

Manufacturer:	: MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ	Order No.
Type	: MCS-3020G-12	--
Subject	: ECE R13 REFERENCE AXLE	PBV-TAA-027 Rev. 04

TECHNICAL REPORT

22-TAMO-0017_1E

Base Part: ID4-22-TAMO-0017_1E

Suffix: 1E

**Inspection/Test Report:
Reference Axle**

Regulation No. **UN-R13.14**

Taking into consideration amendment No. **14** supplement **00**

Annex 11, Appendix 3

Approval Status		
☒	Granting of a type approval	
☐	Extension to ... type-approval No.	
☐	Correction to type-approval No.	
☐	Only Test Report	

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0.	Test Details		
0.1.	Manufacturer's name and address:	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3. Sokak, No: 7 42250 Selçuklu/KONYA	
0.2.	Brief description (Component Specification):	12-ton Drum Brake Trailer Axle	
0.3.	Submitted test on:	21.02.2022	
0.4.	Test Location: Test Date:	KONYA 21.02.2022-23.02.2022 Paperwork date: 29.07.2025	
0.5.	Reason(s) for extension/correction of test report:	Change of test code. Update of manufacturer address Update of item 3.1.1. Update of date information document's date and revision number. Addition of confirmation.	
0.6.	Testing Equipment Used		
Equipment		Equipment Code	Next Calibration Date
Vbox		28	02.07.2022
Manometer		127	18.09.2022
Manometer		128	18.09.2022
Manometer		129	18.09.2022
Laser Thermometer		96	22.09.2022
Tape Measure		91	01.10.2022

0.7.	Selection of worst case (Selection of versions/variants for testing):
	The axle type ID1-MCS-3020G-12 with ID2-MCS3020G brake configuration tested according to regulation. There is not any axle/brake variant configuration included to this application. There is also one tyre dimension for testing. For that reason test results only valid for tested axle type.

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1. General

Note: Test report as prescribed in section 3.9 of Appendix 2 to Annex 11.

- 1.1. Axle manufacturer name and address: MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ
Büyükkayacıkosb Mahallesi, 3. Sokak, No: 7
42250 Selçuklu/KONYA
- 1.1.1. Make of axle manufacturer: 
- 1.2. Brake manufacturer name and address: See item 1.1.
- 1.2.1. Brake identifier ID2-: MCS3020G
- 1.2.2. Automatic brake adjustment device (~~Integrated~~ or Non-integrated): Non-integrated
- 1.3. Manufacturer's information document no: MCY-300200-12-R13

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2. Test Record

The following data form has to be taken Annex 11 – Appendix 3 has to be recorded for each test:

2.1.	Test code:	23022201
2.2.	Test specimen:	Axle with drum brake
	Test variant:	S-cam brake
2.2.1.	Axle code:	See below
2.2.1.1.	Axle identifier:	ID1-MCS-3020G-12
2.2.1.2.	Identification of tested axle:	MCS-3020G-12
2.2.1.3.	Test axle load (Fe identifier):	ID3-12020 daN
2.2.2.	Brake:	
2.2.2.1.	Brake identifier:	ID2-MCS3020G
2.2.2.2.	Identification of tested brake:	300x200
2.2.2.3.	Maximum stroke capability of the brake :	NA
	<i>Note: Applies to disc brakes only.</i>	
2.2.2.4.	Effective length of the cam shaft:	650 mm
	<i>Note: Applies to drum brakes only.</i>	
2.2.2.5.	Material variation:	NA
	<i>Note: As per paragraph 3.8 (m) of Appendix 2 to this annex.</i>	
2.2.2.6.	Brake (Drum or Disc):	
2.2.2.6.1.	Actual test mass of drum*/ disc *:	39 kg
	<i>*Strikethrough, as appropriate.</i>	
2.2.2.6.2.	Nominal external diameter of disc:	NA
	<i>Note: Applies to disc brakes only.</i>	
2.2.2.6.3.	Type of cooling of the disc: (Ventilated or non-ventilated)	NA
2.2.2.6.4.	Integrated hub: (with or without)	NA
2.2.2.6.5.	Disc with integrated drum: (With parking brake function or Without parking brake function)	NA
	<i>Note: Applies to disc brakes only.</i>	

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2.2.2.6.6.	Geometric relationship between disc friction surfaces and disc mounting: <i>Examples: One piece, casted, connection on action side.</i>	NA
2.2.2.6.7.	Base material:	Grey Cast Iron
2.2.2.7.	Brake (Lining or Pad):	
2.2.2.7.1.	Manufacturer:	Kale Balata Otomotiv Sanayi ve Ticaret A.Ş. Cumhuriyet Mah. İstanbul Cad. No:3 41400 Gebze / Kocaeli / TÜRKİYE
2.2.2.7.2.	Make:	Kale
2.2.2.7.3.	Type:	KF 15
2.2.2.7.4.	Method of attachment (Lining or Pad on the brake shoe or Back plate) : <i>*Strikethrough, as appropriate.</i>	Riveted
2.2.2.7.5.	Thickness of back plate* : Weight of shoes*: Or other describing information (Manufacturer's information document)*: <i>*Strikethrough, as appropriate.</i>	--- mm* 6,25 kg* None
2.2.2.7.6.	Base material of Back plate* / Brake shoe*: <i>*Strikethrough, as appropriate.</i>	Steel (S 235)
2.2.3.	Automatic brake adjustment device <i>*Not applicable in the case of integrated automatic brake adjustment device.</i>	
2.2.3.1.	Manufacturer name and address:	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3. Sokak, No: 7 42250 Selçuklu/KONYA
2.2.3.2.	Make:	MUSTAFA CEYLAN
2.2.3.3.	Type:	78772
2.2.3.4.	Version:	-

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2.2.4. Wheel(s)

Note: For dimensions, see Figures 1A and 1B in Appendix 5 to this annex.

2.2.4.1. Reference tyre rolling radius (R_e) at test axle load (F_e): 383 mm

2.2.4.2. Data of the fitted wheel during testing:

Tyre Size	Rim Size	X_e (mm)	D_e (mm)	E_e (mm)	G_e (mm)
245/70 R17,5	17,5 x 6,75	245	210	45	+15

2.2.5. Lever length l_e : 150 mm

2.2.6. Actuator:

2.2.6.1. Manufacturer: ORSAN

2.2.6.2. Make: ORSAN

2.2.6.3. Type: 30"

2.2.6.4. (Test) identification number: 30030310

2.3. Test results

Note: Corrected to take account of rolling resistance of $0.01 \cdot F_e$.

2.3.1. In the case of vehicles of categories O_2 and O_3 where the O_3 trailer has been subject to the Type I test:

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)	650	100	650
Braking time (mins)	N/A	2.33	N/A
Braking force developed T_e (daN)	6879	841	5528
Brake efficiency T_e/F_e	0.57	0.07	0.45
Actuator stroke s_e (mm)	35	N/A	40
Brake input torque C_e (Nm)	1796	N/A	1796
Brake input threshold torque $C_{0,e}$ (Nm)	54	N/A	54

2.3.2. In the case of vehicles of categories O_3 and O_4 where the O_3 trailer has been subject to the Type III test:

Test Type	0	III	
Annex 11, Appendix 2, paragraph:	3.5.1.2.	3.5.3.1.	3.5.3.2.
Initial test speed (km/h)	60	60	60
Final test speed (km/h)	0	43	0
Brake actuator pressure p_e (kPa)	650	410	650
Number of brake applications	N/A	20	N/A

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Duration of brake cycle	N/A	60	N/A
Braking force developed T_e (daN)	6613	3678	4810
Brake efficiency T_e/F_e	0.55	0.3	0.44
Actuator stroke s_e (mm)	35	N/A	40
Brake input torque C_e (Nm)	1796	N/A	1796
Brake input threshold torque $C_{0,e}$ (Nm)	54	N/A	54

2.3.3. *This item is to be completed only when the brake has been subject to the test procedure defined in paragraph 4 of Annex 19 to this regulation, to verify the cold performance characteristics of the brake by means of the brake factor (BF).*

2.3.3.1. Brake factor B_F : 6.84

2.3.3.2. Declared threshold torque $C_{0,dec}$: 54 Nm

2.3.4. Performance of the automatic brake adjustment device, if applicable:

2.3.4.1. Free running according to paragraph 3.6.3 of Annex 11, Appendix 2:

-Yes*

~~No*~~

*Strikethrough, as appropriate.

3 Application Range

3. 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. NA

4. 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. Yes

4. At the end of the test defined in paragraph 3.6 of Annex 11, Appendix 2, the requirements of paragraph 5.2.2.8.1 of Regulation No. 13 are deemed to be fulfilled. Yes

Note: Only to be completed when an automatic brake wear adjustment device is installed.

5. Approval Authority

Signed: David Walsh
Head, Automotive Certification
NSAI

Date: 18th November 2025



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4. Annexes

Annex C Information documents (acc. to 1.3) 6 Pages

5. Final Statement

The Axle identifier specified in No. 2.2.1.1. complies with the above basis of testing.

The worst case was selected in accordance with the document "VB-TAGMBH-KBS-0700f_Auswahlverfahren für worst case-DE".

The test report becomes invalid in the event of technical changes of the subject or if changes made to the vehicle types described in the range of application influence the use of the subject, as well as in the event of changes to the legal basis.

This Test Report comprises pages 1 to 8 and the annexes listed in item 4.

The partial reproduction and duplication of this document requires the written approval of the test laboratory.

Vienna, 29.07.2025

TÜV AUSTRIA GMBH

- ☐ Designated Technical Service of Kraftfahrt-Bundesamt (KBA), Germany, Registration number KBA-P 00126
- ☒ Designated Technical Service by the National Standards Authority of Ireland (NSAI), Technical Number 00143
- ☐ Designated Technical Service of Swedish Transport Agency (STA), Reference number TT 0035

Authorised Signatory



Zehra DOĞAN



Test Engineer



Mehmet YÜKSEL

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REASON OF EXTENSION

Changed/Updated:

- Change of test code.
- Update of manufacturer address
- Update of item 3.1.1.
- Update of date information document's date and revision number.

Added:

- Addition of confirmation.

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1. GENERAL

	Name and address of axle or vehicle manufacturer	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3. Sokak, No: 7 42250 Selçuklu/KONYA
1.1.	Commercial Description	12 Ton 300x200 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
2.1.1.	Make of axle manufacturer	
2.2.	Type / variant	MCS-3020G-12
2.3.	Axle identifier	ID1- MCS-3020G-12
2.4.	Test axle load (F_e)	12020 daN
2.5.	Wheel and brake data according to the following Figures 1A and 1B	

Figure 1A

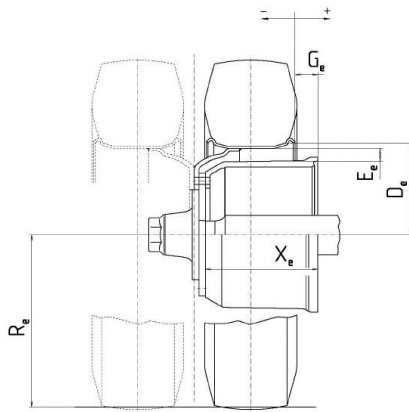
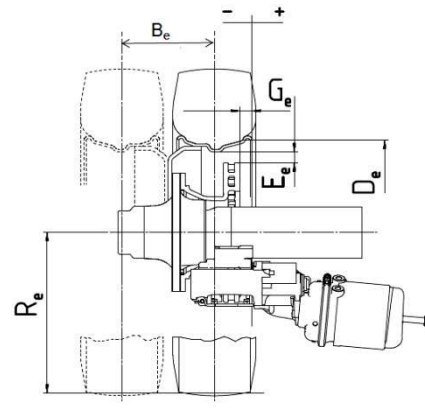


Figure 1B



Tyre	Rim	D_e (mm)	E_e (mm)	G_e (mm)	R_e (mm)	B_e (mm)	X_e (mm)
245/70 R17,5	17,5 x 6,75	210	45	+15	383	300	245

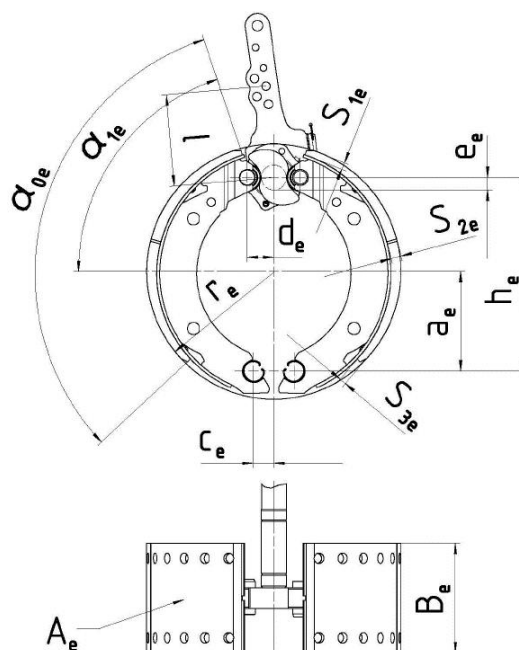
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3. BRAKE

3.1. General Information

- 3.1.1. **Make** **CEYLAN**
- 3.1.2. Manufacturer (Name and address) See item 1.
- 3.1.3. Type of brake Drum Brake
- 3.1.3.1. Variant S-Cam brake
- 3.1.4. Brake identifier ID2- MCS3020G
- 3.1.5. Brake data according to the following Figures 2A and 2B
- 3.1.6. Brake Factor (B_f) 6,84

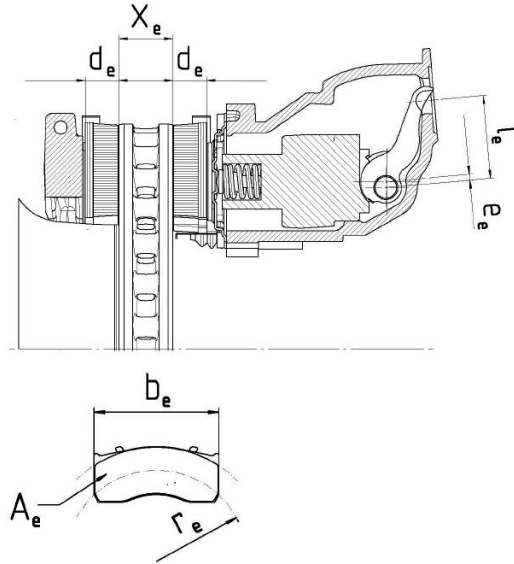
Figure 2A



a_e (mm)	h_e (mm)	c_e (mm)	d_e (mm)	e_e (mm)	a_{0e} (°)	a_{1e} (°)	B_e (mm)	r_e (mm)	A_e (cm ²)	S_{1e} (mm)	S_{2e} (mm)	S_{3e} (mm)
110	223	30	26,5	22	114,5	67,25	200	150	1118	13	18	13

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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)
--	--	--	--	--	--	--

3.2. Drum brake data

3.2.1.	Brake adjustment device (external/internal)	External
3.2.1.1.	Manufacturer (Name and address)	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ Büyükkayacıkosb Mahallesi, 3. Sokak, No: 7 42250 Selçuklu/KONYA
3.2.1.2.	Make	MUSTAFA CEYLAN
3.2.1.3.	Type	78772
3.2.1.4.	Version	-
3.2.2.	Declared maximum brake input torque (C_{max})	2800 Nm
3.2.3.	Mechanical efficiency (η)	0,88
3.2.4.	Declared brake input threshold torque ($C_{0,dec}$)	54 Nm
3.2.5.	Efficiency length of the cam shaft	650 mm
3.3.	Brake drum	
3.3.1.	Max. diameter of friction surface (wear limit)	300 mm

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3.3.2.	Base material	Grey Cast iron
3.3.3.	Declared mass	39 kg
3.3.4.	Nominal mass	39 kg
3.3.5.	Permitted range of the brake drum mass	39-42 kg
3.4.	<i>Brake Lining</i>	
3.4.1.	Manufacturer (Name and address)	Kale Balata Otomotiv Sanayi ve Ticaret A.Ş. Cumhuriyet Mah. İstanbul Cad. No:3 41400 Gebze / Kocaeli / TURKEY
3.4.2.	Make	Kale
3.4.3.	Type	KF 15
3.4.4.	Identification (type identification on lining)	KF 15
3.4.5.	Minimum thickness (wear limit)	5 mm
3.4.6.	Method of attaching friction material to brake shoe	Riveted
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	Steel (S 235)
3.4.6.3.	Range of the weight of the brake shoes (with brake lining)	6,25 kg
3.5.	<i>Disk brake data</i>	
3.5.1.	Connection type to the axle (axial, radial, integrated etc.)	N/A
3.5.2.	Brake adjustment device (external / integrated)	N/A
3.5.3.	Max. actuation stroke	N/A
3.5.4.	Declared maximum input force (Th_{Amax})	N/A
3.5.4.1.	Declared maximum brake input torque (C_{max}) $C_{max} = Th_{Amax} * l_e$	N/A
3.5.5.	Friction radius (r_e)	N/A
3.5.6.	Lever length (l_e)	N/A
3.5.7.	Input/output ratio (i) (l_e/e_e)	N/A

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3.5.8.	Mechanical efficiency (η)	N/A
3.5.9.	Declared brake input threshold force ($Th_{A0,dec}$)	N/A
3.5.9.1.	$C_{0,dec} = Th_{A0,dec} * l_e$	N/A
3.5.10.	Minimum rotor thickness (wear limit)	N/A
3.6.	<i>Brake disc data</i>	
3.6.1.	Disc type description	N/A
3.6.2.	Connection/mounting to the hub	N/A
3.6.3.	Ventilation (yes/no)	N/A
3.6.4.	Declared mass	N/A
3.6.5.	Nominal mass	N/A
3.6.6.	Declared external diameter	N/A
3.6.7.	Minimum external diameter	N/A
3.6.8.	Inner diameter of friction ring	N/A
3.6.9.	Width of ventilation channel (if appl.)	N/A
3.6.10.	Base material	N/A
3.7.	<i>Brake pad data</i>	
3.7.1.	Manufacturer and address	N/A
3.7.2.	Make	N/A
3.7.3.	Type	N/A
3.7.4.	Identification (type identification on pad back plate)	N/A
3.7.5.	Minimum thickness (wear limit)	N/A
3.7.6.	Method of attaching friction material to pad back plate	N/A
3.7.6.1.	Worst case of attachment (in case of more than one)	N/A