RDW

Test report no.:RDW -71/320 – 1462 ext. 01

TEST REPORT

TESTING
RvA L 121

Concerning the braking system of certain categories of motor 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 / 10.~~

0.1.	Make	: JMR
0.2.	Type	: 2 axle semi trailer with electric– hydraulic braking system (DEXTER disc)
	Variety	: 2 axle semi trailer / centre axle trailer
0.4.	Category of vehicle	: O2
0.5.	Name and address of the manufacturer	: JMR Trading B.V. Staalstraat 1 2984 AJ Ridderkerk The Netherlands
	Tests conducted by order of	: JMR Trading B.V. Staalstraat 1 2984 AJ Ridderkerk The Netherlands

Tests : The tests have been conducted according to Annex I, 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.~~

Documentation : Drawing 91006, system description and TDB0842 (total of 14 pages).

Conclusion : The type of ~~motor~~ vehicle does/~~does not~~* comply with the requirements mentioned in above mentioned Directives ~~and Regulations~~.
Braking system does not comply to definition for electrical braking systems, see remark on page 2 of this report.

Test date(s) : 19-11-2008 / 06 and 17-02-2009 / 11 and 12-08-2009 / 23-12-2009 / 19-10-2010

By : B.v.d.Grift / L. Vellekoop / R. Begeman

Lelystad, 19 October 2010

The test engineer,

RDW Test Centre Lelystad
Talingweg 76
8218 NX Lelystad
the Netherlands

5 C 1301b

* Strike out what doesn't apply

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EXPLANATION OF THE CHANGES MADE TO THE TESTREPORT

Concerning ~~**CORRECTION**~~**/EXTENSION** *

Belongs to reportnr.: **RDW-71/320-1462**

Changes concerning the pages: 4 and 6

Remark: The changes in the report are marked by reference.

Explanation of the changes:

New parking brake calliper, therefore a new parkingbrake test is performed.
Result for current parking brake test are corrected.

date: 28-10-2010

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Additional information :

According 71/320/EEC-2008/78/EC :
Electrical brakes are service braking systems consisting of a control device, an electromechanical transmission device, and friction brakes.

The braking system JMR as tested in this report does not fully comply with above mentioned definition. The JMR braking system consists of a control device, electric transmission, hydraulic energy source (pump), hydraulic transmission and a friction brake.

Tests
The electric-hydraulic braking system JMR was tested according all relevant precriptions mentioned in Annex I, II, VII and XI of Directive 71/320/EEC – 2002/78/EC.

Conclusion:
The electric-hydraulic braking system JMR as tested in this report does comply with all relevant prescriptions mentioned in Annex I, II and XI of Directive 71/320/EEC – 2002/78/EC except the definition for electrical braking system (item 1.1 Annex XI).
Because of this exception it is not possible to issue a type approval certificate according Directive 71/320 Annex IX.

date: 23-12-2009

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Test vehicle specifications											
Brake schedule:	~~Full trailer~~/Semi trailer *										
Make and type	E.Pagenkopf MS4		VIN	W09SAH2057BP13337							
				XL9CG560801225061 (only parking brake test)							
Brake schedule number	91006		Wheelbase (E_r)			5000+900		mm			
Maximum allowed weight(mass):											
King pin	1500 kg										
Axle 1	1750 kg										
Axle 2	1750 kg										
Axle 3	-- kg										
Axle 4	-- kg										
Total	5000 kg										
Axles:											
Make and type	Dexter axle USA			Code		Torflex					
Tyres:											
Axle number	Make and type			Tyre Size		Tyre Pressure					
Axle 1	Barum Vanis			225/70R15		3,5 bar					
Axle 2	Barum Vanis			225/70R15		3,5 bar					
Axle 3											
Axle 4											
Brakes:											
Make and type	Kodiak 225			Lining make and type		D289					
Brake specification:											
Axle number	1			2		3			4		
Brake cylinder(s)	Ø 54			Ø 54		--			--		
Disc/drum diameter	Ø 309			Ø 309		--			--		
Volume of the air reservoirs	-- dm^3										
Suspension:											
Type	Mechanical ~~/ Pneumatic / Hydraulic *~~										
Make	Dexter Rubber torsion										
Dimensions	--										
Parking brake:											
Make	Herman Peters in combination with Kodiac					BOOPARK					
Type	090.000-00 + 225P (D289)					DC 225					
On axle number	1 or 2 or 1 and 2					1 and 2					
Brake lever length	control : 200 mm					Idem, lever on calliper: 70 mm.					
Support legs	not used during the test					not used during the test					
ABS or EBS System:	Not applicable										
Make and type	--										
Category ABS	--										
If applicable, reportnumber for Annex XIV / Annex 19				Not applicable							
LSD settings:	**Not applicable**										
LSD plate	Pass / Fail *			Test connections		Pass / Fail *					
P_m	bar	Suspension travel/ pressure		P_{out} LSD		Mass (kg)			LSD lever length		
Position		Front	Rear	Front	Rear	Front	Rear	Total	Front	--	mm
Unladen		--	--	--	--	--	--	--	Rear	--	mm
Laden		--	--	--	--	--	--	--			

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Test weight (mass) for type 0 brake tests (2.2 Annex II)									
	Combination weight laden			Combination weight unladen			Tractor weight		
Axle 1	1765	kg		1560	kg		1530	kg	
Axle 2	1500	kg		1420	kg		970	kg	
Axle 3	1720	kg		540	kg			kg	
Axle 4	1800	kg		500	kg			kg	
Axle 5		kg			kg				
Axle 6		kg			kg				
Axle 7		kg			kg				
Total	6785	kg		3480	kg		2500	kg	
Rolling resistance combination		0,1	m/s^2	Rolling resistance trailer			0,1	m/s^2	
Calculation factor for deceleration									
Laden		1,928							
Unladen		3,865							

Brake performance (2.2 Annex II) **/ Compatibility** (3.4 Annex XI) **LADEN**

Deceleration [m/s^2] (combination is braked by brake pedal of tractor)	measured deceleration in jmr braking-system	Deceleration combination (only trailer is braked with external computer)		Brake pressure [bar]		Deceleration calculated for trailer T_R/P_R		Diagram number	
		up	down	up	down	up	down	up	down
1,06	0,122	0,006	0,068	12,5	11,6	0,101	0,122	16	24
2,07	0,213	0,100	--	25,7	--	0,183	--	17	--
3,03	0,310	0,132	0,158	32,8	35,3	0,244	0,295	18	23
3,90	0,405	0,191	--	47,2	--	0,358	--	19	--
4,96	0,522	0,242	--	60,6	--	0,457	--	20	--
5,83	0,600	0,283	0,273	70,5	70,7	0,536	0,518	21	22

Brake performance (2.2 Annex II) **/ Compatibility** (3.4 Annex XI) **UNLADEN**

Deceleration [m/s^2] (combination is braked by brake pedal of tractor)	measured deceleration in jmr braking-system	Deceleration combination (only trailer is braked with external computer)		Brake pressure [bar]		Deceleration calculated for trailer T_R/P_R		Diagram number	
		up	down	up	down	up	down	Up	down
1,06	0,122	0,047	0,044	5,2	5,0	0,151	0,122	25	33
2,07	0,213	0,054	--	8,5	--	0,181	--	26	--
3,03	0,310	0,079	0,095	11,4	13,2	0,278	0,337	27	32
3,90	0,405	0,111	--	16,6	--	0,399	--	28	--
4,96	0,522	0,136	--	21,7	--	0,499	--	29	--
5,83	0,600	0,164	0,169	26,6		0,604	0,626	30	31

date: 19-11-2008 / 12-08-2009

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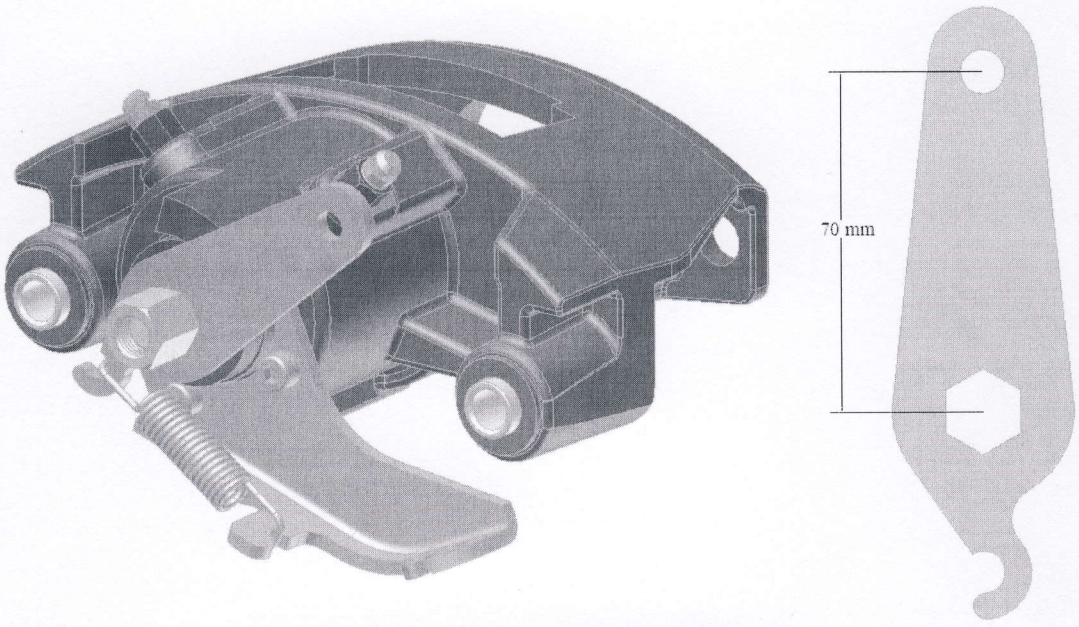
Parking brake (2.2.2.1. Annex II)					
Simulated slope test (on axle 1 or 2)			**Simulated slope test (on axle 1 and 2)**		
Brake Force forewards	940.0	daN	Brake Force forewards	965.0	daN
Brake Force rearwards	920.0	daN	Brake Force rearwards	930.0	daN
Control force	10	daN	Control force	40	daN
Diagram	I/III		Diagram	II / IV	
Brake force required	882.9	daN	Brake force required	882.9	
Test result parking brake : Pass/~~fail~~			Test result parking brake : Pass/~~fail~~*		

Parking brake (2.2.2.1. Annex II) with Boopark parking brake calliper		
Simulated slope test (on axle 1 and 2)		
Brake Force forewards	930.0	daN
Brake Force rearwards	930.0	daN
Control force	30	daN
Diagram	A/ B	
Brake force required	882.9	daN
Test result parking brake : Pass/~~fail~~*		



Boopark DC225, parking brake calliper

date: 19-11-2008 / 12-08-2009
19-10-2010
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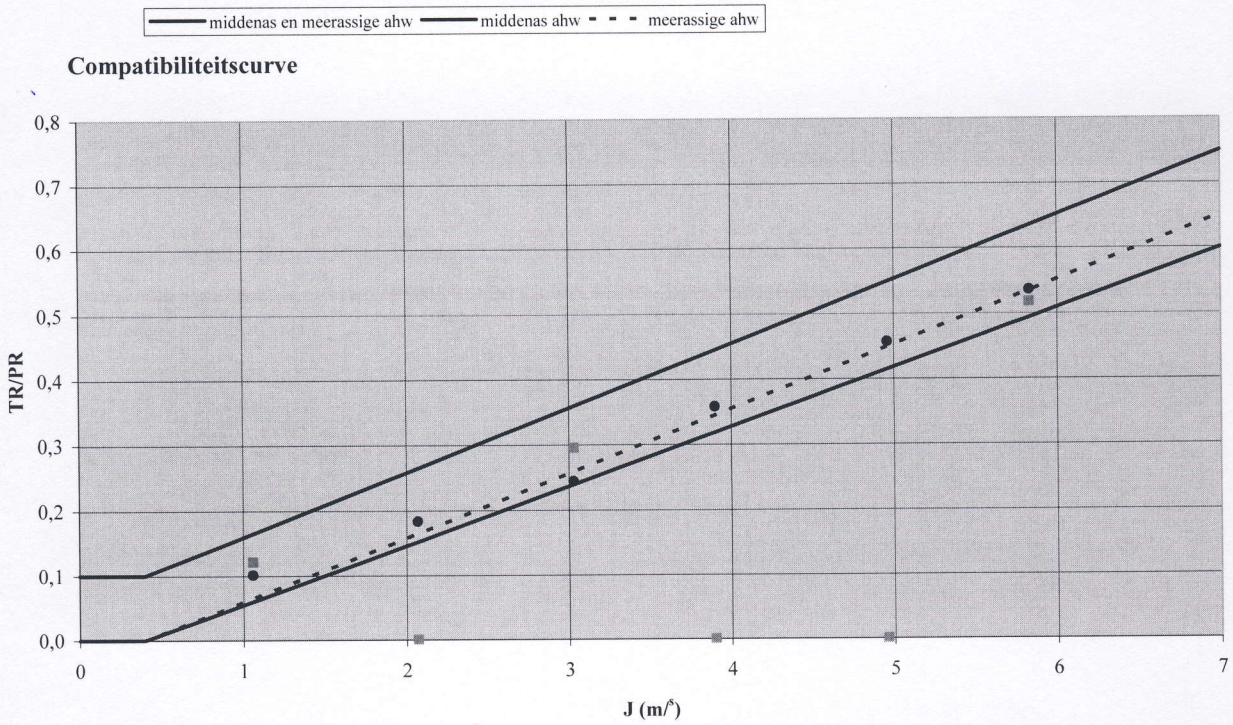
LADEN :



Deceleration tractor/trailer combination J m/s²	T_R/P_R	T_R/P_R
1,06	0,101	0,122
2,07	0,183	--
3,03	0,244	0,295
3,90	0,358	--
4,96	0,457	--
5,83	0,536	0,518

Potentiometer setting laden : 13,2 kΩ
ECU software program : S108(12-08-2009)

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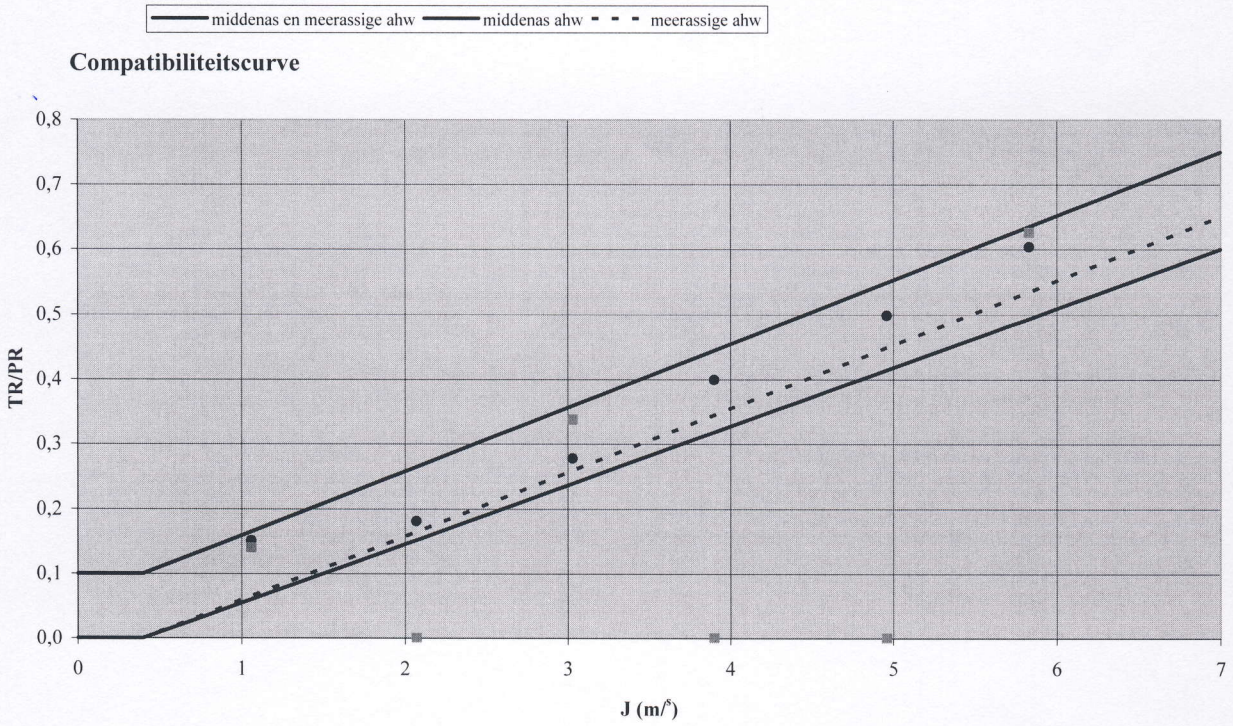
UNLADEN :



Deceleration tractor/trailer combination J m/s^2	T_R/P_R	T_R/P_R
1,06	0,151	0,140
2,07	0,181	--
3,03	0,278	0,337
3,90	0,399	--
4,96	0,499	--
5,83	0,604	0,626

Potentiometer setting unladen : 10,4 kΩ
ECU software program : S108(12-08-2009)

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Annex I Constructional demands		
2.2.2.2.	Braking system O2 continuous or semi continuous or inertia. Electical braking system conforming Annex XI shall permitted	See remark on page 2. Braking system is electric-hydraulic.
2.2.2.4.	The service braking shall act on all wheels of the trailer	PASS / ~~FAIL~~
2.2.2.5.	The action of the service braking system shall suitably distributed among the axles	PASS / ~~FAIL~~
2.2.2.6	Action of braking symmetrically to longitudinal median plane of the vehicle.	PASS / ~~FAIL~~
2.2.2.7.	Braking surfaces in constant contact with the wheels.	PASS / ~~FAIL~~
2.2.2.8.	wear of brakes shall be easily compensated	PASS / ~~FAIL~~
2.2.2.8.1.	wear adjustment shall be automatic. optional for O2	PASS / ~~FAIL~~
2.2.2.8.2.	Possible to easily check wear	PASS / ~~FAIL~~
2.2.2.9.	Trailer is stopped automatically if coupling separates	PASS / ~~FAIL~~
2.2.2.10	Parking braking when trailer is separated from towing vehicle. Actuating by a person standing on the ground	PASS / ~~FAIL~~
Annex II		
2.3.3.	Reaction time	≤ 0.6 PASS / ~~FAIL~~
Annex VII		
4.1	Varification of components	PASS / ~~FAIL~~ See TDB0842
4.3	Verification of performance	PASS / ~~FAIL~~
Annev XI		
1.1	Contol device on the trailer?	PASS / ~~FAIL~~
1.2	Elektrical energy supplied to the trailer by the motor vehicle	PASS / ~~FAIL~~
1.3	Actuated by the operating of the service brake of the motorvehicle	PASS / ~~FAIL~~
1.4	Nominal voltage rating 12 V	PASS / ~~FAIL~~
1.5	Max. current consumption not higher than 15 A	PASS / ~~FAIL~~ See page 9 of this report
1.6	The connection: - special connector - not fit the lighting connect -plug and cable shall be on the trailer	PASS / ~~FAIL~~
2.1	If there is a battery on trailer it must be separated during service braking of the trailer	PASS / ~~FAIL~~; On the test vehicle there was not a extra battery. If there is an extra auxilary battery this should be connected through a relay which separate this battery during braking.
2.2	Min. mass less that 75% of max Mass a load sensing device is mandatory	PASS / ~~FAIL~~
2.3	When the connection line is reduced	PASS / ~~FAIL~~

	to 7 V 20% braking effect of the max laden weight shall be mantained	7V gives a hydraulic pressure of 45 bar.
2.4	-It must be possible to adjust manualy the position of the deceleration indicator. -The device shall clearly indicate the horizontal position	PASS / ~~FAIL~~
2.5	The relay for actuating the braking current shall be positioned on the trailer	PASS / ~~FAIL~~
2.6	Is there a dummy socket for the plug	PASS / ~~FAIL~~
2.7	There shall be a tell-tale: -lighting up with every application -indication the proper functioning of the electrical braking system	PASS / ~~FAIL~~ by pressure sensor
3.1	Does brake system respond at combination deceleration of not more than 0,4 m/s2	PASS / ~~FAIL~~
3.2	Initial brake pressure not higher than10% of the max.stat. axle load and 13% of the unladen axle load	PASS / ~~FAIL~~
3.3	is the brake force increased by steps than it should fulfil these demands	Not applicable
3.4	the minimum braking force of 50% shall be be attained at not more that 5,9 m/s2 combination deceleration	PASS / ~~FAIL~~
3.6	When coupling is seperated while it is in motion minimal performance is 25% for minimal 15 minutes	PASS / ~~FAIL~~ 15 min pressure drops from 50 to 44 bar.

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date: 12-08-2008 / 23-12-2009

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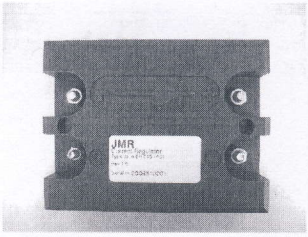
Annex XI 1.5

Device under test

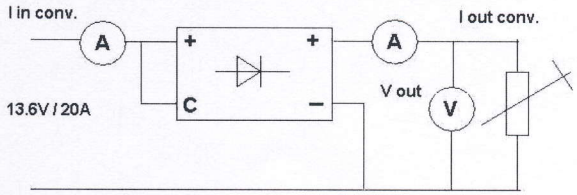
JMR Current Regulator EH15-001

Make: JMR Trading
Type: Jaco EH 015-001
Rev: 1.0
Serialnr. 2009510001



The current regulator prevents the towing vehicle against an electric output current greater than 15A.
The current regulator was tested under following conditions.

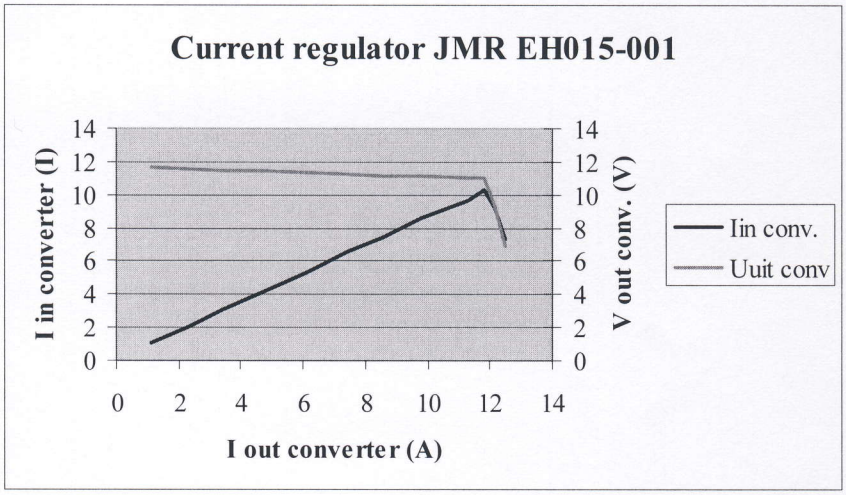
Testcircuit



Testresult

I out conv.	I in conv.	V out conv
1.11 A	1.01 A	11.62 V
2.31 A	2.04 A	11.55 V
3.44 A	3.03 A	11.49 V
4.70 A	4.12 A	11.42 V
6.08 A	5.31 A	11.32 V
7.45 A	6.53 A	11.25 V
8.54 A	7.47 A	11.18 V
9.81 A	8.56 A	11.10 V
11.29 A	9.66 A	11.00 V
11.81 A	10.32 A	10.99 V
12.15 A	9.25 A	9.31 V
12.50 A	7.27 A	6.94 V

Diagram



The maximum measured current into the input of the regulator : 10.32A.

Conclusion

This current regulator fulfils the requirements of 1.5 annex XI

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Meteorlogical conditions

Date:	12-09-2009	Location of test track:	RDW Test Centre Lelystad
Barometric pressure	1016 mbar	Weather conditions	dry
Winddirection	W	Relative humidity	85 %
Temperature	19 °C	Wind speed	4 m/s

Used testequipment

Description	**Required accuracy**	**Registration number**
Pressure (manometer)	± 1 % of 16 bar	DRU 94
(registration; pressure transducer)	(± 2,5% of 10 bar)	
Speed- / distance	± 1 %	GPS05 VYF74
ABS test equipment		--
Temperature (0 – 700°C)	± 10°C	TEM43
Weighing installation	± 10 kg per plate	OPS08
Time (test type I,II)	± 5 s	--
Wabco simulator	± 1 % of 16 bar	--
Recorder		RCH10 RCH12
Force	± 3%	KRA21
Amplifier		MVS31/33/76/73/79
Current I out conv.		unv26/unv23
Current I in conv.		unv25/unv22
Voltage V out conv		unv24
Voltage V in conv		unv19
Power supply		sup37
Electrical load		rbw01
Order nr.: VR196967		

date: 19-11-2008 up to 23-12-2009
19-10-2010
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