



# Seven Trailers tested for that gentle Touch

*Cavallo, a leading German Equine Magazine, went in search of a suitable horse trailer and tested seven models to see how they performed with respect to noise, comfort on the road and stopping distances. Not all of them manage to prevent the animals from suffering stress.*

**Text** John Patrick Mikisch **Photos** Lisa Rädlein

**W**hen travelling in a trailer, it is inevitable that horses will experience a level of stress, particularly on busy roads and uneven road surfaces.

The editorial team at Cavallo sought to find the trailer in which horses suffer the least from stress in a comprehensive test. They tested the noise level inside the trailer and the extent to which unevenness in the road is transferred to a horse's legs and body. In addition to these comfort categories, Cavallo tested the trailers' stopping distances at 50kph and 80kph in order to assess how safe they are on the road.

## FOUR GERMAN TRAILERS, TWO FRENCH AND ONE BRITISH

The trailers tested were mid-priced (€6000 to €9000) double horsebox models. The only exception to this was the winner of the "Trailer of the Year" award at Equitana 2009, Top Master. Böckmann's flagship was the only trailer to be fitted with a costly but comfortable hydraulic brake. At €13000 the Top Master is significantly more expensive than the other trailers tested (see table).

Three other German suppliers were put to the test: Humbaur with "Pegasus", WM Meyer with "Nevada Alu" and Thiel with "Compact". Two French models, "Provan E" by Fautras and "Grand Confort Gold" by Cheval Liberté, were also in the running as well as the "HB506" produced by UK Manufacturer Ifor Williams Trailers.

# TEST PROCEDURE

**Trailers were tested in three categories; Noise, Shock Absorption and Stopping Distances.**



### 1. Noise measurement inside the trailer

The noise level was measured at a speed of precisely 80kph with a sound level meter positioned at

the height of a horse's head inside the trailer. The result was an average taken from repeated measurements in two directions of travel.

### 2. Stopping distances

Two 500kg weights were fastened securely to the interior of each trailer as ballast. The same towing vehicle was used for all trailers and the stopping distances were repeatedly recorded at 50kph and 80kph at a predefined point on the dry asphalt surface. The average of three tests was taken.

### 3. Vertical motion/lateral rocking

One side of the car and trailer was driven over a 30mm high bump at precisely 20kph. The bump sensors on the vehicle recorded the effect of the vertical movement on the horse and the extent to which the trailer rocked to the side. The results were the maximum values taken from several tests.



Sensors recorded the effect of the vibrations on the trailer whilst driving over the bump.



The tyres simulated the horse's weight

## NONE OF THE TRAILERS WERE QUIETER THAN 100DBA

All trailers were subjected to the same conditions in the test.

Two 500kg, securely-bound sets of tyres were used to simulate the horse's weight within the trailers.

The towing vehicle used was a Mercedes GL420 CDI with 306bhp.

Noise within the trailer was measured at 80kph by a calibrated measuring microphone positioned at the approximate height of a horse's ears.

However, it is difficult to judge the extent to which noise stresses the animals during travel. Indicators such as the cortisol level and heart rate of the horse can prove that travelling in a horsebox or trailer causes stress in horses but so far it has not been possible to determine the main cause – movement during travel or noise?

It is agreed though that noise can have a considerable affect on living creatures. Prolonged exposure to 80 decibels (dB) is considered enough to cause agitation. Some of the measurements taken in the trailers travelling at 80kph were markedly higher than 100dB even when hatches and flaps were closed. This was a level of noise which one of the Cavallo team in the vehicle also found uncomfortably high.

The quietest trailer tested was the 'Provan E' by Fautras at 101.3dB (see table below). Manager of sales for Germany, Matthieu Kerninon, attributes the comparatively good result predominantly to the diminutive height of the Provan E. "It is closer to the ground than other trailers and is just 2.65 metres high. Depending on the towing vehicle it sits better in the slip stream than others."

The 'Nevada Alu' by WM Meyer proved to be particularly loud at 108.5dB. For our tester the 7.2dB difference was also plain to hear.

**Day of reckoning: Cavallo sent seven horse trailers on a test run. Amongst them was the top of the range model, Top Master – the award-winner at the fair for equestrian sports in Essen, Equitana – made by Böckmann. A trial of strength with a surprising result.**



## IMPACTS ARE BARELY CUSHIONED AT ALL

The noise within the trailer also depends on other factors such as the towing vehicle and its aerodynamics. Whether hatches and flaps are open or closed can also have a significant effect on the noise level as well as external traffic.

However, it is not only noise that can cause stress to horses when travelling. Horses cannot anticipate an uneven road surface or a change in direction and speed.

Therefore, in a second comfort test Cavallo sought to determine how well the seven trailers cushioned impacts and the extent to which vibrations caused movement about the longitudinal axis.

A 30mm tall slab of rubber (bump) was used as an obstacle in the test. The trailers were driven over it at precisely 20kph. The g-value then gave the extent to which the horse is affected by the vertical motion. 0.5g means that for a short amount of time the horse must withstand forces equivalent to half its body weight.

## LEAF SPRINGS CUSHION BEST

The Nevada Alu by WM Meyer with a score of 0.42g and the HB506, with aluminium floor, by Ifor Williams with a score of 0.44g performed the best in this category.

The Ifor Williams dealer Peter Berger from Fellbach, close to Stuttgart, puts the good result down to the absorbent spring leaf suspension.

It also clearly compensates for any lateral rocking very well. The HB506 was the best in this category with a rate of 10.5° per second, the lowest levels in this category. Horses, therefore, have it particularly comfortable in this trailer.

The Nevada Alu, however, has hydraulic AL-KO shock absorbers. They absorb shock the most effectively but then the vehicle rocks 19.8° per second, tormenting the horse as the sides of the trailer lurch towards it. Humbaur's Pegasus (17.7° per second) and Thiel's Compact (17.3° per second) rock almost as much. Both vehicles have differently adjusted AL-KO absorbers. In addition, they have the highest g-values: 0.79g for the Pegasus and 0.77g for the Compact.



# “A Long Drive Causes Stress”

**Cavallo's Christiane Wehnert tested the detrimental effects of transport on horses**

**Cavallo: You once drove 24 horses through Brandenburg for a stress test, why?**

Wehnert: Before coming to Cavallo I studied equine science in Vienna and was looking for an exciting topic for my final thesis. The Graf Lehndorff Institute gave me the opportunity to conduct this stress project. I was very enthusiastic about it right from the start.

**Cavallo: How can you measure stress caused by transport?**

Wehnert: Stress causes the heart rate and cortisol levels to increase. The horse's heart rate can be measured in the same way as it is for athletes. The stress hormone cortisol can be measured in the saliva.

**Cavallo: What did you find out?**

Wehnert: The results were unambiguous. The longer the transport takes the more stress a horse suffers. To take the measurements I transported eight horses for an hour, another eight for three and a half hours and the final eight for eight hours. For the first 30 minutes of driving the heart rates of all the horses increased though subsequently dipped slightly. It was different in the case of cortisol. To begin with the concentration increased too but it didn't go back down, instead it reached a peak at the end of the drive. The horses that were driven for eight hours had the highest cortisol concentration; those driven for an hour had the lowest.



**Cavallo transport expert  
Christine Wehnert**

**Cavallo: How can the stress levels be reduced?**

Wehnert: It is important to accelerate slowly, avoid pot holes and to take breaks. Give your horse plenty of time to recover after the journey.

**The HB506 by Ifor Williams Trailers is the overall winner with two second places for noise and shock absorbance as well as first place for lateral rocking in the three comfort categories. Provan E by Fautras followed in second place.**

The French model was also impressive in the stopping distance tests. When travelling at 50kph it needed only 10m to come to a standstill, and at 80kph, 26.2m.

Humbaur's Pegasus and Thiel's Compact only needed fractionally longer to come to a stop – Pegasus 10.3m (50kph) and 26.6m (80kph); the Compact 10.5m and 26.6m.



You can find out more about stress in trailers at: [www.cavallo.de/haengertest](http://www.cavallo.de/haengertest)

## Complete Test Results

	Top Master (Böckmann)	Grand Confort Gold (Cheval Liberté)	Provan E (Fautras)	Pegasus (Humbaur)	HB 506 (Ifor Williams)	Compact (Thiel)	Nevada Alu (WM Meyer)
Internal noise at 80kph in decibels	104,2	107,3	101,3	105,2	103,3	106,1	108,5
Vertical motion when travelling over a 30mm bump in g	0,65	0,64	0,64	0,79	0,44	0,77	0,42
Lateral rocking caused by 30mm bump in degrees per second	11,9	12,6	12,9	17,7	10,5	17,3	19,8
Stopping distance at 50kph (ave.) in metres	12,6	10,6	10,0	10,3	10,6	10,5	10,9
Stopping distance at 80kph (ave.) in metres	36,5	27,4	26,2	26,6	27,1	26,6	27,6

Most surprising, however, was the result of Böckmann's Top Master. Its hydraulic brakes are supposed to be particularly conducive to horse comfort and brake gently. Yet in the test they slowed the trailer very slowly. At 50kph the Top Master required 12.6m to stop and at 80kph as much as 36.5m.

## CAREFUL WITH NEW HYDRAULIC BRAKES

To a small degree this could have been down to the tyres. The Top Master was fitted with year-round tyres, possibly lacking the necessary traction on the summer asphalt. However, the Nevada Alu by WM Meyer did much better with the same tyres. The manager of technology at Böckmann, Reinhard Steinkamp, suspects that during the test the brakes were not at operating temperature and were

new, "So-called friction poles must form on the brake linings of new vehicles to achieve full functionality." Caution is therefore advised as otherwise valuable metres will be lost.

Conventional mechanical trailer brakes stop a vehicle – due to the mechanism – somewhat more impulsively with a small jerk and often cause the wheels to lock.

This can be avoided with normal brakes by at first applying gentle then increasing pressure on the brake pedal.

This is also the case for the HB506 by Ifor Williams. The winner in the comfort categories took a respectable fourth place in the stopping distance test – 10.6m at 50kph and 27.1m at 80kph.

# Commentary





Loud, rigid suspension and sometimes even the brakes work badly. Would you drive a car like this? I would not. Nonetheless this is exactly what we put our horses through as proved by the Cavallo test. And then we wonder why the horse is sometimes reluctant to be loaded into the trailer.

Something obviously needs to be done about this. Manufacturers must produce trailers which are more horse-friendly and horse owners have a duty to purchase the best trailer for their horses. Regrettably, the horse is currently just a passenger.



John Patrick Mikisch:  
"produce horse-  
friendlier trailers"

# Seven Trailers Compared

	 Top Master	 Grand Confort Gold	 Provan E	 Pegasus
Manufacturer	Böckmann Fahrzeugwerke GmbH, Siehefeld 5, 49688 Lastrup, Tel. (04472) 895460, www.boeckmann.com	Cheval Liberté, Route de St. Baslemont, 88800 Ligneville, Frankreich, Tel. (0033) 329088390, www.cheval-liberte.com/de	Vans Fautras, 24230 Montcaret, Frankreich, Tel. (0033) 553734400, www.fautras.com	Humbaur GmbH, Mercedesring 1, 86368 Gersthofen, Tel. (0821) 249290, www.humbaur.com
Overall Length	4950 mm	4470 mm	4270 mm	4642 mm
Height	2730 mm	2720 mm	2650 mm	2875 mm
Width	2300 mm	2140 mm	2220 mm	2270 mm
Internal Width	1800 mm	2200 mm	1630 mm	1800 mm
Internal Dimensions	3600 x 2300 x 1750 mm	3210 x 2300 x 1670 mm	3050 x 2250 x 1630 mm	3200 x 2270 x 1700 mm
Length of Drawbar	1515 mm	1150 mm	1150 mm	1130 mm
Unladen Weight <sup>1</sup>	1070 / 1085 kg	840 / 860 kg	900-980 / 925 kg	830 / 800 kg
Wheel Load (right) <sup>2</sup>	550 kg	430 kg	440 kg	405 kg
Wheel Load (left) <sup>2</sup>	535 kg	430 kg	485 kg	395 kg
Single Axle Load	1200 kg	1000 kg	1100 kg	1668 kg
Double Axle Load	2400 kg	2000 kg	2000 kg	2400 kg
Recommended Coupling/ Tow Bar Load <sup>3</sup>	80 kg	65-80 kg	80 kg	41-44 kg
Maximum Coupling/ Tow Bar Load	100 kg	100 kg	100 kg	100 kg
Gross Weight	2400 kg	2000 kg	2000 kg	2400 kg
Payload	1330 kg	1160 kg	1000-1100 kg	1570 kg
Suspension Manufacturer	WCF-Chassis	Pullmann-Chassis / Cheval Liberté	JLFD Production / Van Fautras	Champ-Chassis / Humbaur
Coupling	Knott	Knott	Knott	AL-KO
Braking System	Hydraulic Drum Brake	Mechanical Drum Brake	Mechanical Drum Brake	Mechanical Drum Brake
Towing Plug	13-Pin	7-Pin	13-Pin	13-Pin
Axle Construction/ Manufacturer	Single Wheel Suspension, Coiled Springs / Böckmann	Single Wheel Suspension, Coiled Springs / Cheval Lib.	Rubber Spring Axle / Paillard	Rubber Spring Axle / AL-KO
Shock Absorber/ Manufacturer	Hydraulic / –	Hydraulic / Knott	Hydraulic / AL-KO	Hydraulic / AL-KO
Dimension/Size of Rims	5 1/2 J x 15	4 1/2 J x 13	4 1/2 J x 15	5 1/2 J x 15
Tyre Dimension/Size	195/65 R 15 93 N / M+S, Security BK	165 R 13 C 92 N / –	185/70 R 15 90 N / Kargo Max XL ST-4000	195/65 R 15 93 N / Security
Load Capacity of Tyres <sup>4</sup>	650 kg	630 kg	600 kg	650 kg
Price (Inc vat)	12978 Euro <sup>5</sup>	5990 Euro	7700 Euro <sup>6</sup>	9186 Euro

1. As per Manufacturer tested unladen weight. 2. As per tested unladen weight. 3. As per Manufacturer. 4. Per Tyre. 5. With WCF-Chassis hydraulic brake, polyester bumper water carrier and saddle storage. 6. With windows and saddle storage. 7. With rear top doors and sliding windows.

## Information on the tested trailers can be found in this table.

 HB 506	Compact	Nevada Alu
Ifor Williams Trailers, Cynwyd, Corwen, Denbighshire LL21 0LB, UK (0044) 1490412527, www.iwt.co.uk	Thiel Pferdeanhänger, Huckardstr. 108-110, 44147 Dortmund, Tel. (0231) 5600802, www.thiel-anhaenger.de	WM Meyer Fahrzeugbau AG, Robert-Bosch-Str. 4, 97440 Werneck, Tel. (09722) 91000, www.wm-meyer.de
4300 mm	4870 mm	4510 mm
2750 mm	2850 mm	2940 mm
2100 mm	2230 mm	2135 mm
1800 mm	1740 mm	1710 mm
3160 x 2260 x 1670	3460 x 2360 x 1700	3200 x 2480 x 1655
1140 mm	1380 mm	2520 mm
920 / 955 kg	890 / 900 kg	860 / 880 kg
485 kg	450 kg	435 kg
470 kg	450 kg	445 kg
1500 kg	1200 kg	2400 kg
3000 kg	2500 kg	2500 kg
50 kg	50-60 kg	60 kg
150 kg	100 kg	100 kg
2600 kg	2400 kg	2500 kg
1680 kg	1510 kg	1640 kg
Ifor Williams / Ifor Williams	Thiel / Thiel	Challenge-Chassis WM Meyer
Knott	AL-KO	BPW
Mechanical Drum Brake	Mechanical Drum Brake	Mechanical Drum Brake
7-Pin	13-Pin	7-Pin
Rubber Spring Axle - Additional Charge	Rubber Spring Axle / AL-KO	Rubber Spring Axle / BPW
Hydraulic Shock Absorbers Extra Charge	Hydraulic / AL-KO	Hydraulic / AL-KO
4 1/2 J x 13	5 1/2 J x 15	5 1/2 J x 14
165 R 13 C 96/94 N / Kargo Max C ST-6000	195/65 R 15 91 H / Goodyear	195/70 R 14 96 N / M+S, Security BK
710 / 670 kg	615 kg	710 kg
7094 Euro <sup>7</sup>	8100 Euro	8543 Euro

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