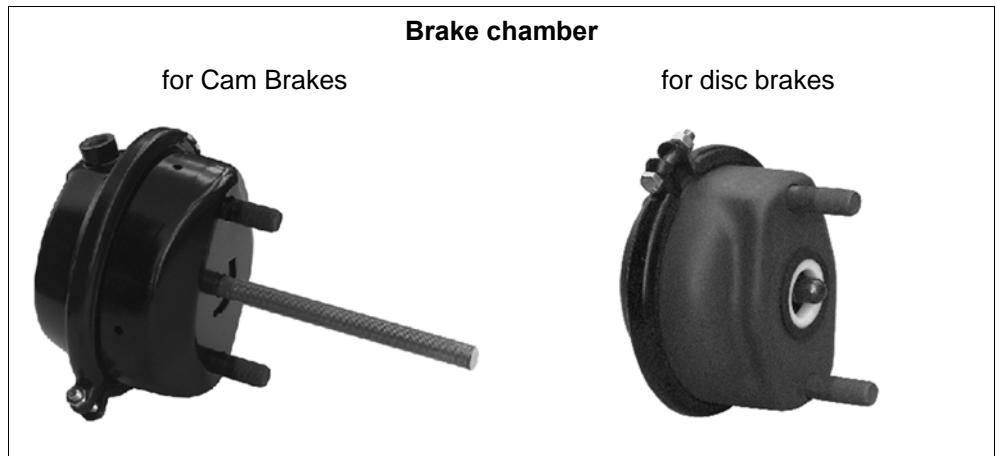


### Brake chamber 423 ...



#### Application

Drawbar trailer and semitrailer with more than one axle. Brake chambers are used on the axles that do not have to be equipped with Tristop® cylinders.

#### Purpose

To generate the brake force for the wheel brakes. It can also be used to actuate other facilities, e.g. for clamping, raising or gear-shifting.

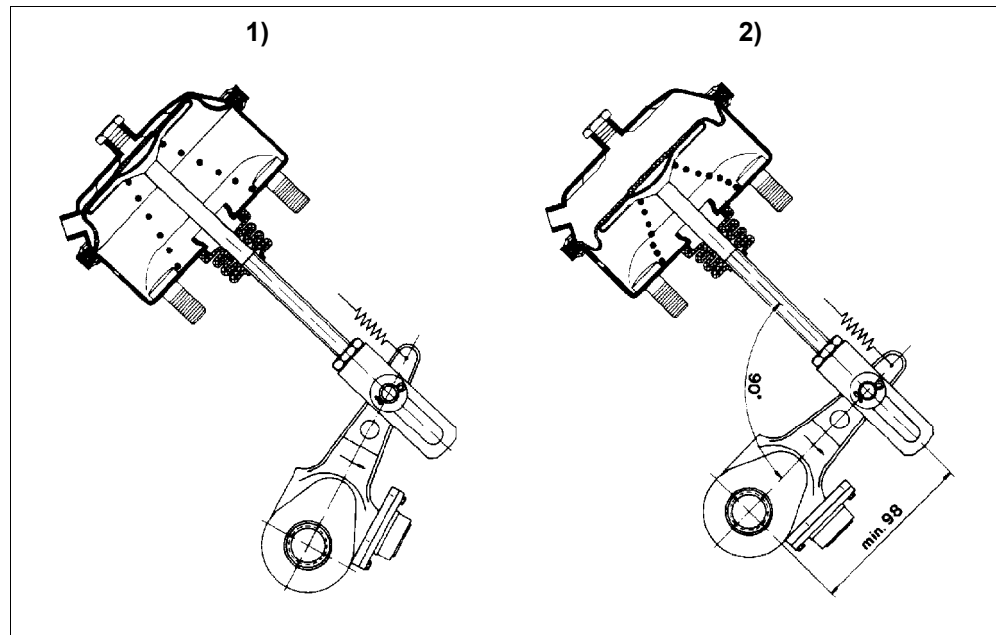
#### Maintenance

Special maintenance that extends beyond the legally specified inspections is not required.

#### Installation recommendation

- Install the diaphragm cylinder at an upward slant to the yoke joints so that any water that is let in can run out again.
- Make sure that the brake line is not lower than the cylinder heads when installing, so that the brake line and the connection points will not be damaged (by ground-contact).  
Two couplings on the diaphragm cylinder simplify the line route, which can be used optionally by implementing the screw-plug.  
When installing the brake chambers or when adjusting the brake, the push-rod cannot be pulled out.
- Make sure that the cylinder achieves its idle position when the brake is released (the piston does not hang on the brake lever but presses the diaphragm against the rear wall of the housing).
- If the rods of a mechanical park brake assembly also affect the brake lever, then the piston of the cylinder is not to be pulled out past a specified stroke when actuating this assembly. To prevent damages, use a yoke with an oblong slot.

## Schematic for installation



### Legend

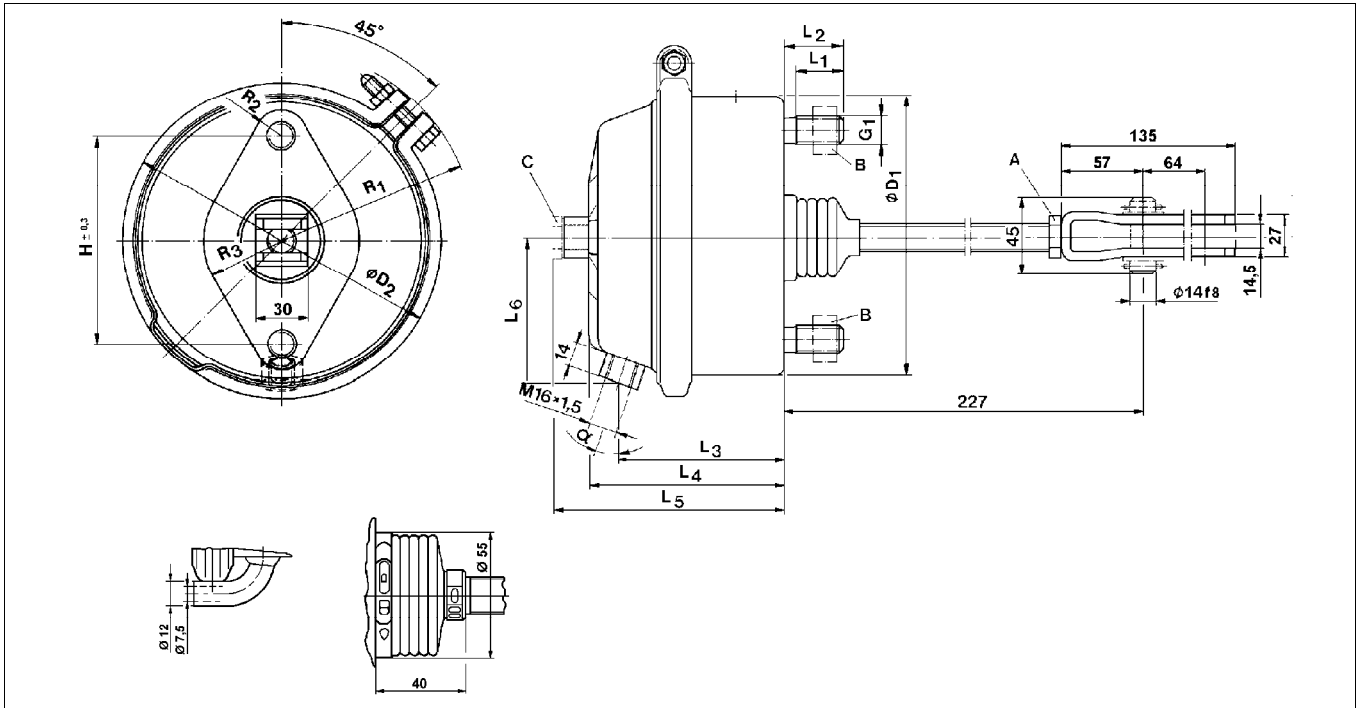
1) Idle position: No play between piston and diaphragm permitted

2) Operating position: at maximum stroke

**!** If the diaphragm cylinders have been installed standing up for trailing steering axles (piston rod pointing up), the sealed version is recommended by the axle manufacturers: Order number 24": 423 106 905 0 (with accessories pack)

# Brake chamber 423 ...

## Installation dimensions – Brake chamber for the cam brake (with bellows)



Type	Install dimensions [mm]														
	D <sub>1</sub>	D <sub>2</sub>	G <sub>1</sub>	H	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	X	$\alpha$
24	161	185	M 16x1.5	120.7	27	34	96	113	134	85	112	15	45	96	19.5°
36	–	230	M 16x1.5	120.7	27	33	136	152	176	112	133	21.5	55	134	15°

## Technical data – Brake chamber for the cam brake (with bellows)

Order number	423 106 905 0* – Type 24	423 008 919 0** – Type 36
Max. stroke	75 mm	76 mm
Volume-stroke at 2/3 stroke	0.93 litre	1.65 litre
Tightening torque A	80 ±10 Nm	
Tightening torque B	180 +30 Nm	
Tightening torque C	45 ±5 Nm	60 ±5 Nm
Accessories pack	423 000 533 2	–
Weight	3.0 kg	4.5 kg
Max. operating pressure	8.5 bar	
Permissible medium	Air	
Operating temperature range	-40 °C to +80 °C	

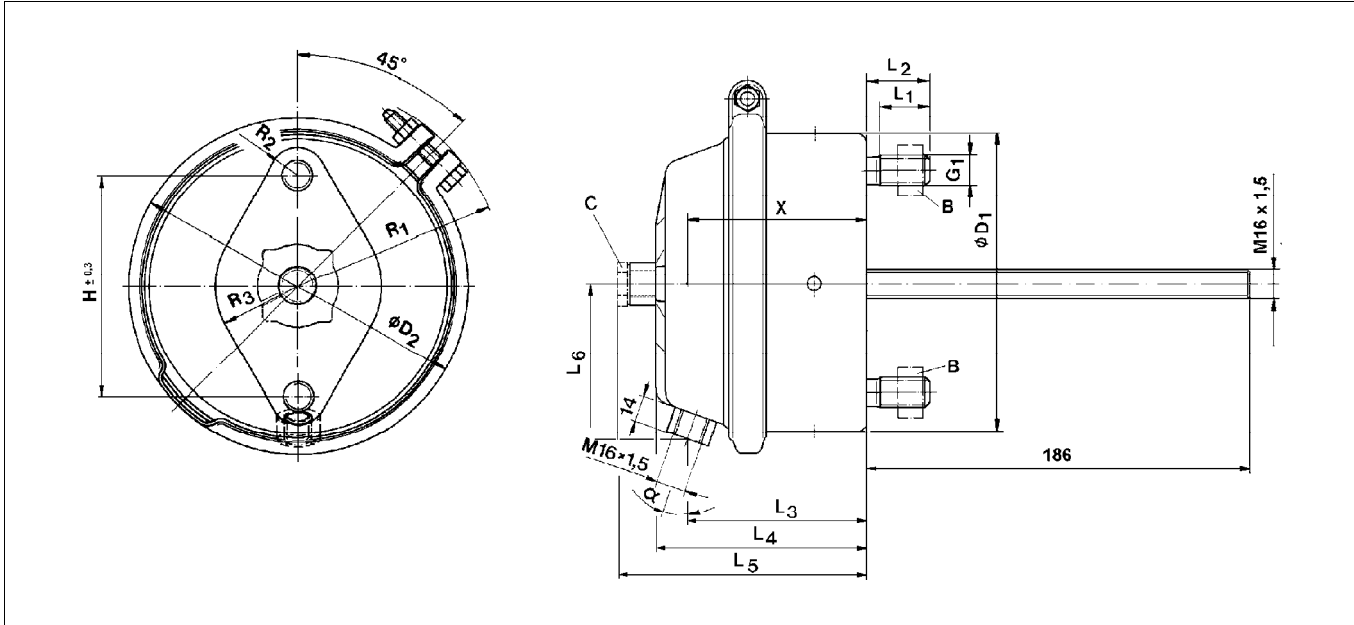
### Legend

\* with fording capability: Ventilation with pipe; supplied with accessories pack

\*\* The brake chamber type 36 (thread M 22x1.5) is delivered complete, with fastening nuts and screw plug, but with no yoke joint. The yoke joint can be ordered separately, see section "Brake chamber accessories".

# Brake chamber 423 ...

## Installation dimensions – Brake chamber for the cam brake (with disc seals)

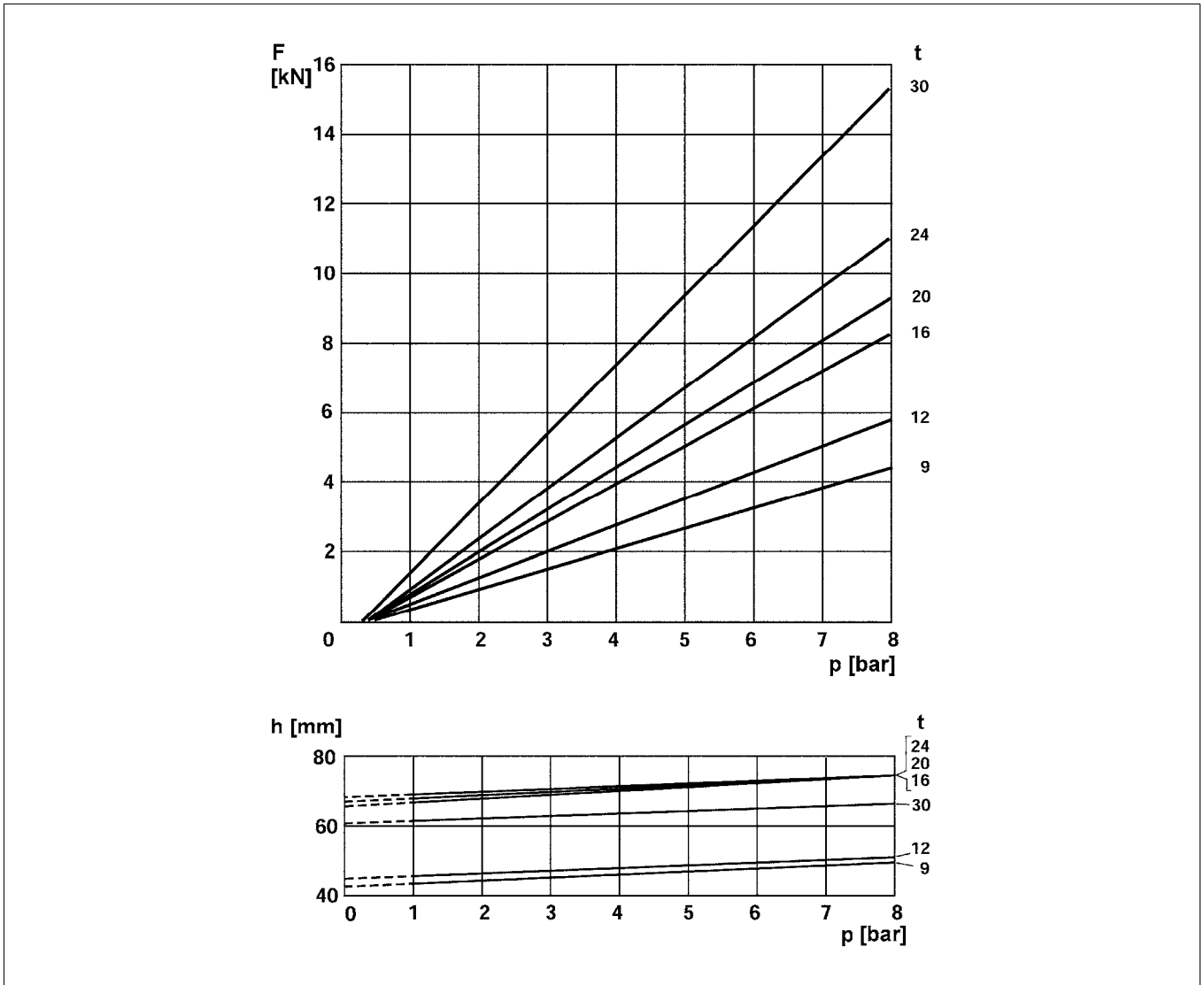


Type	Install dimensions [mm]														
	D <sub>1</sub>	D <sub>2</sub>	G <sub>1</sub>	H	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	R <sub>1</sub>	R <sub>2</sub>	R <sub>3</sub>	X	$\alpha$
9	112	135	M 12x1.5	76.2	20	25	97	108	–	63	86	23	32	91	22.5°
12	123	144	M 12x1.5	76.2	20	25.5	103	114	136	66	94	22	34	98	22.5°
16	141	166	M 12x1.5	76.2	20	25.5	96	112	133	75	101	17	35	96	20.5°
20	151	174	M 16x1.5	120.7	27	34	96	112	134	80	105	15	45	96	20.5°
24	161	185	M 16x1.5	120.7	30	34.5	96	113	134	85	111	15	45	103	19.5°
30	162	209	M 16x1.5	120.7	27	34.5	104	113	134	92	123	15	45	102	30°

## Technical data – Brake chamber for the cam brake (with disc seals)

Order number	423 102 900 0 Type 9	423 103 900 0 Type 12	423 104 900 0 Type 16	423 105 900 0 Type 20	423 106 900 0 Type 24	423 107 900 0 Type 30
Max. stroke	60 mm			75 mm		
Max. volume-stroke at 2/3 stroke [litres]	0.28	0.40	0.75	0.85	0.93	1.15
Tightening torque A	80 ±10 Nm					
Tightening torque B	70 +16 Nm			180 +30 Nm		
Tightening torque C	–	40 ±5 Nm				
Order number for "Round hole" accessories	423 902 537 2	423 902 533 2		423 000 534 2		
Order number for "Oblong hole" accessories	423 902 536 2	423 902 534 2		423 000 535 2		
Bellows	Yes			No		

## Pressure diagrams – Brake chamber for cam brake (with disc seals) Types 9 to 30



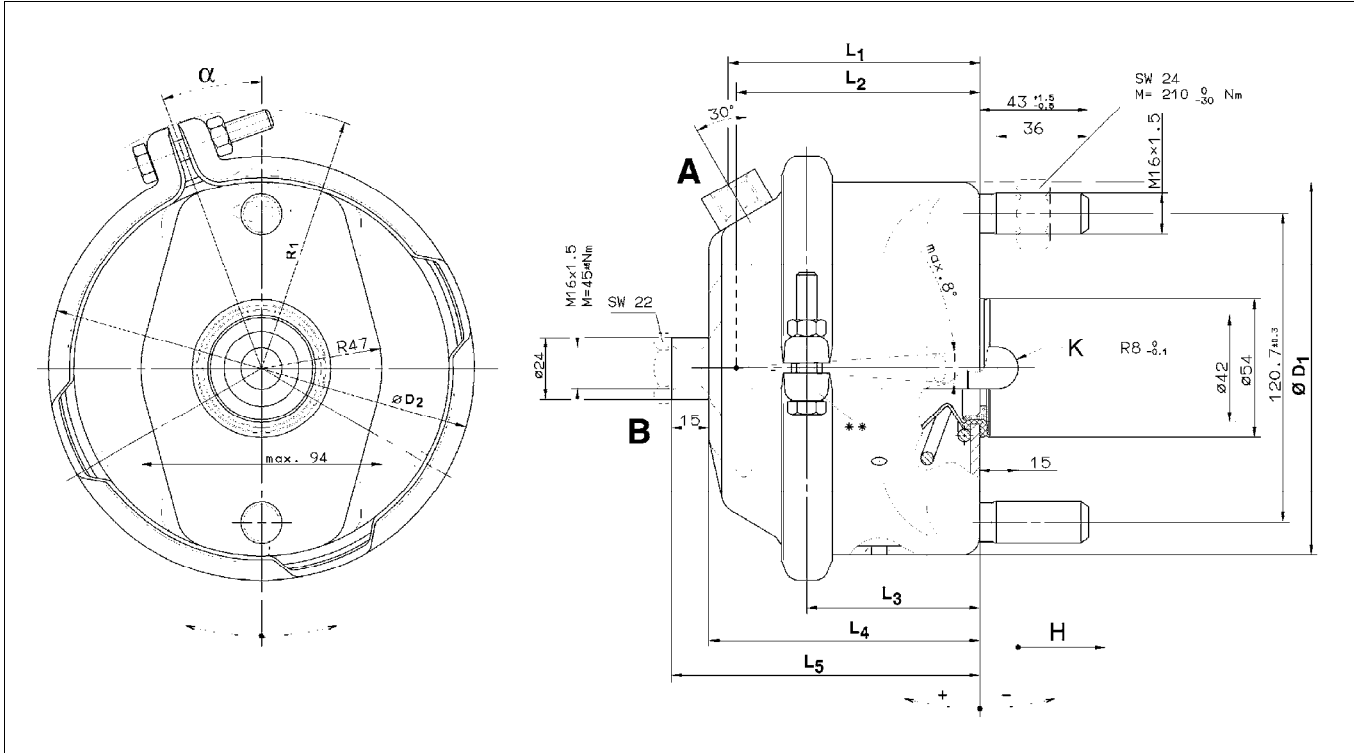
### Legend

- F** The average piston force is the force determined using an iteration of the values between 1/3 and 2/3 of the overall piston stroke ( $h_{max}$ ). **p** Pressure in brake cylinder
- h** The usable piston stroke is the stroke at which the piston force is 90% of the average piston force  $F$ . **t** Type

Type	F [N]	h [mm]	$h_{max}$ [mm]
9	$606 \times p - 242$	$0.64 \times p + 44$	60
12	$766 \times p - 230$	$0.57 \times p + 46$	60
16	$1056 \times p - 317$	$0.86 \times p + 68$	75
20	$1218 \times p - 244$	$0.74 \times p + 69$	75
24	$1426 \times p - 285$	$0.56 \times p + 70$	75
30	$1944 \times p - 389$	$0.67 \times p + 62$	75

# Brake chamber 423 ...

## Installation dimensions – Brake chamber for disc brake



### Legend

**K** Sphere **H** Stroke

Order number	Type	Install dimensions [mm]									Connection	
		D <sub>1</sub>	D <sub>2</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	R <sub>1</sub>	α	B	B
423 114 710 0	14	146	166	98	95	67	106	121	101	20°	x	1)
423 104 710 0	16	146	166	98	95	67	106	121	101	20°	x	x
423 104 715 0	16	146	166	100	94	66	104	119	103	0°	1)	x
423 104 716 0	16	146	166	100	94	66	104	119	103	90°	1)	x
423 504 003 0	16	146	166	98	92	64	102	117	101	0°	1)	x
423 112 710 0	18	175	175	94	92	65	103	117	106	20°	x	x
423 505 000 0	20	153	175	94	92	65	102	117	106	20°	x	x
423 110 710 0	22	163	185	94	92	65	102	117	111	20°	x	x
423 506 001 0	24	163	185	99	94	65	106	120	112.5	20°	x	x

### Legend

1) with screw plug M 16x1.5

## Technical data – Brake chamber for disc brake

Type	14	16	18	20	22	24
Max. deflection of the push rod	8° (with 0 mm stroke)					
Max. stroke	57 mm	62 mm		64 mm		
Volume-stroke at 2/3 stroke [litres]	0.60	0.68	0.71	0.81		
Max. operating pressure	10 bar			10.2 bar		
Operating temperature range	-40 °C to +80 °C					
Weight	3.2 kg	2.8 kg		3.0 kg		

## Test results – Brake chamber for disk brakes (types 14 to 24)

**F** The average piston force is the force determined using an iteration of the values between 1/3 and 2/3 of the overall piston stroke ( $h_{max}$ ).

**h** The usable piston stroke is the stroke at which the piston force is 90% of the average piston force **F**.

Type	F [N]	h [mm]	$h_{max}$ [mm]
14	861 x p - 255	1.40 x p + 40	57
16	1062 x p - 308	0.54 x p + 46	57
18	1138 x p - 330	1.19 x p + 47	64
20	1210 x p - 351	1.00 x p + 55	64
22	1332 x p - 373	0.79 x p + 50	64
24	1453 x p - 407	0.57 x p + 48	64

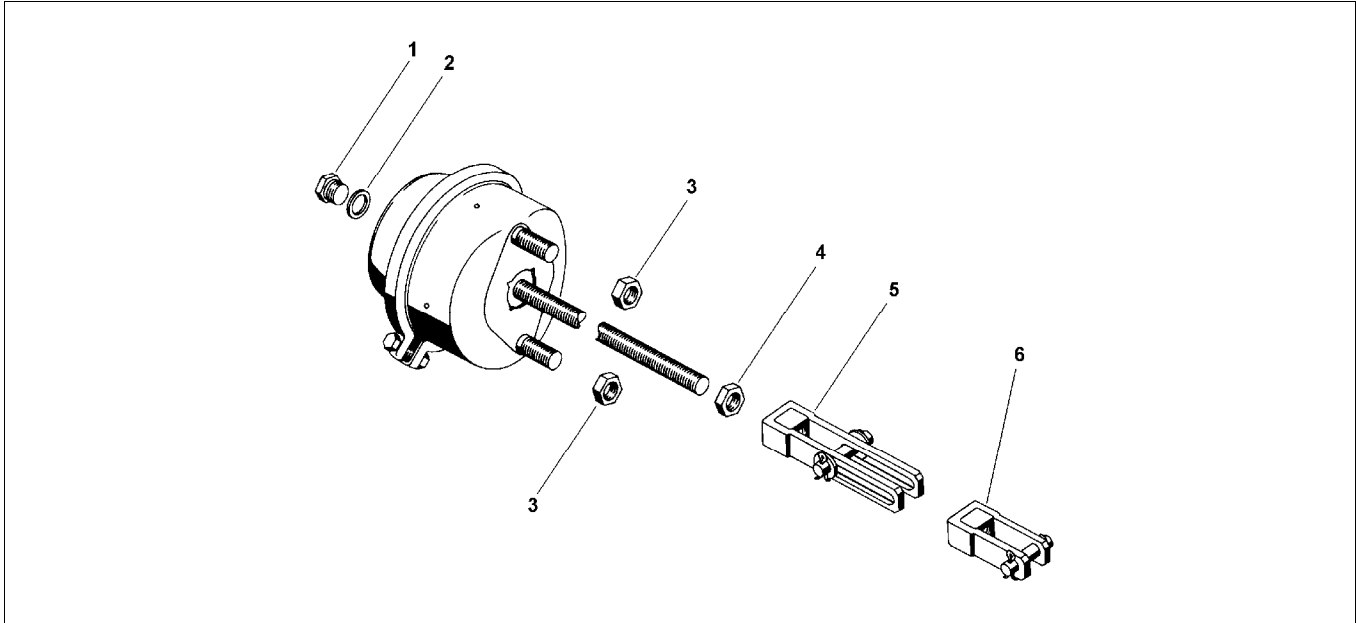
## Installation instructions – Brake chamber for disc brake

- Install the brake chamber horizontally so that the opened ventilation hole/drain hole faces downward. Maximum deviation  $\pm 30^\circ$   
Permissible deviation: 10° with push rod showing upward; 30° showing downwards.
- Be sure to remove the plastic plugs of the lower drain hole.
- Fasten the brake chamber with nuts M 16x1.5 property class 8 (WABCO No. 810 304 031 4)
- Thread on both nuts by hand until the brake chamber makes full contact.
- Then tighten both nuts to approximately 120 Nm and tighten to 210 Nm (Tolerance -30 Nm) with a torque wrench.  
If you are using self-locking nuts, the torque must be increased accordingly.

**!** The piston rod must seat in the slot of the brake lever at / with maximum 10° deflection of the piston rod.  
Flange area and sealing surface of brake chamber and disk brake must be clean and undamaged.  
The gaiter must have no damages and together with the back-up ring, being properly seated.

# Brake chamber 423 ...

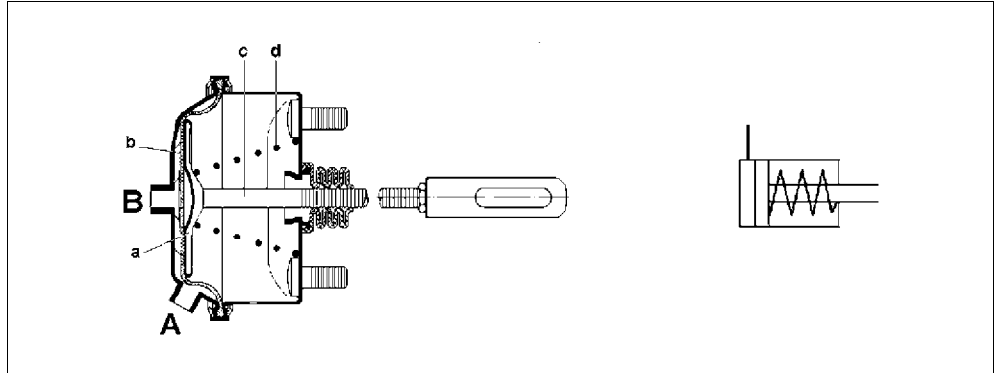
## Brake chamber accessories



Pos.	Description	Order number	423 000 531 2	423 000 532 2	423 000 533 2	423 000 534 2	423 000 535 2	423 002 530 2	423 103 532 2	423 901 533 2	423 901 538 2	423 902 532 2	423 902 533 2	423 902 534 2	423 902 535 2	423 902 536 2	423 902 537 2	423 903 530 2
1	Screw plug	M 16x1.5	893 011 710 4	1	1	1	1	1	1			1	1	1				
2	Sealing washer	A 16x20	811 401 057 4	1	1	1	1	1	1			1	1	1				
3	Hexagon nut	M 12	810 304 026 4	2	2			2	2									
		M 12x1.5	810 304 027 4									2	2	2	2	2	2	
		M 16x1.5	810 304 031 4			2	2	2			2							2
4	Hexagon nut	M 14x1.5	810 306 013 4					1	1									1
		M 16x1.5	810 319 029 4	1	1		1	1					1	1		1	1	
5	Yoke joint with bolts Ø 14	M 16x1.5	895 801 310 2		1			1						1		1		
		M 14x1.5	895 801 312 2						1	1								
6	Yoke joint with bolts Ø 14	M 16x1.5	895 801 513 2	1			1						1				1	
		M 14x1.5	895 801 511 2															1
		M 14x1.5	810 612 020 2															
-	Pins	14x45x35.6	810 601 100 4			1					1	1						
		14x45x31.2	810 601 097 4							1								
		12x45x34	810 601 084 4												1			
-	Washer	15	810 403 011 4			2					2	2						
-	Split pin	4x22	810 511 034 4			2				2	2	2			2			



### Functionality of the brake chamber



If the diaphragm (b) is applied with compressed air via connection A or B, it moves to the right together with the piston (a). The generated piston force is applied via the push-rod (c) to the hinged brake lever (slack adjuster) and therefore onto the wheel brake.

When draining the brake cylinder, the spring (d) presses the piston (a) and the diaphragm (b) back into slack position. The force output of the brake chamber depends on the effective diaphragm surface and the pressure put on the diaphragm (b). The diaphragm surface is a different size depending on the camber.