



## TECHNICAL REPORT

**No.: LCTR 1423 001 20**

Inspection concerning

### Reference axle

performed according to

**ECE-Regulation No. 13**  
**series of amendments: 11**  
**Including supplement: 16**

**Annex 11, Appendix 3**

**Type: MC-4220**

**Manufacturer name and address:**  
**MUSTAFA CEYLAN ENDÜSTRİ ANONİM ŞİRKETİ**  
**3. Organize Sanayi 3. Sokak No:7**  
**SELÇUKLU / KONYA / TURKEY**

Type approval previously granted: **not applicable**  
Issue level: correction 1

### Contents:

1. General
2. Test details  
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**1. General**

Manufacturer: **MUSTAFA CEYLAN ENDÜSTRİ  
ANONİM ŞİRKETİ**  
3. Organize Sanayi 3. Sokak No:7  
SELÇUKLU / KONYA / TURKEY

Vehicle Type **MC-4220**  
Or component or ~~ESA~~ or STU:

**2. Test details**

	Inspector	Location of test:	Date of receipt of test item:	Date of test:
Main report	Erdal Çınarcı (Type Approval Engineer) Mehmet Yüksel (Type Approval Engineer)	3. Organize Sanayi 3. Sokak No:7 SELÇUKLU / KONYA / TURKEY	09.03.2020	10-11-12.03.2020

**2.1. Remarks**

2.1.1. Main report:

Not applicable.





**3. Statement of compliance**

The inspections items and measurements carried out have shown the compliance of the type described in this technical report and the attached Annexes with the requirements of the standard as stated on page 1.

İstanbul-Turkey, April 16, 2020

Luxcontrol s.a.  
Service Homologation-automobile

Erdal Çınarcı  
Ingénieur-Inspecteur

Mustafa Yılmaz  
Ingénieur-Inspecteur

Annexes





Details to the information package, including a summary in chronological order, concerning extensions and/or amendments

Type-approval previously granted: **not applicable**

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### Main Report

Technical Report No.:	LCTR 1423 001 20	3 Pages
	Index	1 Page

List of Annexes:

A: Test results	6 Pages
B: Information folder	5 Pages


### Content of the information folder:

- manufacturer's information document no. MC.4220.1210 dated 13/03/20 acc. to ECE R13.11 (page 1 to 5)
-



## **1. Test results:**

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  
3. Organize Sanayi 3. Sokak No:7  
SELÇUKLU / KONYA / TURKEY
- 1.1.1. Make of axle manufacturer:  

- 1.2. Brake manufacturer name and address:  
See item 1.1.
- 1.2.1. Brake identifier ID2-: MCS 4220
- 1.2.2. Automatic brake adjustment device:  
- ~~Integrated\*~~  
- Non-integrated\*  
\*Strikethrough, as appropriate.
- 1.3. Manufacturer's information document: MC.4220.1210

## **2. Test Record**

The following data is recorded for each test:

- 2.1. Test code: LCTR 1423 001 20
- 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- 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): ID3-12062



2.2.2.	Brake:	See below
2.2.2.1.	Brake identifier:	ID2- MCS 4220
2.2.2.2.	Identification of tested brake:	MCS 4220
2.2.2.3.	Maximum stroke capability of the brake: <i>Note: Applies to disc brakes only.</i>	NA mm
2.2.2.4.	Effective length of the cam shaft: <i>Note: Applies to drum brakes only.</i>	640 mm
2.2.2.5.	Material variation: <i>Note: As per paragraph 3.8 (m) of Appendix 2 to this annex.</i>	NA
2.2.2.6.	Brake: - Drum* - <del>Disc</del> * <i>*Strikethrough, as appropriate.</i>	
2.2.2.6.1.	Actual test mass of drum/disc: <i>*Strikethrough, as appropriate.</i>	50,5 kg
2.2.2.6.2.	Nominal external diameter of disc: <i>Note: Applies to disc brakes only.</i>	NA mm
2.2.2.6.3.	Type of cooling of the disc: - <del>Ventilated</del> * - <del>Non-ventilated</del> * <i>*Strikethrough, as appropriate.</i>	
2.2.2.6.4.	Integrated hub: - <del>With</del> * - <del>Without</del> * <i>*Strikethrough, as appropriate.</i>	
2.2.2.6.5.	Disc with integrated drum: - <del>With parking brake function</del> * - <del>Without parking brake function</del> * <i>*Strikethrough, as appropriate.</i> <i>Note: Applies to disc brakes only.</i>	
2.2.2.6.6.	Geometric relationship between disc friction surfaces and disc mounting: NA <i>Examples: One piece, casted, connection on action side.</i>	



2.2.2.6.7.	Base material:	Grey Cast Iron				
2.2.2.7.	Brake: - Lining* - Pad* <i>*Strikethrough, as appropriate.</i>					
2.2.2.7.1.	Manufacturer:	EREN BALATACILIK SANAYİ VE TİCARET A.Ş. 13. Sokak No:6 KOSBİ Kemalpaşa / İzmir / Turkey				
2.2.2.7.2.	Make:	EREN				
2.2.2.7.3.	Type:	M750				
2.2.2.7.4.	Method of attachment: - Lining* - Pad on the brake shoe* - Back plate* <i>*Strikethrough, as appropriate.</i>	Riveted				
2.2.2.7.5.	Thickness of back plate: Weight of shoes: <i>*Strikethrough, as appropriate.</i>	<table><tr><td>--</td><td>mm*</td></tr><tr><td>6,304</td><td>kg*</td></tr></table>	--	mm*	6,304	kg*
--	mm*					
6,304	kg*					
2.2.2.7.6.	Base material: - Back plate* - Brake shoe* <i>*Strikethrough, as appropriate.</i>	Steel (St 37)				
2.2.3.	Automatic brake adjustment device: <i>*Not applicable in the case of integrated automatic brake adjustment device.</i>	See below				
2.2.3.1.	Manufacturer name and address:	TURBOTEK OTOMOTİV İNŞAAT MAKİNA SANAYİ TİCARET LİMİTED ŞİRKETİ 3.ORGANİZE SANAYİ BÖLGESİ, BÜYÜK KAYACIK MAHALLESİ, 15. SOKAK, NO: 17 SELÇUKLU / KONYA / TURKEY				
2.2.3.2.	Make:	GTSA				
2.2.3.3.	Type:	S-ABA				



2.2.3.4. Version: 78772

2.2.4. Wheel(s): 445/65 R22,5

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 R22,5	14,00x22,50	258	285,75	20	+50,5

2.2.5. Lever length  $l_e$ : 155 mm

2.2.6. Actuator: See below

2.2.6.1. Manufacturer: ARFESAN A.Ş.

2.2.6.2. Make: ARFESAN A.Ş.

2.2.6.3. Type: 30/30 "

2.2.6.4. (Test) identification number: BC 0079.0

2.3. Test results: See below

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<sub>2</sub> and O<sub>3</sub> where the O<sub>3</sub> 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)	-	2,33	-
Braking force developed $T_e$ (daN)	6352	844	6246
Brake efficiency $T_e/F_e$	0,53	0,07	0,52
Actuator stroke $s_e$ (mm)	40	-	40
Brake input torque $C_e$ (Nm)	1925	-	1925
Brake input threshold torque $C_{0,e}$ (Nm)	48	-	48





2.3.2. In the case of vehicles of categories O<sub>3</sub> and O<sub>4</sub> where the O<sub>3</sub> trailer has been subject to the Type III test:

Test Type	0	III	
	3.5.1.2.	3.5.3.1.	3.5.3.2.
Annex 11, Appendix 2, paragraph:			
Initial test speed (km/h)	60	60	60
Final test speed (km/h)	0	44	0
Brake actuator pressure p <sub>e</sub> (kPa)	650	378	650
Number of brake applications	-	20	-
Duration of brake cycle	-	60	-
Braking force developed T <sub>e</sub> (daN)	6668	3690	6162
Brake efficiency T <sub>e</sub> /F <sub>e</sub>	0,55	0,31	0,51
Actuator stroke s <sub>e</sub> (mm)	40	-	40
Brake input torque C <sub>e</sub> (Nm)	1925	-	1925
Brake input threshold torque C <sub>0,e</sub> (Nm)	48	-	48

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<sub>F</sub>:

2.3.3.2. Declared threshold torque C<sub>0,dec</sub>:  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.



### **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.  | <div style="border: 1px solid black; background-color: #d4f1d4; padding: 5px; width: 100px; height: 40px; display: flex; align-items: center; justify-content: center;">NA</div>  |
| 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.  | <div style="border: 1px solid black; background-color: #d4f1d4; padding: 5px; width: 100px; height: 40px; display: flex; align-items: center; justify-content: center;">Yes</div> |
| 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.<br><i>Note: Only to be completed when an automatic brake wear adjustment device is installed.</i> | <div style="border: 1px solid black; background-color: #d4f1d4; padding: 5px; width: 100px; height: 40px; display: flex; align-items: center; justify-content: center;">Yes</div> |

### 5. **Remarks**


The inspection results are only applicable to items which have been tested.

Axle identifier name is corrected.

Issue level: correction 1 report overrides the previous report dated 13 March 2020.

### 6. **Test facilities**

Calibration of measuring and test equipment used to carry out the inspections is in accordance with the standard stated on page 1 of this report and with ISO 17025.

	<b>TRAILER AXLE &amp; BRAKE INFORMATION DOCUMENT</b>	Date	13.03.2020
		Document Nr.	MC.4220.1210
	According to ECE R13.11, 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 / TURKEY
- 1.1. Commercial Description      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 / TURKEY
- 2.1.1. Make of axle manufacturer
- 2.2. Type / variant      MC-4220
- 2.3. Axle identifier      ID1 - NA-1210-ST/DT
- 2.4. Test axle load ( $F_e$ )      **12062 daN**
- 2.5. Wheel and brake data according to the following Figures 1A and 1B

Figure 1A

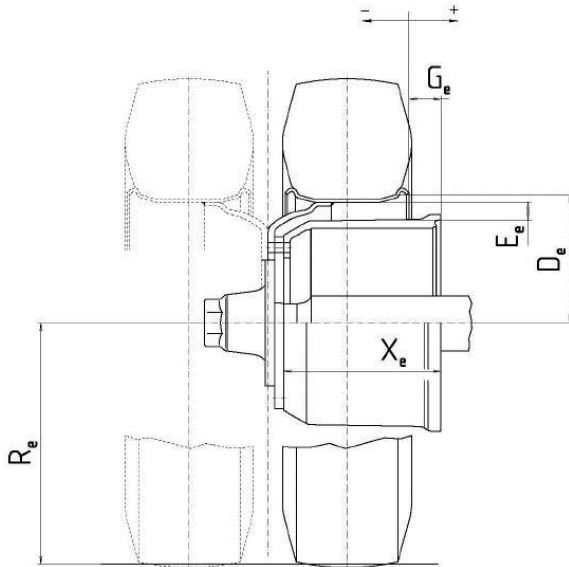
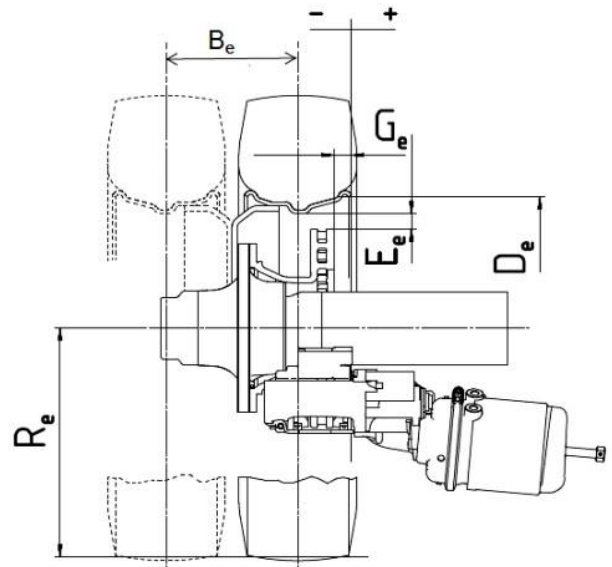



Figure 1B



Tyre	Rim	$D_e$ (mm)	$E_e$ (mm)	$G_e$ (mm)	$R_e$ (mm)	$B_e$ (mm)	$X_e$ (mm)
445/65 R 22.5	14.00x22,5	285,75	20	+50,50	555	--	258



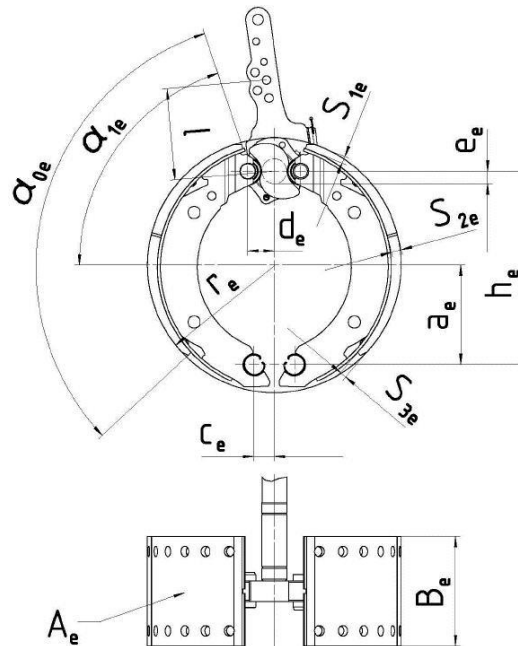
	<b>TRAILER AXLE &amp; BRAKE INFORMATION DOCUMENT</b>	Date	13.03.2020
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### 3. BRAKE

#### 3.1. General Information

- 3.1.1. Name **MUSTAFA 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- MCS 4220
- 3.1.5. Brake data according to the following Figures 2A and 2B
- 3.1.6. Brake Factor ( $B_f$ ) 9.9

Figure 2A



$a_e$ (mm)	$h_e$ (mm)	$c_e$ (mm)	$d_e$ (mm)	$e_e$ (mm)	$\alpha_{0e}$ (°)	$\alpha_{1e}$ (°)	$B_e$ (mm)	$r_e$ (mm)	$A_e$ (cm <sup>2</sup> )	$S_{1e}$ (mm)	$S_{2e}$ (mm)	$S_{3e}$ (mm)
163,7	317,7	33	42	21	122,7	75,5	200	210	1740	11,9	17,73	11,9




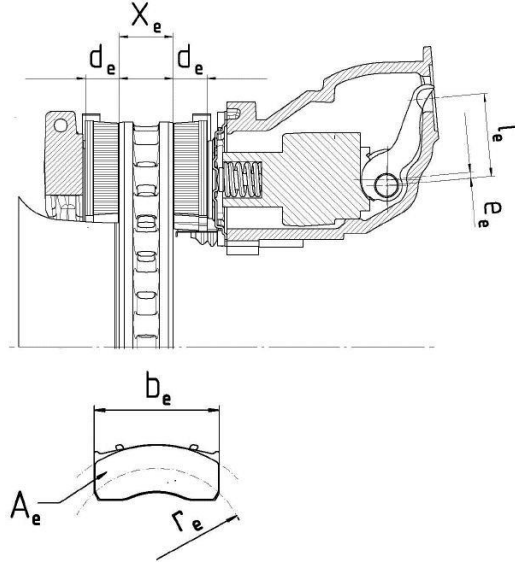
	<b>TRAILER AXLE &amp; BRAKE INFORMATION DOCUMENT</b>	Date	13.03.2020
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Figure 2B



$X_e$ (mm)	$d_e$ (mm)	$e_e$ (mm)	$l_e$ (mm)	$b_e$ (mm)	$A_e$ (cm <sup>2</sup> )	$r_e$ (mm)
--	--	--	--	--	--	--

### 3.2. Drum brake data

#### 3.2.1. Brake adjustment device (external/internal)

##### 3.2.1.1. Manufacturer (Name and address)

TURBOTEK OTOMOTİV İNŞAAT MAKİNA  
SANAYİ TİCARET LİMİTED ŞİRKETİ  
3. ORGANİZE SANAYİ BÖLGESİ, BÜYÜK  
KAYACIK MAHALLESİ, 15. SOKAK, NO:17  
SELÇUKLU / KONYA / TURKEY  
GTSA

##### 3.2.1.2. Make

##### 3.2.1.3. Type

##### 3.2.1.4. Version

S-ABA

78772

#### 3.2.2. Declared maximum brake input torque ( $C_{max}$ )

1925 Nm

#### 3.2.3. Mechanical efficiency ( $\eta$ )

0,95

#### 3.2.4. Declared brake input threshold torque ( $C_{0,dec}$ )


60 Nm

#### 3.2.5. Efficiency length of the cam shaft

640 mm


### 3.3. Brake drum



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3.3.1.	Max. diameter of friction surface (wear limit)	424 mm
3.3.2.	Base material	Grey Cast iron
3.3.3.	Declared mass	50.50 kg
3.3.4.	Nominal mass	50.50 kg
3.3.5.	Permitted range of the brake drum mass	50-55 kg
3.4.	<i>Brake Lining</i>	
3.4.1.	Manufacturer (Name and address)	EREN BALATACILIK SANAYİ VE TİCARET A.Ş. 13. Sokak No:6 KOSBİ Kemalpaşa / İzmir / Turkey
3.4.2.	Make	EREN
3.4.3.	Type	M750
3.4.4.	Identification (type identification on lining)	M750
3.4.5.	Minimum thickness (wear limit)	4,5 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 (St 37)
3.4.6.3.	Range of the weight of the brake shoes (without brake lining)	6,304 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



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3.5.7.	Input/output ratio (i) ( $I_e/e_e$ )	N/A
3.5.8.	Mechanical efficiency ( $\eta$ )	N/A
3.5.9.	Declared brake input threshold force ( $Th_{A0,dec}$ )	N/A
3.5.9.1.	$C_{0,dec} = Th_{A0,dec} * I_e$	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

