



TEST REPORT



Concerning the braking system of certain categories of vehicles corresponding the Directive of the Council 71/320/EEC as last amended by the Commission Directive 2002/78/EC and ECE Regulation no. 13.09.

Test report number : **RDW-13R-0182**

0.1. Make : SAF

0.2. Type : PAN22-1 NG22

0.3. Variety : 3 axle semi trailer

0.4. Category of vehicle : O4

0.5. Name and address of the manufacturer : Otto Sauer Achsenfabrik GmbH
Hauptstraße 26
63856 BESSENBACH
Germany

0.6. Name and address of the assembly plants : See 0.5

General : The braking system does comply with the requirements laid down in Annex I section 2 of the above mentioned Directive and/or section 5.3. of the above mentioned Regulation.
See drawing number(s)/documentation number(s): 601T3695

Tests : The tests have been conducted according to Annex II, ~~III, IV, V, VI, VII, VIII, X, XI, XII, XIII, XIV and XV~~ of the above mentioned Directive and/or Annex IV, ~~V, VI, VII, VIII, IX, XI, XII, XIII, XIV and XV~~ of the above mentioned Regulation.
See Annex number(s): 1- 12

Conclusion : The type of vehicle does comply with the stated requirements and there are no objections against approval according to the above mentioned Directives and Regulation.

Test date(s) : 26-02-2006

By : W. Hartman

Invoice number: VR117282

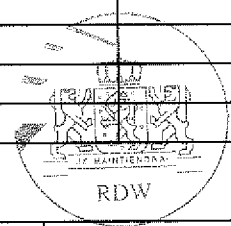
Lelystad, 26-02-2006
The Test-engineer,



RDW
W.R. Hartman

W.R. Hartman

Vehicle specifications:							
Make	Pacton		Type	TXD			
Nat./EC/ECE (1)			Category	O4			
VIN	Test vehicle						
Test carried out by	W. Hartman						
Place	Lelystad		Date	26-02-2006			
Road-surface	Asphalt		Weather conditions	Dry			
Wind force	1	m/s	Wind direction	ZW			
Barometric pressure	999	mbar	Temperature	1	°C		
Humidity	99	%	Remarks	-			
Static measurements:							
Maximum allowed weights (mass):			Weights laden/unladen (1) 1 persons. including				
king pin	18.000	Kg	King pin	*	kg		
Axle 1	9.000	Kg	Axle 1	*	kg		
Axle 2	9.000	Kg	Axle 2	*	kg		
Axle 3	9.000	Kg	Axle 3	*	kg		
Axle 4		Kg	Axle 4		kg		
Total	45.000	Kg	Total	*(see Table below)			
Tyre size(s)	385/65 R22,5						
Tyre pressure	9.0	Bar	Load Index	160K			
Brake schedule	601T3695						
Brake cylinders				Brake levers			
Axle number 1	16	inch	Axle number 1	69	mm		
Axle number 2	16/24	inch	Axle number 2	69	mm		
Axle number 3	16/24	inch	Axle number 3	69	mm		
Axle number 4	-	inch	Axle number 4	-	mm		
Tests:							
Type 0 (1.2.4. Annex II)		Type I (1.3.2. Annex II)			Type 0 after I (1.3.3. Annex II)		
Speed	km/h	Speed	km/h	Speed	km/h		
Control force	daN	Control force	DaN	Control force	daN		
Control pressure	bar	Control pressure	Bar	Control pressure	Bar		
Deceleration	m/s ²	Deceleration	m/s ²	Deceleration	m/s ²		
Diagram		Time	S	Diagram			
Type III (1.6 Annex II)		No	deceleration	control force	No	Deceleration	control force
Speed	km/h	1			11		
Control force	daN	2			12		
Control pressure	bar	3			13		
Deceleration	m/s ²	4			14		
Time	s	5			15		
Diagram		6			16		
Type 0 after III (1.6.3 Annex II)		7			17		
Speed	km/h	8			18		
Control force	daN	9			19		
Control pressure	bar	10			20		
Deceleration	m/s ²	Remarks:					
Diagram							
Pressure after air supply line fracture (2.2.3.1 Annex II)	≥0,0	bar	Brake performance	Agreed/not agreed			
Pressure after air supply line fracture and a deflation speed of at least 1 bar/s (2.2.1.18.4.2 Annex I)	≥0,0	bar	Brake performance	Agreed/not agreed			

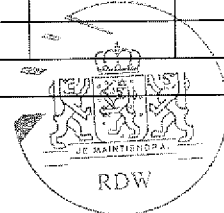


(1) Strike out what is not applicable.

3 axles

Parking brake (2.2.2.1. Annex II)			Reaction time (2.3. Annex II and 3. Annex III)								
Brake force forward	5.500	daN	Make test equipment	Wabco Westinghouse							
Brake force rearward	5.200	daN	Feed line pressure	6,5	Bar						
Control force	-	daN	t_{sS}		s						
Lever length	69	mm	$t_{aP} + t_{sA}$ axle 1		s						
Remarks: Only 1 axle tested !			$t_{aP} + t_{sA}$ axle 2		s						
			$t_{aP} + t_{sA}$ axle 3		s						
			$t_{aP} + t_{sA}$ axle 1 (Can)		s						
			Mass of the combination			41.665	kg	Capacity of the air reservoirs			
Unladen weight under axles			4.235	kg	Volume air reservoirs	-	dm ³				
Maximum weight under axles			27.000	kg	Maximum pressure P ₀	8,5	bar				
Rolling resistance combination			0,01	m/s ²	Rolling resistance trailer	0,01	m/s ²				
Calculation factor for deceleration (acc. 1.3. Annex IV)											
Laden			1,543	Pressure in reservoir after 1x braking P ₁	-	Bar					
Unladen			3,25	Pressure in reservoir after 9x braking P ₀	-	Bar					
Additional tests according Directive 75/524/EEC (Appendix to Annex II check diagram 2 and 4B)											
Command line pressure (bar)		Brake cylinder pressure (bar)		Deceleration combination (m/s ²)		Diagram number		Deceleration calculated for trailer (m/s ²)		Remarks	
up	Down	up	Down	up	down			Up	down	Up	Down
2,0	2,2	1,4	1,6	0,88	0,93	1	13	1,31	1,38	Laden	Laden
3,0	3,0	2,6	2,7	1,47	1,49	2	12	2,12	2,25	Laden	Laden
4,1	4,0	3,9	3,8	2,20	2,12	3	11	3,33	3,22	Laden	Laden
5,0	-	4,8	-	2,68	-	4	-	4,07	-	Laden	-
5,0	5,0	4,8	4,8	2,74	2,78	5	10	4,18	4,24	Laden	Laden
6,0	6,0	6,0	6,0	3,36	3,30	6	9	5,14	5,05	Laden	Laden
6,5	6,5	6,5	6,7	3,47	3,51	7	8	5,30	5,37	Laden	Laden
5,7	5,7	1,5	1,4	1,65	1,73	5a	6a	5,15	5,41	Un.lad	Un.lad
LSD failure (6. Appendix to Annex II)				Agreed/not agreed/N.A. ⁽¹⁾							
Remarks:											

Weights of combination under test conditions								
Unladen			Laden			Tractor unit solo		
Axle 1	5.690	kg	Axle 1	5.840	Kg	Axle 1	5.560	kg
Axle 2	3.850	kg	Axle 2	9.730	Kg	Axle 2	2.490	kg
Axle 3	1.240	kg	Axle 3	8.825	Kg	Total	8.050	kg
Axle 4	1.340	kg	Axle 4	8.695	Kg			
Axle 5	1.655	kg	Axle 5	8.575	Kg			
Total	13.775	kg	Total	41.665	Kg			

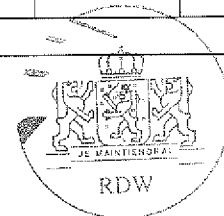


(1) Strike out what is not applicable.

2 axes

Parking brake (2.2.2.1. Annex II)			Reaction time (2.3 Annex II and 3 Annex III)								
Brake force forward	-	daN	Make test equipment	Wabco Westinghouse							
Brake force rearward	-	daN	Feed line pressure	6,5	Bar						
Control force	-	daN	t_{sS}		S						
Lever length	-	Mm	$t_{aP} + t_{sA}$ axle 1	-	S						
Remarks:			$t_{aP} + t_{sA}$ axle 2	-	S						
			$t_{aP} + t_{sA}$ axle 3	-	S						
			$t_{aP} + t_{sA}$ axle 1(Can)	-	S						
Mass of the combination	37.360	kg	Capacity of the air reservoirs								
Unladen weight under axles	3.665	kg	Volume air reservoirs	80	Dm ³						
Maximum weight under axles	18.000	kg	Maximum pressure P_0	8,5	Bar						
Rolling resistance combination	0,01	m/s ²	Rolling resistance trailer	0,01	m/s ²						
Calculation factor for deceleration (acc. 1.3. Annex IV)											
Laden	2,07		Pressure in reservoir after 1x braking P_1	-	Bar						
Unladen	3,68		Pressure in reservoir after 9x braking P_9	-	Bar						
Additional tests according Directive 75/524/EEC (Appendix to Annex II check diagram 2 and 4B)											
Command line pressure (bar)		Brake cylinder pressure (bar)		Deceleration combination (m/s ²)		Diagram number		Deceleration calculated for trailer (m/s ²)		Remarks	
up	Down	up	Down	up	down			Up	down	Up	Down
2,0	2,0	2,1	1,5	0,91	0,73	14	23	1,78	1,40	Laden	Laden
3,0	3,0	3,1	2,7	1,31	1,27	15	22	2,60	2,53	Laden	Laden
4,0	4,0	4,1	3,7	1,80	1,69	16	21	3,62	3,41	Laden	Laden
5,0	5,0	5,0	4,9	2,11	2,22	17	20	4,26	4,50	Laden	Laden
6,0	6,0	6,0	6,0	2,56	2,63	18	19	5,19	5,34	Laden	Laden
5,5	5,5	1,8	1,8	1,69	1,70	3a	4a	5,98	6,02	Un.lad	Un.lad
LSD failure (6. Appendix to Annex II)						Agreed/not agreed/N.A. ⁽¹⁾					
Remarks:											

Weights of combination under testconditions										
Unladen			Laden			Tractor unit solo				
Axle 1	5.705	kg	Axle 1	6.005	Kg	Axle 1	5.560	kg		
Axle 2	4.135	kg	Axle 2	11.280	Kg	Axle 2	2.490	kg		
Axle 3	Lifted	kg	Axle 3	Lifted	Kg	Total	8.050	kg		
Axle 4	1.890	kg	Axle 4	10.125	Kg					
Axle 5	1.775	Kg	Axle 5	9.950	Kg					
Total	13.505	Kg	Total	37.360	Kg					

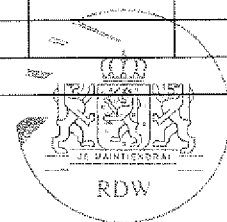


(1) Strike out what is not applicable.

1 axle

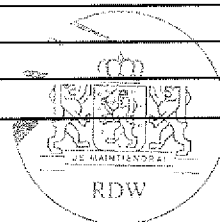
Parking brake (2.2.2.1. Annex II)			Reaction time (2.3. Annex II and 3. Annex III)								
Brake force forward	-	daN	Make test equipment	Wabco Westinghouse							
Brake force rearward	-	daN	Feed line pressure	6,5	Bar						
Control force	-	daN	t_{ss}		S						
Lever length	-	Mm	$t_{ap} + t_{sA}$ axle 1	-	S						
Remarks:			$t_{ap} + t_{sA}$ axle 2	-	S						
			$t_{ap} + t_{sA}$ axle 3	-	S						
			$t_{ap} + t_{sA}$ axle 1(Can)	-	S						
Mass of the combination	26.525	kg	Capacity of the air reservoirs								
Unladen weight under axles	3.980	kg	Volume air reservoirs	80	Dm ³						
Maximum weight under axles	9.000	kg	Maximum pressure P_0	8,5	Bar						
Rolling resistance combination	0,01	m/s ²	Rolling resistance trailer	0,01	m/s ²						
Calculation factor for deceleration (acc. 1.3. Annex IV)											
Laden	2,94		Pressure in reservoir after 1x braking P_1	-	Bar						
Unladen	3,39		Pressure in reservoir after 9x braking P_9	-	Bar						
Additional tests according Directive 75/524/EEC (Appendix to Annex II check diagram 2 and 4B)											
Command line pressure (bar)		Brake cylinder pressure (bar)		Deceleration combination (m/s ²)		Diagram number		Deceleration calculated for trailer (m/s ²)		Remarks	
up	Down	up	Down	up	down			Up	down	Up	Down
2,0	2,0	1,6	2,0	0,53	0,65	24	33	1,38	1,73	Laden	Laden
3,0	3,0	2,6	3,0	0,85	1,03	25	32	2,31	2,84	Laden	Laden
4,0	4,0	3,8	4,0	1,20	1,35	26	31	3,34	3,78	Laden	Laden
5,0	5,0	4,8	5,0	1,53	1,65	27	30	4,32	4,65	Laden	Laden
6,0	6,0	5,7	6,0	1,73	1,91	28	29	4,9	5,42	Laden	Laden
6,0	6,0	3,0	3,0	1,63	1,72	1a	2a	5,30	5,39	Un.lad	Un.lad
LSD failure (6. Appendix to Annex II)				Agreed/not agreed/N.A. ⁽¹⁾							
Remarks:											

Weights of combination under testconditions								
Unladen			Laden			Tractor unit solo		
Axle 1	5.690	kg	Axle 1	5.875	Kg	Axle 1	5.560	kg
Axle 2	3.845	kg	Axle 2	11.025	Kg	Axle 2	2.490	kg
Axle 3	Lifted	kg	Axle 3	Lifted	Kg	Total	8.050	kg
Axle 4	3.980	kg	Axle 4	9.625	Kg			
Axle 5	Lifted	kg	Axle 5	Lifted	Kg			
Total	13.515	kg	Total	26.525	Kg			



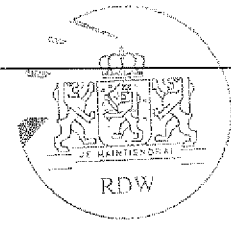
(1) Strike out what is not applicable.

Brake schedule:		Full trailer/Semi trailer ⁽¹⁾								
Brake schedule number	601T3659	VIN			Test vehicle					
Make and type	Pacton TXD	Wheelbase (E)			7.800	mm				
Axles:										
Make and type	SAF SBW 2243-11S	Code			361 101 20-05					
Brakes:										
Make and type	Wabco PAN 22-1 NG 22	Lining make and type			Jurid 539					
Bogie:										
Make and type	Intradisc +	Security cable			Agreed/not agreed/N.A. ⁽¹⁾					
Tyres:										
Tyre size	385/65 R22,5									
Brake specification:										
Axle number	1	2	3	4	5	6	7	8	9	
Brake cylinder(s)	16	16/24	16/24							
Brake lever length (mm)	69	69	69							
Suspension:										
Type	Mechanical/pneumatic ⁽¹⁾									
Make	Intradisc +									
Dimensions	Air									
Parking brake:										
Make	SAF									
Type	16/24 Report BZ 139.1									
On axle number	2+3									
Brake lever length	69									
Support legs	Not used during test									
LSD settings:										
LSD plate		Agreed/not agreed ⁽¹⁾			Test connections			Agreed/not agreed ⁽¹⁾		
P _m	6,5	bar	Suspension travel/suspension pressure		P _{out} LSD		Mass (kg)		LSD lever length	
Position	Front	Rear	Front	Rear	Front	Rear	Total	Front		Mm
Unladen				1,2		1.000		Rear		Mm
Laden				6,6		9.000				
Reaction time test:										
Axle number	T1 (s)	T2 (s)	T1 (s)	T2 (s)	T1 (s)	T2 (s)	T1 (s)	T2 (s)		
1 (pneumatic)	-	-	-	-	-	-	-	-		
1 (Can only)	-	-	-	-	-	-	-	-		
Air reservoir capacity test:										
P ₀ ≥ 0,5 P ₁	Agreed/not agreed			Volume		-		dm ³		
P ₀	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	P ₉	
8,5	-	-	-	-	-	-	-	-	-	
Parking brake test:										
P ₀	P ₁	P ₂	P ₃							
6,5	-	-	-							
Parking brake releases after 3 applications				Yes/no ⁽¹⁾						
Parking brake operating pressure				- Bar						
Remarks:										



(1) Strike out what is not applicable.

ABS test of full trailer:				
- $V_{initial} = 50$ km/h				
- ABS inoperative				
- Condition of the vehicle: unladen				
Annex X section 6.2. (Appendix 2 ad 2.2.)				
Determination of the coefficient of adhesion with the <u>front axle(s)</u> braked (k_f)				
Braking test	$k_H = \pm 0,8$			
	$V_{initial}$ (km/h)	T_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. Number
number 1				
number 2				
number 3				
number 4				
$t_{min} =$				
t_m or $t_{min} = (1)$				
$z_{Cmax} = 0,566/t_m$ or $t_{min} (2)$				
$F_{bRmaxi} = z_{Cmaxi} \times (F_M + F_R) - 0,010 \times F_{cnd} - 0,015 \times F_{cd}$				
$F_{idyn} = F_i + \frac{z_{Cmaxi} \times (F_M \times h_D + g \times P \times h_R) - F_{wM} \times h_D}{E}$				
$k_f = \frac{F_{bRmaxi}}{F_{idyn}}$				
Determination of the coefficient of adhesion with the <u>rear axle(s)</u> braked (k_r)				
Braking test	$k_H = \pm 0,8$			
	$V_{initial}$ (km/h)	T_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. Number
number 1				
number 2				
number 3				
number 4				
$t_{min} =$				
t_m or $t_{min} = (1)$				
$z_{Cmax} = 0,566/t_m$ or $t_{min} (2)$				
$F_{bRmaxi} = z_{Cmaxi} \times (F_M + F_R) - 0,010 \times F_{cnd} - 0,015 \times F_{cd}$				
$F_{idyn} = F_i - \frac{z_{Cmaxi} \times (F_M \times h_D + g \times P \times h_R) - F_{wM} \times h_D}{E}$				
$k_r = \frac{F_{bRmaxi}}{F_{idyn}}$				

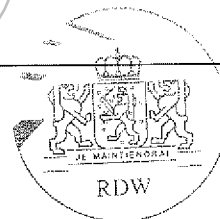


(1) Mean value of three values within t_{min} and $1,05 \times t_{min}$ or t_{min} (see Appendix 2, item 2.1.3.2.)
 (2) z_{Cmax} in $m/s^2 / 9,81$.

- P total mass of individual vehicle in kg.
- g acceleration due to gravity ($9,81$ m/s^2).
- F static load on axle (kg).
- h_k height of kingpin.
- h_R height of centre of gravity of the trailer.
- E_R wheelbase.
- F_M total static load of towing motor vehicle.
- F_R total static load of the trailer.

k shall be calculated in three digits accuracy.

ABS test of semi-trailer or centre-axle trailer:				
- $V_{initial} = 50$ km/h				
- ABS inoperative				
- Condition of the vehicle: unladen				
- Wheels fitted to only one axle, the wheels on the other axle(s) are removed.				
Annex X section 6.2. (Appendix 2 ad 2.3.)				
Determination of the coefficient of adhesion (k)				
Braking test	$k_H = \pm 0,8$			
	$V_{initial}$ (km/h)	T_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. Number
number 1				
number 2				
number 3				
number 4				
$t_{min} =$				
t_m or $t_{min} = (1)$				
$z_{Cmax} = 0,566/t_m$ or $t_{min} (2)$				
$F_{bRmax} = z_{Cmax} \times (F_M + F_R) - 0,010 \times F_{cnd} - 0,015 \times F_{cd}$				
$F_{Rdyn} = F_R - \frac{F_{bRmax} \times h_K + z_C \times g \times P \times (h_R - h_K)}{E_R}$				
$k = \frac{F_{bRmax}}{F_{Rdyn}}$				

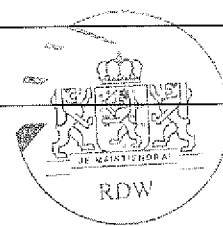


(1) Mean value of three values within t_{min} and $1,05 \times t_{min}$ or t_{min} (see Appendix 2, item 2.1.3.2.)
 (2) z_{Cmax} in $m/s^2 / 9,81$.

- P total mass of individual vehicle in kg.
- g acceleration due to gravity ($9,81 m/s^2$).
- F static load on axle.
- h_K height of kingpin.
- h_R height of centre of gravity of the trailer.
- E_R wheelbase.
- F_M total static load of towing motor vehicle.
- F_R total static load of the trailer.

k shall be calculated in three digits accuracy.

ABS test, determination of the maximum braking rate (z_{RAL}) and calculation of k_R and ϵ .								
- $V_{initial} = 50$ km/h								
- ABS in operation								
- Condition of the vehicle: unladen								
- For a semi-trailer all wheels are fitted.								
Annex X section 6.2. (Appendix 2 ad 2.2. and 2.3.)								
Full trailer								
Braking test	$k_L = \leq 0,3^{(1)}$				$k_H = \pm 0,8$			
	$V_{initial}$ (km/h)	t_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. number	$V_{initial}$ (km/h)	t_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. Number
number 1								
number 2								
number 3								
number 4								
$t_{min} =$								
t_m or $t_{min} =^{(2)}$								
$z_{CAL} = 0,566/t_m$ or $t_{min}^{(3)}$								
$k_R = \frac{k_f \times F_{fdyn} + k_r \times F_{rdyn}}{P \times g}$								
$z_{RAL} = \frac{z_{CAL} \times (F_M + F_R) - 0,010 \times F_{cnd} - 0,015 \times F_{cd}}{F_R}$								
$\epsilon = \frac{z_{RAL}}{k_R}$ (rounded to 2 decimals)								
Semi-trailer or centre-axle trailer								
Braking test	$k_L = \leq 0,3^{(1)}$				$k_H = \pm 0,8$			
	$V_{initial}$ (km/h)	t_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. number	$V_{initial}$ (km/h)	t_{40-20} (sec.)	$P_{cylinder}$ (bar)	Diagr. Number
number 1								
number 2								
number 3								
number 4								
$t_{min} =$								
t_m or $t_{min} =^{(2)}$								
$z_{CAL} = 0,566/t_m$ or $t_{min}^{(3)}$								
$F_{bRAL} = z_{CAL} \times (F_M + F_R) - 0,010 \times F_{cnd} - 0,015 \times F_{cd}$								
$F_{Rdyn} = F_R \frac{F_{bRAL} \times h_K + z_{CAL} \times g \times P \times (h_R - h_K)}{E_R}$								
$z_{RAL} = \frac{F_{bRAL}}{F_{Rdyn}}$								
$\epsilon = \frac{z_{RAL}}{k}$ (rounded to 2 decimals)								



(1) Only for vehicles with category A ABS-system.

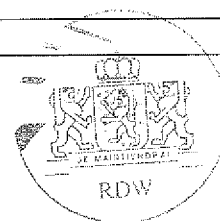
(2) Mean value of three values within t_{min} and $1,05 \times t_{min}$ or t_{min} (see Appendix 2, item 2.1.3.2.)

(3) z_{RAL} in $m/s^2 / 9,81$.

F_{fdyn} dynamic load front axle (kg).
 F_{rdyn} dynamic load rear axle (kg).

k shall be calculated in three digits accuracy.

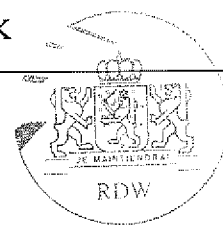
ABS test, energy consumption $k > 0,5$.									
- V = minimum 30 km/h									
- capacity of reservoirs: 80 dm ³									
- ABS in operation									
- Condition of the vehicle: unladen with LSD set to the laden position.									
- Initial energy level in the energy storage device shall be 8,0 bar.									
Annex X section 6.1.									
V _{max} = km/h									
- t = 15 seconds									
- Maximum pressure stated by manufacturer : Bar									
- Pressure of the reservoir before braking : Bar									
Speed (km/h)			Braking time (s)			Diagram number			
- Pressure in the reservoir after 15 seconds = Bar									
- Pressure in the reservoir after 4 times fully actuating the brakes (at standing position):									
Front axle (bar)			Rear axle (bar)			Air reservoir (bar)			
number 1									
number 2									
number 3									
number 4									
number 5									
Alternative method for energy consumption 6.2 of Anhang XIV									
P ₀	P ₁	P ₂	P ₃	P ₄	P ₅	P ₆	P ₇	P ₈	P ₉
-	-	-	-	-	-	-	-	-	-
P ₁₀	P ₁₁	P ₁₂	P ₁₃	P ₁₄	P ₁₅	P ₁₆			
-	-	-	-	-	-	-			
Additional tests according to R13 09 sup. 05 paragraph 5.2.2.16 and 5.2.2.16.1									
At which pressure does the red and yellow warning light , light up ? 4,5 bar									
Pressure at 5th full stroke actuation.									
1	-		Bar	3	-				Bar
2	-		Bar	4	-				Bar
5	-		Bar						
Is the deceleration at the pressure of the 5th full stroke more than 50% of the prescribed performance of the service brake system ?				Yes/No	Deceleration :			≥2,25	m/s ²
Remarks									
- Pressure necessary for secondary braking: 2,9 Bar									



ABS test, road behaviour tests (additional checks paragraph 6.3.)		
- Maximum braking		
- ABS in operation		
- Condition of the vehicle: unladen		
Road behaviour on k_H (ad 6.3.1.)		
Speed	Results	Diagram no
40 km/h		
80 km/h		

- V = 50 km/h		
- Maximum braking		
- ABS in operation		
- LSD is set to cycling pressure.		
- Category ABS: A		
Split μ (k_i/k_H) ⁽²⁾ (ad 6.3.2. and 6.3.3.)		
Speed km/h	Results Locking behaviour	Diagram no

Determination of the braking rate z_{RALS} (additional checks paragraph 6.3.2. and Appendix 3)			
- V = 50 km/h			
- Maximum braking			
- ABS in operation			
- Category ABS: A			
- Condition of the vehicle: unladen			
Braking test split μ	Results		Diagram number
	$V_{initial}$ (km/h)	t_{40-20} (s)	
number 1			
number 2			
number 3			
$z_{RALS} = 0,566/t$			
$\frac{0,75}{\epsilon_H} \times \frac{4 \times z_{RALL} + z_{RALH}}{5}$ ⁽³⁾			
$z_{RALS} \geq \frac{0,75}{\epsilon_H} \times \frac{4 \times z_{RALL} + z_{RALH}}{5}$ and $z_{RALS} > \frac{z_{RALL}}{\epsilon_H}$		OK/not OK	



(1) Strike out what does not apply.
 (2) $k_H \geq 0,5$ and $k_H/k_L \geq 2$ and ABS category A only!
 (3) If $\epsilon_H > 0,95$ use $\epsilon_H = 0,95$.

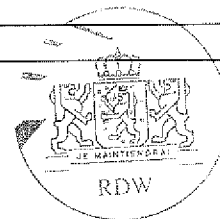
4. General requirements.

- 4.1. Is any electrical failure (supply, wiring) or sensor anomaly signalled to the driver by a specific optical warning signal? : Yes/~~no~~
- 4.1.1. Does the warning signal light up when the ABS-system is energised? : Yes/~~no~~
- Does the warning signal only extinguish if none of the in 4.1. mentioned defects are present? : Yes/~~no~~
- 4.1.2. Does the static sensor check verify that a sensor was not functioning the last time that the vehicle was at a greater speed than 10 km/h? : Yes/~~no~~/~~N.A.~~
The warning signal may light up again while the vehicle is stationary, provided that it is extinguished before the vehicle reaches 10 km/h when no defect is present.
- Does the electrically controlled pneumatic modulator cycle at least once during the above mentioned verification phase? : Yes/~~no~~/~~N.A.~~
- 4.4. Does the electrical connection between the trailer and the towing vehicle conform to ISO Standard 7638-1985 or ISO/DIS Standard 7638-1996? (not for vehicles of category O1 and O2) : Yes/~~no~~/~~N.A.~~
The wiring specification of point 6.2 of ISO 7638-1985 or point 5.4. of ISO/DIS 7638-1996 for the trailer may only be reduced if the trailer is equipped with its own independent fuse. The rating of the fuse shall be such that the current rating of the conductors is not exceeded. With the exception of vehicles of categories N3 and O4, and until a uniform international standard has been agreed, the electrical connection between towing vehicles and trailers equipped with a 12 volt electrical system shall conform with DIN standard 72570, Part 4.
- 4.5. Is the residual braking performance in the event of a defect in the anti-lock braking system (according to point 4.1. of this Annex) at least 80% of the laden prescribed performance for the service braking system? : Yes/~~no~~
- 4.6. Does the ABS system comply with the requirements laid down in 72/245/EEC (95/54/EC)? : Yes/~~no~~
- 4.7. Is there no manual device to disconnect the ABS or to change the control mode of the ABS? : Yes/~~no~~
Only allowed on N2 and N3 OFF-ROAD vehicles under special conditions, see item 4.7.1. - 4.7.5. of Annex X.

Remarks: See also testreport RW TuV EB 120.0E/121.0E,123.3E,130.0E,140.0E 133.0^E



USED TEST EQUIPMENT	
Description	Registration number
Scale	Ops 08
Pressure meter	Man 10/11/07
Speed measurement equipment	Vijf 74
Deceleration meter	Vijf 74
Pedal-force meter	
Temperature meter	Tem 41
Tyre-pressure meter	Man 43
Force measurement equipment	Kra 21
Dynometer	
Time measurement test equipment	
Angle meter	
Reaction-time measurement test equipment	TMS 06
Engine revolutions meter	
Brake test bench	
Hydraulic parking-brake pull equipment	
Recorder	Rech 12
Noise measurement test equipment	
Torque measurement test equipment	
Dynamic fatigue test equipment	
Length measurement equipment	
Amplifier	Mvs 33
Filter	
Remarks:	



SAFE