TECHNICAL REPORT

OPH-T-02276-00 Rev05 Dated 10.01.2023

Applicant	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.Ş.
Regulatory act	:	UNECE Regulation No. 13, Annex 19 Performance characteristics for diaphragm brake chambers and spring brakes Supplement 18 to the 11 series of amendments
Type	:	T36/30

Application for:

	Vehicle
	System
X	Component
	Seperate technical unit

Information regarding approval status:

X	First approval application
	Application for extension from
	Technical report

Information regarding based on the standard:

X	ISO/IEC 17020:2012
	ISO/IEC 17025:2017

0. INDEX

1. ATTACHMENTS

Test Documents

1.1 Appendix 1 → Dıaphragm brake chambers
1.2 Appendix 2 → Test results for the diaphragm brake chamber
1.3 Appendix 3 → Sprıng brakes
1.4 Appendix 4 → Test results for the spring brakes
1.5 Information document

2. GENERAL INFORMATION

2.1	Make (trade name of manufacturer)	:	HALDEX Europe SAS
2.2	Type	:	T36/30
2.3	Part number	:	225 363 0001
2.4	Company name and address of manufacturer	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.S. GOSB İhsan Dede Caddesi 300 sok. No:304 41400 Kocaeli/TURKEY
2.5	Name and address of the manufacturer's representative (if any)	:	N/A

Date	:	19.10.2022
Location	:	Gebze-Kocaeli/TURKEY
Test expert	:	Eren Balkı, H. Anıl Kolukırık

3. REASONS FOR EXTENSION

N/A

4. TEST EQUIPMENT AND CONDITION

4.1. Equipment name	ID Number
Pressure transmitter (with indicator)	- KL0258 - KL0259 - KL0260 - KL0261 - KL1379
Loadcell	- KL0254 - KL0255
Height measuring device	- KL0257 - KL0256
Compound gauge	- KL0628

4.2. Ambient conditions

Temperature	19 °C

5. CONCLUSION AND STATEMENT OF CONFORMITY

This test has been carried out and the results reported in accordance with Annex 19 to Regulation No. 13 as last amended by supplement 18 to the 11 series of amendments.

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Optival Belgelendirme Hizmetleri A.Ş. is affirmed by National Standards Authority of Ireland (NSAI) with technical service number 97.0126.

Authorized expert
H.Anıl Kolukırık

OPTİVAL BELGELENDİRME HİZMETLERİ A.Ş.
Evliya Çelebi Mh. Küme Sk.
Tuzla Ticaret Merkezi Sit. No: 2C/15 Tuzla/İST.
Tuzla V.D: 544 078 0129

Content check by
Buse Onur

6. CONFIRMATION BY THE APPROVAL AUTHORITY

This technical report is prepared within the technical service designation scope of Irish approval authority NSAI. As no component approval is defined for brake actuators according to UN ECE Regulation no. 13, Annex 19; this technical report is prepared for confirmation letter.

7. COPYRIGHTS

NATIONAL STANDARDS AUTHORITY OF IRELAND
NSAI Certification
TRANSPORT DEPARTMENT

APPENDIX 1

DIAPHRAGM BRAKE CHAMBERS

1.	Idendification		
1.1	Manufacturer	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.S. GOSB İhsan Dede Caddesi 300 sok. No:304 41400 Kocaeli/TURKEY
1.2	Make	:	HALDEX Europe SAS
1.3	Type	:	T36/30
1.4	Part Number	:	225 363 0001
2.	Operating conditions:		
2.1	Maximum working pressure	:	10 Bar ($10*10^2$ kPa)
3.	Performance characteristics declared by the manufacturer		
3.1	Maximum stroke (s_{max}) at 6,500 kPa	:	75 mm
3.2	Average thrust (Th_A) – f(p)	:	$2358,4[10^{-2}N/kPa]*P-146,5[N]$
3.3	Effective stroke (s_p) – f(p)	:	$0,4984[10^{-2}mm/kPa]*P + 62,089[mm]$
3.3.1	Pressure range over which the above effective stroke is valid	:	3-10 bar
3.4	Pressure required to produce a push rod stroke of 15mm (p_{15}) based on Th_A – f(p) or declared value	:	$0,17*10^2$ kPa
4.	Scope of application		

X	The brake chamber may be used on trailers of Category O_3 and O_4
	The brake chamber may be used on trailers of Category O_3 only

5.	Name of Technical Service/Approval Authority conducting the test:	:	Optival Belgelendirme Hizmetleri A.Ş.
6.	Date of test	:	19.10.2022

7. This test has been carried out and the results reported in accordance with Annex 19 to Regulation No. 13 as last amended by the 18 series of amendments.

Technical Service(1) conducting the test

Signed

OPTİVAL BELGELENDİRME HİZMETLERİ A.Ş.
Evliya Çelebi Mh. Küme Sk.
Tuzla Ticaret Merkezi Sit. No: 2C/15 Tuzla/İST.
Tuzla V.D: 544 078 0129

Date

10.01.2023

8. Approval Authority(1)

Signed

Mary Madigan Digitally signed by Mary Madigan Date: 2023.01.16 12:28:09 Z

Date

16.01.2023

9. Test documents

Appendix 2

NATIONAL STANDARDS AUTHORITY OF IRELAND NSAI Certification TRANSPORT DEPARTMENT

APPENDIX 2

1. Test Results for the diaphragm brake chamber

Record of test results(1) for part number

1.1 Sample 1

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2093,910117	56,1
2	4521,723451	60,3
3	6935,218227	61,6
4	9323,315135	62,5
5	11732,28187	63,3
6	14037,85849	64,2
7	16417,74	64,2
8	18732,6032	64,6
9	21164,85437	65,4
10	23503,34739	65,7

p_{15} : 0,18 *10^2 kPa

1.2 Sample 2

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2106,88033	58,4
2	4503,03073	63
3	6906,06193	64,8
4	9282,66077	65,5
5	11673,6375	66,1
6	13969,6089	66,4
7	16336,2275	66,5
8	18642,8416	67,3
9	21048,4341	67,7
10	23411,9504	68,4

p_{15} : 0,16 *10^2 kPa

1.3 Sample 3

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2079,353782	60,2
2	4492,131132	64,3
3	6898,254124	65,9
4	9276,842373	66,5
5	11687,39879	67,1
6	13966,49481	67,4
7	16332,35068	67,9
8	18645,41673	68,3
9	21052,73033	68,7
10	23393,00045	69,5

p_{15} : 0,15 *10^2 kPa

1.4 Sample 4

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2072,90513	56,4
2	4489,89279	60,9
3	6909,15737	62,1
4	9304,35771	62,7
5	11709,7901	63,5
6	14010,0699	63,8
7	16392,3007	64
8	18705,9257	64,5
9	21124,3	65,4
10	23490,3127	65,7

p_{15} : 0,15 *10^2 kPa

1.5 Sample 5

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2048,91472	56,4
2	4472,24049	61,7
3	6886,26277	63,1
4	9277,82428	64
5	11669,446	64,5
6	13972,4126	65
7	16332,958	65,2
8	18656,1521	65,7
9	21057,8481	66,2
10	23424,3479	66,6

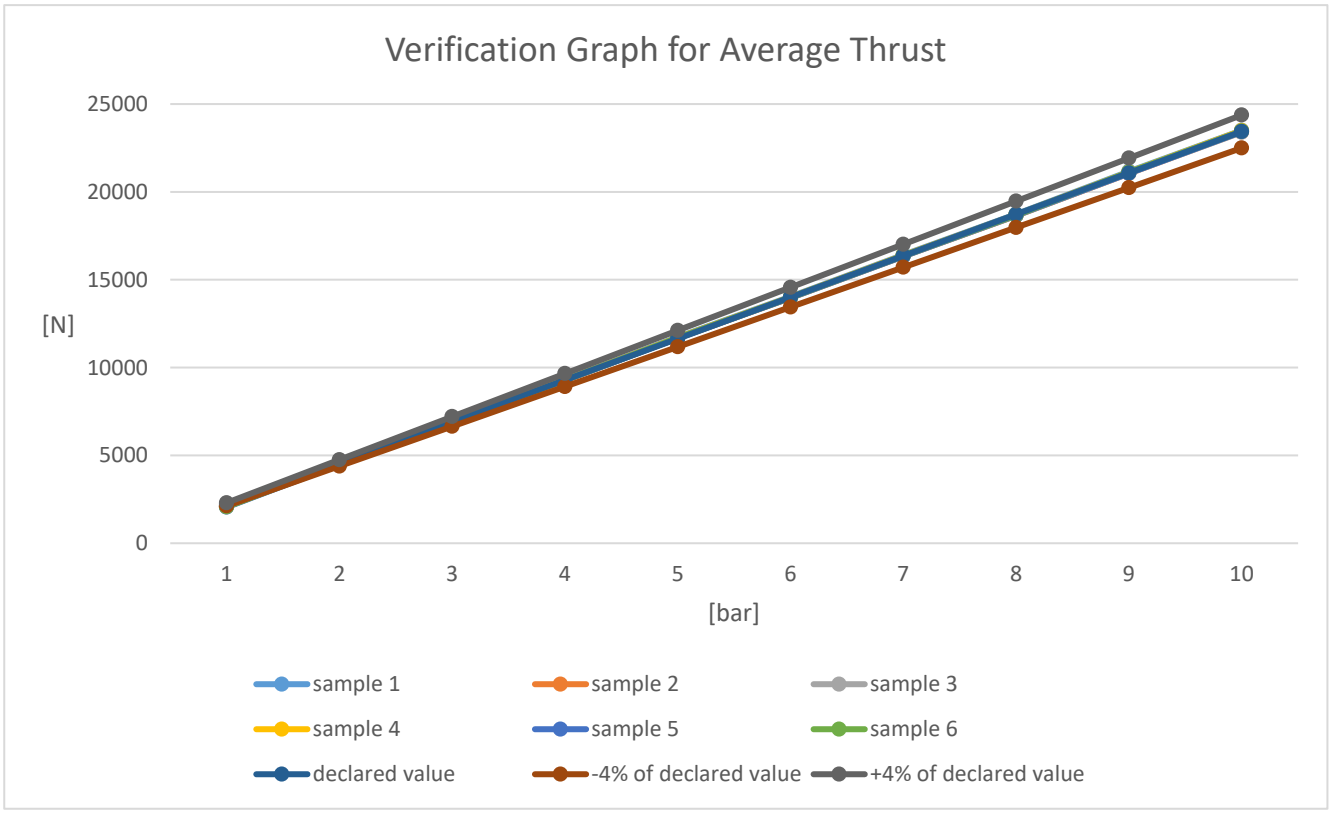
p_{15} : 0,18 *10^2 kPa

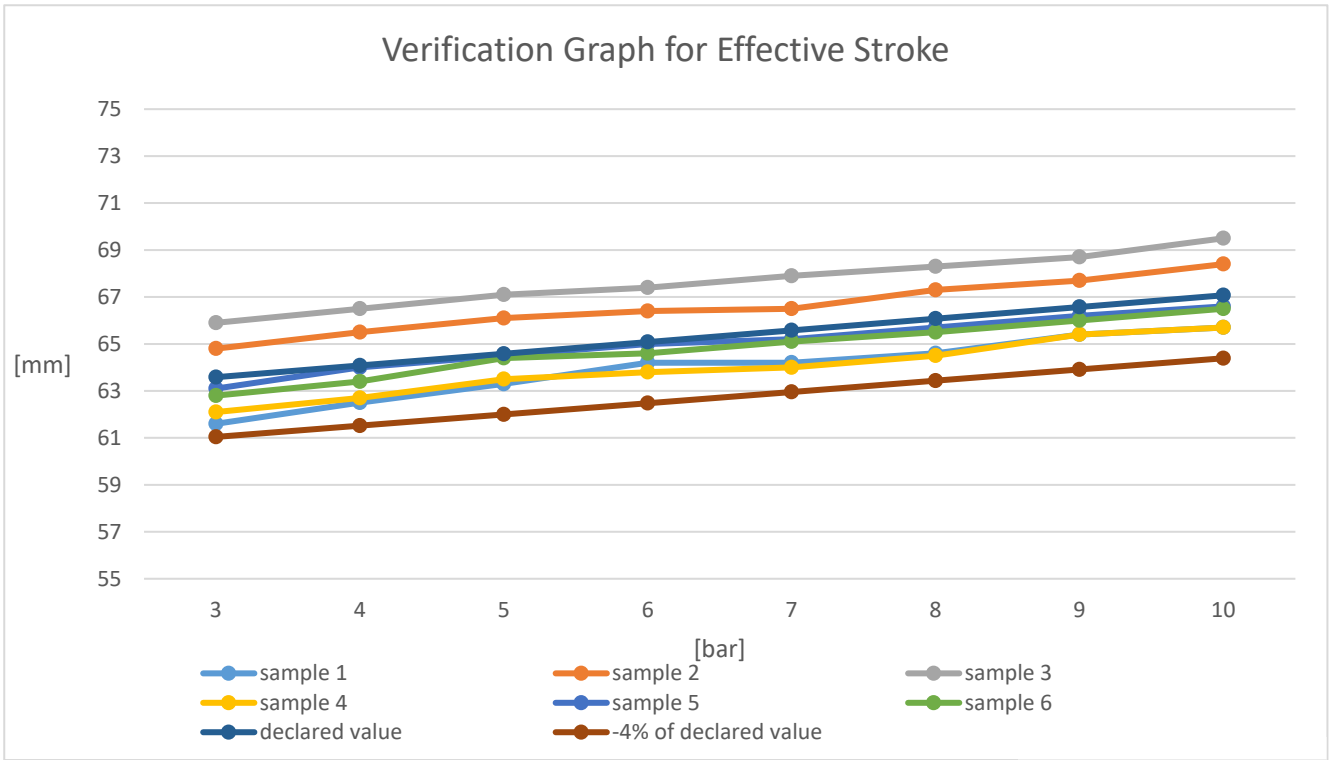
1.6 Sample 6

Pressure **p** - (*10^2 kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	2069,43884	56,2
2	4496,16368	61,5
3	6901,51576	62,8
4	9292,33195	63,4
5	11690,5302	64,4
6	13992,6087	64,6
7	16365,9021	65,1
8	18673,6399	65,5
9	21115,0429	66
10	23453,5505	66,5

p_{15} : 0,18 *10^2 kPa

2. Verification graphics for the diaphragm brake chamber





APPENDIX 3

SPRING BRAKES

1.	Idendification		
1.1.	Manufacturer	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.S. GOSB İhsan Dede Caddesi 300 sok. No:304 41400 Kocaeli/TURKEY
1.2.	Make	:	HALDEX Europe SAS
1.3.	Type	:	T36/30
1.4.	Part Number	:	225 363 0001
2.	Operating conditions:		
2.1	Maximum working pressure	:	8,5 Bar (8,5*10² kPa)
3.	Performance characteristics declared by the manufacturer		
3.1	Maximum stroke (s_{max})	:	64 mm
3.2	Spring thrust (Th_s) – *f*(s)	:	13197 [N] – 73,995 [N/mm]*S [mm]
3.3	Release pressure (at 10mm stroke)	:	5,40*10² kPa
4.	Date of test	:	19.10.2022
5.	This test has been carried out and the results reported in accordance with Annex 19 to Regulation No. 13 as last amended by the 18 series of amendments.		

Technical Service(3) conducting the test

Signed

OPTİVAL BELGELENDİRME HİZMETLERİ A.Ş.
Evliya Çelebi Mh. Küme Sk.
Tuzla Ticaret Merkezi Sit. No: 2C/15 Tuzla/İST.
Tuzla V.D: 544 078 0129

Date

10.01.2023

6. Approval Authority(3)

Signed

Date

16.01.2023

7. Test documents

Appendix 4

APPENDIX 4

1.Test Results for the spring brakes

1.1 Sample 1

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
10	12434,7
20	11715,7
30	10978,2
40	10254,7
50	9563,8

Release pressure (at 10mm stroke) : 5,40*10^2 kPa

1.2 Sample 2

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
10	12490,7
20	11755,8
30	11023,5
40	10280
50	9572,2

Release pressure (at 10mm stroke) : 5,40*10^2 kPa

1.3 Sample 3

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
10	12466,8
20	11750,7
30	11010,6
40	10274,1
50	9570,7

Release pressure (at 10mm stroke) : 5,35*10^2 kPa

1.4 Sample 4

Stroke **s** - (mm)	**Thrust** **Th$_s$** - (N)
10	12368
20	11581,4
30	10813,5
40	10034,6
50	9246,8

Release pressure (at 10mm stroke) : 5,35*10^2 kPa

1.5 Sample 5

Stroke **s** - (mm)	**Thrust** **Th$_s$** - (N)
10	12527,3
20	11822,2
30	11101,4
40	10332,8
50	9610

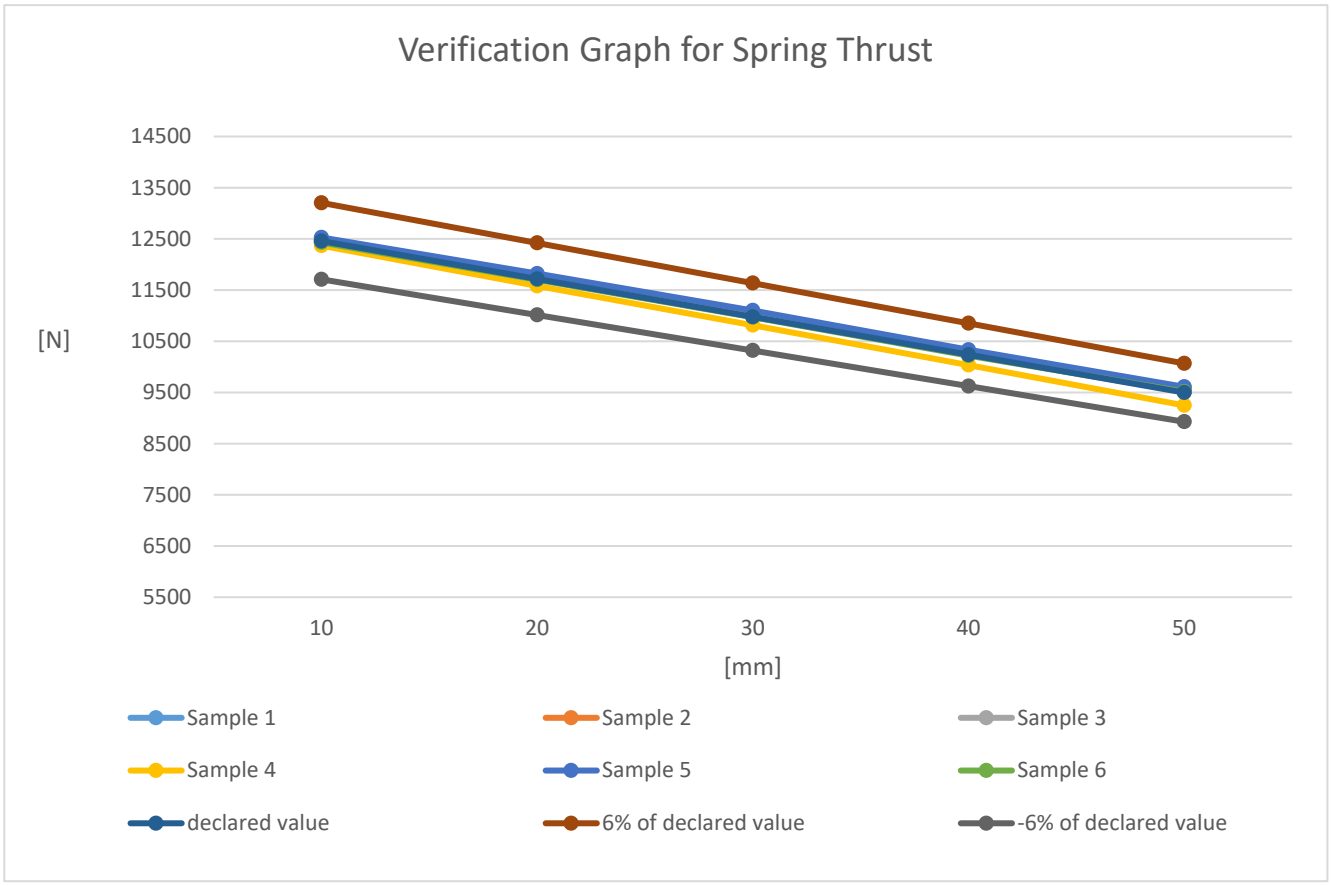
Release pressure (at 10mm stroke) : 5,55*10^2 kPa

1.6 Sample 6

Stroke **s** - (mm)	**Thrust** **Th$_s$** - (N)
10	12429,2
20	11701,9
30	10969,2
40	10218,6
50	9516,2

Release pressure (at 10mm stroke) : 5,30*10^2 kPa

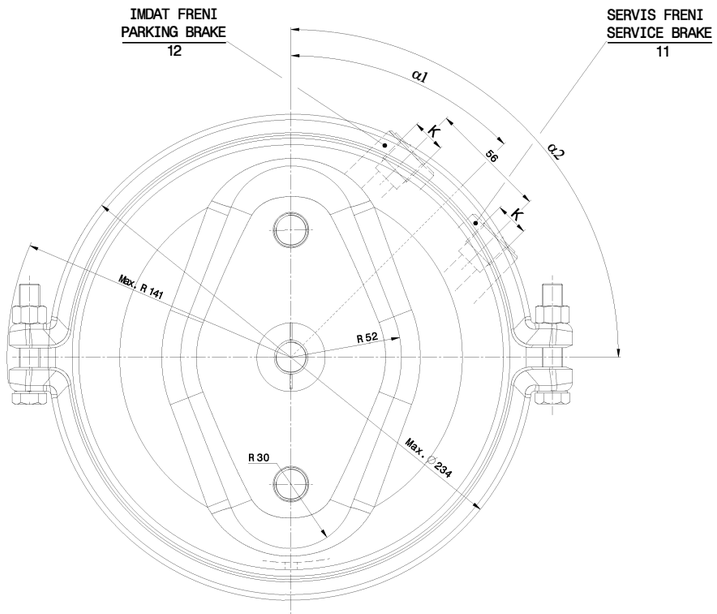
2. Verification graphics for spring brakes

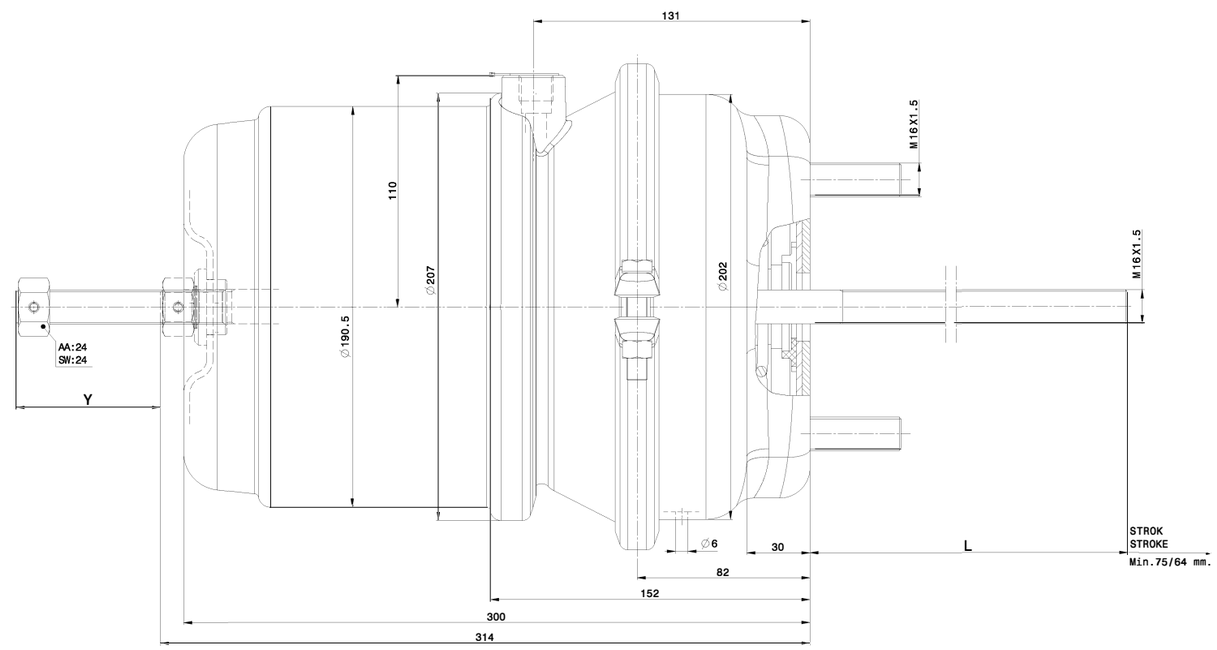


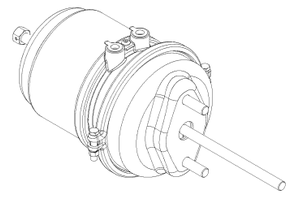
INFORMATION DOCUMENT NO: 001 **Date: 06.01.2023**

RELATING TO THE TYPE-APPROVAL OF A VEHICLE WITH RESPECT TO THE BRAKING SYSTEM COMPONENTS (ACCORDING TO UNECE REGULATION No 13_11_18)

0.	GENERAL		
0.1.	Make (trade name of manufacturer)	:	HALDEX Europe SAS
0.2.	Type	:	T36/30
0.5.	Name and address of manufacturer	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.S. GOSB İhsan Dede Caddesi 300 sok. No:304 41400 Kocaeli/TURKEY
1	Part Number	:	225 363 0001
2.	Operating conditions		
2.1	Maximum working pressure	:	10 Bar (10*10² kPa)
3.	Performance characteristics declared by the manufacturer		
3.3	Maximum stroke (smax) at 6,500 kPa	:	75 mm
3.4	Average thrust (ThA) – f(p)	:	2358,4[10^{-2}N/kPa]*P-146,5[N]
3.5	Effective stroke (sp) – f(p)	:	0,4984[10^{-2}mm/kPa]*P + 62,089[mm]
3.6	Pressure range over which the above effective stroke is valid	:	3-10 bar
3.7	Pressure required to produce a push rod stroke of 15mm (p15) based on Th_A – f(p) or declared value	:	0,17*10^2 kPa
4.	Spring Brakes		
4.1	Manufacturer	:	Arfesan Arkan Fren Elemanları Sanayi Tic. A.S. GOSB İhsan Dede Caddesi 300 sok. No:304 41400 Kocaeli/TURKEY
4.2	Make	:	HALDEX Europe SAS
4.3	Type	:	T36/30
4.4	Part Number	:	225 363 0001
4.5	Operating conditions		
4.5.1	Maximum working pressure	:	8,5 Bar (8,5*10² kPa)
4.6	Performance characteristics declared by the manufacturer		
4.6.1	Maximum stroke (s_{max})	:	64 mm
4.6.2	Spring thrust (Th_s) – *f*(s)	:	13197 [N] – 73,995 [N/mm]*S [mm]
4.6.3	Release pressure (at 10mm stroke)	:	5,40*10^2 kPa







225 363 0001	OPTIONAL	OPTIONAL	VARIANT 1 (M22X1.5 VOSS 232 NG12) VARIANT 2 (3/8"-18 NPTF) VARIANT 3 (M22X1.5) VARIANT 4 (M16X1.5)	OPTIONAL	VARIANT 1 (FULL STROKE BOLT) 65 mm VARIANT 2 (HALF STROKE BOLT) 36 mm VARIANT 3 (ZERO STROKE BOLT) 0 mm
P/N	α1	α2	K	L	Y

SYMBOL:DIN ISO 1219

MEDIA	
OPERATING TEMPERATURE RANGE	
MAXIMUM OPERATING PRESSURE	
MAXIMUM PRESSURE (TEMPORARY)	
PERMISSIBLE LEAKAGE	

CLASS : CF1D — KRITISK CRITICAL — VIKTIG IMPORTANT

SPRING BRAKE RELEASE PRESSURE (AT "0 mm." STROKE)

AIR VOLUME OF SPRING BRAKE PART

FORCE OF RETURN SPRING AT 0 STROKE

NSAI TRANSPORT

Haldex
HALDEX BRAKE PRODUCTS AB
LANDSKRONA SWEDEN

TOLERANCES UNLESS OTHERWISE SPECIFIED
Unless Otherwise Specified
THIS DOCUMENT USES SPECIAL CHARACTERISTICS AS DEFINED IN PROCEDURE HDK2-3-004

DOC TYPE	SCALE	MATERIAL			
DRAWN	DATE	WEIGHT (ONLY FOR INFO.)	DIMENSION IN		
CHECKED	DATE	TITLE: SPRING BRAKE CHAMBER TYPE 36/30			
APPROVED	DATE	ITEM NUMBER: 225 363 0001	PROJECTION	SHEET	FORMAT

GENERIC MODEL (INFO ONLY):