

Aktenzeichen / File number

24-TAMO-0162

Hersteller : MUSTAFA CEYLAN EDÜSTİ ANONİM ŞİRKETİ

Manufacturer

Type : MCD-4345-12T-ST/DT

Type

Prüfgegenstand : ECE R13 REFERENCE AXLE

Subject

TÜV AUSTRIA AUTOMOTIVE GMBH

Deutschstraße 10

A-1230 Wien

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PBV-TAA-027 Rev. 03

TECHNICAL REPORT

24-TAMO-0162

Base Part: ID4- 24-TAMO-0162

Suffix: 00

Reference Axle

Regulation (ECE/EU) / Regulation No. **ECE-R13**


Taking into consideration amendment No. **12** supplement **02**

Annex 11, Appendix 3

0.	Test Details	
0.1.	Manufacturer's name and address:	MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ 3.Organize Sanayi 3.Sokak No:7 SELÇUKLU/KONYA/TÜRKİYE
0.2.	Brief description (Component Specification):	12 ton Disc Brake Trailer Axle
0.3.	Submitted test on:	20.02.2024
0.4.	Test Location: Test Date:	KONYA 19.02.2024-20.02.2024
0.5.	Reason(s) for extension/correction of test report:	Not Applicable
0.6.	Testing Equipment Used	
	Equipment	Equipment Code Next Calibration Date
	<i>MANOMETER</i>	<i>127 03.08.2024</i>
	<i>MANOMETER</i>	<i>128 03.08.2024</i>
	<i>MANOMETER</i>	<i>129 03.08.2024</i>
	<i>V-BOX</i>	<i>126 13.07.2024</i>
	<i>LASER THERMOMETER</i>	<i>96 03.08.2024</i>
0.7.	Selection of worst case (Selection of versions/variants for testing):	
	The axle type ID1- NA-1210-ST/DT with ID2- MCD 4345 brake configuration tested according to regulation. There is also one tyre dimension for testing. For that reason test result only valid for tested axle type.	

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 ENDÜSTİ ANONİM ŞİRKETİ
3. Organize Sanayi 3. Sokak No:7
SELÇUKLU/KONYA/TÜRKİYE |
| 1.1.1. | Make of axle manufacturer: |  |
| 1.2. | Brake manufacturer name and address: | See item 1.1 |
| 1.2.1. | Brake identifier ID2-: | MCD 4345 |
| 1.2.2. | Automatic brake adjustment device (Integrated or Non-integrated): | Integrated |
| 1.3. | Manufacturer's information document no: | MCD 4345
Date on: 20.02.2024 |

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:	23022024
2.2.	Test specimen:	Axle with disc brake
	Test variant:	Floating Caliper
2.2.1.	Axle code:	See below
2.2.1.1.	Axle identifier:	ID1- NA-1210-ST/DT
2.2.1.2.	Identification of tested axle:	NA-1210-ST/DT
2.2.1.3.	Test axle load (Fe identifier):	11965 daN
2.2.2.	Brake:	
2.2.2.1.	Brake identifier:	ID2- MCD 4345
2.2.2.2.	Identification of tested brake:	MCD 4345
2.2.2.3.	Maximum stroke capability of the brake:	64 mm
	<i>Note: Applies to disc brakes only.</i>	
2.2.2.4.	Effective length of the cam shaft:	N/A
	<i>Note: Applies to drum brakes only.</i>	
2.2.2.5.	Material variation:	N/A
	<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*:	34,85 kg
	<i>*Strikethrough, as appropriate.</i>	
2.2.2.6.2.	Nominal external diameter of disc:	430 mm
	<i>Note: Applies to disc brakes only.</i>	
2.2.2.6.3.	Type of cooling of the disc: (Ventilated or non-ventilated)	Ventilated
2.2.2.6.4.	Integrated hub: (with or without)	With
2.2.2.6.5.	Disc with integrated drum: (With parking brake function or Without parking brake function)	Without parking brake function
	<i>Note: Applies to disc brakes only.</i>	

- 2.2.2.6.6. Geometric relationship between disc friction surfaces and disc mounting: Single Part
Examples: One piece, casted, connection on action side.
- 2.2.2.6.7. Base material: Cast Iron
- 2.2.2.7. **Brake (Lining or Pad):**
- 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 (~~Lining~~ or Pad on the ~~brake shoe~~ or Back plate) : Pressed
**Strikethrough, as appropriate.*
- 2.2.2.7.5. Thickness of back plate*: 11 mm*
~~Weight of shoes*:~~ -- kg*
 Or other describing information (Manufacturer's information document)*: None
**Strikethrough, as appropriate.*
- 2.2.2.7.6. Base material of ~~Back plate*~~ / ~~Brake shoe*~~: Steel
**Strikethrough, as appropriate.*
- 2.2.3. **Automatic brake adjustment device**
**Not applicable in the case of integrated automatic brake adjustment device.*
- 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)**
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): 555 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) |
|---------------|--------------|------------|------------|------------|------------|
| 445/65 R 22,5 | 14.00 x 22.5 | -- | 310 | 35 | 145 |
- 2.2.5. **Lever length l_e :** 88 mm

2.2.6. **Actuator:**

2.2.6.1. Manufacturer: ARFESAN A.Ş.

2.2.6.2. Make: ARFESAN

2.2.6.3. Type: 24"

2.2.6.4. (Test) identification number:

2.3. **Test results**

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

In the case of vehicles of categories O₂ and O₃ where the O₃ trailer has been subject to the Type I test:

2.3.1.

Test Type:	0	I	
Annex 11, Appendix 2, paragraph:	3.5.1.4	3.5.2.2/3	3.5.2.4
Test speed (km/h)	40	40	40
Brake actuator pressure p _e (kPa)	650	N/A	650
Braking time (mins)	N/A	2.55	N/A
Braking force developed T _e (daN)	6057,3	837,8	5578,5
Brake efficiency T _e /F _e	0.51	0.07	0,47
Actuator stroke s _e (mm)	50	N/A	50
Brake input torque C _e (Nm)	827,596	N/A	827,596
Brake input threshold torque C _{0,e} (Nm)	16,89	N/A	16,89

In the case of vehicles of categories O₃ and O₄ where the O₃ trailer has been subject to the Type III test:

2.3.2.

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	30	0
Brake actuator pressure p _e (kPa)	650	N/A	650
Number of brake applications	N/A	20	N/A
Duration of brake cycle	N/A	60	N/A
Braking force developed T _e (daN)	6015,7	3660	5536,8
Brake efficiency T _e /F _e	0,50	0,31	0,46
Actuator stroke s _e (mm)	50	N/A	50
Brake input torque C _e (Nm)	827,596	N/A	827,596
Brake input threshold torque C _{0,e} (Nm)	16,89	N/A	16,89

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.

2.3.3.1. Brake factor B_F: 20,59

2.3.3.2. Declared threshold torque C_{0,dec}: 16,89

2.3.4	Performance of the automatic brake adjustment device, if applicable:	N/A
2.3.4.1.	Free running according to paragraph 3.6.3 of Annex 11, Appendix 2: -Yes* -No* <i>*Strikethrough, as appropriate.</i>	
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.	N/A
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. <i>Note: Only to be completed when an automatic brake wear adjustment device is installed.</i>	Yes

4. Annexes

Annex I Information documents (acc. to 1.3) 5 Pages

5. Final Statement

The information document as mentioned under No. 1.3 and the type described therein are in compliance with the test specification mentioned above. The worst case was selected in accordance with document (QAA-TAA-002_Selection process for worst case).

This report includes pages 1 to 8. The test report may be reproduced and published fully and by the client only.

Wien / Vienna, 26.02.2024


TÜV AUSTRIA AUTOMOTIVE GMBH

- Benannter Technischer Dienst der National Standards Authority of Ireland (NSAI), Technical Service Number 103
Designated Technical Service by the National Standards Authority of Ireland (NSAI), Technical Service Number 103

Fatih Uzun
Recognized Expert/Signature



Zehra Doğan
Recognized Expert/Signature

	TRAILER AXLE & BRAKE INFORMATION DOCUMENT	Date	20.02.2024	
		Document Nr.	MCD 4345	
	According to ECE R13.12, Annex 11, Appendix 5 ANNEX I		Revision Nr.	00
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1. GENERAL

Name and address of axle or vehicle manufacturer MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ 3. Organize Sanayi 3. Sokak No:7 SELÇUKLU/KONYA/TÜRKİYE

1.1. Commercial Description 12 Ton Disc Brake Trailer Axle
1.2. Category O3&O4

2. AXLE DATA

2.1. Manufacturer (name and address) MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ 3. Organize Sanayi 3. Sokak No:7 SELÇUKLU/KONYA/TÜRKİYE

2.1.1. Make of axle manufacturer



2.2. Type / variant MCD-4345-12T-ST/DT

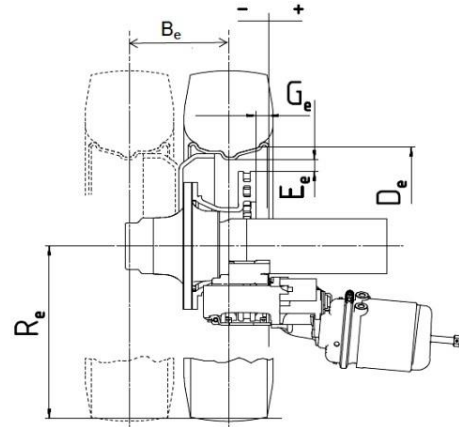
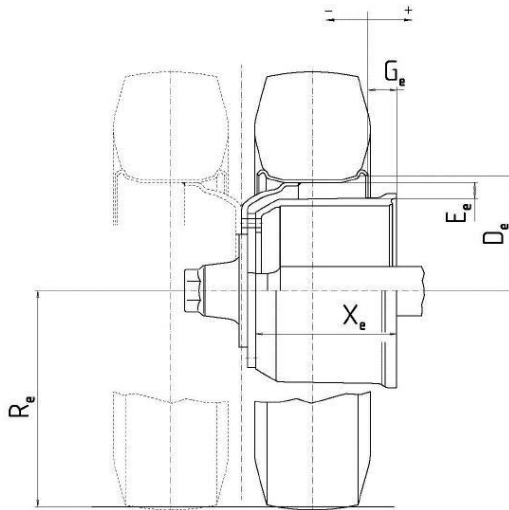
2.3. Axle identifier ID1-NA-1210-ST/DT

2.4. Test axle load (F_e) **ID3-11965 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)
445/65 R22,5	14.00x22.5	310	35	145	555	--	--


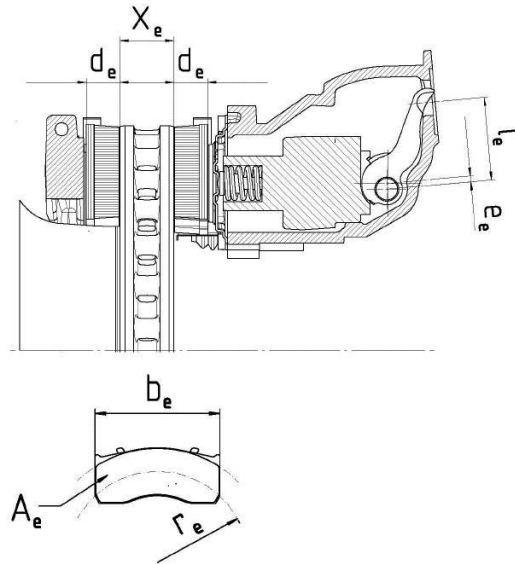
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Figure 2B



X_e (mm)	d_e (mm)	e_e (mm)	l_e (mm)	b_e (mm)	A_e (cm ²)	r_e (mm)
45	21	5,75	88	210,7	2x196	175

3.2. *Drum brake data*

3.2.1.	Brake adjustment device (external/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
3.2.1.4.	Version	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.	Efficiency length of the cam shaft	N/A

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3.3. *Brake drum*


- 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*

- 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 64 mm
- 3.5.4. Declared maximum input force (Th_{Amax}) 1241,9 daN
 - 3.5.4.1. Declared maximum brake input torque (C_{max}) 1092.83 Nm
 $C_{max} = Th_{Amax} * l_e$
- 3.5.5. Friction radius (r_e) 175 mm
- 3.5.6. Lever length (l_e) 88 mm

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3.5.7.	Input/output ratio (i) (I_e/e_e)	15,3
3.5.8.	Mechanical efficiency (η)	0,66
3.5.9.	Declared brake input threshold force ($Th_{A0,dec}$)	96 N
3.5.9.1.	$C_{0,dec} = Th_{A0,dec} * I_e$	16,89 Nm
3.5.10.	Minimum rotor thickness (wear limit)	10 mm
3.6.	<i>Brake disc data</i>	
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	35-40 kg
3.6.5.	Nominal mass	38,45 kg
3.6.6.	Declared external diameter	432 mm
3.6.7.	Minimum external diameter	430 mm
3.6.8.	Inner diameter of friction ring	145 mm
3.6.9.	Width of ventilation channel (if appl.)	15 mm
3.6.10.	Base material	Cast iron
3.7.	<i>Brake pad data</i>	
3.7.1.	Manufacturer and address	Honeywell Bremsbelaag GmbH
3.7.2.	Make	Jurid
3.7.3.	Type	Jurid 539
3.7.4.	Identification (type identification on pad back plate)	Jurid 539 FF 39
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