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ISO/IEC 17020 Accredited inspection body - Accreditation certificate BELAC No. 016-INSP

REFERENCE AXLE TEST REPORT

R13-11 (Annex 11, Appendix 3)

Test Report Number	: **H2060855129/026-TR**	No. of pages	: 1 of 7	No. of annexes	: -
Base Part	: **ID4-H2060855129026**	Suffix	: 00		

1. GENERAL

References (Annex 11, Appendix 3)	Characteristics concerned and prescriptions to apply	Value
1.1.	Axle manufacturer (name and address):	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3.Sokak, No:7 42250 Selçuklu/Konya TURKEY
1.1.1.	Make of axle manufacturer:	CEYLAN
1.2.	Brake manufacturer (name and address):	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3.Sokak, No:7 42250 Selçuklu/Konya TURKEY
1.2.1.	Brake identifier ID2-:	MCD 4309
1.2.2.	Automatic brake adjustment device[1]:	~~integrated~~ / non-integrated
1.3.	Manufacturer's information document:	MCD 4309

[1] Strike out what does not apply.

2. TEST RECORD

The following data has to be recorded for each test:

References (Annex 11, Appendix 3)	Characteristics concerned and prescriptions to apply	Value
2.1.	Test code:	200903A
2.2.	Test specimen:	
2.2.1.	Axle	
2.2.1.1.	Axle identifier:	ID1-NA-0910-ST/DT
2.2.1.2.	Identification of tested axle:	NA-0910-ST/DT
2.2.1.3.	Test axle load (Fe identifier) (daN):	ID3-9810
2.2.2.	Brake	
2.2.2.1.	Brake identifier:	ID2-MCD 4309
2.2.2.2.	Identification of tested brake:	Mustafa Ceylan disc brake, MCD 4309, S/N: NA-0910-ST/DT
2.2.2.3.	Maximum stroke capability of the brake[2]:	54 mm
2.2.2.4.	Effective length of the cam shaft[3]:	N.A.
2.2.2.5.	Material variation as per Paragraph 3.8 (m) of Appendix 2 of this Annex:	Not Applicable
2.2.2.6.	Brake ~~drum~~/disc[4]	Disc Brake
2.2.2.6.1.	Actual test mass of disc/~~drum~~[4]:	34 kg
2.2.2.6.2.	Nominal external diameter of disc[5]	430 mm
2.2.2.6.3.	Type of cooling of the disc[4]	ventilated /~~non-ventilated~~
2.2.2.6.4.	With or without integrated hub[4]	Without
2.2.2.6.5.	Disc with integrated drum - with or without parking brake function[4]-[5]	Without

[2] Applies to disc brakes only.
[3] Applies to drum brakes only.
[4] Strike out what does not apply.
[5] Applies to disc brakes only.

References (Annex 11, Appendix 3)	Characteristics concerned and prescriptions to apply	Value
2.2.2.6.6.	Geometric relationship between disc friction surfaces and disc mounting:	Single Part
2.2.2.6.7.	Base material:	Grey Cast Iron
2.2.2.7.	Brake ~~lining~~ or pad[4]:	
2.2.2.7.1.	Manufacturer:	Honeywell Bremsbelag GmbH
2.2.2.7.2.	Make:	JURID
2.2.2.7.3.	Type:	JURID 539
2.2.2.7.4.	Method of attachment of the ~~lining~~/pad on the ~~brake shoe~~/back plate[4]:	Pressed on back plate
2.2.2.7.5.	Thickness of back plate, weight of shoes or other describing information (Manufacturer's Information Document)[4]	See information document
2.2.2.7.6.	Base material of ~~brake shoe~~/back plate[4]	Steel
2.2.2.7.7.	Identification	On backplate
2.2.3.	Automatic brake adjustment device (not applicable in the case of integrated automatic brake adjustment device)[4]	N.A.
2.2.3.1.	Manufacturer (name and address):	N.A.
2.2.3.2.	Make:	N.A.
2.2.3.3.	Type:	N.A.
2.2.3.4.	Version:	N.A.
2.2.4.	Wheel(s) (dimensions see Figures 1A and 1B in Appendix 5 of this Annex)	
2.2.4.1.	Reference tyre rolling radius (Re) at test axle load (Fe):	555 mm
2.2.4.2.	Data of the fitted wheel during testing:	

Tyre size	Rim size	Xe (mm)	De (mm)	Ee (mm)	Ge (mm)
445/65 R22,5”	22,5x13”	--	585	min 45	-100

References (Annex 11, Appendix 3)	Characteristics concerned and prescriptions to apply	Value
2.2.5.	Lever length le:	81,5 mm
2.2.6.	Brake actuator	
2.2.6.1.	Manufacturer:	ORSAN Ticari Araç Sistemleri Limited Şirketi
2.2.6.2.	Make:	CEYLAN
2.2.6.3.	Type:	16/24”
2.2.6.4.	(Test) Identification number:	07-T08-028/05
2.3.	Test results (corrected to take account of rolling resistance of 0.01 x Fe)	
2.3.1.	In the case of vehicles of Categories O2 and O3 where the O3 trailer has been subject to the Type-I test: Not Applicable	

Test type:	**0**	**I**	
Annex 11, Appendix 2, Paragraph.:	3.5.1.2.	3.5.2.2./3.	3.5.2.4.
Test speed (km/h)	40	40	40
Brake actuator pressure p_e (kPa)		-	
Braking time (min)	-	2.55	-
Brake force developed T_e (daN)			
Brake efficiency T_e/F_e			
Actuator stroke s_e (mm)		-	
Brake input torque C_e (Nm)		-	
Brake input threshold torque $C_{o,e}$ (Nm)		-	

<table>
<tr><th>References (Annex 11, Appendix 3)</th><th>Characteristics concerned and prescriptions to apply</th><th>Value</th></tr>
<tr><td>2.3.2.</td><td colspan="2">In the case of vehicles of Categories O3 and O4 where the O3 trailer has been subject to the Type-III test:
<table>
<tr><td>Test type:</td><td>0</td><td colspan="2">III</td></tr>
<tr><td>Annex 11, Appendix 2, Paragraph.:</td><td>3.5.1.2.</td><td>3.5.3.1.</td><td>3.5.3.2.</td></tr>
<tr><td>Test speed initial (km/h)</td><td>60</td><td>60</td><td>60</td></tr>
<tr><td>Test speed final (km/h)</td><td>0</td><td>40</td><td>0</td></tr>
<tr><td>Brake actuator pressure p_e (kPa)</td><td>650</td><td>350</td><td>650</td></tr>
<tr><td>Number of brake applications</td><td>-</td><td>20</td><td>-</td></tr>
<tr><td>Duration of braking cycle (s)</td><td>-</td><td>60</td><td>-</td></tr>
<tr><td>Brake force developed T_e (daN)</td><td>5003</td><td>2943</td><td>3924</td></tr>
<tr><td>Brake efficiency T_e/F_e</td><td>0,51</td><td>0,30</td><td>0,40</td></tr>
<tr><td>Actuator stroke s_e (mm)</td><td>45</td><td>-</td><td>45</td></tr>
<tr><td>Brake input torque C_e (Nm)</td><td>502</td><td>-</td><td>502</td></tr>
<tr><td>Brake input threshold torque $C_{o,e}$ (Nm)</td><td>10</td><td>-</td><td>10</td></tr>
</table></td></tr>
<tr><td>2.3.3.</td><td colspan="2">This item is to be completed only when the brake has been subject to the test procedure defined in Paragraph 4 of Annex 19 – Part 1 to this Regulation to verify the cold performance characteristics of the brake by means of the brake factor (B_F).</td></tr>
<tr><td>2.3.3.1.</td><td>Brake factor B_F:</td><td>28,2</td></tr>
<tr><td>2.3.3.2.</td><td>Declared threshold torque $C_{0,dec}$ (Nm):</td><td>10</td></tr>
<tr><td>2.3.4.</td><td>Performance of the automatic brake adjustment device (if applicable)</td><td></td></tr>
<tr><td>2.3.4.1.</td><td>Free running according to Paragraph 3.6.3 of Annex 11, Appendix 2[6]:</td><td>yes / ~~no~~</td></tr>
</table>

[6] Strike out what does not apply.

FACILITIES AND EQUIPMENT

The facilities and equipment used to carry out the inspections are in compliance with the requirements of the applied Regulatory Act(s).

WORST CASE:

Only one axle type with specific characteristics has been tested.

MEASURING APPARATUS

Test instrument and serial number	Manufacturer	Type	Last calibration date
Vbox – 4010223	Ragelogic	VBOX Mini	2019.12.27
Tape Line – ITAC003	FISCO	Uni-Matic II 5m	2019.08.21
Manometer – ITAC012	Pakkens	Analog gylcerin,KL 2,5	2019.08.21
MS5540T – ITAC067	Mastech	MS6540B 32 °C ~ 1050 °C	2020.09.12

3. APPLICATION RANGE

The application range specifies the axle/brake variants that are covered in this test report, by showing which variables are covered by the individual test codes.

4. This test has been carried out and the results reported in accordance with Appendix 2 to Annex 11 and where appropriate Paragraph 4, of Annex 19 – Part 1 to Regulation No. 13, as last amended by the 11 series of amendments..

At the end of test defined in Paragraph 3.6 of Annex 11, Appendix 2, the requirements of Paragraph 5.2.2.8.1. of Regulation No. 13 were deemed to be fulfilled / ~~not fulfilled~~.[7]

Technical Service conducting the test[8] :
VINCOTTE nv
Jan Olieslagerslaan 35
1800 VILVOORDE
BELGIUM

Signed : Date : 2020.09.09

VINÇOTTE nv/sa
Okan Özgoren
Automotive Certification

Approval Authority [8] :
Service public de Wallonie *mobilité infrastructures*
Boulevared du Nord 8 B
5000 NAMUR
BELGIUM

Signed : Date : 2020.09.09

AU NOM DU MINISTRE, *ON BEHALF OF THE MINISTER*
Pour le Directeur Général, *For the Director General*
Le Directeur, *The Director*,

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A. DESCAMPS

[7] Strike out what does not apply.
[8] To be signed by different persons even when the Technical Service and Approval Authority are the same or alternatively, a separate Approval Authority authorization is issued with the report.

THIS REPORT MAY NOT BE REPRODUCED UNLESS WRITTEN AUTHORIZATION GIVEN BY BOTH THE MANAGER (OR AUTHORISED PERSON) AND THE APPLICANT.

1. GENERAL

	Name and address of axle or vehicle manufacturer	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3.Sokak, No:7 42250 Selçuklu/Konya TURKEY
1.1.	Commercial Description	9 Ton 10 Stud Trailer Axle
1.2.	Category	O3 & O4

2. AXLE DATA

2.1.	Manufacturer (name and address)	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3.Sokak, No:7 42250 Selçuklu/Konya TURKEY
2.1.1.	Make of axle manufacturer	CEYLAN
2.2.	Type / variant	MCD-4309-9T-ST/DT
2.3.	Axle identifier	ID1-NA-0910-ST/DT
2.4.	Test axle load (F_e)	9810 daN
2.5.	Wheel and brake data according to the following Figures 1A and 1B	

Figure 1A

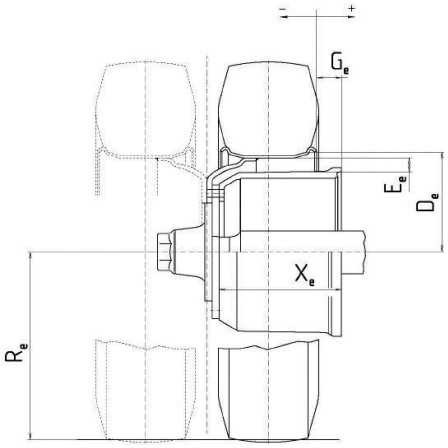
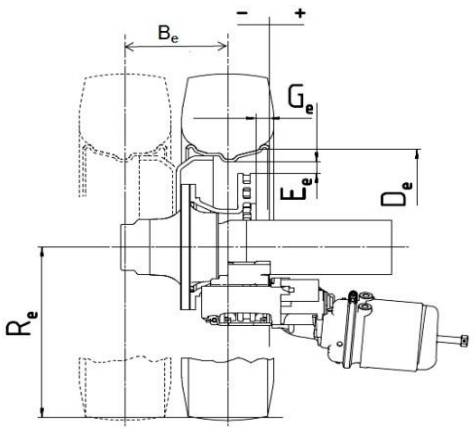


Figure 1B



Tyre	Rim	D_e (mm)	E_e (mm)	G_e (mm)	R_e (mm)	Xe (mm)
445/65 R22,5”	22,5x13”	585	min 45	-100	min. 0,8x555	45

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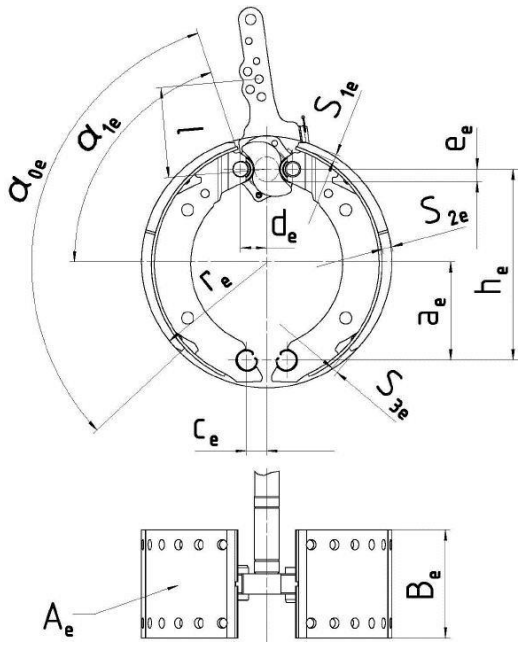
3. BRAKE

3.1. *General Information*

3.1.1.	Name	KNORR-BREMSE
3.1.2.	Manufacturer (Name and address)	See item I
3.1.3.	Type of brake	Disc brake
3.1.3.1.	Variant	Floating caliper
3.1.4.	Brake identifier	ID2-MCD 4309
3.1.5.	Brake data according to the following Figures 2A and 2B	
3.1.6	Brake Factor (B_f)	28,2

Figure 2A



a_e (mm)	h_e (mm)	c_e (mm)	d_e (mm)	e_e (mm)	α_{0e} (°)	α_{1e} (°)	B_e (mm)	r_e (mm)	A_e (cm^2)	S_{1e} (mm)	S_{2e} (mm)	S_{3e} (mm)
-	-	-	-	-	-	-	-	-	-	-	-	-

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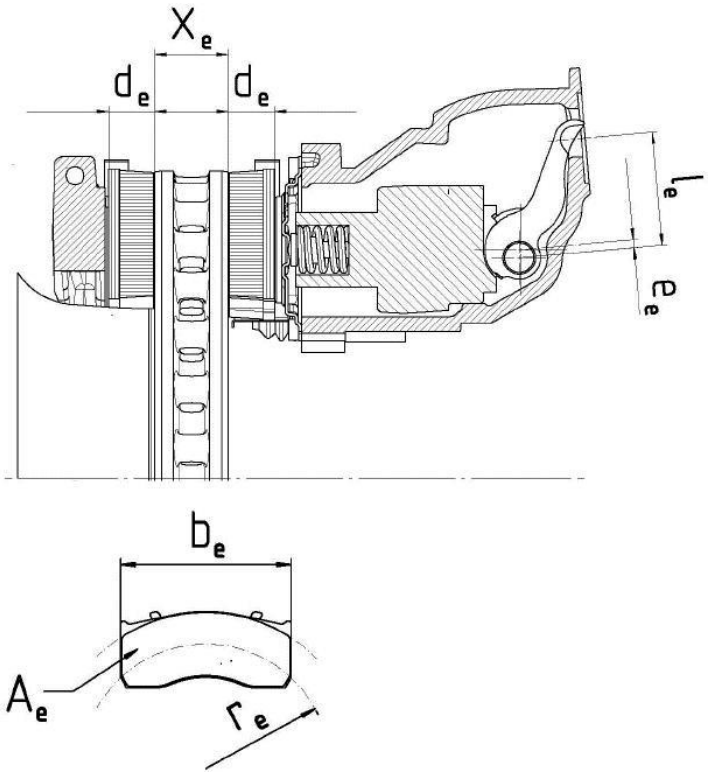
Figure 2B



X_e (mm)	d_e (mm)	e_e (mm)	l_e (mm)	b_e (mm)	A_e (cm^2)	r_e (mm)
45	29	5,22	81,5	210	2x161	172,6

3.2.	*Drum brake data*	N/A
3.2.1.	Brake adjustment device (externa/internal)	N/A
3.2.1.1	Manufacturer (Name and address)	N/A
3.2.1.2	Make	N/A
3.2.1.3	Type	N/A
3.2.2.	Declared maximum brake input torque (C_{max})	N/A
3.2.3.	Mechanical efficiency (η)	N/A
3.2.4.	Declared brake input threshold torque ($C_{0,dec}$)	N/A
3.2.5.	Effective length of the cam shaft	N/A
3.3.	*Brake drum*	N/A

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3.3.1.	Max. diameter of friction surface (wear limit)	N/A
3.3.2.	Base material	N/A
3.3.3.	Declared mass	N/A
3.3.4.	Nominal mass	N/A
3.3.5.	Permitted range of the brake drum mass	N/A
3.4.	*Brake Lining*	N/A
3.4.1.	Manufacturer (Name and address)	N/A
3.4.2.	Make	N/A
3.4.3.	Type	N/A
3.4.4.	Identification (type identification on lining)	N/A
3.4.5.	Minimum thickness (wear limit)	N/A
3.4.6.	Method of attaching friction material to brake shoe	N/A
3.4.6.1.	Worst case of attachment (in the case of more than one)	N/A
3.4.6.2.	Base material of the brake shoe	N/A
3.4.6.3.	Range of the weight of the brake shoes (without brake lining)	N/A
3.5.	*Disk brake data*	
3.5.1.	Connection type to the axle (axial, radial, integrated etc.)	Integrated
3.5.2.	Brake adjustment device (external / integrated)	Integrated
3.5.3.	Max. actuation stroke	54 mm
3.5.4.	Declared maximum input force (Th_{Amax})	636,7 daN
3.5.4.1.	Declared maximum brake input torque (C_{max}) $C_{max} = Th_{Amax} * l_e$	518,9 Nm
3.5.5.	Friction radius (r_e)	172,6 mm
3.5.6.	Lever length (l_e)	81,5 mm
3.5.7.	Input/output ratio (i) (l_e/e_e)	15,6
3.5.8.	Mechanical efficiency (η)	0,95

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3.5.9.	Declared brake input threshold force ($Th_{A0,dec}$)	150 N
3.5.9.1.	$C_{0,dec} = Th_{A0,dec} * l_e$	12,2 Nm
3.5.10.	Minimum rotor thickness (wear limit)	37 mm
3.6.	*Brake disc data*	
3.6.1.	Disc type description	Ventilated flange disc
3.6.2.	Connection/mounting to the hub	Fixed by screw
3.6.3.	Ventilation (yes/~~no~~)	yes
3.6.4.	Declared mass	38 kg
3.6.5.	Nominal mass	34 kg
3.6.6.	Declared external diameter	430 mm
3.6.7.	Minimum external diameter	425 mm
3.6.8.	Inner diameter of friction ring	245 mm
3.6.9.	Width of ventilation channel (if appl.)	19 mm
3.6.10.	Base material	Cast iron
3.7.	*Brake pad data*	
3.7.1.	Manufacturer and address	
3.7.2	Make	Honeywell Bremsbelaag GmbH
3.7.3.	Type	JURID 539
3.7.4.	Identification (type identification on pad back plate)	JURID 539
3.7.5.	Minimum thickness (wear limit)	11 mm
3.7.6.	Method of attaching friction material to pad back plate	Pressed on back plate
3.7.6.1.	Worst case of attachment (in case of more than one)	N/A

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