TECHNICAL REPORT

OPH-T-01532-00 Rev03 Dated 04.07.2022

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	:	30/30” Diaphragm Diaphragm S-Cam Brake Chamber

Application for:

	Vehicle
	System
X	Component
	Seperate technical unit

Information regarding approval status:

	First approval application
	Application for extension from
X	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
2.2	Type	:	30/30” Diaphragm Diaphragm S-Cam Brake Chamber
2.3	Part number	:	346.3030.0XX
2.4	Company name and address of manufacturer	:	Arfesan A.S. GOSB 300 sok. No:304 41400 Kocaeli/TURKEY
2.5	Name and address of the manufacturer's representative (if any)	:	N/A

Date	:	20.05.2021-03.06.2021
Location	:	Gebze-Kocaeli/TURKEY
Test expert	:	Oğuz Başsaraç, Emre Can Karabağ

3. REASONS FOR EXTENSION

N/A

4. TEST EQUIPMENT AND CONDITION

4.1. Equipment name	**ID Number**
Pressure transmitter (with indicator)	- KL0258 - KL0259 - KL0261
Loadcell	- KL0260 - KL0255 - KL0254
Height measuring device	- KL0257 - KL0256
Compound gauge	- KL0627

4.2. Ambient conditions

Temperature	21 °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: 644 078 0129

Content check by
Emel Sırma

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 repprt is prepared for confirmation letter.

NATIONAL STANDARDS AUTHORITY OF IRELAND
NSAI Certification
TRANSPORT DEPARTMENT

7. COPYRIGHTS

APPENDIX 1

DIAPHRAGM BRAKE CHAMBERS

1.	Idendification		
1.1	Manufacturer	:	Arfesan A.S. GOSB 300 sok. No:304 41400 Kocaeli/TURKEY
1.2	Make	:	Haldex
1.3	Type	:	30/30" Diaphragm Diaphragm S-Cam Brake Chamber
1.4	Part Number	:	346.3030.0XX
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	:	80 mm
3.2	Average thrust (Th_A) – f(p)	:	1910,80 [10^{-2}N/kPa]*P – 98,10 [N]
3.3	Effective stroke (s_p) – f(p)	:	0,508 [10^{-2}mm/kPa]*P + 72,68 [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	:	20.05.2021-03.06.2021

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 — Date

OPTİVAL BELGELENDİRME HİZMETLERİ A.Ş.
Evliya Çelebi Mh. Küme Sk.
Tuzla Ticaret Merkezi Sit. No: 2C/15 Tuzla/İST.
Tuzla V.D. 544 078 9128

07.07.2022

8. Approval Authority(1)

Signed — Date

Mary Madigan
Manager
NSAI

08.08.2022

9. Test documents

Appendix 2

APPENDIX 2

1. Test Results for the diaphragm brake chamber

Record of test results(1) for part number

1.1 Sample 1

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1654,446154	68,6
2	3619,555172	72
3	5598,917012	73,9
4	7539,056889	74,8
5	9492,821226	75,9
6	11441,87114	76,9
7	13328,72526	77,4
8	15174,49505	77,3
9	17089,91437	77,2
10	18994,67378	77

p_{15} : 0,17 *10² kPa

1.2 Sample 2

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1670,03433	69,2
2	3641,96468	72,2
3	5604,72267	73,7
4	7554,81834	74,5
5	9519,44213	75,5
6	11475,3532	77
7	13366,6731	77,8
8	15223,3413	77,5
9	17146,0636	77,2
10	19045,7325	77

p_{15} : 0,16 *10² kPa

1.3 Sample 3

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1670,03433	69,2
2	3641,96468	72,2
3	5604,72267	73,7
4	7554,81834	74,5
5	9519,44213	75,5
6	11475,3532	77
7	13366,6731	77,8
8	15223,3413	77,5
9	17146,0636	77,2
10	19045,7325	77

p_{15} : 0,16 *10² kPa

1.4 Sample 4

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1627,68299	69,1
2	3606,02031	72,3
3	5601,25228	74
4	7357,34071	72,1
5	9296,1717	73,8
6	11236,8175	75
7	13107,6142	76,6
8	14936,0368	76,7
9	16842,1131	76,8
10	18726,3917	76,7

p_{15} : 0,16 *10² kPa

1.5 Sample 5

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1622,43394	69,8
2	3606,34048	72,3
3	5581,92778	74,1
4	7530,58721	74,9
5	9496,59903	76
6	11453,9492	76,8
7	13337,0043	77,2
8	15213,8102	77,2
9	17101,2241	76,8
10	19019,7988	76,8

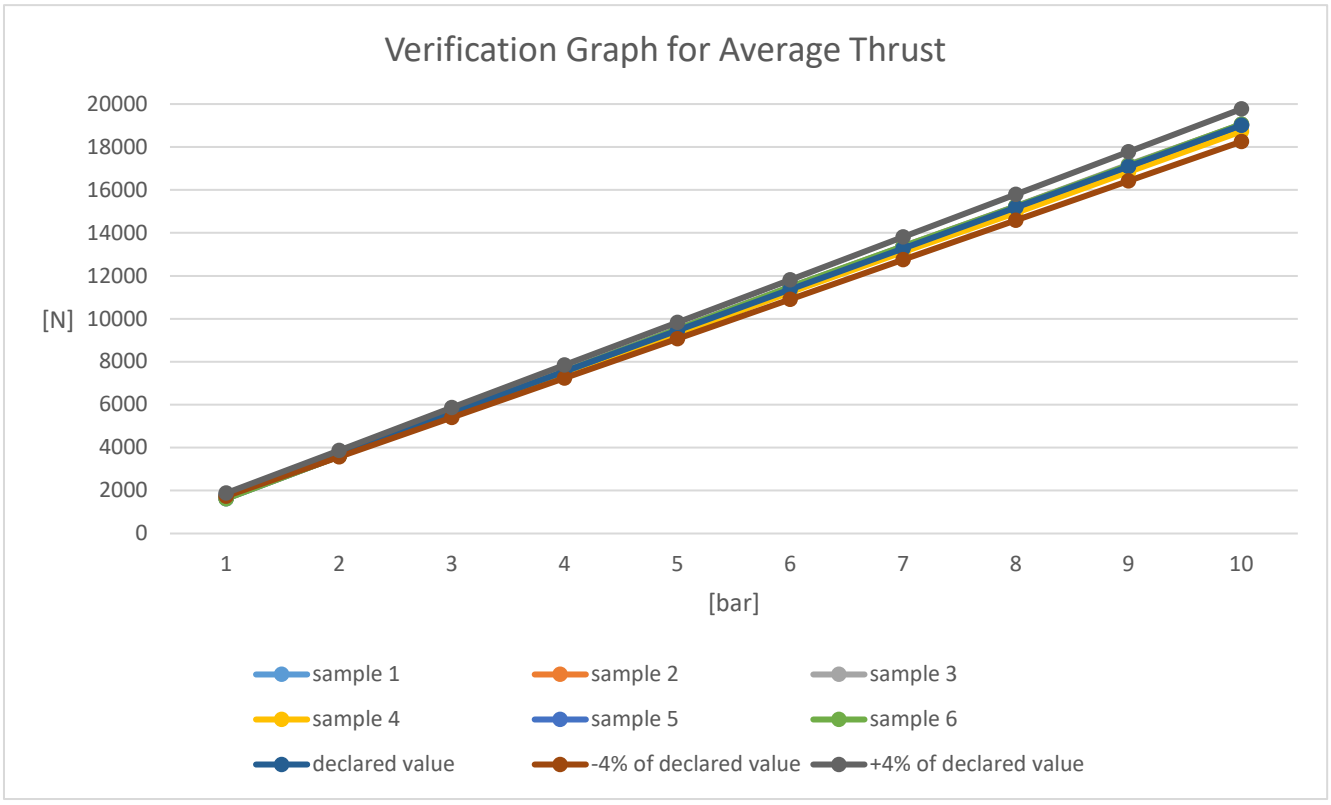
p_{15} : 0,17 *10² kPa

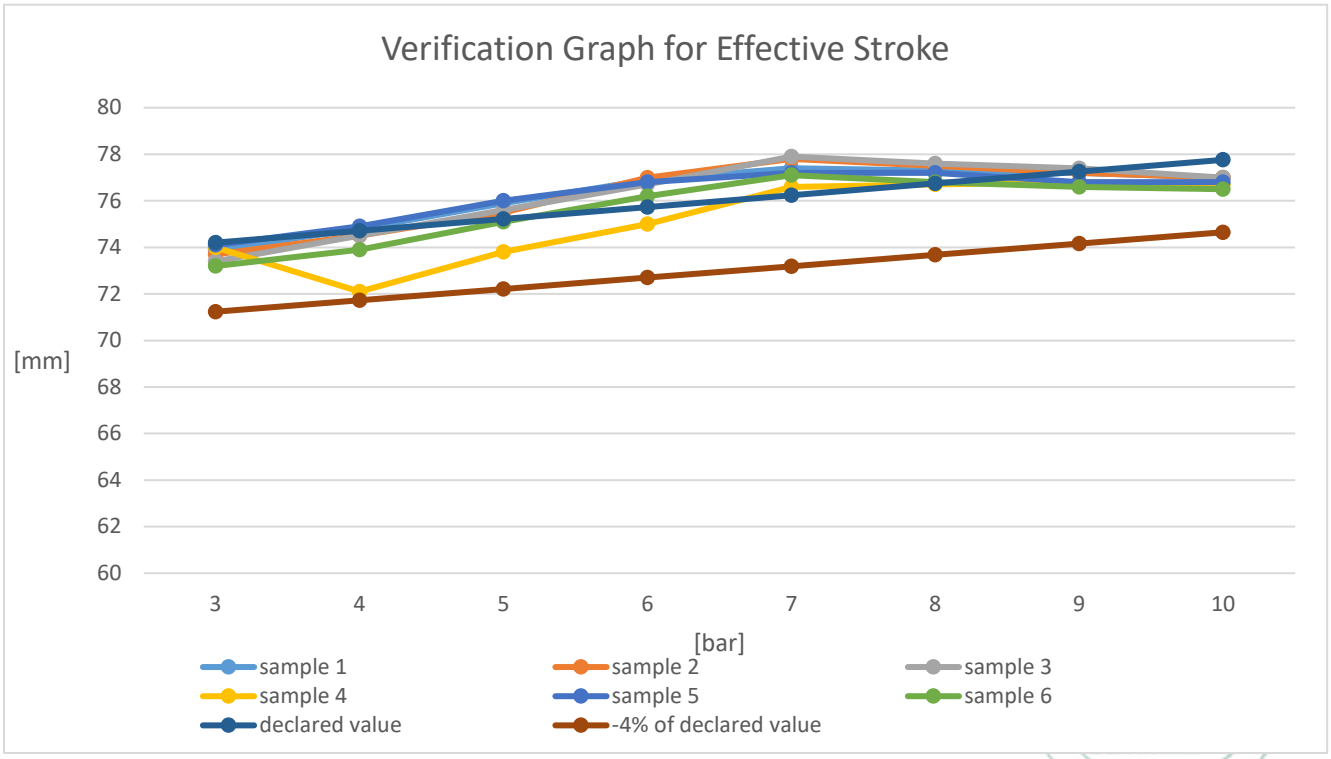
1.6 Sample 6

Pressure **p** - (*10² kPa)	**Average Thrust** **Th_A** - (N)	**Effective Stroke** **Sp** - (mm)
1	1621,60505	68,8
2	3604,45179	71,8
3	5586,54249	73,2
4	7554,47477	73,9
5	9519,26699	75,1
6	11480,1371	76,2
7	13373,3697	77,1
8	15234,3915	76,8
9	17157,5024	76,6
10	19065,2835	76,5

p_{15} : 0,17 *10² kPa

2. Verification graphics for the diaphragm brake chamber





APPENDIX 3

SPRING BRAKES

1.	Idendification		
1.1.	Manufacturer	:	Arfesan A.S. GOSB 300 sok. No:304 41400 Kocaeli/TURKEY
1.2.	Make	:	Haldex
1.3.	Type	:	30/30" Diaphragm Diaphragm S-Cam Brake Chamber
1.4.	Part Number	:	346.3030.0XX
2.	Operating conditions:		
2.1	Maximum working pressure	:	8,5 Bar ($8,5*10^2$ kPa)
3.	Performance characteristics declared by the manufacturer		
3.1	Maximum stroke (s_{max})	:	78 mm
3.2	Spring thrust (Th_s) – $f(s)$	:	9969,10 [N] – 68,80 [N/mm]*S [mm]
3.3	Release pressure (at 10mm stroke)	:	$4,91*10^2$ kPa
4.	Date of test	:	20.05.2021-03.06.2021

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 — Date

OPTİVAL BELGELENDİRME HİZMETLERİ A.Ş.
Evliya Çelebi Mh. Küme Sk.
Tuzla Ticaret Merkezi Sit. No: 2C/15 Tuzla/İST.
Tuzla V.D. 544 078 0128

07.07.2022

6. Approval Authority(3)

Signed — Date

Mary Madigan
Manager
NSAI

08.08.2022

7. Test documents

Appendix 4

NATIONAL STANDARDS AUTHORITY OF IRELAND
NSAI Certification
TRANSPORT DEPARTMENT

APPENDIX 4

1.Test Results for the spring brakes

1.1 Sample 1

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	9318,3
21,5	8570,5
31,5	7887,3
41,5	7251,5
51,5	6549,4

Release pressure (at 10mm stroke) : $4,90*10^2$ kPa

1.2 Sample 2

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	9176
21,5	8419,8
31,5	7718,9
41,5	7089,8
51,5	6384,6

Release pressure (at 10mm stroke) : $4,90*10^2$ kPa

1.3 Sample 3

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	9538,1
21,5	8769,3
31,5	8068,5
41,5	7428,4
51,5	6735

Release pressure (at 10mm stroke) : $4,95*10^2$ kPa

1.4 Sample 4

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	9128,8
21,5	8381,2
31,5	7673,7
41,5	7041,7
51,5	6376,2

Release pressure (at 10mm stroke) : $4,90*10^2$ kPa

1.5 Sample 5

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	8882,3
21,5	8144,6
31,5	7449,2
41,5	6838,8
51,5	6155,8

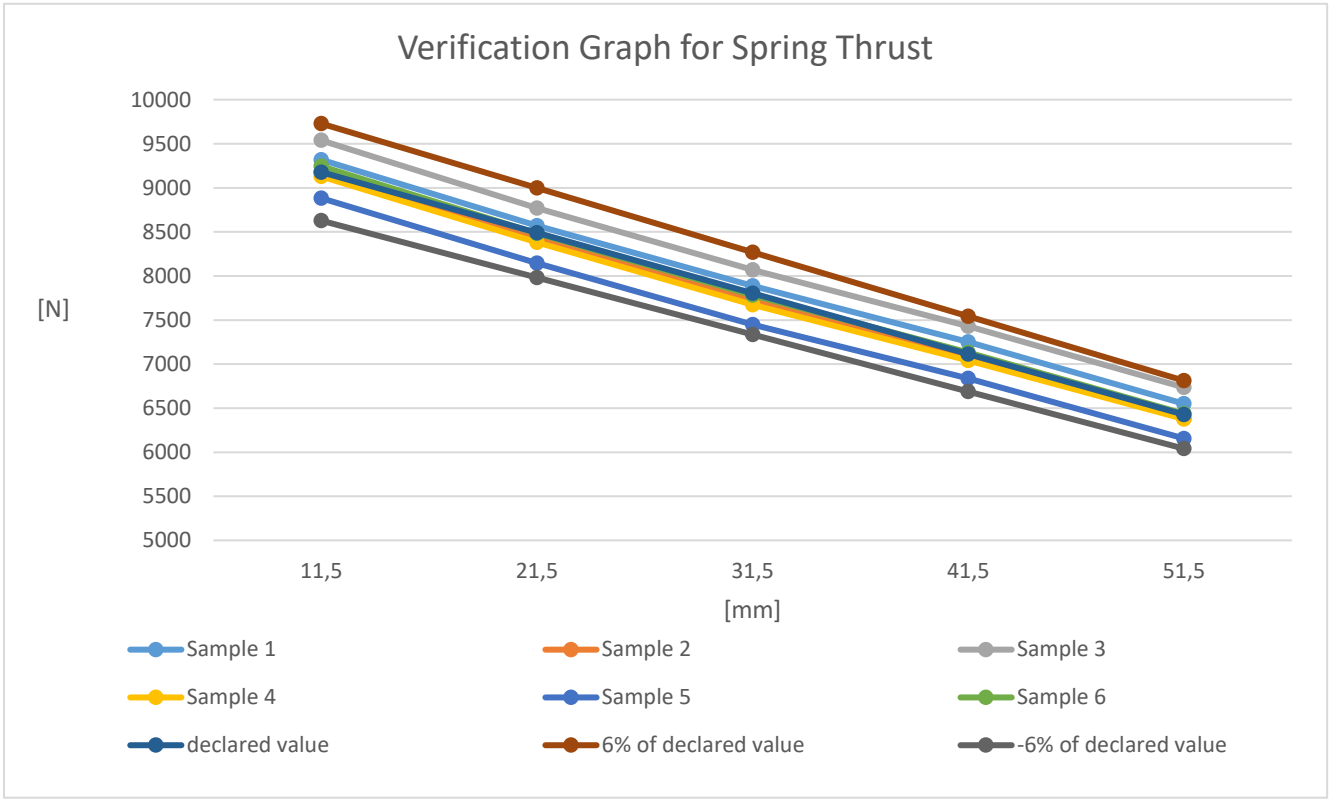
Release pressure (at 10mm stroke) : $4,90*10^2$ kPa

1.6 Sample 6

Stroke **s** - (mm)	**Thrust** **Th_s** - (N)
11,5	9244,3
21,5	8481
31,5	7780,9
41,5	7133,2
51,5	6437

Release pressure (at 10mm stroke) : $4,85*10^2$ kPa

2. Verification graphics for spring brakes

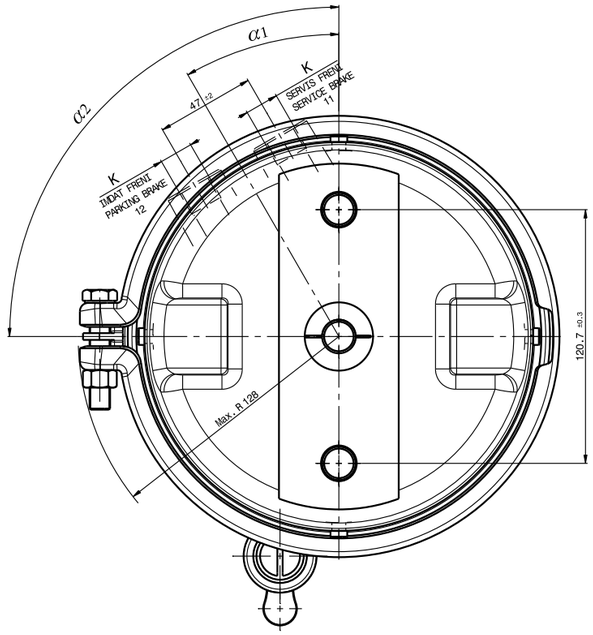


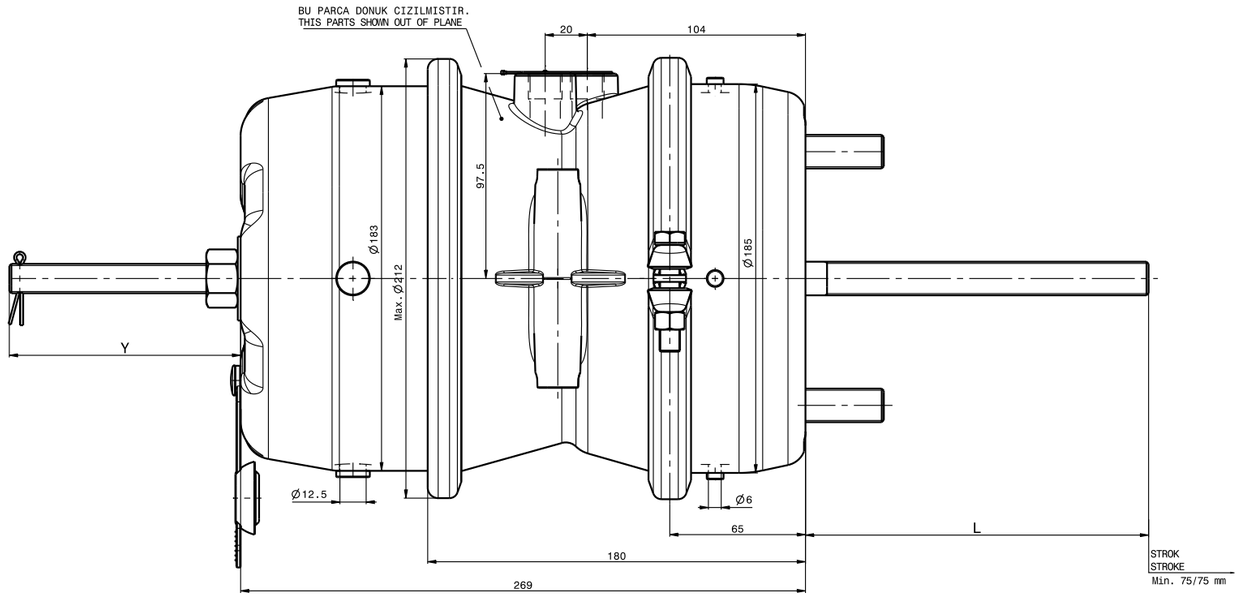
INFORMATION DOCUMENT NO: 003

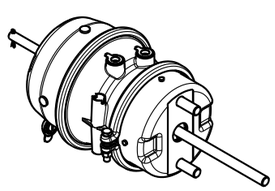
Date: 4th July 2022

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
0.2.	Type	:	30/30” Diaphragm Diaphragm S-Cam Brake Chamber
0.5.	Name and address of manufacturer	:	Arfesan A.S. GOSB 300 sok. No:304 41400 Kocaeli/TURKEY
1	Part Number	:	346.3030.0XX
2.	Operating conditions		
2.1	Maximum working pressure	:	10 Bar ($10*10^2$ kPa)
3.	Performance characteristics declared by the manufacturer		
3.3	Maximum stroke (smax) at 6,500 kPa	:	80 mm
3.4	Average thrust (ThA) – f(p)	:	1910,80 [10^{-2}N/kPa]*P – 98,10 [N]
3.5	Effective stroke (sp) – f(p)	:	0,508 [10^{-2}mm/kPa]*P + 72,68 [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 A.S. GOSB 300 sok. No:304 41400 Kocaeli/TURKEY
4.2	Make	:	Haldex
4.3	Type	:	30/30” Diaphragm Diaphragm S-Cam Brake Chamber
4.4	Part Number	:	346.3030.0XX
4.5	Operating conditions		
4.5.1	Maximum working pressure	:	8,5 Bar (8,5*10^2 kPa)
4.6	Performance characteristics declared by the manufacturer		
4.6.1	Maximum stroke (s_{max})		78 mm
4.6.2	Spring thrust (Th_s) – *f*(s)		9969,10 [N] – 68,80 [N/mm]*S [mm]
4.6.3	Release pressure (at 10mm stroke)		4,91*10^2 kPa







346 3030 0XX	OPTIONAL	OPTIONAL	VARYANT 1 (M22X1.5 VOSS 232 NG12) VARYANT 2 (3/8"-18 NPTF) VARYANT 3 (M22X1.5) VARYANT 4 (M16X1.5)	OPTIONAL	VARYANT 1 (FULL STROKE BOLT) 112 mm VARYANT 2 (FULL STROKE BOLT) ... mm VARYANT 3 (FULL STROKE BOLT) ... mm
P/N	α1	α2	K	L	Y

07.01-T03'E GORE / ACCORDING TO 07.01-T03	
CLASS : CF1D (KRITIK CRITICAL / ONEMLI IMPORTANT)	
SPRING BRAKE RELEASE PRESSURE (AT "10 mm." STROKE)	
AIR VOLUME OF SPRING BRAKE PART	
FORCE OF RETURN SPRING AT 0 STROKE	

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

DURABILITY TEST : ⋈
(ACCORDING TO INSTRUCTION 06.20-T06)
SYMBOL:DIN ISO 1219 — TH H11

NOTE : PERFORMANCE MEASUREMENTS SHOULD BE DONE AFTER CAGING THE SPRING CHAMBER FOR 24 HOURS MINIMUM.

TOLERANCES UNLESS OTHERWISE SPECIFIED Unless Otherwise Specified	DOC-TYPE	SCALE	MATERIAL SEE DETAILS
THIS DOCUMENT USES SPECIAL CHARACTERISTICS AS DEFINED IN PROCEDURE HSK2-3-364	DRAWN	DATE	WEIGHT (ONLY FOR INFO.) / DIMENSION IN MM
Haldex HALDEX BRAKE PRODUCTS AB LANDSKRONA SWEDEN	CHECKED	DATE	TITLE SPRING BRAKE CHAMBER
	APPROVED	DATE	ITEM NUMBER 346 3030 0XX / PROJECTION / SHEET / FORMAT

GENERIC MODEL (INFO ONLY):