ATEK
DRIVE SOLUTIONS
BRAKES·GEARS·MOTORS

PRODUCT CATALOGUE
2026

ELEPHANT BRAKES

BRAKE TECHNOLOGY

as from 05/2026

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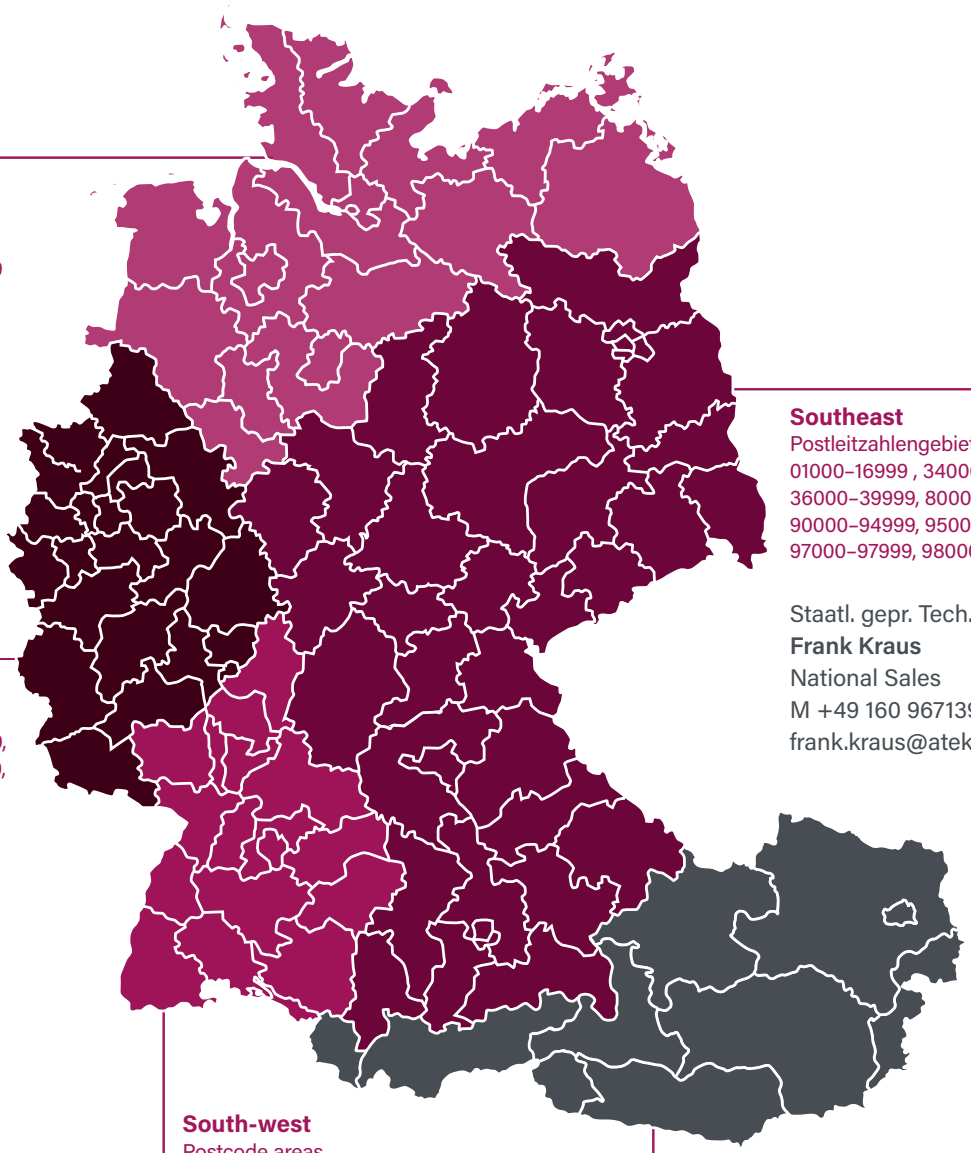

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ATEK
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DOKUMENTATION

ATEX – explosive atmospheres

Calculations for the design of Industrial disc brakes

TEX, potentially explosive atmospheres, explosion protection in accordance with EU Directive 2014/34/EU
The term 'ATEX' refers to a legal basis for the regulation of explosion protection in Europe, which has also been binding for non-electrical products since 1 July 2003. This directive thus also defines basic safety requirements for non-electrical products such as mechanical friction brakes. All ignition sources must be taken into account when placing products on the market, e.g. the risk of mechanically generated sparks.

An appliance is subject to the ATEX Directive if it has its own effective ignition source.

The operator of a system is responsible for the respective hazardous areas and divides them into zones according to the risk potential for the formation of a hazardous, explosive atmosphere. Typeical hazardous areas can be found wherever flammable gases, liquids, vapours or dusts are produced, processed, stored or transported and can form an explosive mixture in combination with oxygen.

Use in parking, safety/emergency and service brakes
Our brake callipers are available in this explosion-proof version:

II 2G Ex h IIC T4...T2 Gb U
II 2D Ex h IIIC T90°C...T266°C Db U

In contrast to products that develop a certain operating temperature due to their design, the temperature classes and the maximum surface temperature of a mechanical friction brake depend on the application parameters (T4...T3). ATEX conformity is only confirmed when our friction lining quality T544 is used in conjunction with the mating material EN-GJS-400-15.

The brake calipers are designed for installation in explosion-protected devices. In accordance with the ATEX directive, our brake calipers and brakes are components with EU conformity certification.

Depending on the application, our brake calipers must be equipped with a special monitoring unit and, if necessary, isolating switching amplifiers that allow the brake lever position to be monitored. In addition, a wear signalling wire in loop design is inserted into the brake pads on each brake lever side. This signal also requires an isolating switching amplifier. The brake callipers are equipped with an installation kit for the defined alignment of the brake levers.

Zoning / devices, protection systems			
	Constantly, over long periods of time, frequently	Occasionally in normal operation	Rarely or briefly Normal operation
Gases, vapours, mist	**Zone 0 ▪ Kat. 1 G**	**Zone 1 ▪ Kat. 1 or 2 G**	**Zone 2 ▪ Kat. 1, 2 or 3 G**
Dusts	**Zone 20 ▪ Kat. 1 D**	**Zone 21 ▪ Kat. 1 or 2 D**	**Zone 22 ▪ Kat. 1, 2 or 3 D**

If you have any questions, please let us know your exact application parameters so that we can design the optimum braking system for you.

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1. Selection procedures for industrial disc brakes

The Elephant Brakes modular system with its finely graduated brake disc diameters and brake caliper sizes makes it possible to optimally match the individual elements and adapt them to the required operating conditions such as power and braking torque.

Please note that the following calculation bases serve the roughly design of a brake system and can not take into account all the factors required for the design.

Please let us know the technical data relevant to your application using the „Data sheet for disc brake design“. On the basis of this application-specific data, we will make an optimal design of the brake system for you and make you a non-binding offer.

1.1 Used formula symbols

M_{Br}	braking torque [Nm]	r_1	inner radius [m]
$M_{Br,erf}$	required braking torque [Nm]	r_1	outer radius [m]
M_{Mot}	motor torque [Nm]	h	height [m]
W_{Br}	friction work of the brake [kJ]	d_2	diameter big [m]
P_{Mot}	motor power [kW]	d_1	diameter small [m]
P_{Br}	braking power [kW]	D_s	outer diameter of brake disc [m]
$P_{Br,d}$	recommended max. braking power acc. to diagram [kW]	J	mass moment of inertia [kgm²]
P_D	continuous slip braking power [kW]	J_R	reduced mass moment of inertia [kgm²]
P_{Dd}	recommended max. braking power per brake caliper with continuous slip acc. to diagram [kW]	v	haul-off speed, circumferential speed [m/s]
P_{DZ}	recommended max. braking power per brake caliper, continuous slip brake [kW]	d_v	acceleration (decelerated) [m/s²]
N	trailing [rotation]	Z	tension at unwinder [N]
n	rotational speed [min-1]	$F_{Br,erf}$	required braking force at rail [N]
ω	angular frequency [sec-1]	F_{Br}	braking force [N]
t_{Br}	braking time [s]	s	stopping distance [m]
m	mass [kg]	ρ	density [kg/m³]

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2. Motor Brake

If it does not depend on an exact braking time and if large switching frequencies are not to be expected (switching frequency <10 stops/h), then the braking torque can be simplified with 1,5 to 2,5 times of the rated motor torque.

2.1.

$$M_{mot.} = \frac{P_{mot.} \cdot 9550}{n}$$

$$\| M_{Br\ erf.} = (1{,}5 \ldots 2{,}5)\ M_{mot.} \|$$

2.2 Rough calculation

$$\left\| M_{Br\ erf.} = \frac{P_{mot.}}{n} \cdot 20.000 \right\|$$

3.0 Stop brake for rotating Masss

3.1 Rotating Masss

3.1.1

$$\left\| M_{Br\ erf.} = \frac{\sum J \cdot \Delta\omega}{t_{Br}} = \frac{\sum J \cdot \Delta n}{9{,}55 \cdot t_{Br}} \right\|$$

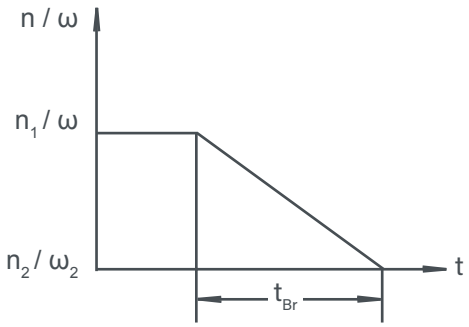
for stopping brakes

$\Delta\omega = \omega_1 - \omega_2$ $\quad \omega_2 = 0$

$\Delta n = n_1 - n_2$ $\quad n_2 = 0$

3.1.2

$$t_{Br} = \frac{\sum J \cdot \Delta\omega}{M_{Br}} = \frac{\sum J \cdot \Delta n}{9{,}55 \cdot M_{Br}}$$



3.1.3 Trailing N

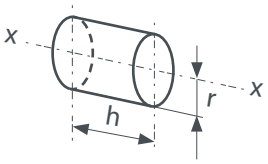
$$N = \frac{\Delta n}{2} \cdot \frac{t_{Br}}{60}$$

3.2 3.2 Calculation of the mass moment of inertia

$$J = \frac{GD^2}{4}$$ $\quad GD^2$ = centrifugal moment [kp m²]

3.2.1 Plain cylinder

$$J_x = \frac{1}{2} mr^2 = \frac{1}{2} \rho\pi\, r^4 \cdot h$$



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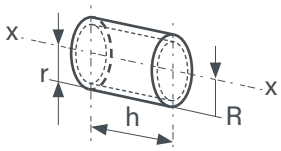
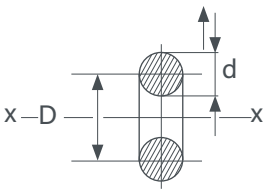
3.2.2 Hollow cylinder

$$J_x = \frac{1}{2} m \left(R^2 + r^2\right) = \frac{1}{2} \rho \cdot \pi h \left(R^4 - r^4\right)$$



3.2.3 Ring

$$J_x = 0{,}25m \left(D^2 + 0{,}75d^2\right) = 0{,}0625\, \rho\pi^2 D d^2 \left(D^2 + 0{,}75d^2\right)$$



3.2.4 Mass reduction (gear)

$$J_R = \left[J_1 + J_2 \left(\frac{\omega_2}{\omega_1}\right)^2 + J_3 \left(\frac{\omega_3}{\omega_1}\right)^2 \cdots J_n \left(\frac{\omega_n}{\omega_1}\right)^2\right]$$

4.0 Translationally moving Masss

4.1 Vehicles (braking at the wheel shaft)
Calculation of the mass moment of inertia J generated by the linearly moved mass.

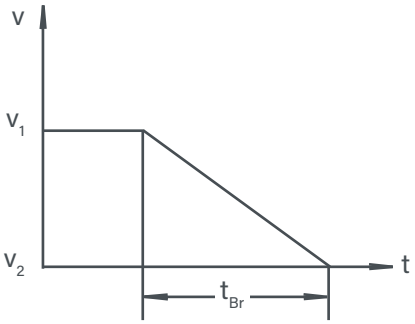
$$J = m \cdot \frac{v^2}{\omega^2} = m \cdot \frac{v^2}{n^2} \cdot 91{,}19$$

$M_{Br\ erf.}$ transferable moment between wheel and ground or between wheel and rail

4.2 Braking of linearly moving Masss
Brake on the rail instead of the brake disc

4.2.1

$$\|F_{Br\ erf.} = m \cdot a_v\|$$



$v_2 = 0$

4.2.2

$$a_v = \frac{v}{t_{Br}} = \frac{2s}{t_{Br}^2} = \frac{v^2}{2s}$$

4.2.3

$$S = \frac{v \cdot t_{Br}}{2} = \frac{a_v \cdot t_{Br}^2}{2} = \frac{v^2}{2a_v}$$

4.2.4

$$t_{Br} = \sqrt{\frac{2s}{a_v}} = \frac{v}{a_v} = \frac{2s}{v}$$

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4.2.5

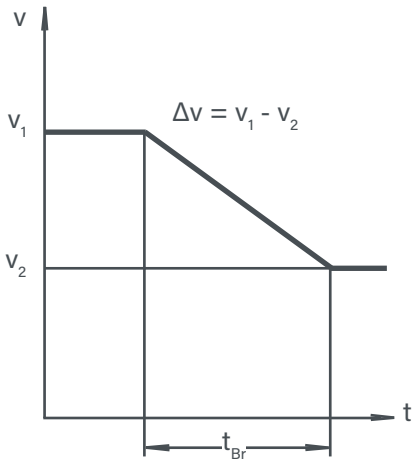
$$a_v = \frac{v_1 - v_2}{t_{Br}} = \frac{\Delta v}{t_{Br}} = \frac{v_1^2 - v_2^2}{2s}$$

4.2.6

$$s = \frac{t_{Br}}{2} (v_1 + v_2) = v_1 t_{Br} + \frac{1}{2} av t_{Br}^2$$

4.2.7

$$t_{Br} = \frac{v_1 - v_2}{a_v} = \frac{\Delta v}{a_v} = \frac{2s}{v_1 + v_2}$$



5.0 Braking Force of a brake caliper

The braking force of a brake caliper – determined from the caliper-specific torque diagrams - results with sufficient accuracy: T_{Br} in the selected pressure range of the caliper divided by 1/2 diameter of the largest brake disc specified in the diagram.

5.1

$$\left\| F_{Br} = \frac{M_{Br}}{0{,}5\ D_{s\ max.}} \right\|$$

6.0 Energy and power of the brake

6.1 Friction energy per braking

$$W_{Br} = \frac{\Delta n}{1{,}91 \cdot 10^4} M_{Br} \cdot t_{Br} = \frac{\Delta n^2 \cdot J}{0{,}18 \cdot 10^6}$$

6.2 Average braking power

$$\left\| P_{Br} = \frac{W_{Br}}{t_{Br}} = \frac{\Delta n^2 \cdot J}{0{,}18 \cdot 10^6 \cdot t_{Br}} \right\|$$

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6.3 Permissible power absorbtion of the brake caliper and disc

The frictional heat occurring during braking naturally heats the brake discs and brake calipers. For safety and wear reasons, each brake caliper or disc may only be heated up to a certain temperature, which depends on the indicated braking power. Diagrams 1 and 2 show the maximum recommended braking performance of 12,7 mm and 25 mm discs as a function of braking time as well as the recommended maximum braking performance of a Typee RH 250.000.01 brake caliper for braking.

Under special conditions, these values are quite surpassable. We would like to ask you to contact us in these special cases.

$$P_{Br} < P_{Br\ d}$$

Diagram 1 (brake disc thickness = 12,7 mm)

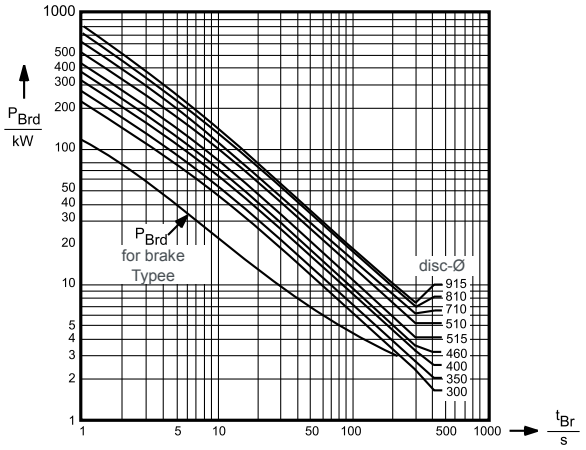
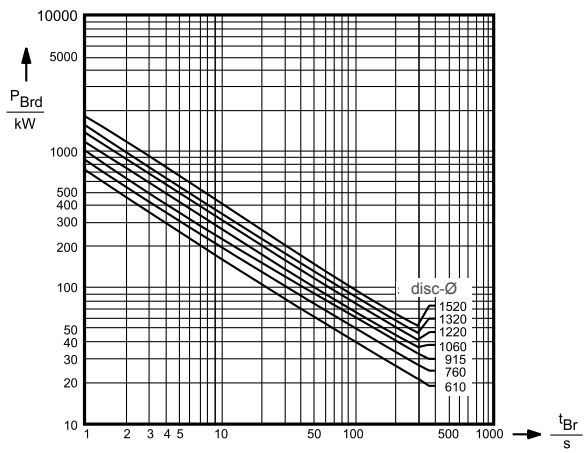


Diagram 2 (brake disc thickness = 25 mm)



7.0 Continuous slip brake

7.1 Calculation of braking torques

7.1.1

$$\left\| M_{Br,erf.max.} = \frac{D}{2} \cdot Z \right\|$$

7.1.2

$$\left\| M_{Br,erf.min.} = \frac{d}{2} \cdot Z \right\|$$

7.2 Calculation of the braking power of continuous slip brakes

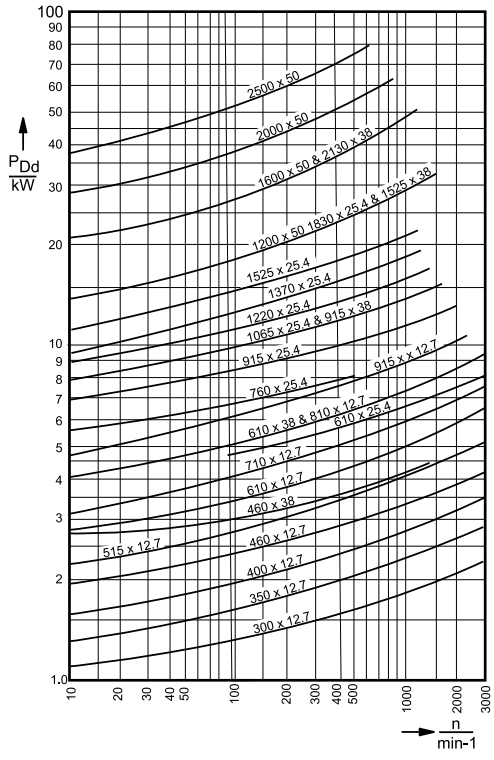
7.2.1

$$\left\| P_D = \frac{Z \cdot v}{1000} \right\|$$

7.2.2

$$\| P_D \leq P_{Dd} \|$$

Diagram 3



P_{Cd} = max. Recommended continuous braking power depending on the speed of the brake disc (see diagram 3).

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7.3 Permissible continuous power P_{DZ} of the brake caliper

The maximum continuous power recommended for a brake caliper is:

Typee	P_{DZ}
RH 100.000.01	2,5 – 3 kW
RH 200.000.01	2,5 – 3 kW graphited
RH 250.000.01	2,5 – 3 kW
RH 215.000.01	4 kW
RH 225.000.01	4 kW
RH 230.000.01	4 kW
RH 245.000.01	4 kW
RH 250.000.02	5 – 6 kW
RH 300.000.04	10 – 12 kW
RH 350.000.01	14 kW
RH 360.000.01	14 kW

8.0 Brake pads

Quality	Mixture	Coefficient of friction	max. temp. [°C]
J 755	sintered metal	0.4	850
C 1203	high rubber content	0.34	250
544	standard	0.3	350
570	graphited	0.2	200
C 3002	highly graphited	0.15	200

In order to minimize the wear of the brake pads and the environmental impact, the peripheral speeds of the brake disc should not exceed the following values.

8.1

For standard pad:
$V_{u\ max.}$ = 3000 m/min. = 50 m/sec.

8.2

For standard pad:
$V_{u\ min.}$ = 1,5 m/min. = 0,025 m/sec.
(to avoid the slip-stitch effect, this value must not be undercut)

In exceptional cases where these recommended guide values are exceeded or undercut, we ask you to contact us, specifying the application-specific technical data.

**The data sheet for the design of Industrie-Scheibenbremsen can be downloaded here:
https://www.atek.de/download/formular-bremsenauslegung/**

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ATEK
DRIVE SOLUTIONS
BRAKES·GEARS·MOTORS

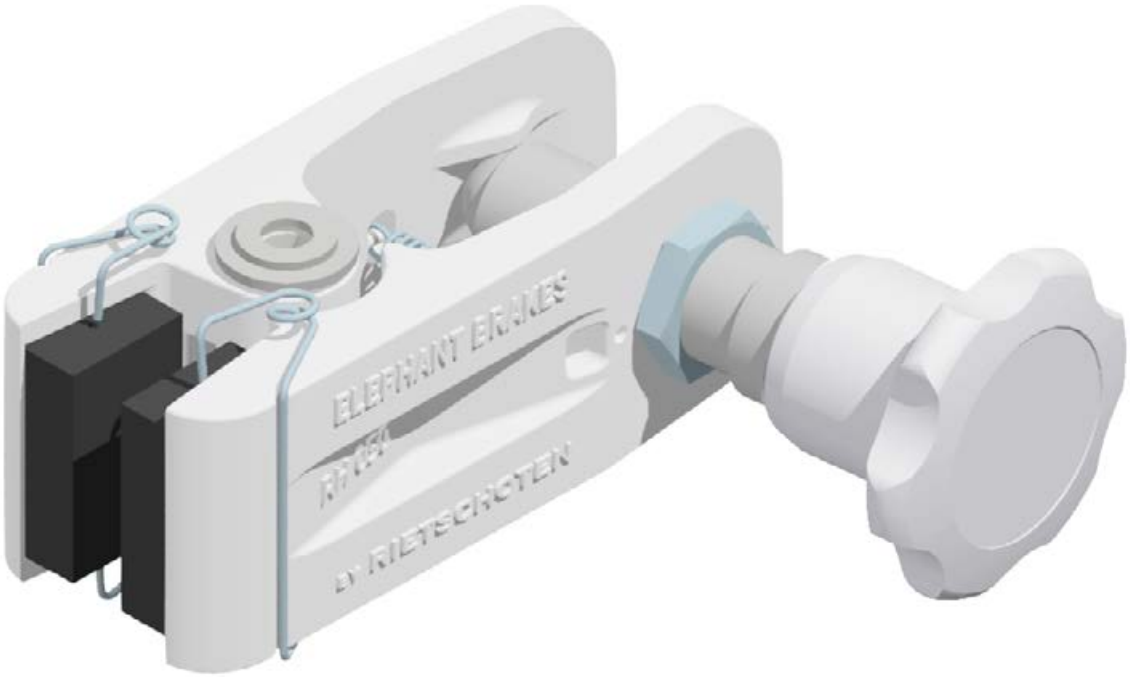
LEVER BRAKES

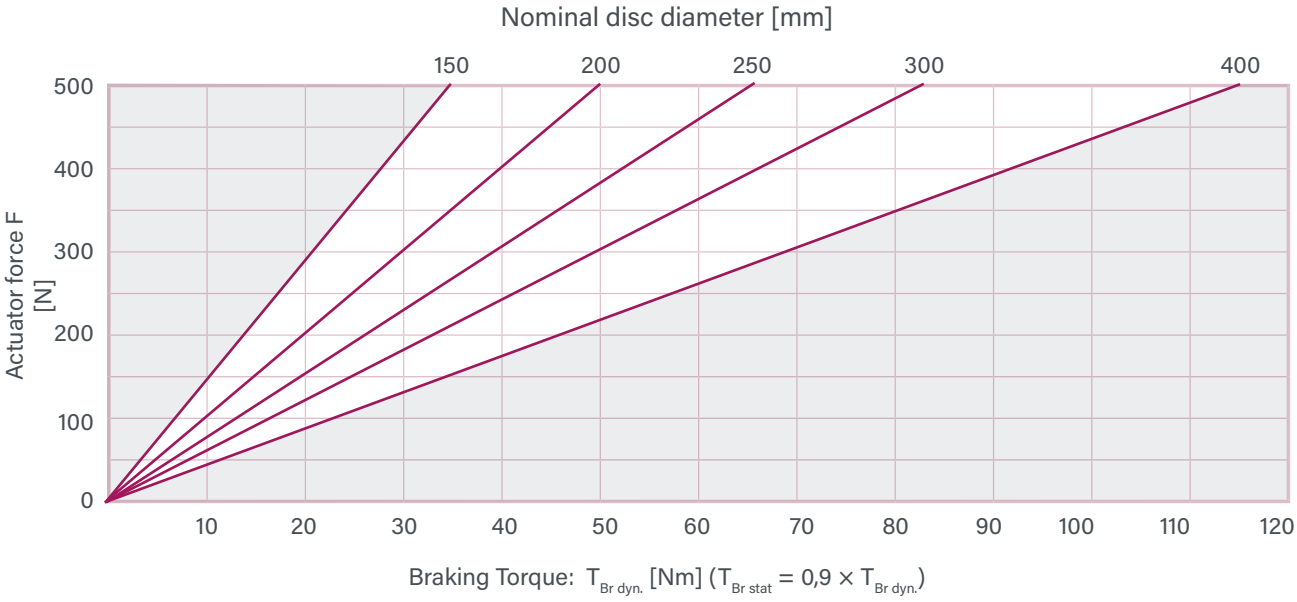
Active lever brakes (service brakes)

- **manually operated closing, spring-operated opening**
- pneumatically actuated closing, spring-operated opening
- hydraulically operated closing, spring-operated opening

Passive lever brakes (safety brakes)

- spring-operated closing, pneumatically operated opening
- spring-operated closing, hydraulically operated opening
- spring-operated closing, electrically operated opening





Mass: 1,5 kg
1 turn ≈ 160 N

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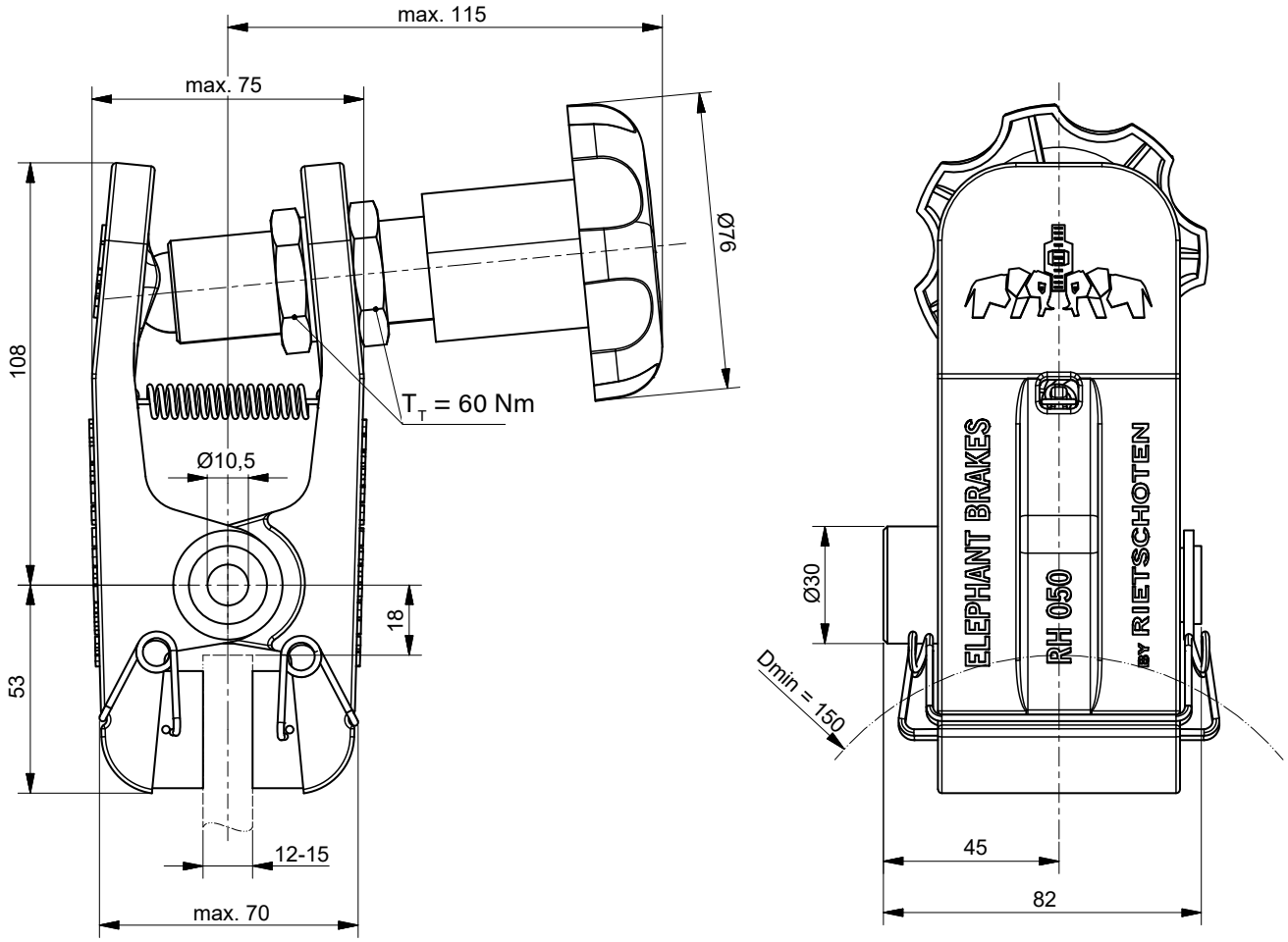

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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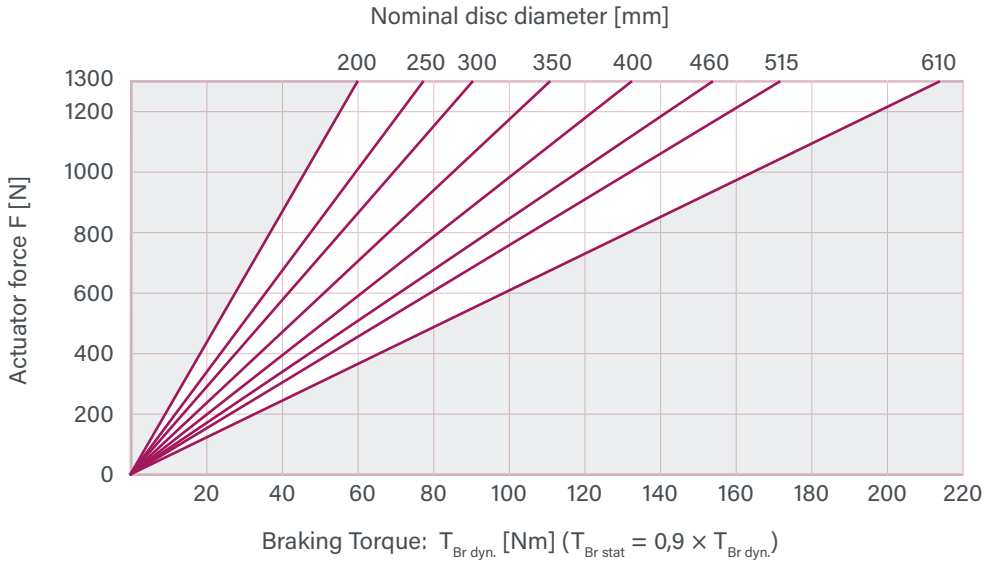

Mass: 1,5 kg
1 turn ≈ 160 N

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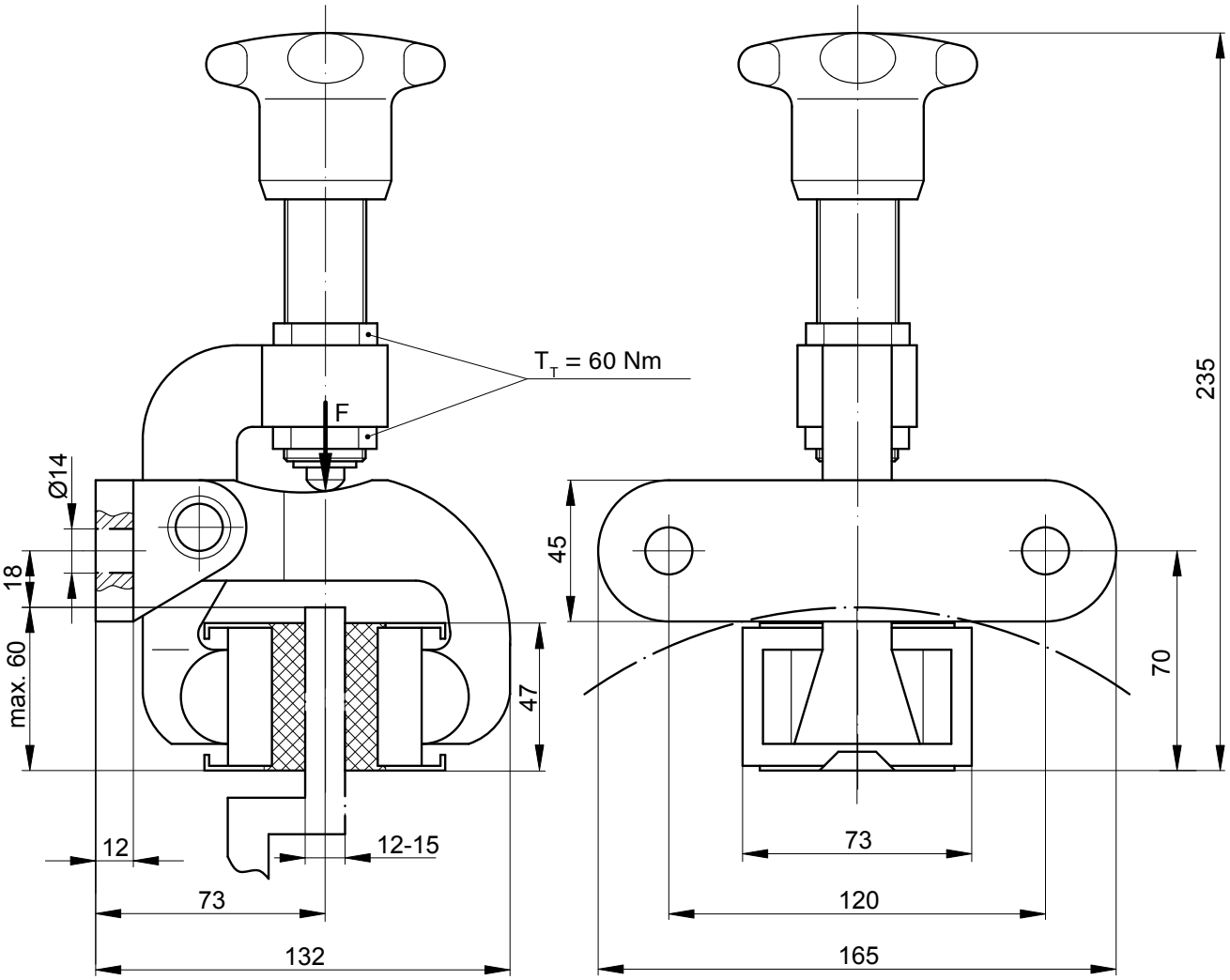

Mounting position is horizontal. Please get in touch if different.

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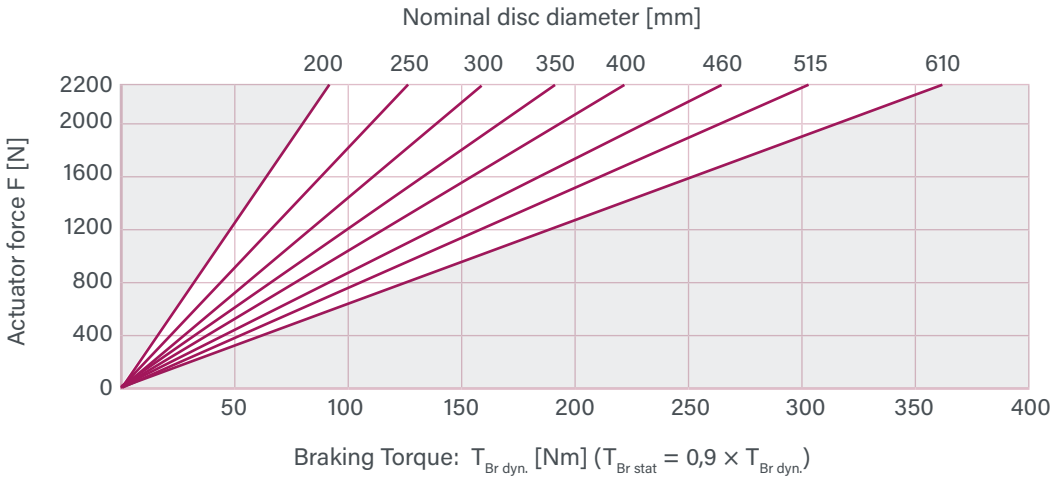

Mass: 4,3 kg
1 Turn ≈ 260 N

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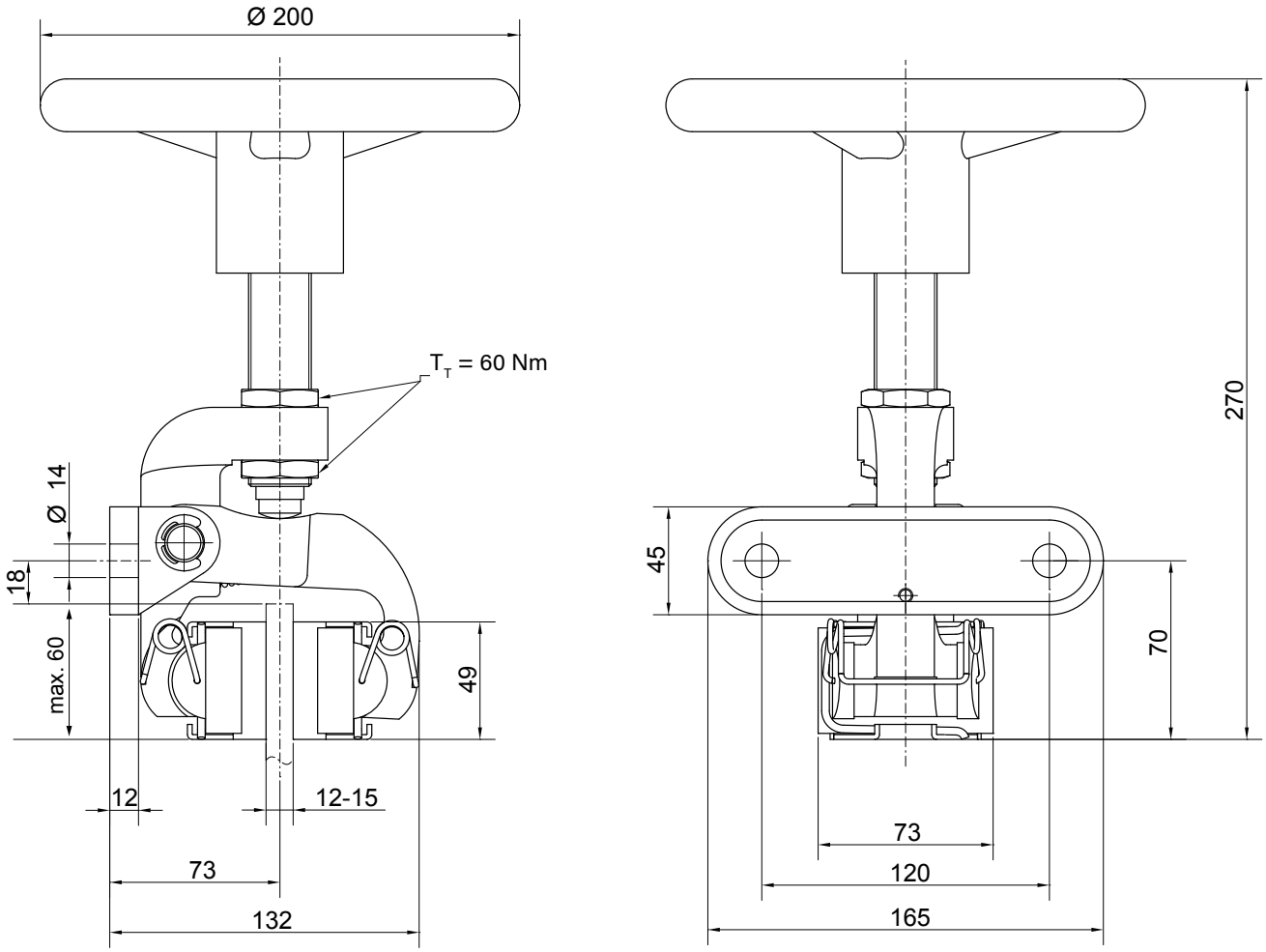

Mounting position is horizontal. Please get in touch if different.

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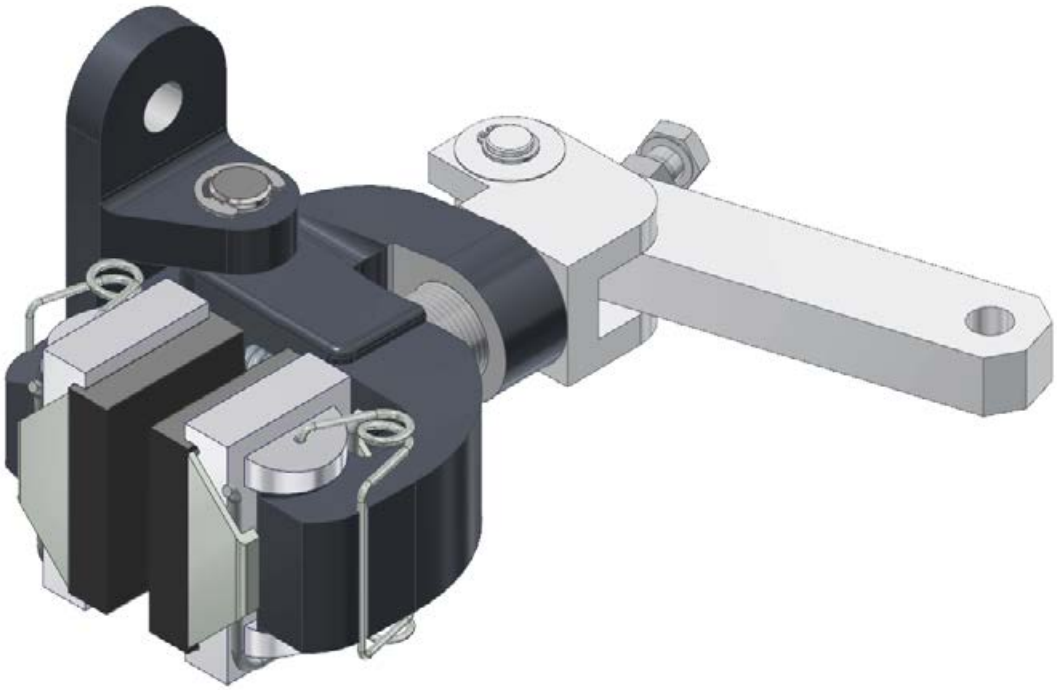

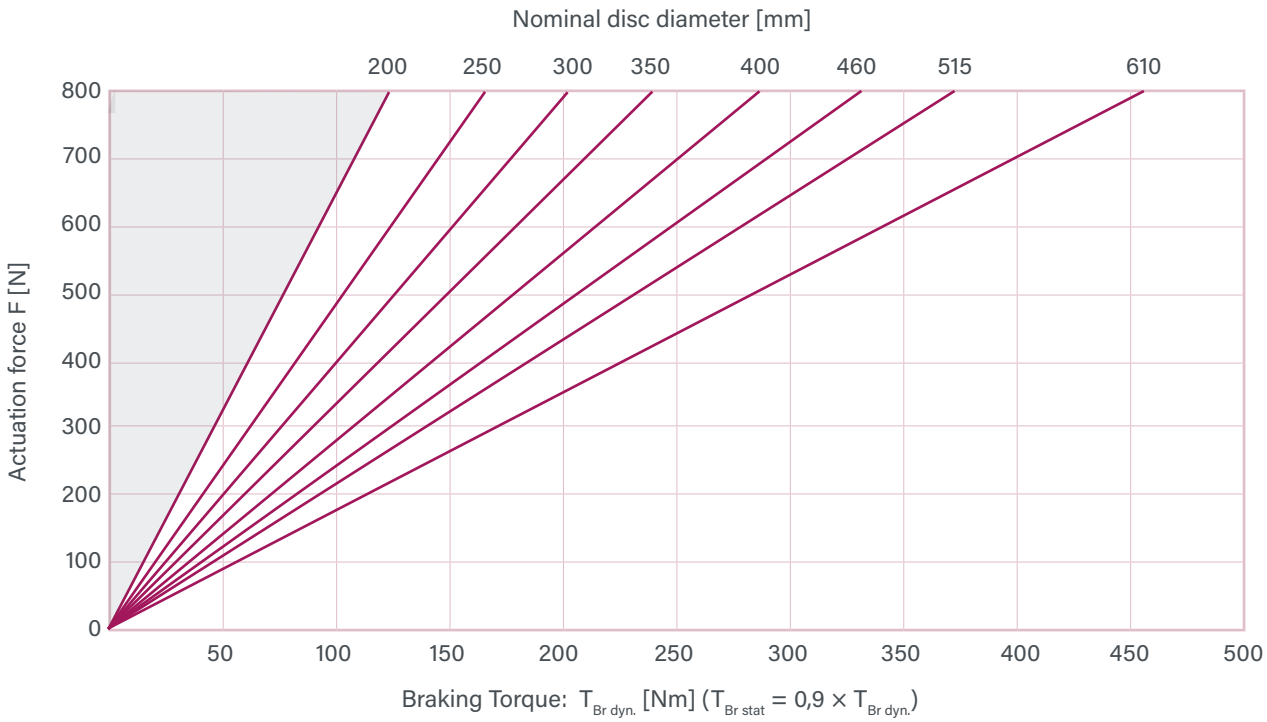

Mass: 3,7 kg

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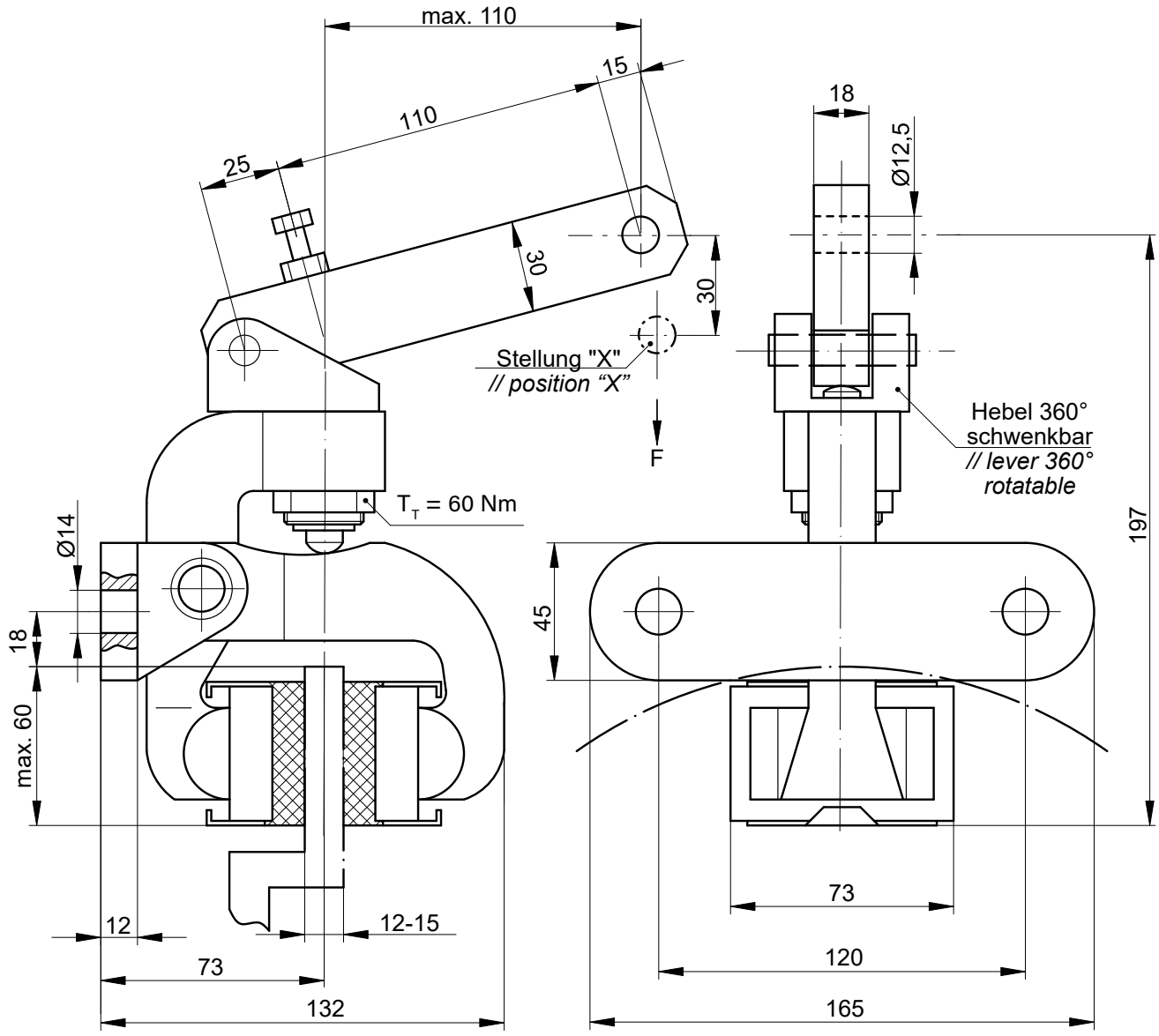

Mounting position is horizontal. Please get in touch if different.
A readjustment will be necessary if position „X“ is reached.

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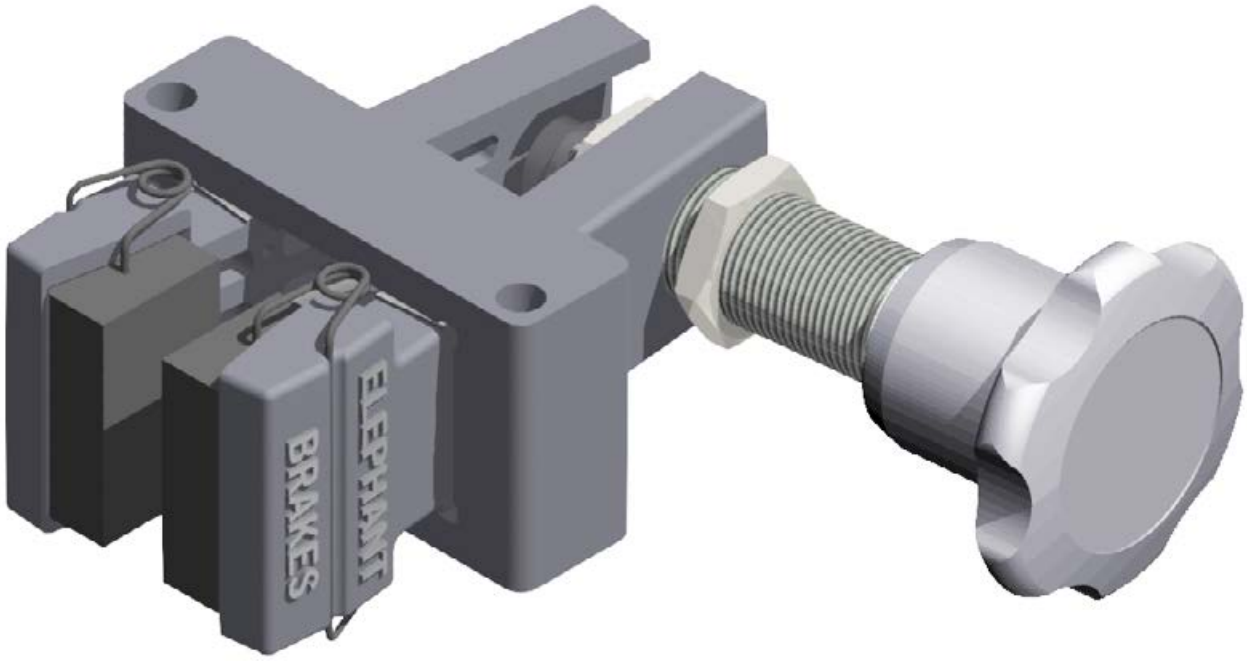

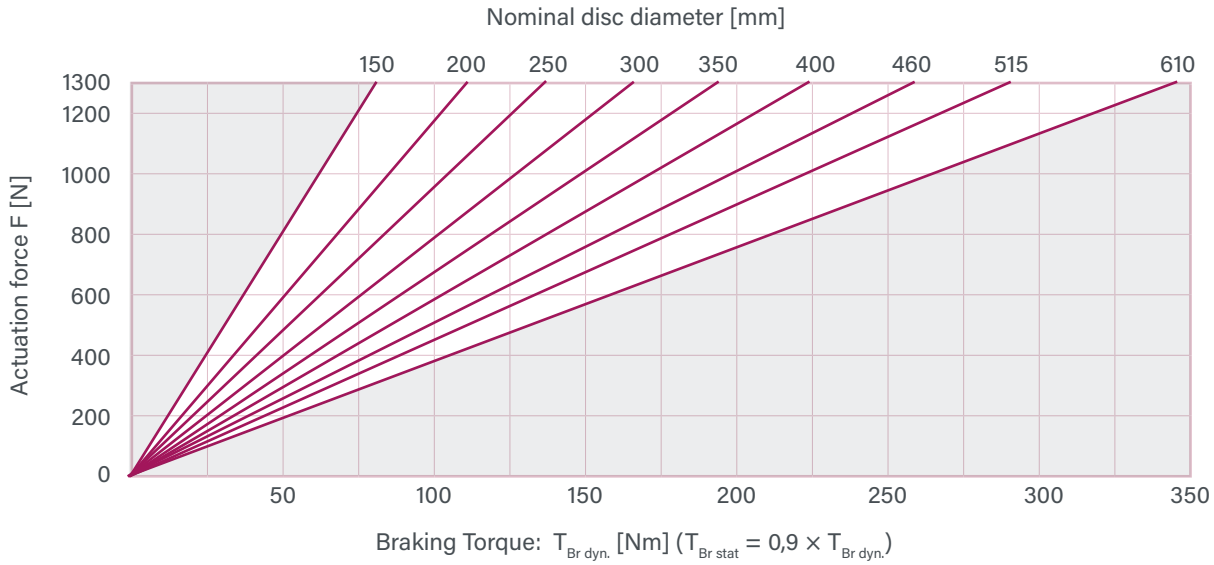

Mass: 1,2 kg
1 Turn ≈ 160 N

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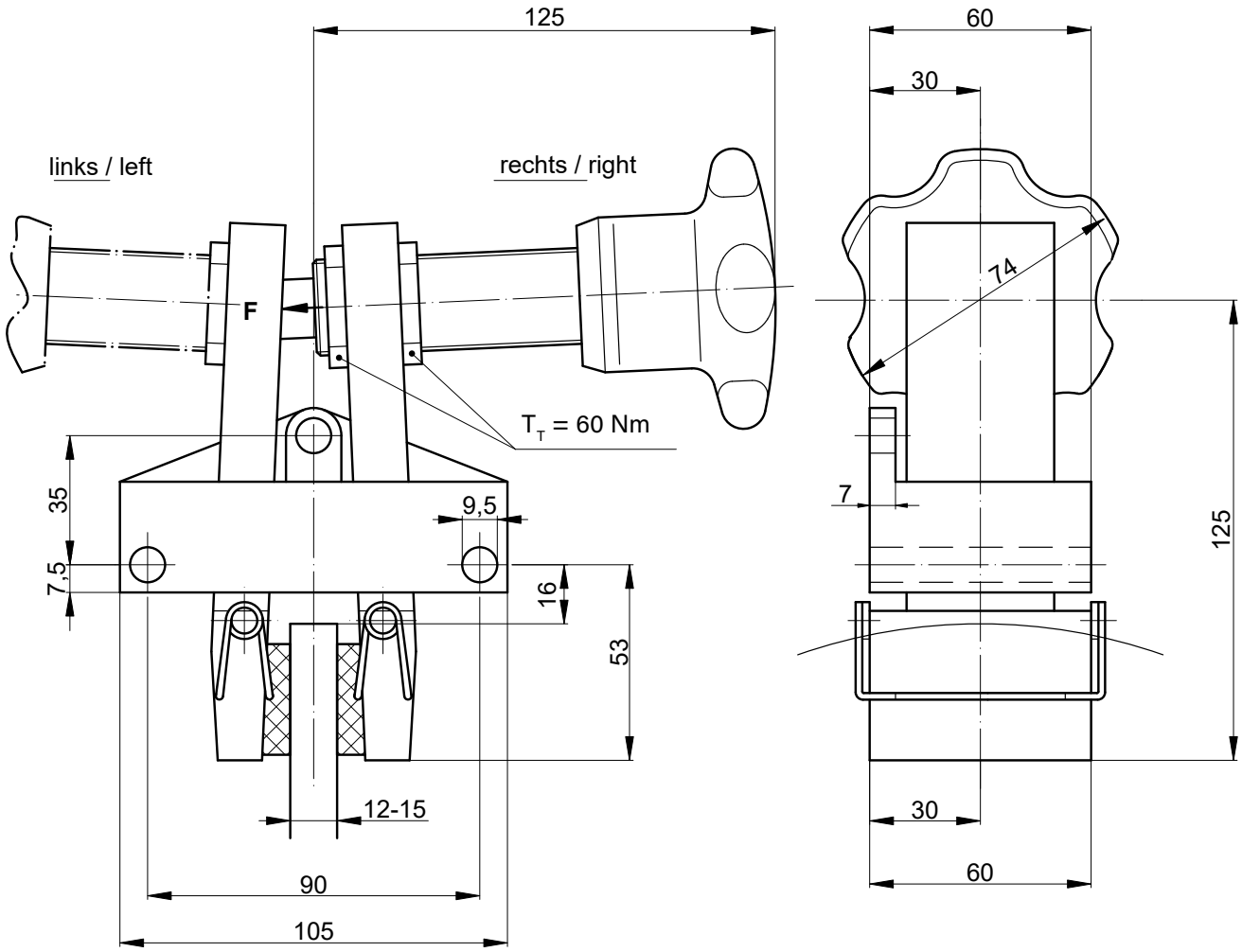

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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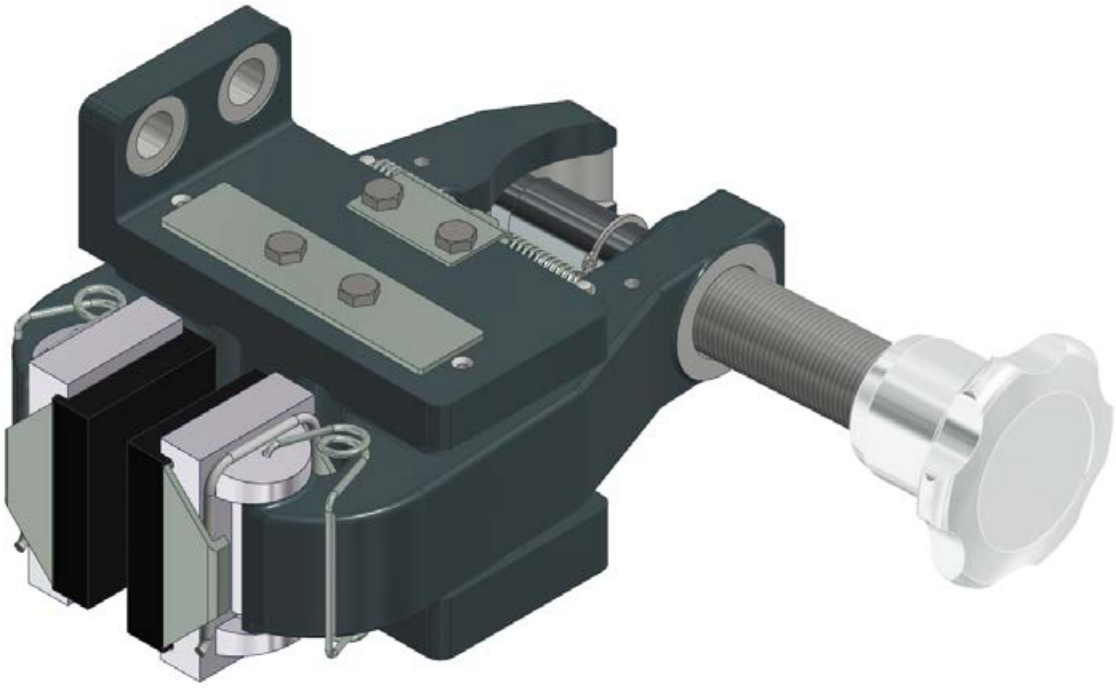

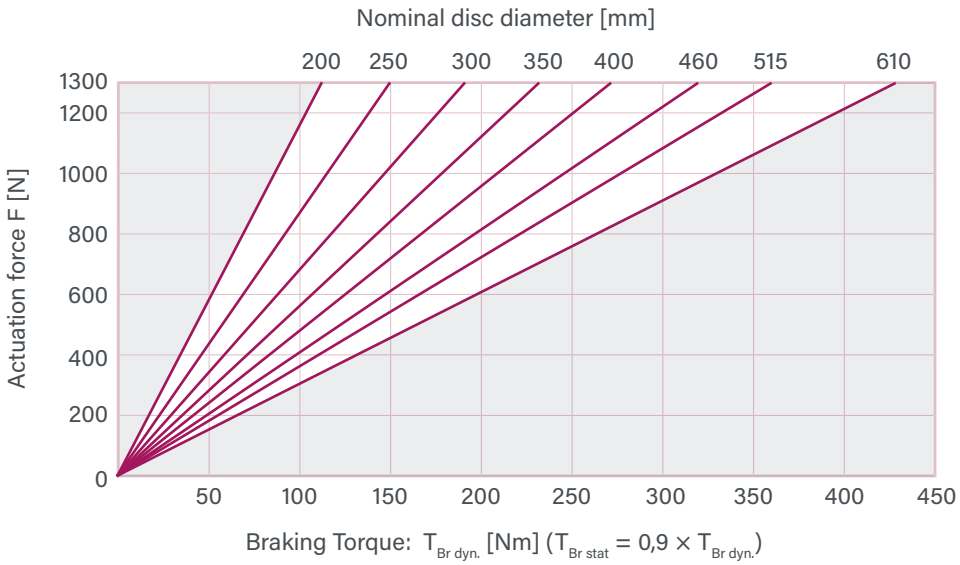

Mass: 7,9 kg
1 Turn ≈ 160 N

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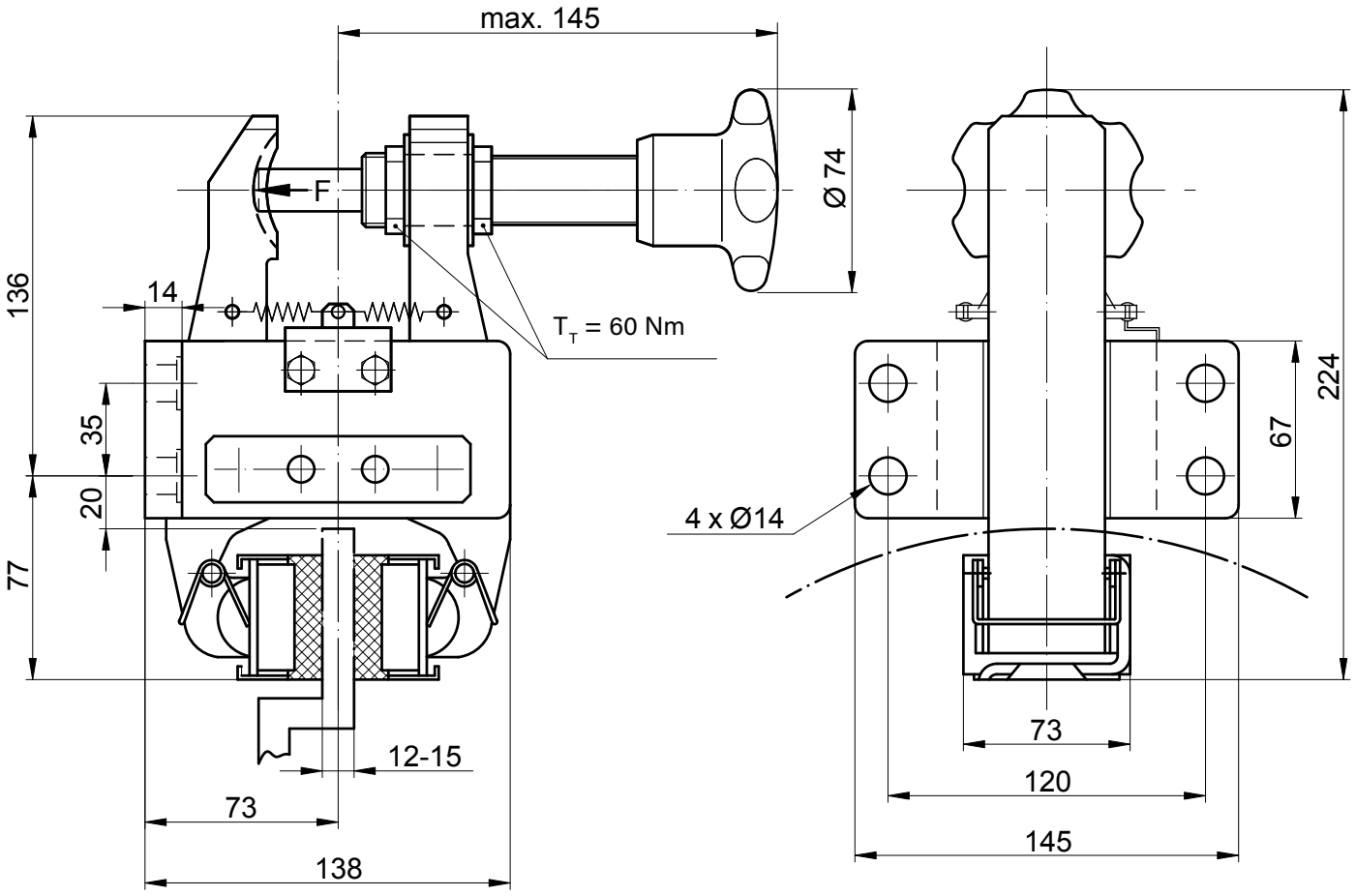

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

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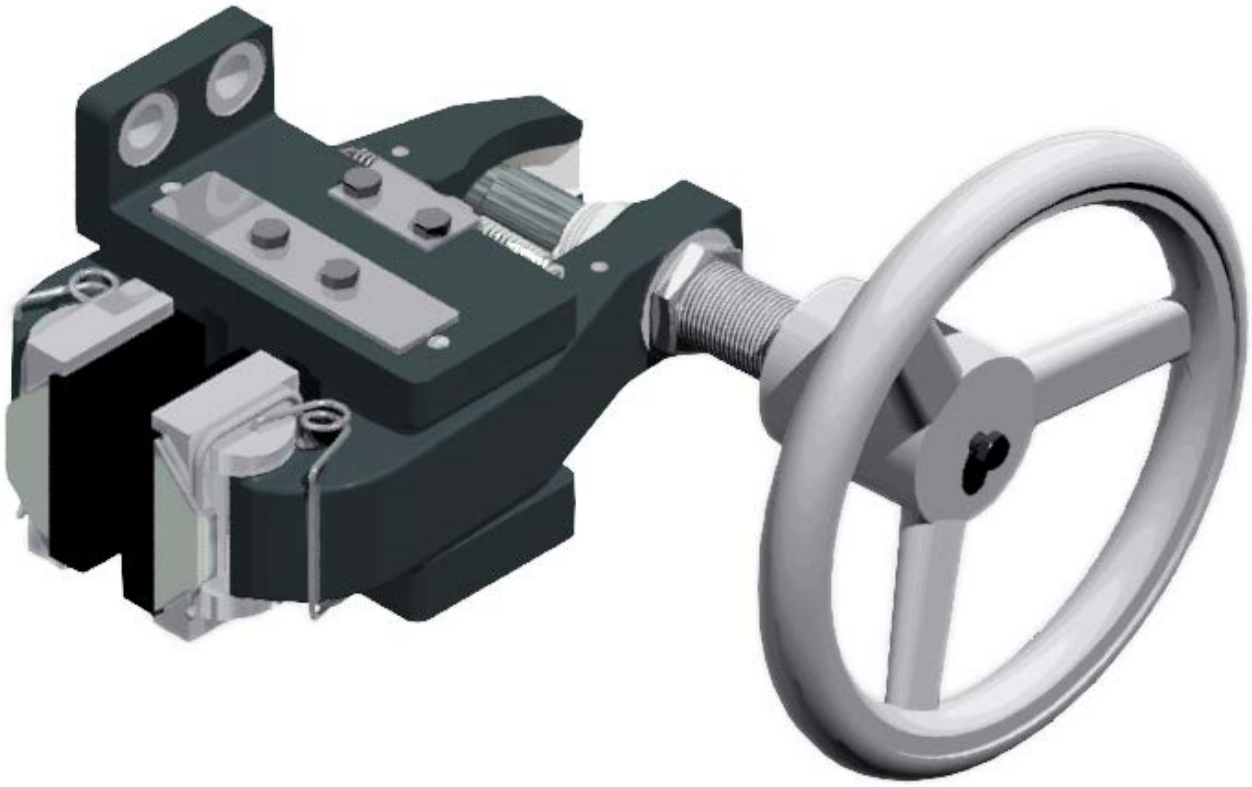

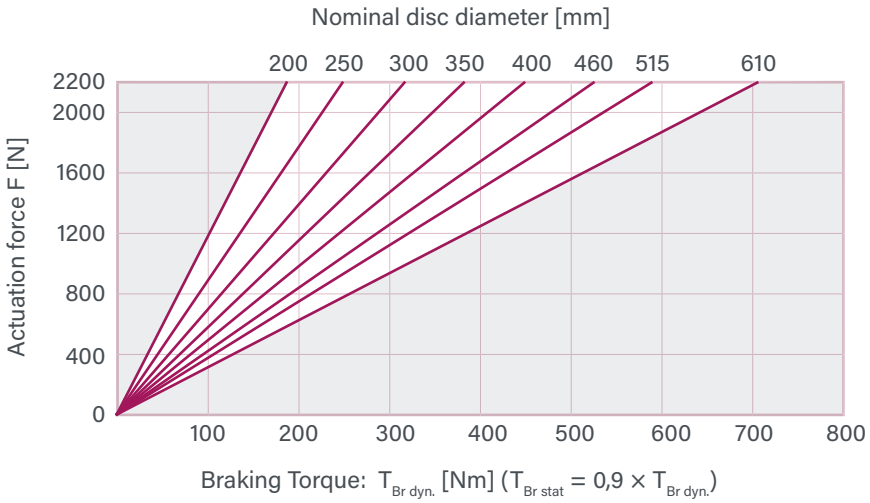

Mass: 9,3 kg
1 Turn ≈ 260 N

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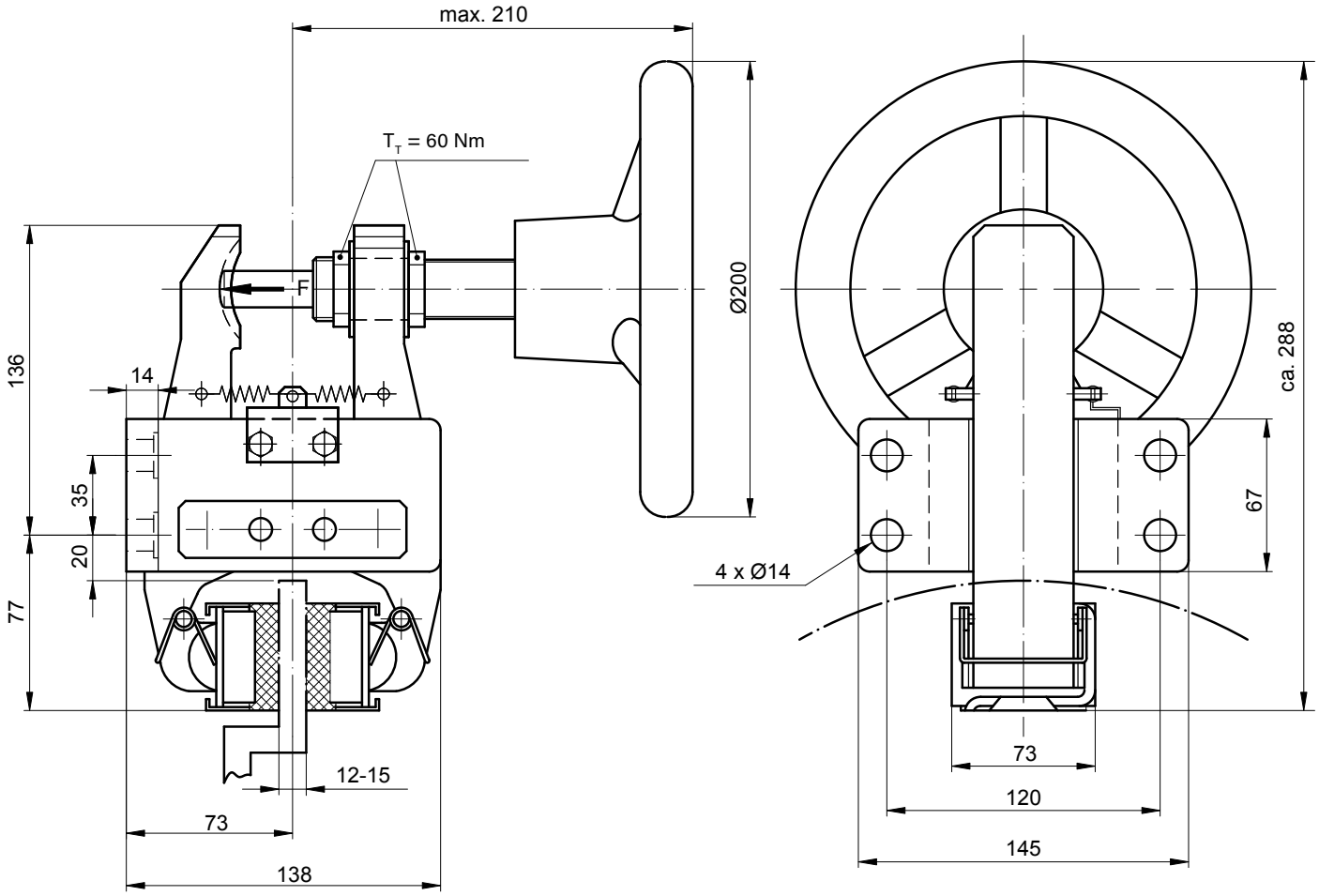

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

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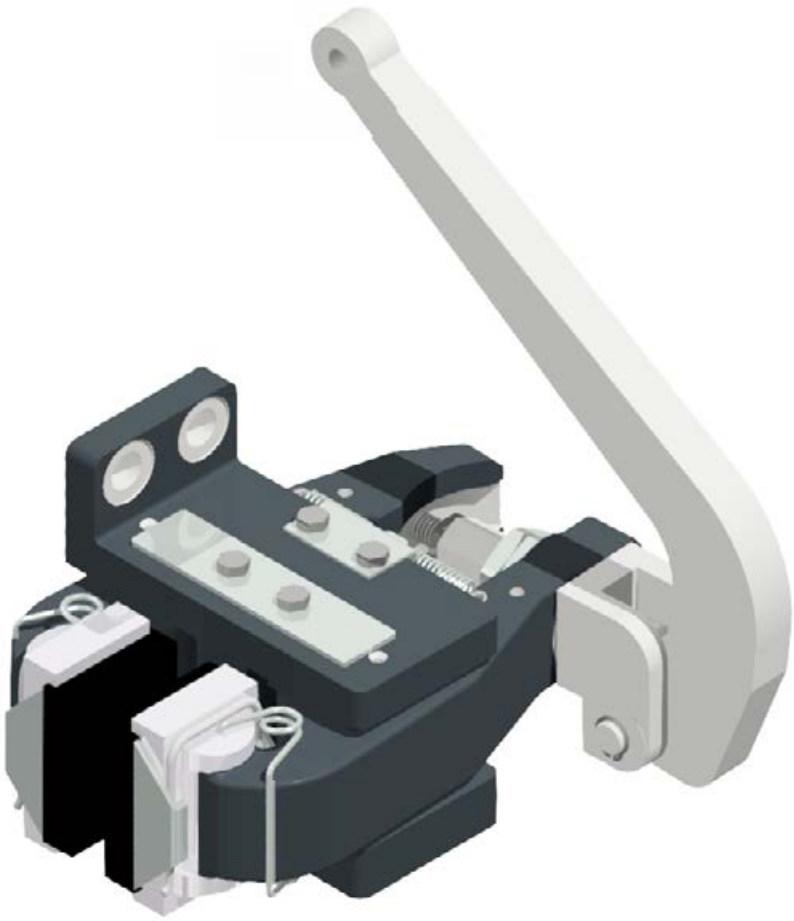

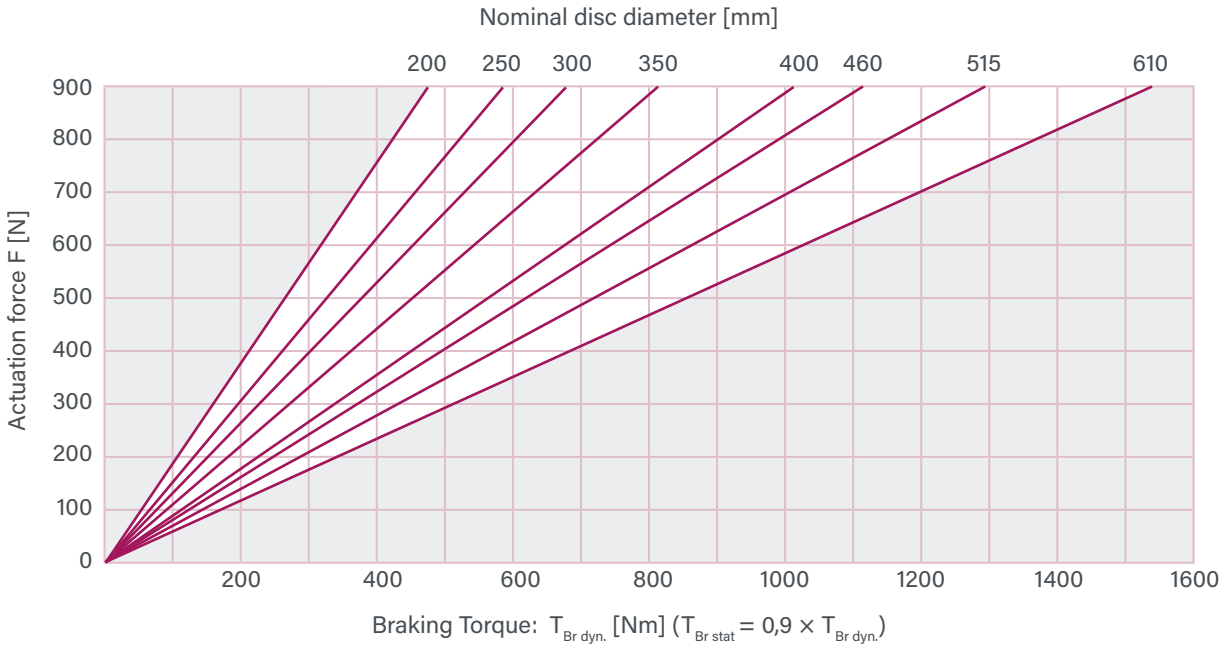

Mass: 8,6 kg

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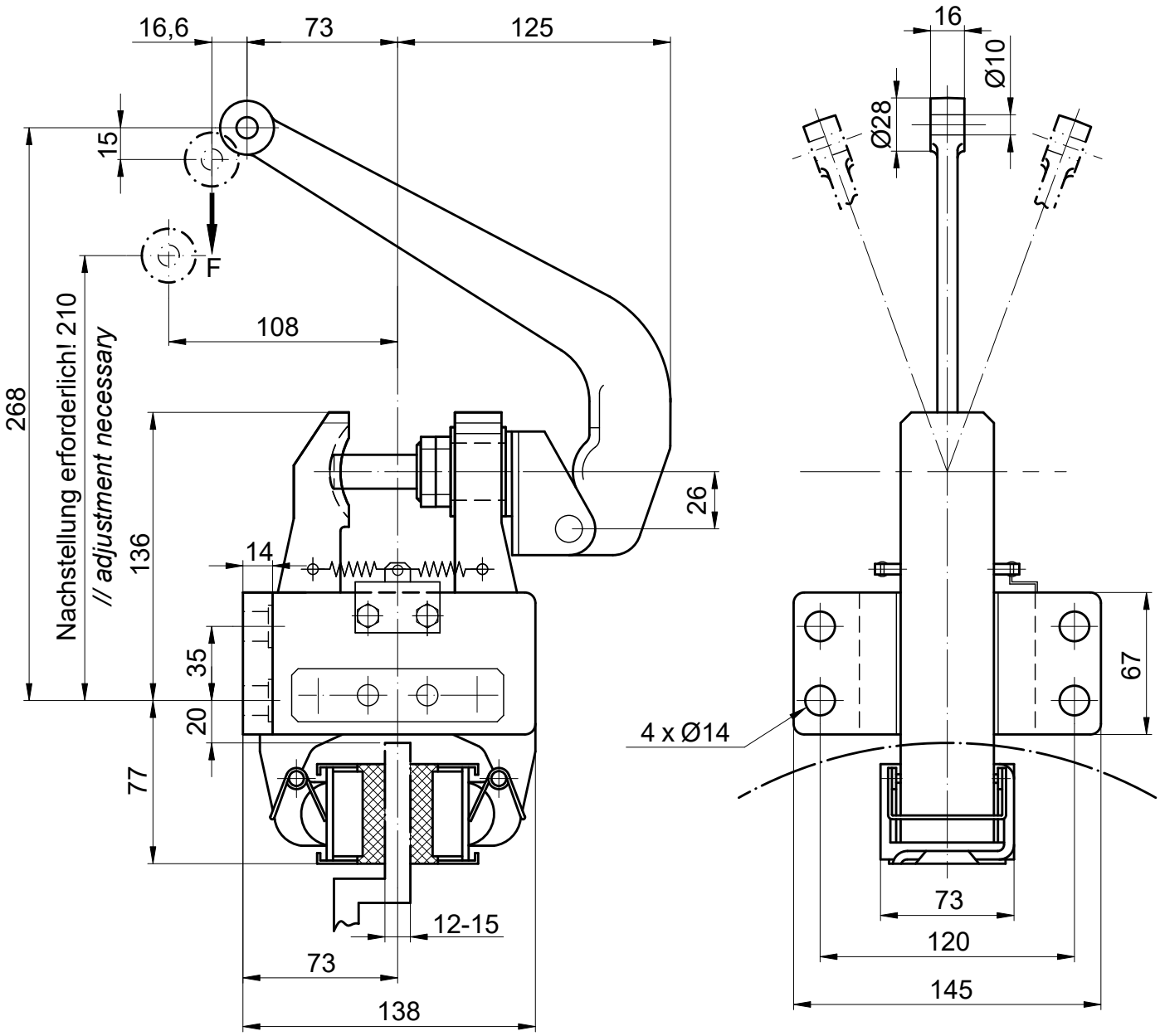

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

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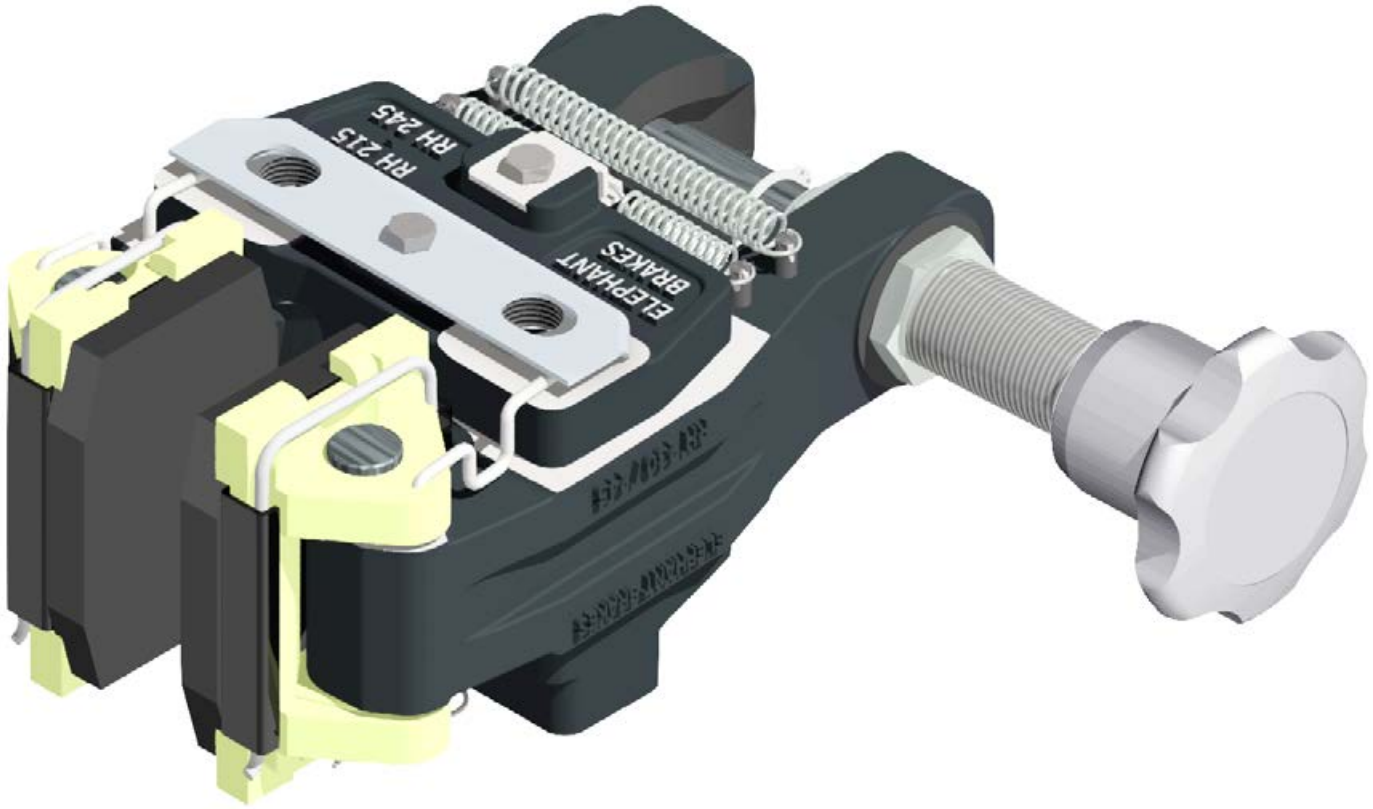

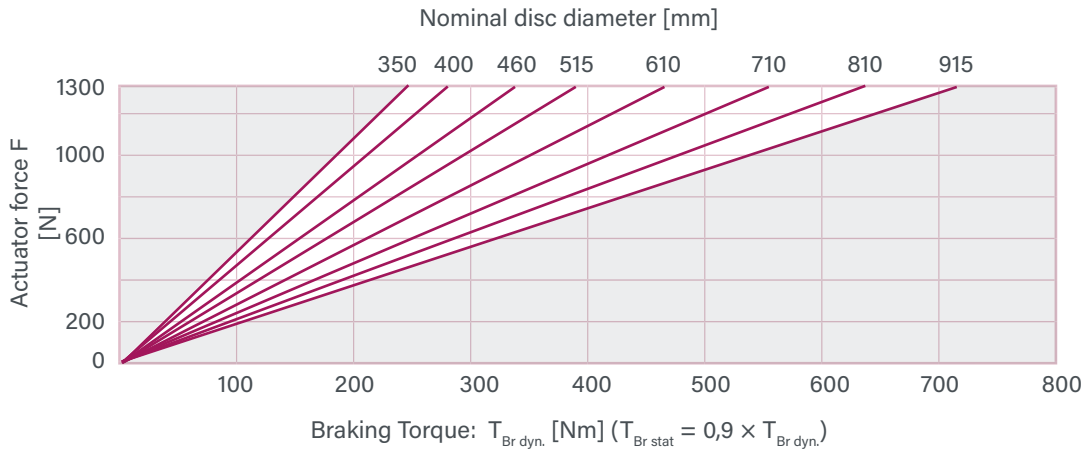

1 Turn ≈ 160 N

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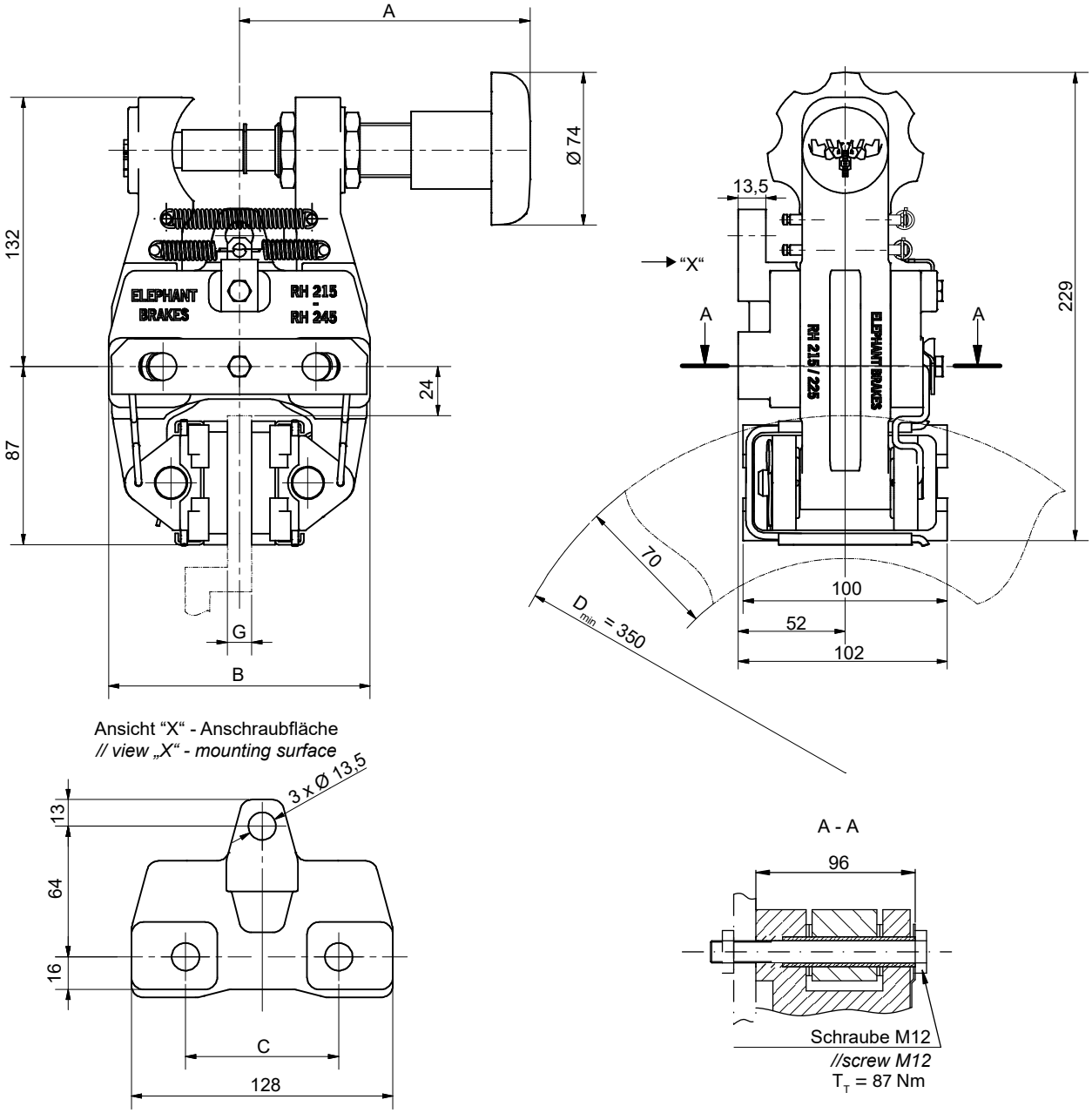

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

Typee	Part-No.	A [mm]	B [mm]	C [mm]	G [mm]	Mass [kg]
RH 215.098.01	10682	144	130	75	12 – 15	8,3
RH 225.098.01	11141	150	140	84	25,4	8,3
RH 230.098.01	10702	153	144	75	30	8,5

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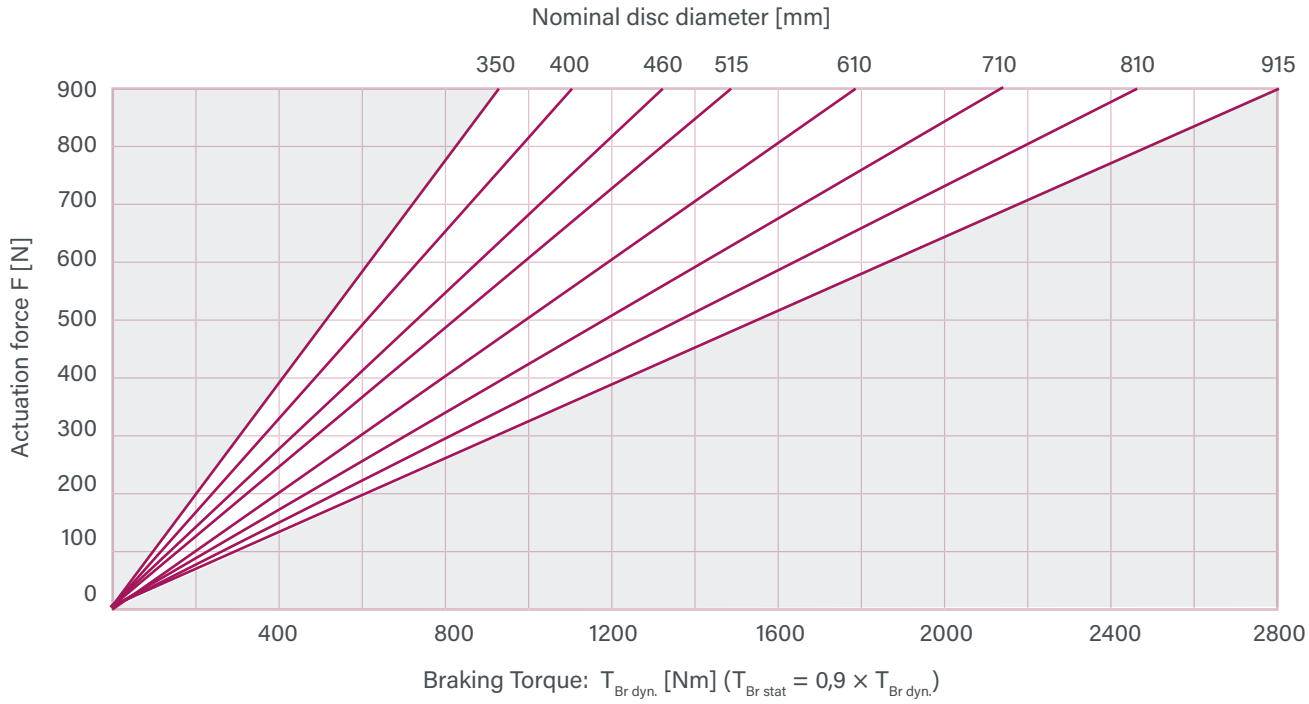

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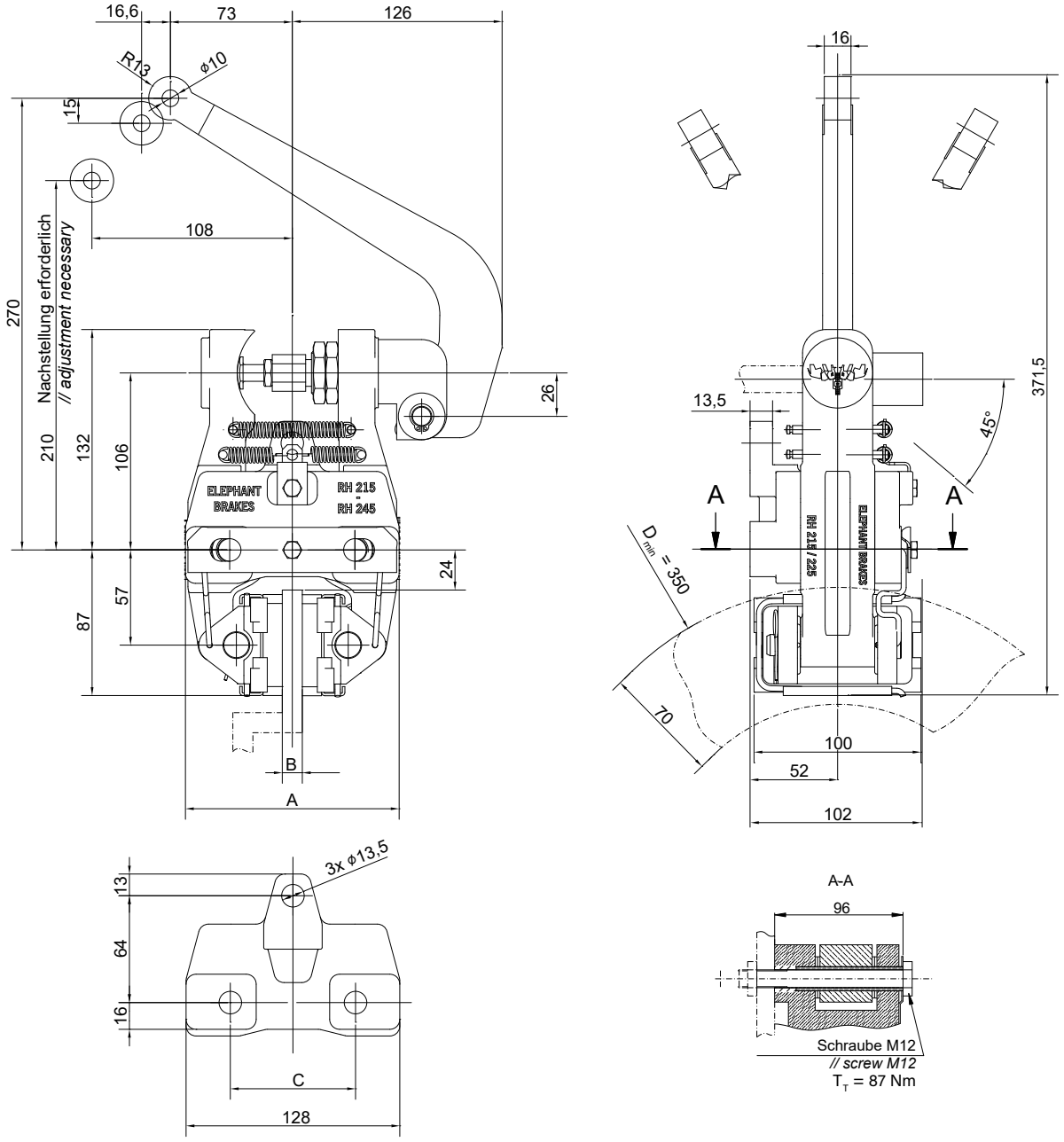

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

Typee	Part-No.	A [mm]	B [mm]	C [mm]	Mass [kg]
RH 215.099.01	10681	130	12-15	75	9,1
RH 225.099.01	11112	140	25,4	84	9,1
RH 230.099.01	10701	144	30	75	9,3
RH 245.099.01	13246	154	45	84	9,3

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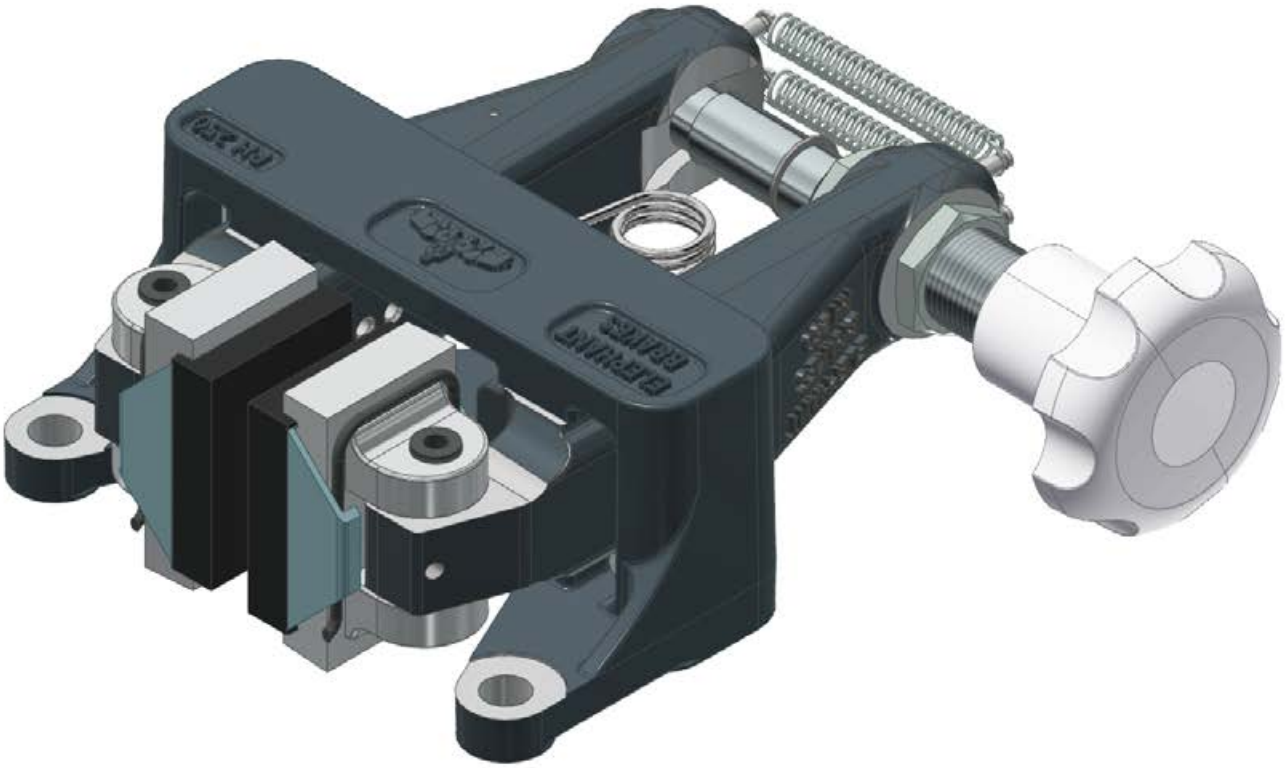

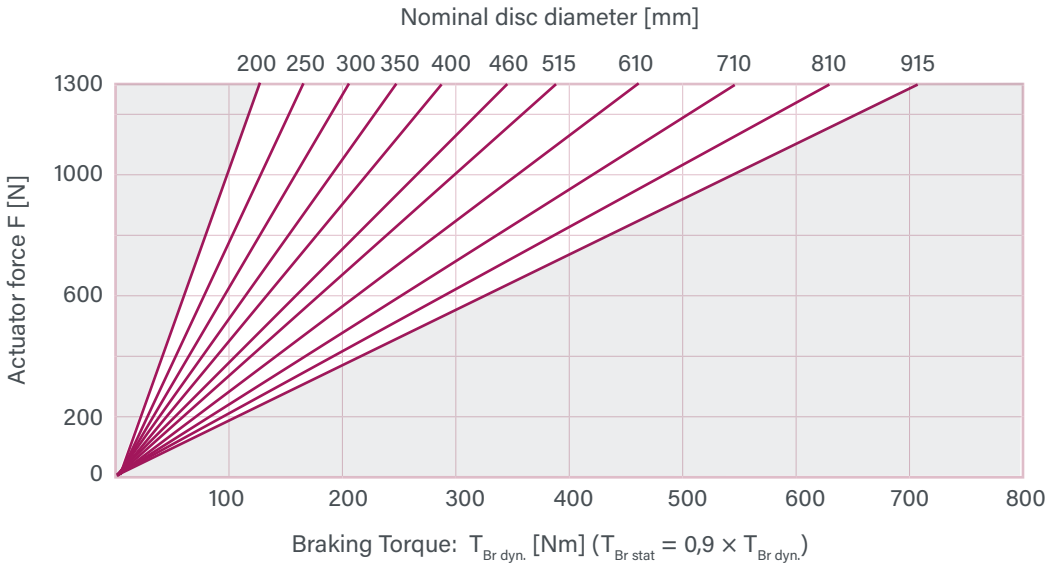

Mass: 7,1 kg
1 Turn ≈ 160 N

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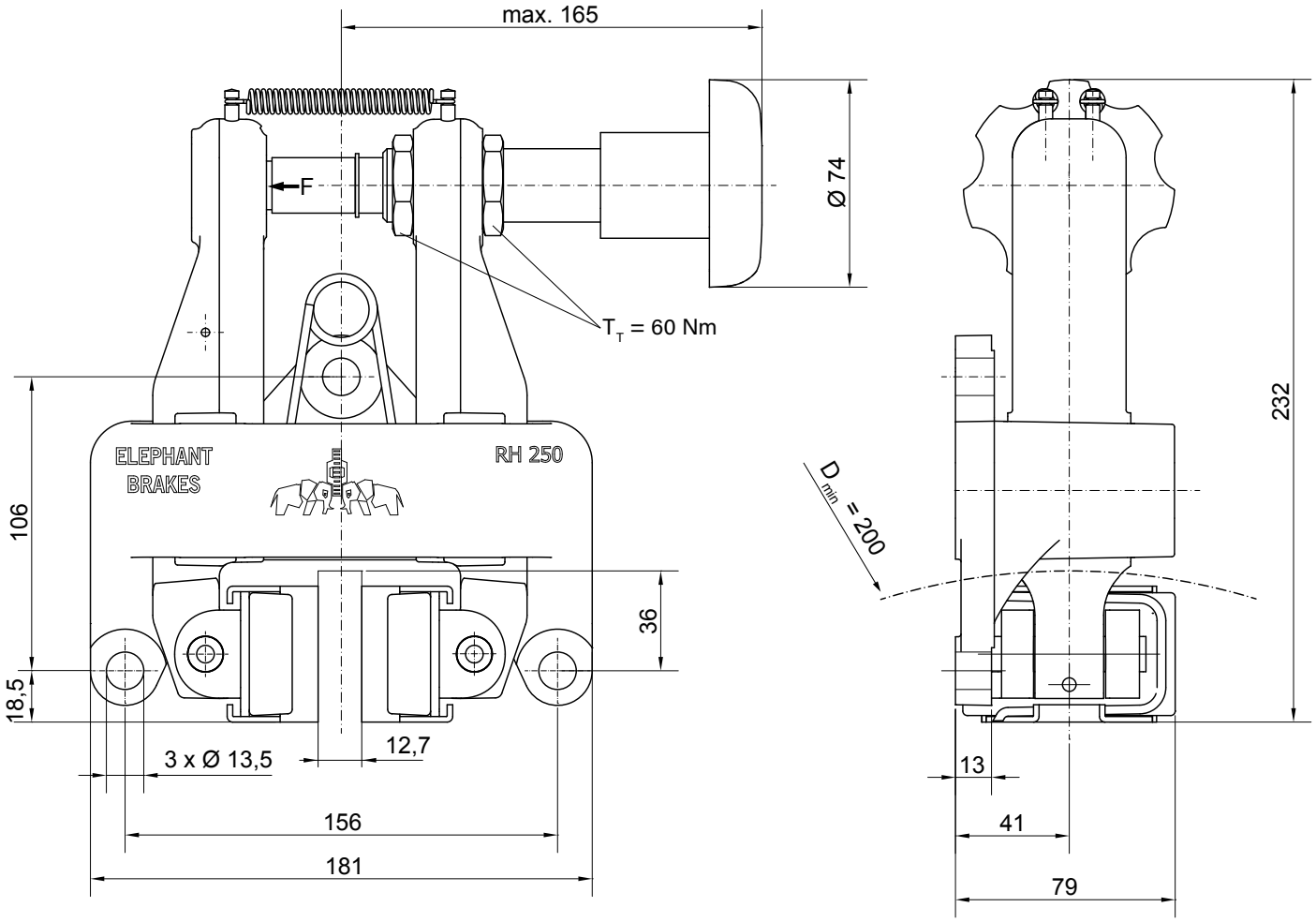

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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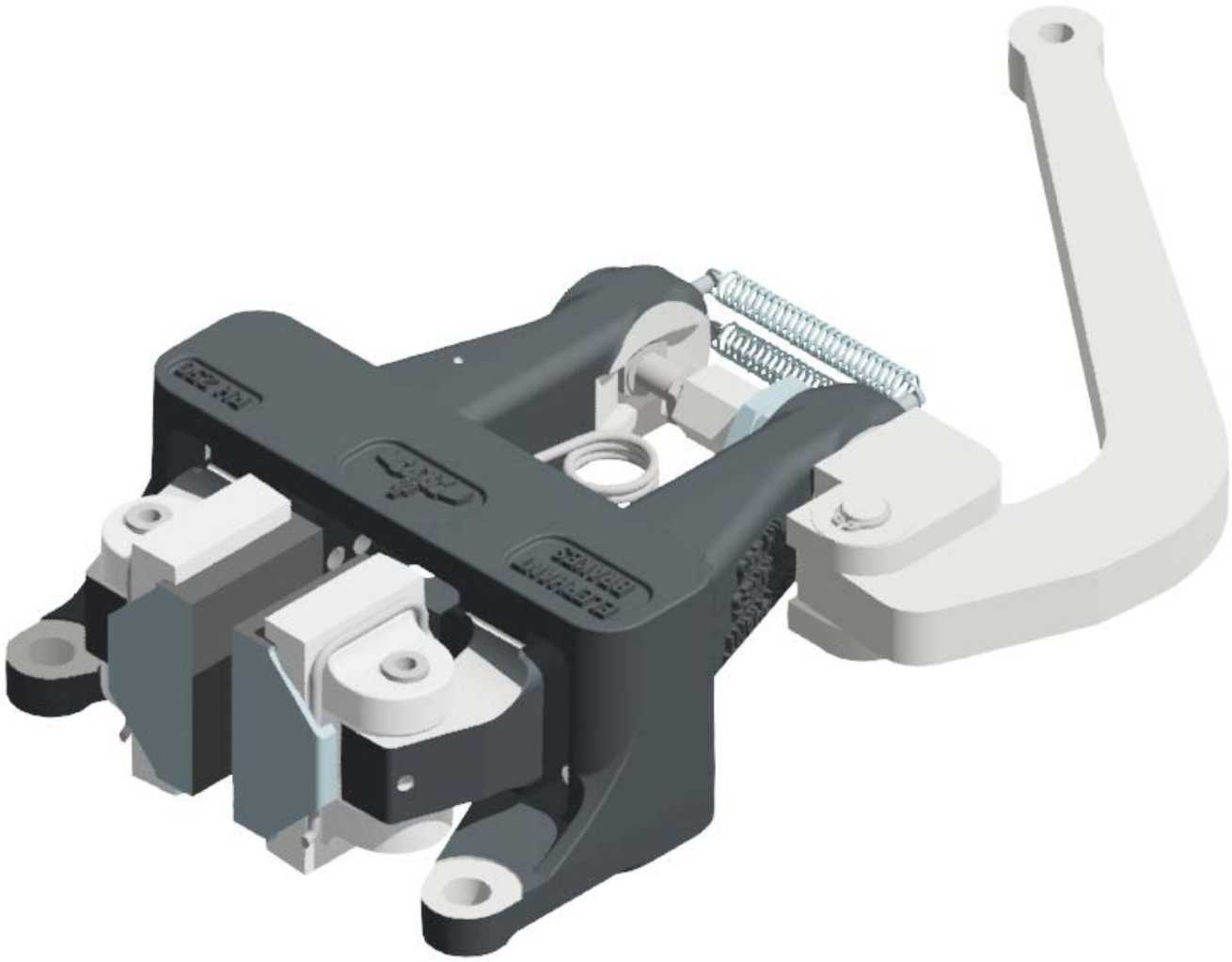

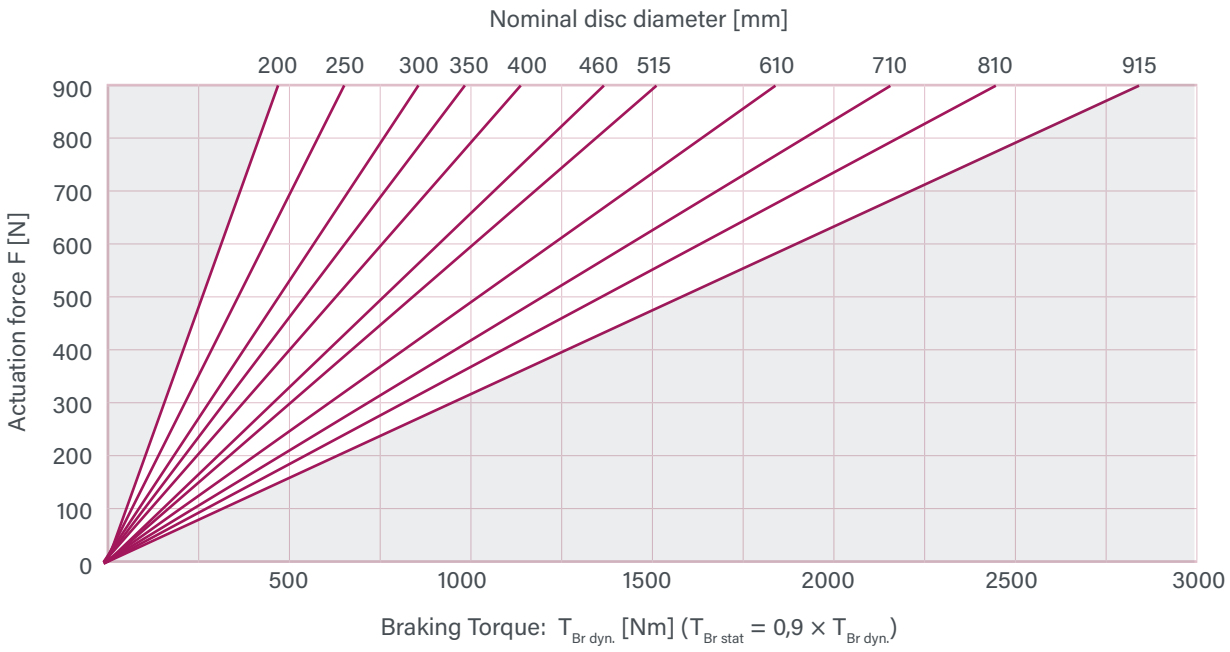

Mass: 7,9 kg

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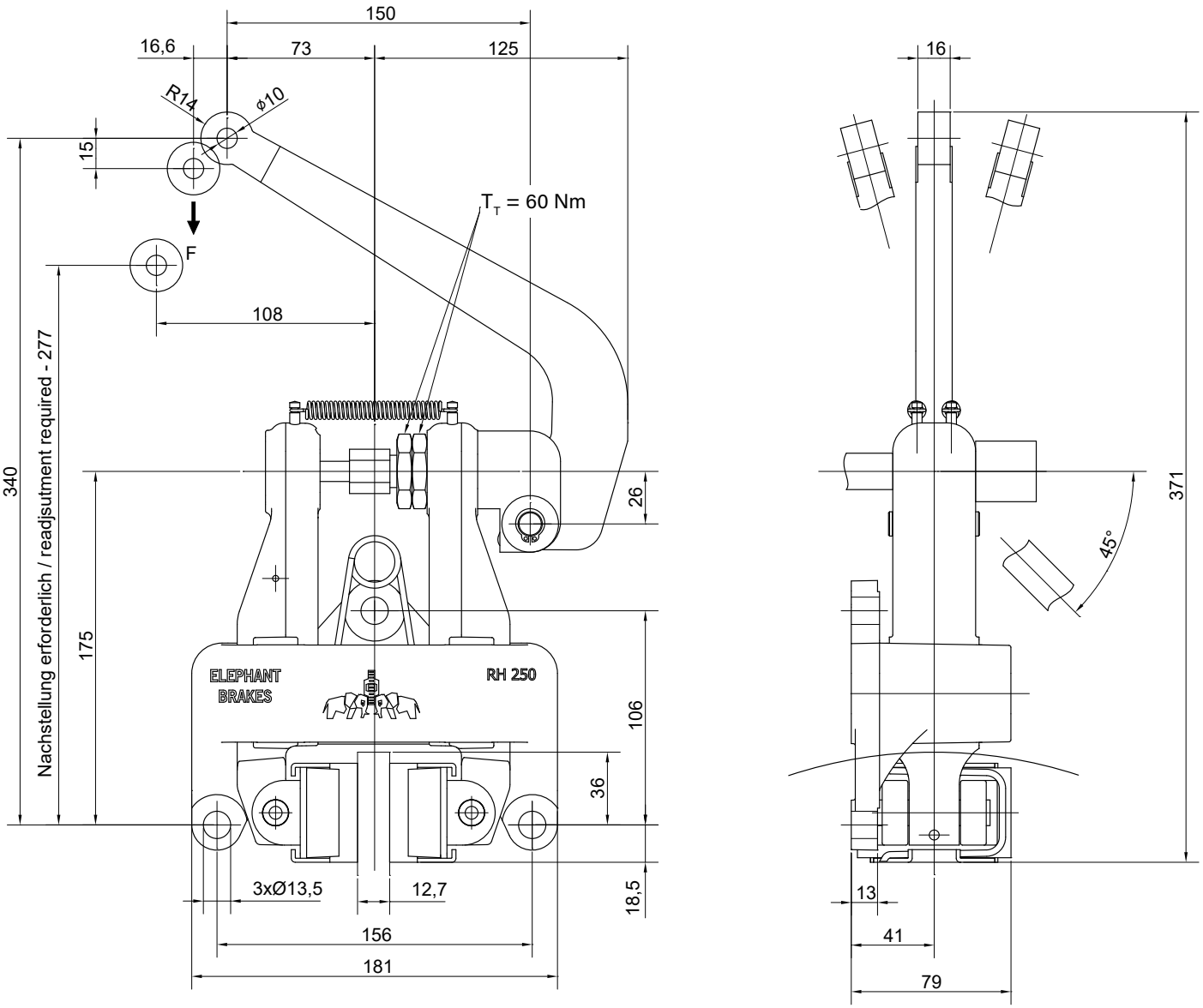

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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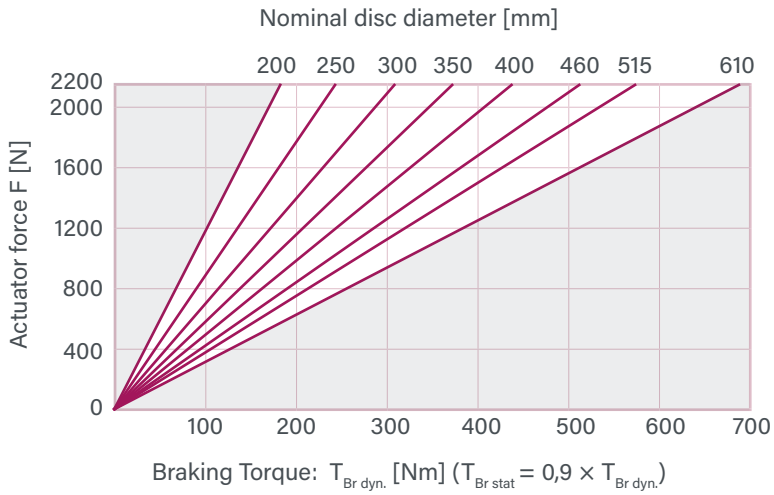

Mass: 8 kg
1 Turn ≈ 260 N

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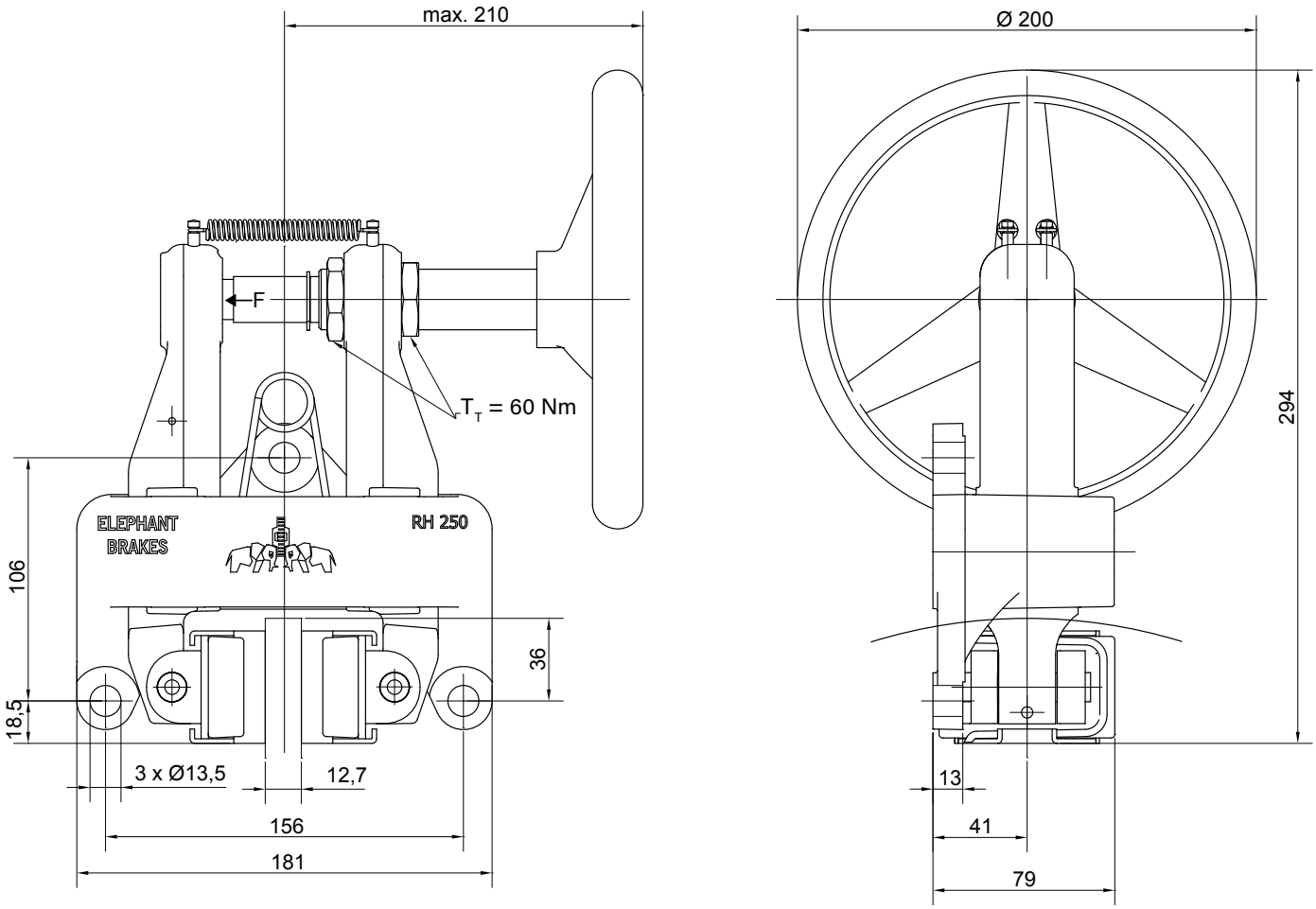

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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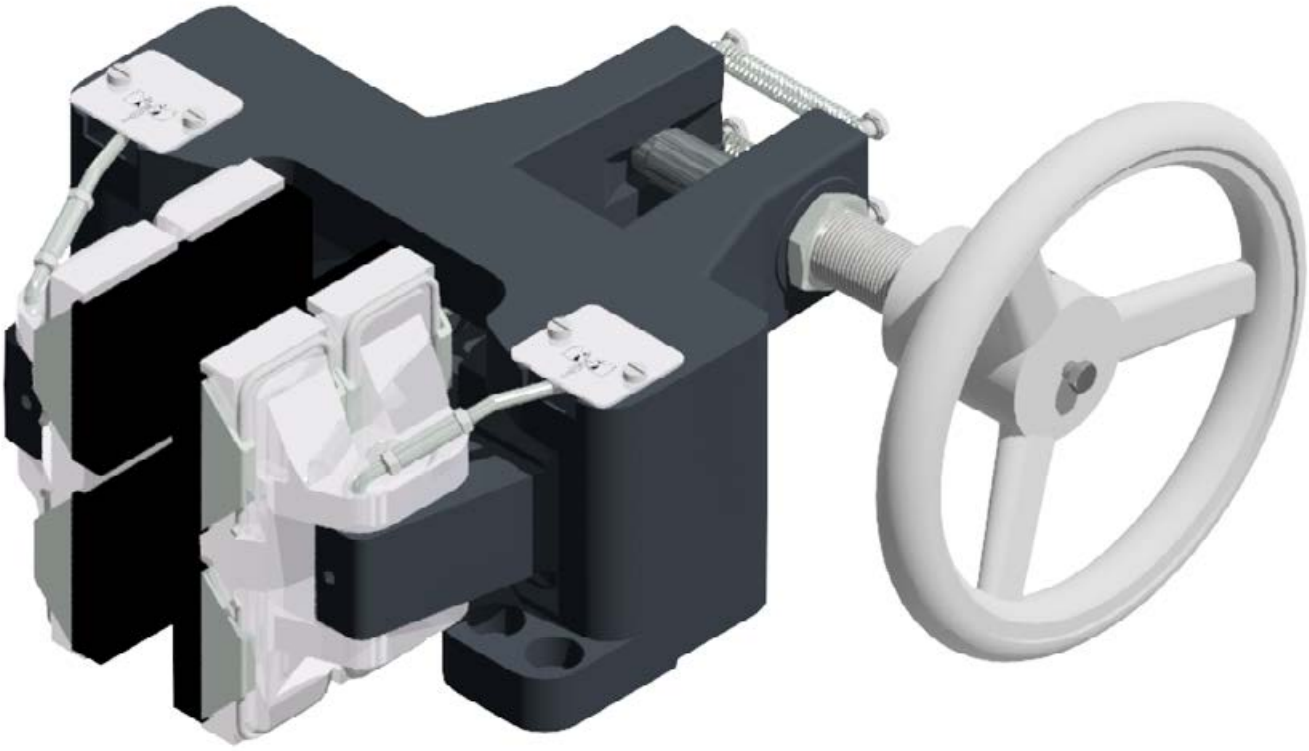

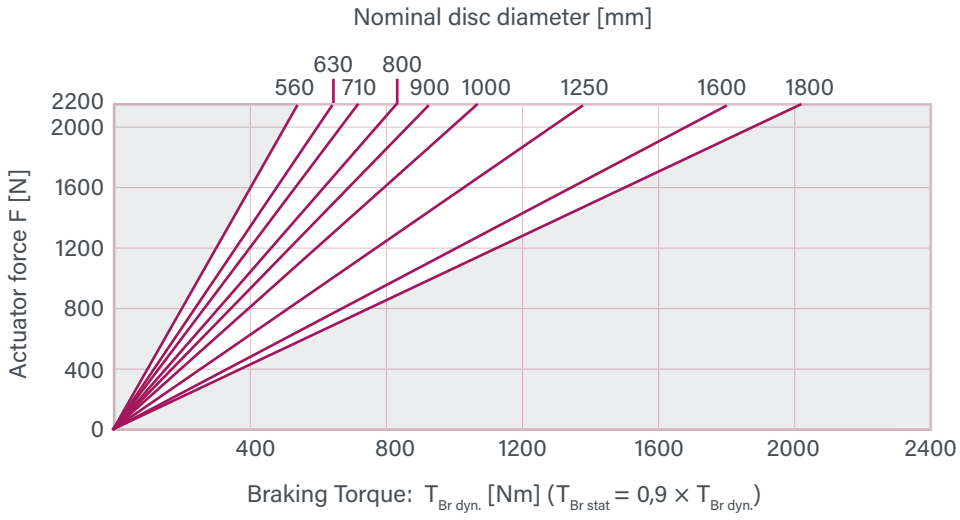

Mass: 21 kg
1 Turn ≈ 260 N

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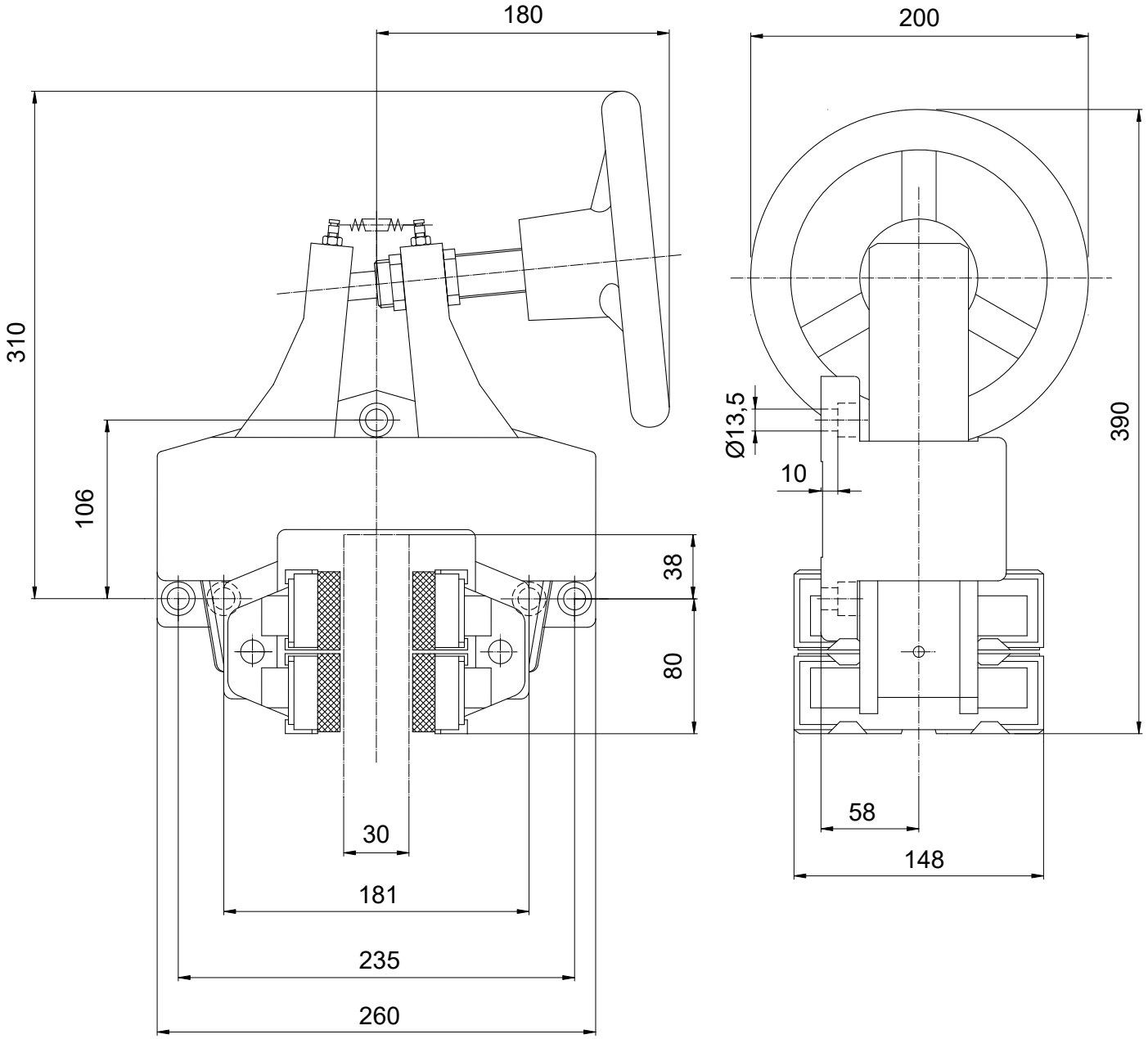

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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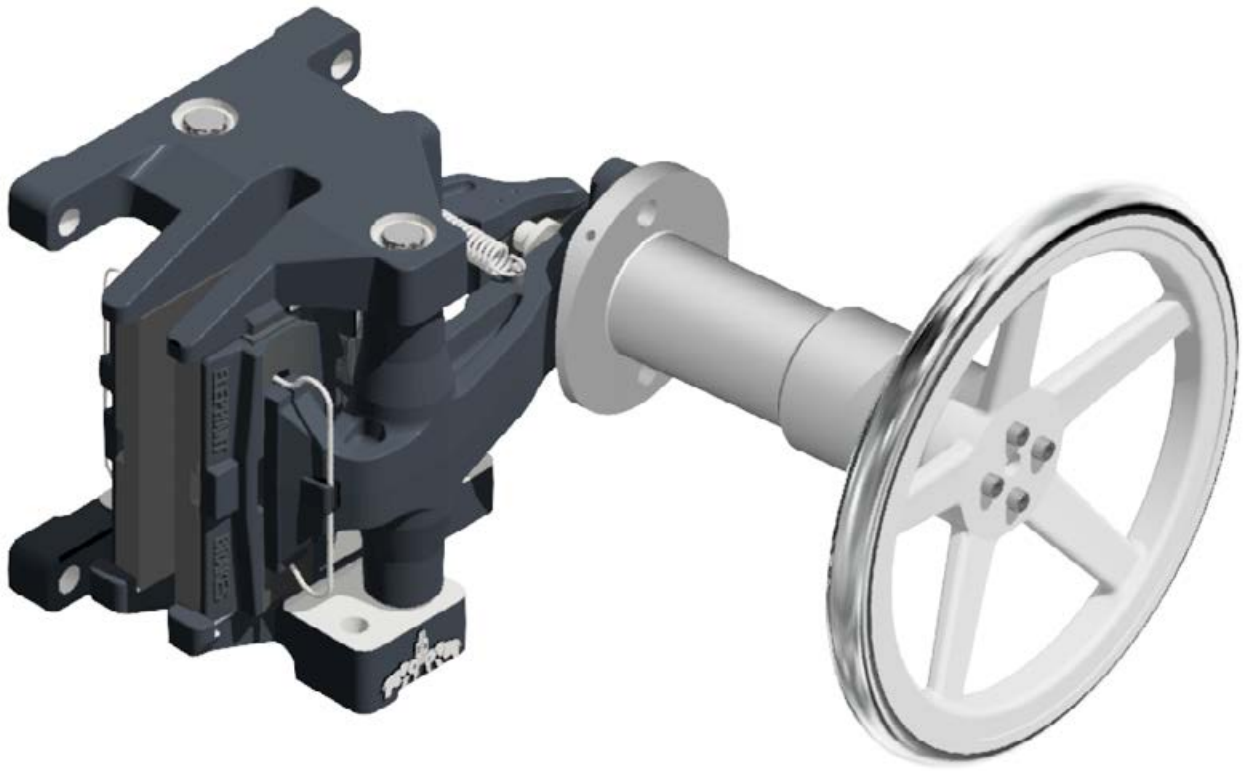

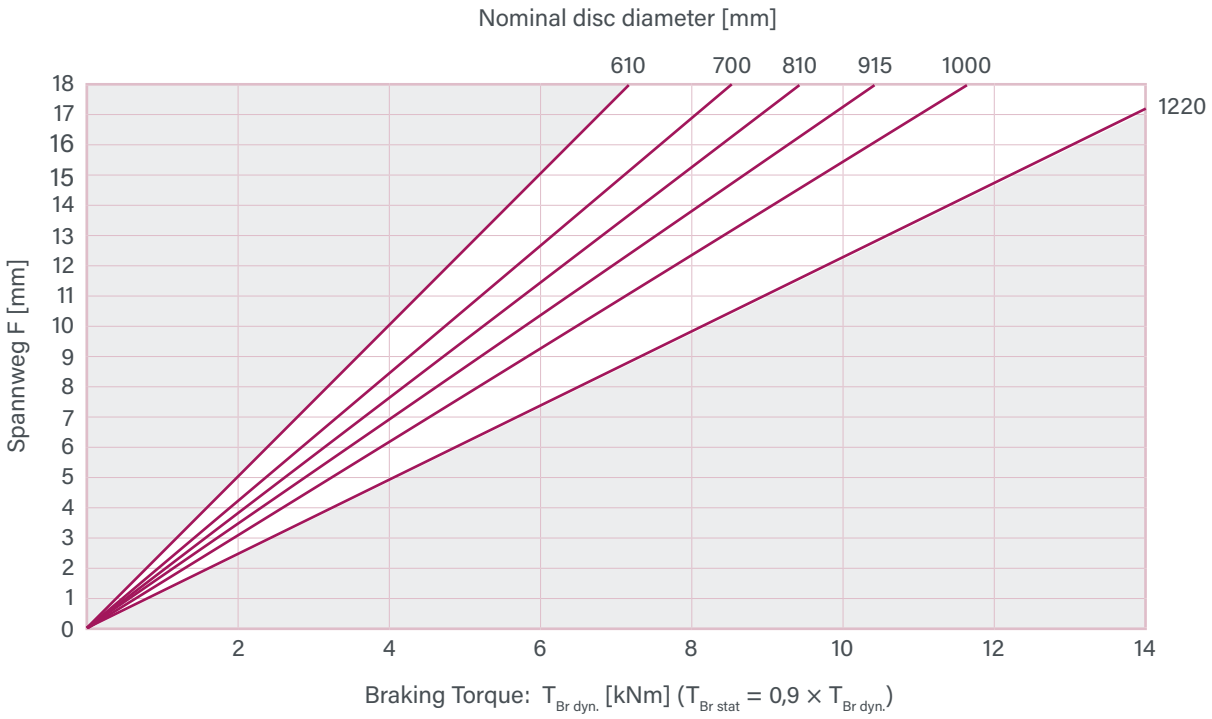

Mass: 55,5 kg

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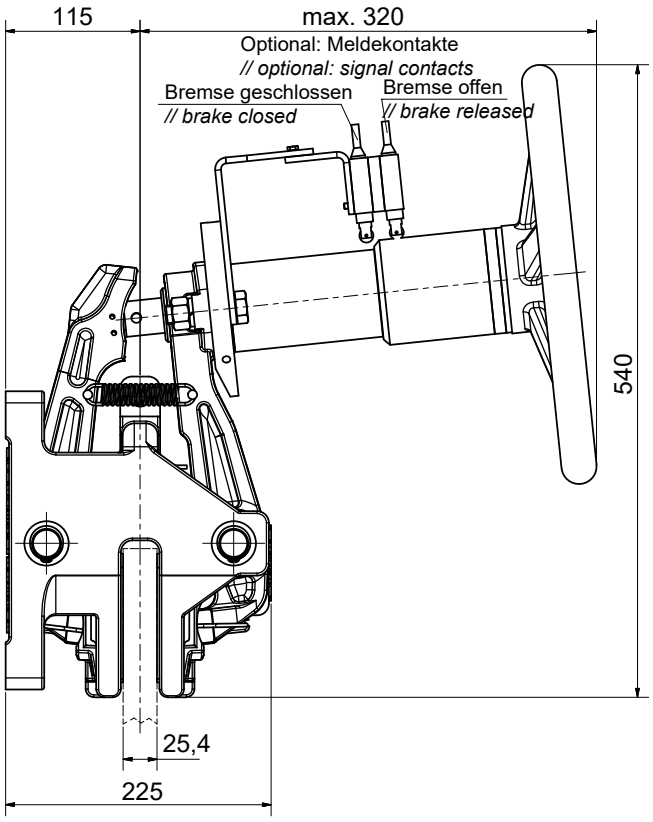
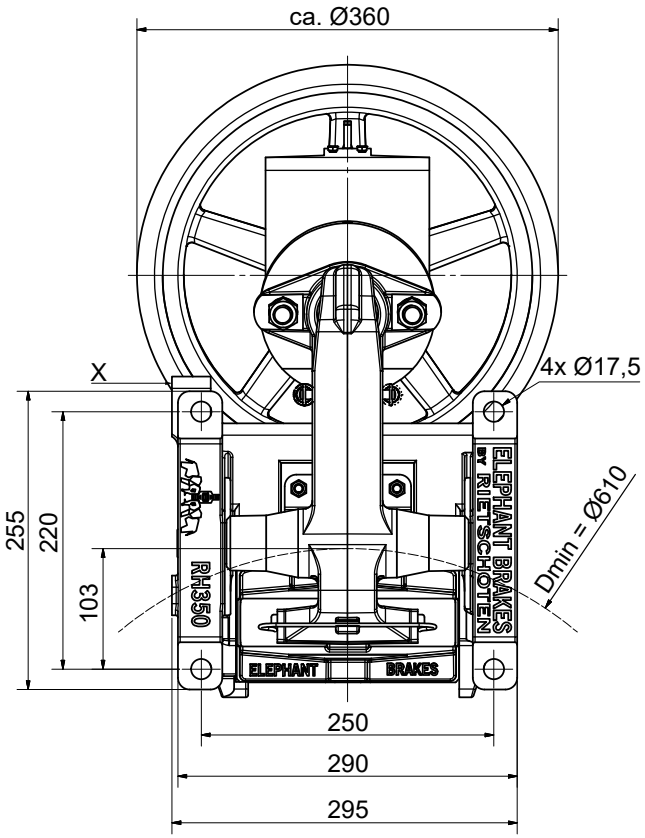
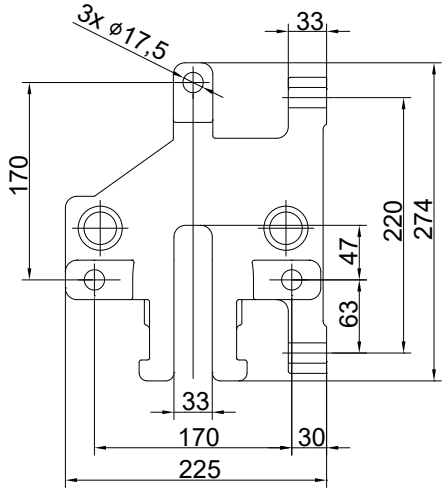




Ansicht „X“ - Anschraubfläche
// view „X“ - mounting surface



Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – left hand mounted please state with order.

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LEVER BRAKES

Active lever brakes (service brakes)

manually operated closing, spring-operated opening

(○) **pneumatically actuated closing, spring-operated opening**

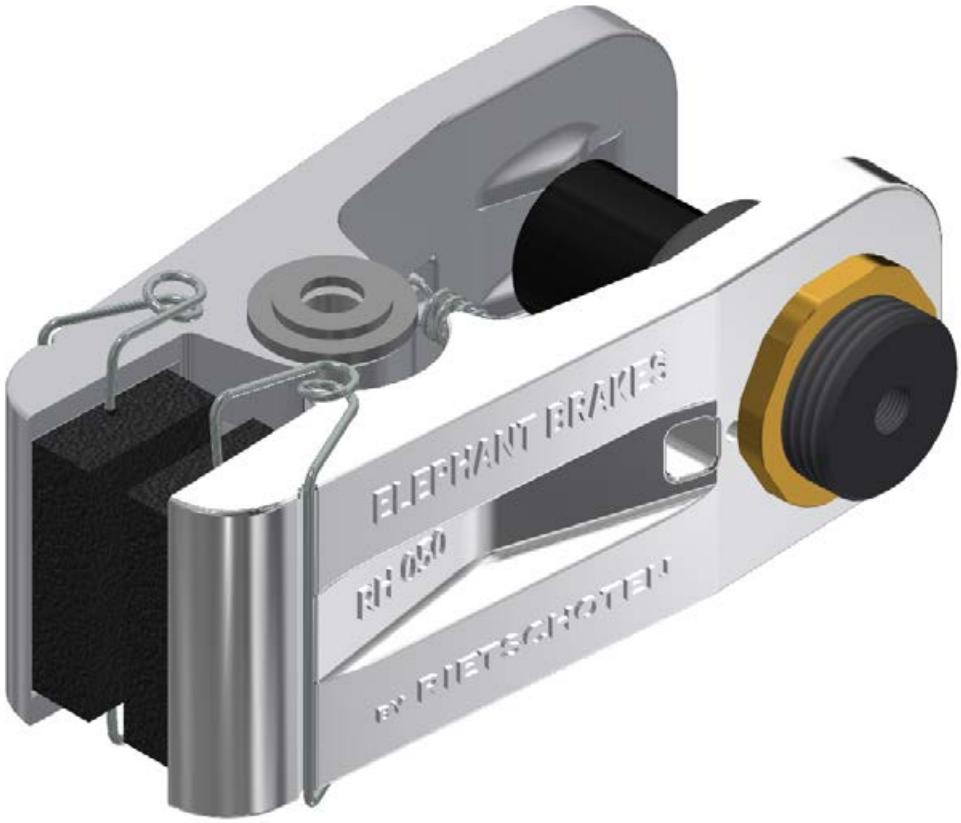
hydraulically operated closing, spring-operated opening

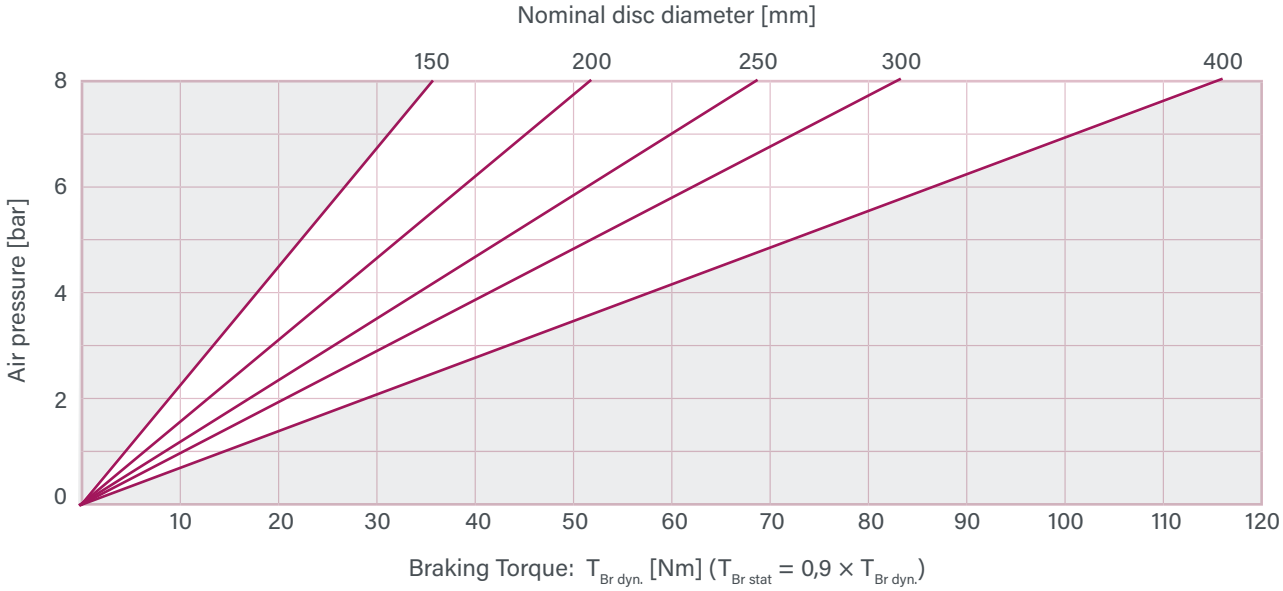
Passive lever brakes (safety brakes)

spring-operated closing, pneumatically operated opening

spring-operated closing, hydraulically operated opening

spring-operated closing, electrically operated opening





Mass: 1 kg
V / Stroke: 0,02 dm³

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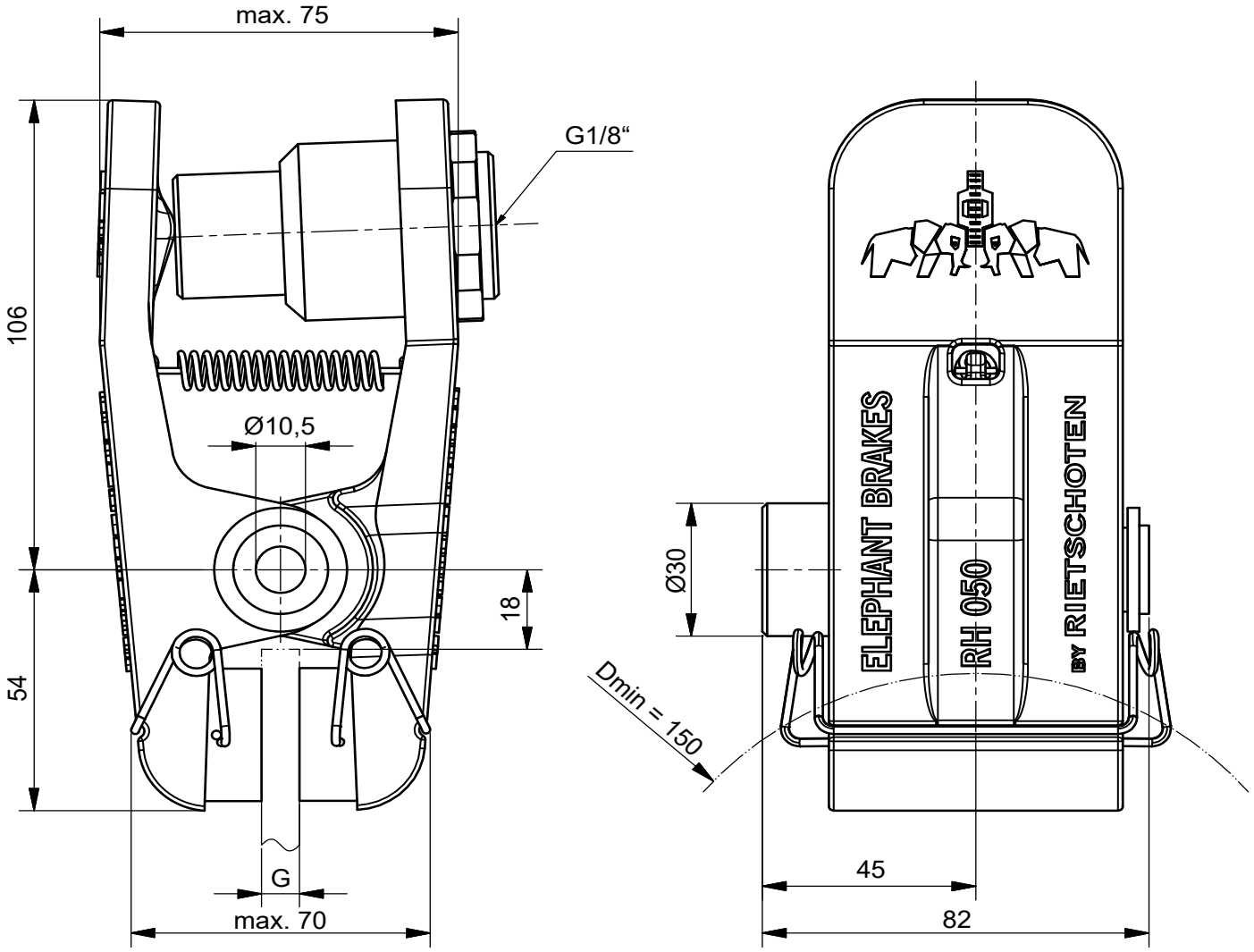

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Typee	Part-No.	G [mm]
RH 051.100.08	12504	8
RH 051.100.13	12934	12,7

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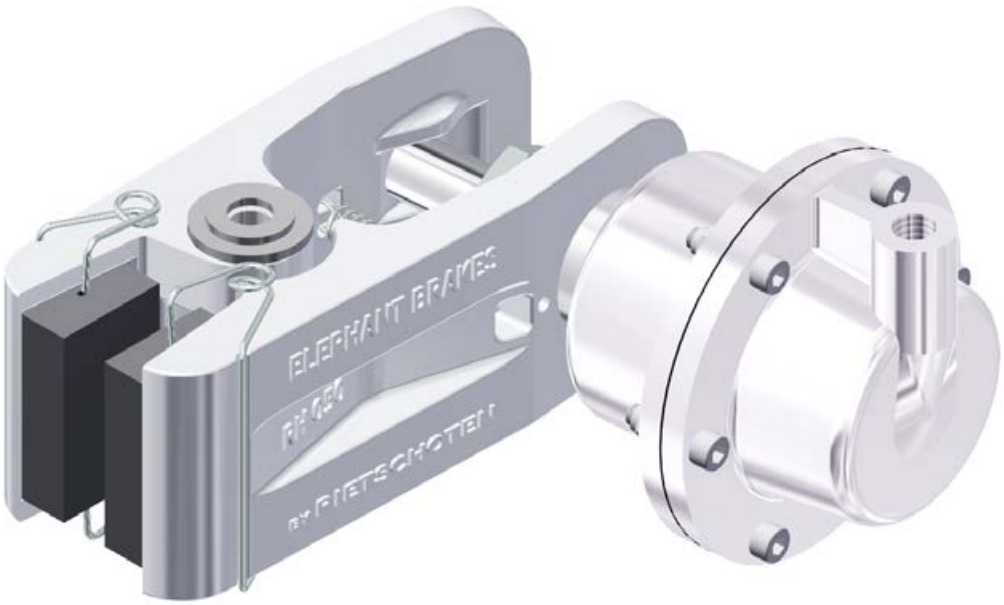
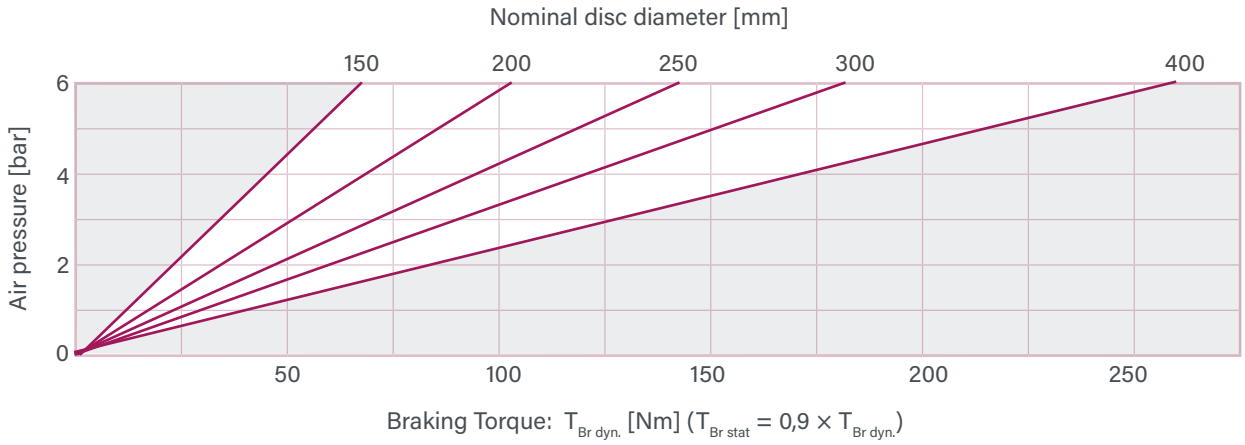
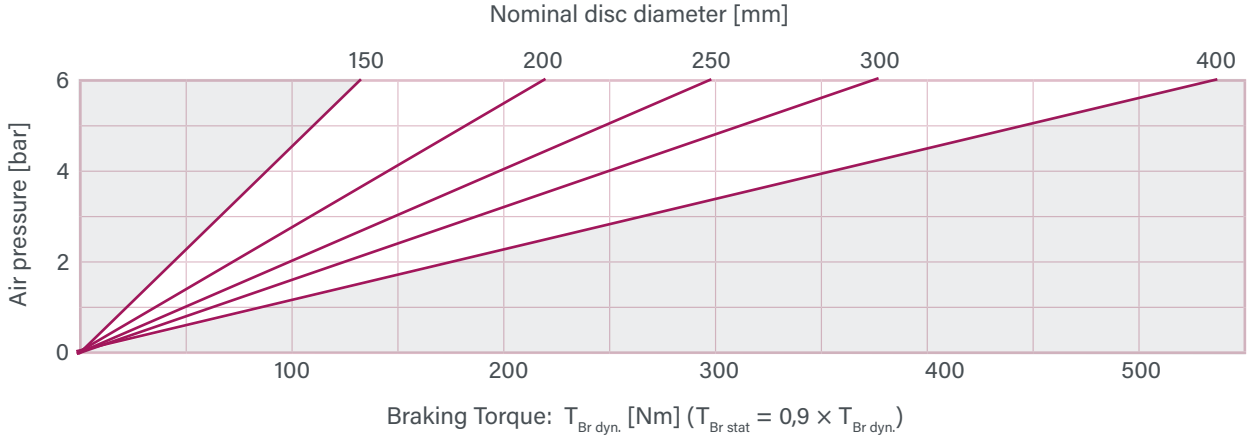


RH 050.102.01



RH 050.103.01



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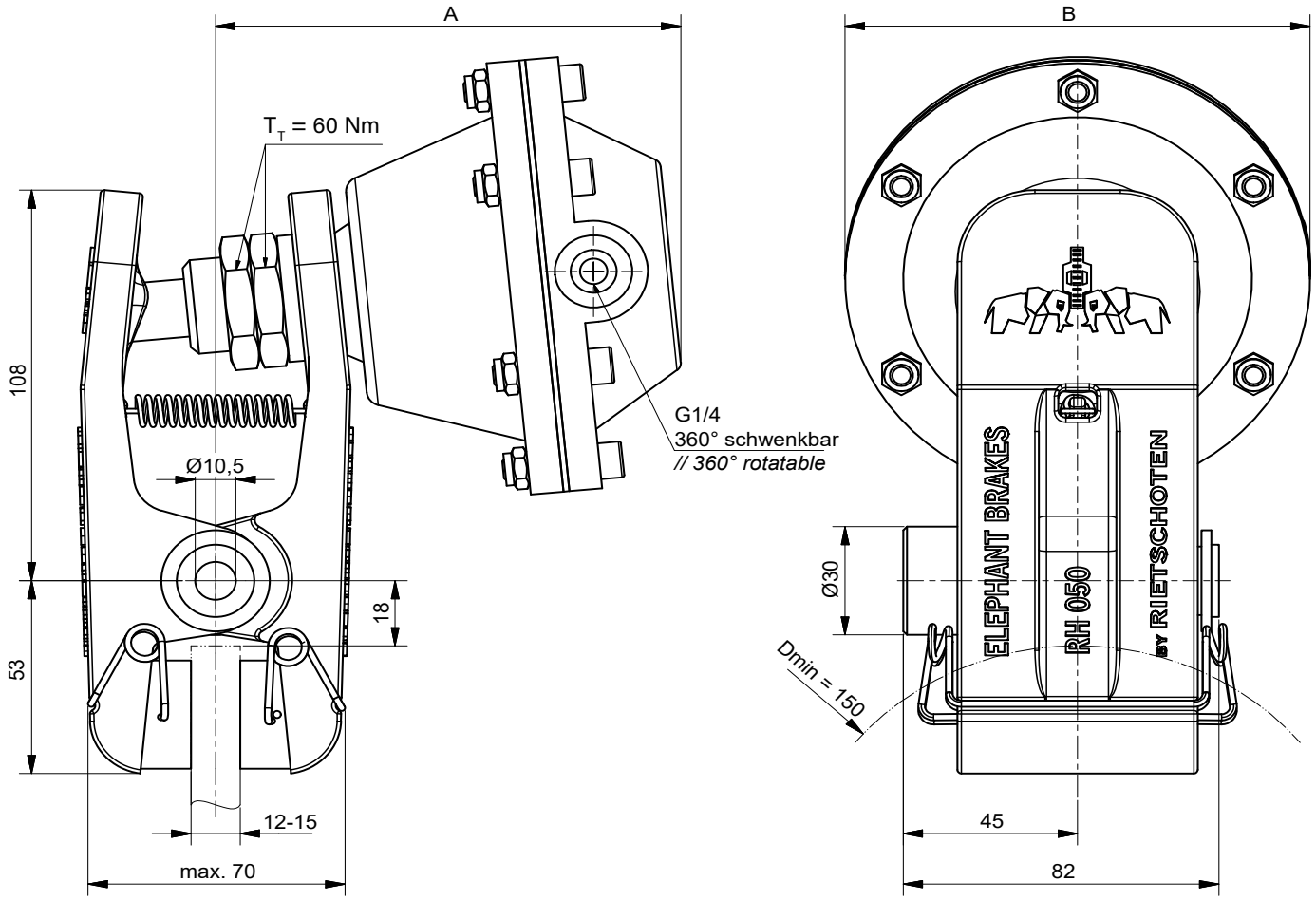

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Typee	Part-No.	A [mm]	Ø B [mm]	V / Stroke [dm³]	Mass [kg]
RH 050.102.01	11230	145	97	0,07	1,7
RH 050.103.01	11093	120	120	0,15	2

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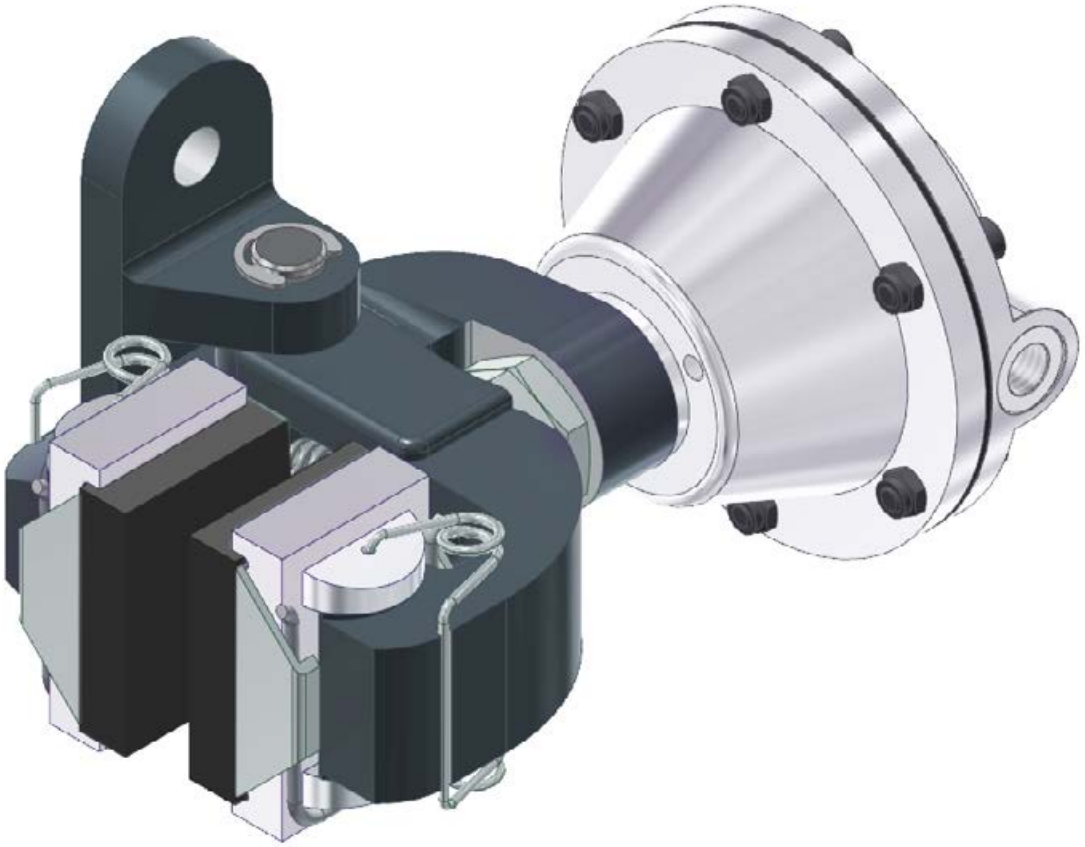
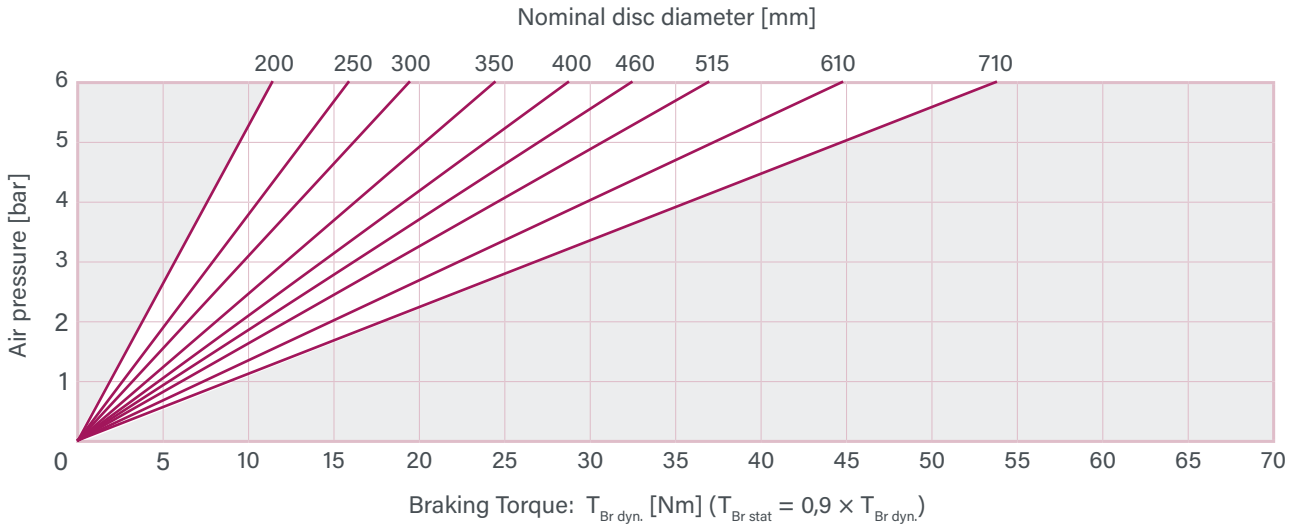


RH 100.101.01



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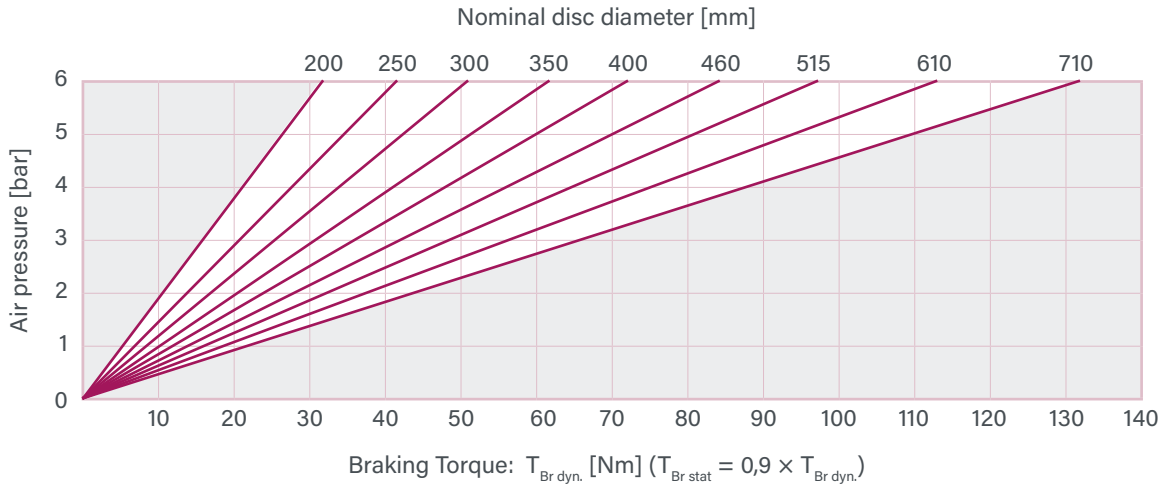
RH 100.102.01



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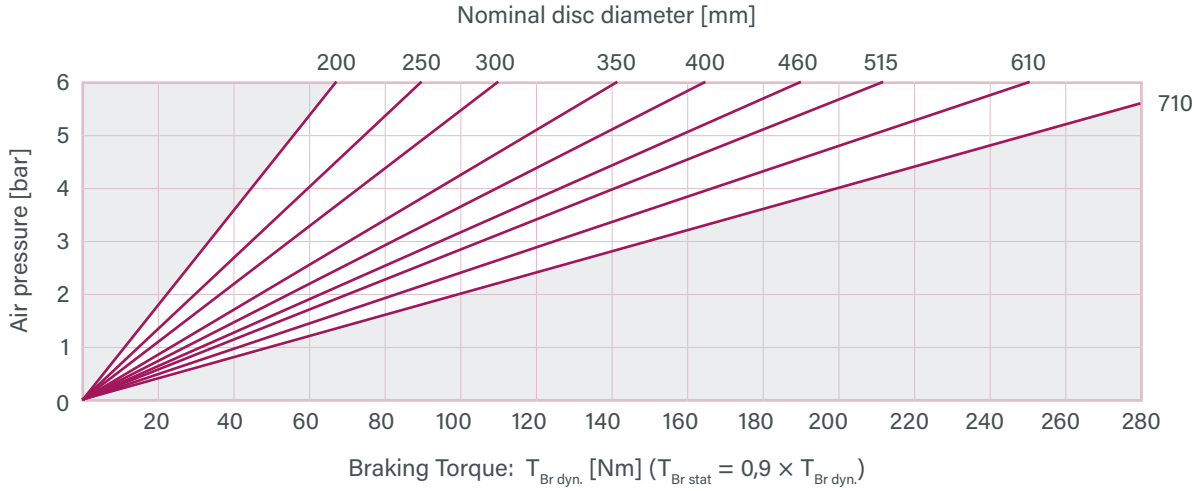
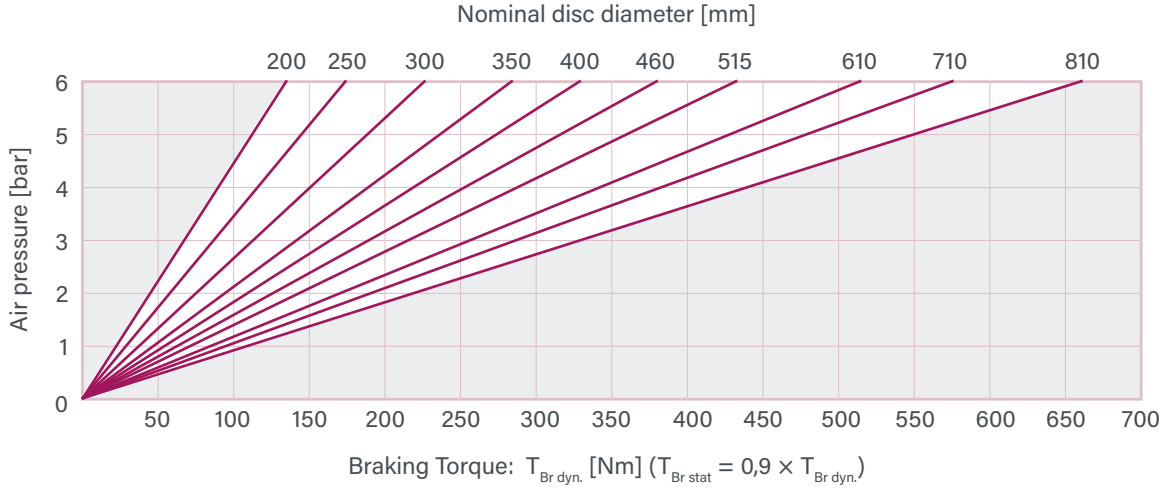


RH 100.105.01



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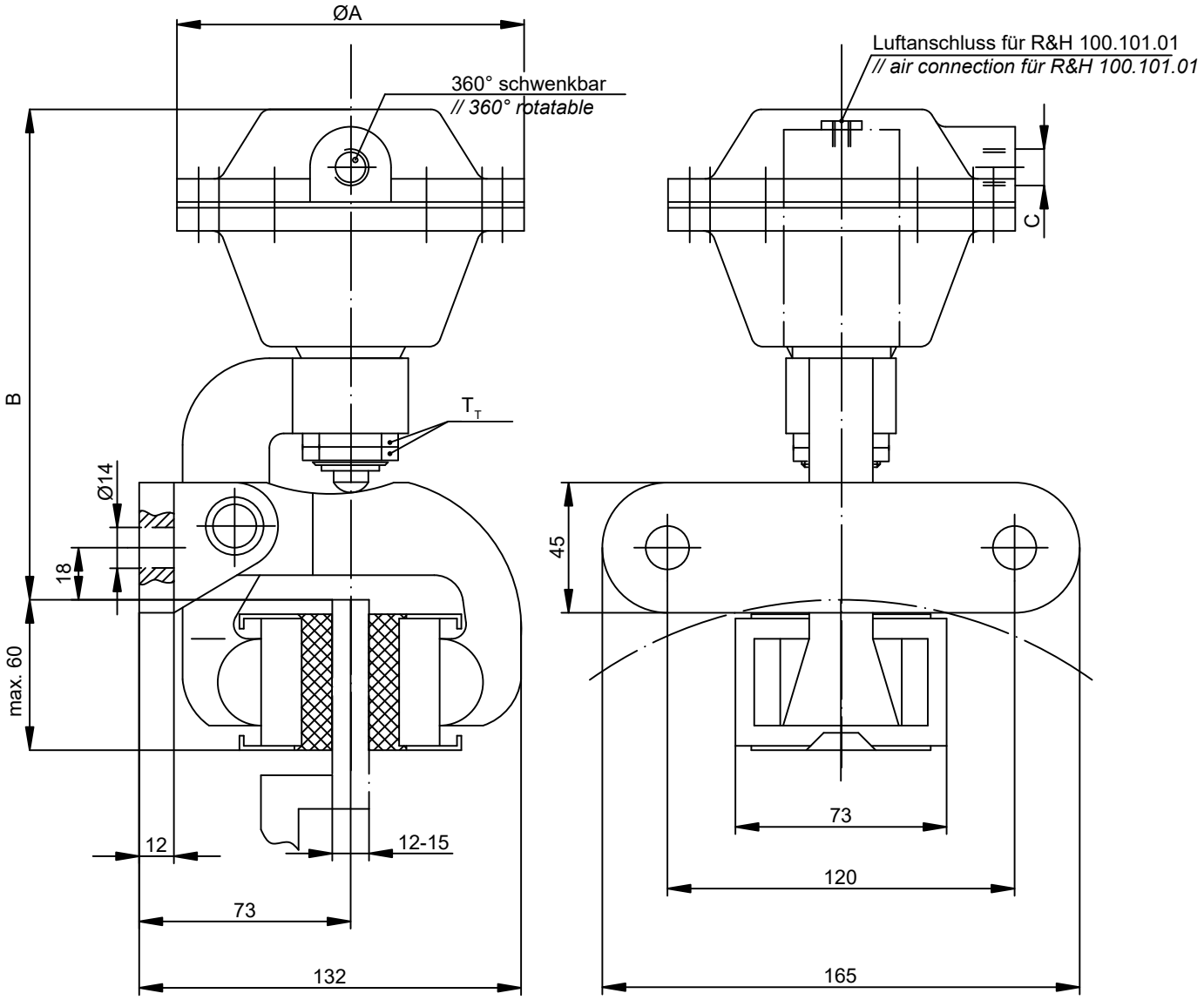

Mounting position is horizontal. Please get in touch if different.

Typee	Part-No.	Mass [kg]	ØA [mm]	B [mm]	C	V / Stroke [dm³]	M_A [Nm]
RH 100.101.01	10389	3,1	40	170	G1/4	0,04	15
RH 100.102.01	10390	3,6	97	185	G1/4	0,07	60
RH 100.103.01	10388	4	120	175	G1/4	0,15	60
RH 100.105.01	10386	4,3	144	180	G3/8	0,30	60

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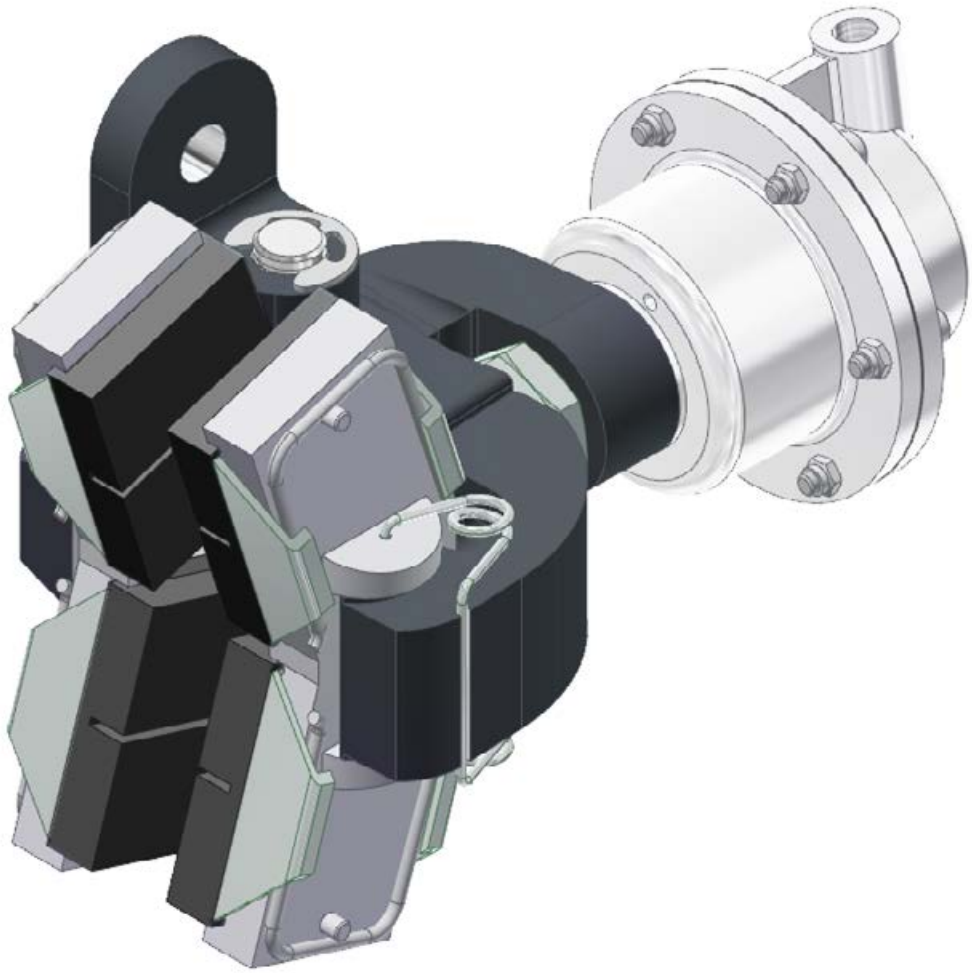
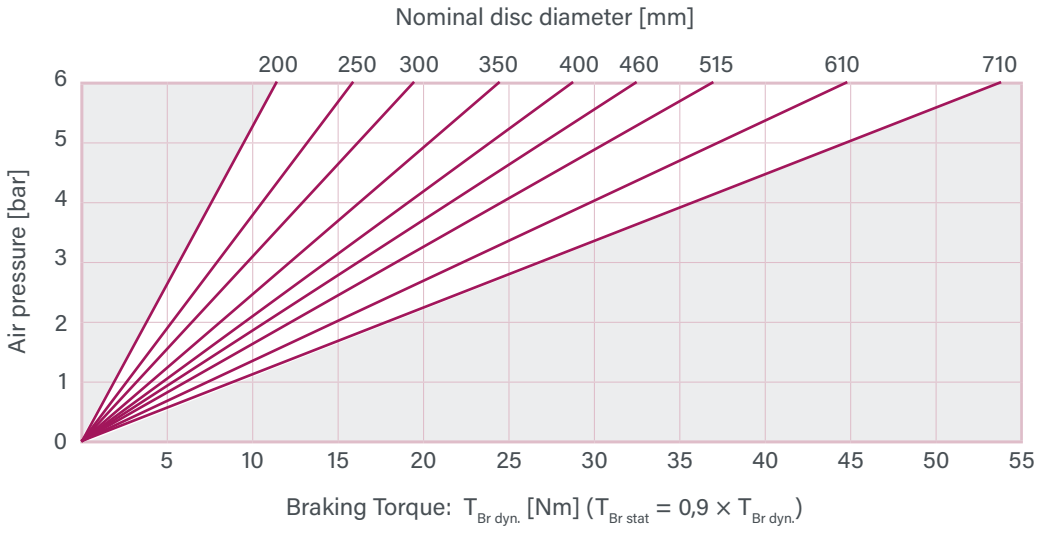


RH 100.101.02



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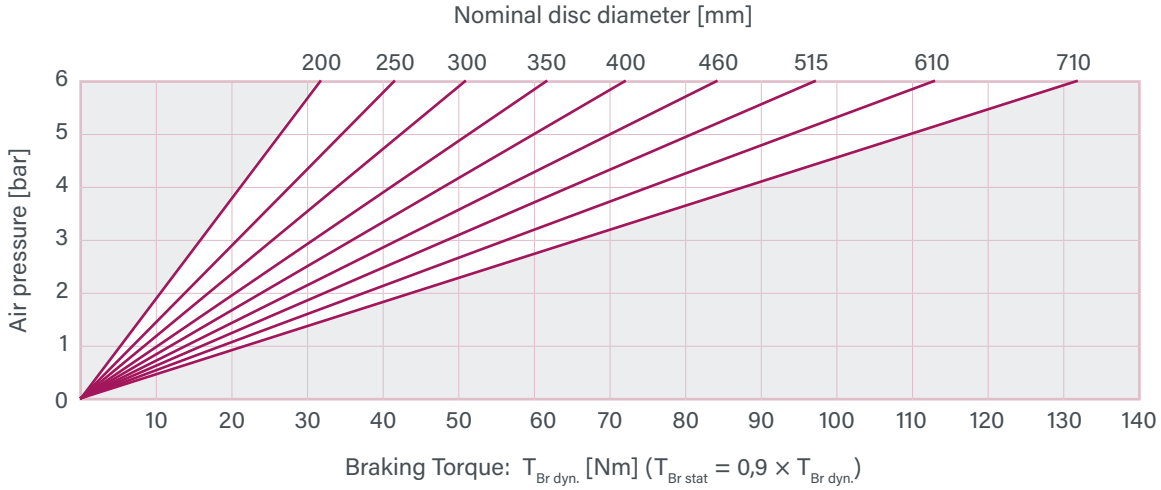
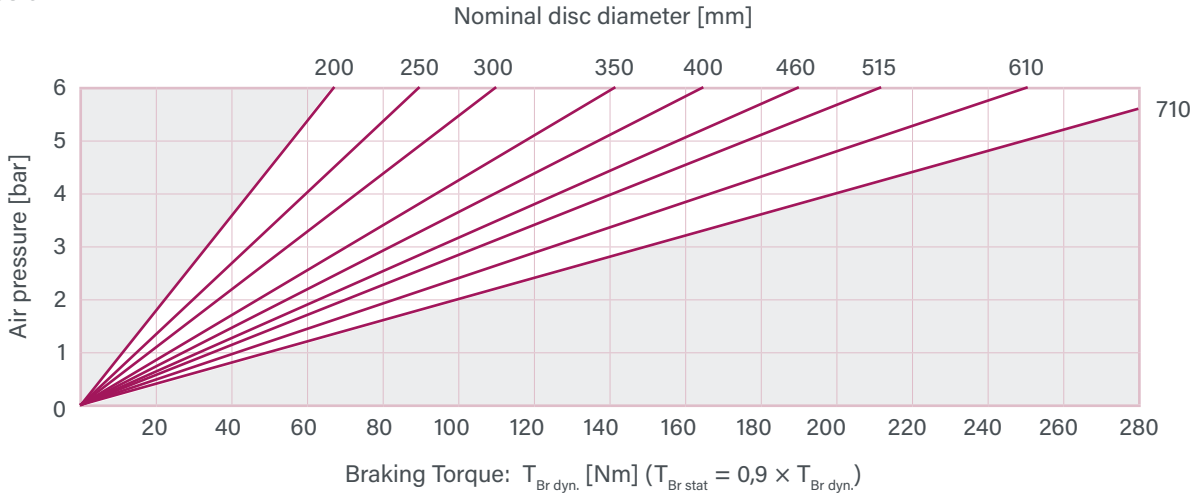
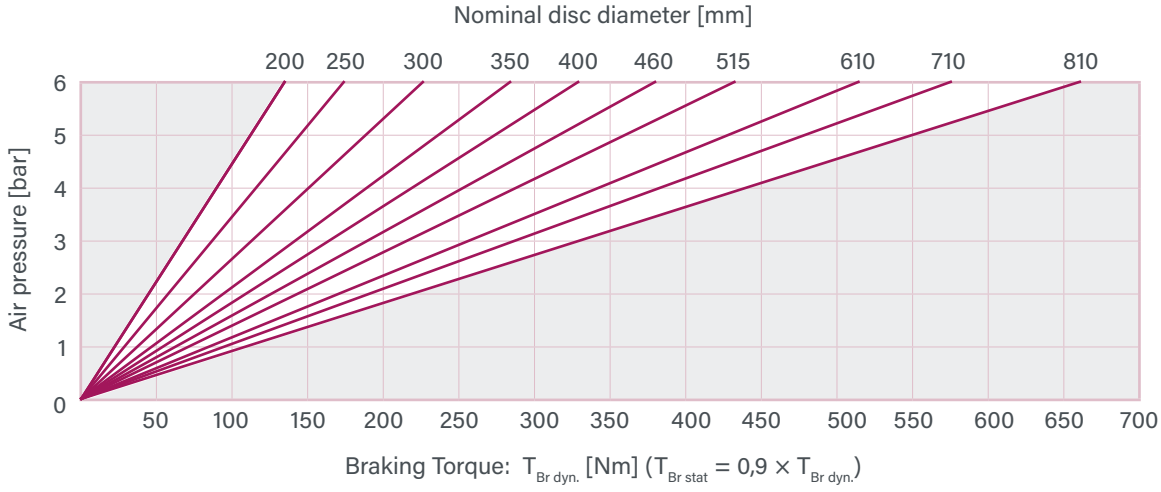
RH 100.102.02



RH 100.103.02



RH 100.105.02



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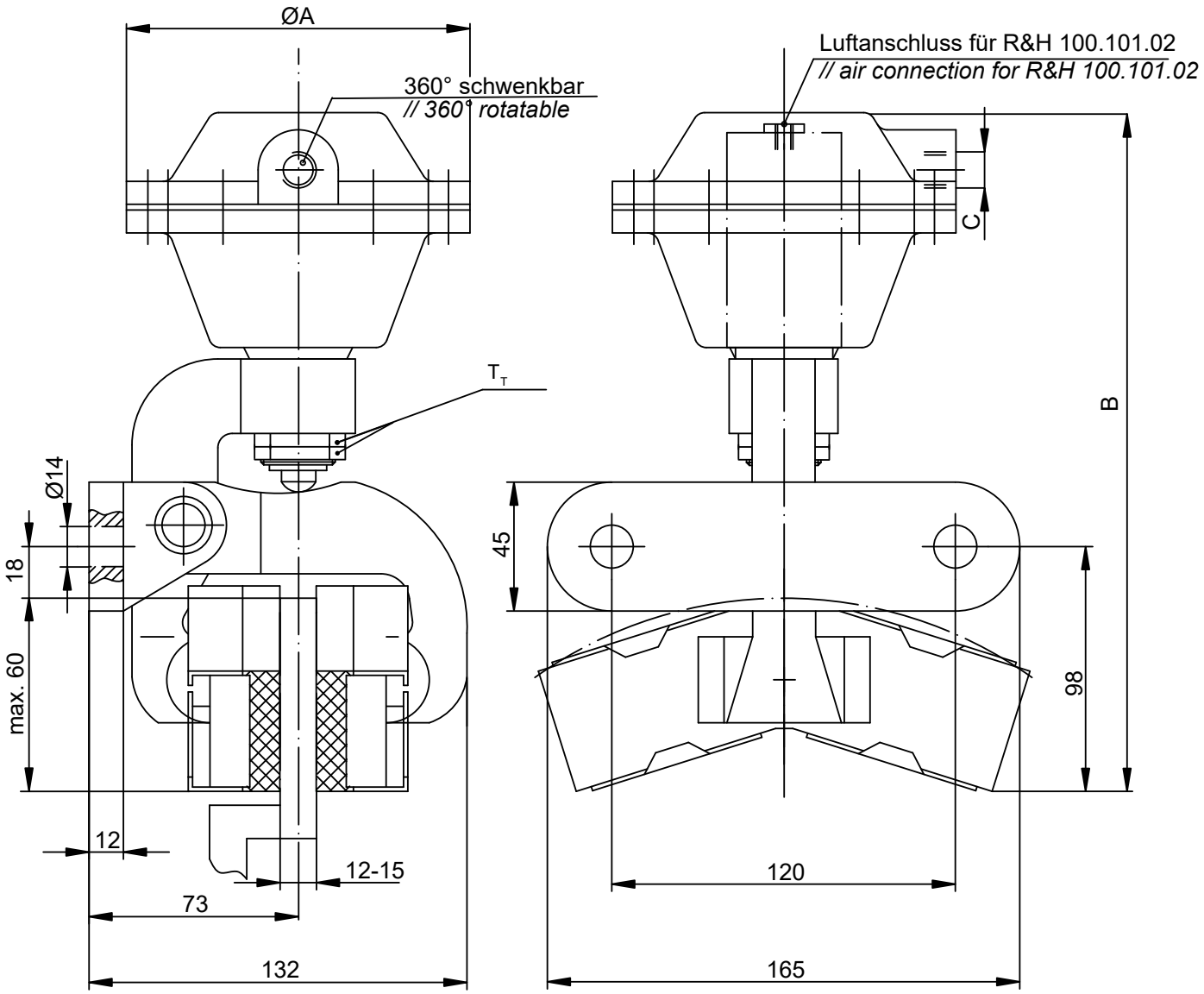

Mounting position is horizontal. Please get in touch if different.

Typee	Part-No.	Mass [kg]	ØA [mm]	B [mm]	C	V / Stroke [dm³]	M_A [Nm]
RH 100.101.02	10781	3,6	40	245	G1/4	0,04	60
RH 100.102.02	10782	4,1	97	253	G1/4	0,07	60
RH 100.103.02	10783	4,4	120	240	G1/4	0,15	60
RH 100.105.02	10784	4,9	144	240	G3/8	0,30	60

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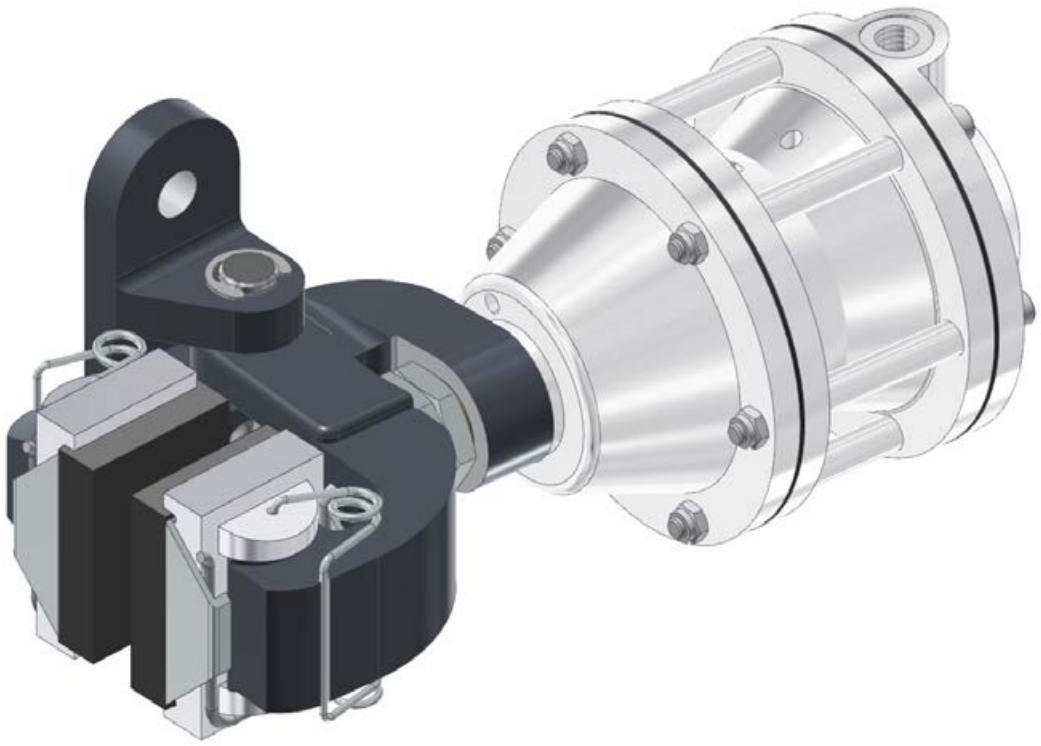
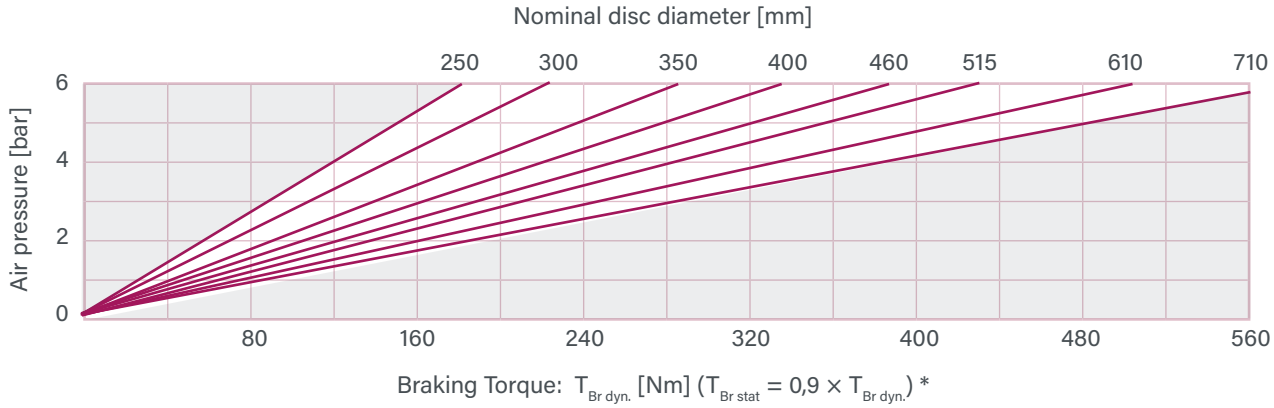
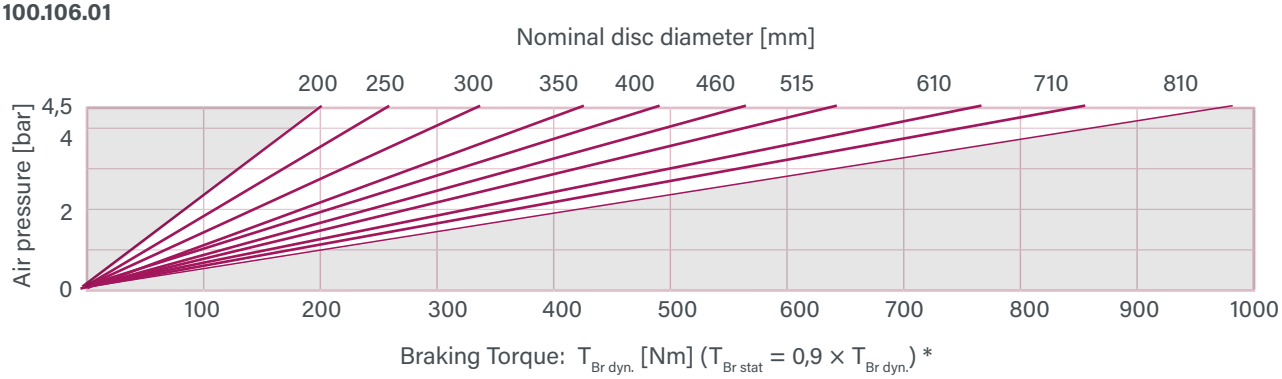


RH 100.104.01



RH 100.106.01



* using one chamber $T_{Br\ dyn.}$ × 0,5

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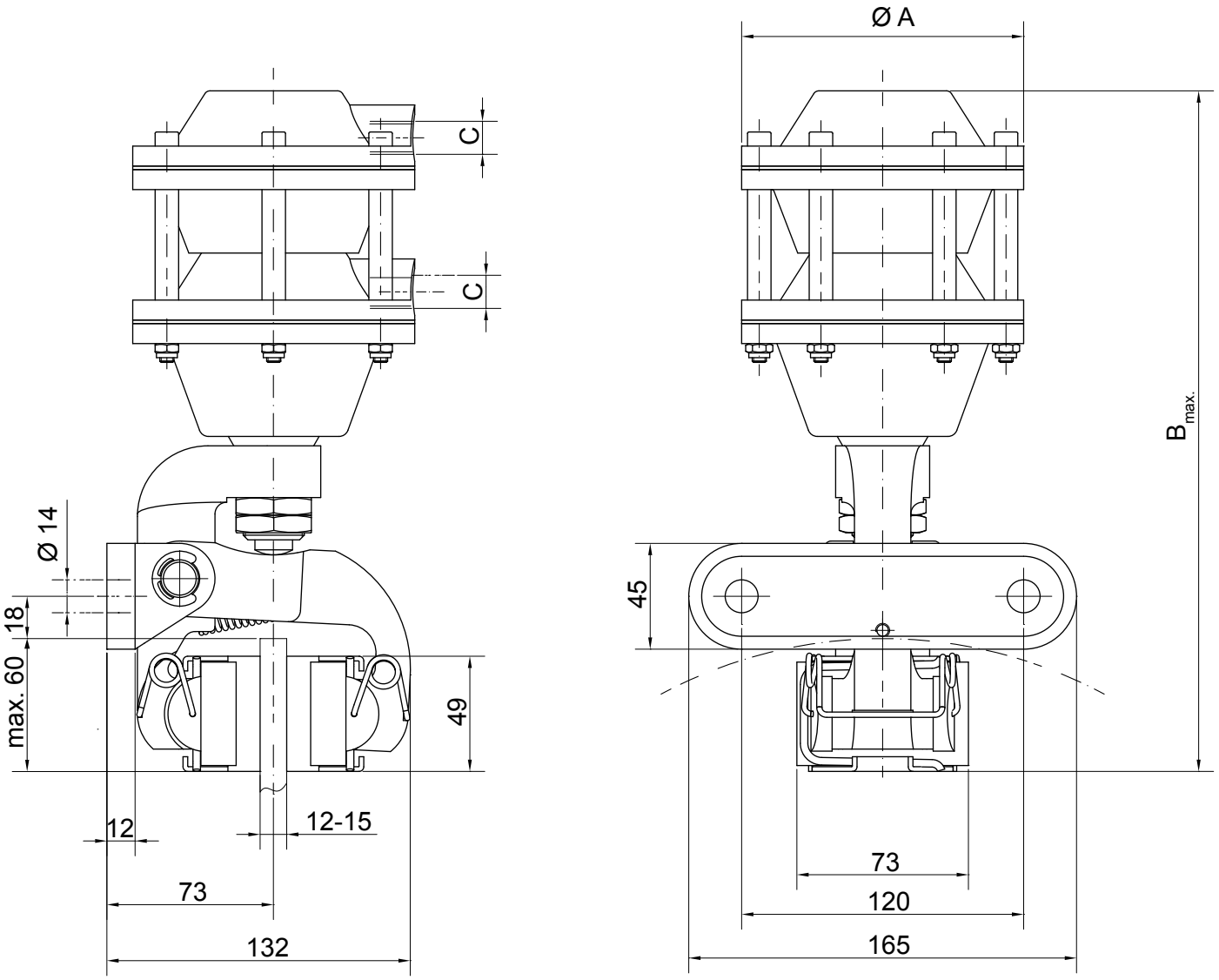

Brake shoes flexibly mounted.
Installation position horizontal – please consult us in case of deviations.

Type	Part-No.	Mass [kg]	ØA [mm]	B [mm]	C	V / Stroke [dm³]
RH 100.104.01	10560	4,6	120	290	2 × G1/4	2 × 0,15
RH 100.106.01	10387	5,4	144	290	2 × G3/8	2 × 0,30

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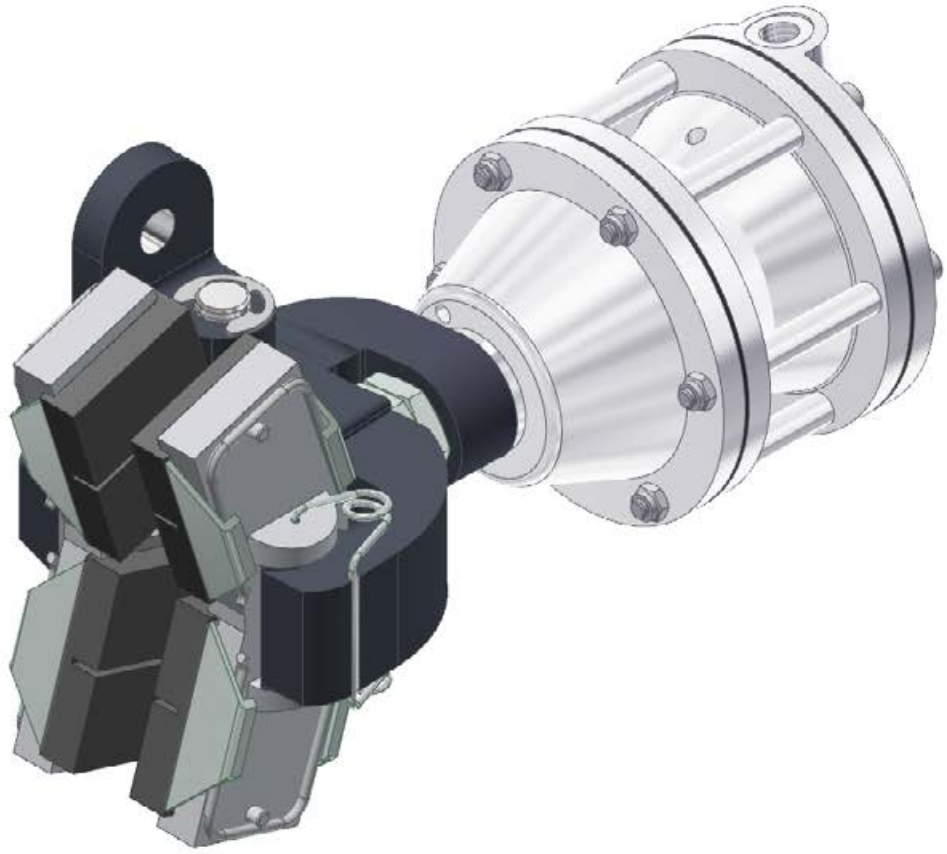
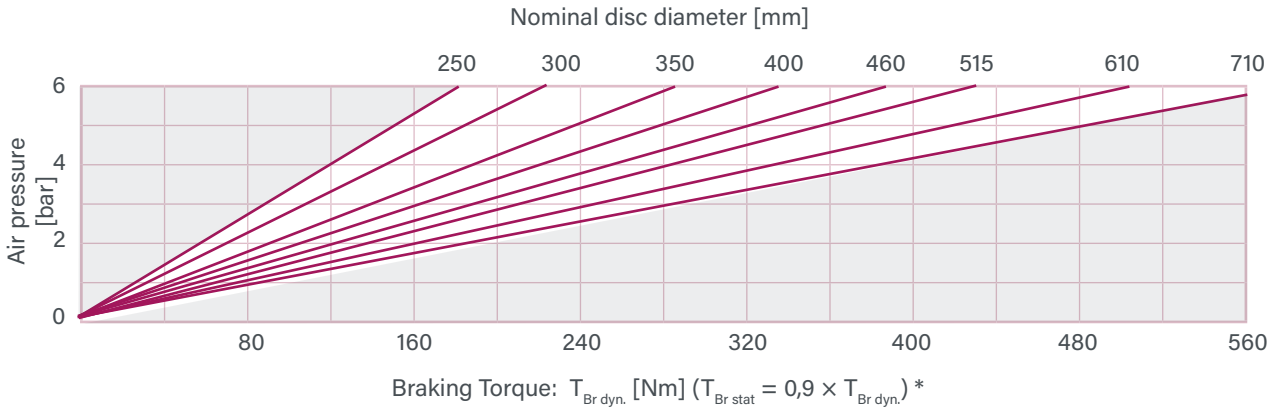
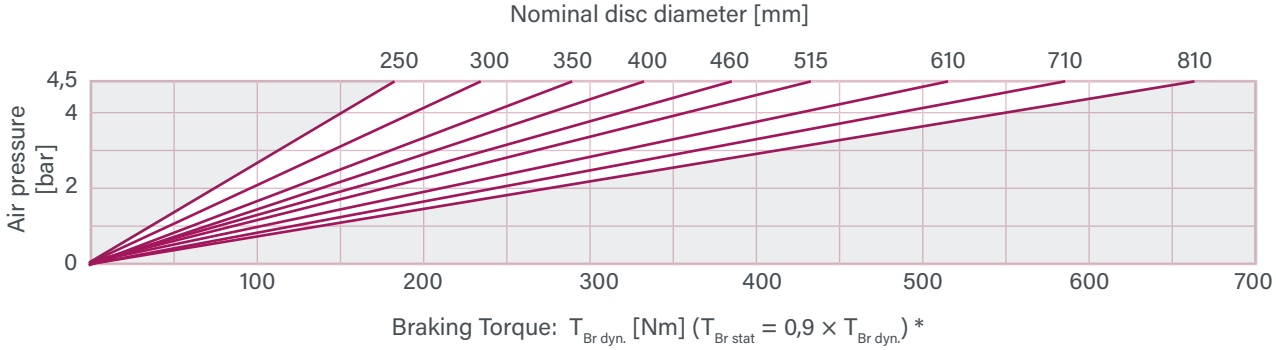


RH 100.104.02



RH 100.106.02



* using one chamber $T_{Br\ dyn.}$ × 0,5

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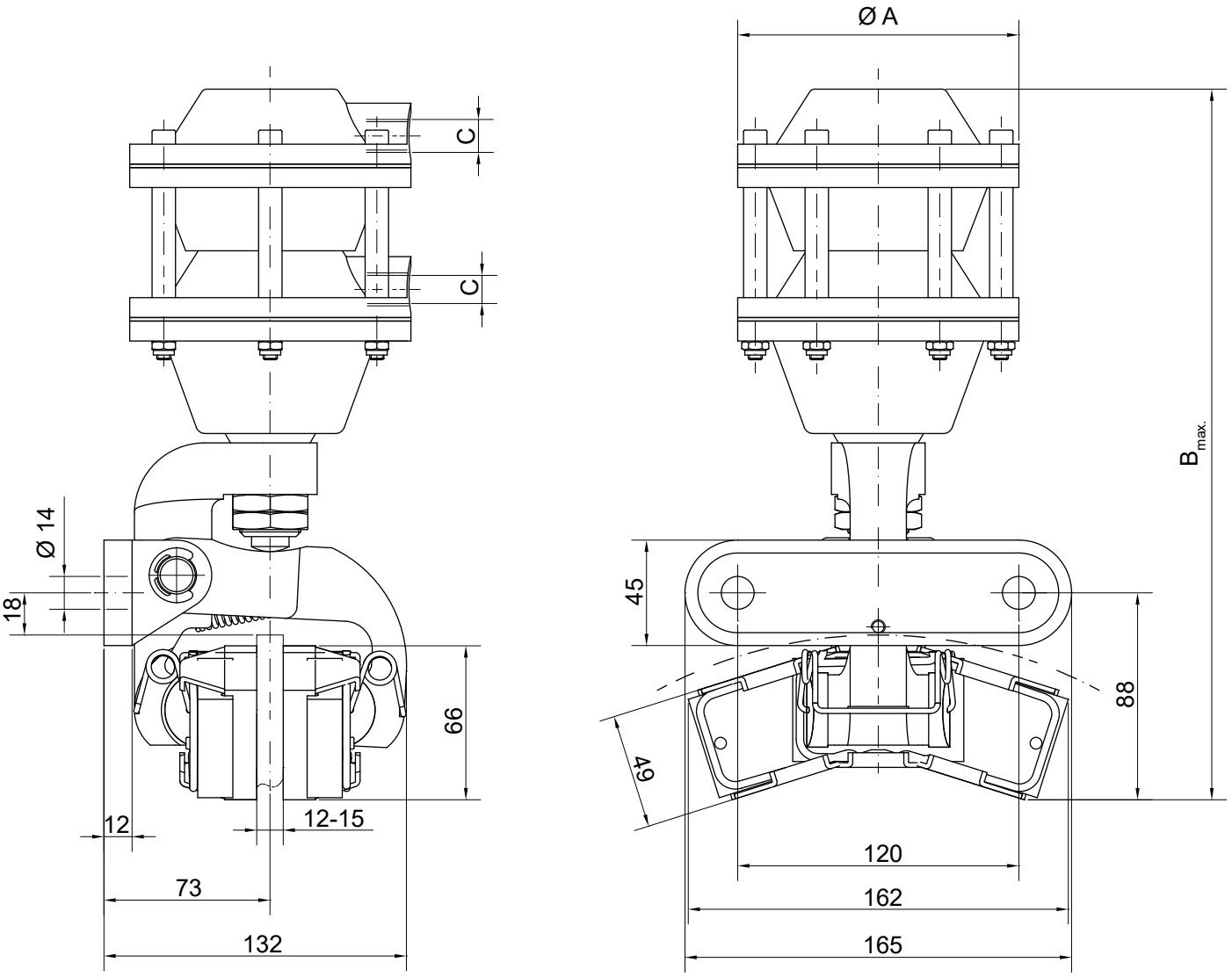

Brake shoes flexibly mounted.
Installation position horizontal – please consult us in case of deviations.

Type	Part-No.	Mass [kg]	ØA [mm]	B [mm]	C	V / Stroke [dm³]
RH 100.104.02	10917	4,6	120	304	2 × G1/4	2 × 0,15
RH 100.106.02	10916	5,4	144		2 × G3/8	2 × 0,30

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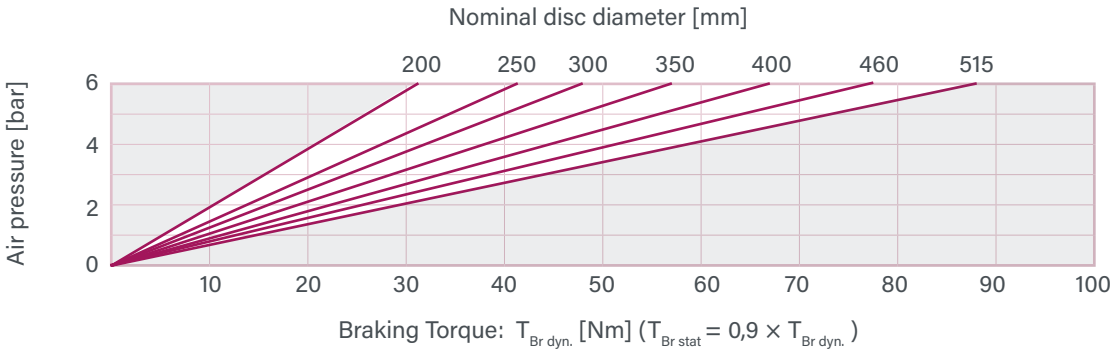
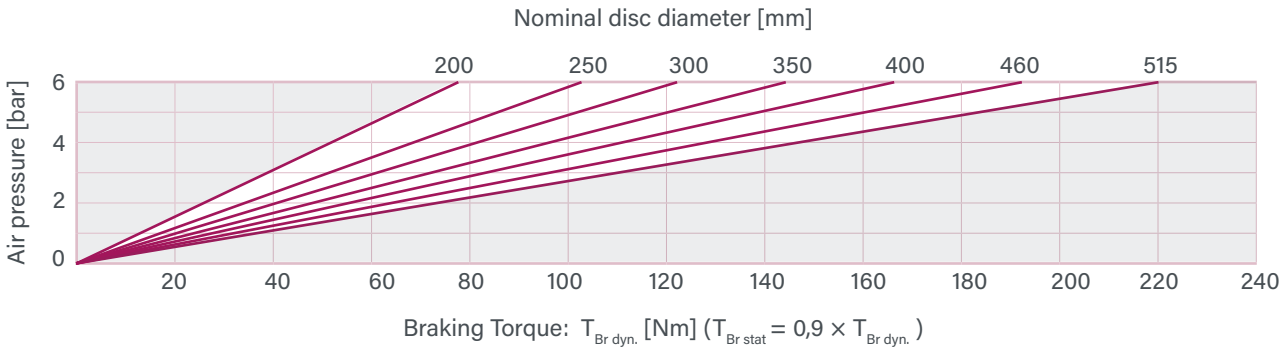
RH 125.101.01



RH 125.102.01



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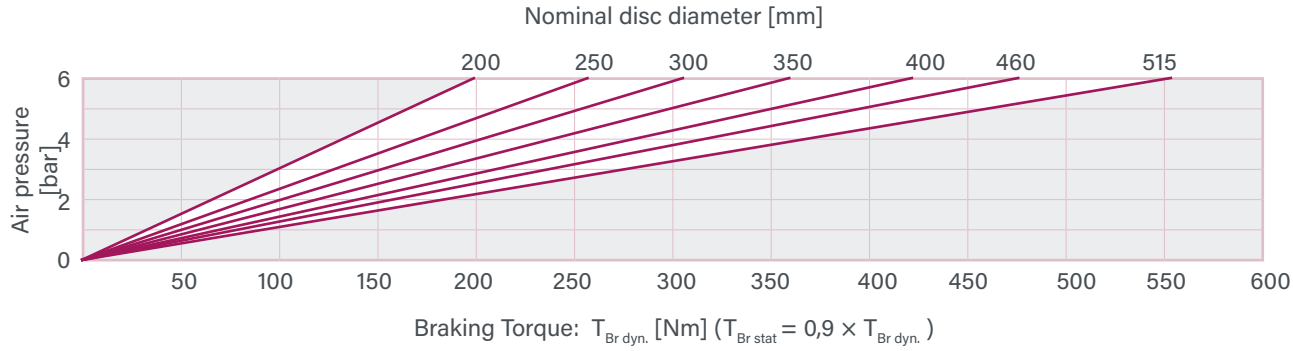
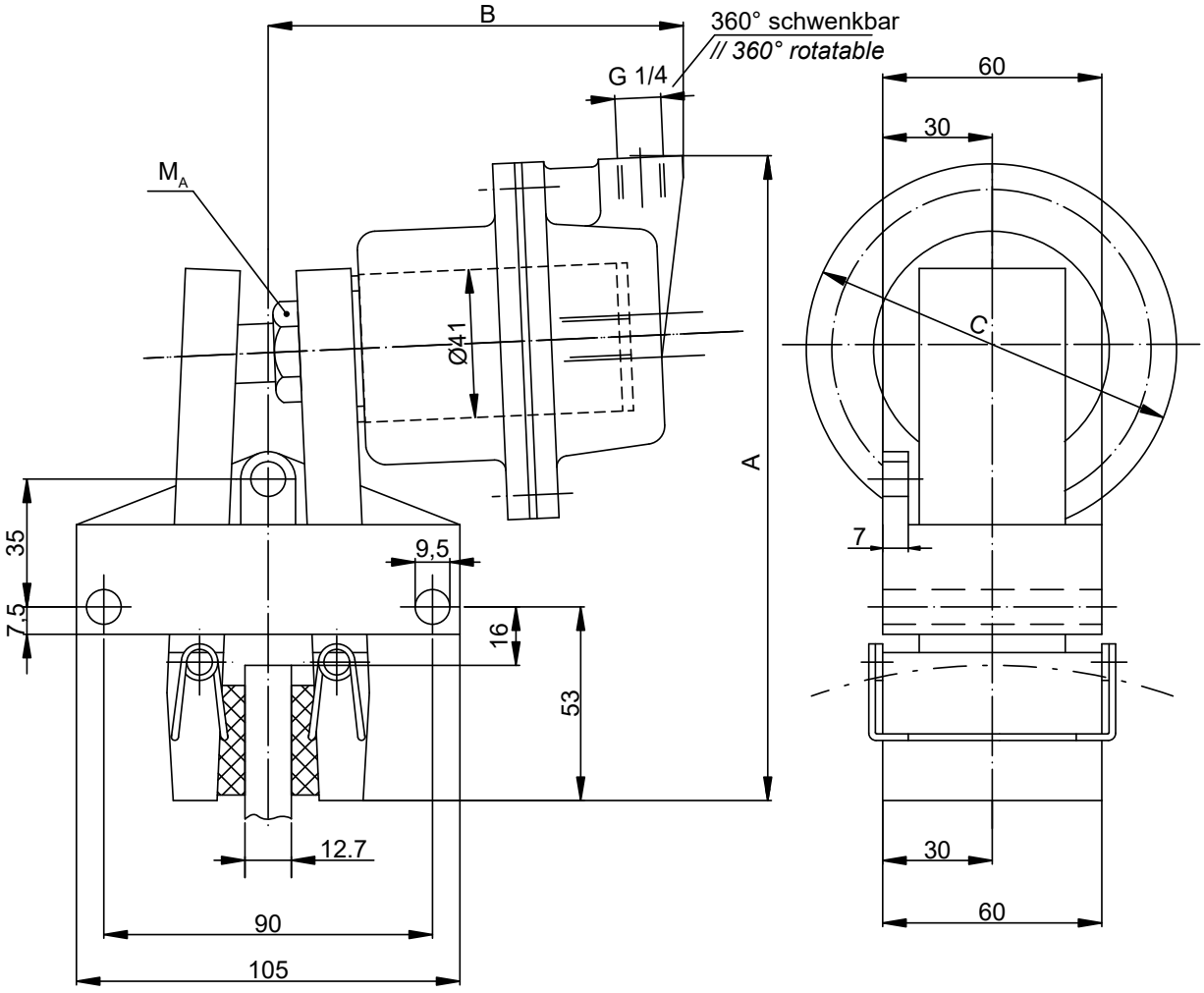
RH 125.103.01





Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	Mass [kg]	A [mm]	B [mm]	C	V / Stroke [dm³]	T_A [Nm]
RH 125.101.01	10104	1	150	100	41	0,04	15
RH 125.102.01	10105	1,5	170	120	97	0,07	60
RH 125.103.01	10103	1,8	183	110	120	0,15	60

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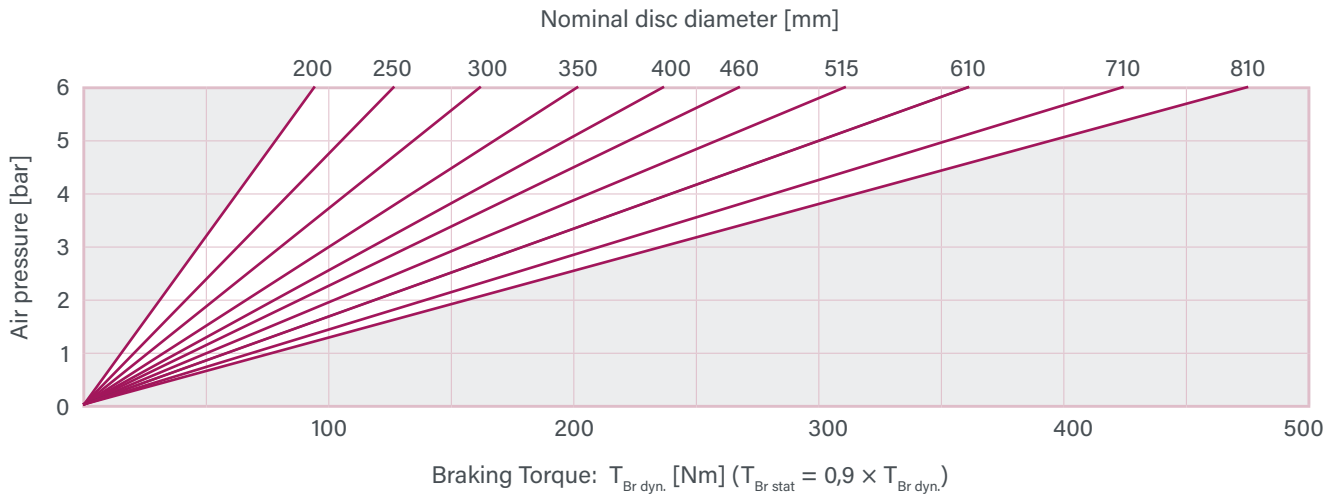
RH 200.102.01



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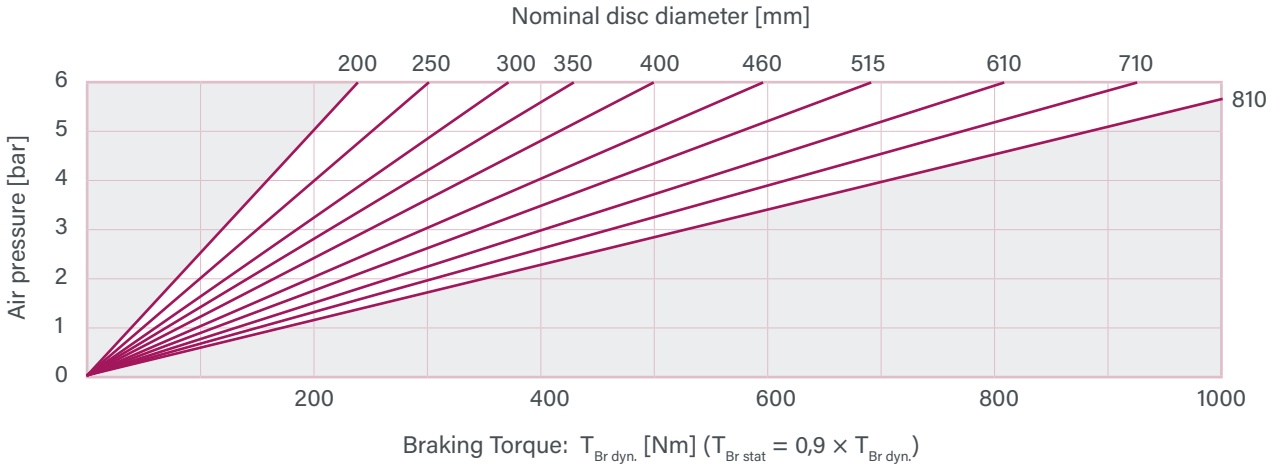
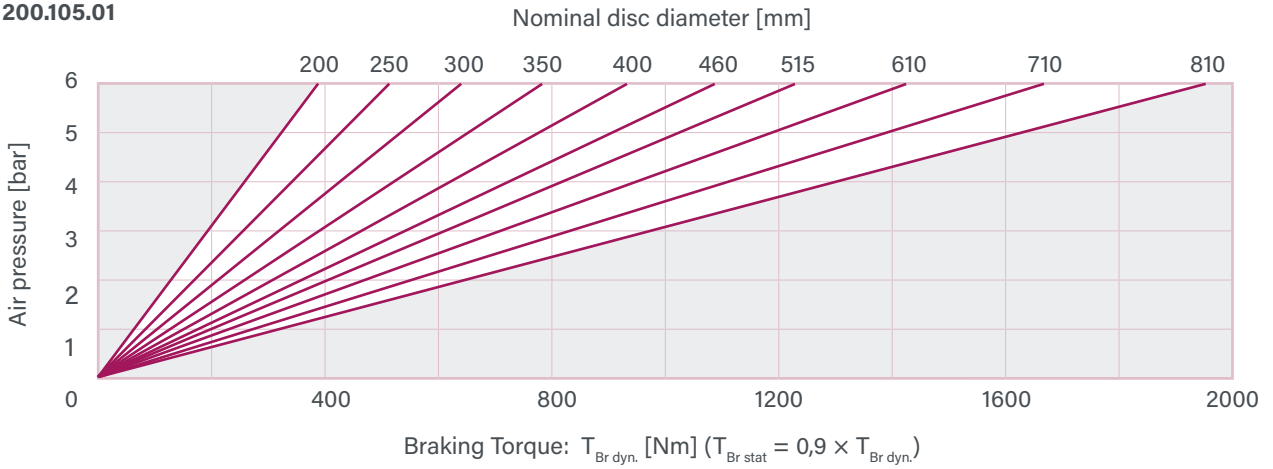
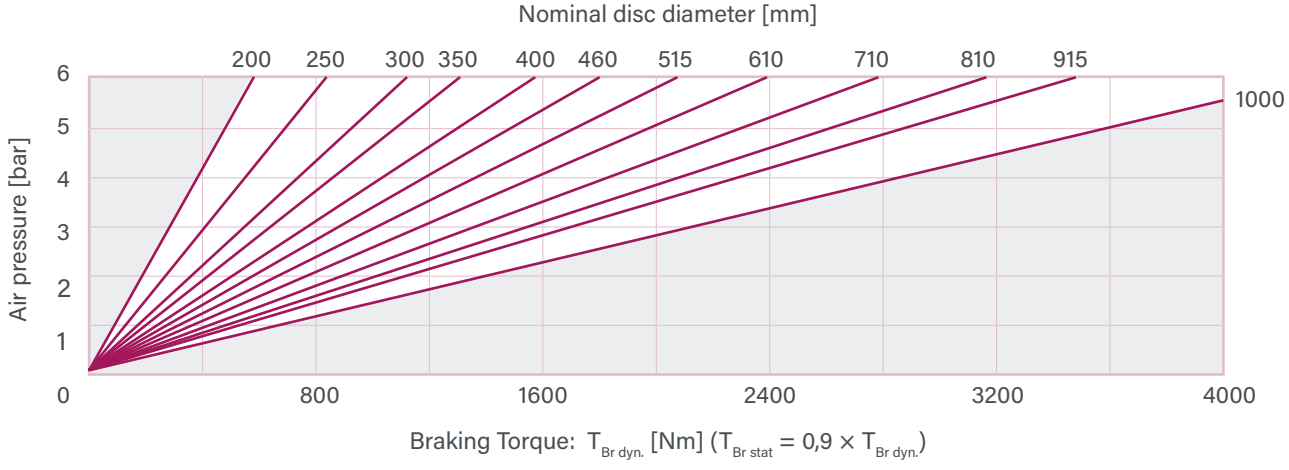
RH 200.103.01



RH 200.105.01



RH 200.107.01



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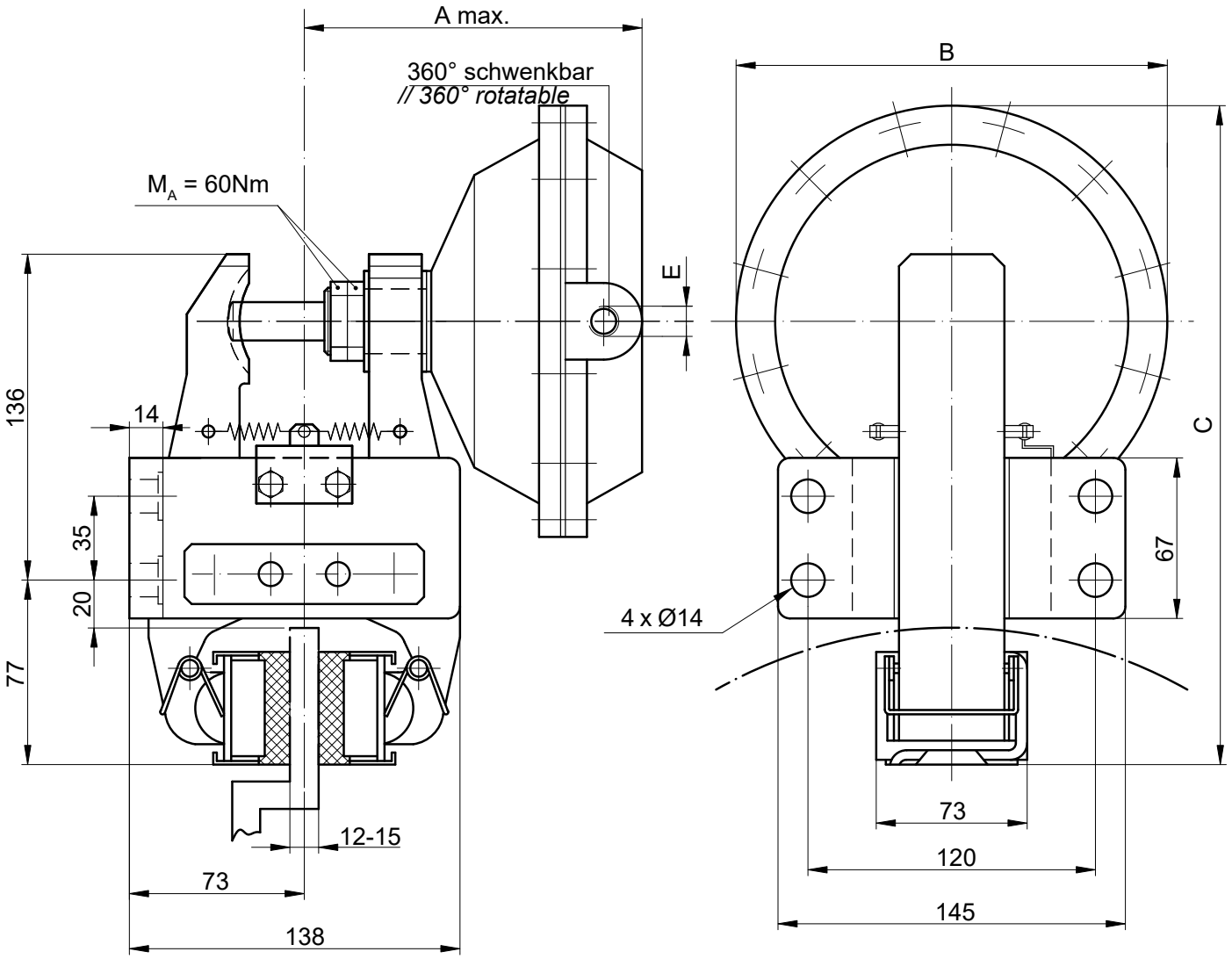

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side" mounted please state with order.

Type	Part-No.	Mass [kg]	A [mm]	Ø B [mm]	C [mm]	V / Stroke [dm³]	E
RH 200.102.01	11145	8,2	155	97	236	0,07	G 1/4
RH 200.103.01	11148	8,6	151	120	248	0,15	G 1/4
RH 200.105.01	11151	8,8	151	144	260	0,30	G 3/8
RH 200.107.01	11154	9,6	165	180	278	0,43	G 3/8

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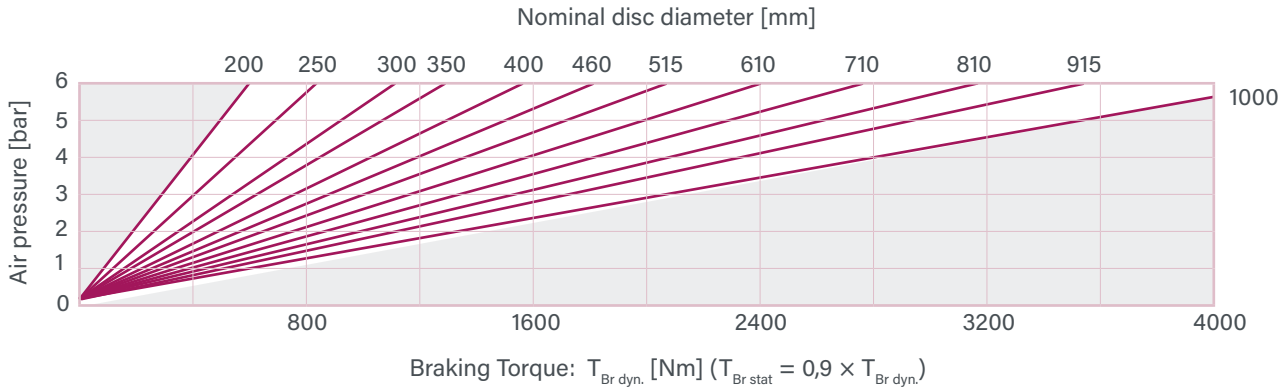
NOTE:
Can also be used as spring-applied, pneumatically released

Pneumatically applied



p_{max}: 8 bar

Spring-applied, pneumatically released

Nominal disc diameter [mm]										
200	250	300	350	400	460	515	6w10	710	810	915
Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat.}$ = 0,9 × $T_{Br\ dyn.}$)										
550	775	925	1050	1250	1400	1650	2000	2300	2600	3000

p_{min}: 5 bar
p_{max}: 10 bar
V / Stroke: 0,22 dm^3
Mass: 16,5 kg

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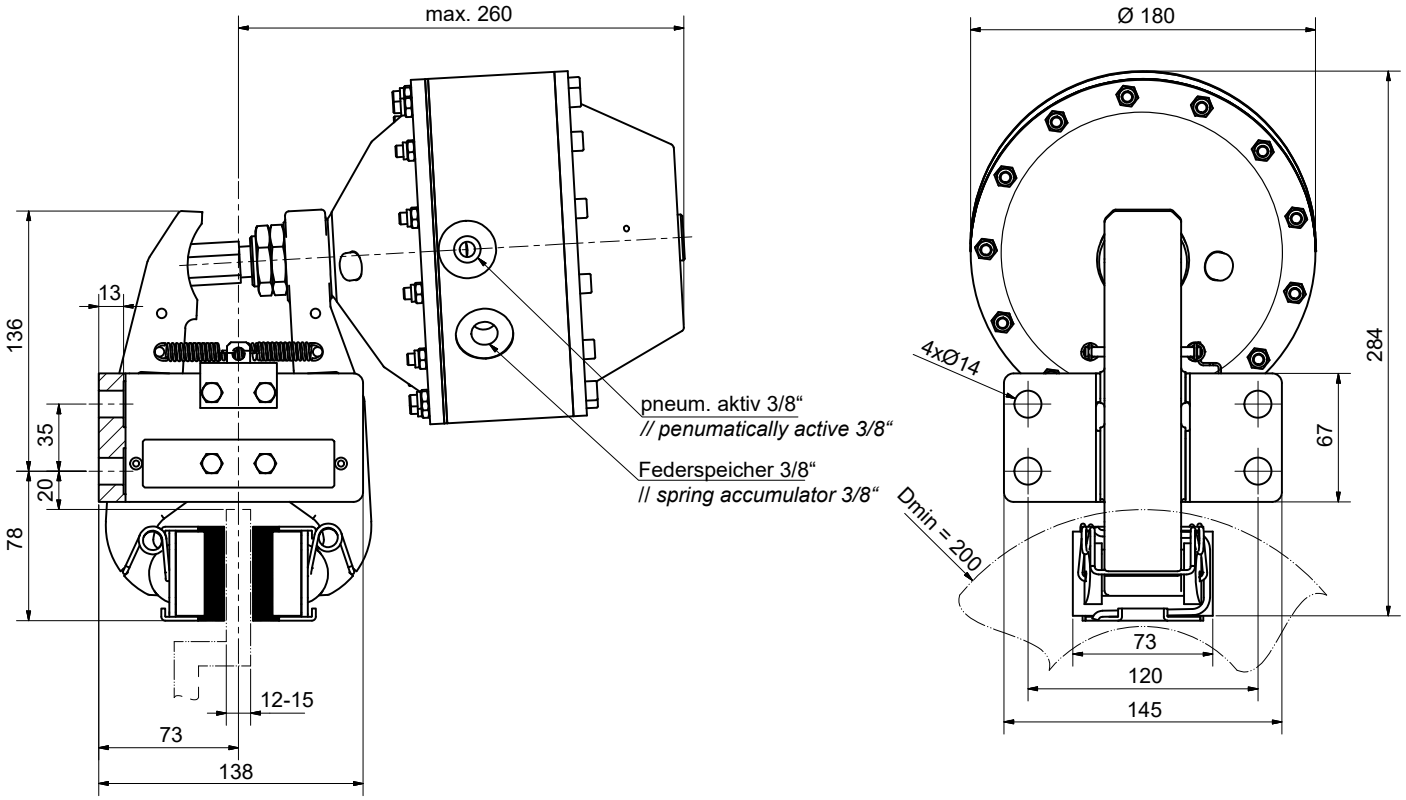

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

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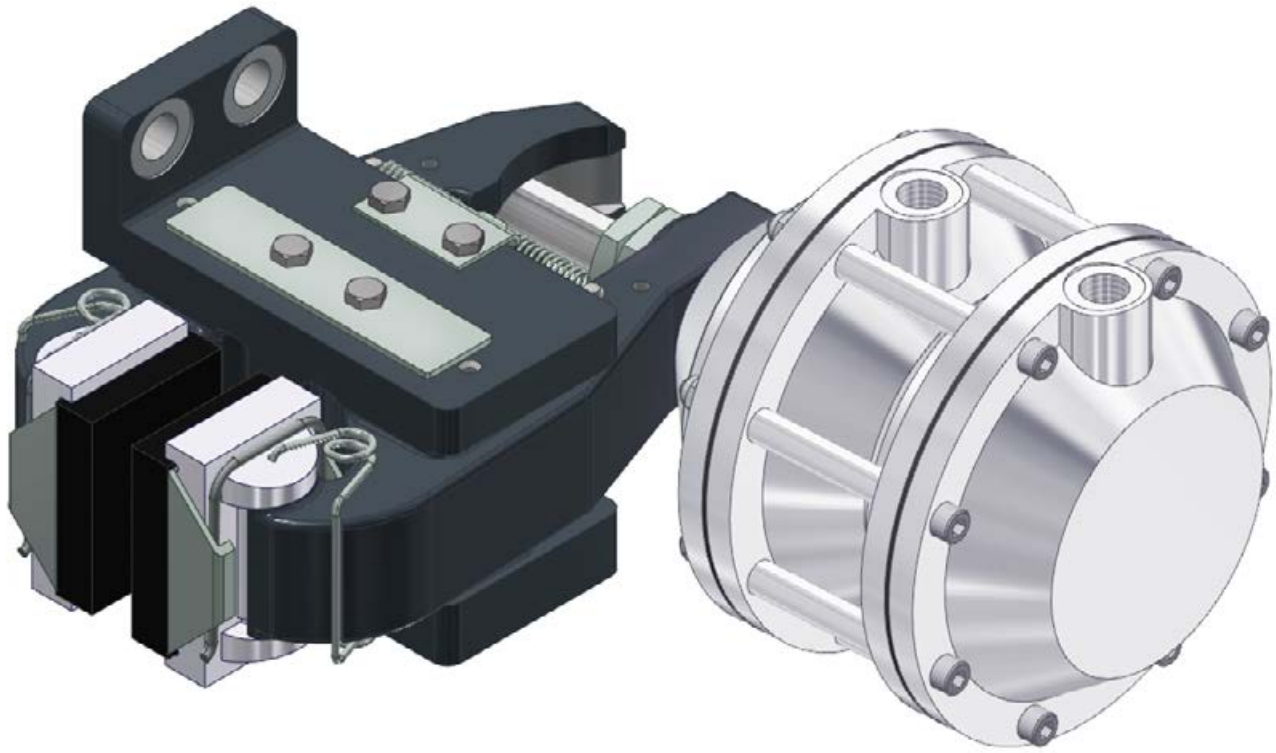
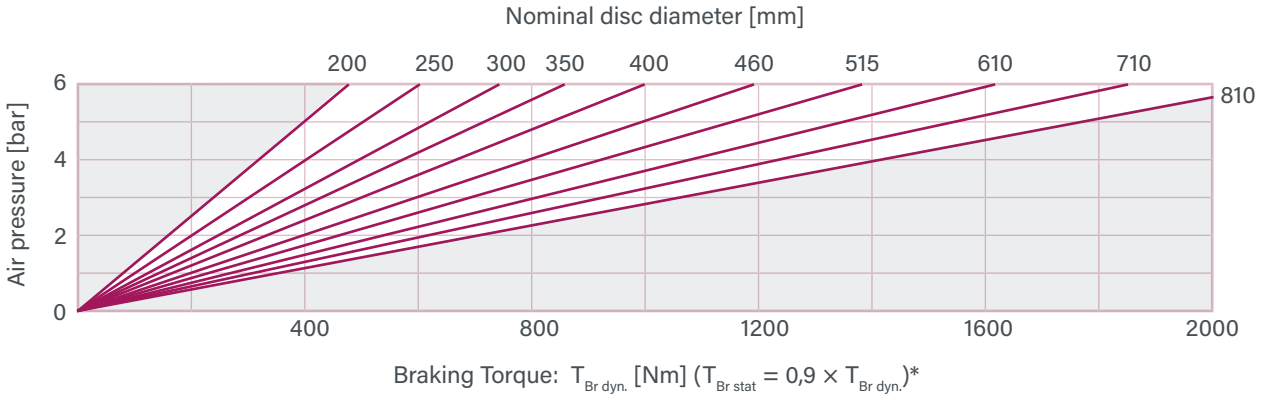
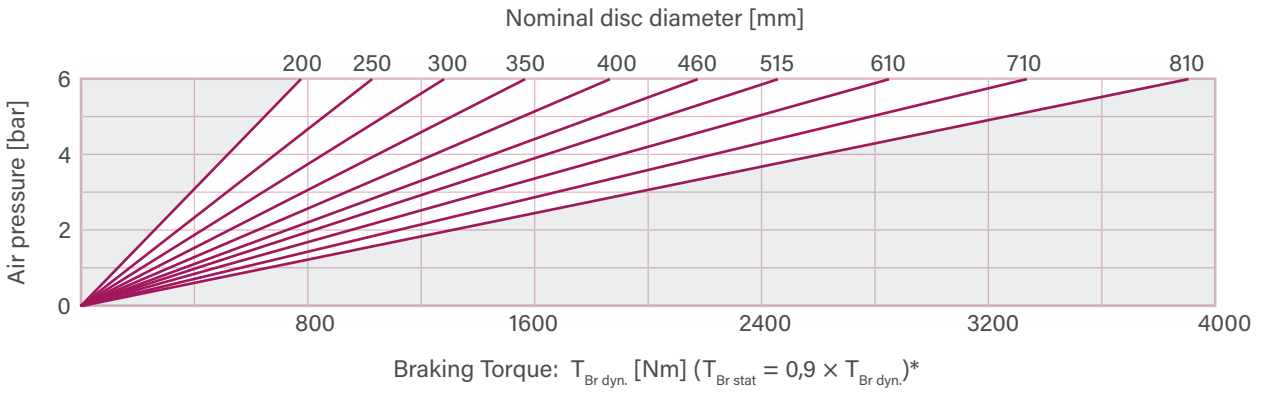


RH 200.104.01



RH 200.106.01



* Using one chamber $T_{Br\ dyn.}$ × 0,5

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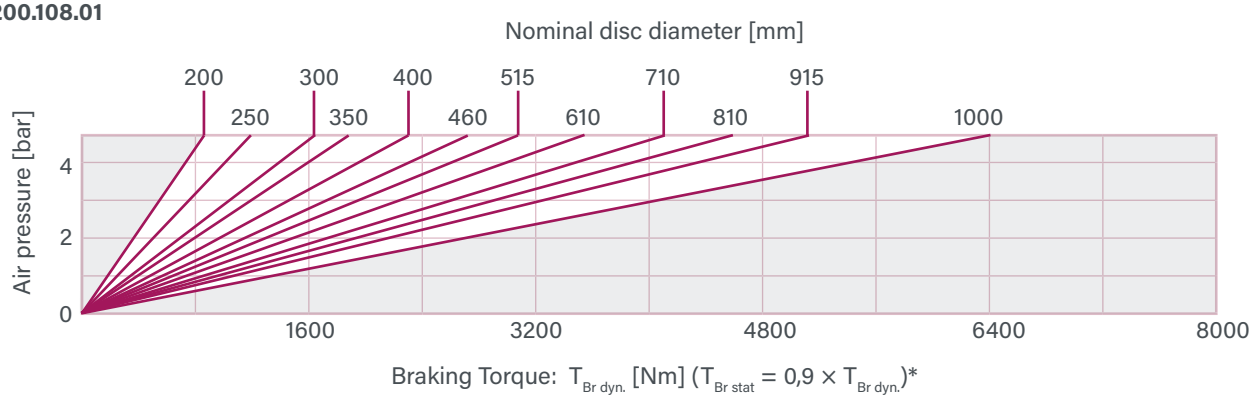
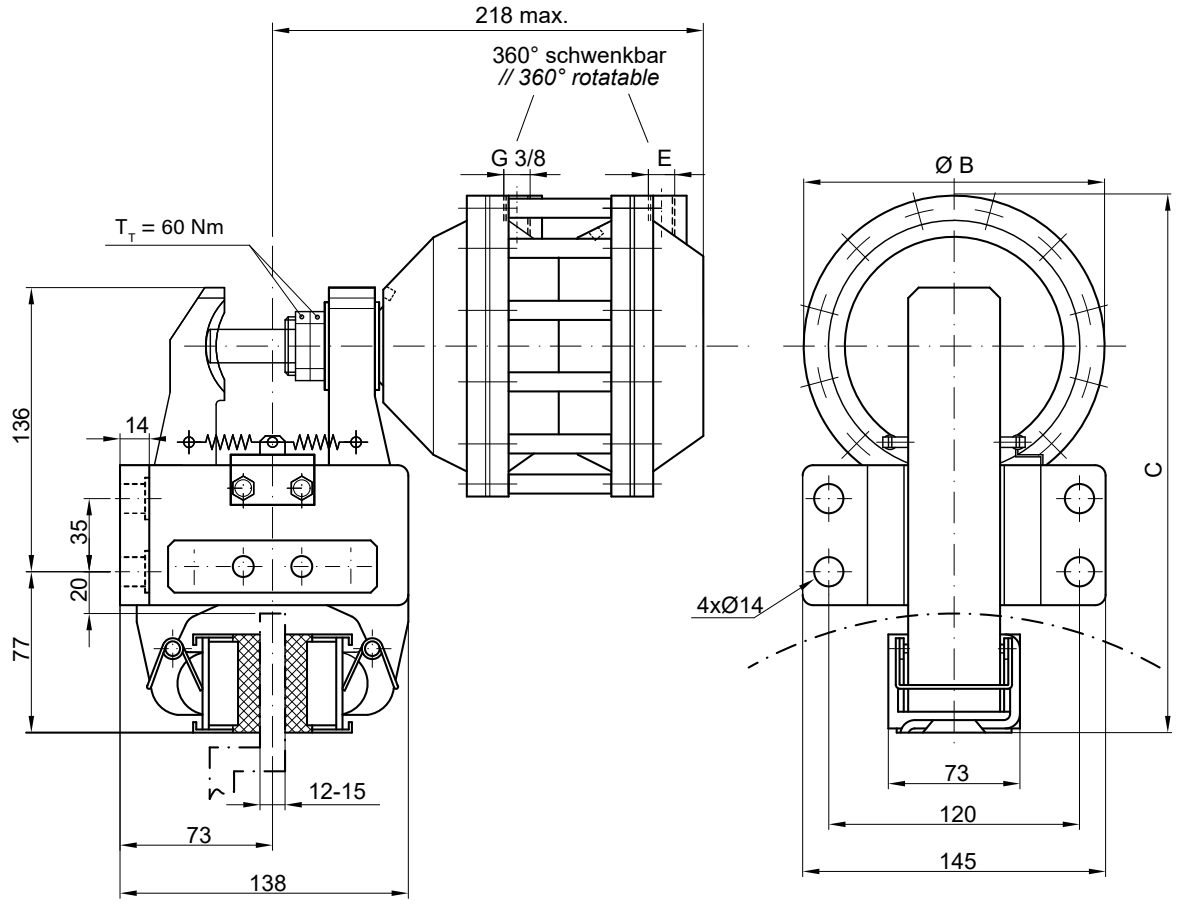
RH 200.108.01



* Using one chamber $T_{Br\ dyn.}$ × 0,5



Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

Type	Part-No.	Mass [kg]	A [mm]	Ø B [mm]	C [mm]	E	V / Stroke [dm³]
RH 200.104.01	11155	9,2	212	120	248	G 1/4	2 × 0,15
RH 200.106.01	11156	9,9	214	144	260	G 3/8	2 × 0,30
RH 200.108.01	12586	10,7	218	180	278	G 3/8	2 × 0,43

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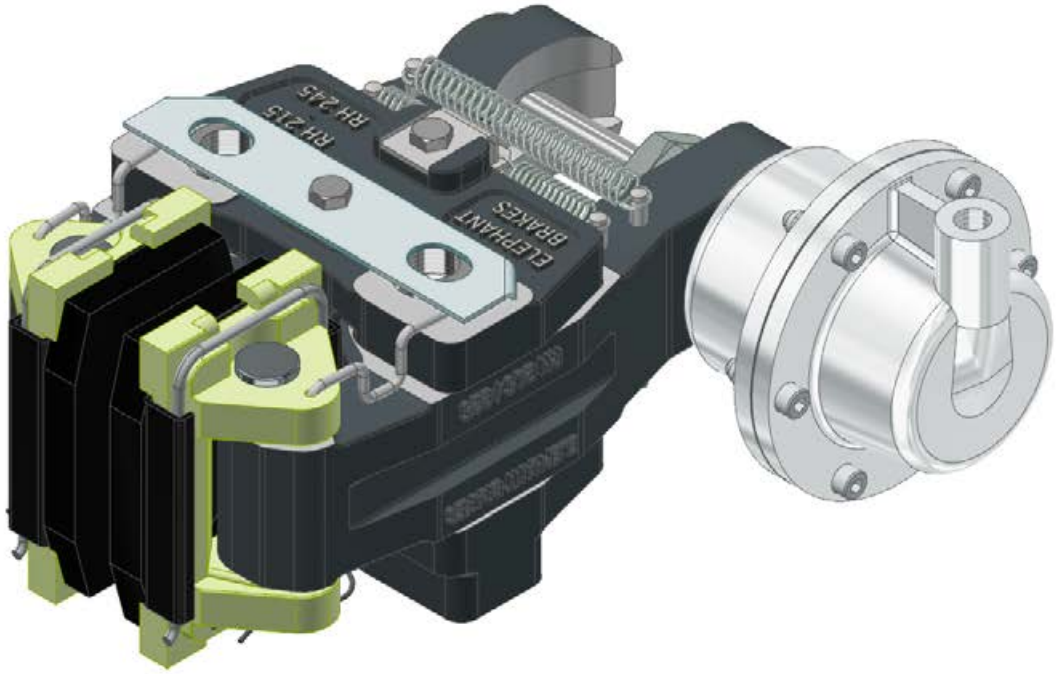
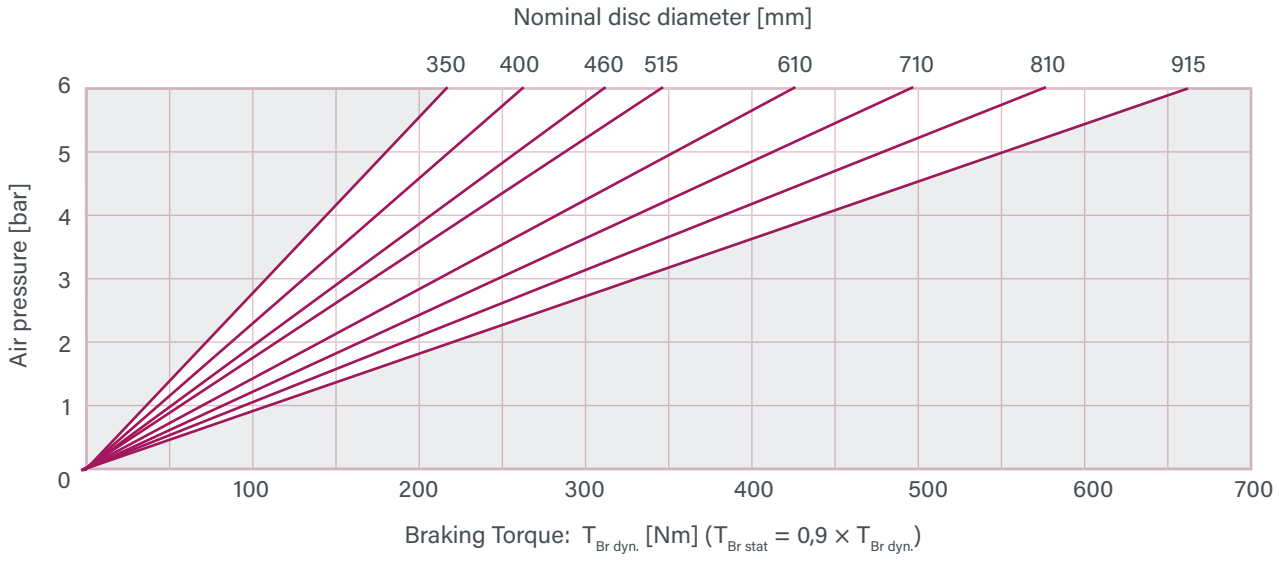


RH 215.102.01 / RH 225.102.01 / RH 230.102.01



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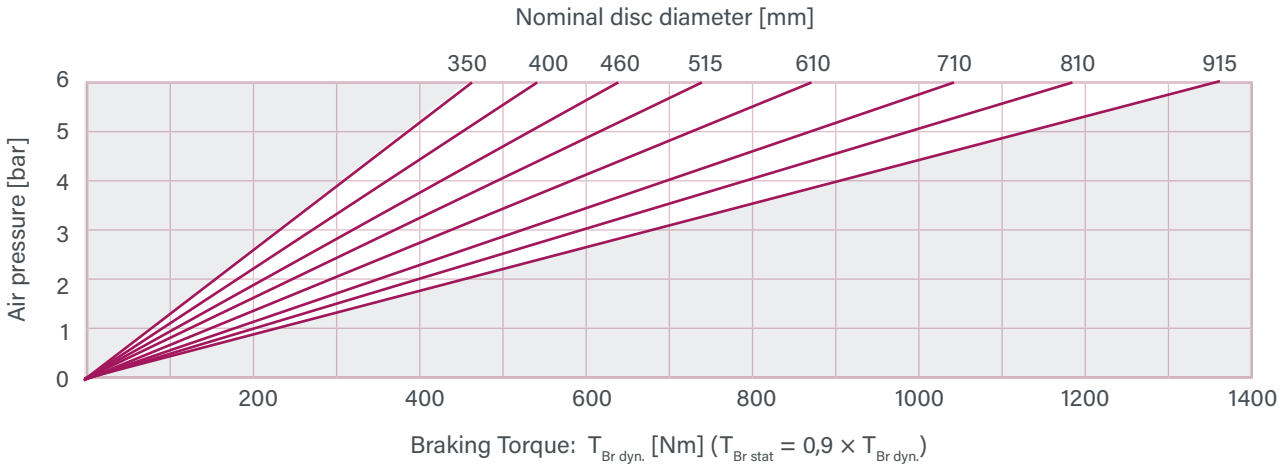
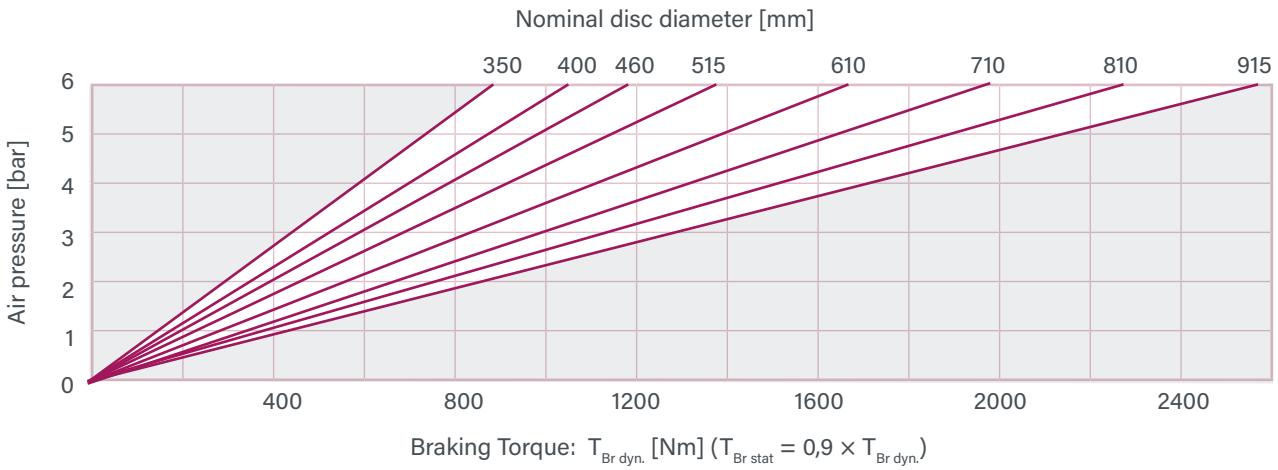
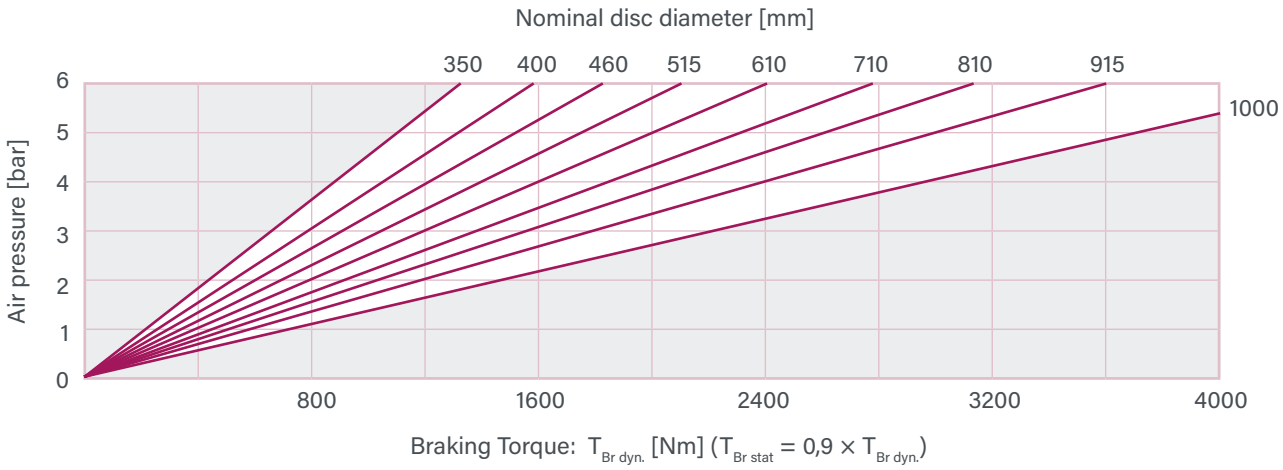
RH 215.103.01 / RH 225.103.01 / RH 230.103.01



RH 215.105.01 / RH 225.105.01 / RH 230.105.01 / RH 245.105.01



RH 215.107.01 / RH 225.107.01 / RH 230.107.01 / RH 245.107.01



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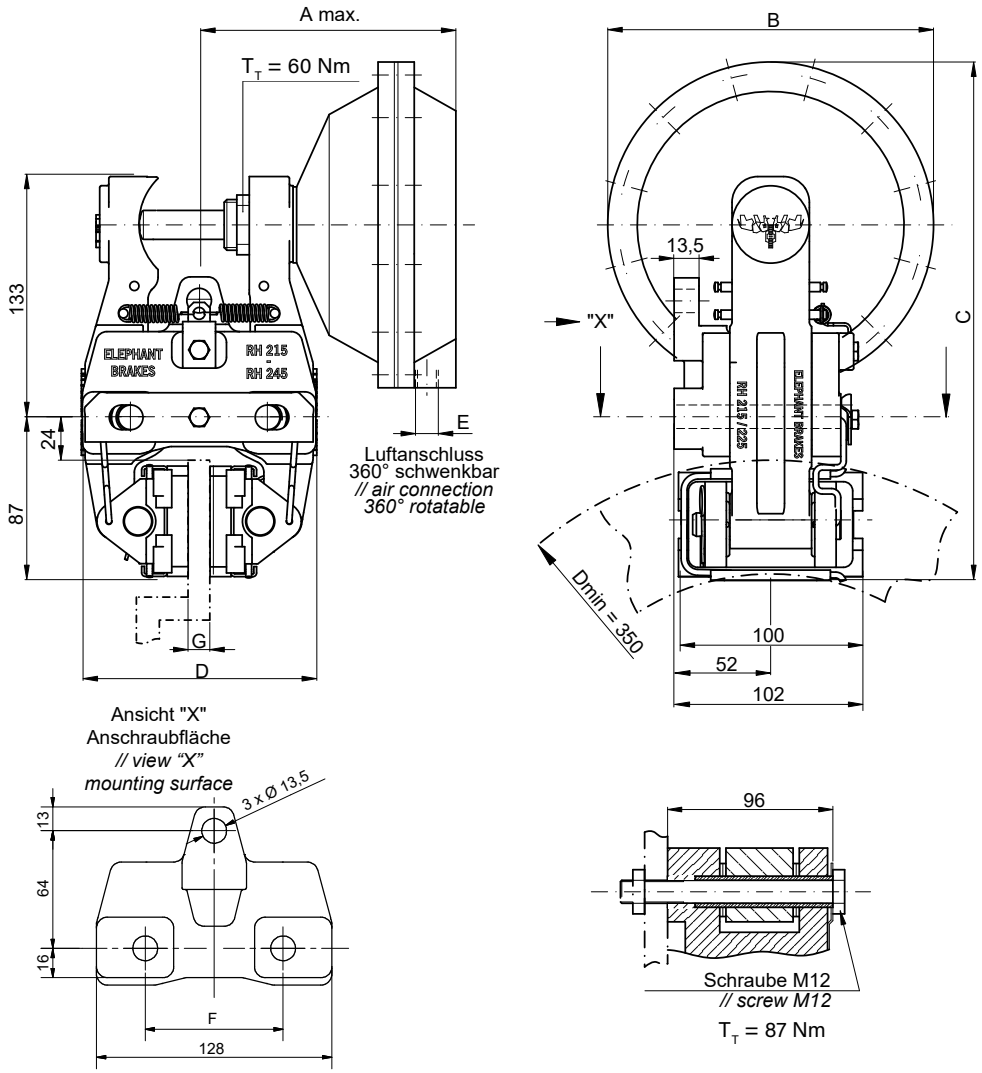

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	Ø B [mm]	C [mm]	D [mm]	E	F [mm]	G [mm]	V/Stroke [dm³]	Mass [kg]
RH 215.102.01	10684	154	97	241	130	G1/4	75	12-15	0,07	8,6
RH 225.102.01	11086	156	97	241	140	G1/4	84	25,4	0,07	8,6
RH 230.102.01	10704	157	97	241	144	G1/4	75	30	0,07	8,8
RH 215.103.01	10685	156	120	252	130	G1/4	75	12-15	0,15	8,7
RH 225.103.01	11087	157	120	252	140	G1/4	84	25,4	0,15	8,7
RH 230.103.01	10705	157	120	252	144	G1/4	75	30	0,15	8,9
RH 215.105.01	10687	159	144	264	130	G3/8	75	12-15	0,30	9,1
RH 225.105.01	11088	159	144	264	140	G3/8	84	25,4	0,30	9,1
RH 230.105.01	10707	159	144	264	144	G3/8	75	30	0,30	9,3
RH 245.105.01	14349	156	144	264	154	G3/8	84	45	0,30	9,3
RH 215.107.01	10689	164	180	282	130	G3/8	75	12-15	0,43	9,9
RH 225.107.01	11089	164	180	282	140	G3/8	84	25,4	0,43	9,9
RH 230.107.01	10709	164	180	282	144	G3/8	75	30	0,43	10,1
RH 245.107.01	13428	161	180	282	154	G3/8	84	45	0,43	10,1

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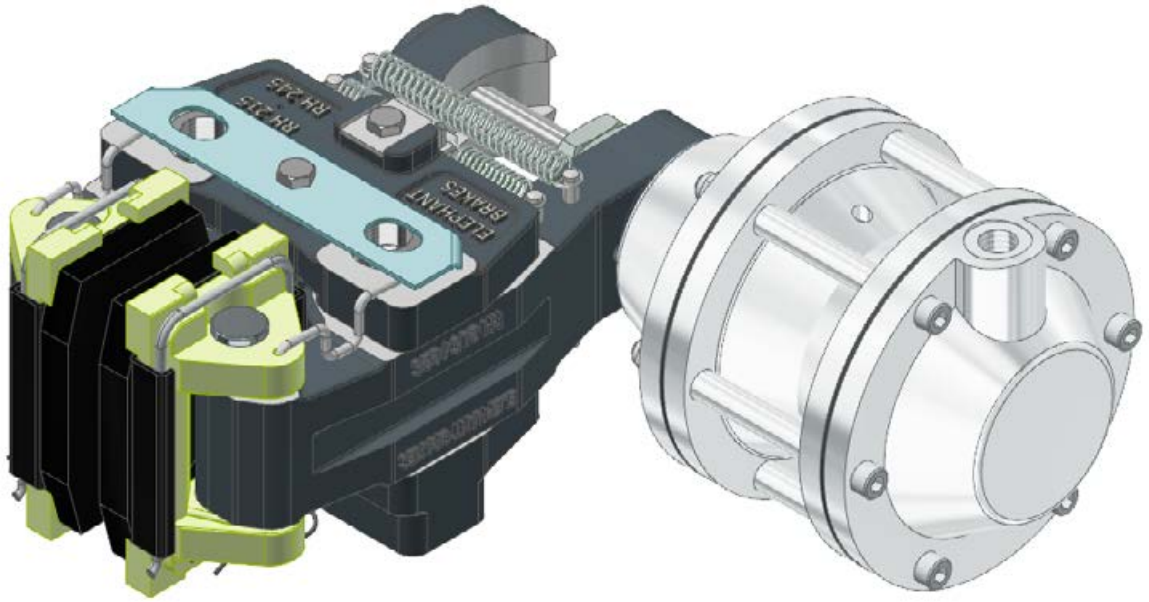
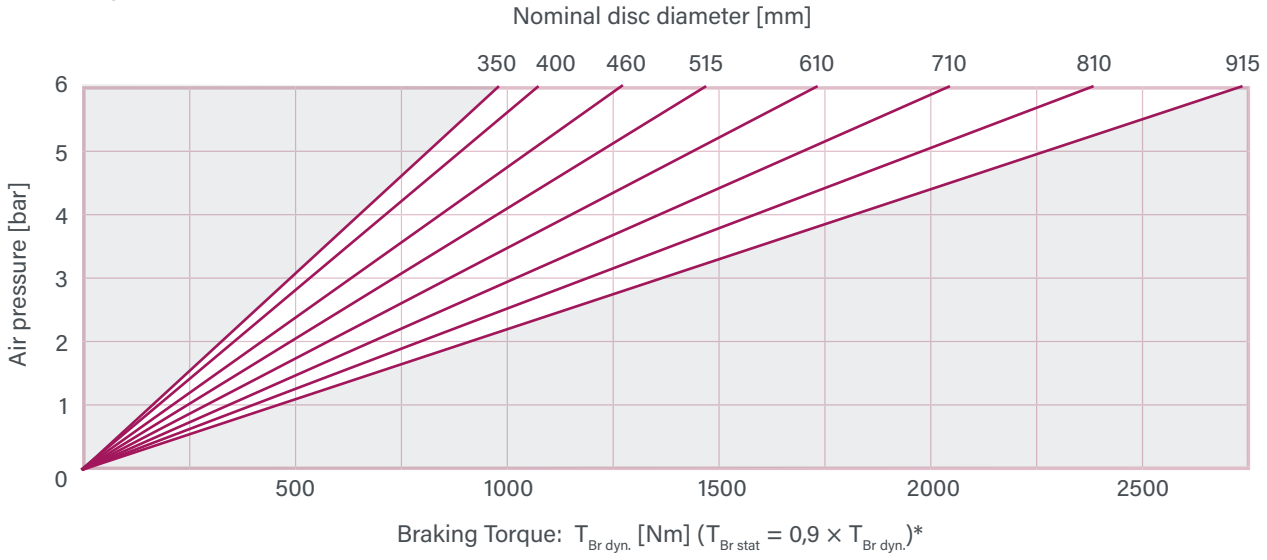


RH 215.104.01 / RH 230.104.01



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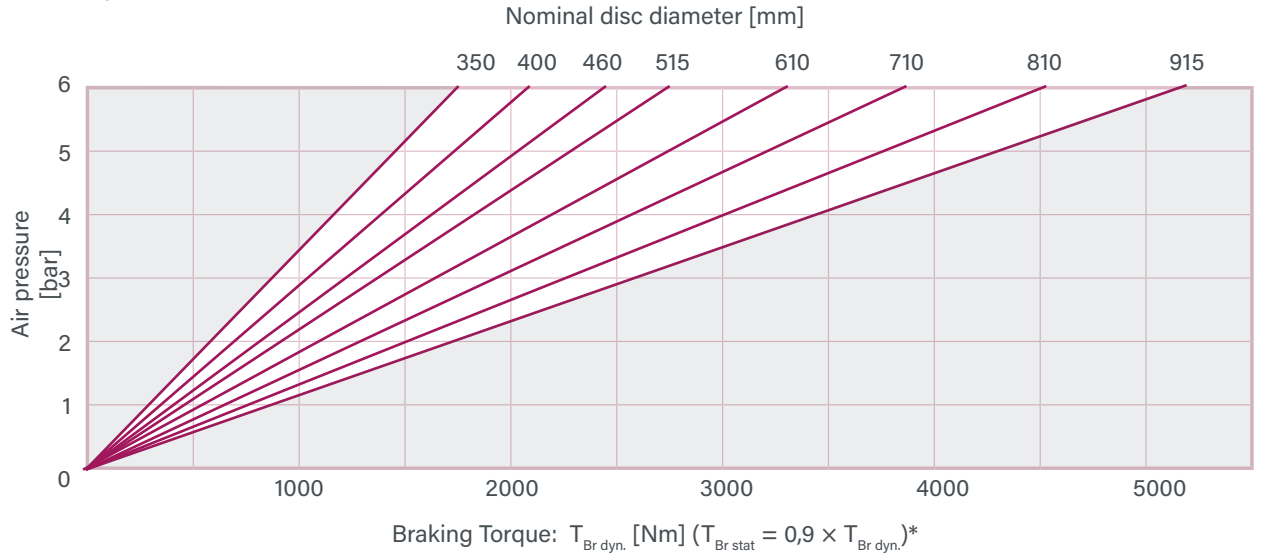
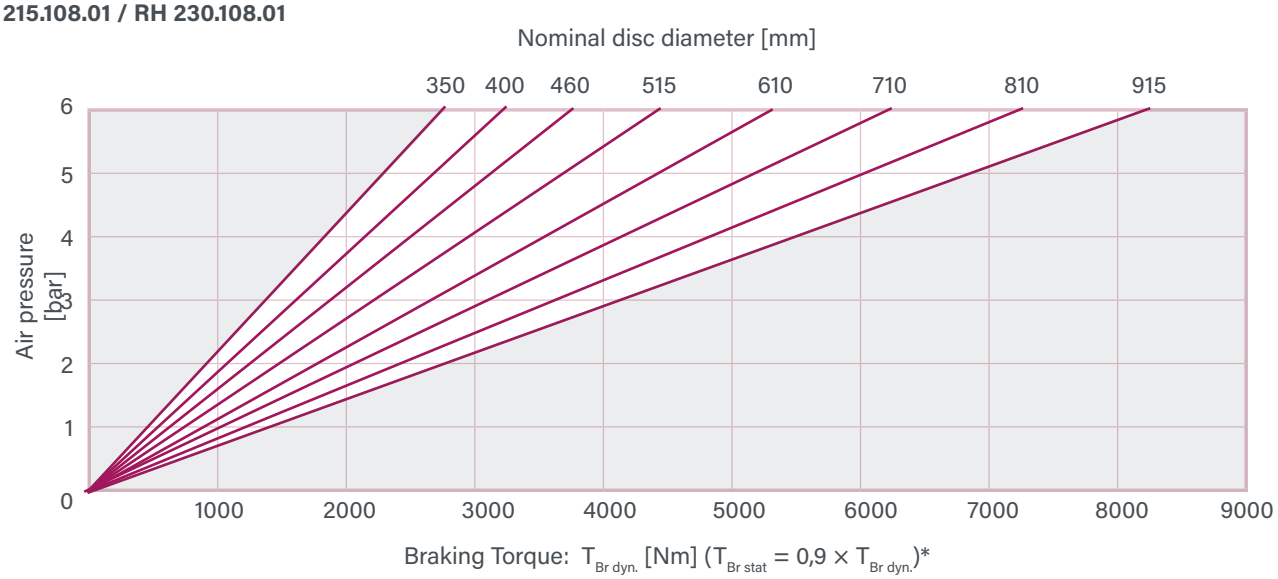
RH 215.106.01 / RH 230.106.01



RH 215.108.01 / RH 230.108.01



* using one chamber $T_{Br\ dyn.}$ × 0,5

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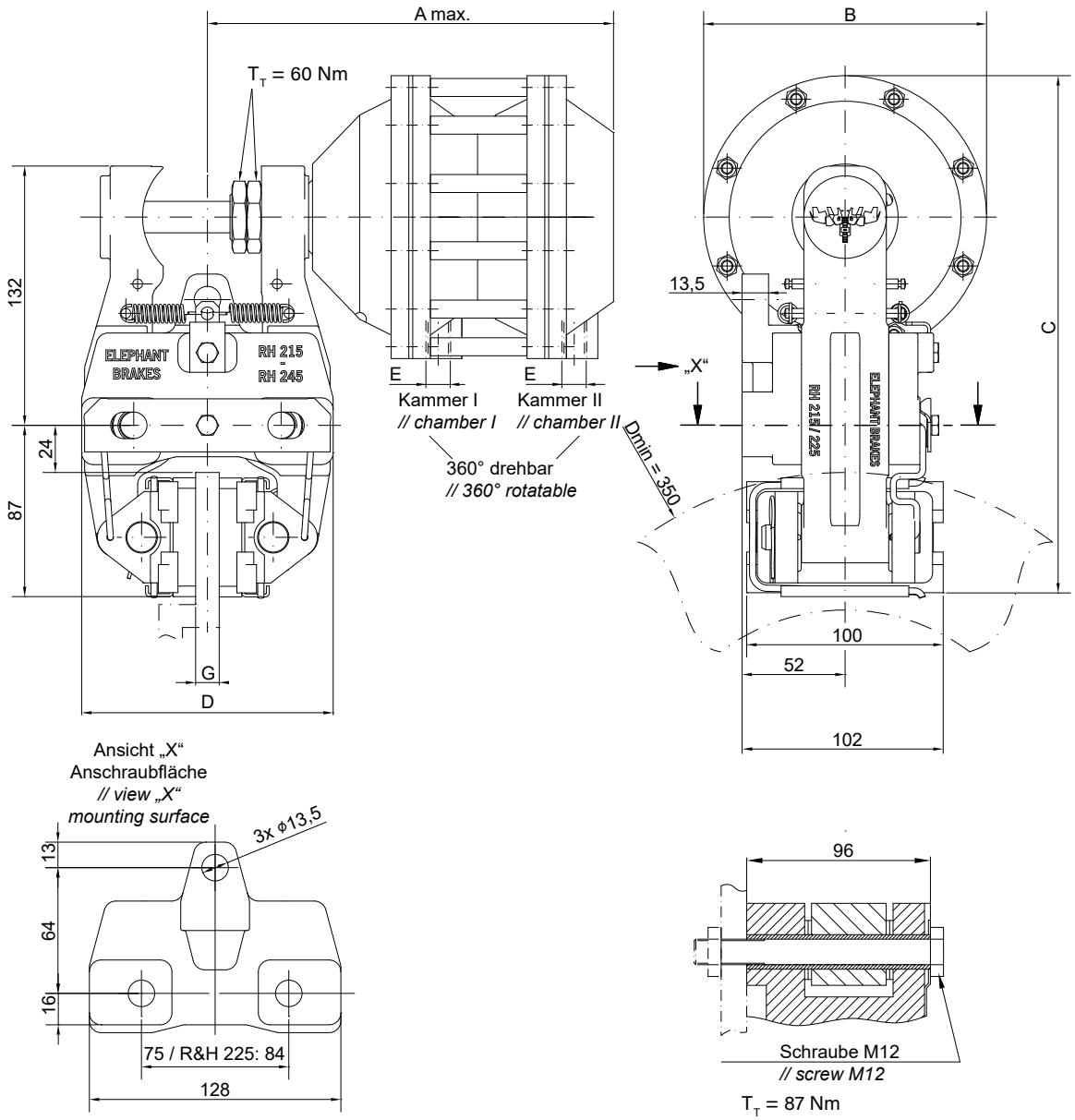

Mounting position is horizontal. Please get in touch if different.

A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	Ø B [mm]	C [mm]	D [mm]	E	G [mm]	max. V/Stroke [dm³]	Mass [kg]
RH 215.104.01	10686	120	253	130	2 × G1/4	12-15	2 × 0,15	9,7
RH 230.104.01	10706	120	253	140	2 × G1/4	30	2 × 0,15	9,9
RH 215.106.01	10688	144	265	130	2 × G3/8	12-15	2 × 0,30	10,4
RH 230.106.01	10708	144	265	140	2 × G3/8	30	2 × 0,30	10,6
RH 215.108.01	10690	180	283	130	2 × G3/8	12-15	2 × 0,43	11,9
RH 230.108.01	10710	180	283	140	2 × G3/8	30	2 × 0,43	12,1

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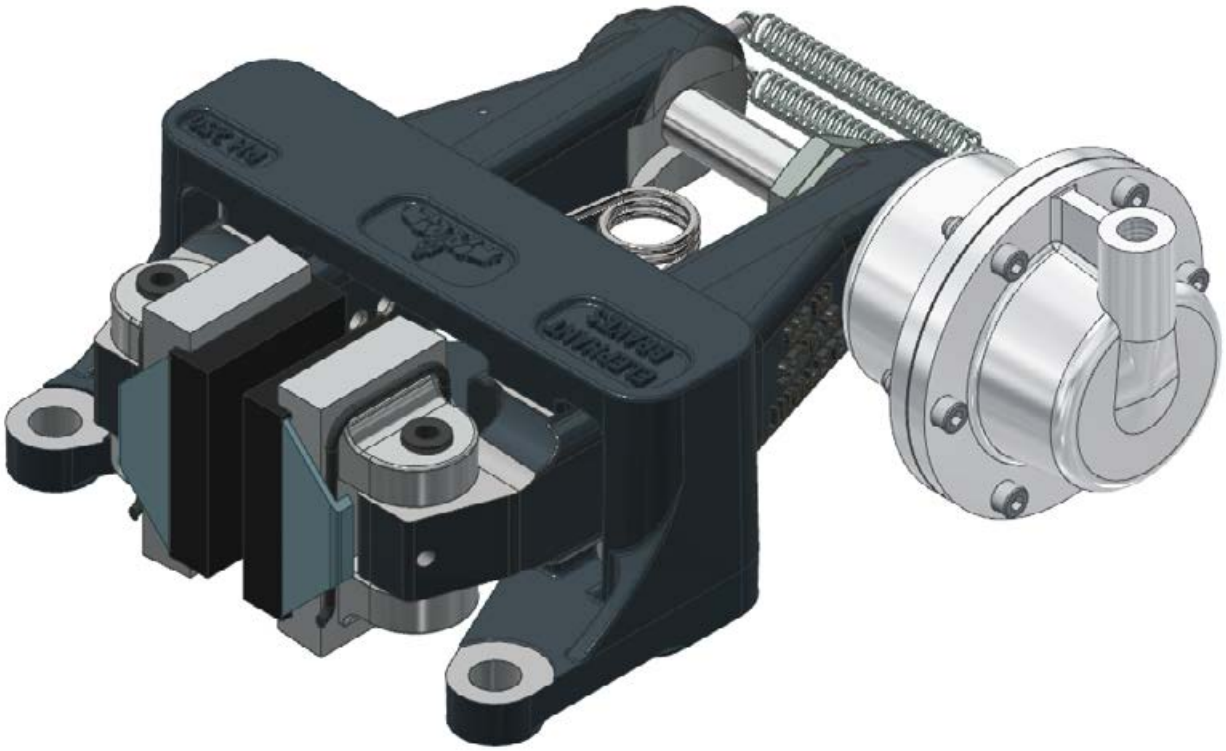
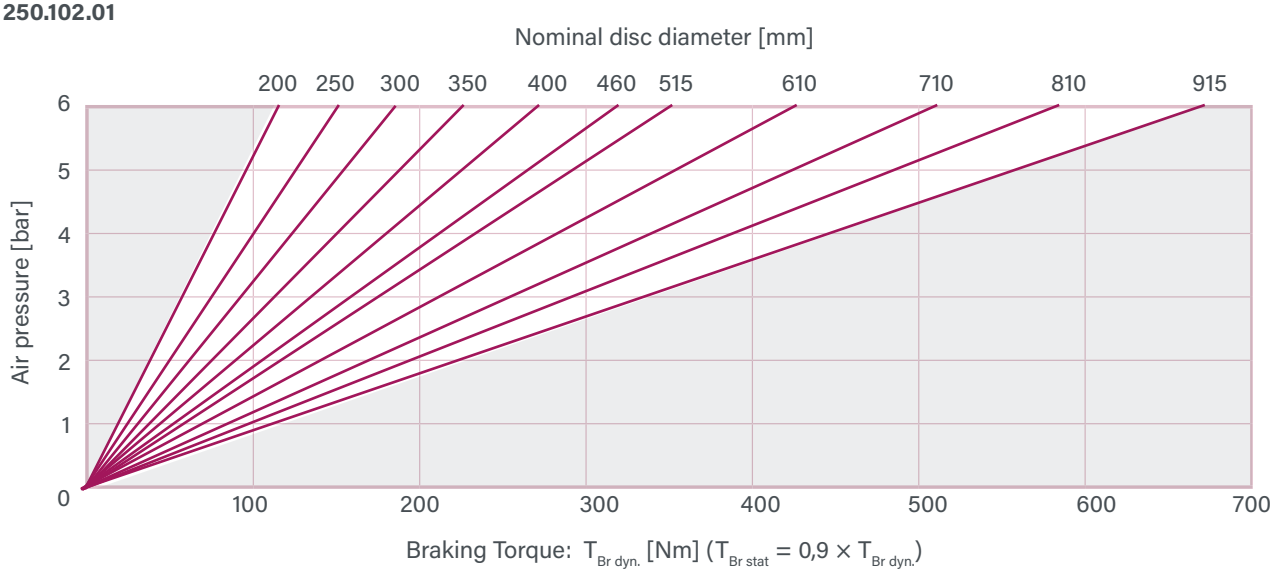


RH 250.102.01



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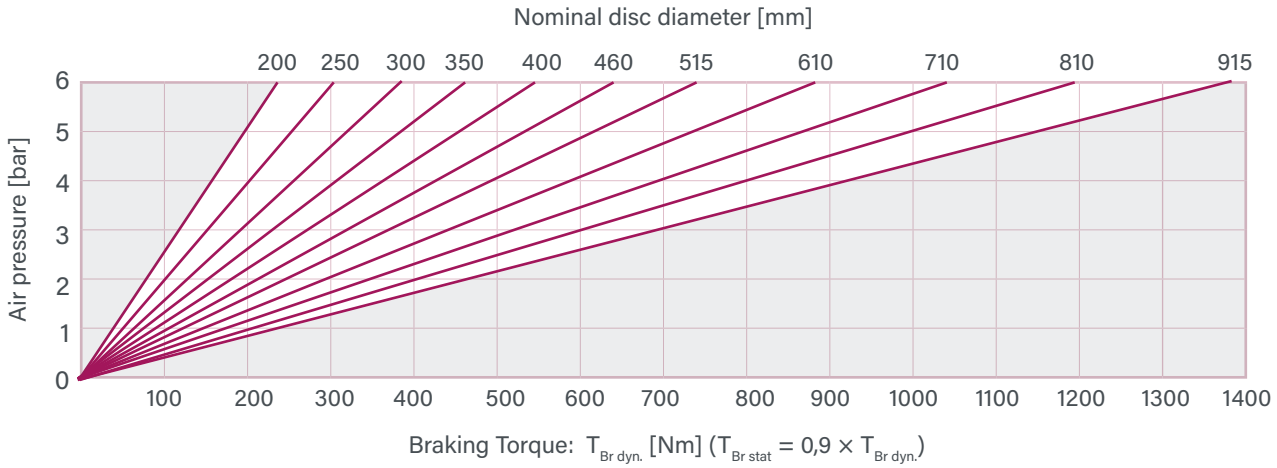
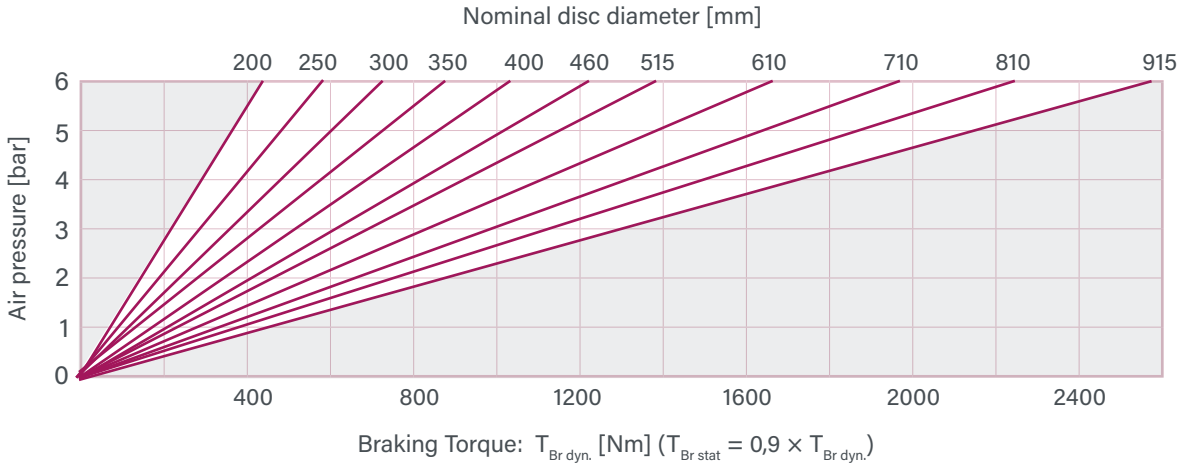
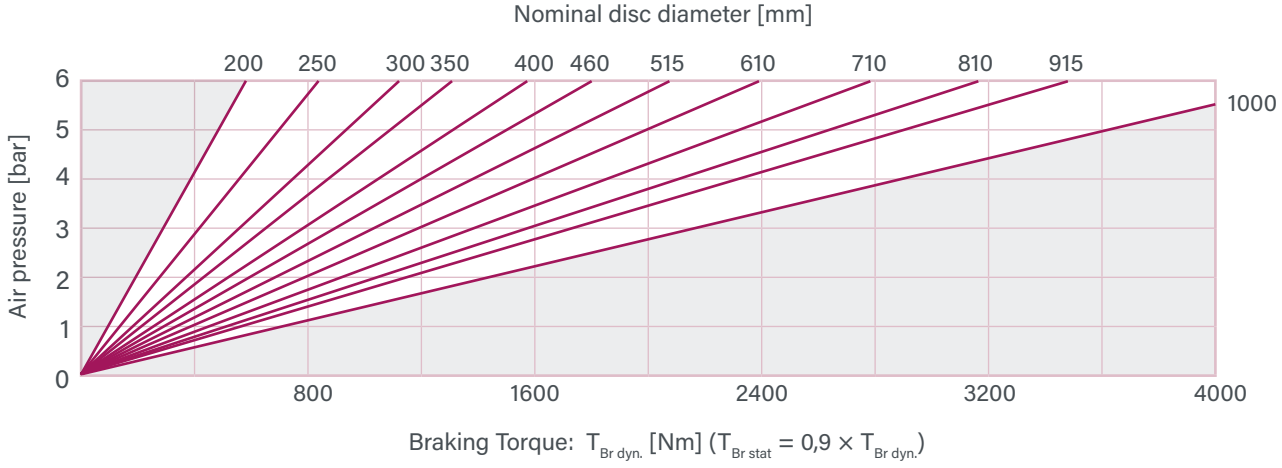
RH 250.103.01



RH 250.105.01



RH 250.107.01



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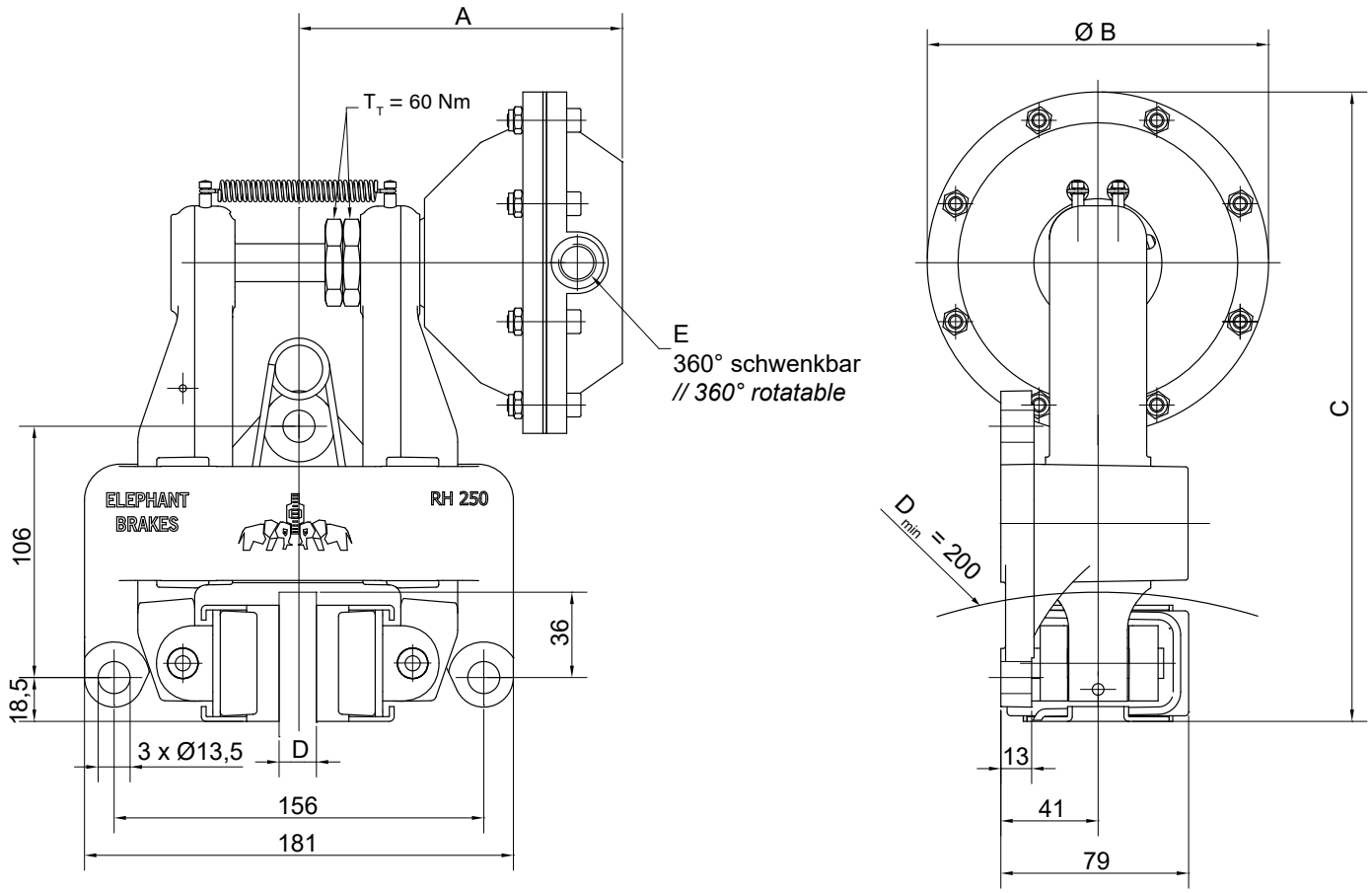

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	B [mm]	C [mm]	D [mm]	E	V / Stroke [dm³]	Mass [kg]
RH 250.102.01	10059	160	97	242	12,7	G1/4	0,07	7,4
RH 250.102.01 short.	10060	157	97	242	25,4	G1/4	0,07	7,4
RH 250.103.01	10050	150	120	254	12,7	G1/4	0,15	7,5
RH 250.103.01 short.	10051	147	120	254	25,4	G1/4	0,15	7,5
RH 250.105.01	10038	150	144	266	12,7	G3/8	0,30	7,9
RH 250.105.01 short.	10039	147	144	266	25,4	G3/8	0,30	7,9
RH 250.107.01	10046	160	180	284	12,7	G3/8	0,45	8,7
RH 250.107.01 short.	10047	157	180	284	25,4	G3/8	0,45	8,7

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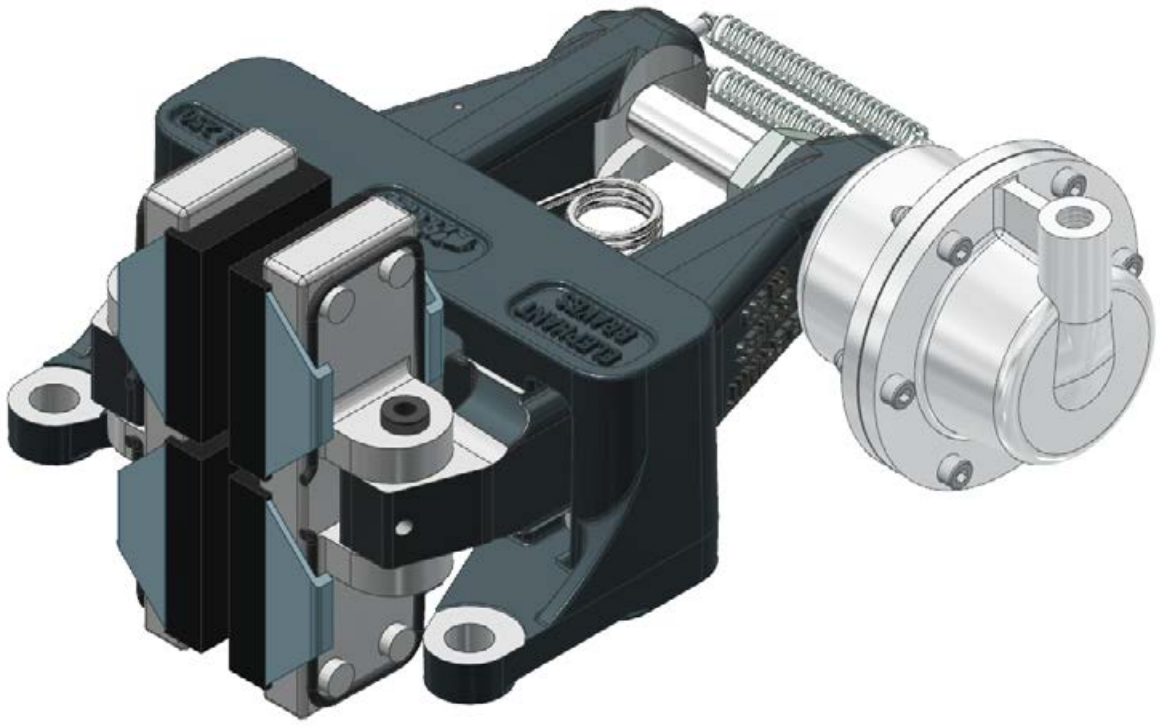
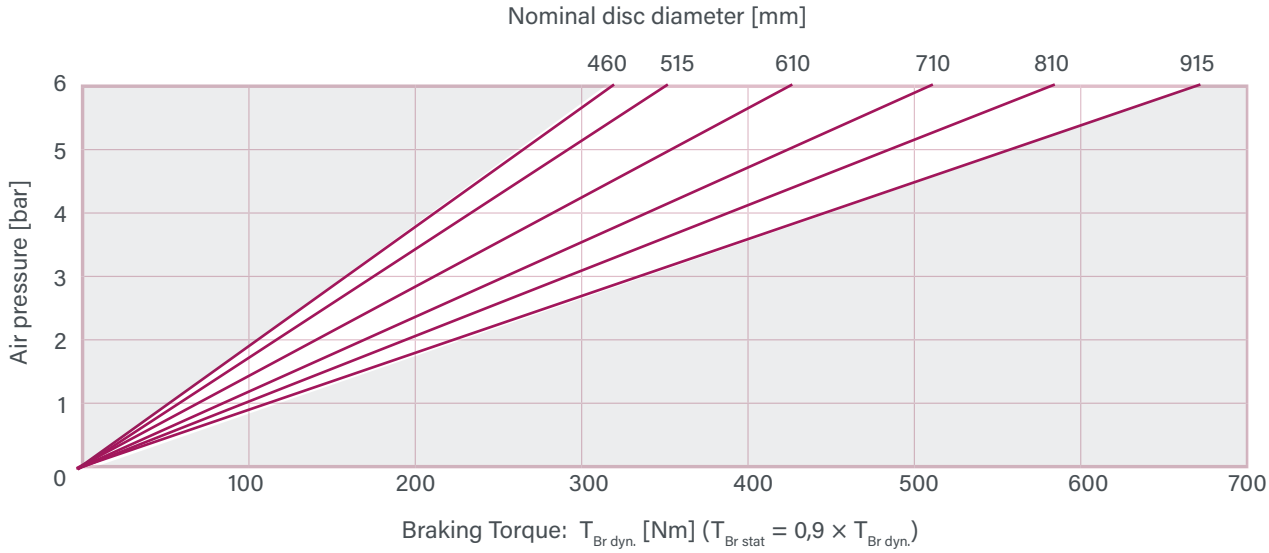


RH 250.102.02



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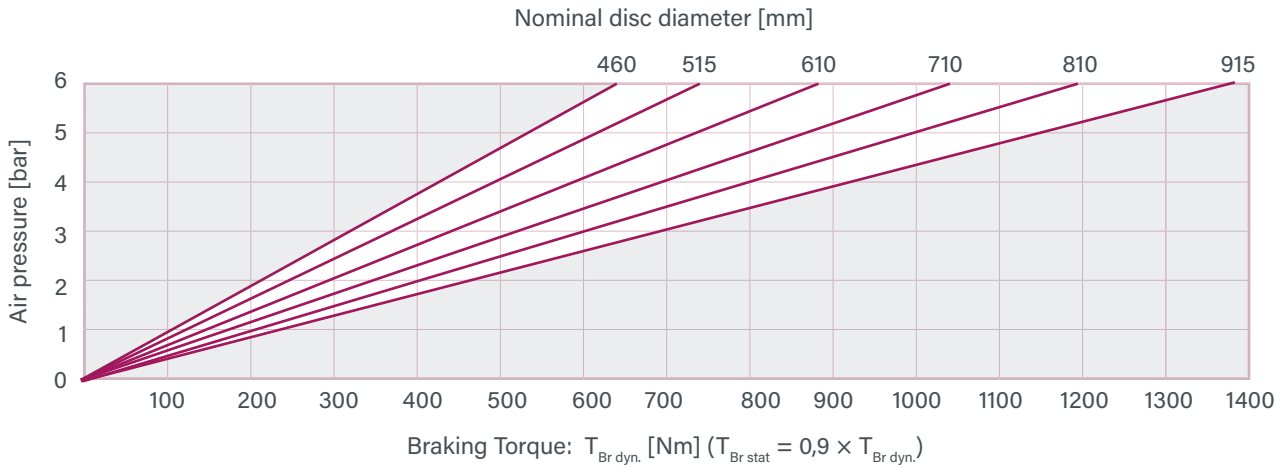
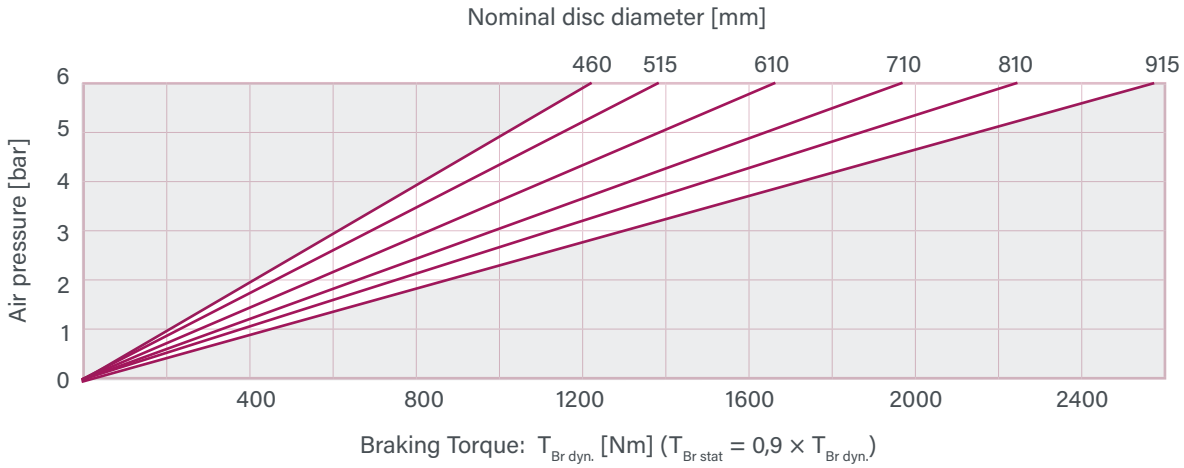
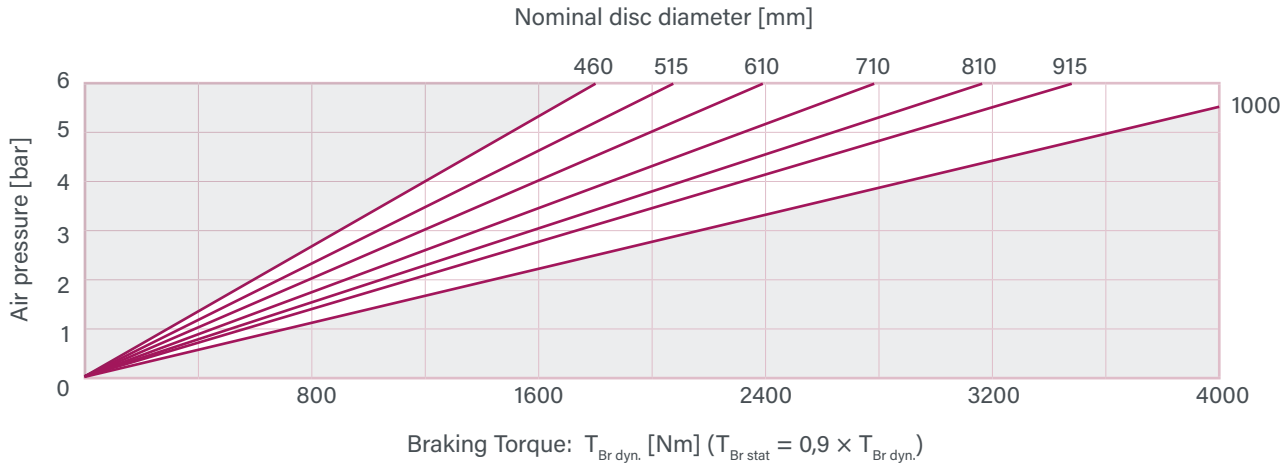
RH 250.103.02



RH 250.105.02



RH 250.107.02



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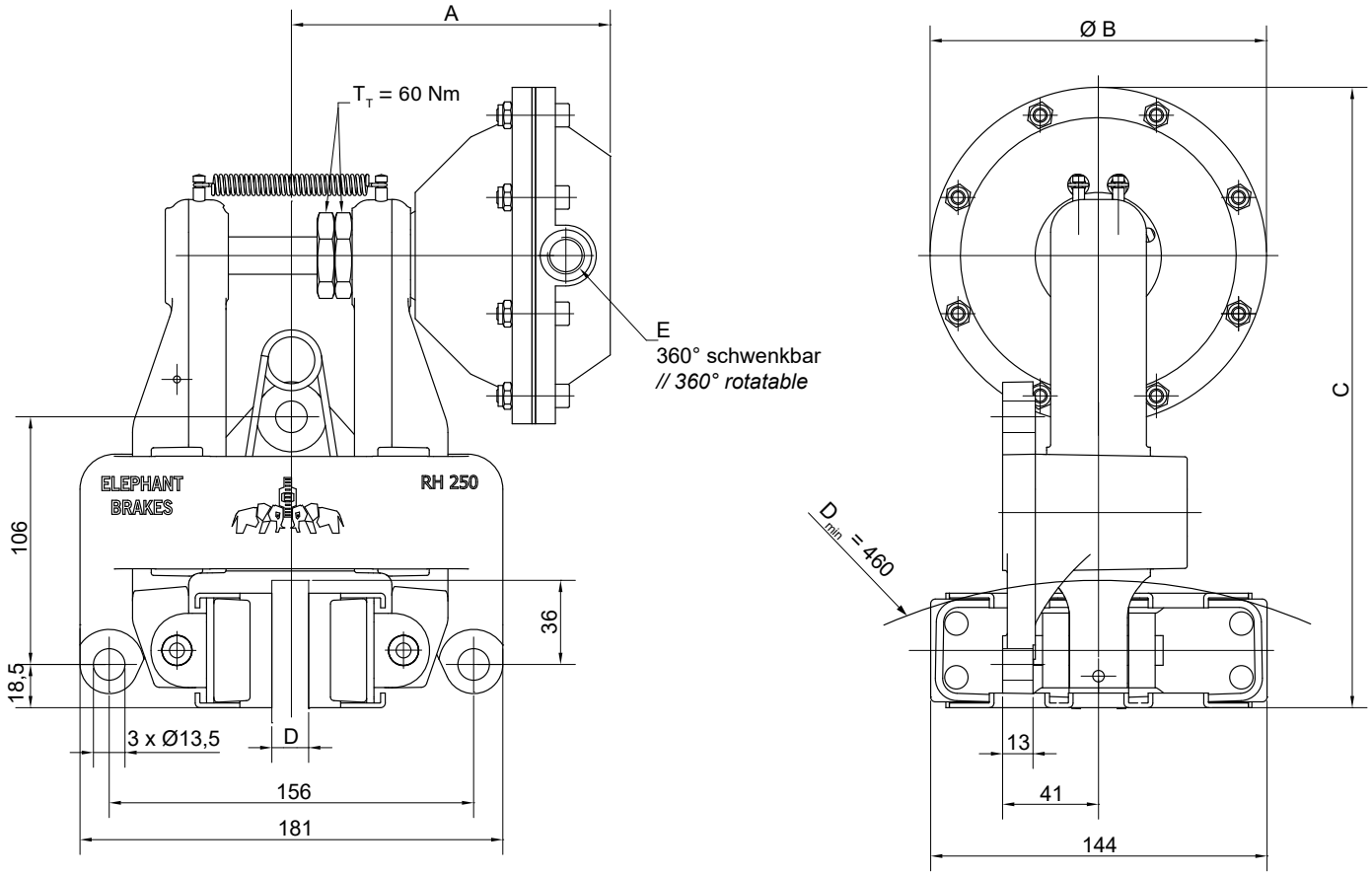

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	B [mm]	C [mm]	D [mm]	E	V / Stroke [dm³]	Mass [kg]
RH 250.102.02	10061	160	97	242	12,7	G1/4	0,07	7,9
RH 250.102.02 short.	10062	157	97	242	25,4	G1/4	0,07	7,9
RH 250.103.02	10052	150	120	254	12,7	G1/4	0,15	8
RH 250.103.02 short.	10053	147	120	254	25,4	G1/4	0,15	8
RH 250.105.02	10040	150	144	266	12,7	G3/8	0,30	8,4
RH 250.105.02 short.	10041	147	144	266	25,4	G3/8	0,30	8,4
RH 250.107.02	10048	160	180	284	12,7	G3/8	0,45	9,2
RH 250.107.02 short.	10049	157	180	284	25,4	G3/8	0,45	9,2

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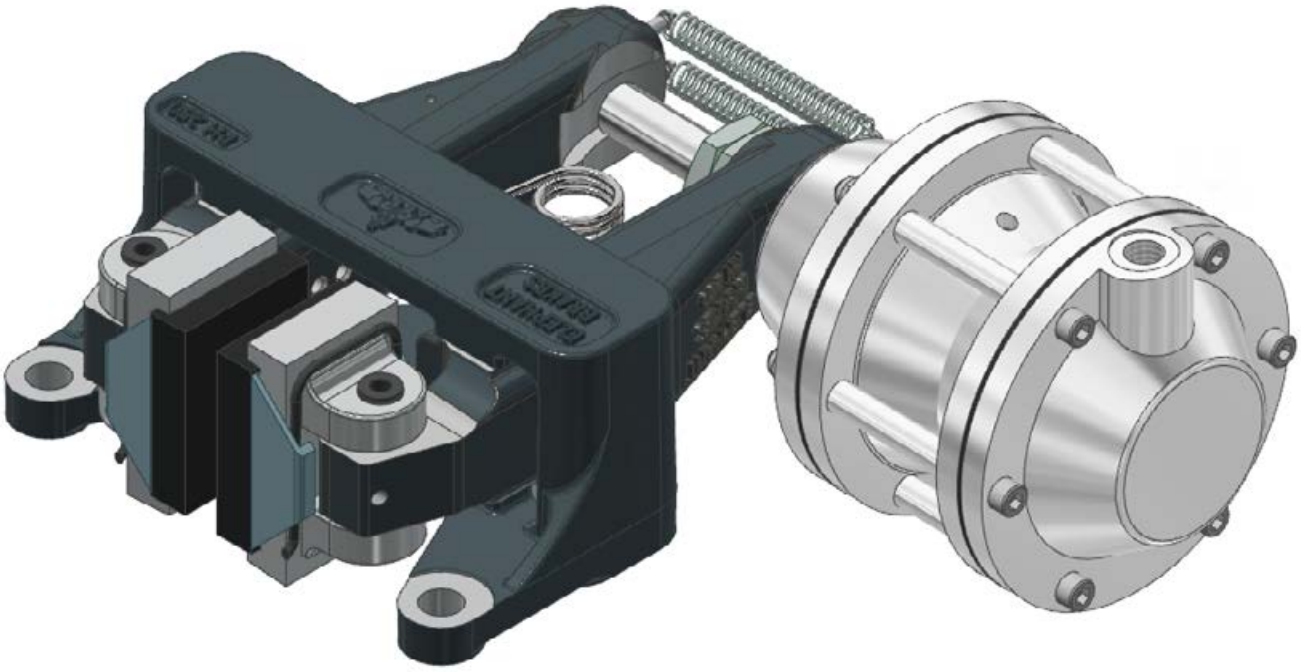
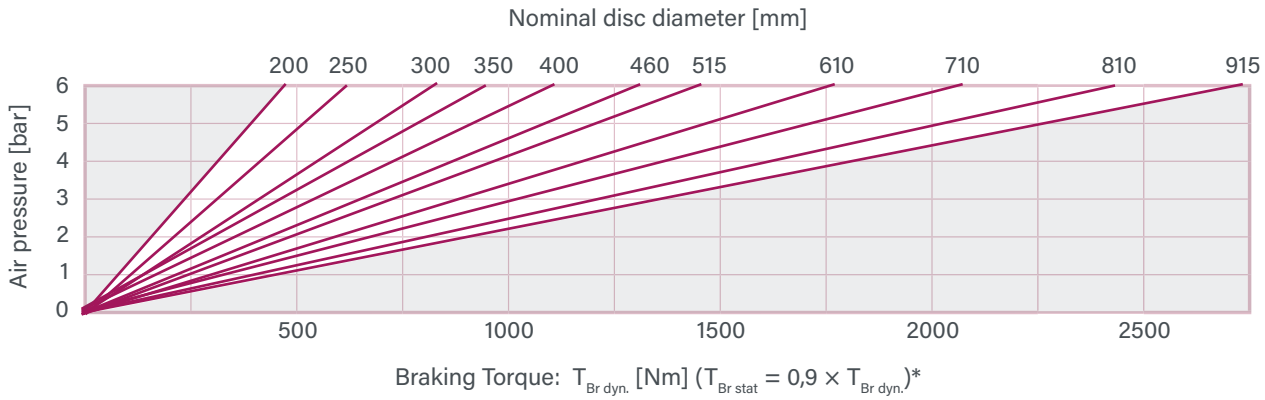
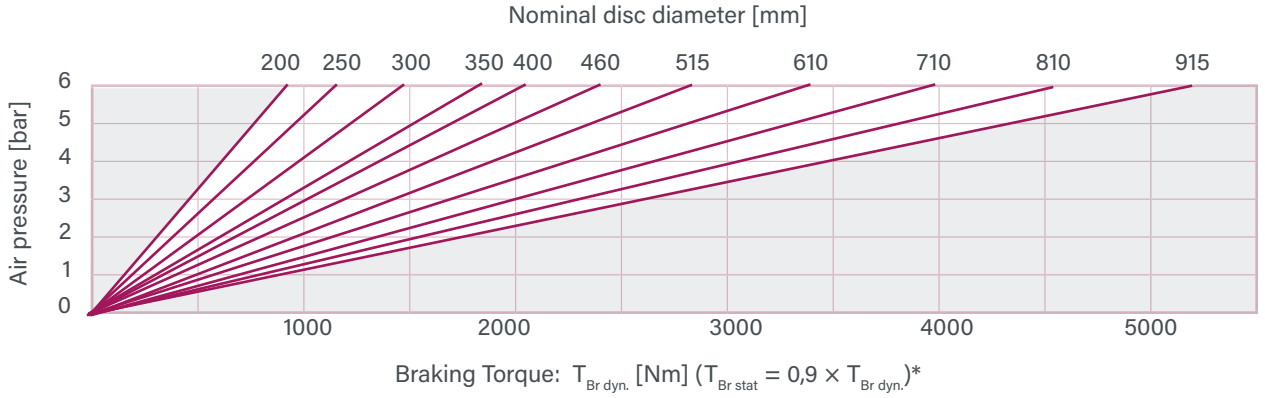


RH 250.104.01



RH 250.106.01



* Bei einer Kammer $T_{Br\ dyn.}$ × 0,5

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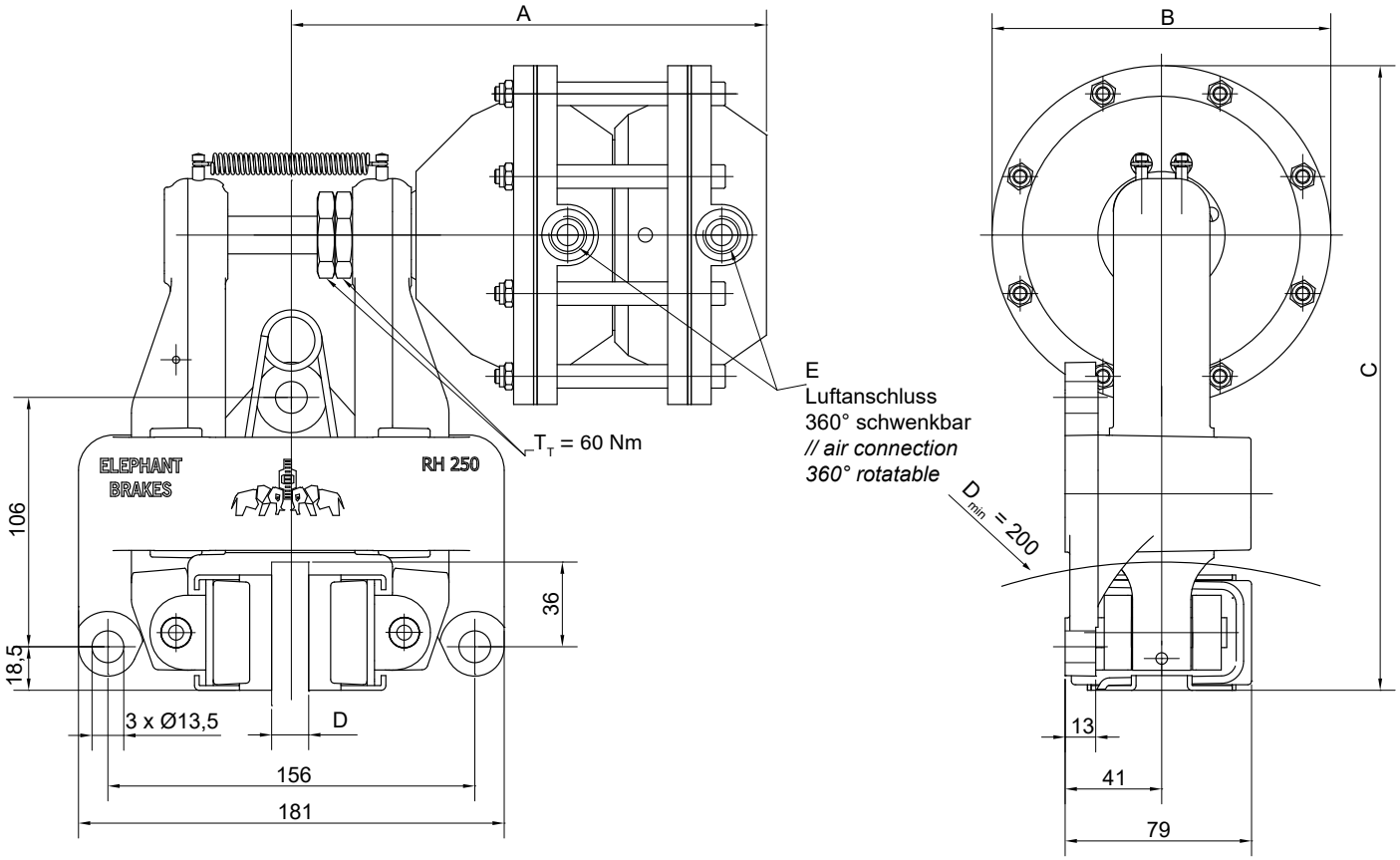

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	Ø B [mm]	C [mm]	D [mm]	E	V / Stroke [dm³]	Mass [kg]
RH 250.104.01	10054	228	120	254	12,7	2 × G1/4	2 × 0,07	8,5
RH 250.104.01 short.	10055	225	120	254	25,4	2 × G1/4	2 × 0,07	8,5
RH 250.106.01	10042	228	144	266	12,7	2 × G3/8	2 × 0,15	9,2
RH 250.106.01 short.	10043	225	144	266	25,4	2 × G3/8	2 × 0,15	9,2

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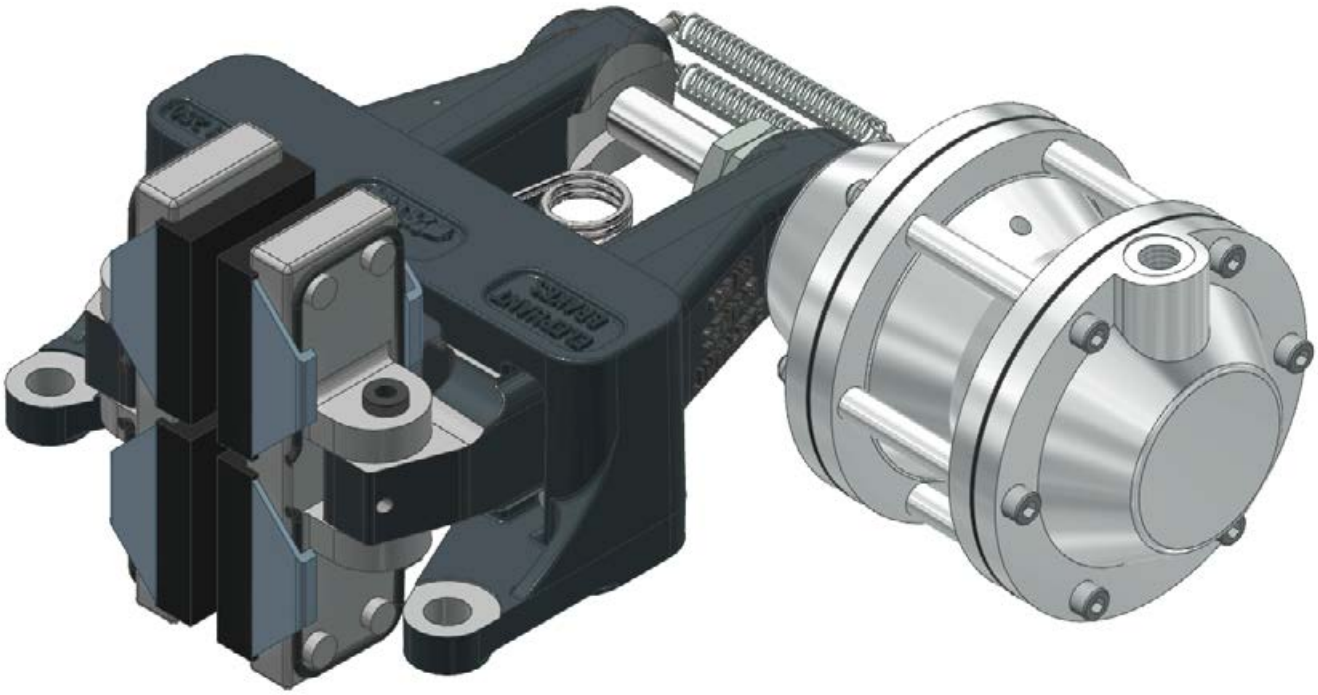
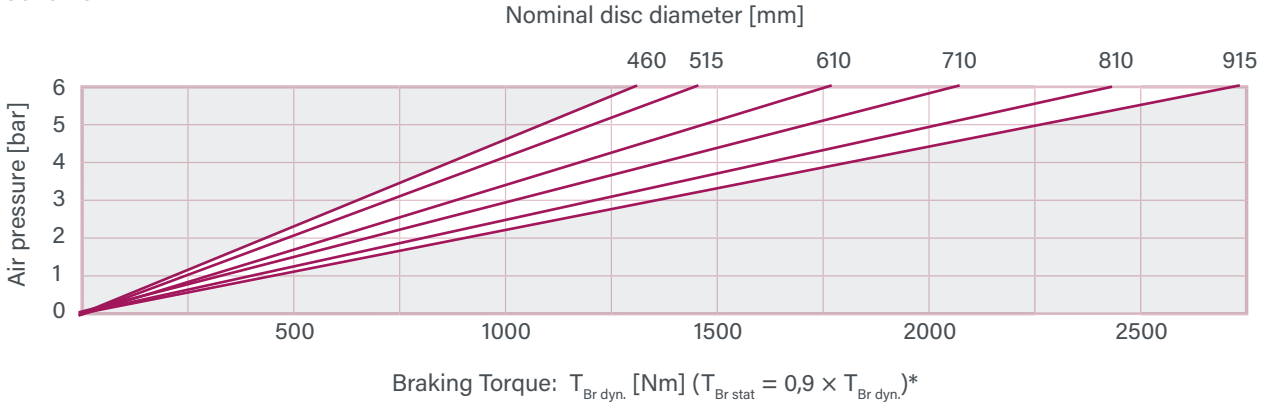
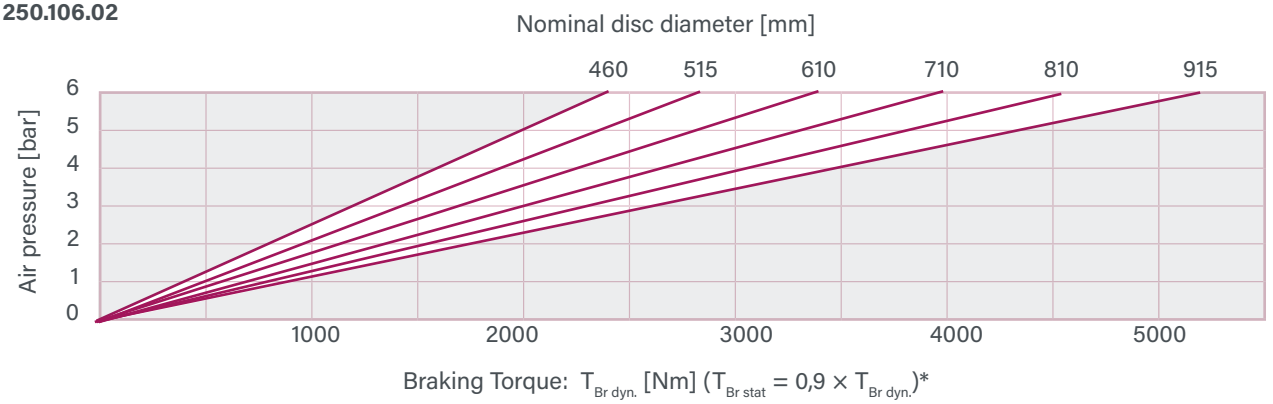


RH 250.104.02



RH 250.106.02



* using one chamber $T_{Br\ dyn.}$ × 0,5

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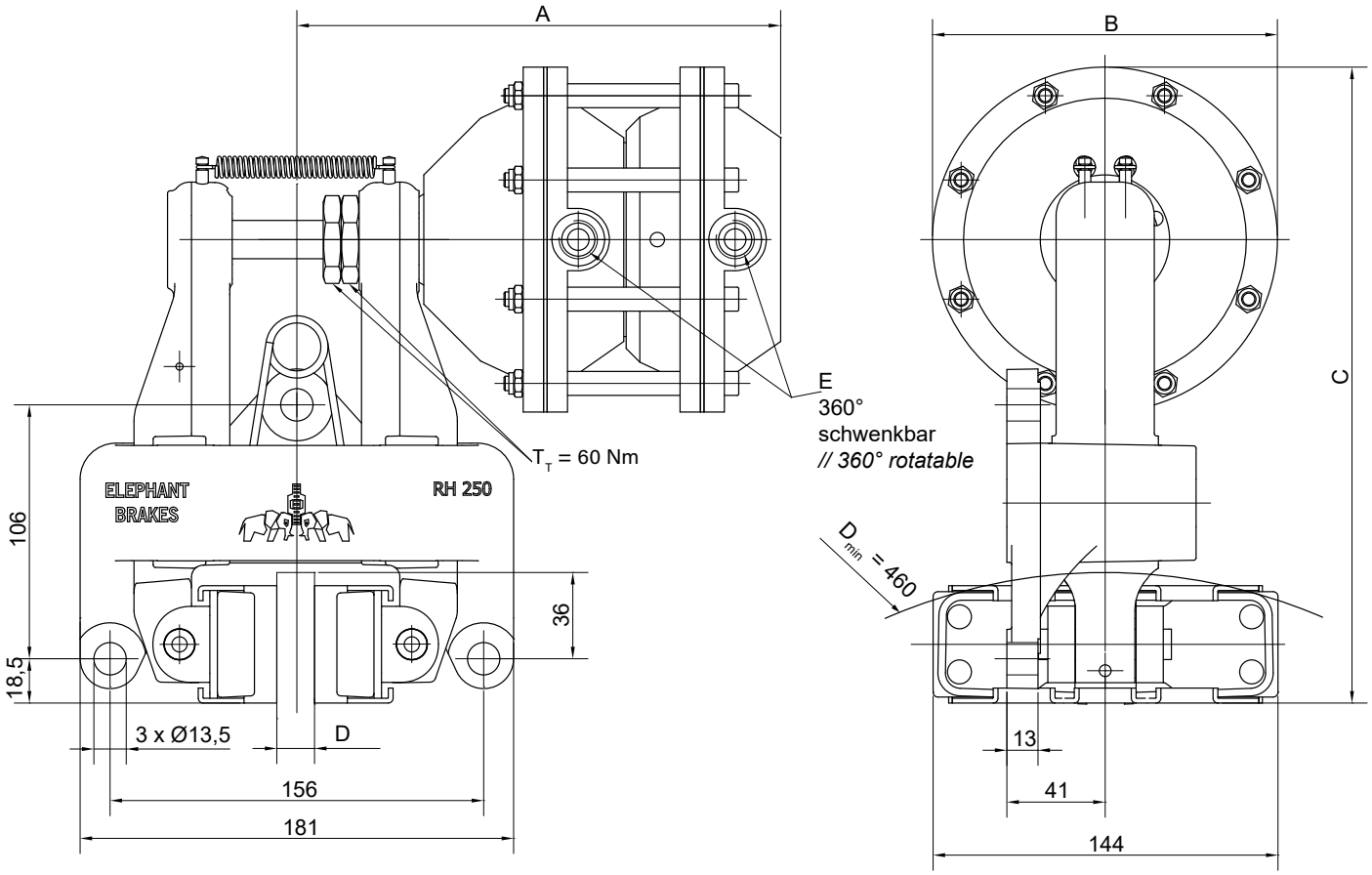

Mounting position is horizontal. Please get in touch if different.

A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	B [mm]	C [mm]	D [mm]	E	V / Stroke [dm³]	Mass [kg]
RH 250.104.02	10056	228	120	254	12,7	2 × G1/4	2 × 0,07	7,1
RH 250.104.02 short.	10057	225	120	254	25,4	2 × G1/4	2 × 0,07	7,1
RH 250.106.02	10044	228	144	266	12,7	2 × G3/8	2 × 0,15	7,5
RH 250.106.02 short.	10045	225	144	266	25,4	2 × G3/8	2 × 0,15	7,5

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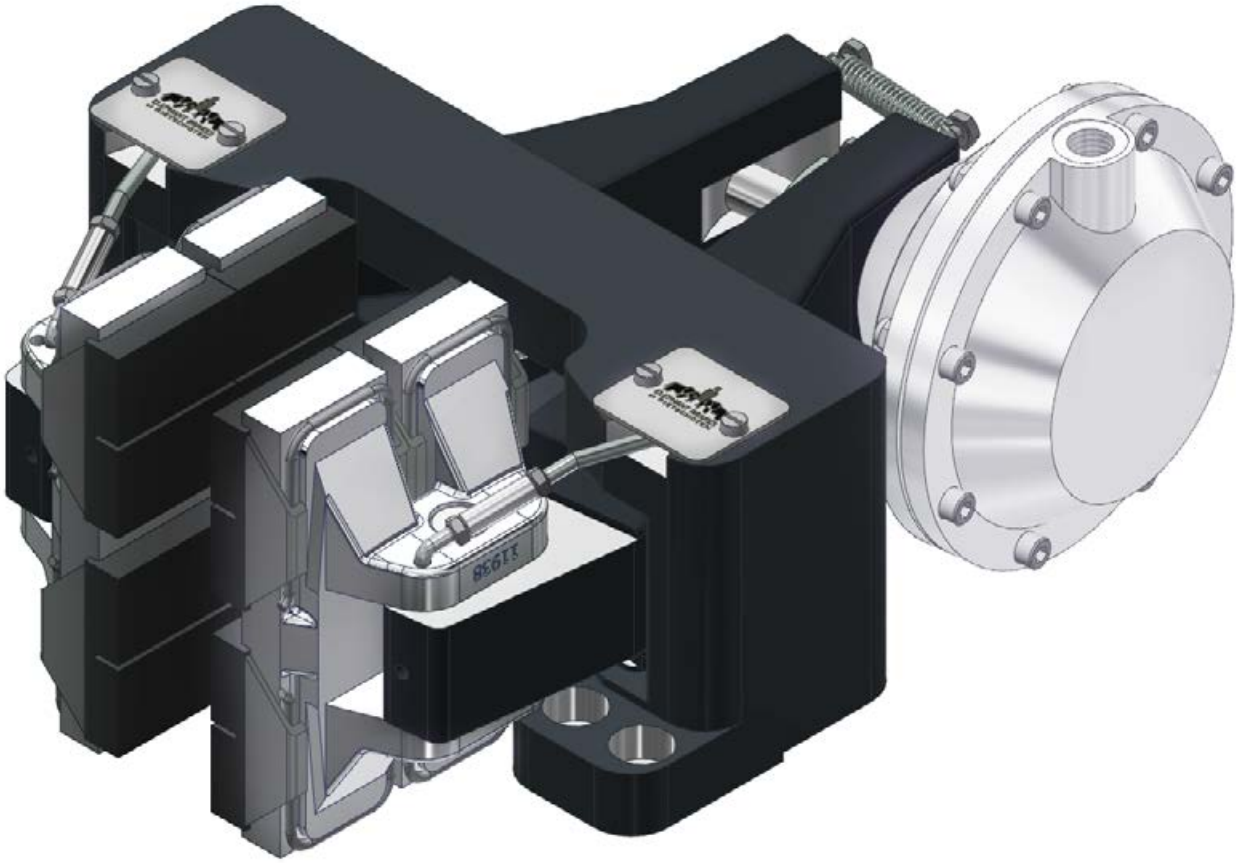
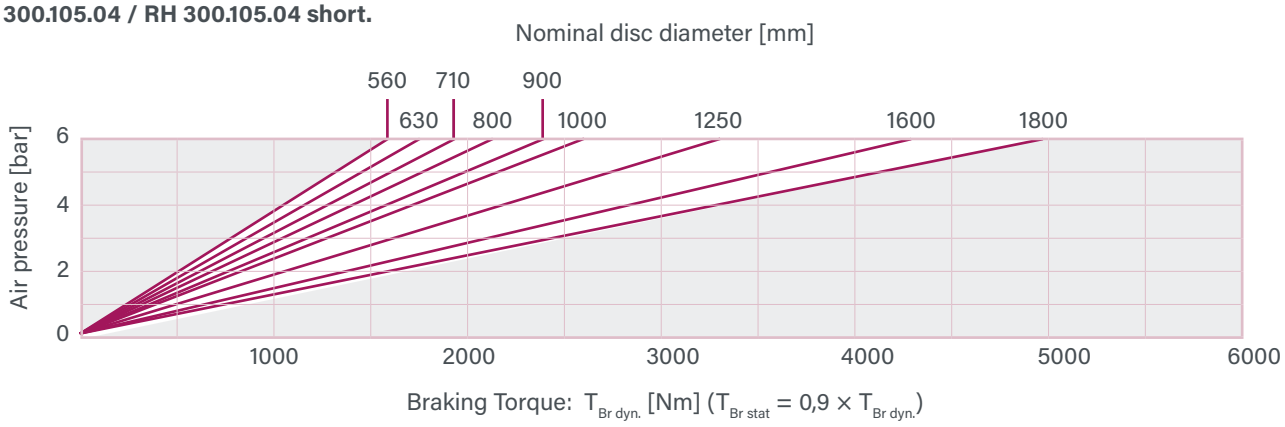
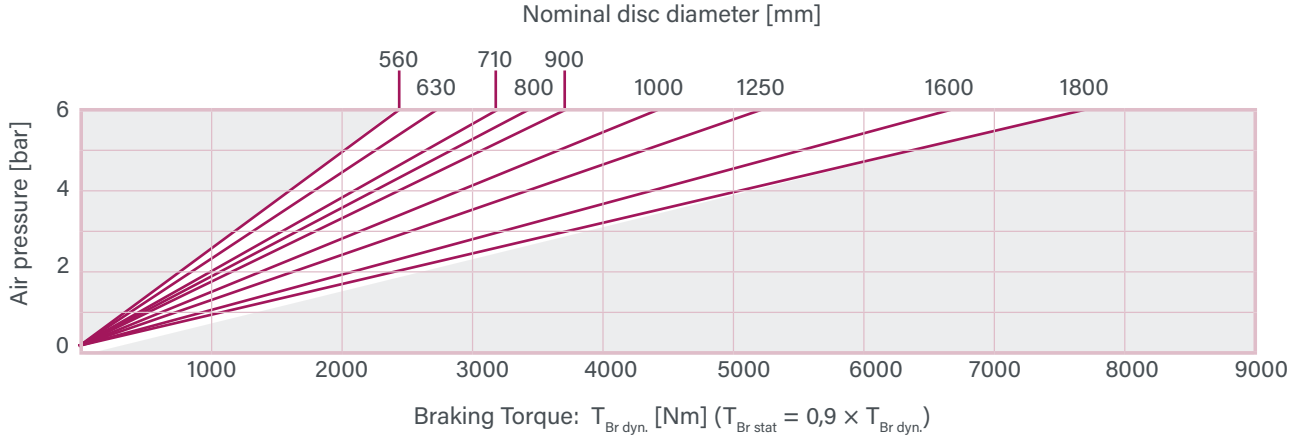


RH 300.105.04 / RH 300.105.04 short.



RH 300.107.04 / RH 300.107.04 short.



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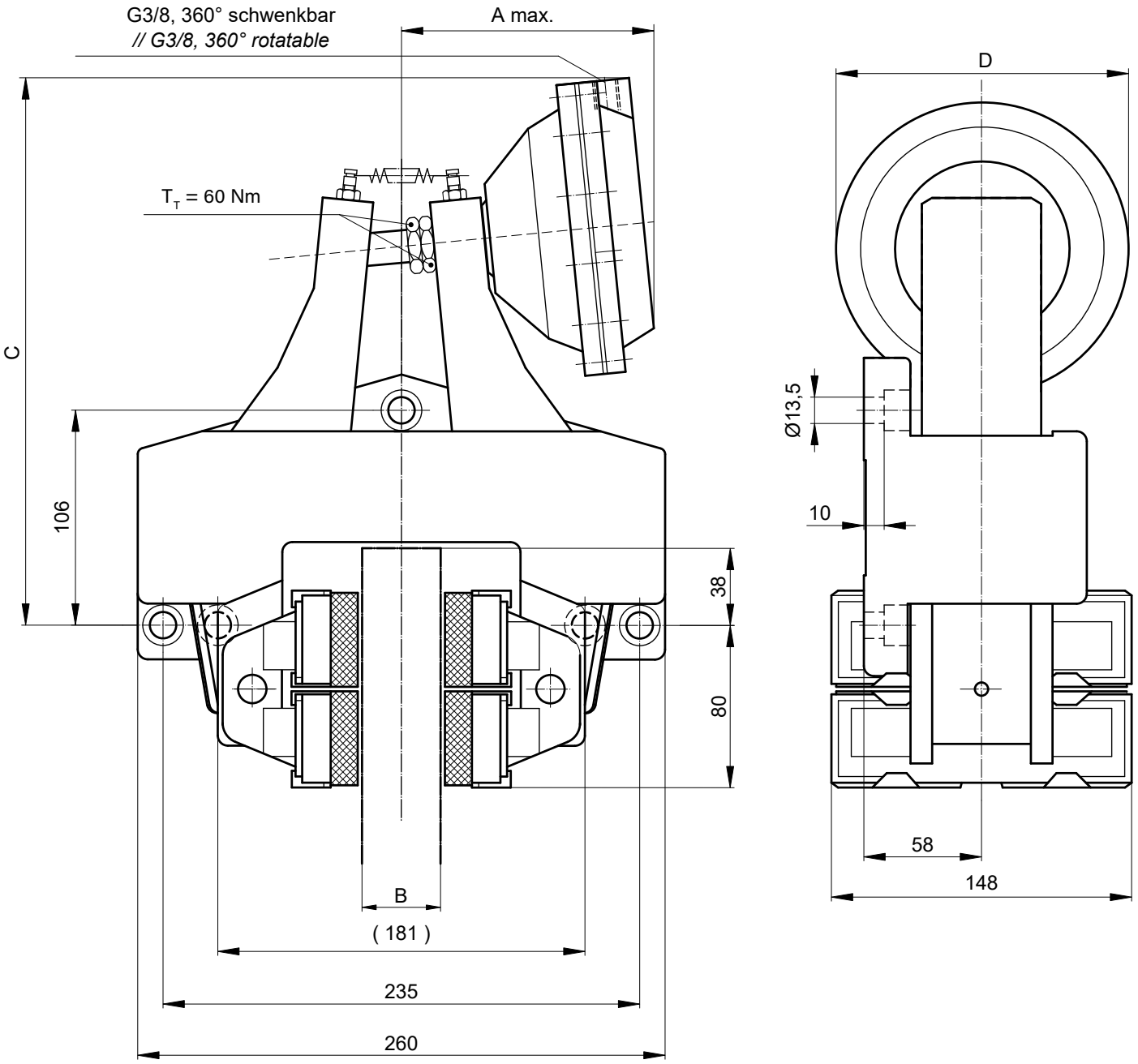

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	$A_{max.}$ [mm]	B [mm]	C [mm]	D [mm]	V / Stroke [dm³]	Mass [kg]
RH 300.105.04	11785	155	30	260	144	0,30	23,2
RH 300.105.04 short.	11786	145	38	270	144	0,30	23,2
RH 300.107.04	11787	160	30	280	180	0,42	24
RH 300.107.04 short.	11788	150	38	290	180	0,42	24

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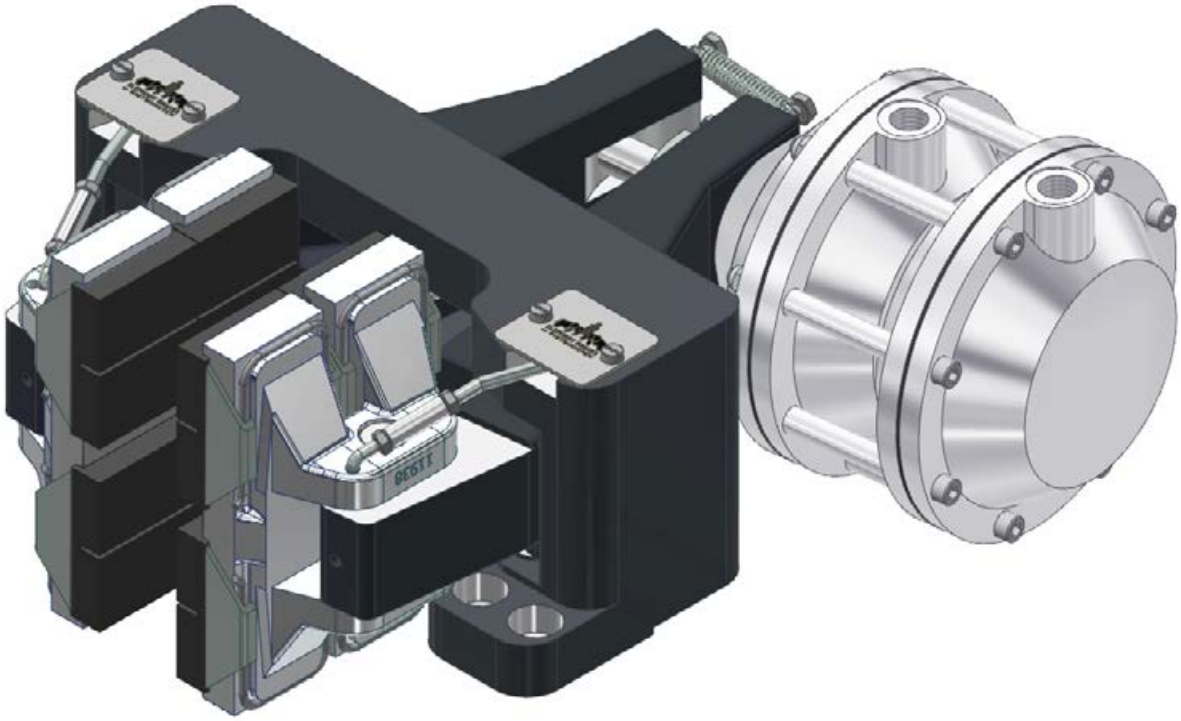
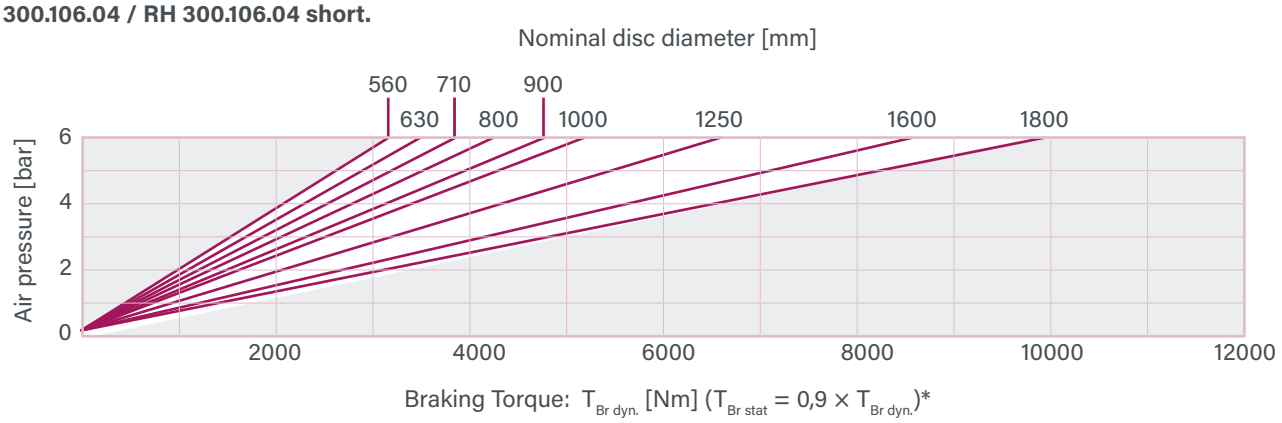
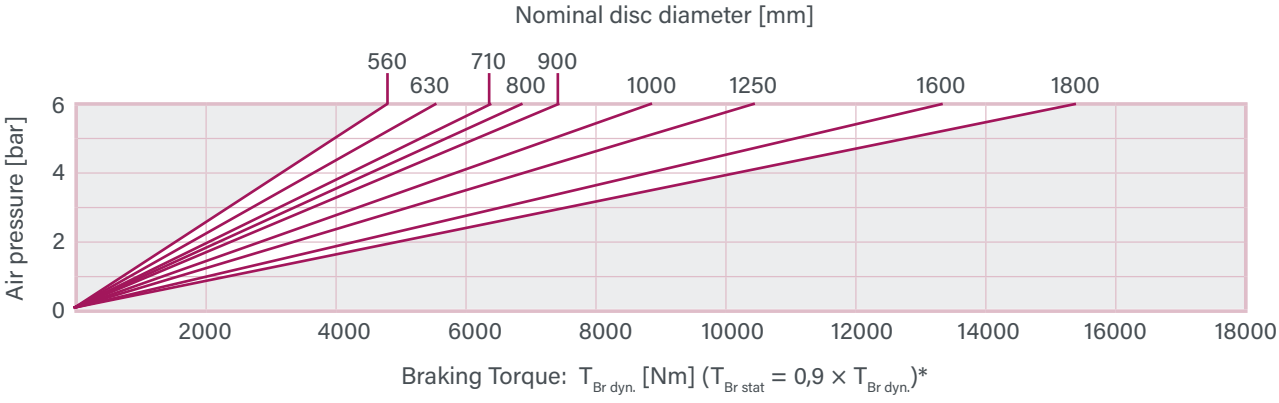


RH 300.106.04 / RH 300.106.04 short.



RH 300.108.04 / RH 300.108.04 short.



* using one chamber $T_{Br\ dyn.}$ × 0,5

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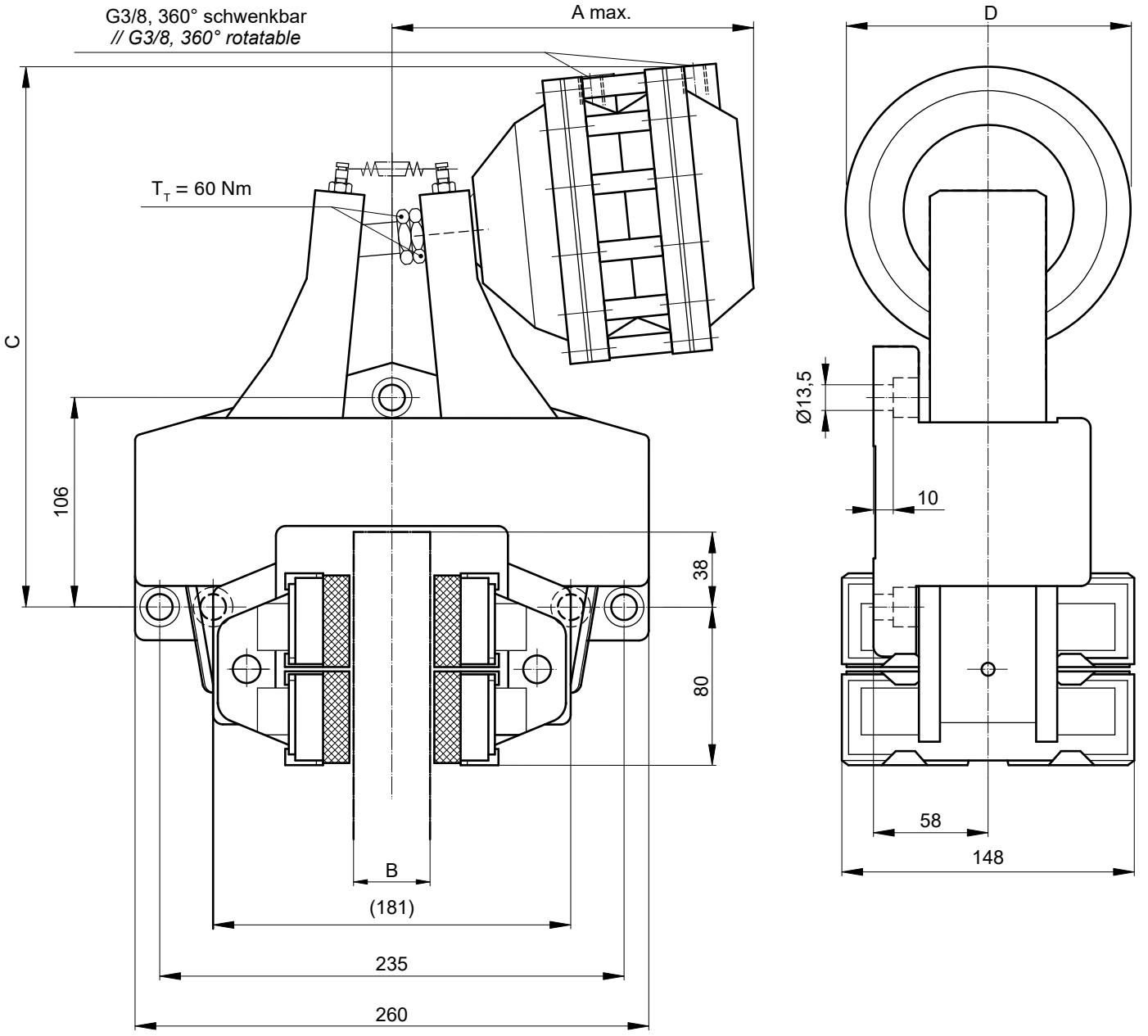

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	$A_{max.}$ [mm]	B [mm]	C [mm]	D [mm]	V / Stroke [dm³]	Mass [kg]
RH 300.106.04	11765	220	30	264	144	0,30	24,5
RH 300.106.04 short.	11766	210	38	274	144	0,30	24,5
RH 300.108.04	11767	225	30	284	180	0,42	26
RH 300.108.04 short.	11768	215	38	294	180	0,42	26

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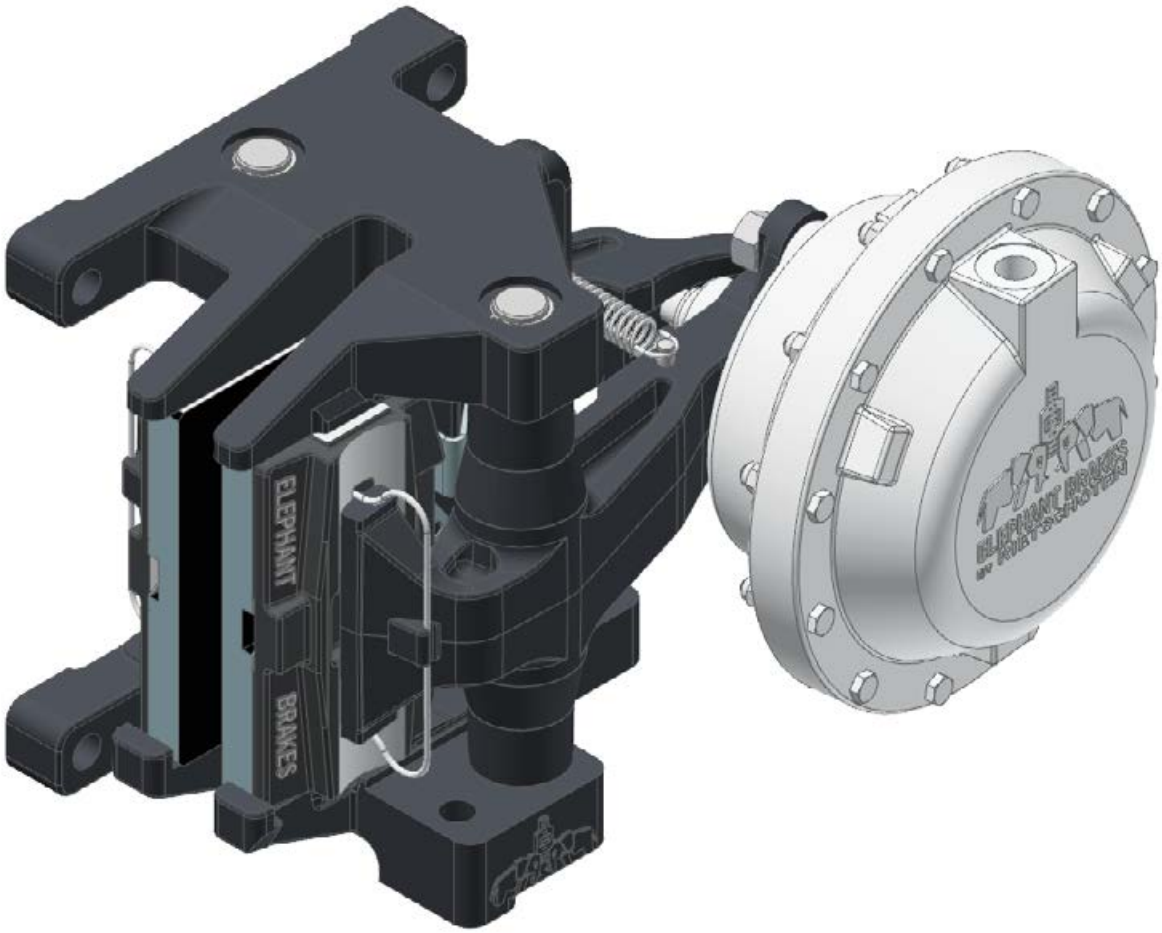

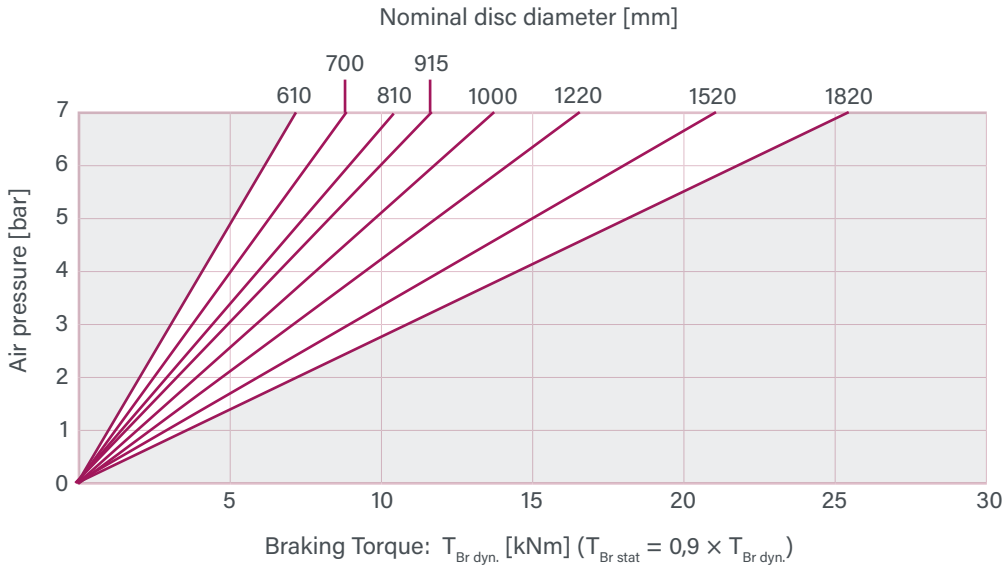

Mass: 49,7 kg
V / Stroke: 2 dm³

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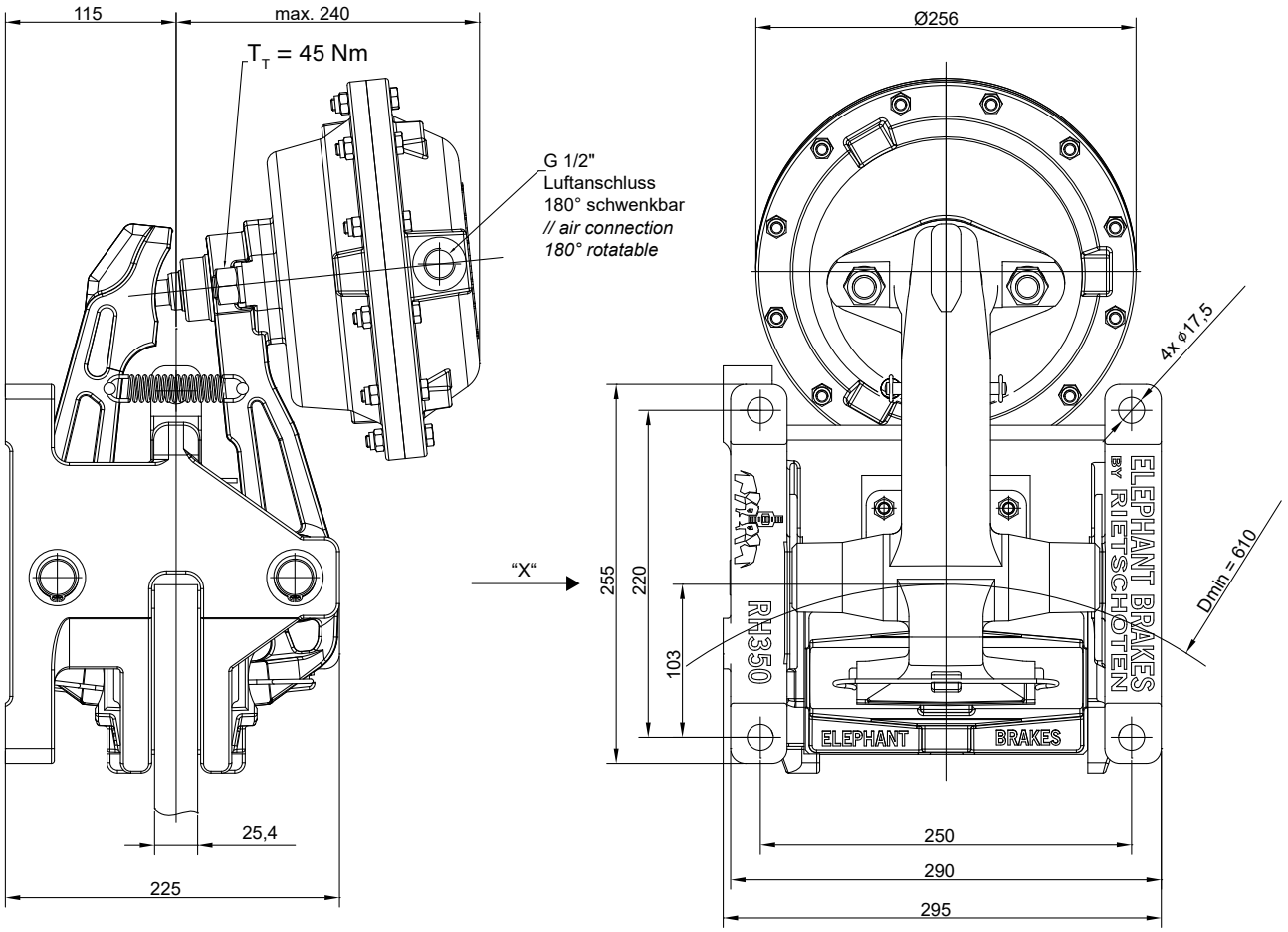
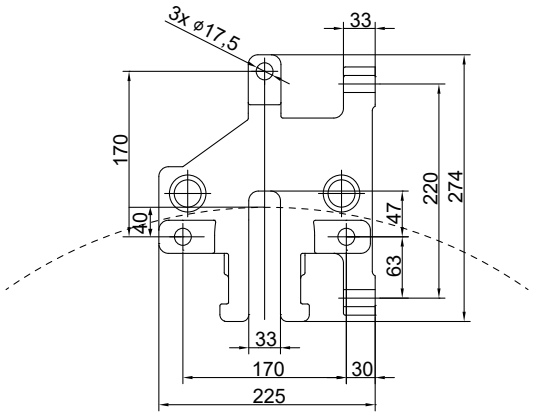


Ansicht "X"
Anschraubfläche
// view „X"
mounting surface



Mounting position is horizontal. Please get in touch if different.
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LEVER BRAKES

Active lever brakes (service brakes)

manually operated closing, spring-operated opening

pneumatically actuated closing, spring-operated opening

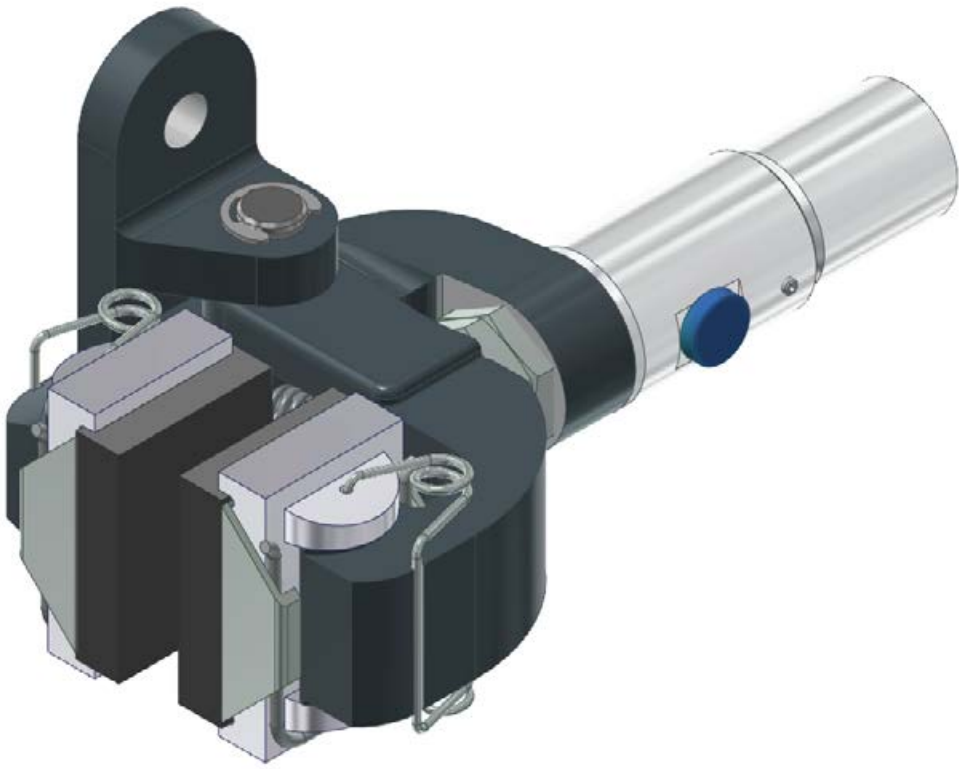
hydraulically operated closing, spring-operated opening

Passive lever brakes (safety brakes)

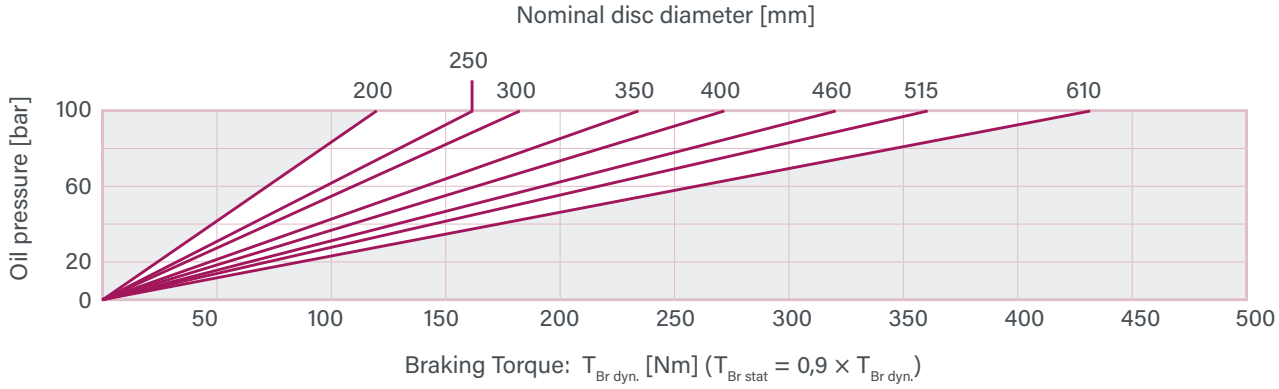
spring-operated closing, pneumatically operated opening

spring-operated closing, hydraulically operated opening

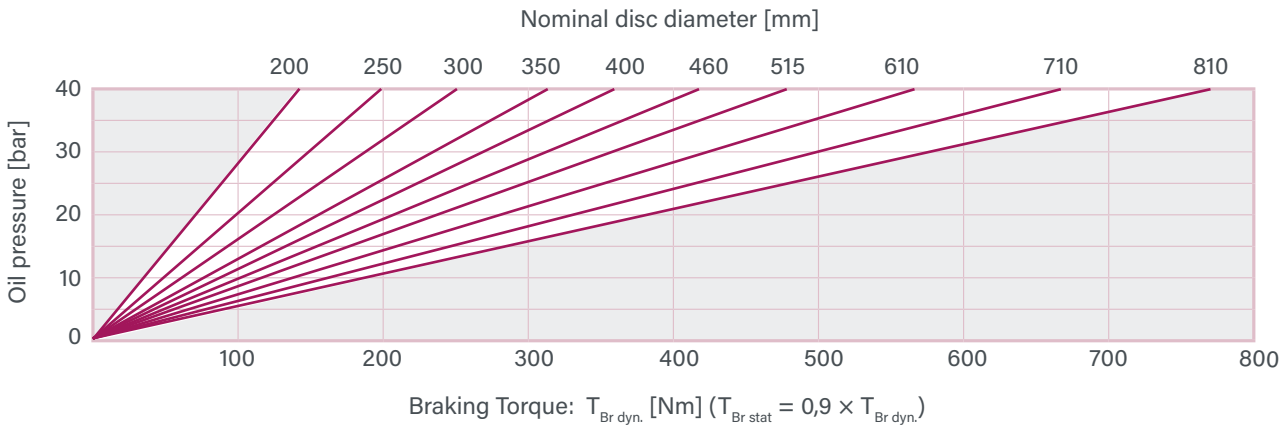
spring-operated closing, electrically operated opening



RH 100.250.01



RH 100.251.01



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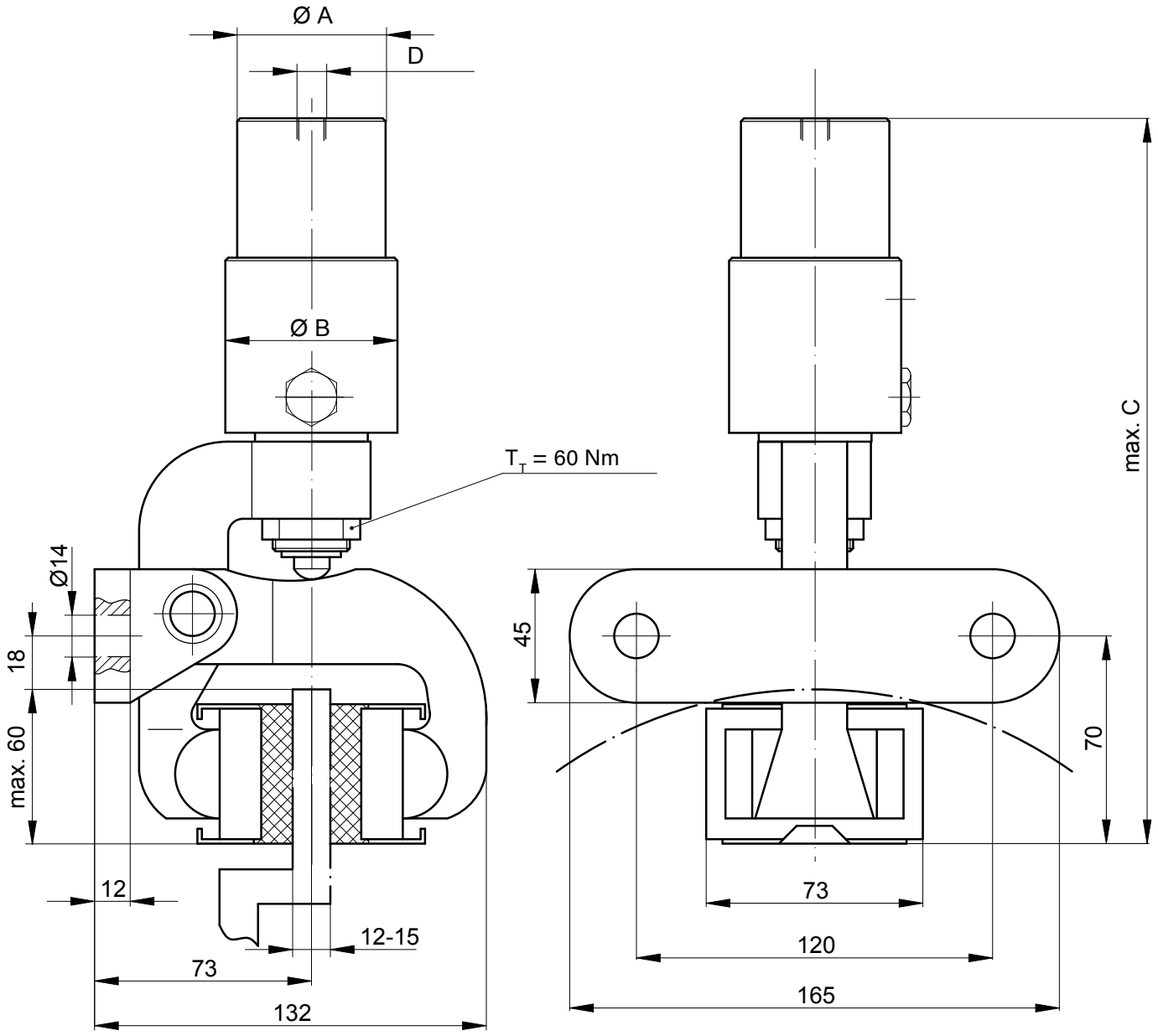

Mounting position is horizontal. Please get in touch if different.

Type	Part-No.	Ø A [mm]	Ø B [mm]	max. C [mm]	D	max. oil demand per braking [cm³]	Mass [kg]
RH 100.250.01	10391	32	40	254	G1/8	20	3,8
RH 100.251.01	10392	50	58	245	G1/4	50,4	4,4

For use with mineral oil.

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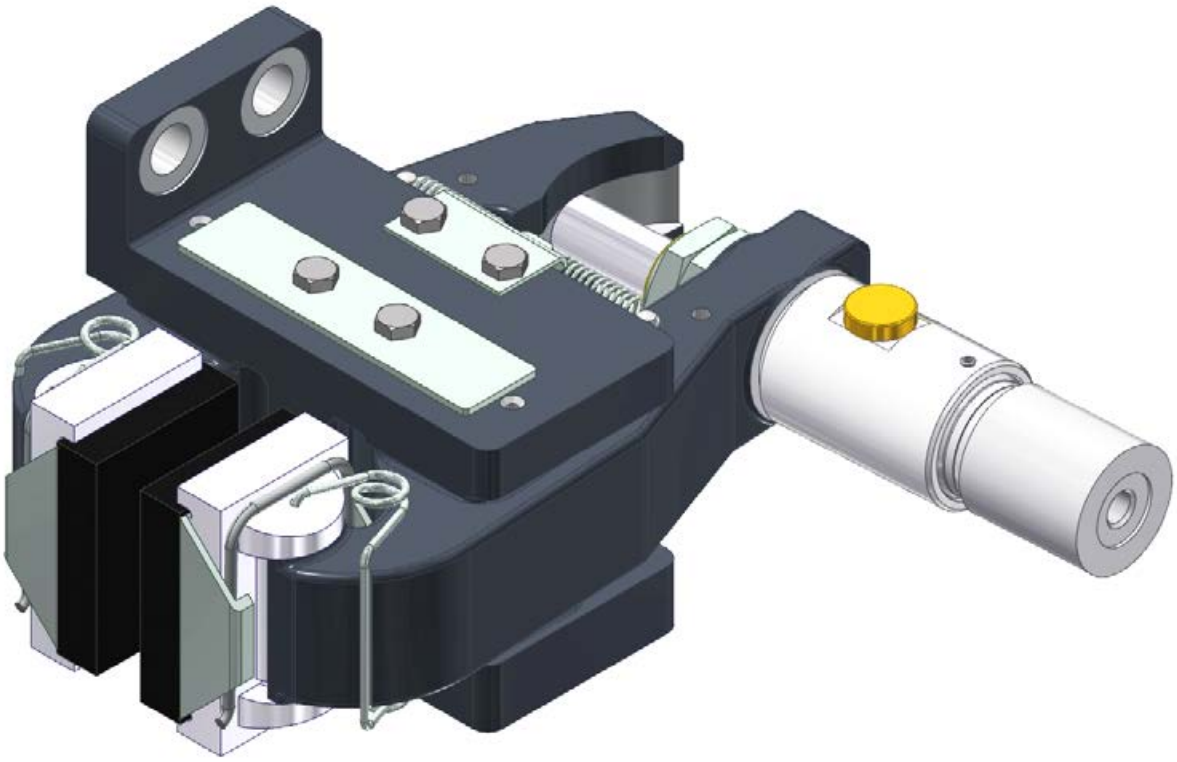
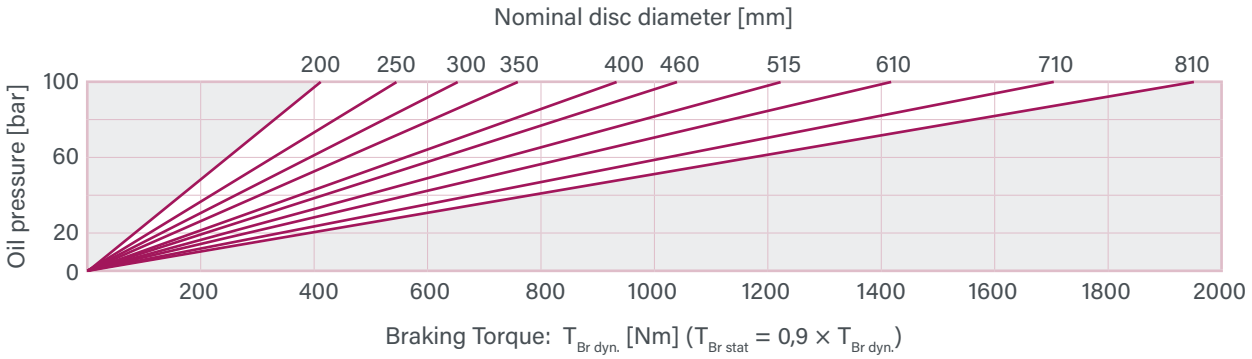
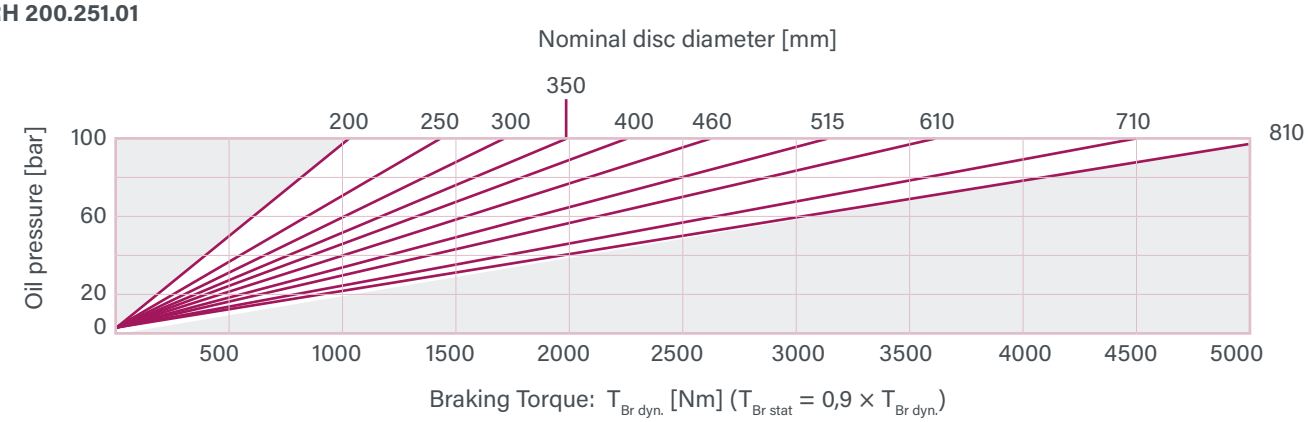


RH 200.250.01



RH 200.251.01



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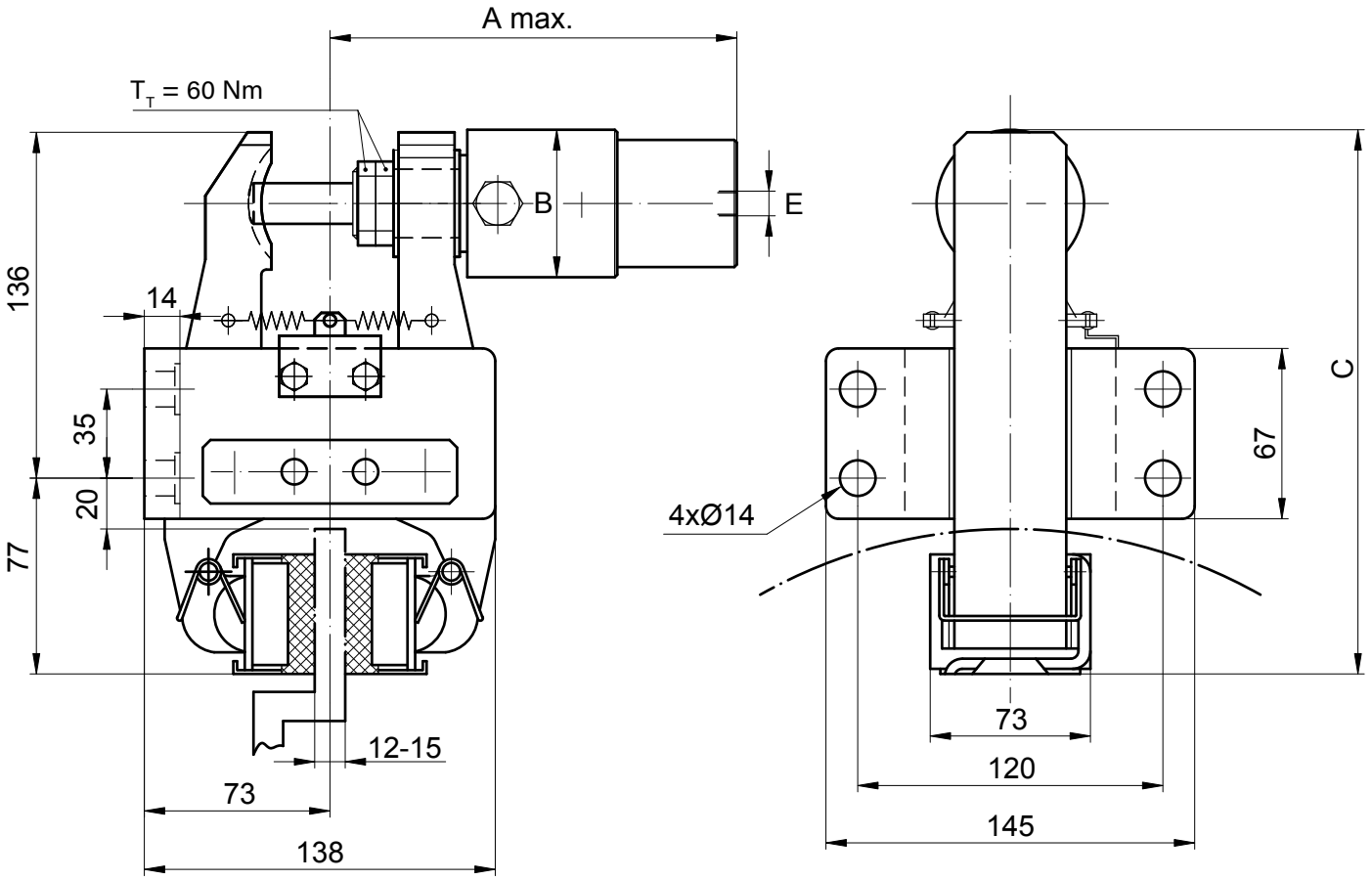

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

Type	Part-No.	A [mm]	Ø B [mm]	C [mm]	E	V / Stroke [cm³]	Mass [kg]
RH 200.250.01	11149	184	40	213	G1/8	20	8,4
RH 200.251.01	11150	175	58	216	G1/4	50	9,1

For use with mineral oil.

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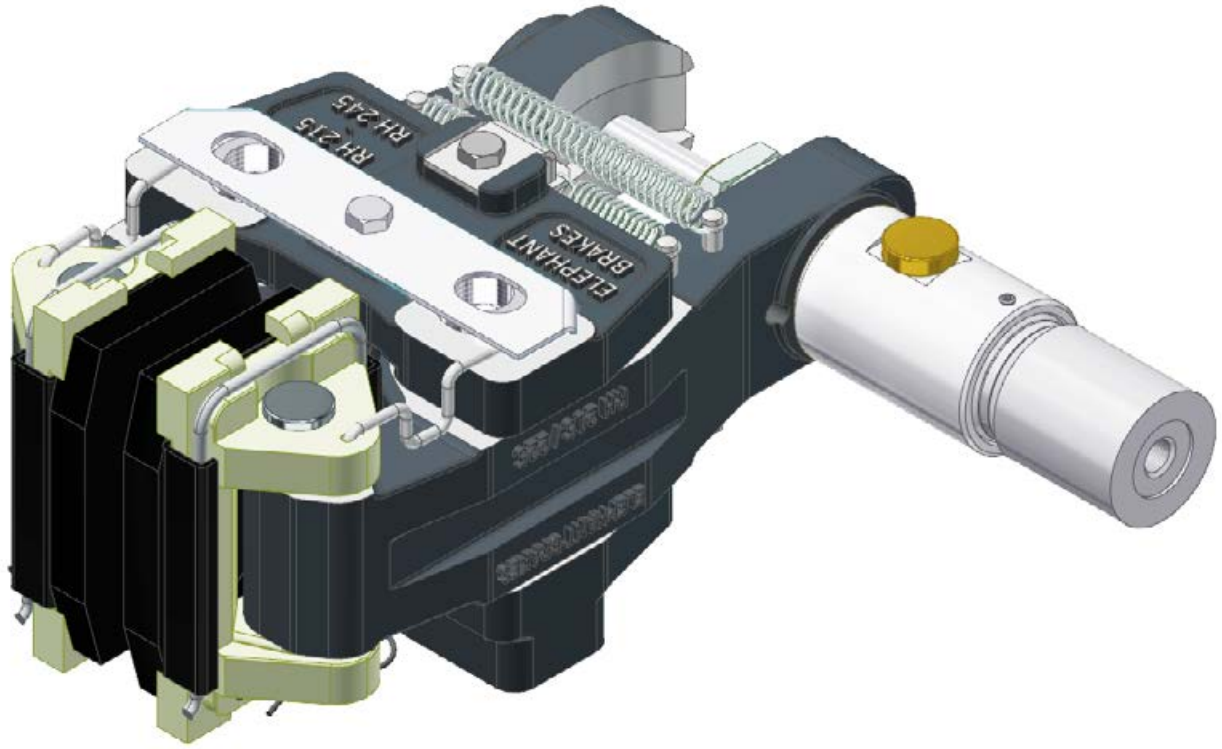
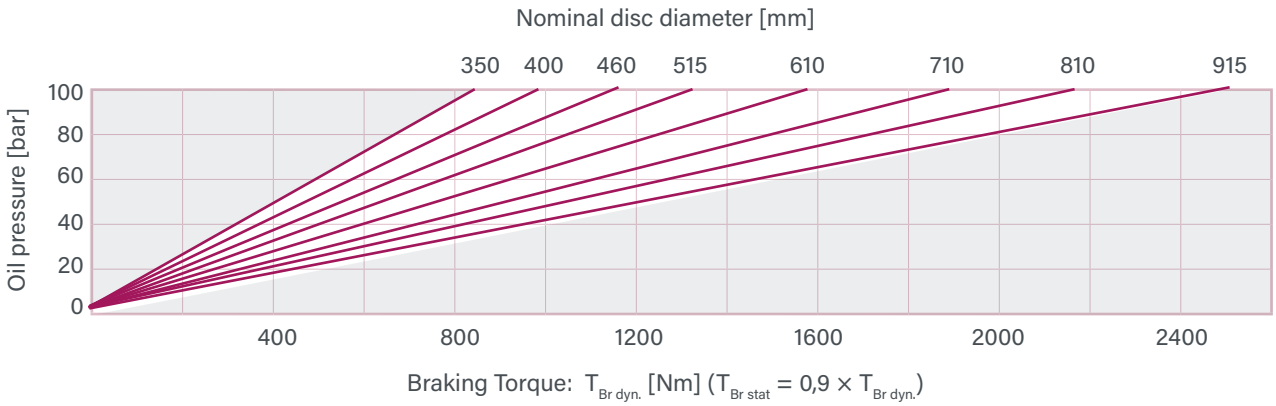
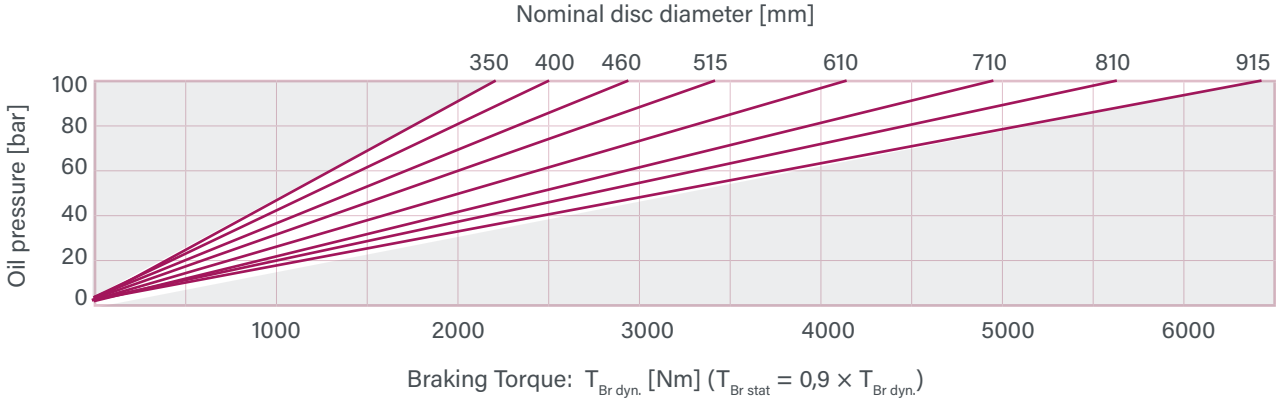


RH 215.250.01 / RH 225.250.01 / RH 230.250.01



RH 215.251.01 / RH 225.251.01 / RH 230.251.01



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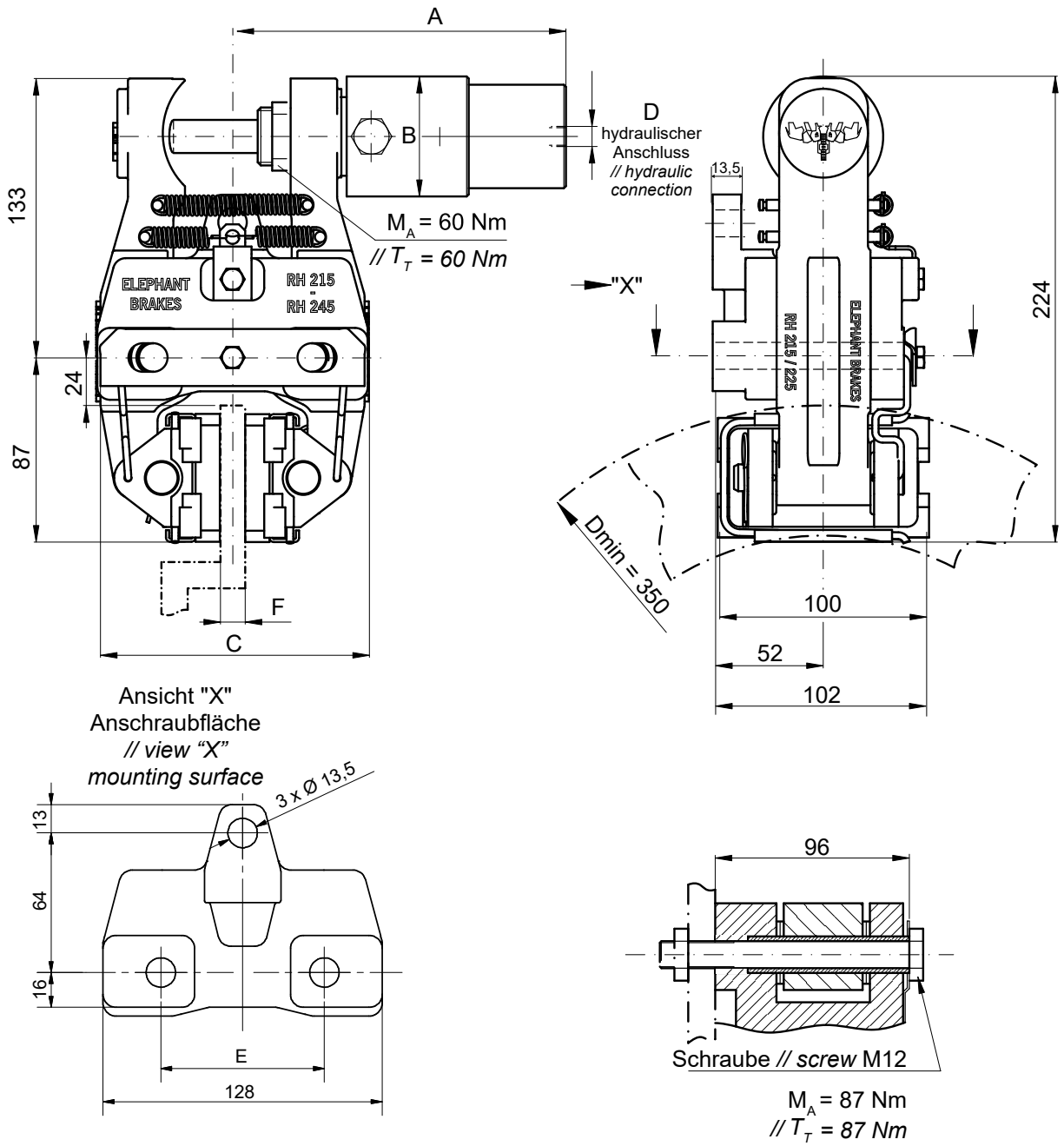

Mounting position is horizontal. Please get in touch if different.

A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	Ø B [mm]	C [mm]	D	E [mm]	F [mm]	max. V/Stroke [cm³]	Mass [kg]
RH 215.250.01	10691	195	40	130	G1/8	75	12-15	20	8,7
RH 225.250.01	11096	199	40	140	G1/8	84	25,4	20	8,7
RH 230.250.01	10711	195	40	144	G1/8	75	30	20	8,9
RH 215.251.01	10692	185	58	130	G1/4	75	12-15	50	9,4
RH 225.251.01	11097	189	58	140	G1/4	84	25,4	50	9,4
RH 230.251.01	10712	185	58	144	G1/4	75	30	50	9,6

For use with mineral oil.

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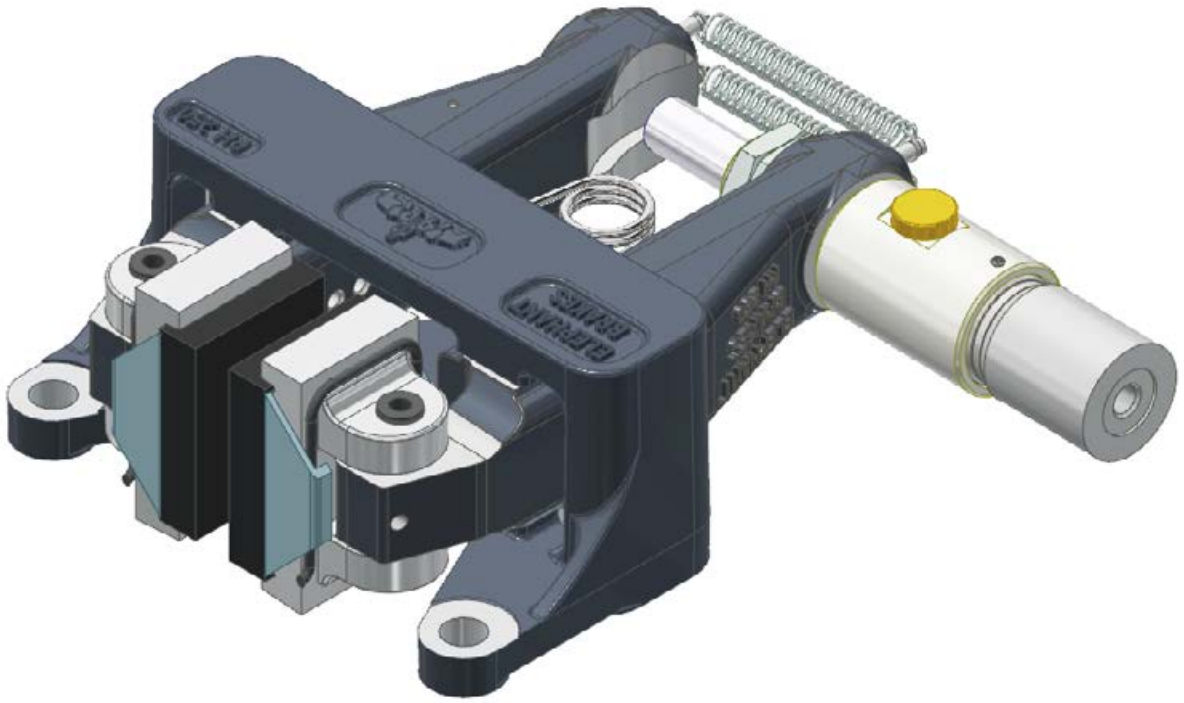
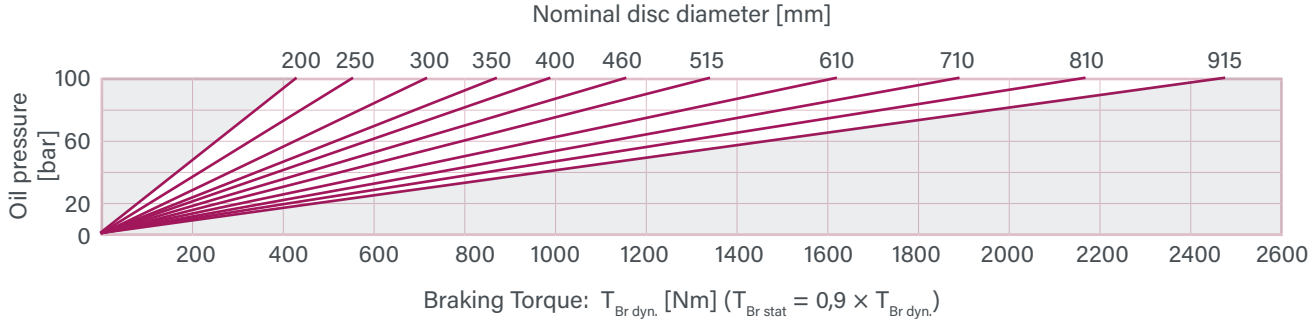
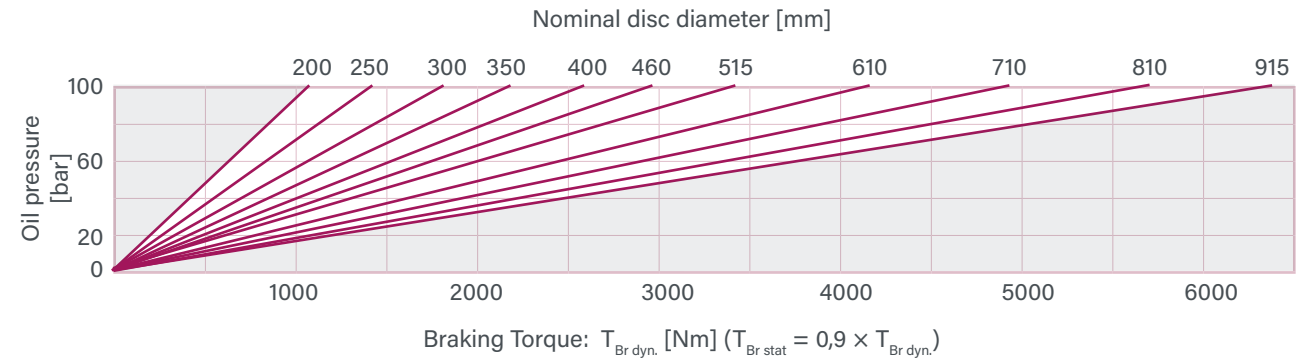


RH 250.250.01



RH 250.251.01



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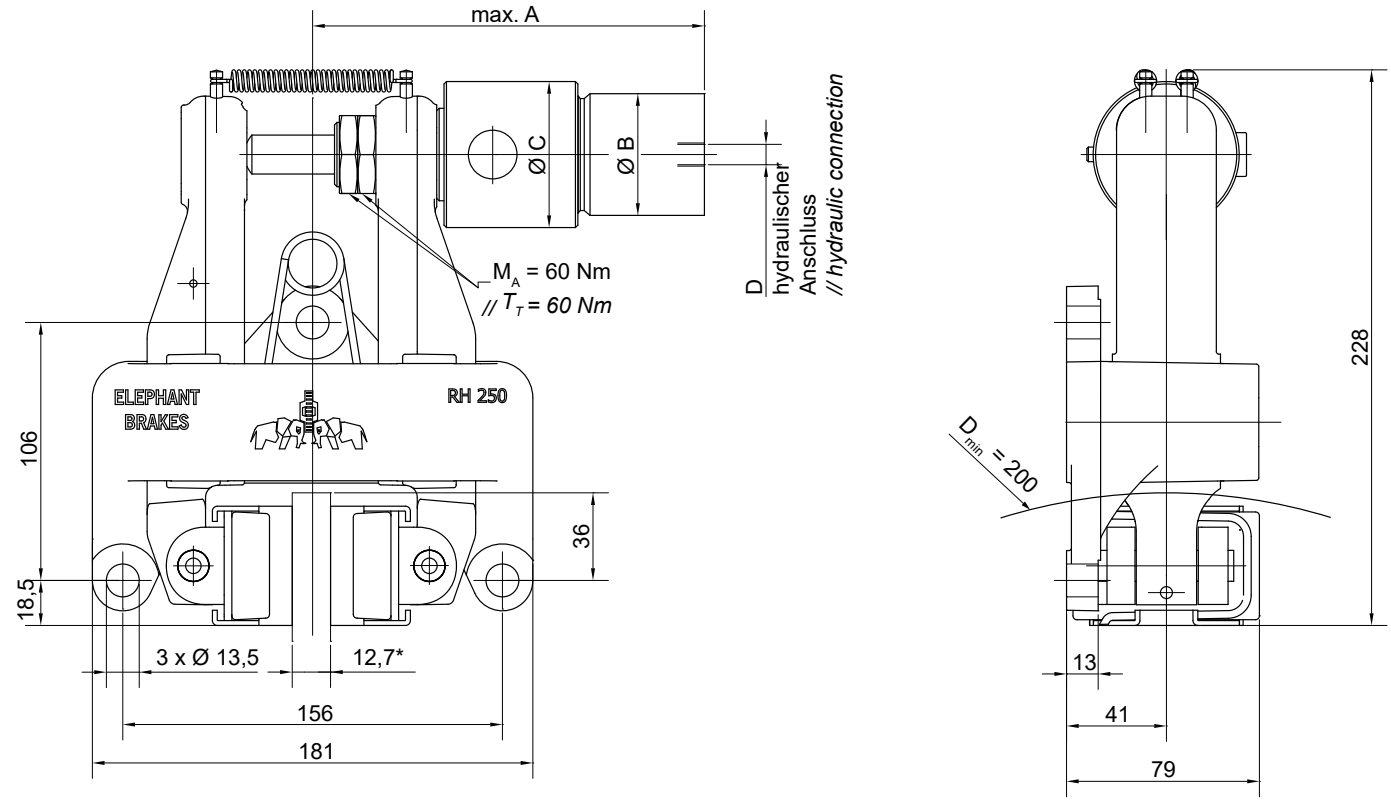

*optional 25,4

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	max. A [mm]	Ø B [mm]	Ø C [mm]	D	max. oil demand per braking [cm³]	Mass [kg]
RH 250.250.01	10070	190	32	40	G1/8	15,7	7,5
RH 250.251.01	10073	183	50	58	G1/4	50,4	8,2

For use with mineral oil.

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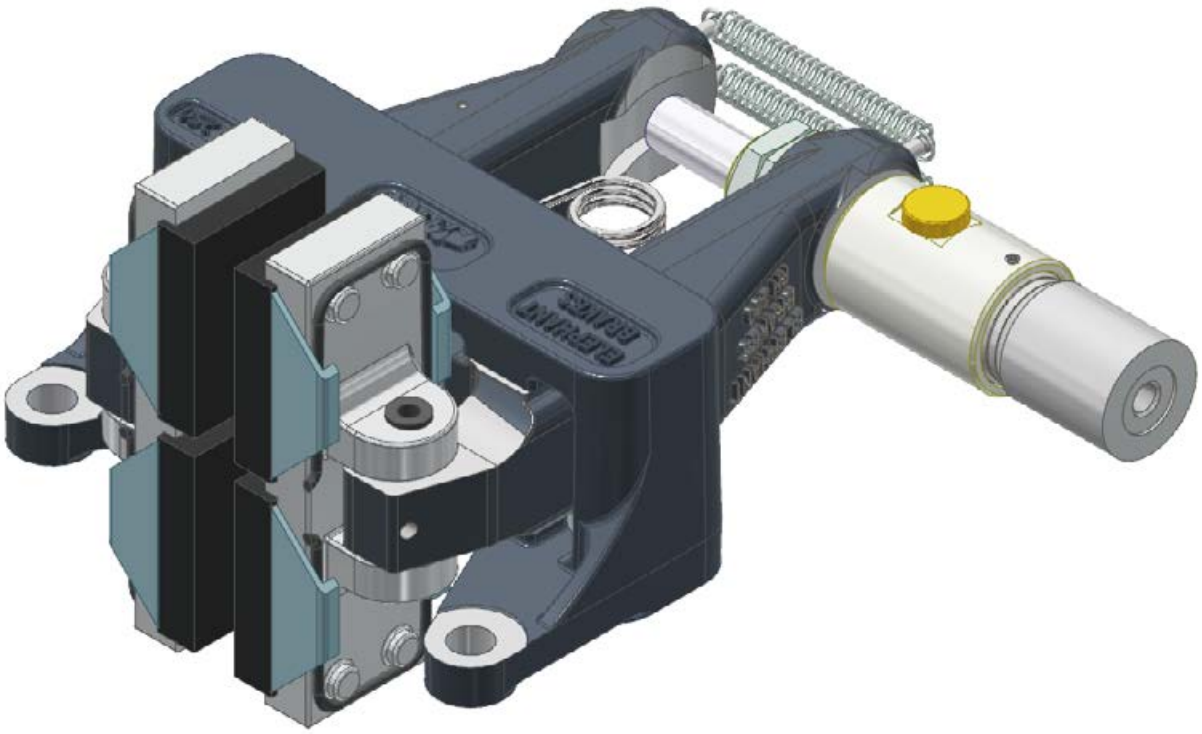
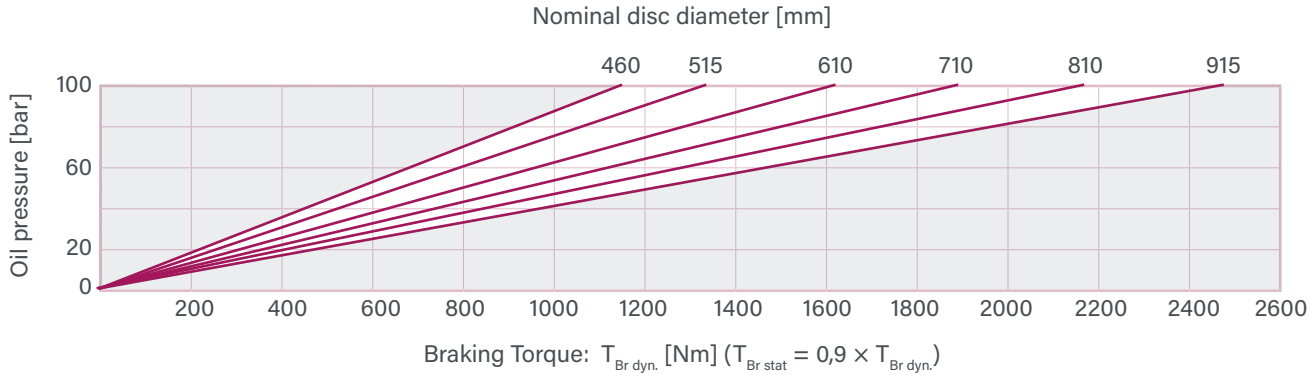
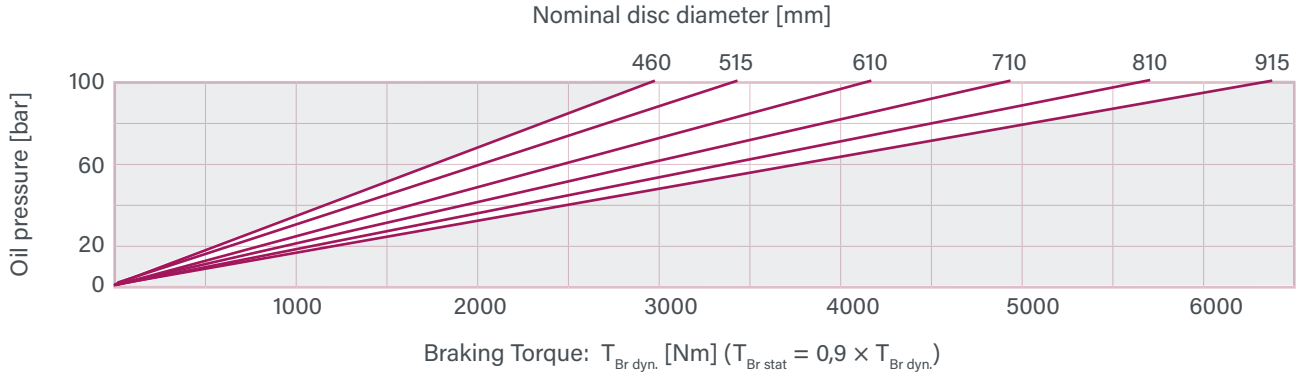


RH 250.250.02



RH 250.251.02



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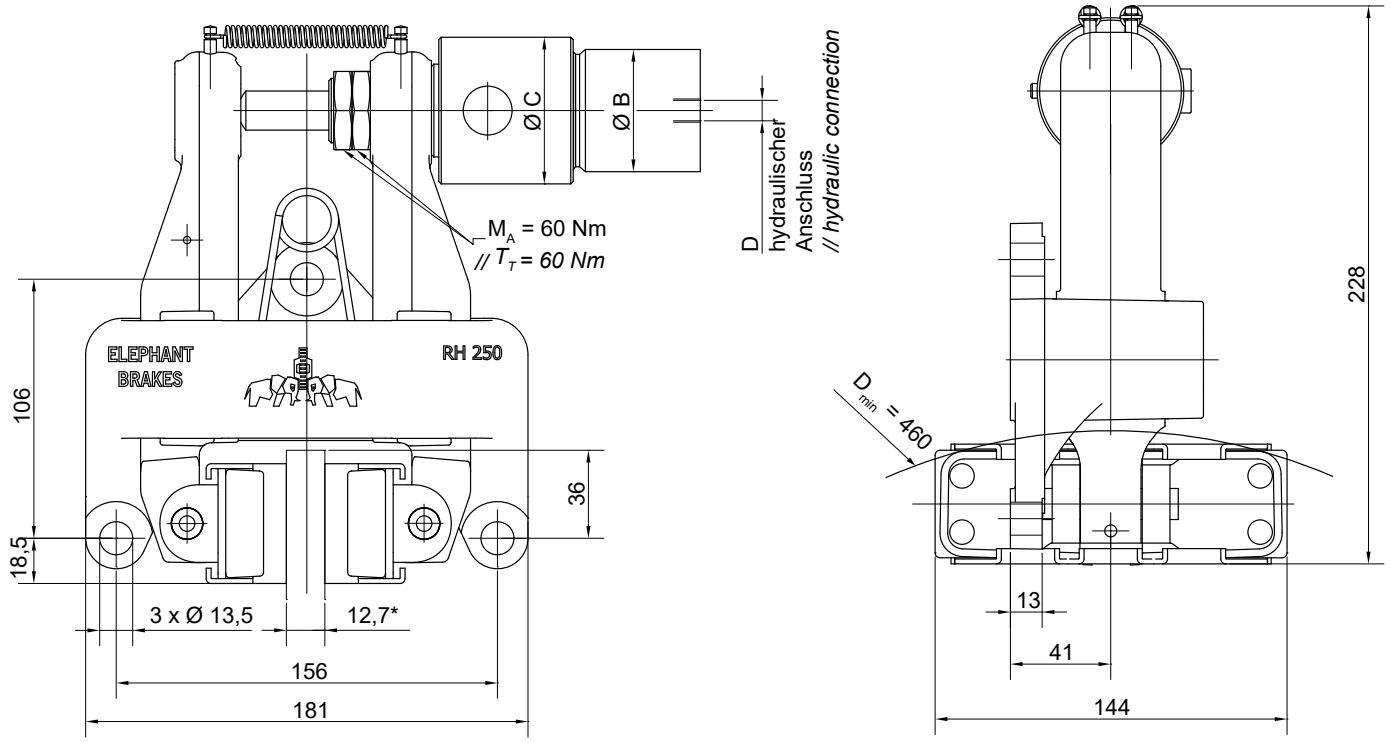

*optional 25,4

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	max. A [mm]	Ø B [mm]	Ø C [mm]	D	max. oil demand per braking [cm³]	Mass [kg]
RH 250.250.02	10072	190	32	40	G1/8	15,7	8
RH 250.251.02	10074	183	50	58	G1/4	50,4	8,7

For use with mineral oil.

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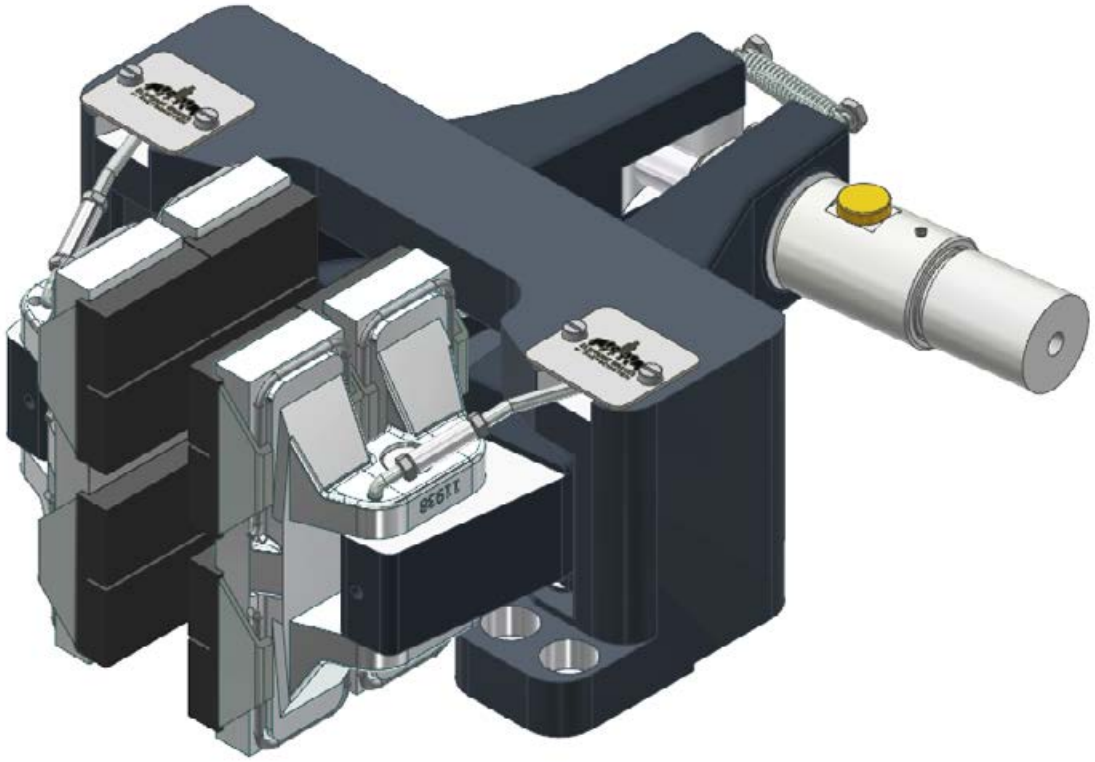
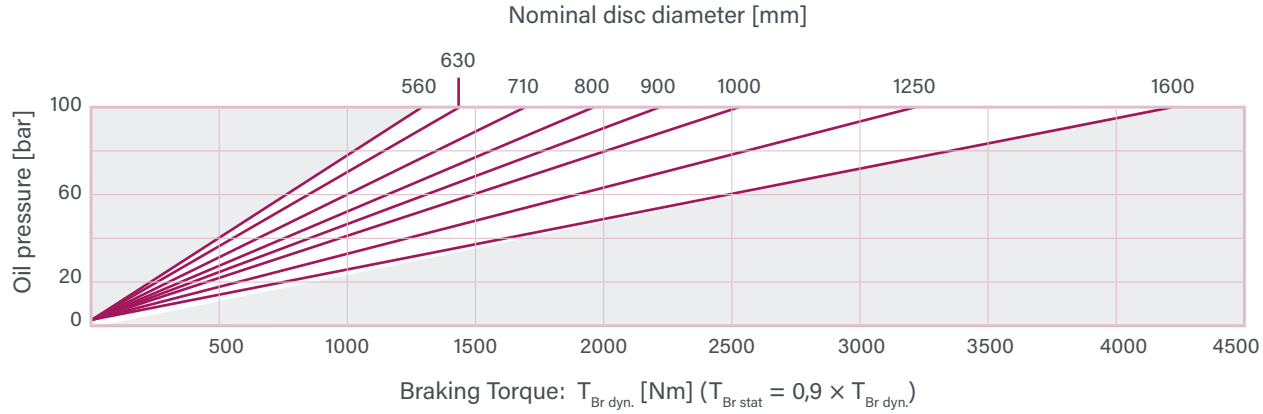
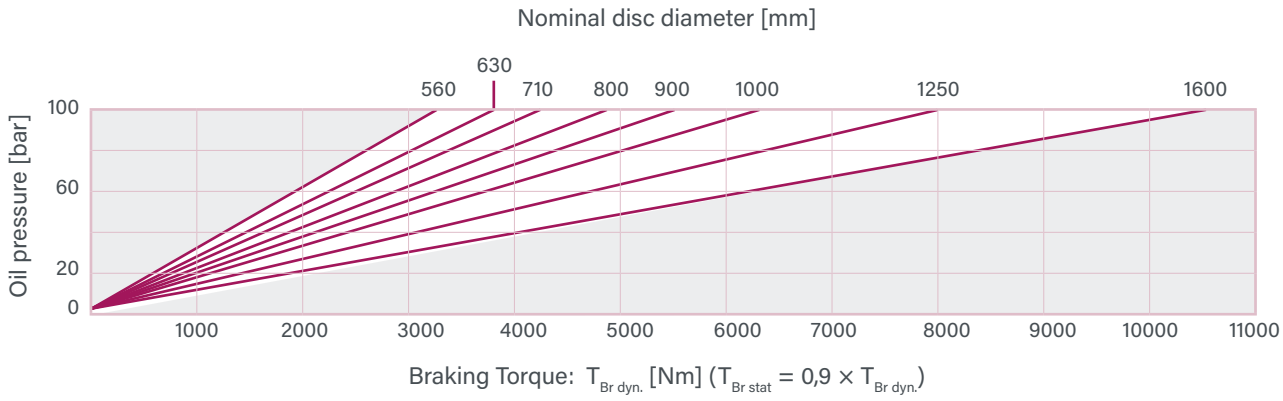


RH 300.250.04



RH 300.251.04 / RH 300.251.04 short.



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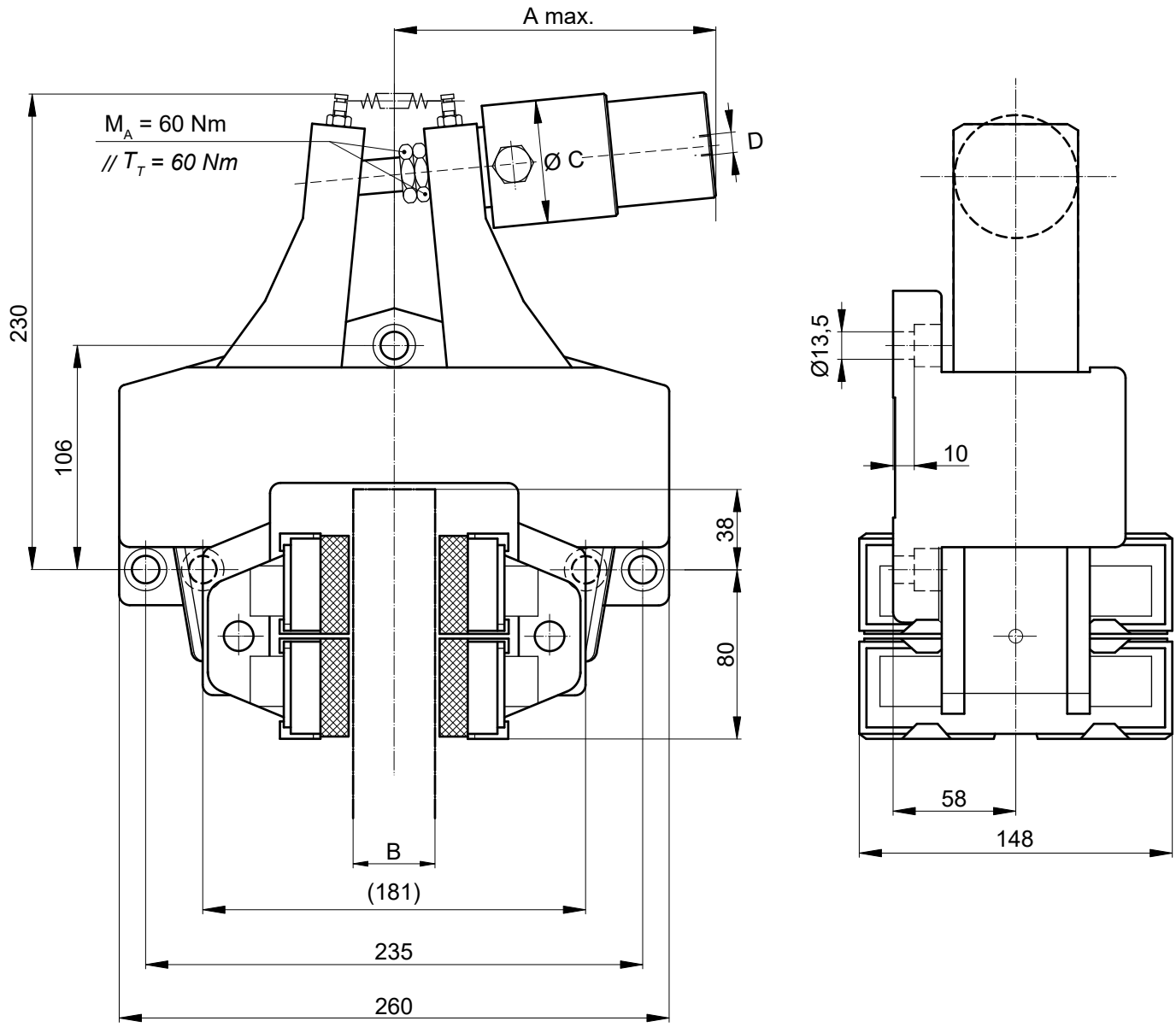

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	B [mm]	Ø C [mm]	D	max. V / Stroke cm^3	Mass [kg]
RH 300.250.04	12749	180	30	40	G1/8	20	23
RH 300.251.04	12750	170	30	58	G1/4	50	23,5
RH 300.251.04 short.	13451	160	38	58	G1/4	50	23,5

For use with mineral oil.

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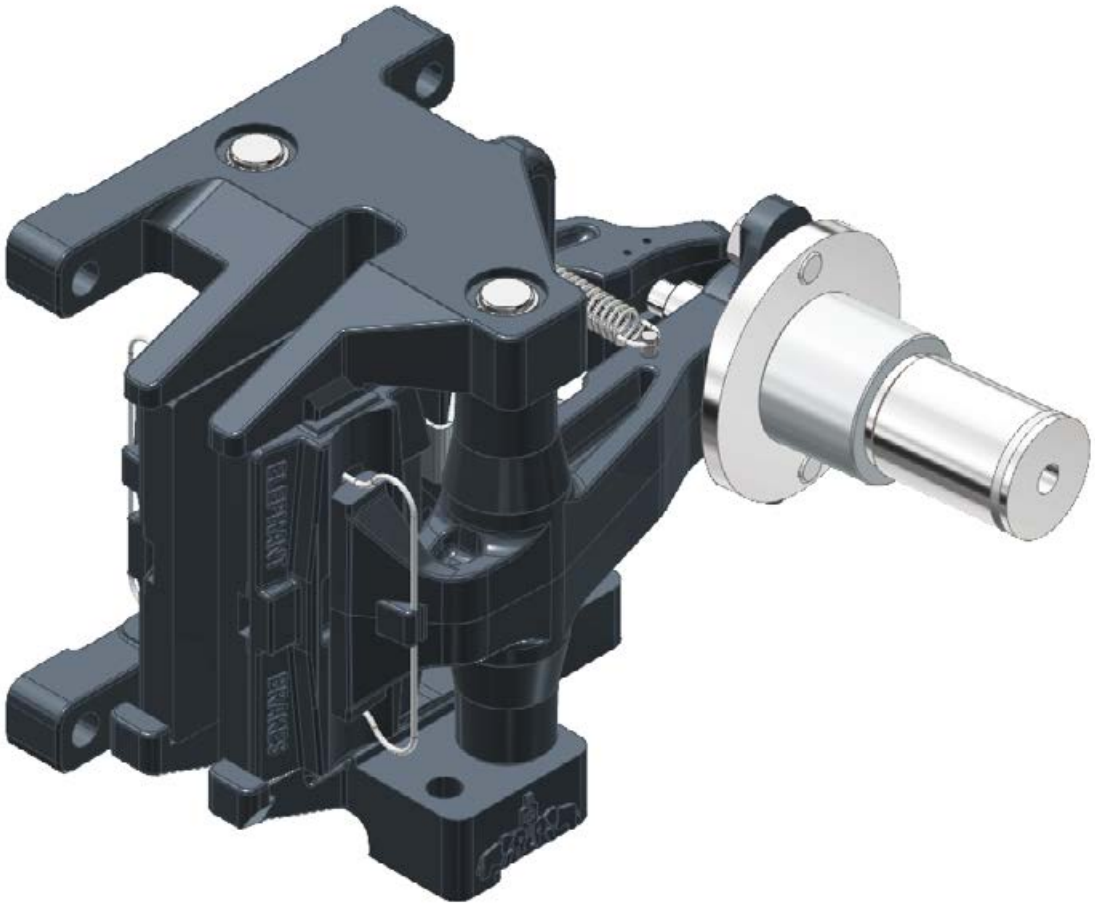
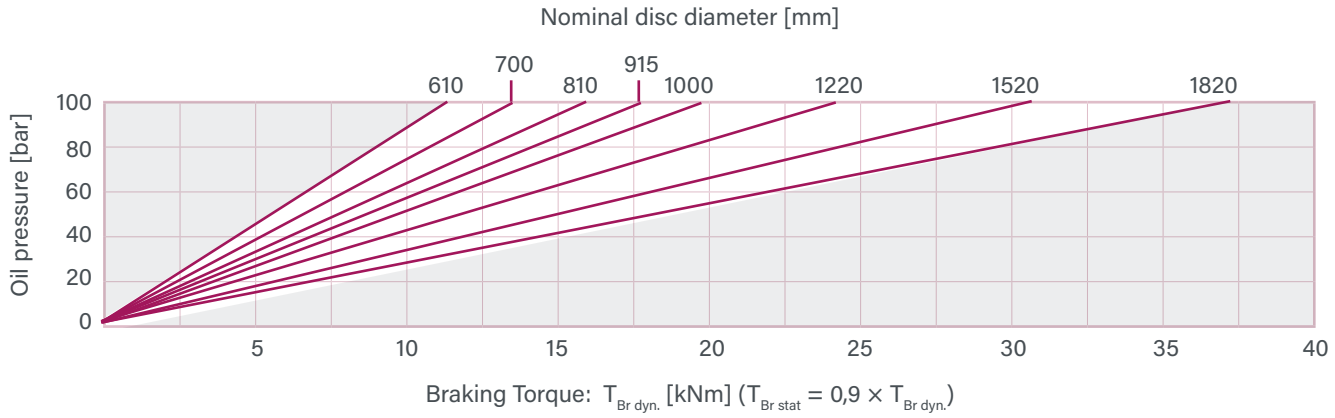
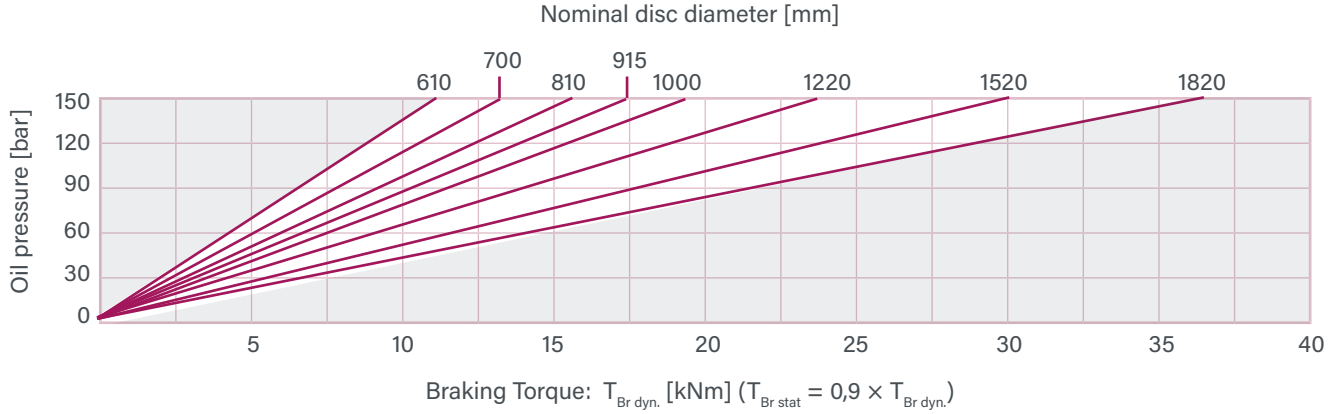


RH 350.205.01



RH 350.204.01



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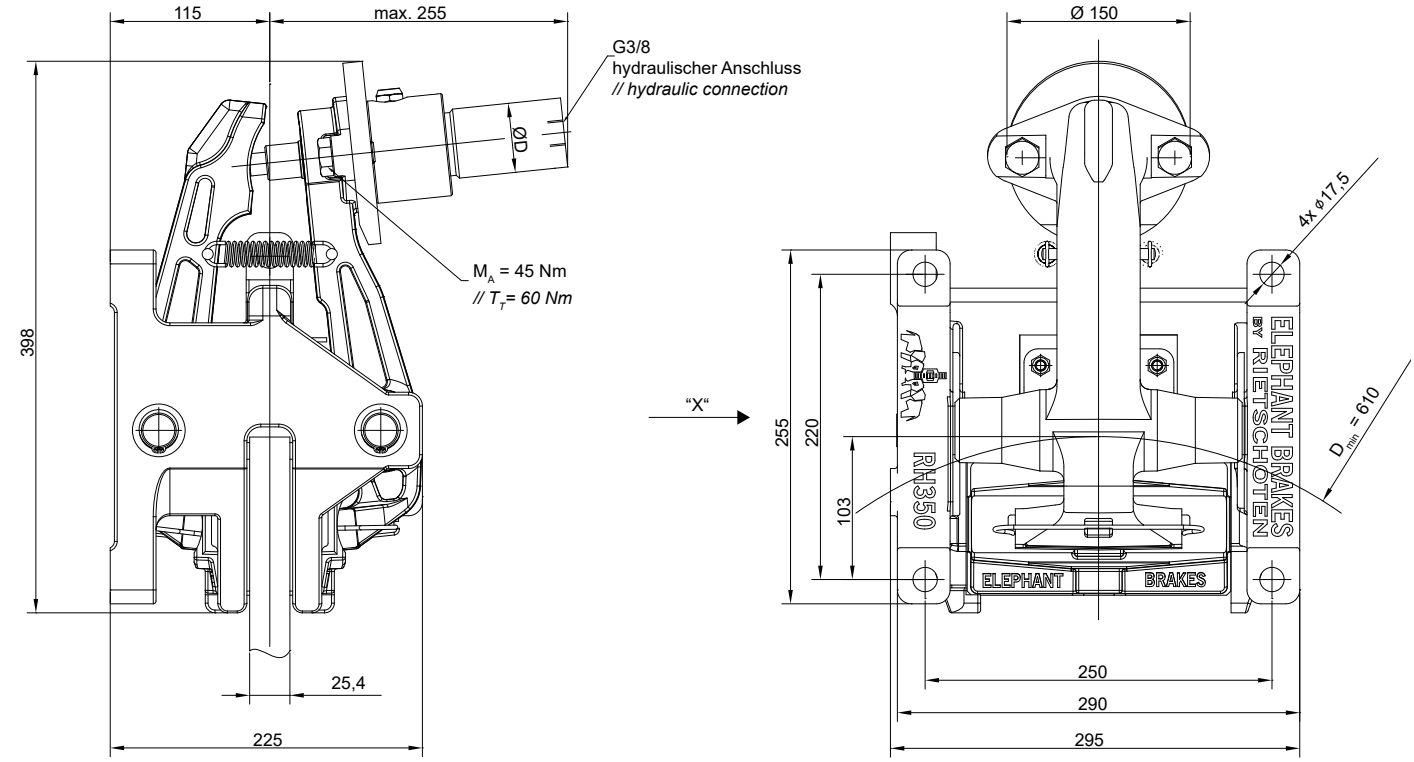

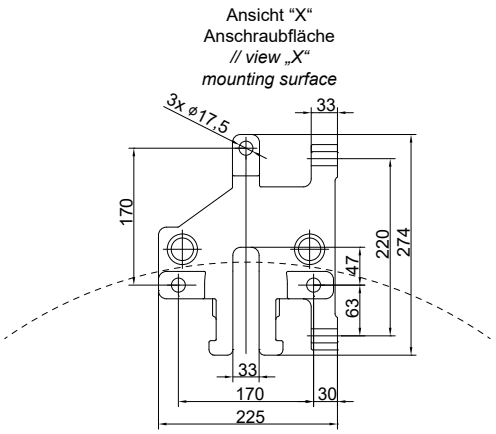

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	D [mm]	p_{max}	max. V / Stroke [cm³]	Mass [kg]
RH 350.204.01	11228	50	150	90	48
RH 350.205.01	10451	60	100	140	48

For use with mineral oil.

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LEVER BRAKES

Active lever brakes (service brakes)

manually operated closing, spring-operated opening

pneumatically actuated closing, spring-operated opening

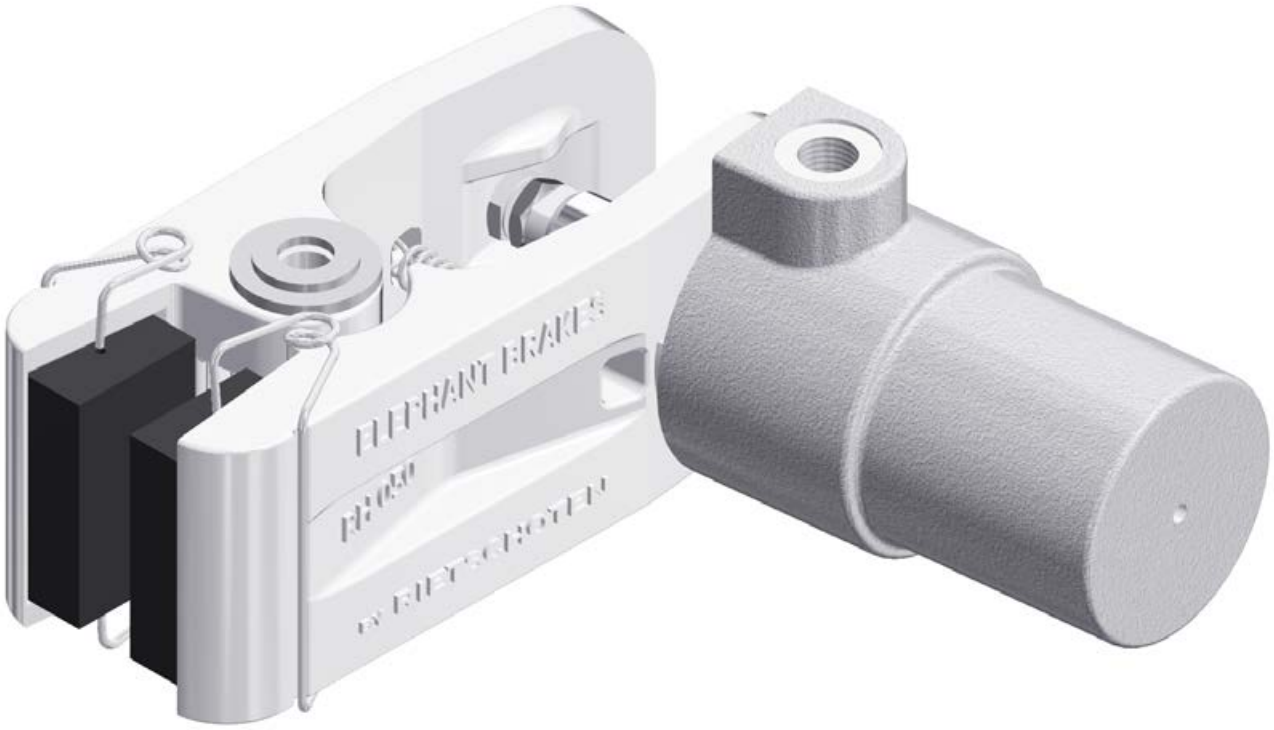
hydraulically operated closing, spring-operated opening

Passive lever brakes (safety brakes)

spring-operated closing, pneumatically operated opening

spring-operated closing, hydraulically operated opening

spring-operated closing, electrically operated opening



Nominal disc diameter [mm]					
150	200	250	300	400	460
Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)					
60	80	110	130	180	210

p_{min}: 5 bar
p_{max}: 8 bar
V / Stroke: 0,015 dm^3
Mass: 1,7 kg

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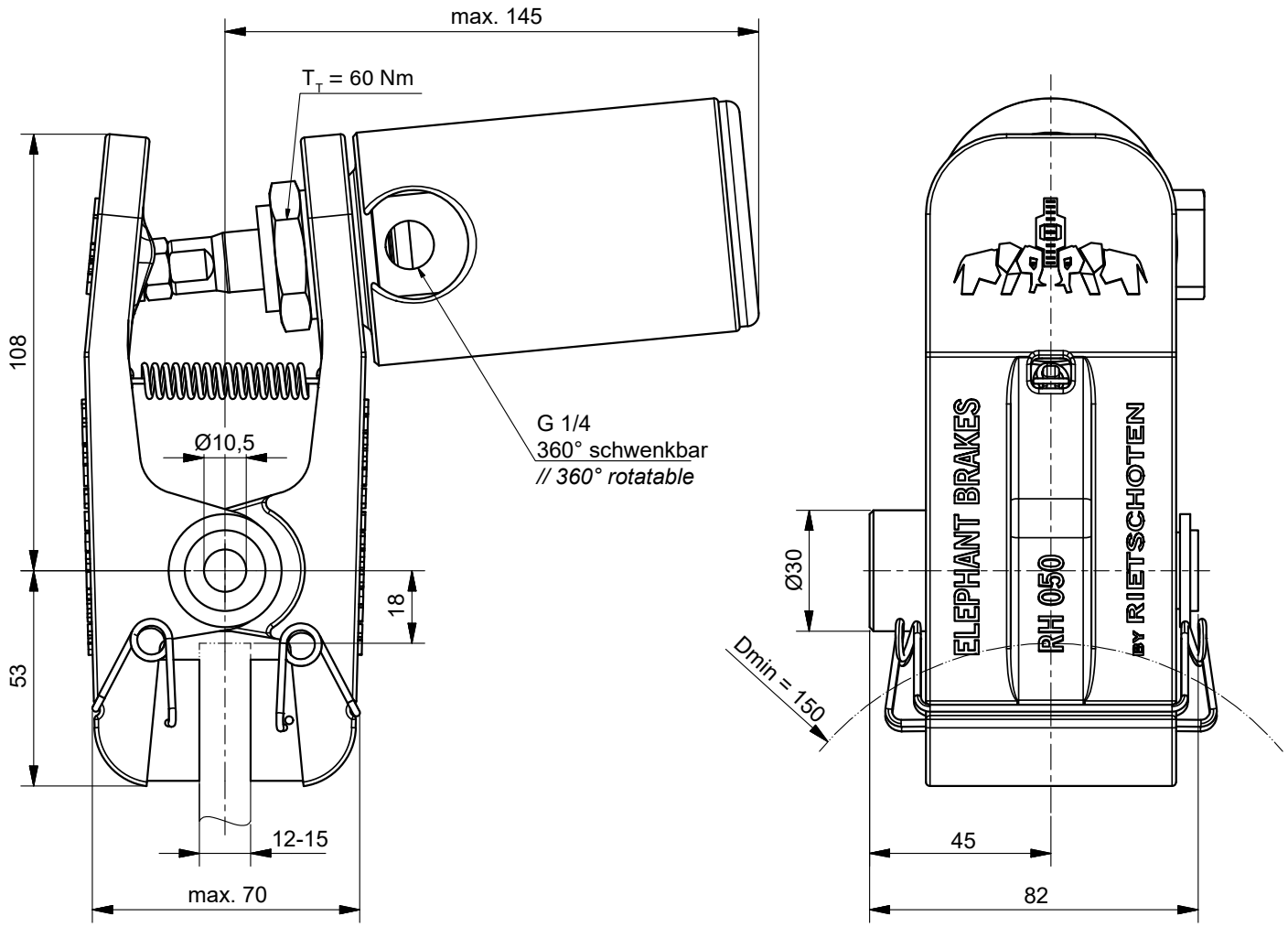

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

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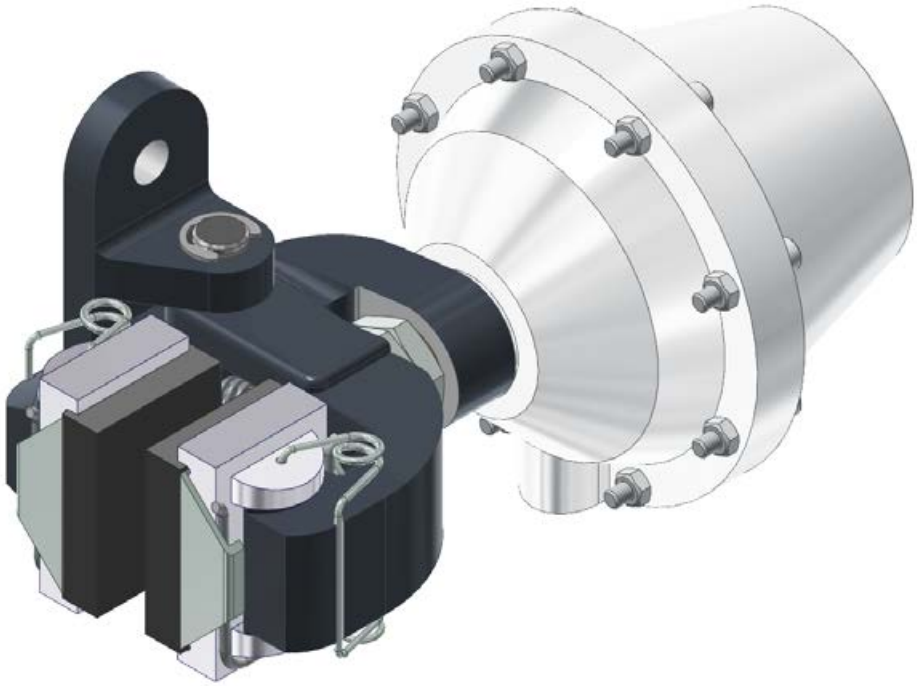

RH 100.405.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
100%	90	130	160	190	220	260	290	350	410	470	540
66%	60	80	105	125	145	170	190	230	270	310	355
33%	30	40	50	60	70	85	95	115	135	155	180

RH 100.406.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
100%	160	220	270	325	380	445	505	610	715	825	940
66%	105	145	180	215	250	295	335	400	470	545	620
33%	50	70	90	110	125	145	165	200	235	270	310

p_{min}: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
p_{max}: 10 bar

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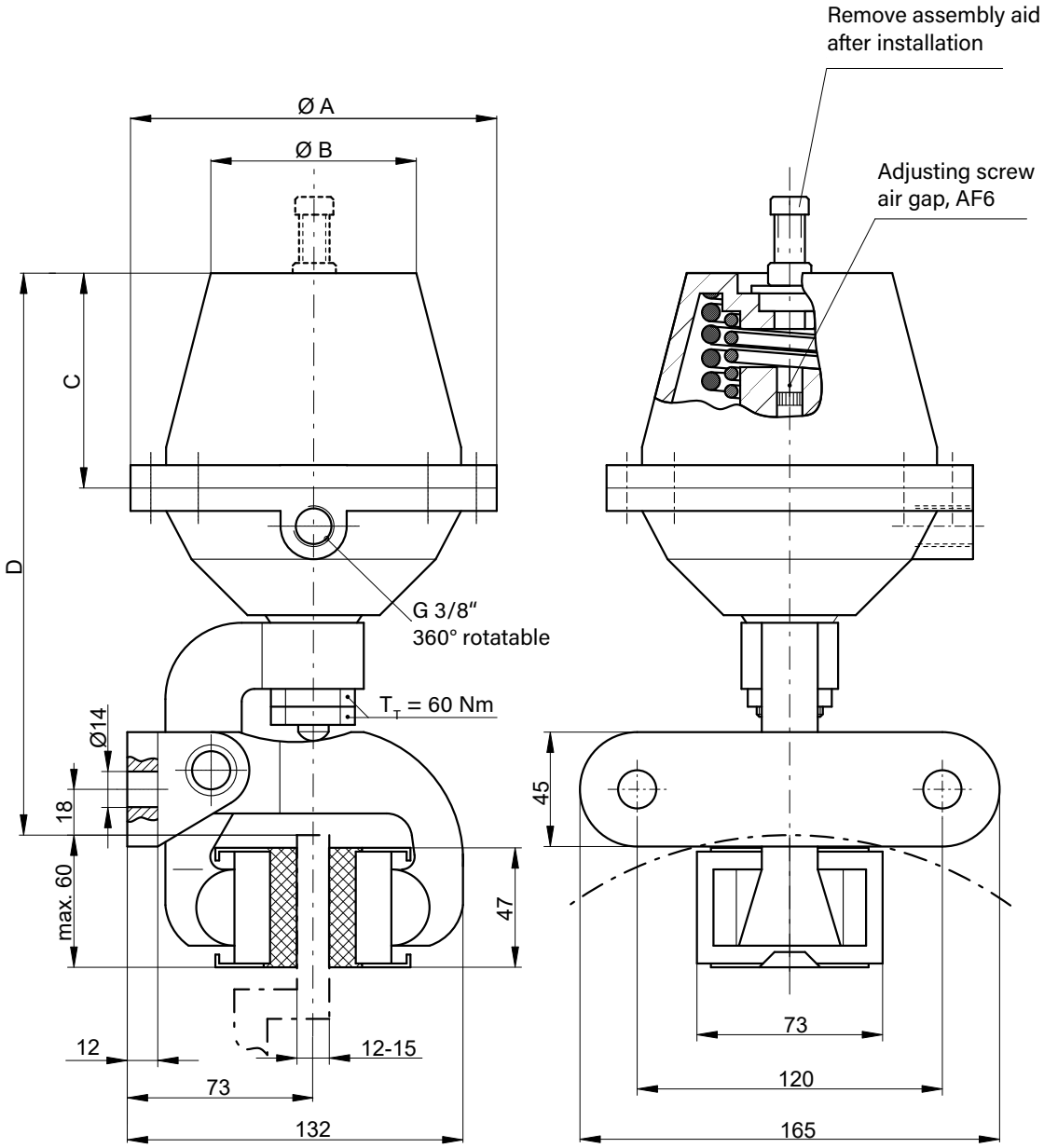

Mounting position is horizontal. Please get in touch if different.

Type	Part-No.	Ø A [mm]	Ø B [mm]	C [mm]	$D_{max.}$ [mm]	Mass [kg]	V / Stroke [dm^3]
RH 100.405.01	11847	144	81	82,5	225	6,2	0,12
RH 100.405.01 66%	13199	144	81	82,5	225	6,2	0,12
RH 100.405.01 33%	13200	144	81	82,5	225	6,2	0,12
RH 100.406.01	11848	180	110	97,5	245	7,7	0,43
RH 100.406.01 66%	13201	180	110	97,5	245	7,7	0,43
RH 100.406.01 33%	13202	180	110	97,5	245	7,7	0,43

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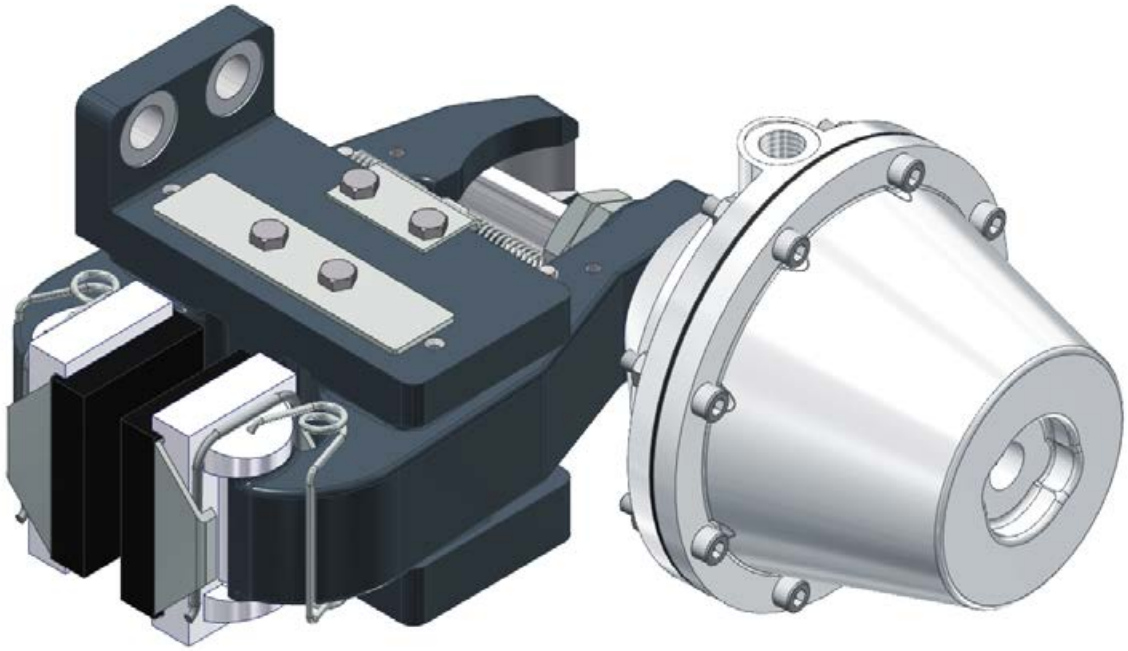

RH 200.405.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\,dyn.}$ [Nm] ($T_{Br\,stat}$ = 0,9 × $T_{Br\,dyn.}$)										
100%	235	315	390	470	550	645	730	880	1040	1195	1350
66%	155	210	260	310	365	425	480	580	685	790	890
33%	80	105	130	155	180	210	240	290	345	395	445

RH 200.406.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\,dyn.}$ [Nm] ($T_{Br\,stat}$ = 0,9 × $T_{Br\,dyn.}$)										
100%	415	555	685	825	970	1135	1285	1550	1830	2100	2390
66%	275	365	450	545	640	750	850	1025	1210	1385	1575
33%	135	185	225	270	320	375	425	510	605	695	790

p_{min}: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
p_{max}: 10 bar

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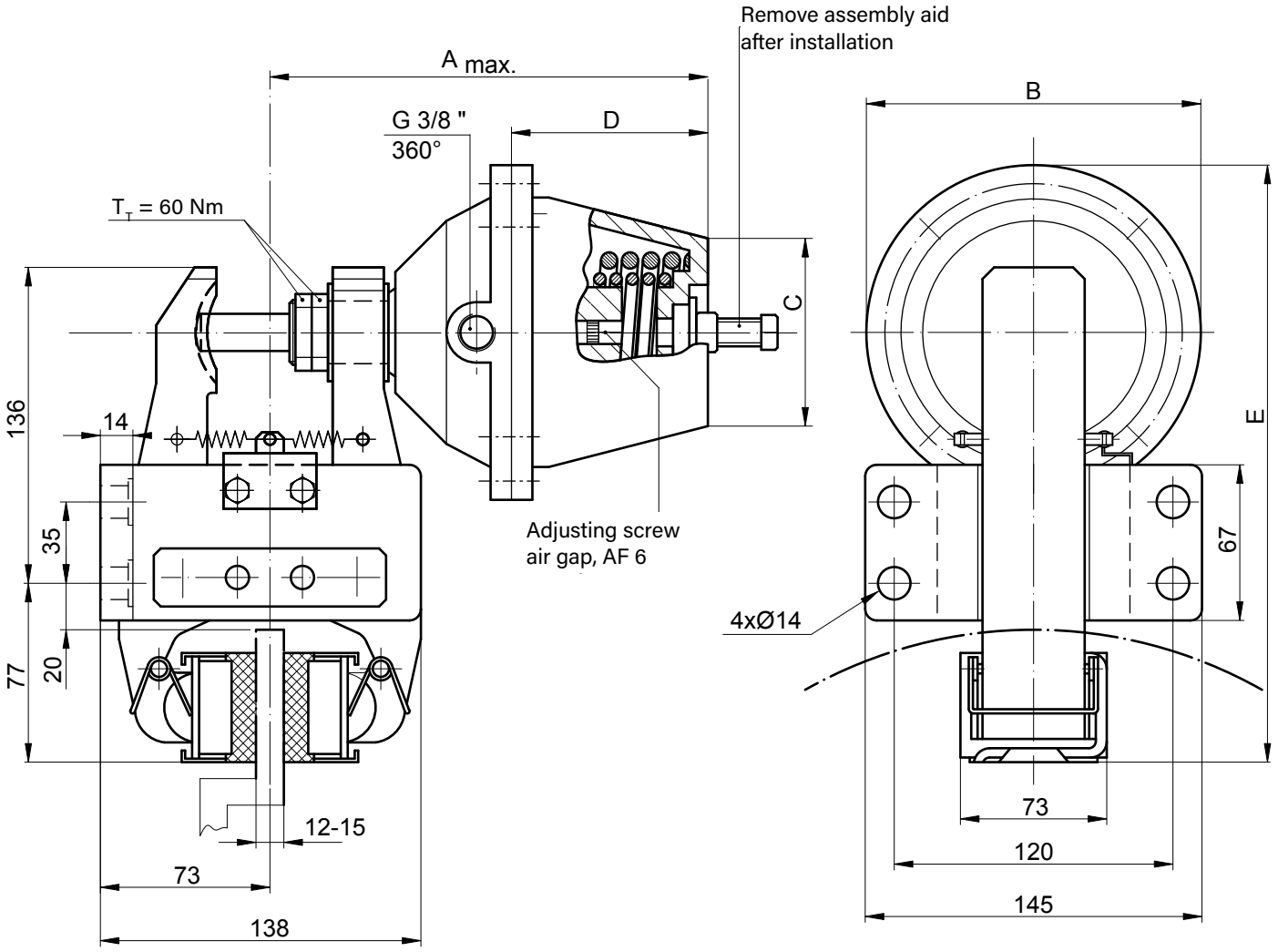

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side" mounted please state with order.

Type	Part-No.	A max. [mm]	Ø B [mm]	Ø C [mm]	D [mm]	E [mm]	V / Stroke [dm³]	Mass [kg]
RH 200.405.01	11849	200	144	81	82,5	260	0,12	10,4
RH 200.405.01 66%	13212	200	144	81	82,5	260	0,12	10,4
RH 200.405.01 33%	13213	200	144	81	82,5	260	0,12	10,4
RH 200.406.01	11850	230	180	110	97,5	278	0,43	11,9
RH 200.406.01 66%	13224	230	180	110	97,5	278	0,43	11,9
RH 200.406.01 33%	13225	230	180	110	97,5	278	0,43	11,9

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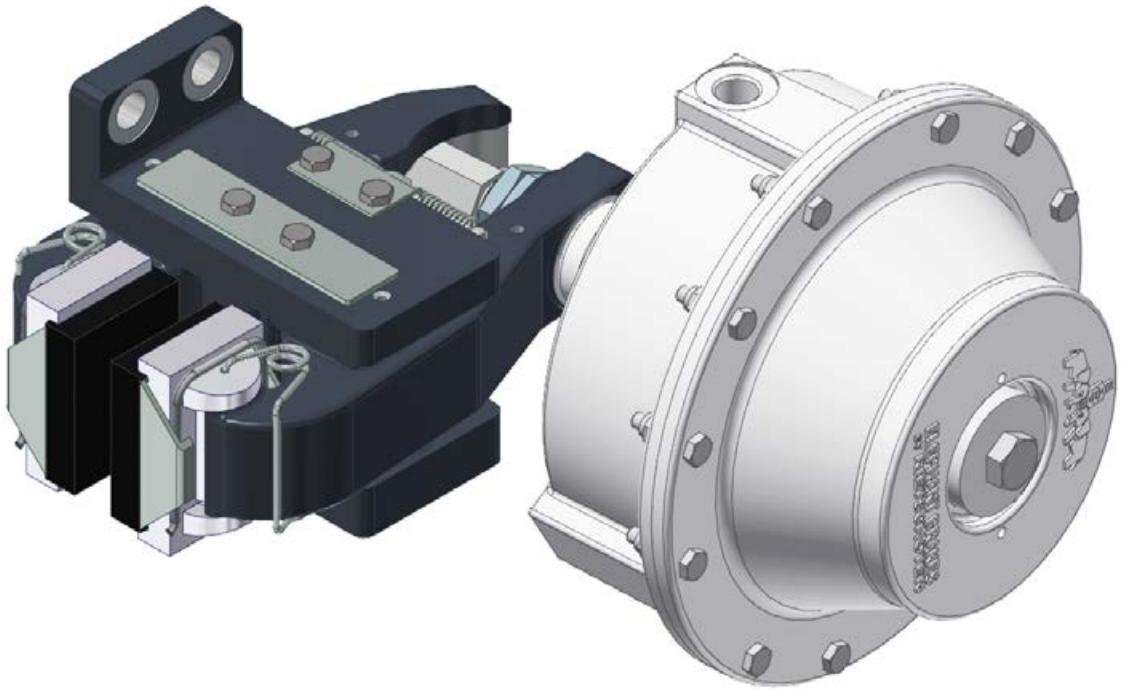

		Nominal disc diameter [mm]										
		200	250	300	350	400	460	515	610	710	810	915
Type	**Part-No.**	**Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)**										
RH 200.412.01	14569	660	910	1160	1410	1660	1960	2230	2700	3200	3690	4220
RH 200.412.01 66%	14569-66	440	600	770	930	1090	1290	1470	1780	2110	2440	2780
RH 200.412.01 33%	14569-33	220	300	380	470	550	650	740	890	1060	1220	1390

p_{min}: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
p_{max}: 10 bar
V / Stroke: 0,4 dm^3
Mass: 15 kg

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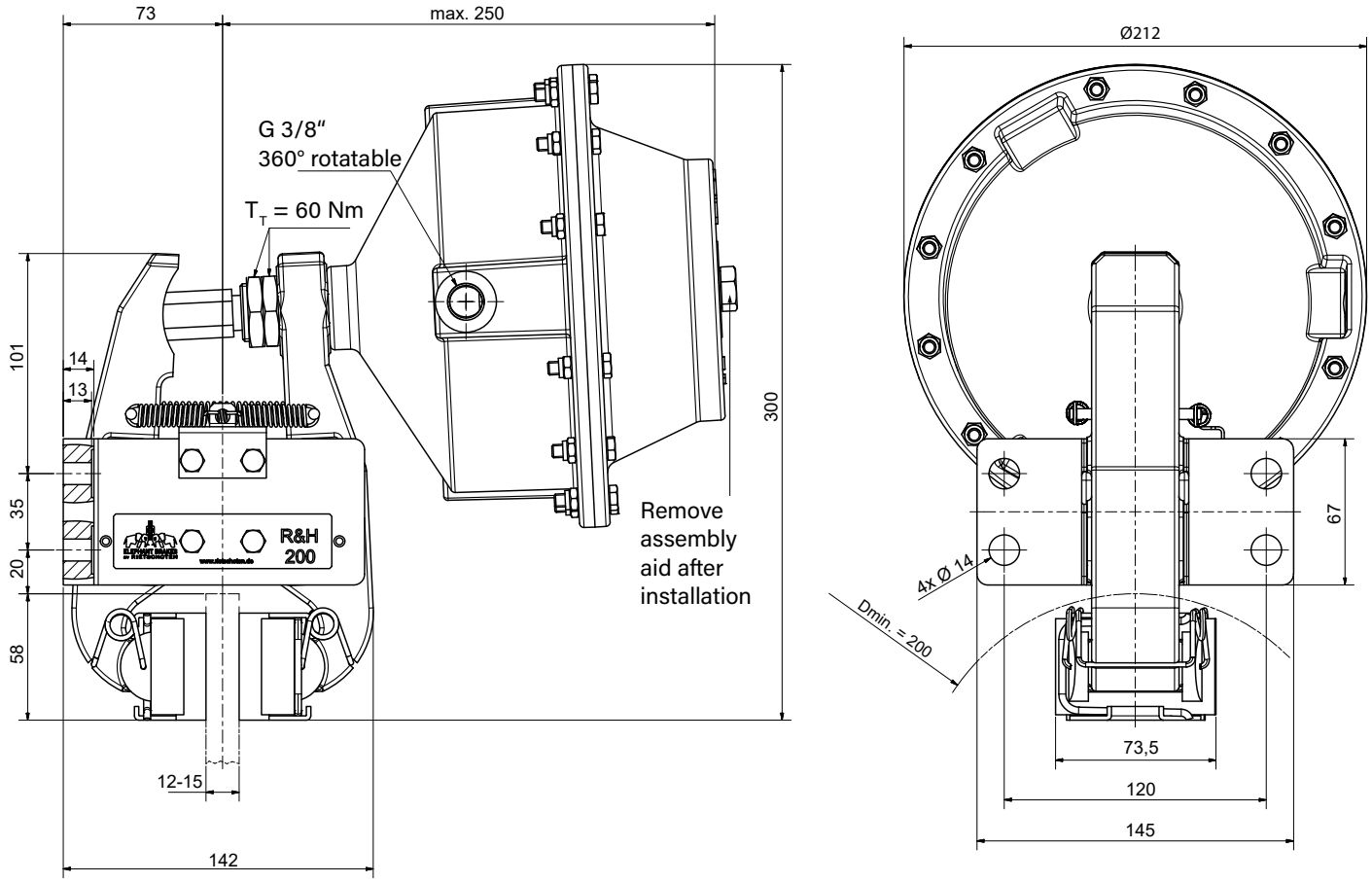

Mounting position is horizontal. Please get in touch if different.
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HINWEIS:
Also pneumatically applied usable

Spring-applied, pneumatically released

Nominal disc diameter [mm]										
200	250	300	350	400	460	515	610	710	810	915
Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
550	775	925	1050	1250	1400	1650	2000	2300	2600	3000

p_{min}: 5 bar
p_{max}: 10 bar
V / Stroke: 0,22 dm^3
Mass: 16,5 kg

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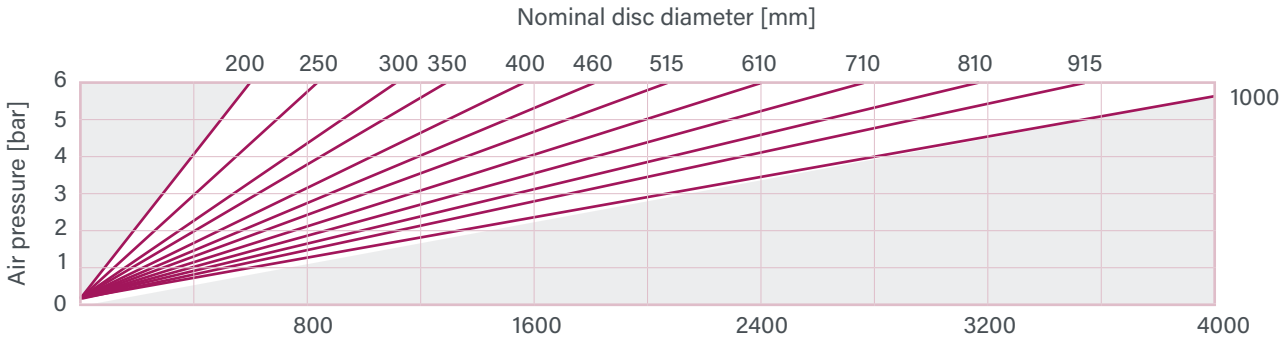
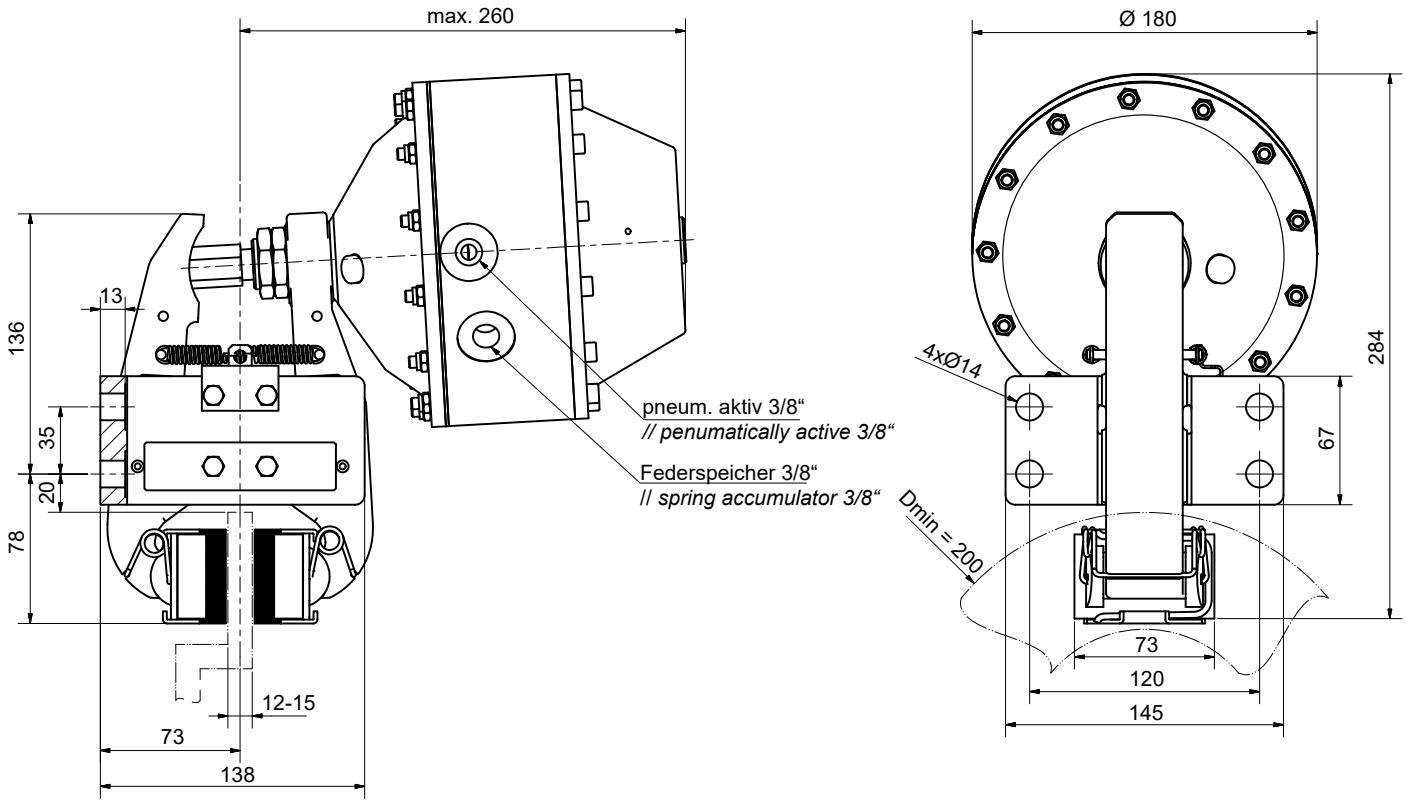
Pneumatically applied



p_{max}: 8 bar

Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)*



Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – „flange side“ mounted please state with order.

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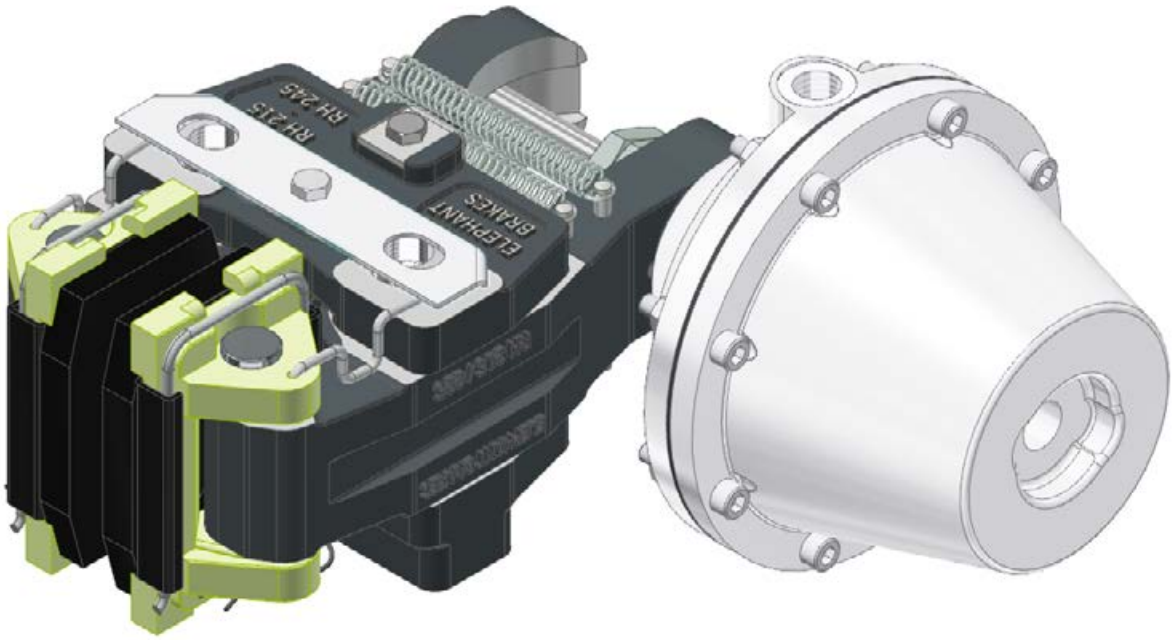

RH 215.405.01 / RH 225.405.01 / RH 230.405.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\,dyn.}$ [Nm] ($T_{Br\,stat}$ = 0,9 × $T_{Br\,dyn.}$)										
100%	235	315	390	470	550	645	730	880	1040	1195	1350
66%	155	210	260	310	365	425	480	580	685	790	890
33%	80	105	130	155	180	210	240	290	345	395	445

RH 215.406.01 / RH 225.406.01 / RH 230.406.01 / RH 245.406.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\,dyn.}$ [Nm] ($T_{Br\,stat}$ = 0,9 × $T_{Br\,dyn.}$)										
100%	415	555	685	825	970	1135	1285	1550	1830	2100	2390
66%	275	365	450	545	640	750	850	1025	1210	1385	1575
33%	135	185	225	270	320	375	425	510	605	695	790

$p_{min.}$: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
$p_{max.}$: 10 bar

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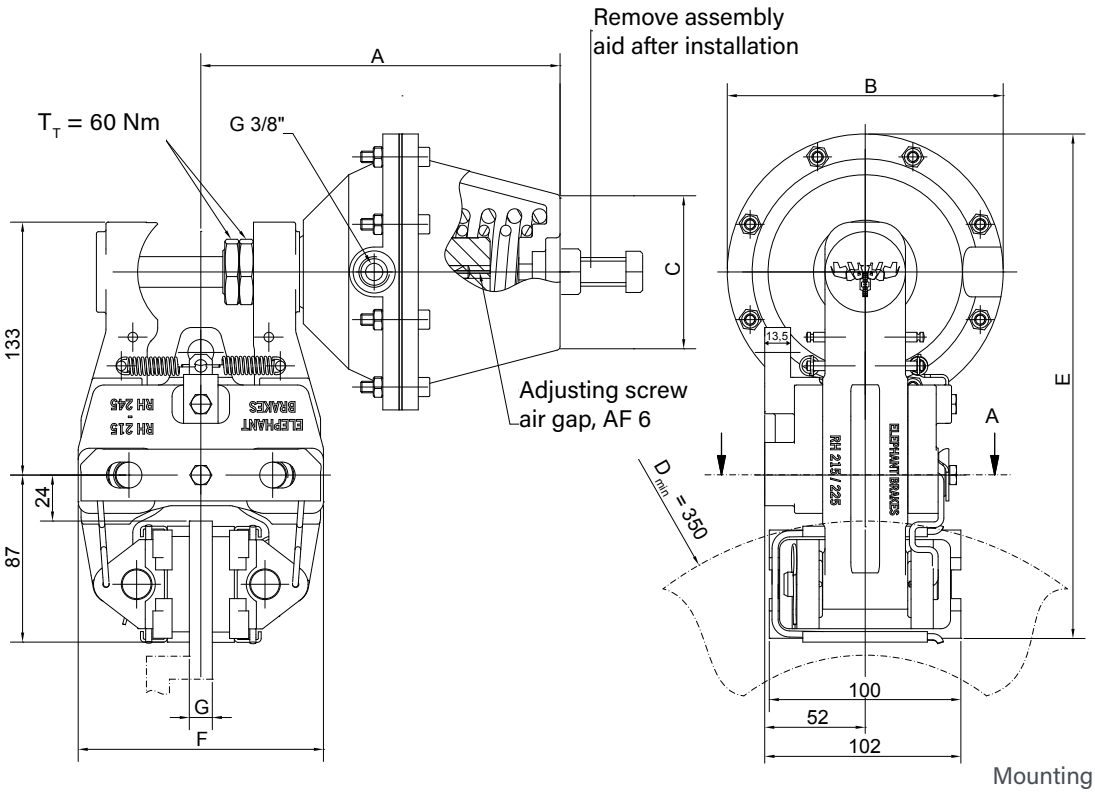

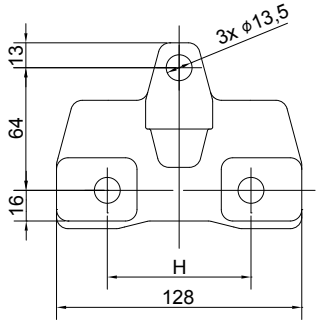

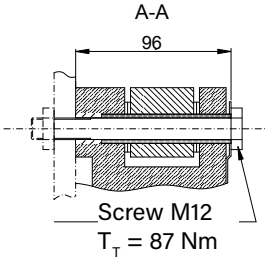

Mounting position is horizontal.
Please get in touch if different.

A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A max. [mm]	Ø B [mm]	Ø C [mm]	E [mm]	F [mm]	G [mm]	H [mm]	V / Stroke [dm³]	Mass [kg]
RH 215.405.01 100%	11860	200	144	81	265	130	12–15	75	0,12	10,3
RH 215.405.01 66%	13216	200	144	81	265	130	12–15	75	0,12	10,3
RH 215.405.01 33%	13217	200	144	81	265	130	12–15	75	0,12	10,3
RH 225.405.01 100%	11861	205	144	81	265	140	25,4	84	0,12	10,3
RH 225.405.01 66%	13218	205	144	81	265	140	25,4	84	0,12	10,3
RH 225.405.01 33%	13219	205	144	81	265	140	25,4	84	0,12	10,3
RH 230.405.01 100%	11862	200	144	81	265	144	30	75	0,12	10,5
RH 230.405.01 66%	13220	200	144	81	265	144	30	75	0,12	10,5
RH 230.405.01 33%	13221	200	144	81	265	144	30	75	0,12	10,5
RH 215.406.01 100%	11863	230	180	110	281	130	12–15	75	0,43	12
RH 215.406.01 66%	13230	230	180	110	281	130	12–15	75	0,43	12
RH 215.406.01 33%	13231	230	180	110	281	130	12–15	75	0,43	12
RH 225.406.01 100%	11864	235	180	110	281	140	25,4	84	0,43	12
RH 225.406.01 66%	13232	235	180	110	281	140	25,4	84	0,43	12
RH 225.406.01 33%	13233	235	180	110	281	140	25,4	84	0,43	12
RH 230.406.01 100%	11865	230	180	110	281	144	30	75	0,43	12,2
RH 230.406.01 66%	13234	230	180	110	281	144	30	75	0,43	12,2
RH 230.406.01 33%	13235	230	180	110	281	144	30	75	0,43	12,2

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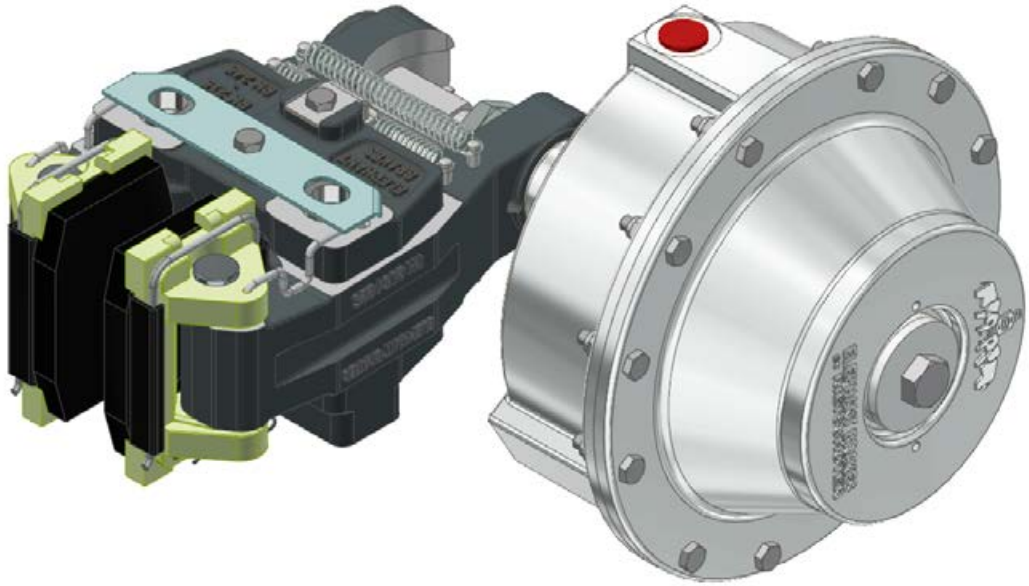

Spring force	Nominal disc diameter [mm]							
	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)							
100%	1410	1660	1960	2230	2700	3200	3700	4220
66%	930	1100	1290	1470	1780	2110	2440	2780
33%	470	550	650	740	890	1060	1220	1390

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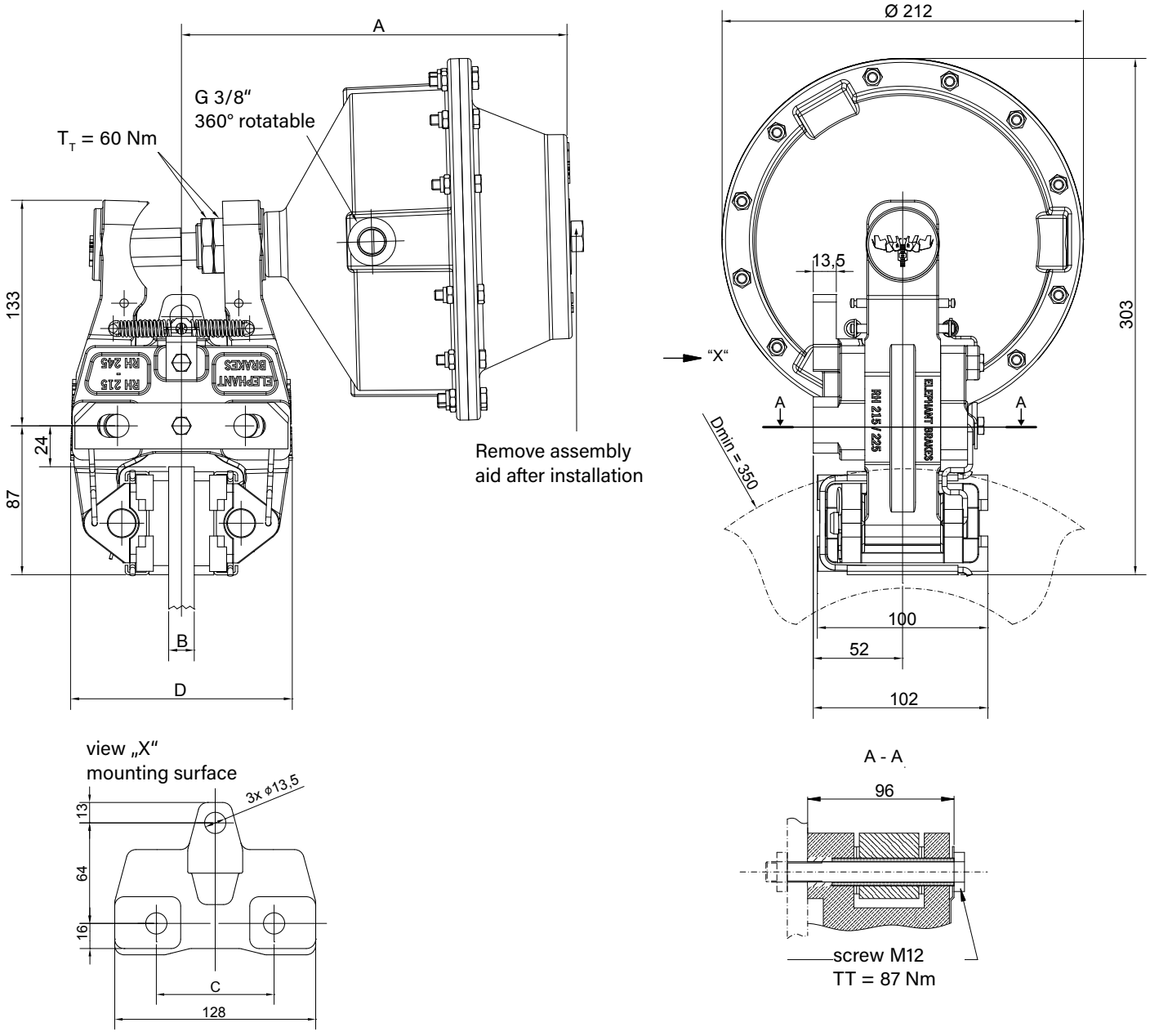

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type*	Part-No.	A [mm]	B [mm]	C [mm]	D [mm]	p_{min} [bar]	p_{max} [bar]	V / Stroke [dm³]	Mass [kg]
RH 215.412.01	14615	225	12–15	75	130	5	10	0,4	14,2
RH 215.412.01 66%	14808	225	12–15	75	130	3,3	10	0,4	14,2
RH 225.412.01	14621	230	25,4	84	140	5	10	0,4	14,2
RH 230.412.01	14622	233	30	75	144	5	10	0,4	14,4
RH 245.412.01	14623	240	45	84	154	5	10	0,4	14,4

* more spring forces available on request

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RH 250.405.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
100%	235	315	390	470	550	645	730	880	1040	1195	1350
66%	155	210	260	310	365	425	480	580	685	790	890
33%	80	105	130	155	180	210	240	290	345	395	445

RH 250.406.01

Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
100%	415	555	685	825	970	1135	1285	1550	1830	2100	2390
66%	275	365	450	545	640	750	850	1025	1210	1385	1575
33%	135	185	225	270	320	375	425	510	605	695	790

$p_{min.}$: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
$p_{max.}$: 10 bar

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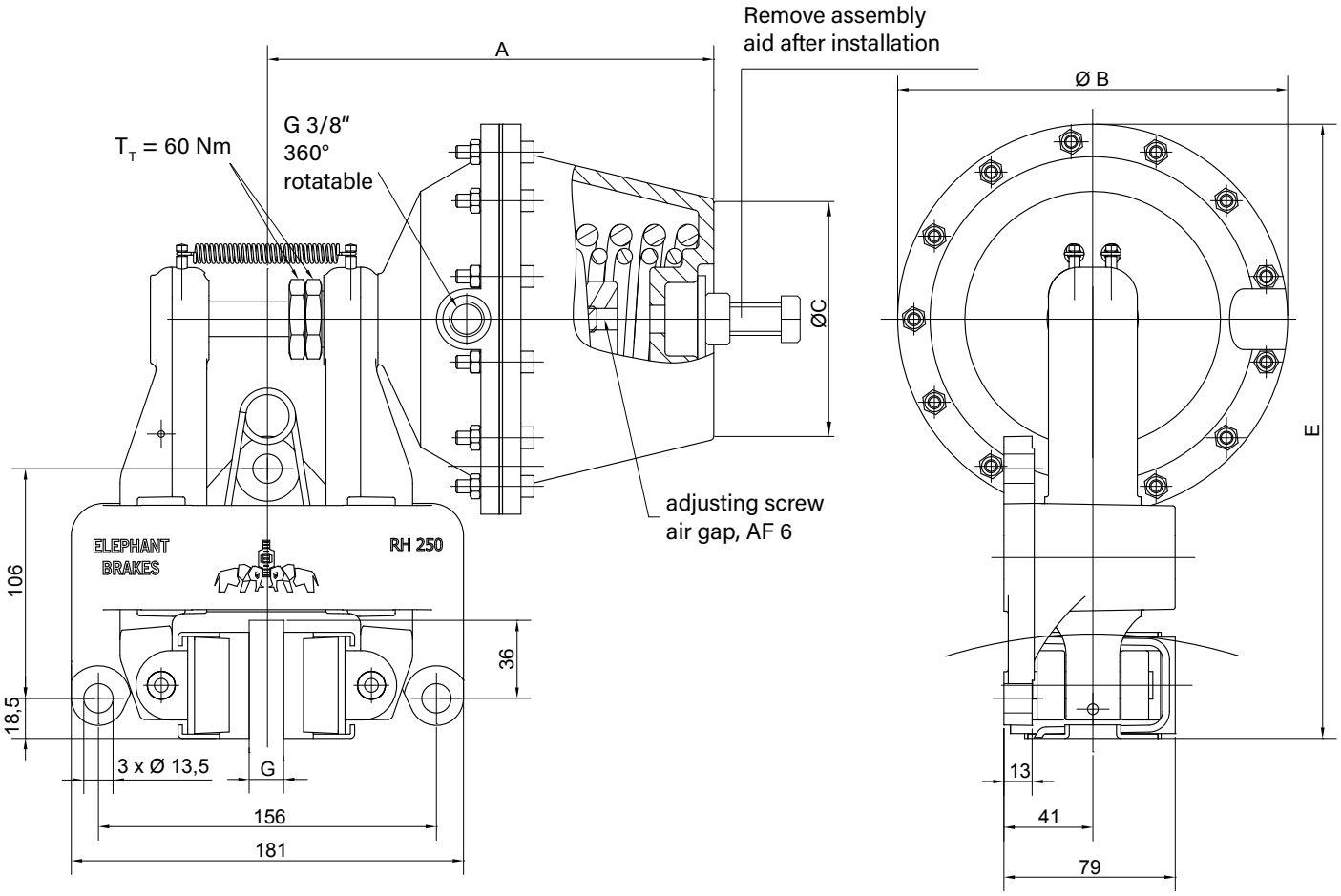

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A max. [mm]	Ø B [mm]	Ø C [mm]	E [mm]	G [mm]	V/Stroke [dm³]	Mass [kg]
RH 250.405.01 100%	11845	205	144	81	266	12,7	0,12	9,5
RH 250.405.01 66%	13214	205	144	81	266	12,7	0,12	9,5
RH 250.405.01 33%	13215	205	144	81	266	12,7	0,12	9,5
RH 250.406.01 100%	11846	230	180	110	284	12,7	0,43	11,0
RH 250.406.01 66%	13228	230	180	110	284	12,7	0,43	11,0
RH 250.406.01 33%	13229	230	180	110	284	12,7	0,43	11,0
RH 250.405.01 short. 100%	13209	205	144	81	266	25,4	0,12	9,5
RH 250.405.01 short. 66%	13210	205	144	81	266	25,4	0,12	9,5
RH 250.405.01 short. 33%	13211	205	144	81	266	25,4	0,12	9,5
RH 250.406.01 short. 100%	12571	230	180	110	284	25,4	0,43	11,0
RH 250.406.01 short. 66%	13222	230	180	110	284	25,4	0,43	11,0
RH 250.406.01 short. 33%	13223	230	180	110	284	25,4	0,43	11,0

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Spring force	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
100%	690	930	1170	1410	1660	1950	2220	2680	3160	3650	4160
66%	450	610	770	930	1090	1290	1460	1770	2090	2410	2740
33%	230	310	390	470	550	640	730	880	1040	1200	1370

$p_{min.}$: 5 bar (100%) / 3,3 (66%) / 1,7 (33%)
$p_{max.}$: 10 bar
max. V / Stroke: 0,4 dm^3
Mass: 13,9 kg

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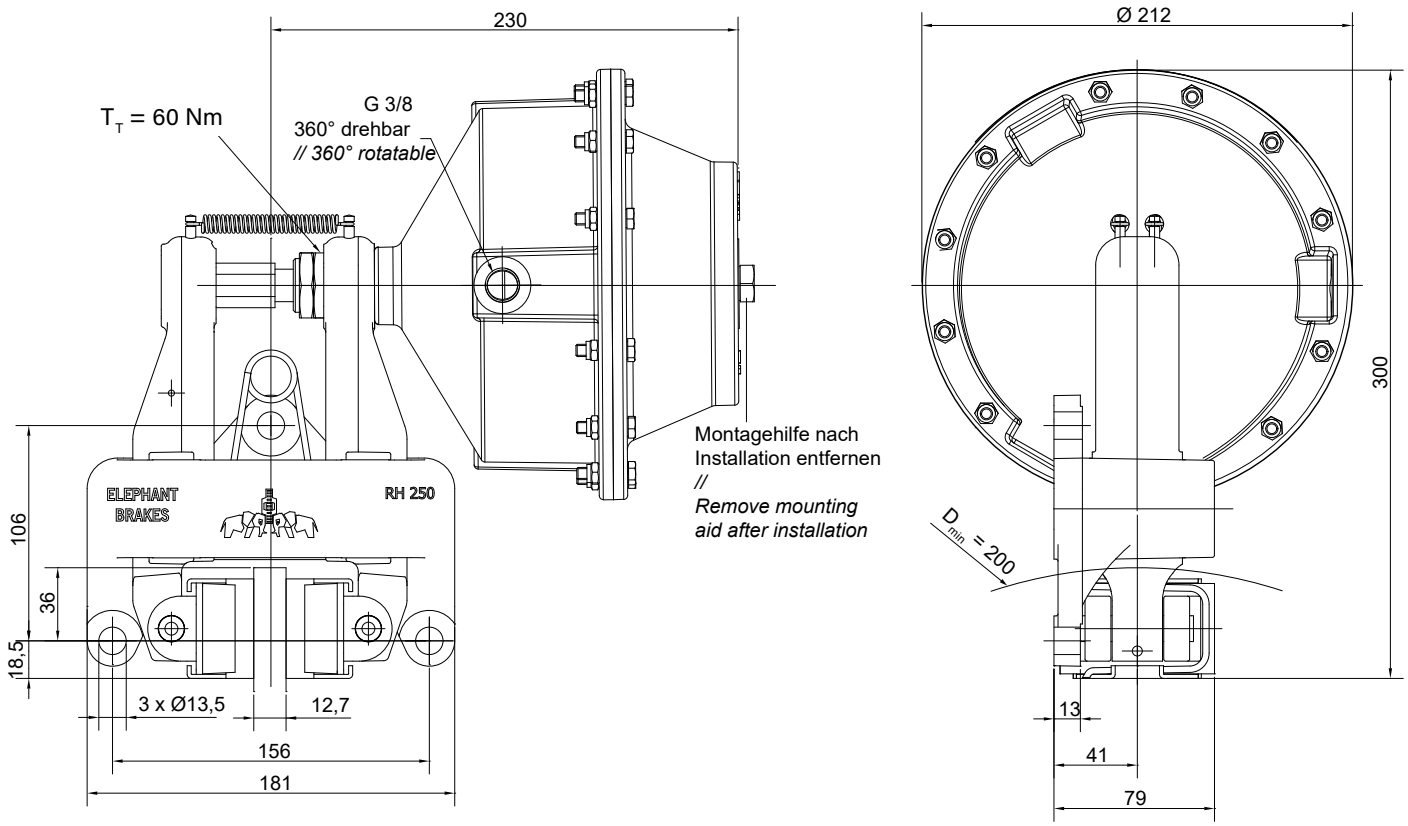

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

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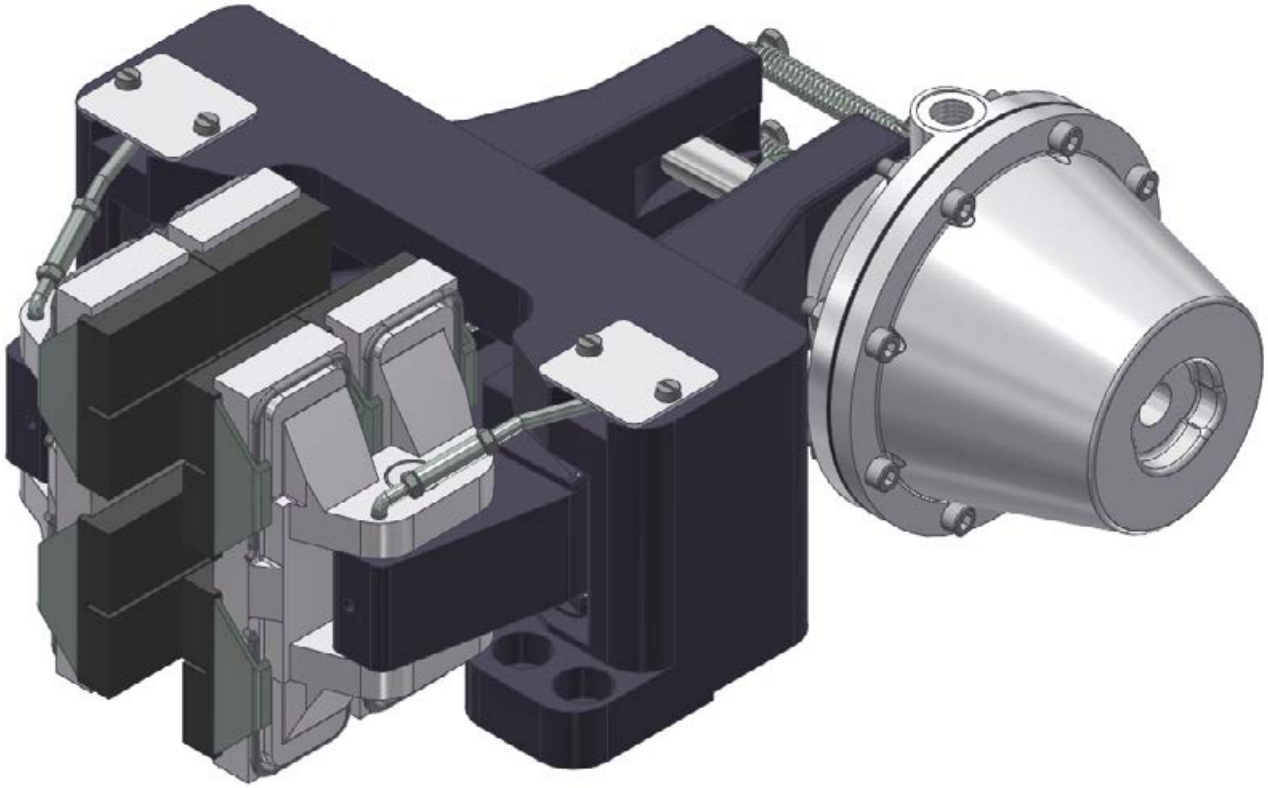

	Nominal disc diameter [mm]								
	560	630	710	800	900	1000	1250	1600	1800
Type	**Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)**								
RH 300.405.04	720	830	960	1100	1250	1410	1800	2350	2660
RH 300.406.04	1270	1460	1690	1940	2200	2480	3170	4170	4680
RH 300.406.04 66%	840	965	1115	1280	1450	1635	2090	2750	3090
RH 300.406.04 33%	420	480	560	640	725	820	1045	1375	1545

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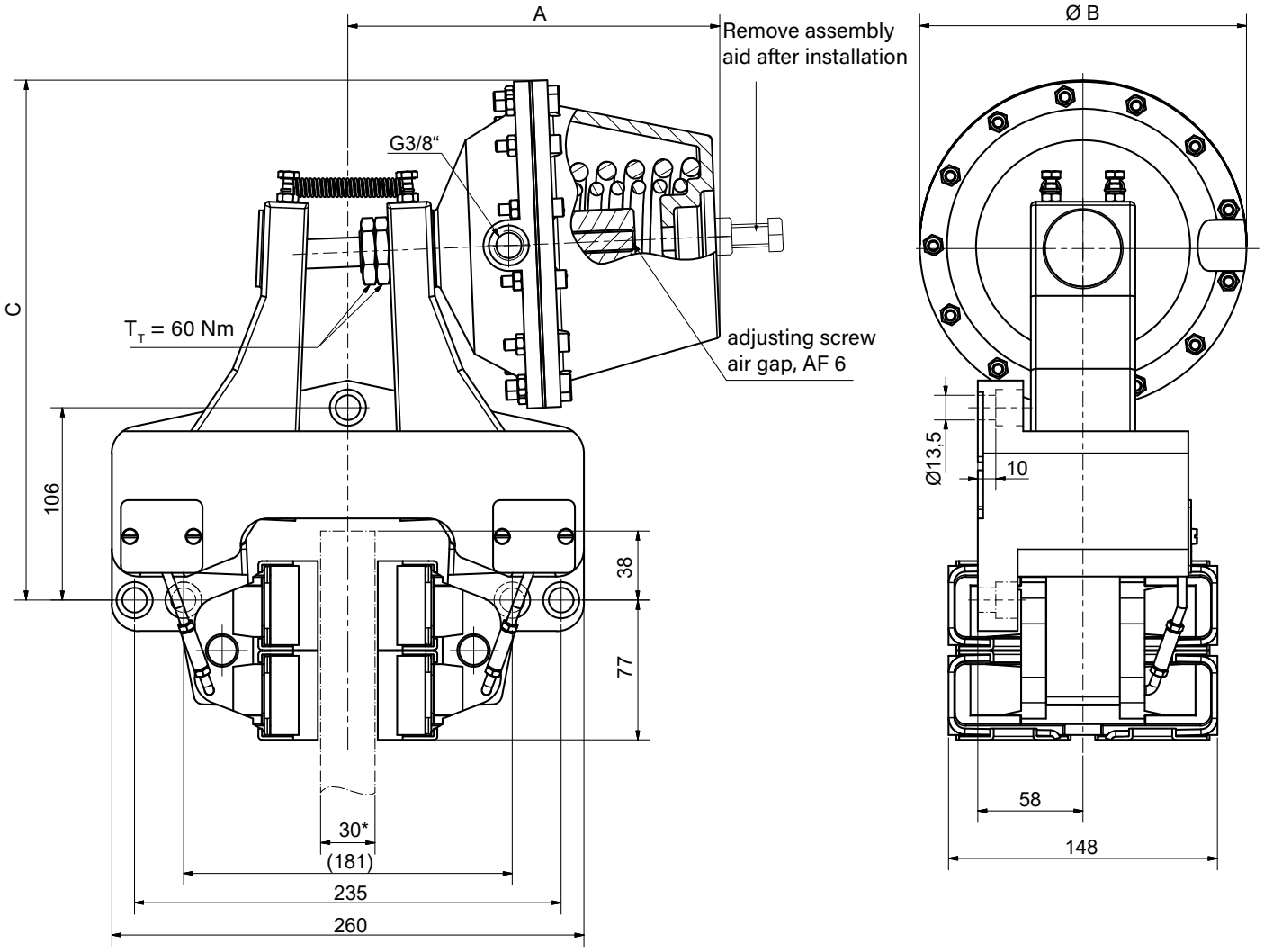

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	Ø B [mm]	C [mm]	$p_{min.}$ [mm]	$p_{max.}$ [mm]	V/Stroke [dm^3]	Mass [kg]
RH 300.405.04	12313	210	144	270	5	10	0,12	23
RH 300.406.04	12765	240	180	285	5	10	0,43	24,5
RH 300.406.04 66%	13226	240	180	285	3,3	10	0,43	24,5
RH 300.406.04 33%	13227	240	180	285	1,7	10	0,43	24,5

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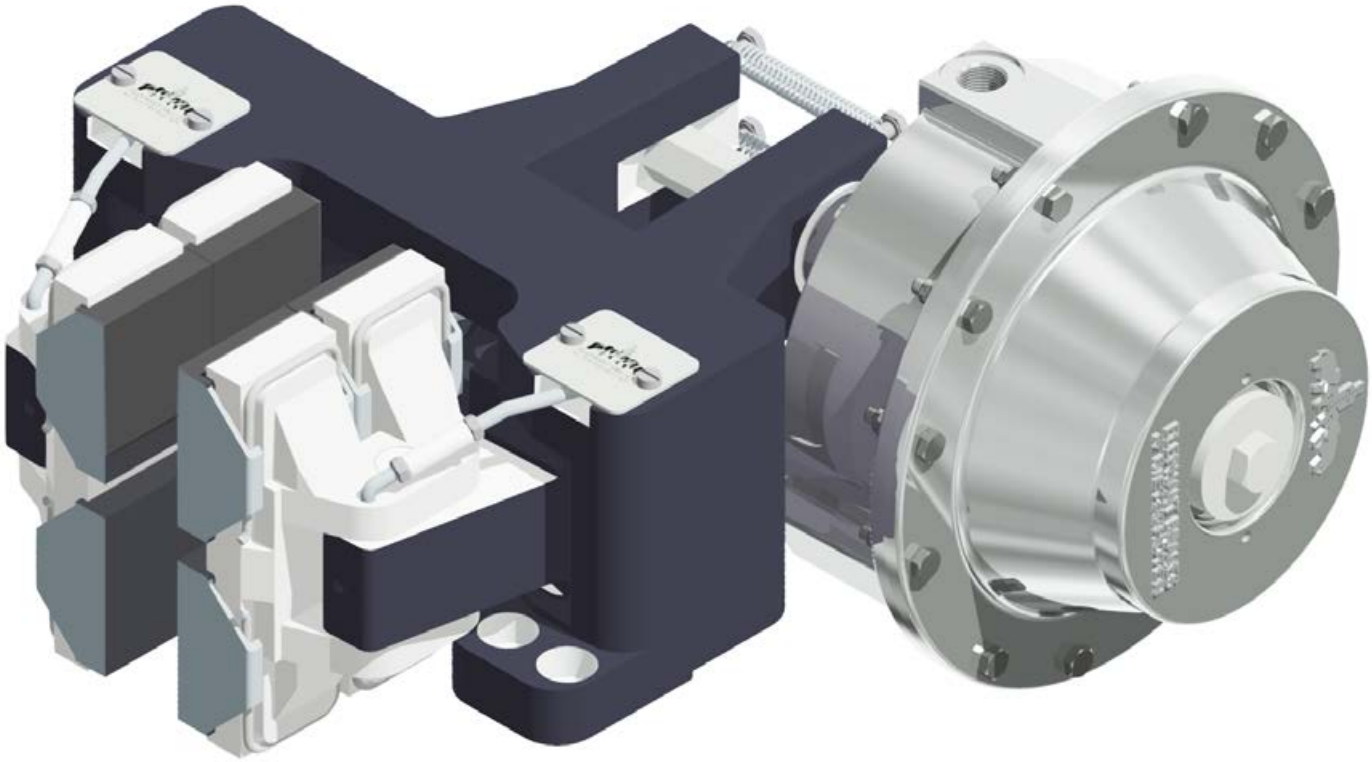

Spring force	Nominal disc diameter [mm]								
	560	630	710	800	900	1000	1250	1600	1800
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat} = 0{,}9 \times T_{Br\ dyn.}$)								
100%	2140	2520	2850	3280	3750	4230	5420	7080	8030
66%	1410	1660	1880	2160	2480	2790	3580	4670	5300
33%	710	830	940	1080	1240	1400	1790	2340	2650

$p_{min.}$: 5 bar (100%) / 3,3 bar (66%) / 1,7 bar (33%)
$p_{max.}$: 10 bar
max. V / Stroke: 0,4 dm^3
Mass: 27 kg

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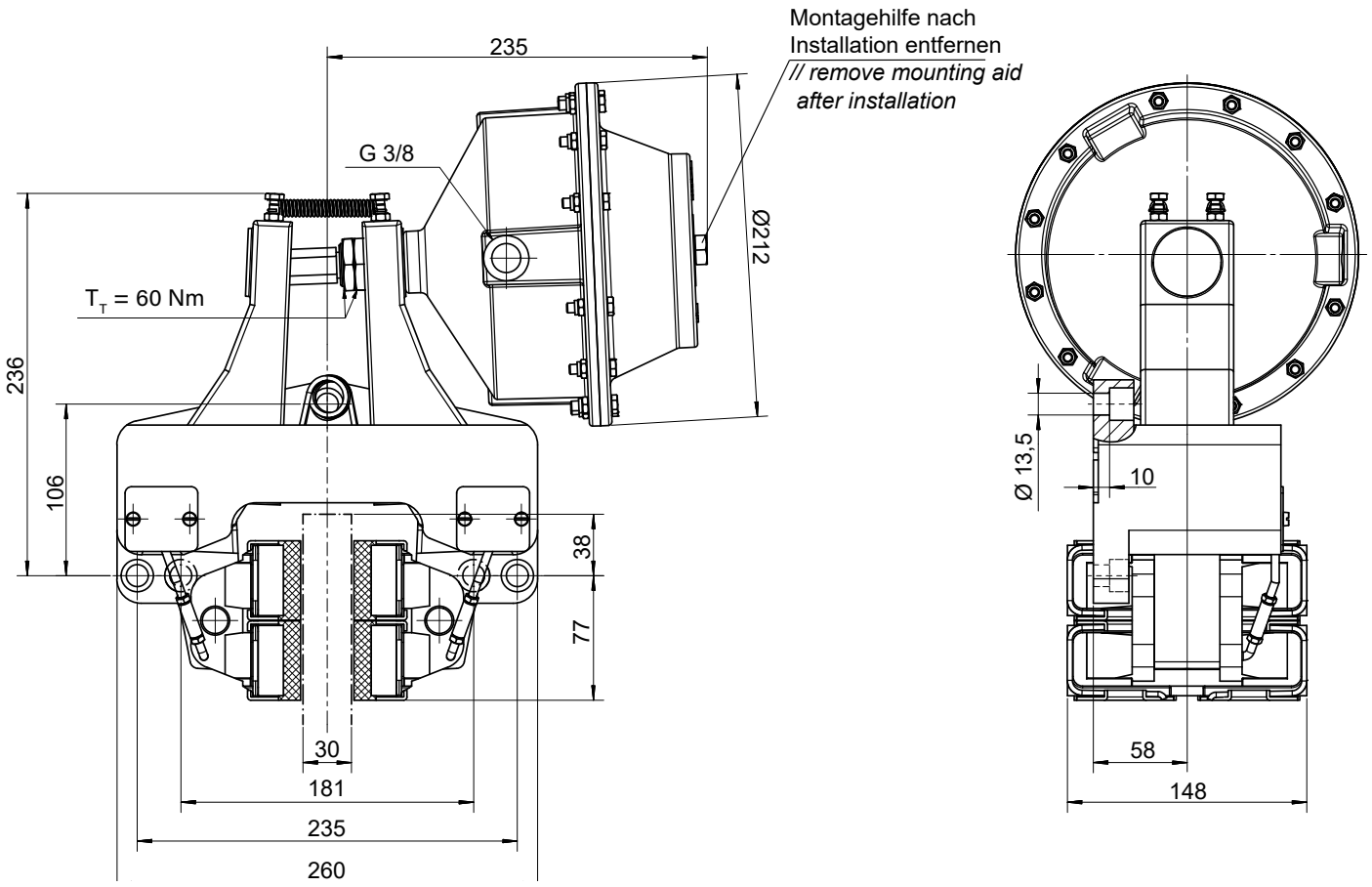

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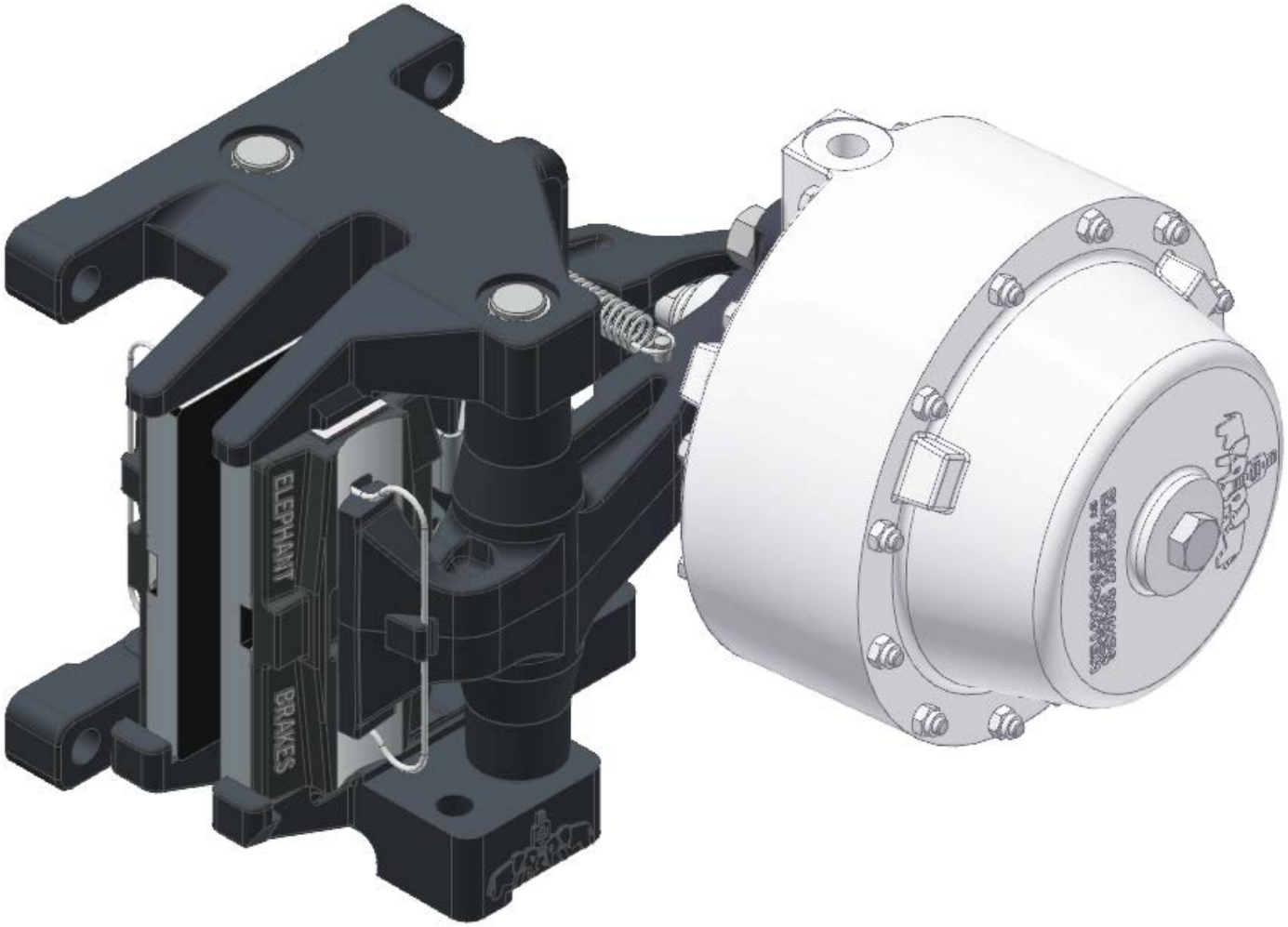

				Nominal disc diameter [mm]							
				610	700	810	915	1000	1220	1520	1820
Type	**Part-No.**	**p_{min} [bar]**	**Mass [kg]**	**Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)**							
RH 350.435.01	14593	5	61,7	7750	9150	10850	12480	13800	17200	21850	26500
RH 350.435.01 83%	14593-83	4,2	60,8	6430	7595	9005	10360	11455	14275	18135	21995
RH 350.435.01 71%	14593-71	3,6	59,8	5500	6495	7705	8860	9800	12210	15515	18815
RH 350.435.01 55%	14593-55	2,8	58,9	4260	5030	5970	6865	7590	9460	12020	14575

p_{max}: 10 bar
V / Stroke: 2,5 dm³

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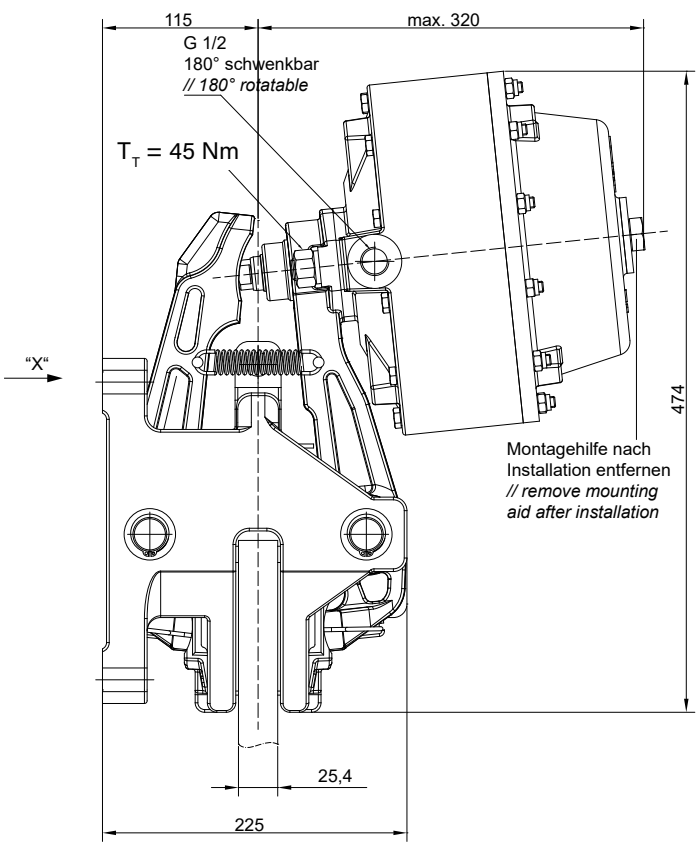
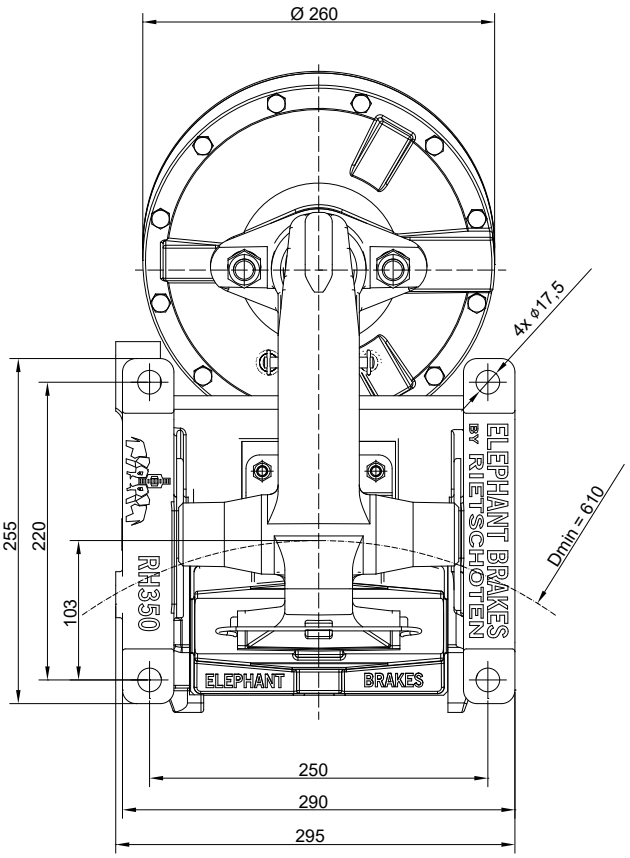
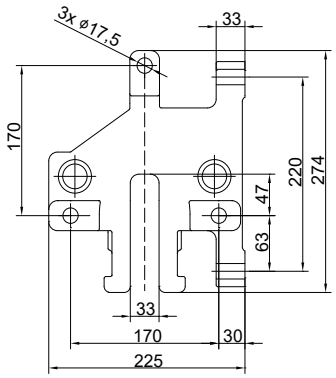




Ansicht „X" - Anschraubfläche
// view „X" - mounting surface



Mounting position is horizontal. Please get in touch if different.
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Active lever brakes (service brakes)

manually operated closing, spring-operated opening

pneumatically actuated closing, spring-operated opening

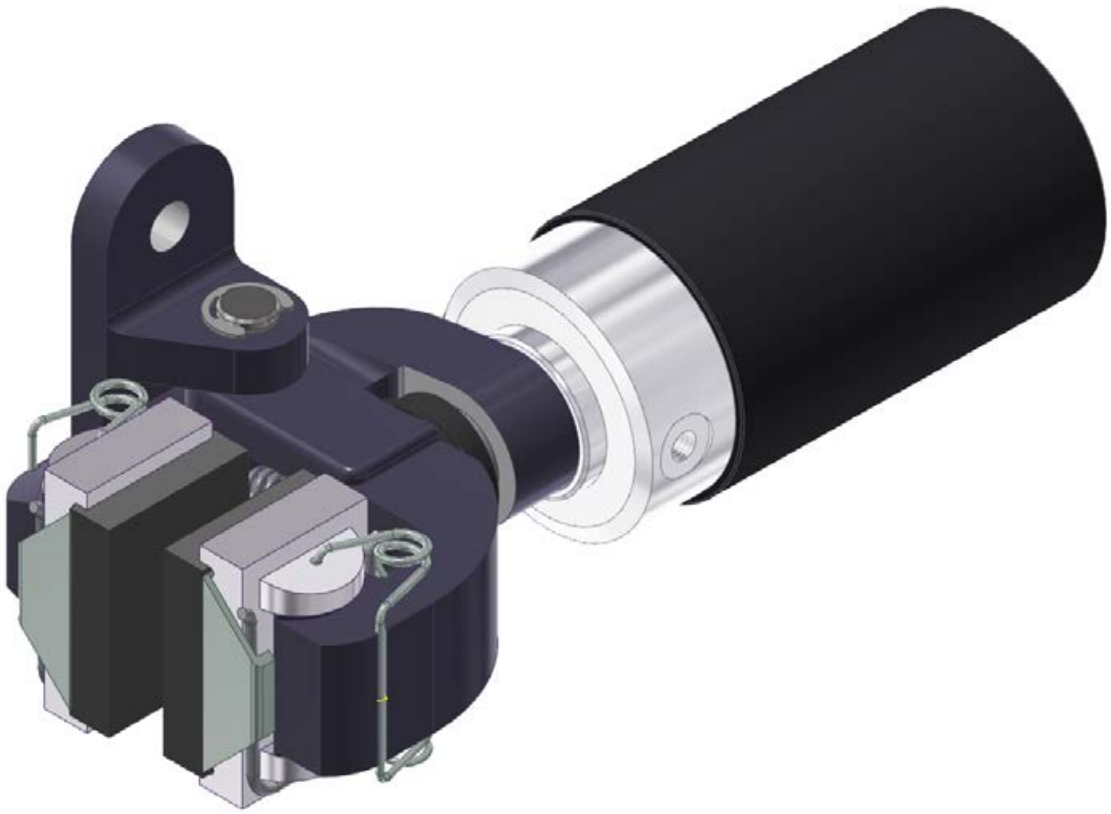
hydraulically operated closing, spring-operated opening

Passive lever brakes (safety brakes)

spring-operated closing, pneumatically operated opening

spring-operated closing, hydraulically operated opening

spring-operated closing, electrically operated opening



RH 100.560.01

Nominal disc diameter [mm]							
250	300	350	400	460	515	610	710
Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)							
120	150	180	210	240	275	330	390

RH 100.550.01

Nominal disc diameter [mm]							
250	300	350	400	460	515	610	710
Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)							
190	235	280	330	375	430	515	610

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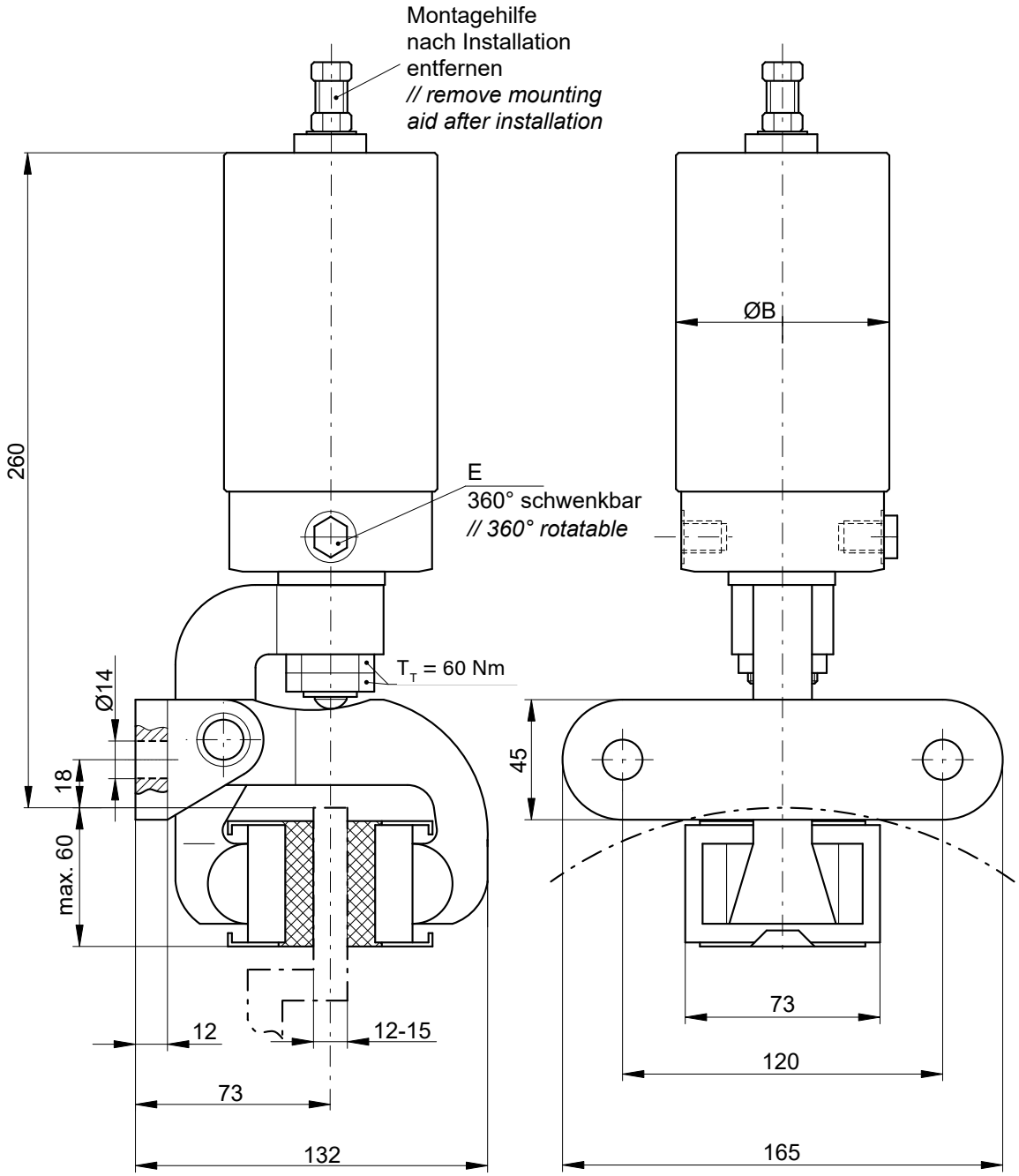

Mounting position is horizontal. Please get in touch if different.

Type	Part-No.	Ø B [mm]	E	$p_{min.}$ [mm]	$p_{max.}$ [mm]	max. oil demand [cm^3]	Mass [kg]
RH 100.560.01	12072	80	G 1/8	40	160	15	9
RH 100.550.01	12100	95	G 1/4	55	160	15	11

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	Nominal disc diameter [mm]									
	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)									
RH 200.562.01	140	180	210	250	290	330	400	470	540	620
RH 200.560.01	475	590	710	830	970	1100	1330	1565	1800	2050
RH 200.550.01	625	780	940	1090	1280	1450	1750	2060	2370	2690
RH 200.551.01	850	1070	1280	1490	1750	1990	2400	2830	3260	3700
RH 200.552.01	1300	1620	1950	2270	2660	3020	3640	4290	4940	5620

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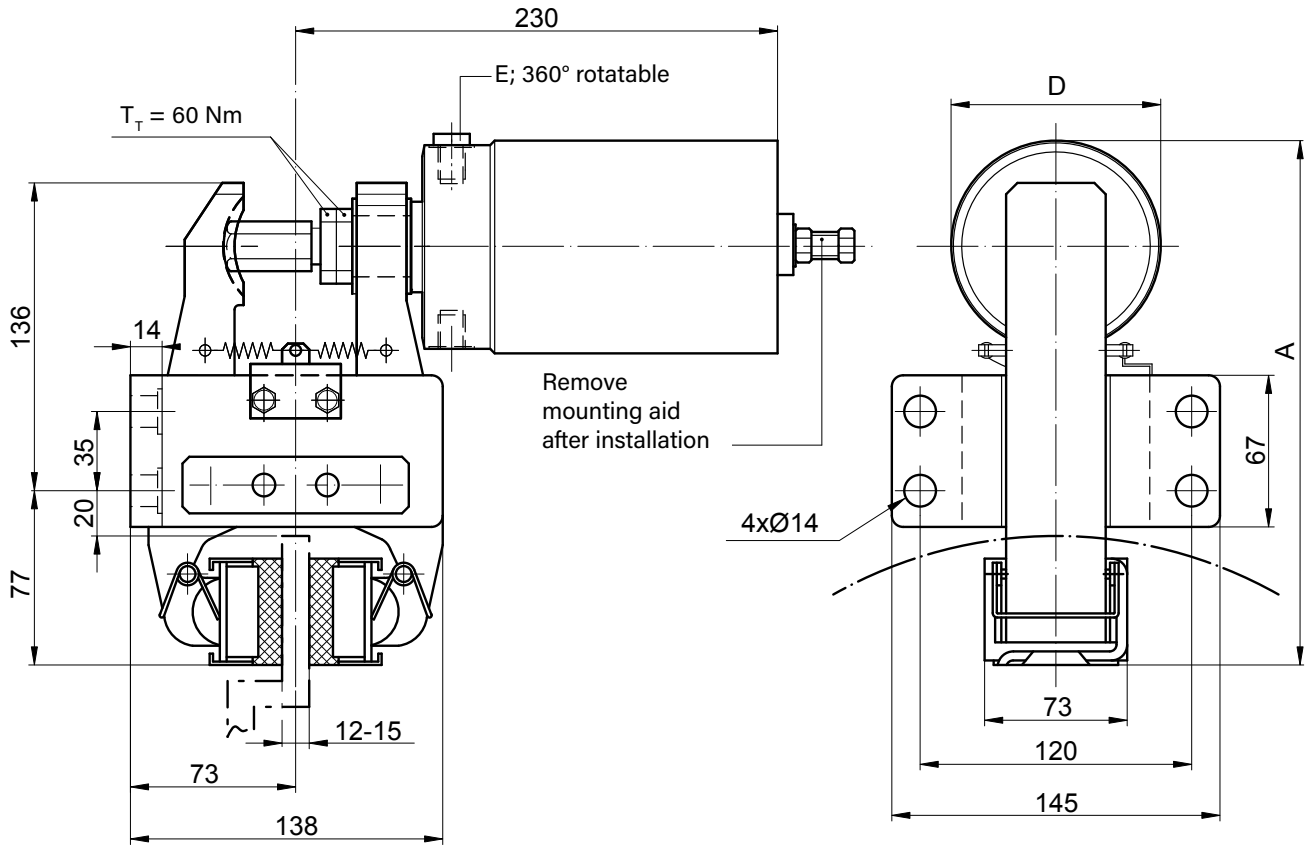

Mounting position is horizontal. Please get in touch if different.
A right hand mounted actuator is standard – "flange side" mounted please state with order.

Type	Part-No.	D [mm]	A [mm]	E	p_{min} [bar]	p_{max} [bar]	max. V / Stroke [cm³]	Mass [kg]
RH 200.562.01	13597	80	227	G 1/8"	20	160	25	14
RH 200.560.01	11294	80	227	G 1/8"	40	160	25	14
RH 200.550.01	11291	95	234	G 1/4"	55	160	25	16
RH 200.551.01	11292	95	234	G 1/4"	65	160	25	16
RH 200.552.01	11293	95	234	G 1/4"	100	160	25	16

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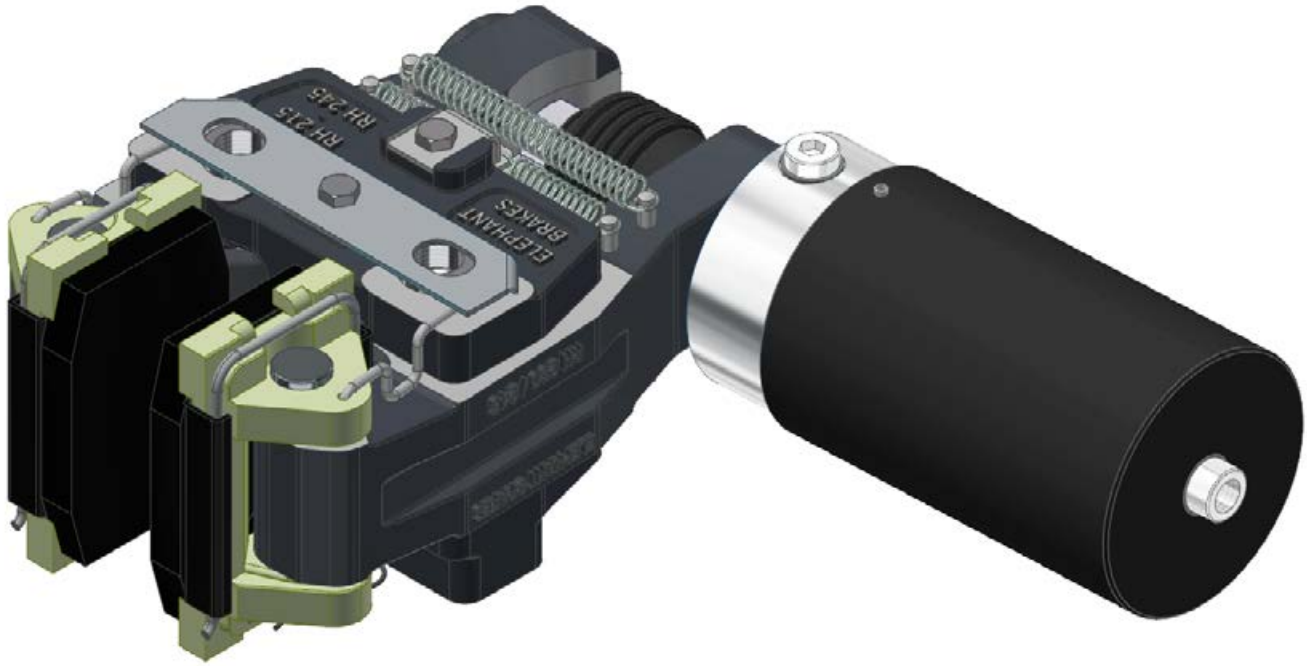

	Nominal disc diameter [mm]							
	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)							
RH 215.560.01	710	830	970	1100	1330	1565	1800	2050
RH 225.560.01	710	830	970	1100	1330	1565	1800	2050
RH 230.560.01	710	830	970	1100	1330	1565	1800	2050
RH 215.550.01	940	1090	1280	1450	1750	2060	2370	2690
RH 215.551.01	1280	1490	1750	1990	2400	2830	3260	3700
RH 215.552.01	1950	2270	2660	3020	3640	4290	4940	5620
RH 225.552.01	1950	2270	2660	3020	3640	4290	4940	5620
RH 230.552.01	1950	2270	2660	3020	3640	4290	4940	5620
RH 245.552.01	1950	2270	2660	3020	3640	4290	4940	5620

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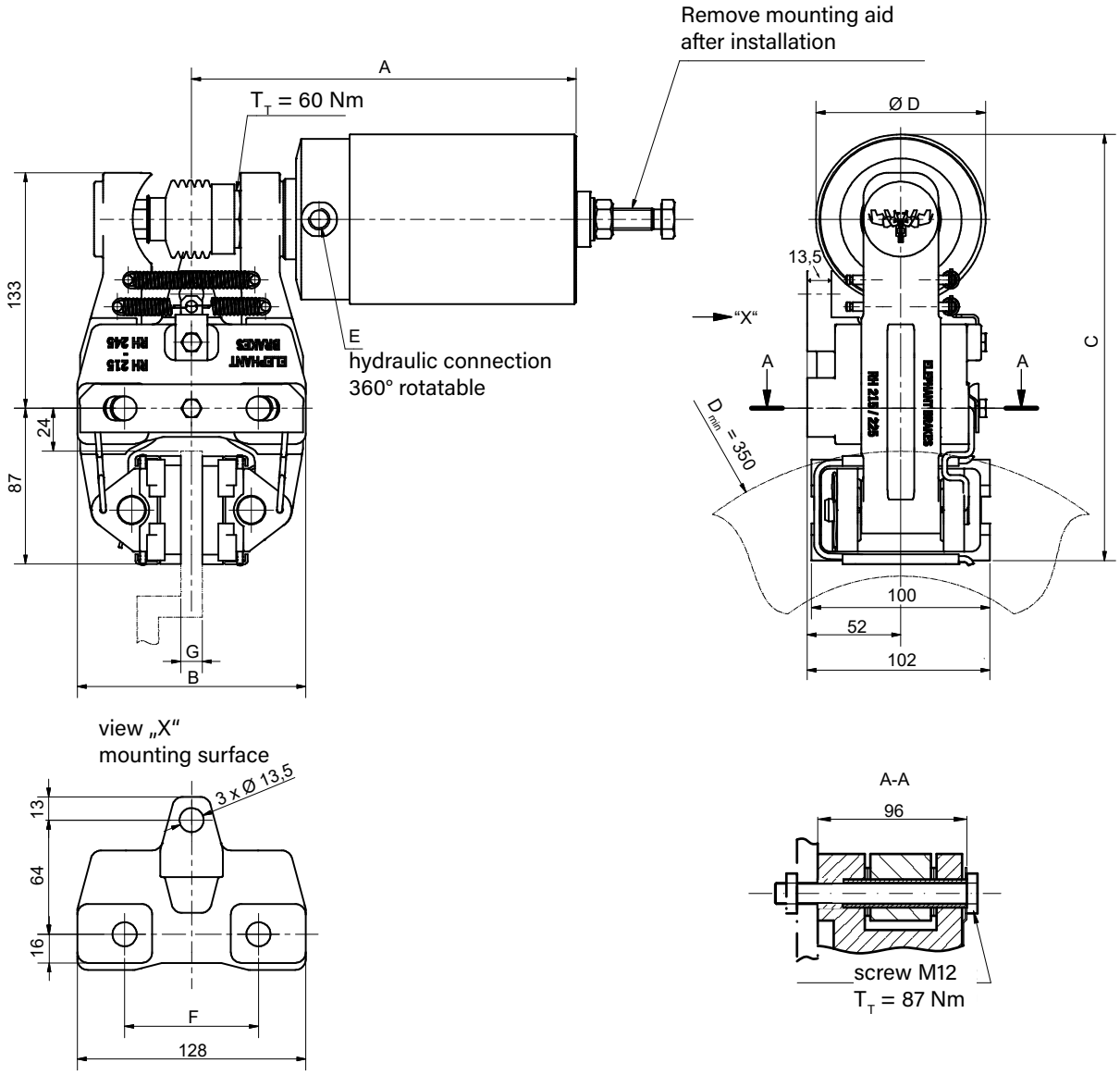

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	p_{min}	p_{max}	A [mm]	B [mm]	C [mm]	Ø D [mm]	E	F [mm]	G [mm]	Mass [kg]
RH 215.560.01	12275	40	160	230	130	238	80	G 1/8"	75	12–15	13,2
RH 225.560.01	14216	40	160	235	140	248	80	G 1/8"	84	25,4	13,2
RH 230.560.01	12642	40	160	235	144	248	80	G 1/8"	75	30	13,4
RH 215.550.01	12276	55	160	230	130	245	95	G 1/4"	75	12–15	15,7
RH 215.551.01	12277	65	160	230	130	245	95	G 1/4"	75	12–15	15,7
RH 215.552.01	12278	100	160	230	130	245	95	G 1/4"	75	12–15	15,1
RH 225.552.01	12948	100	160	235	140	255	95	G 1/4"	84	25,4	15,1
RH 230.552.01	12804	100	160	235	144	245	95	G 1/4"	75	30	15,3
RH 245.552.01	14141	100	160	235	154	250	95	G 1/4"	84	45	15,3

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	Nominal disc diameter [mm]										
	200	250	300	350	400	460	515	610	710	810	915
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)										
RH 250.560.01	350	475	590	710	830	970	1100	1330	1565	1800	2050
RH 250.560.01 HP	350	475	590	710	830	970	1100	1330	1565	1800	2050
RH 250.550.01	490	625	780	940	1090	1280	1450	1750	2060	2370	2690
RH 250.550.01 HP	490	625	780	940	1090	1280	1450	1750	2060	2370	2690
RH 250.551.01	660	850	1070	1280	1490	1750	1990	2400	2830	3260	3700

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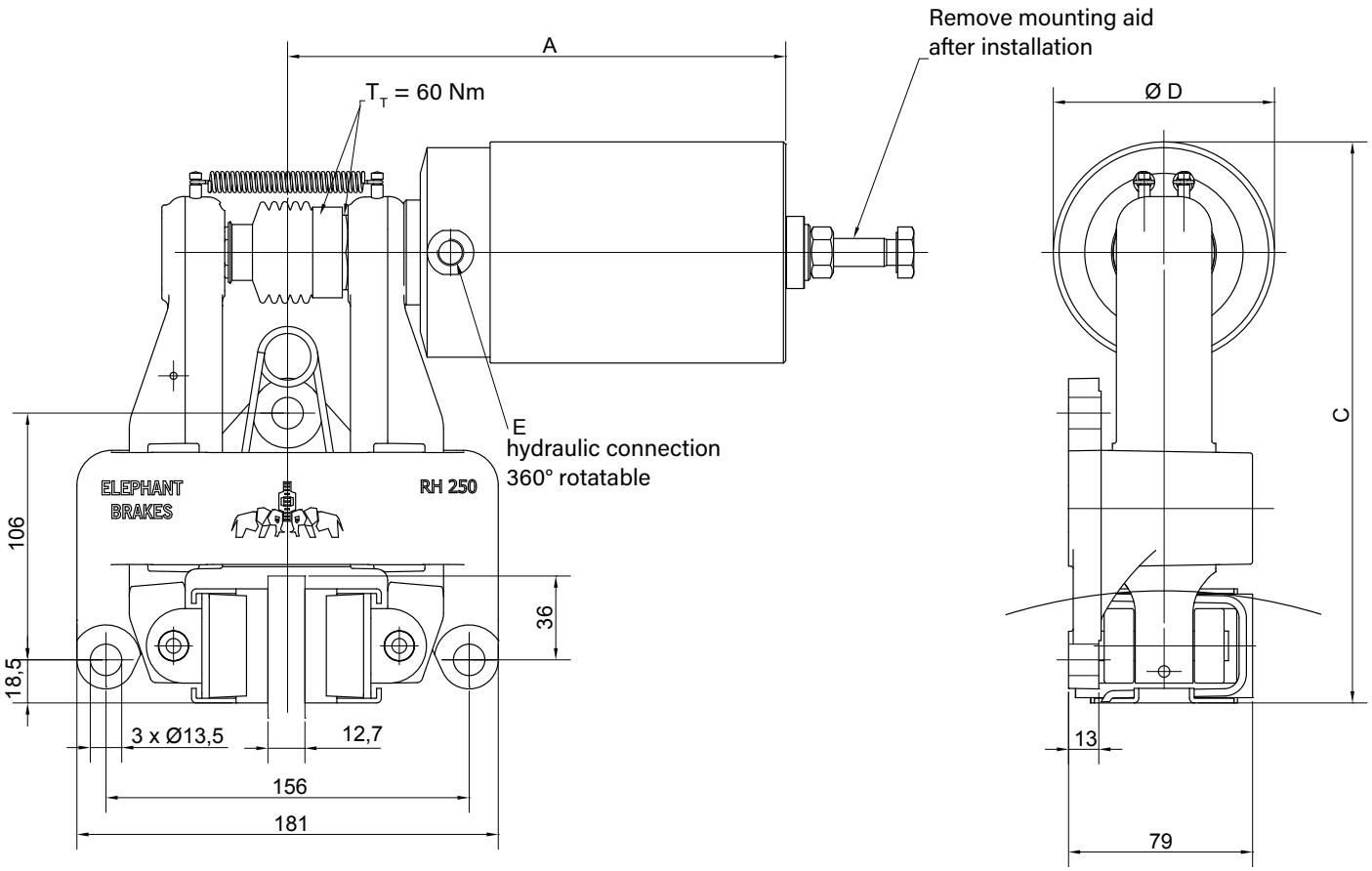

Mounting position is horizontal. Please get in touch if different.
A right hand mounted thruster is standard – left hand mounted please state with order.

Type	Part-No.	A [mm]	C [mm]	D [mm]	E	p_{min} [bar]	p_{max} [bar]	Mass [kg]
RH 250.560.01	11843	233	234	80	G 1/8“	40	160	12
RH 250.550.01	12129	240	241	95	G 1/4“	55	160	14,5
RH 250.551.01	12130	240	241	95	G 1/4“	65	160	14
RH 250.560.01 High Pressure	14179	233	234	80	G 1/8“	55	210	12
RH 250.550.01 High Pressure	14176	240	241	95	G 1/4“	75	210	14,5

max. oil demand: 25 cm^3

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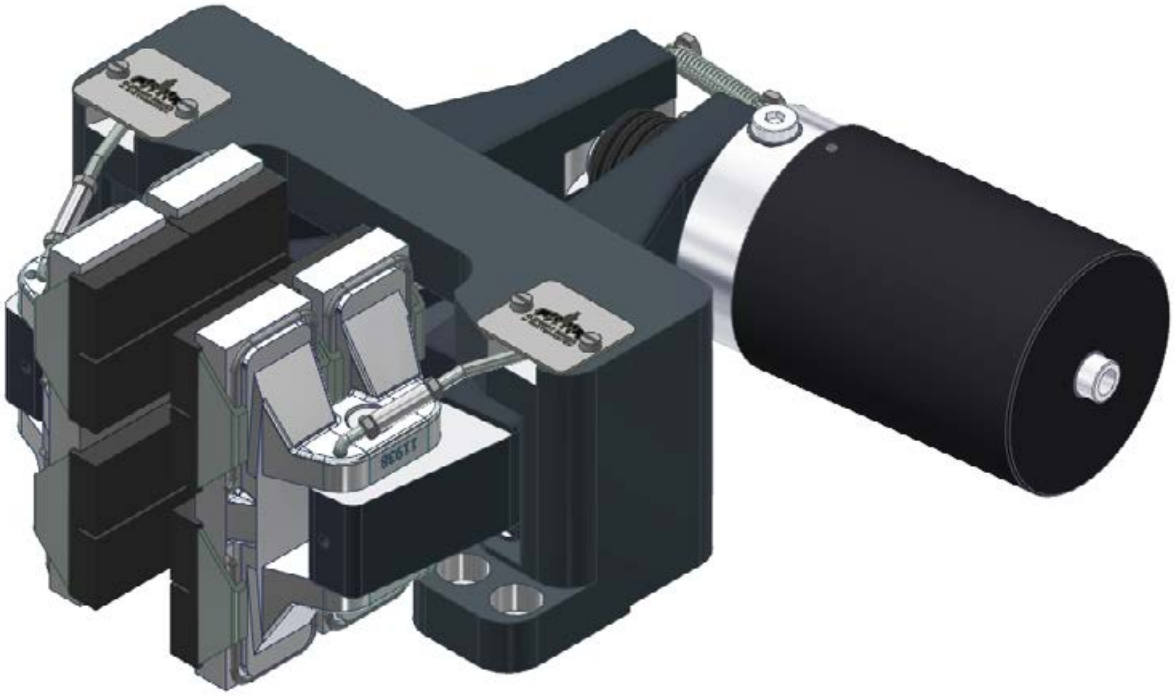

	Nominal disc diameter [mm]							
	560	630	710	800	900	1000	1250	1600
	Braking Torque: $T_{Br\,dyn.}$ [Nm] ($T_{Br\,stat}$ = 0,9 × $T_{Br\,dyn.}$)							
RH 300.551.04	1970	2270	2600	3000	3420	3850	4920	6400
RH 300.552.04	2980	3440	3940	4550	5180	5830	7450	9700
RH 300.552.04 HP	2980	3440	3940	4550	5180	5830	7450	9700
RH 300.563.04	3530	4080	4670	5390	6140	6900	8830	11500

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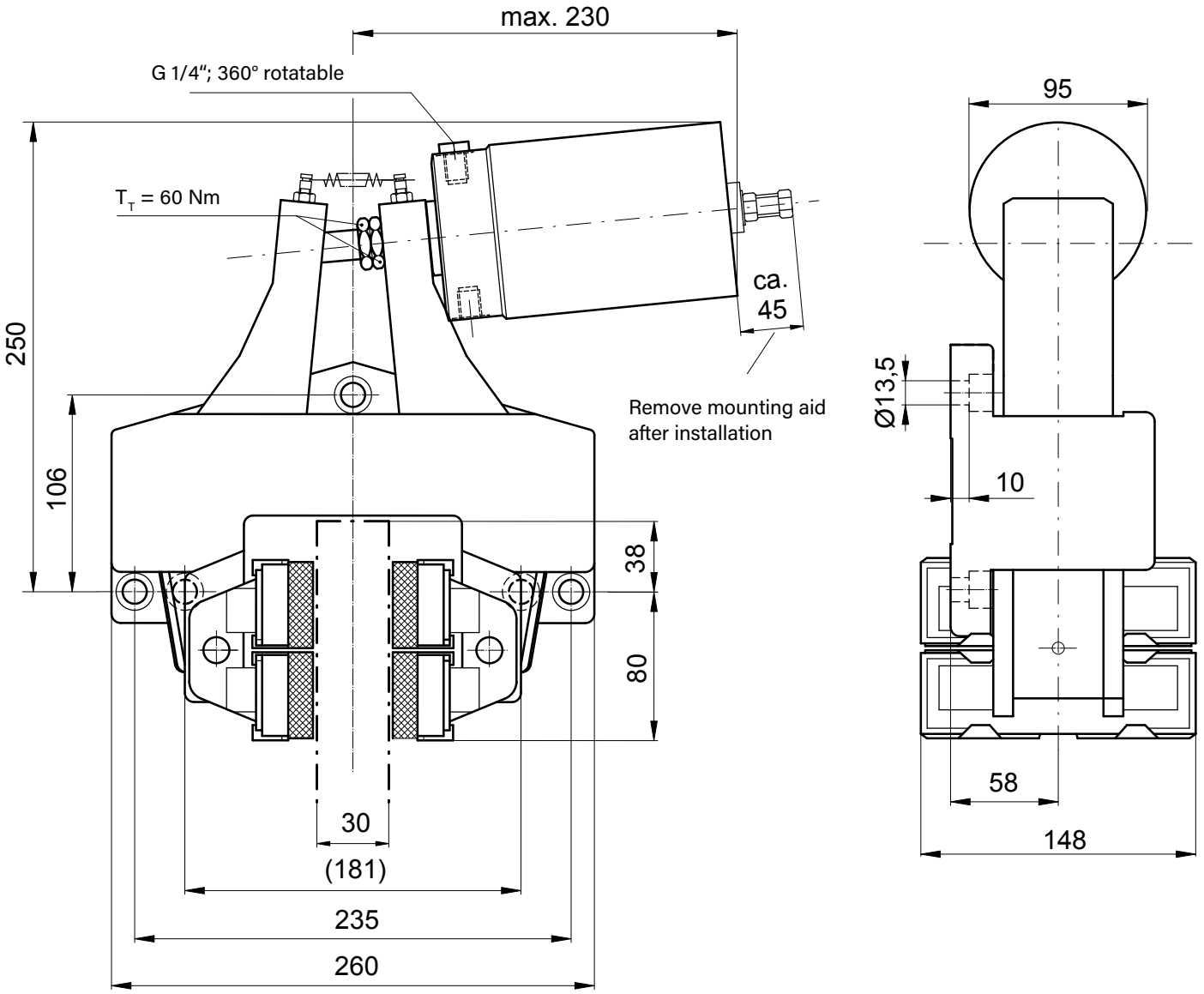

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Type	Part-No.	p_{min} [bar]	p_{max} [bar]	max. V / Stroke [cm³]	Mass [kg]
RH 300.551.04	12260	65	160	25	29
RH 300.552.04	12261	100	160	25	29
RH 300.552.04 High Pressure	14259	135	210	25	29
RH 300.563.04	12256	130	160	25	29

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LEVER BRAKES

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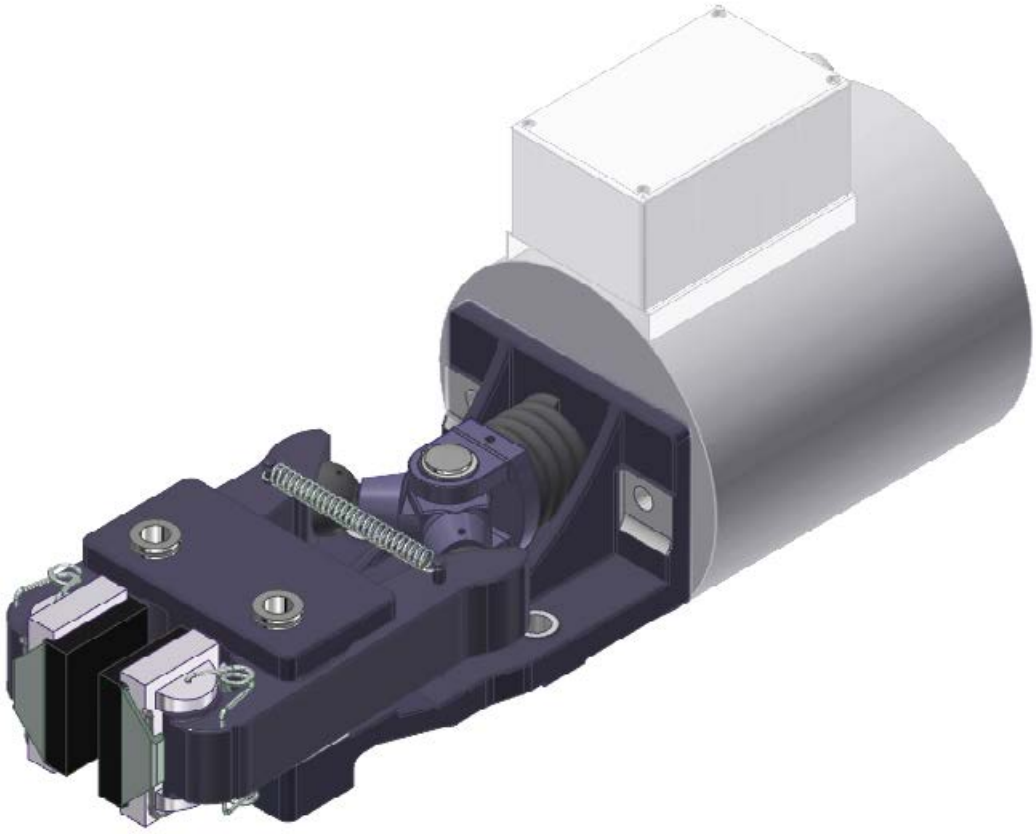
- **spring-operated closing, electrically operated opening**



	Nominal disc diameter [mm]							
	200	250	300	350	400	460	515	610
	Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)							
EMS 120	40	55	70	90	105	120	135	160
EMS 140	75	100	125	155	180	215	240	280
EMS 170	130	175	220	275	320	370	420	490
EMS 170 S	220	290	360	430	510	590	670	780

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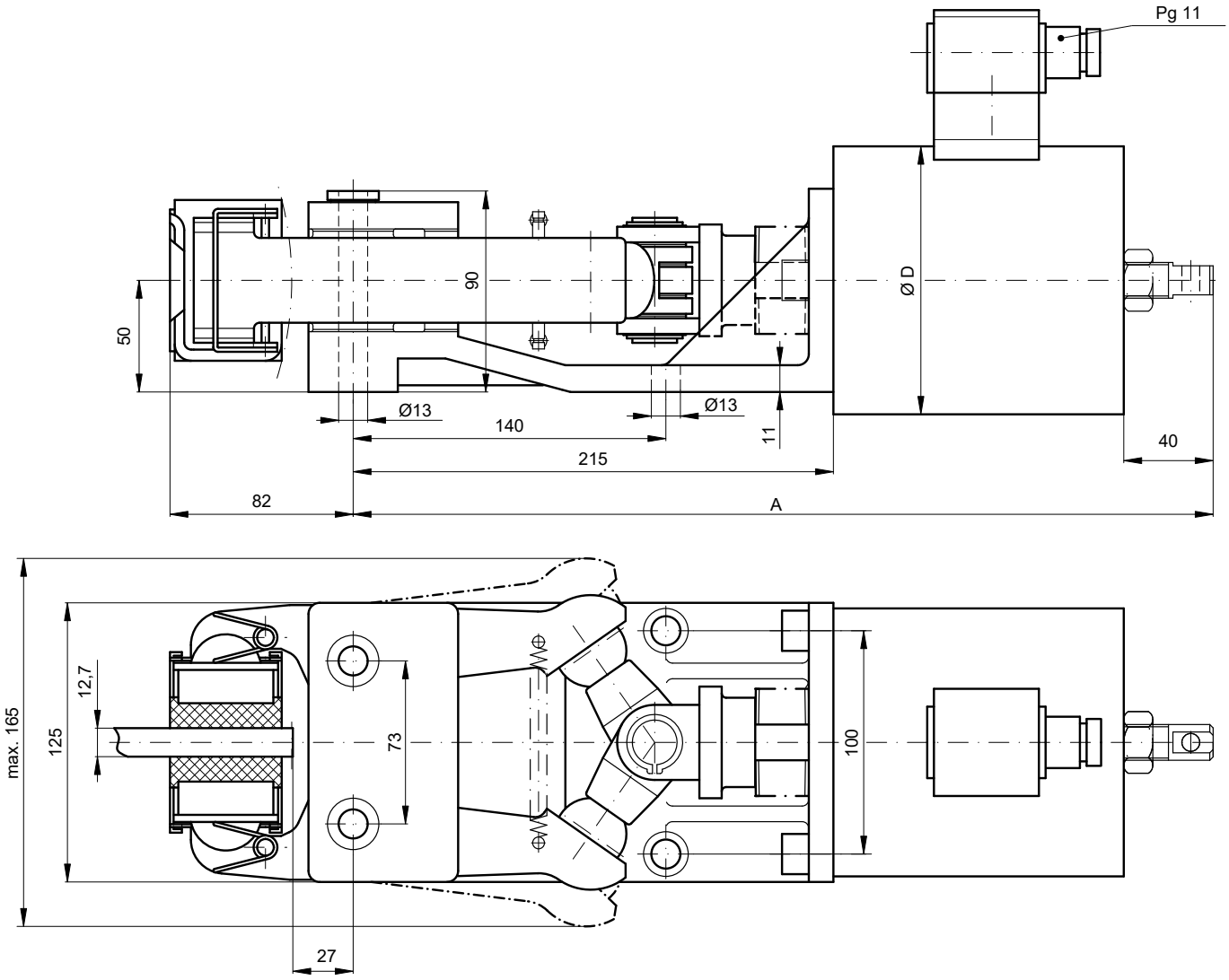
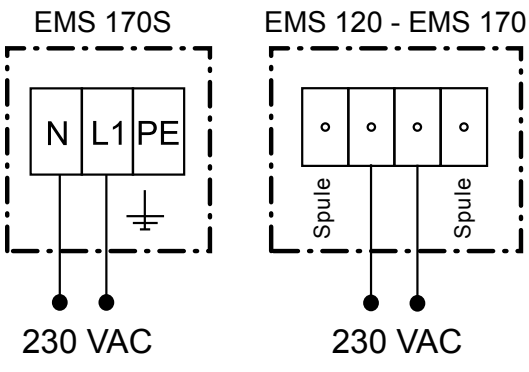


Type	Part-No.	D [mm]	A [mm]	P [W]	I max. [A]	Mass [kg]
EMS 120	11251	120	385	52	0,25	21
EMS 140	11252	137	410	80	0,39	27
EMS 170	11253	165	443	95	0,46	40
EMS 170 S	11700	165	443	280 / 70	1,35 / 0,68	40

Type of protection:	IP 65
Duty cycle ED:	100 %
Supply voltage:	230 VAC, 50/60 Hz (other on request)
Admissibile switching frequency EMS 170 S:	max. 240 / h
Brake application time:	600 ms for EMS 120 – 170 180 ms for EMS 170 S
Brake release time:	350 ms
Ambient temperature:	40° C



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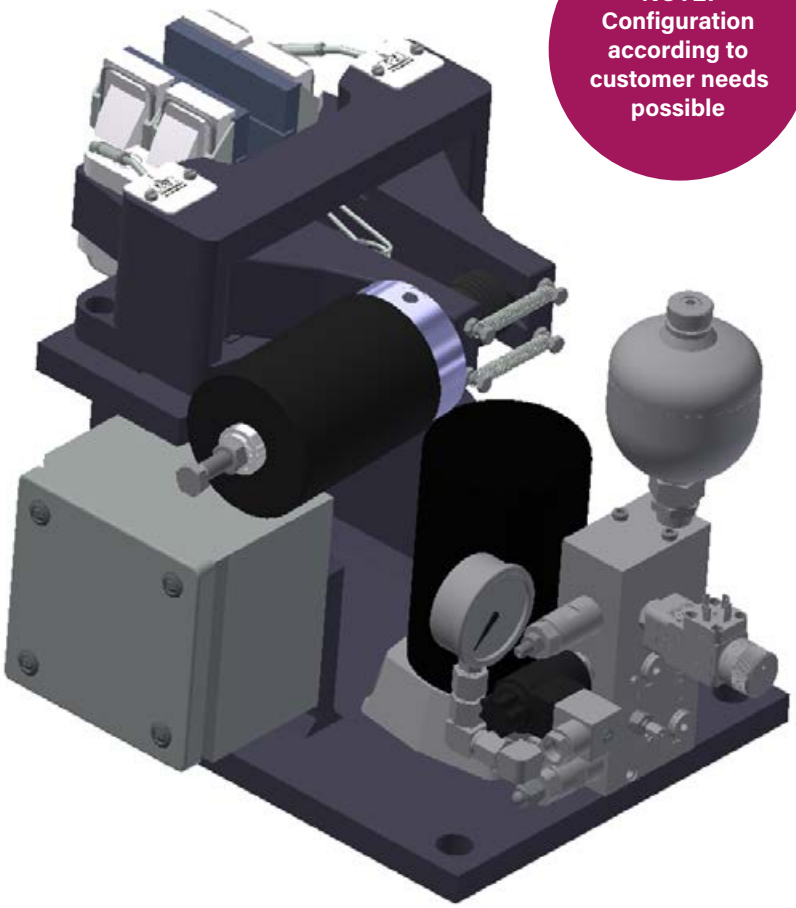

NOTE:
Configuration according to customer needs possible

		Nominal disc diameter [mm]							
		560	630	710	800	900	1000	1250	1600
Type	**Part-No.**	**Braking Torque: $T_{Br\ dyn.}$ [Nm] ($T_{Br\ stat}$ = 0,9 × $T_{Br\ dyn.}$)**							
RH 300.551.04	50933	1970	2270	2600	3000	3420	3850	4920	6400
RH 300.552.04	50436	2980	3440	3940	4550	5180	5830	7450	9700
RH 300.563.04	50437	3530	4080	4670	5390	6140	6900	8830	11500

Operating voltage:

Standard:	380 – 420 VAC 50 Hz / 440 – 480 VAC 60 Hz
Power input:	0,3 kW
Switching frequency:	max. 30/min.
Brake release time:	150 ms
Brake application time:	70 – 100 ms

Control voltage:

E-valve:	24 VDC, 26 W
alternative:	230 VAC, 26 W
Type of protection:	IP 54

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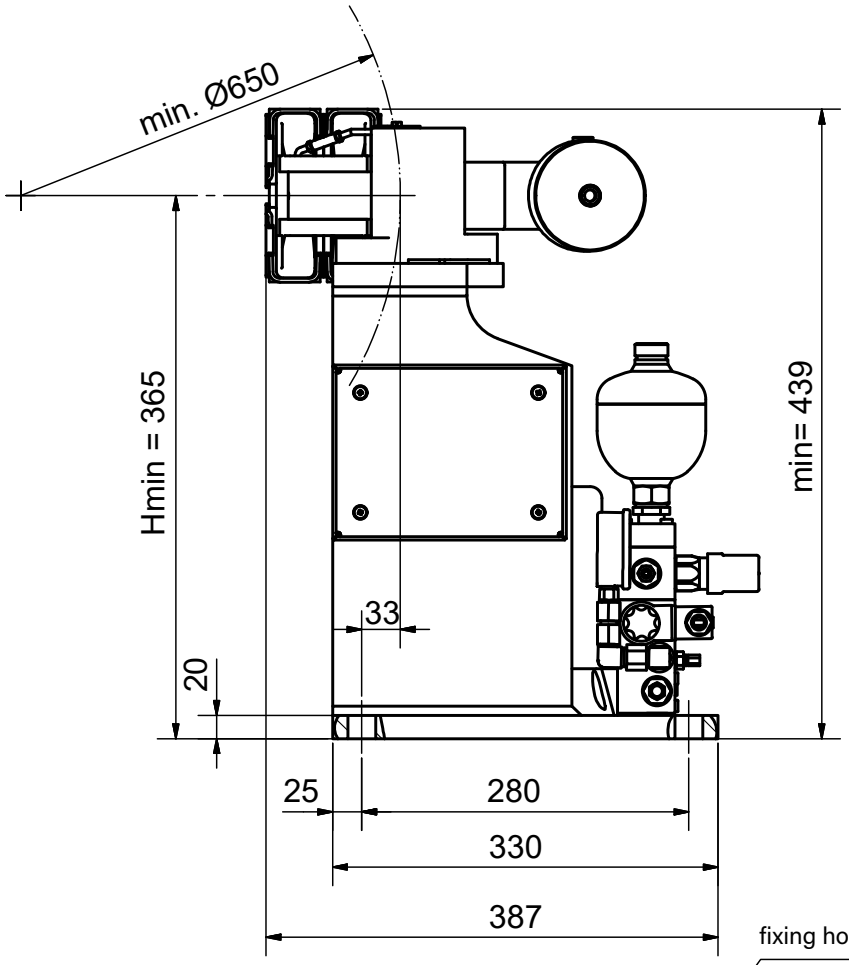
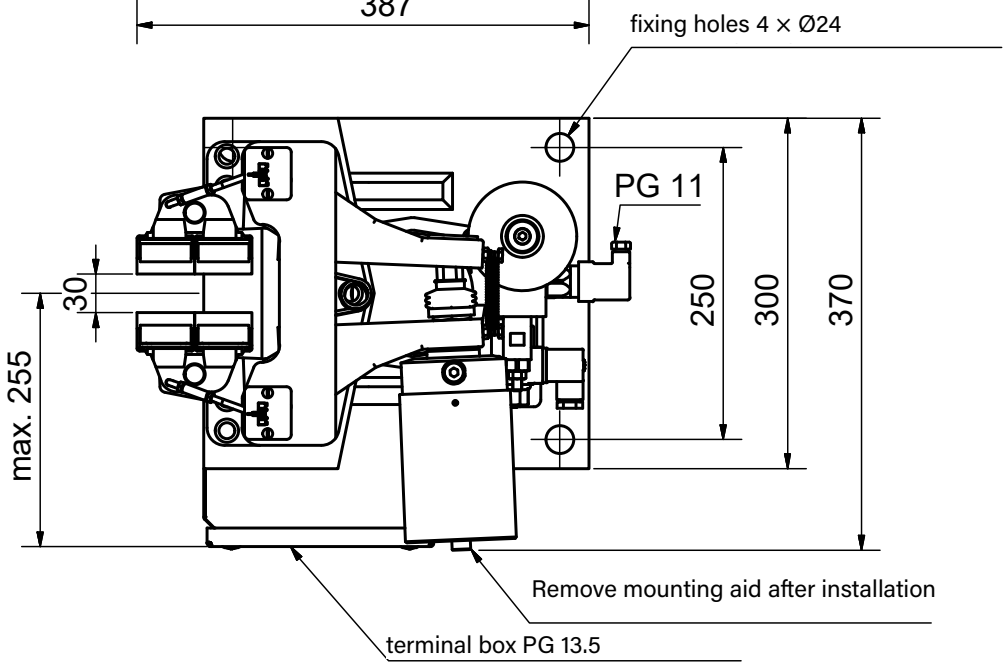


A right hand mounted thruster is standard – left hand mounted please state with order.

Mass:depending on axle height approx. 50 kg



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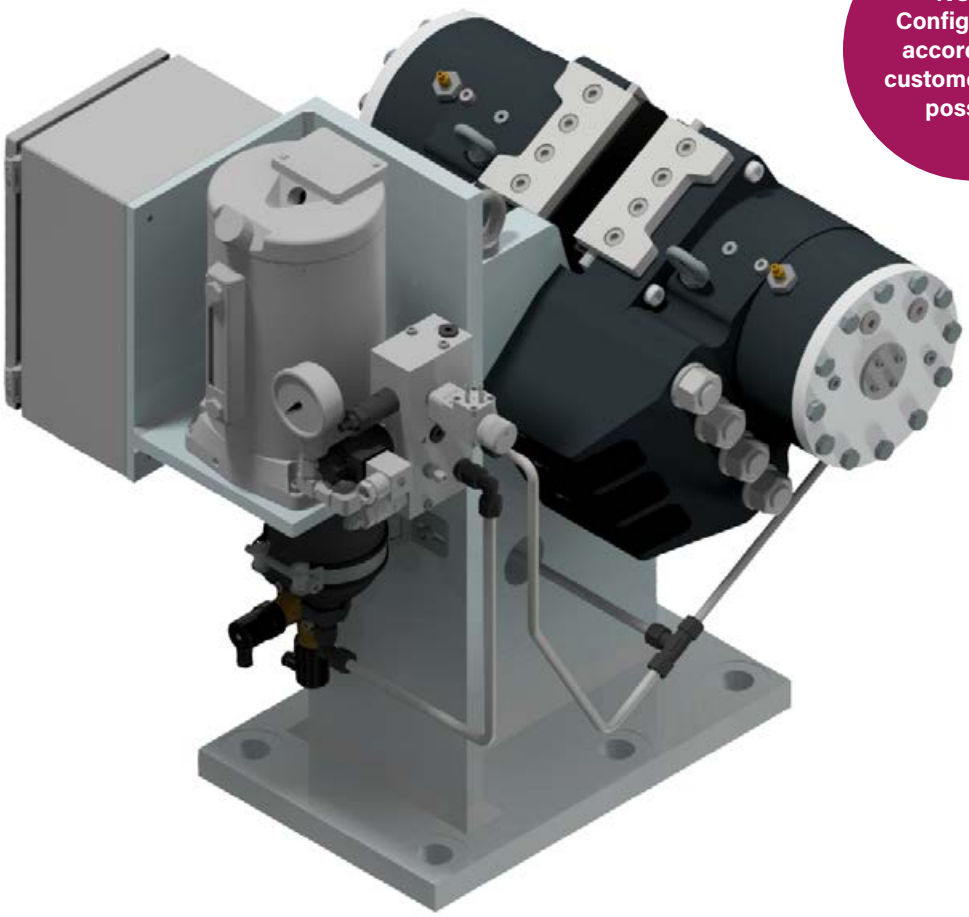
NOTE:
Configuration according to customer needs possible



Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) - 0,095 m

Braking force:	104 kN
Loss of force per 1 mm stroke:	8%
Mass:	depending on axle height approx. 330 kg
Operating voltage:	380 – 420 VAC 50 Hz / 440 – 480 VAC 60 Hz
Power input:	0,7 kW, cos Φ = 0,8 (50 Hz) / 0,8 kW, cos Φ = 0,8 (60 Hz)
Switching frequency:	240/h
Brake release time:	0,3 s
Brake application time:	0,2 s
Control voltage:	
E-valve:	24 VDC
Alternative:	230 VAC 50 Hz / 120 Vac 60 Hz
Type of protection:	IP 54

Different operating and control voltages on request. Wear adjustment and monitoring units can be retrofitted.

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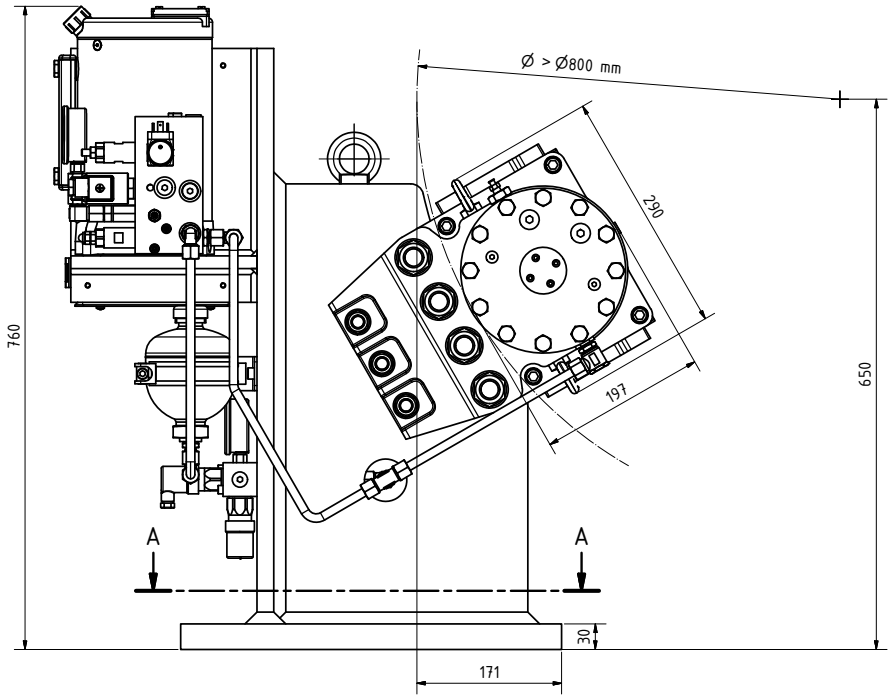

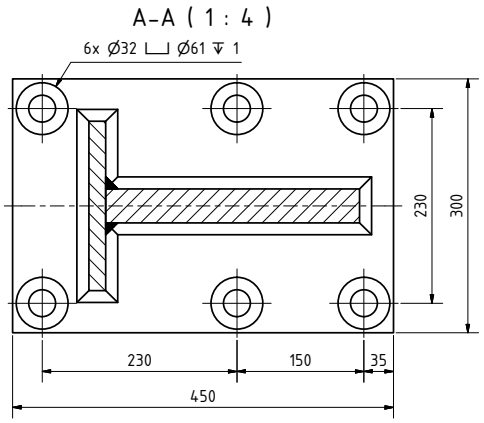

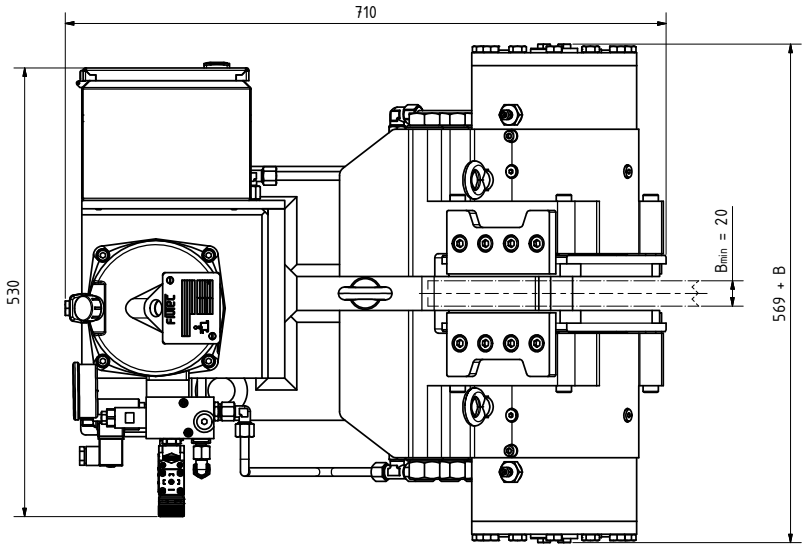

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FIXED CALLIPER BRAKES

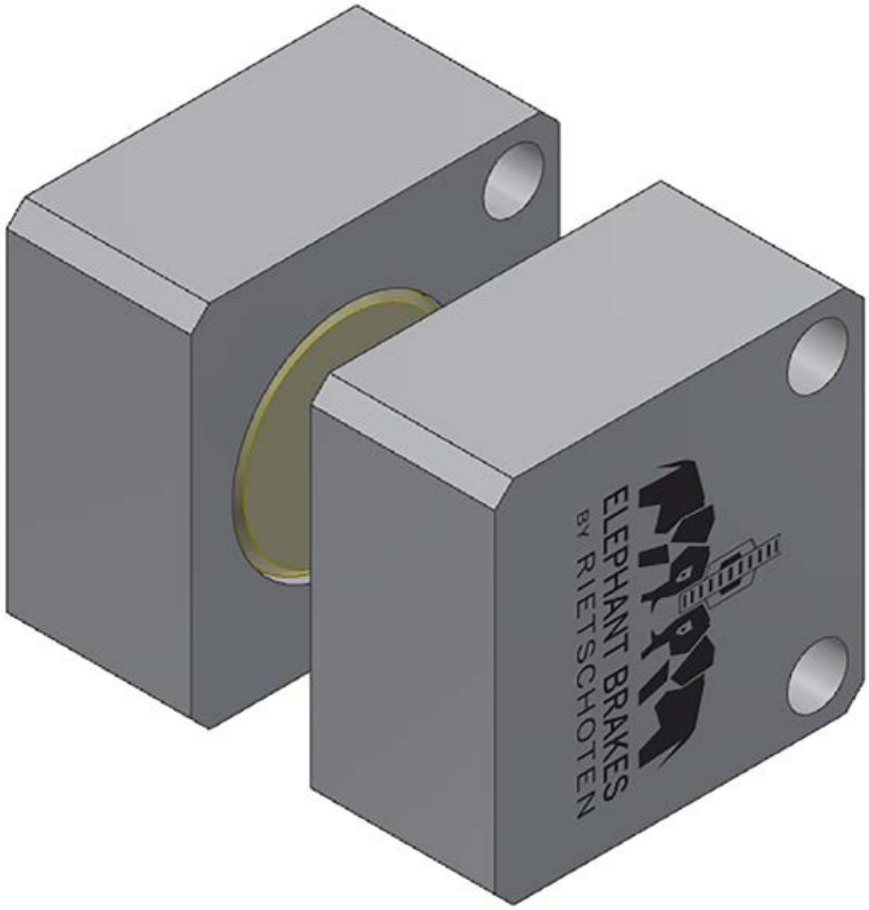
Active fixed calliper brakes (operating brakes)

Pneumatically operated closing, spring-operated opening

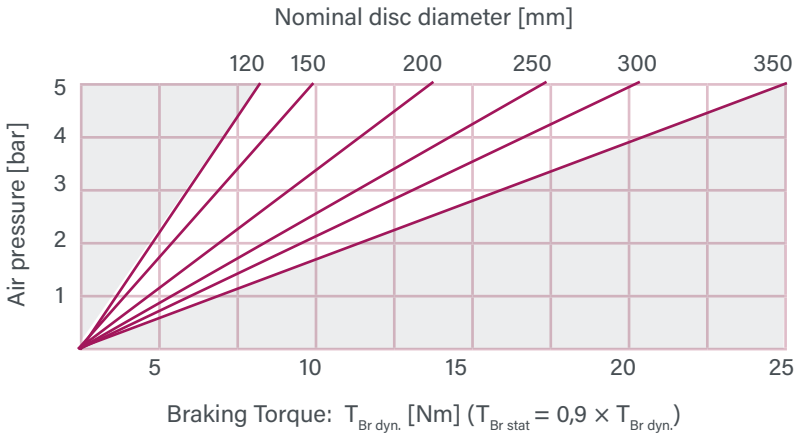
Hydraulically operated closing, spring-operated opening

Passive fixed calliper brakes (safety brakes)

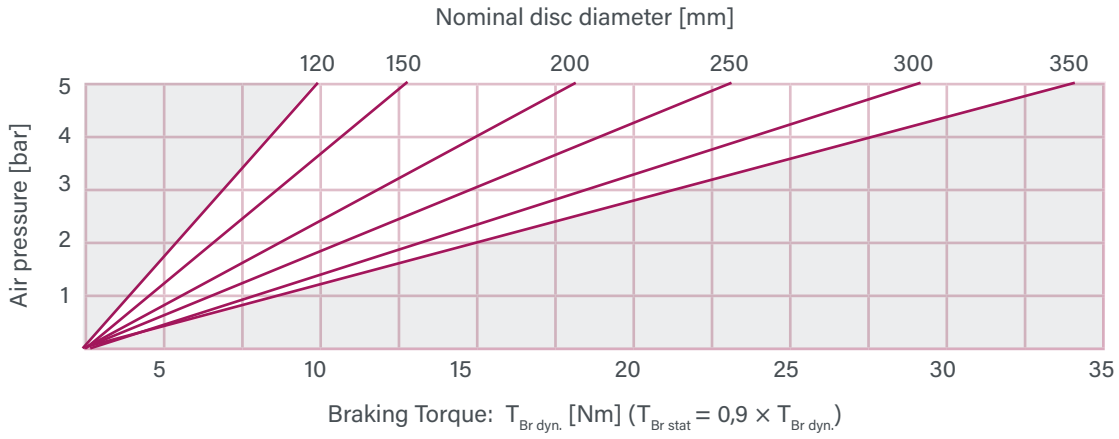
Spring-operated closing, hydraulically operated opening



EB 025



EB 030



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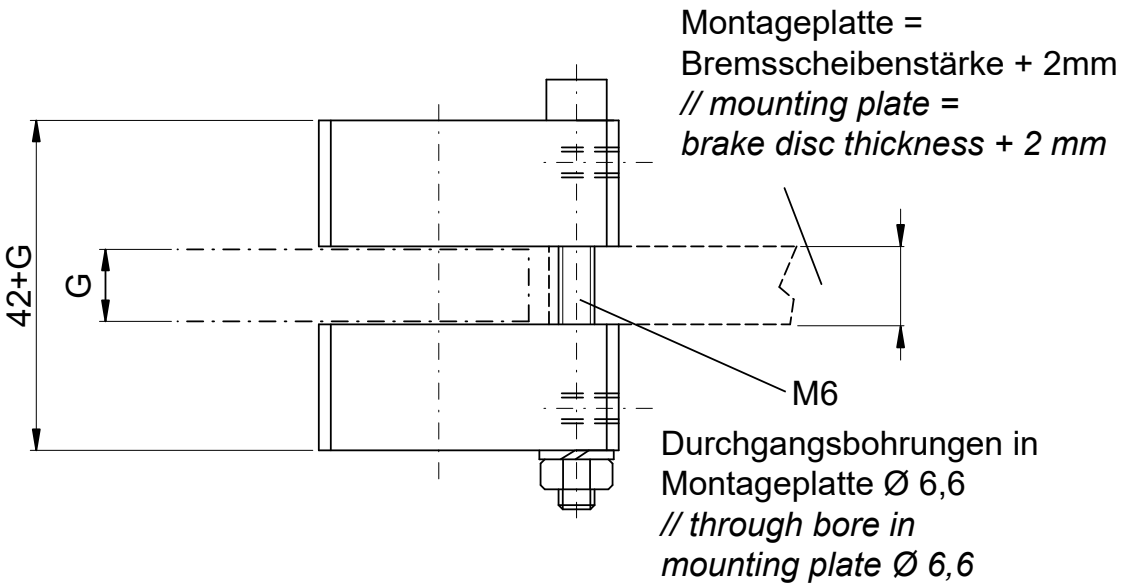

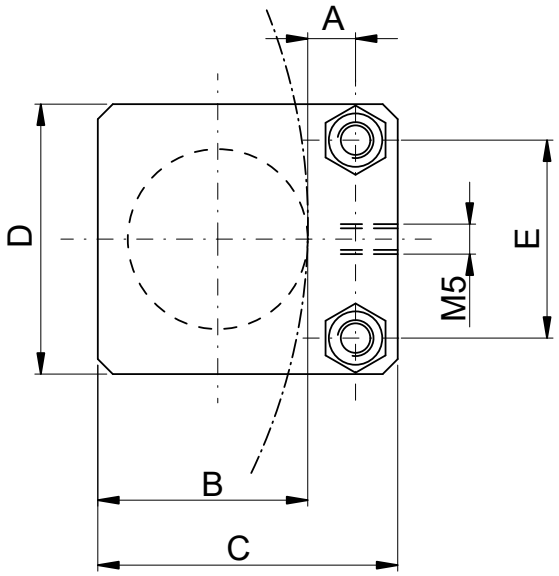

Type	Part-No.	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Mass [kg]
EB 025	10927	6	29	40	40	30	0,14
EB 030	11471	8	35	50	45	33	0,15

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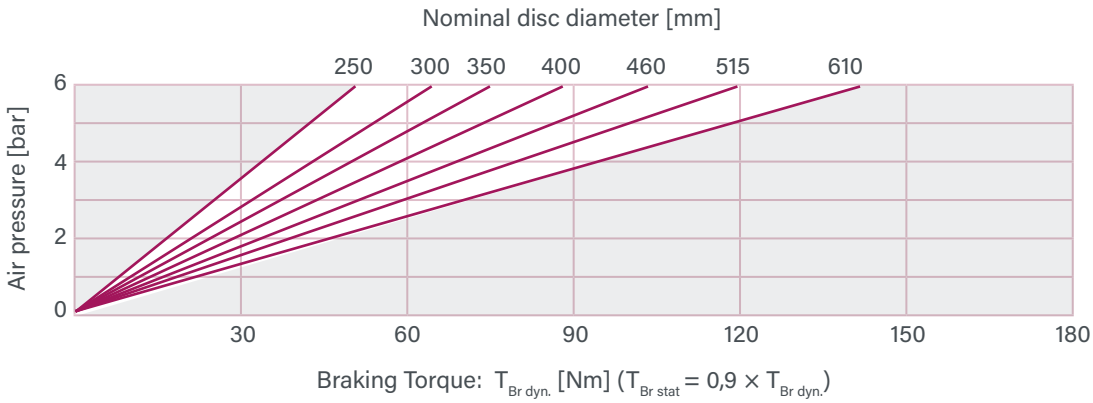
NOTE:
Also hydraulically applied usable



p_{max}: 8 bar
hydraulically applied $p_{max.}$: 20 bar

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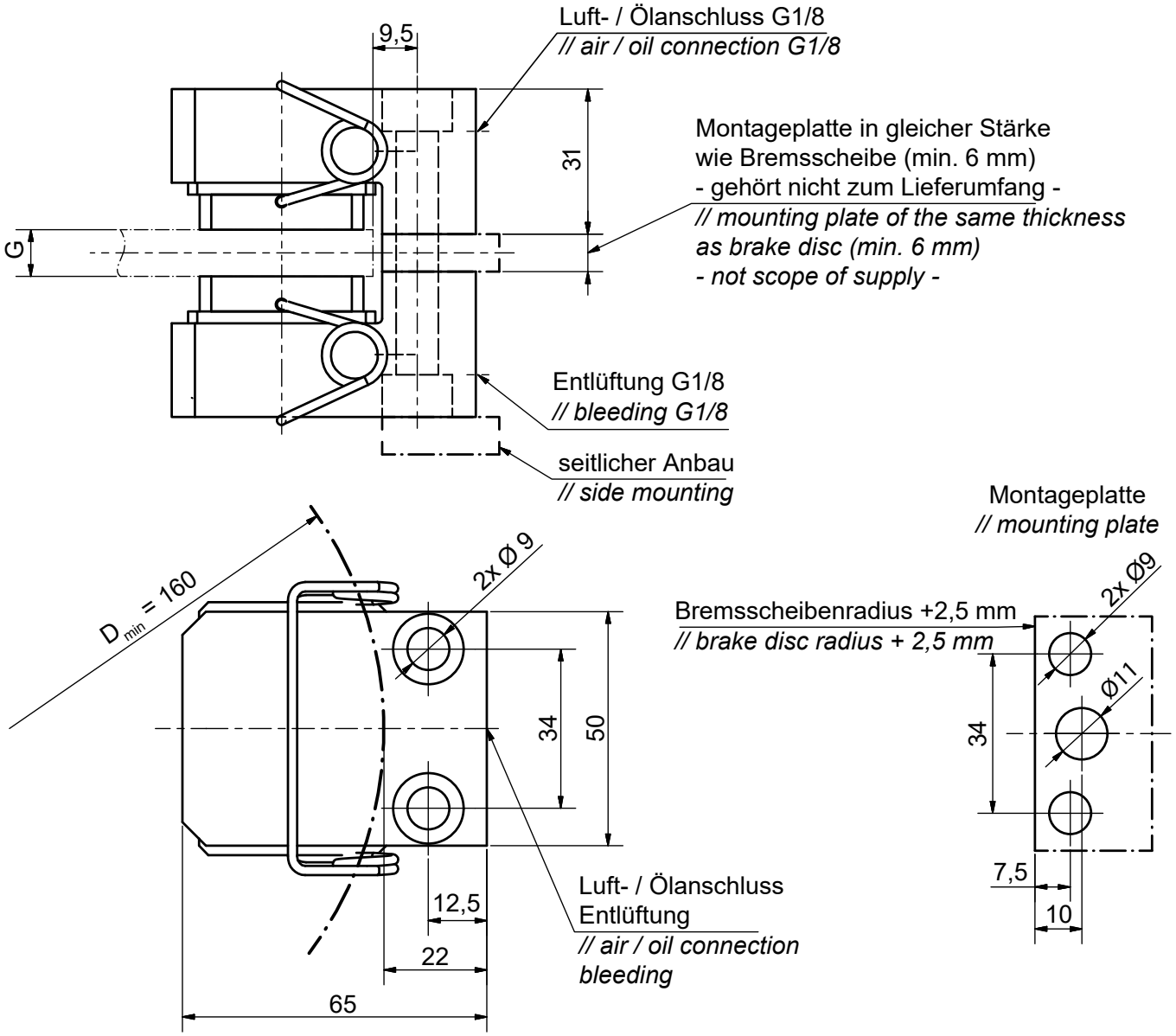

Befestigung: 2 Schrauben M8 - 8.8, Anzugsmoment 23 Nm
// screw connection: 2 x screw M8 - 8.8, tightening torque 23 Nm

For G = 8 mm: EB 108 Part-No. 12294
For G = 15 mm: EB 115 Part-No. 10811

Further disc thicknesses and mounting plates for side mounting on request.

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FIXED CALLIPER BRAKES

Active fixed calliper brakes (operating brakes)

Pneumatically operated closing, spring-operated opening

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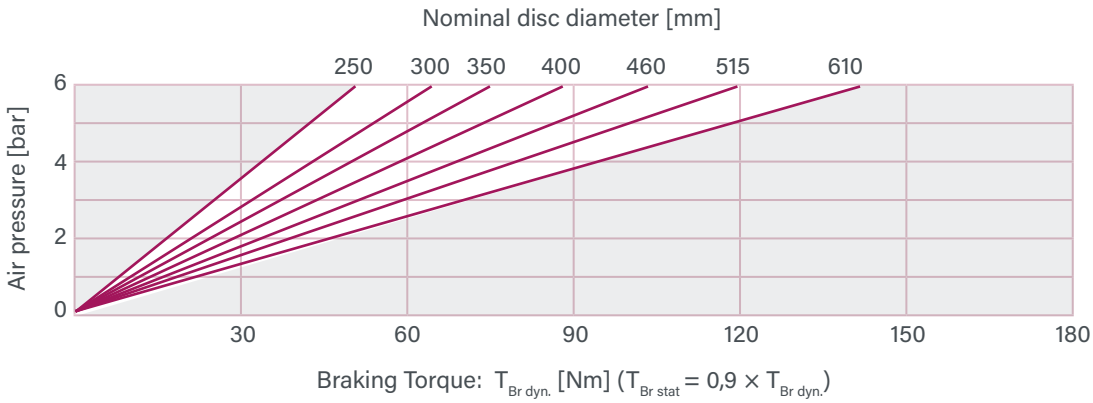
Passive fixed calliper brakes (safety brakes)

Spring-operated closing, hydraulically operated opening



p_{max}: 8 bar
pneumatically applied $p_{max.}$: 20 bar

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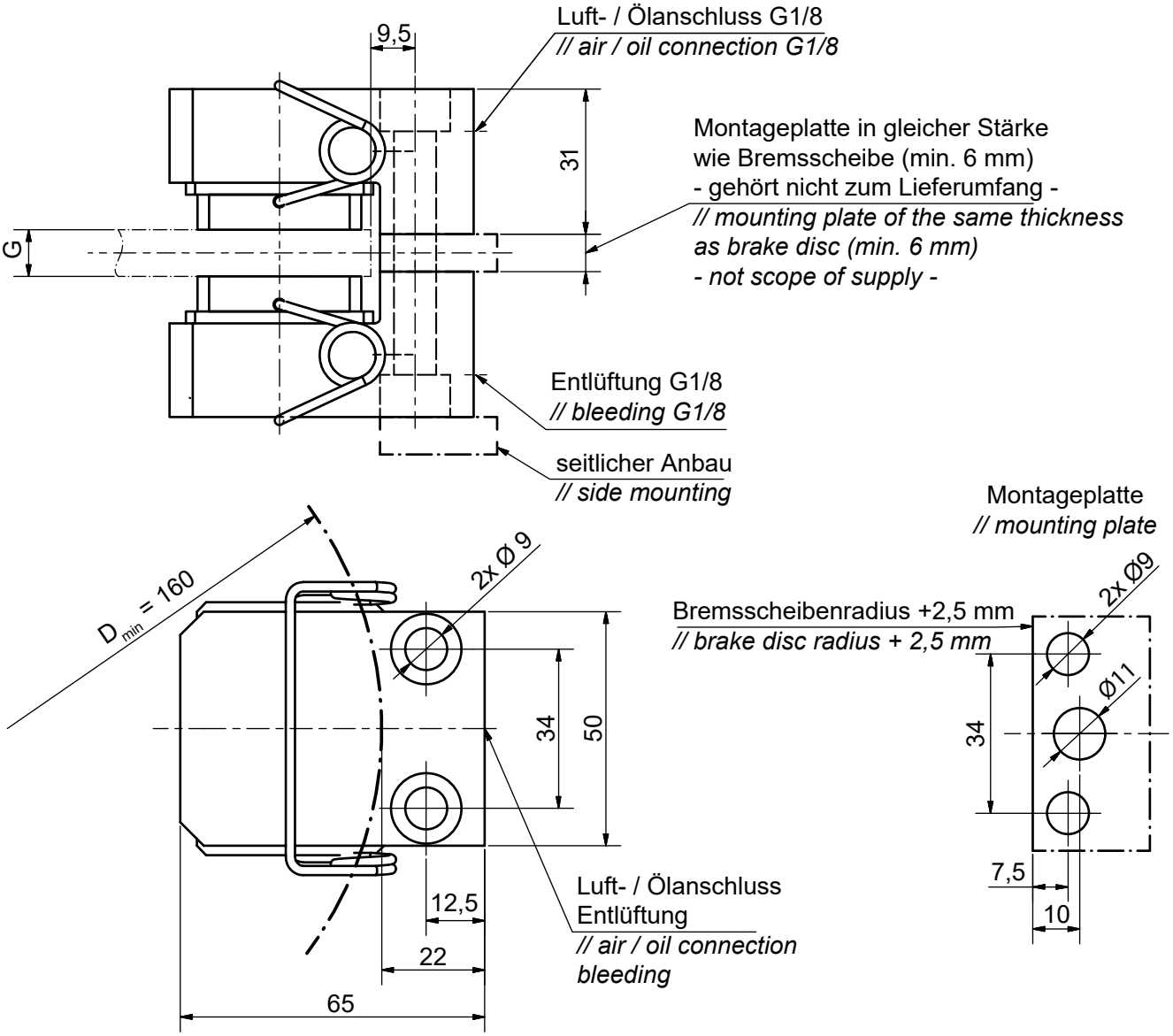

Befestigung: 2 Schrauben M8 - 8.8, Anzugsmoment 23 Nm
// screw connection: 2 x screw M8 - 8.8, tightening torque 23 Nm

For G = 8 mm: EB 108 Part-No. 12294
For G = 15 mm: B 115 Part-No. 10811

Further disc thicknesses and mounting plates for side mounting on request.

For use with mineral oil.

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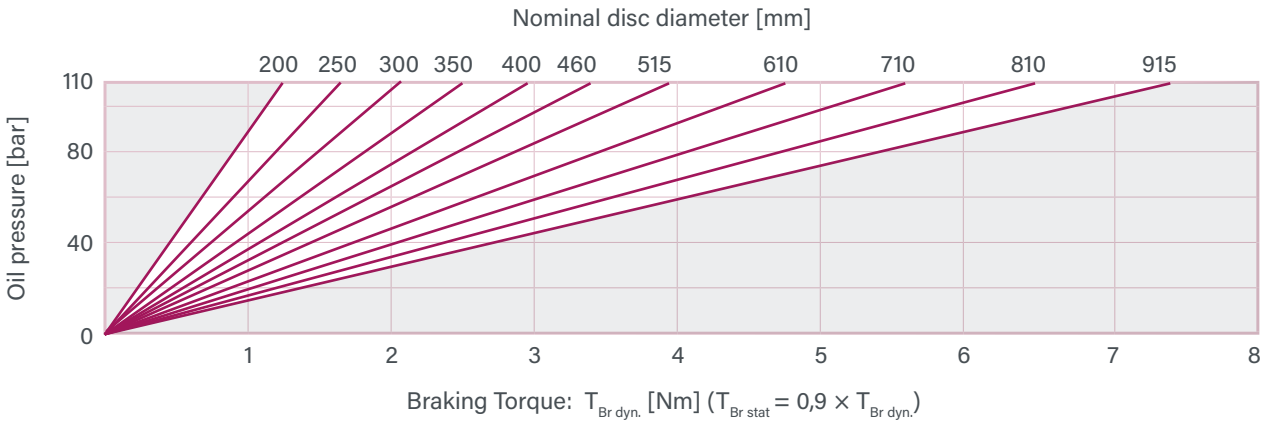

$p_{max.}$: 110 bar
-20°C ≤ T_{amb} ≤ 40°C
Mass: 6,5 kg

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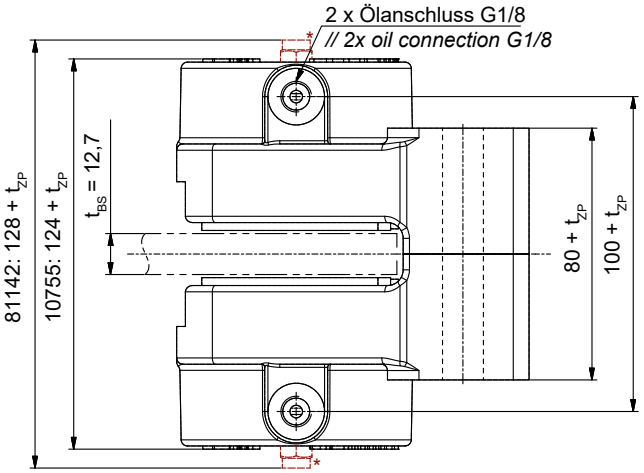
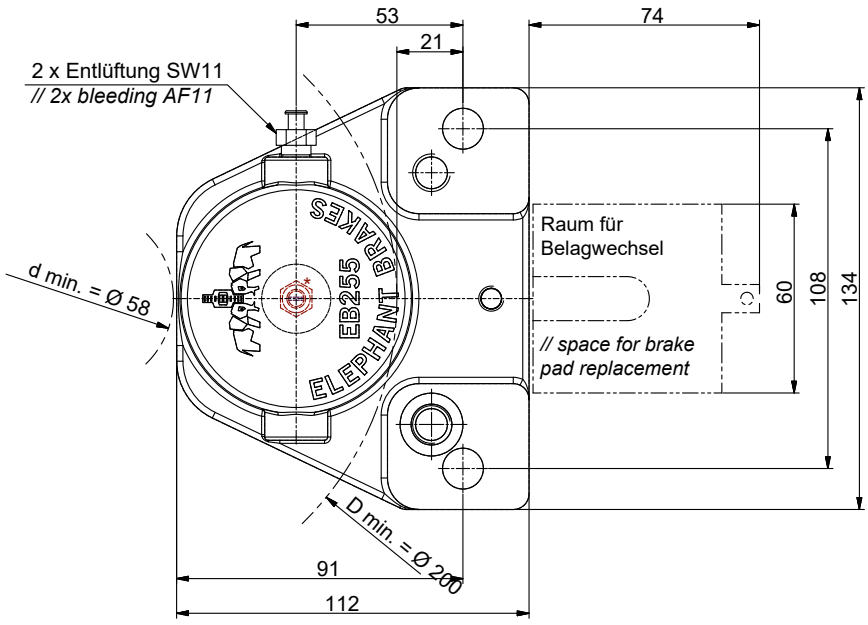
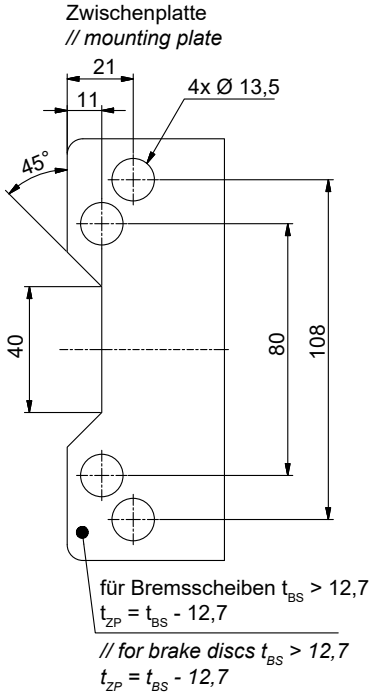


Befestigungssatz:
2 x Zylinderschraube ISO 4762 – M12 x (60+tZP) – 12.9
2 x Schraube – M12 x (100 + tZP) – 12.9
// Mounting kit:
2 x cap screw ISO 4762 – M12 x (60 + tMP) – 12.9
2 x screw – M12 x (100 + tMP) – 10.9





* active piston retraction

For use with hydraulic oil HLP46 according to DIN 51524-2.
HFC and bio-degradable oils on request.

EB 255 – Part-No. 10755
EB 255 with active piston retraction – Part-No. 11142

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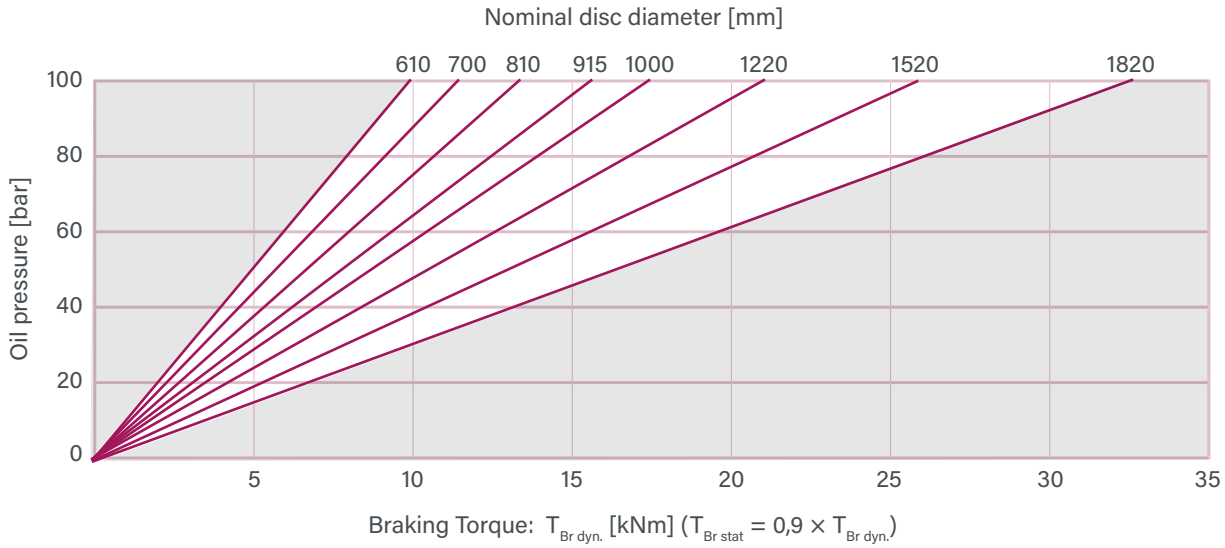

max. oil demand per braking: 0,1 l
brake pad surface: 142 cm²
p_{max}: 100 bar
Mass: 24,5 kg

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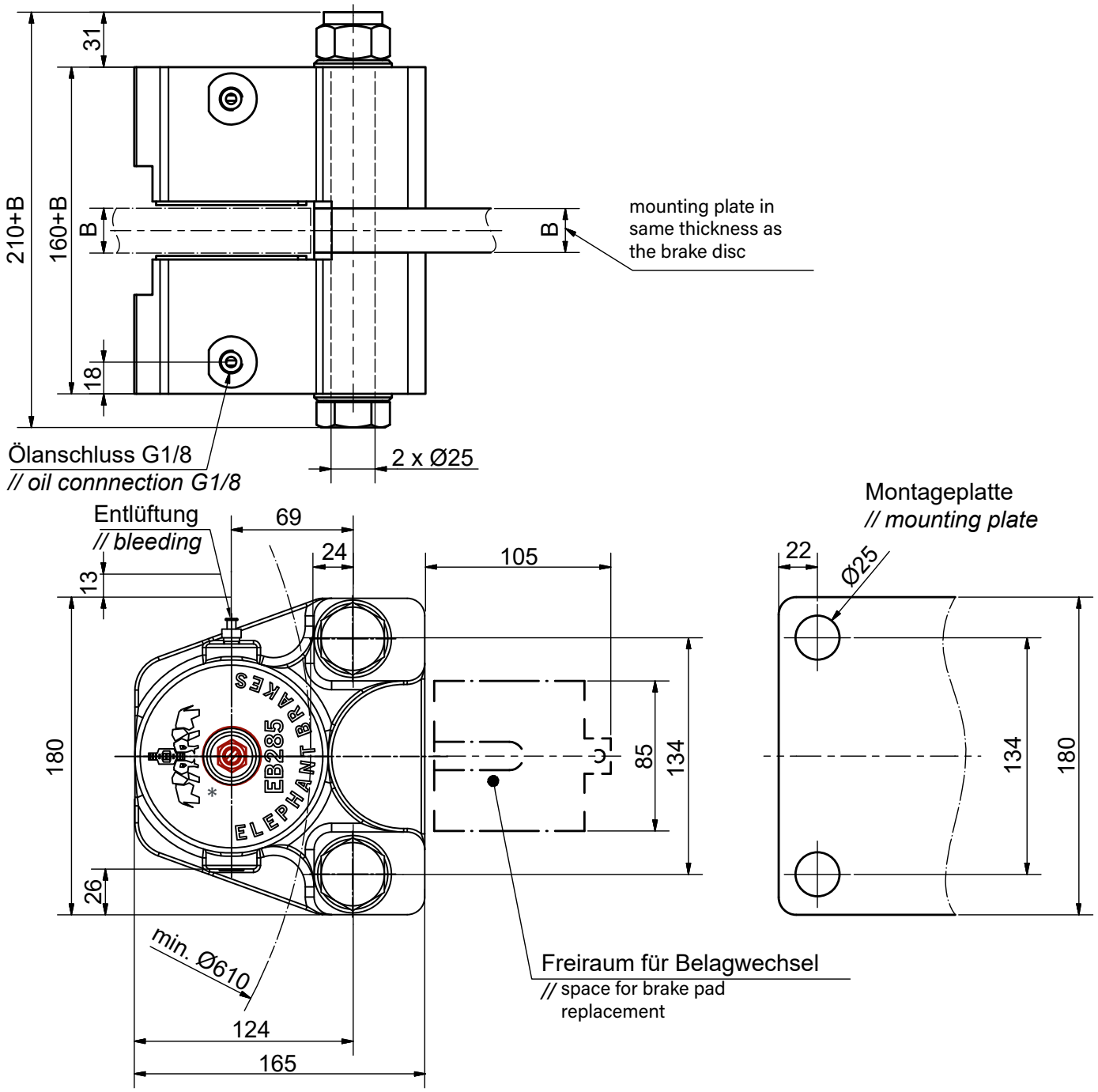

* active piston retraction

EB 285 – Part-No. 10926
EB 285 w/ active piston retraction – Part-No. 11244

For use with mineral oil.

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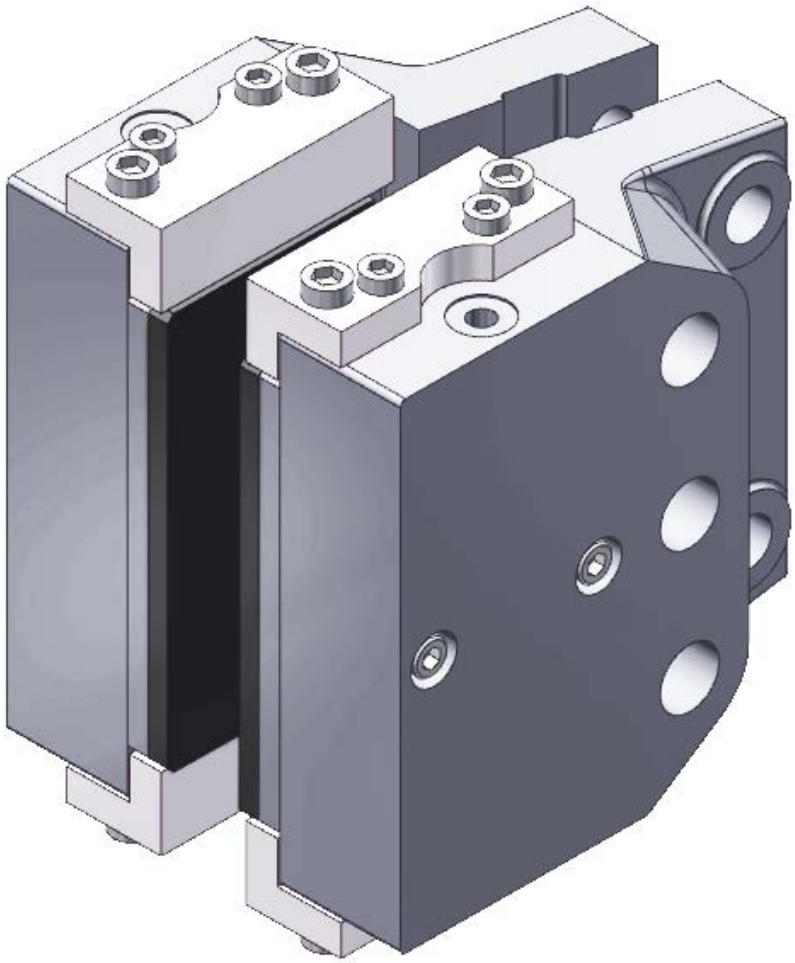

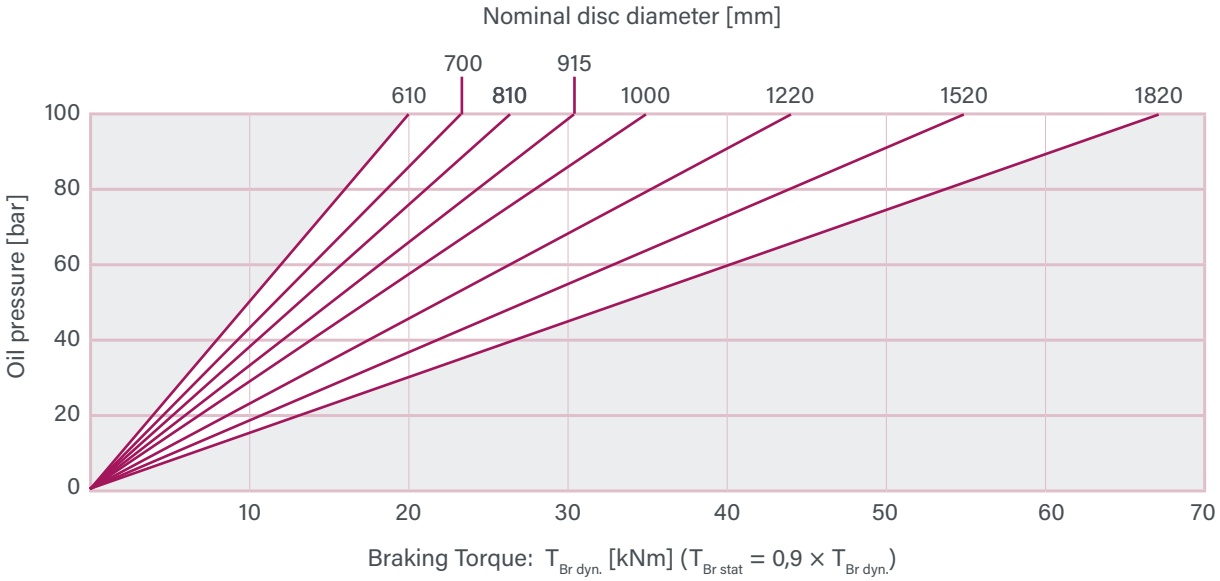

max. oil demand per switching cycle: 200 cm^3
brake pad surface: 408 cm^2
$p_{max.}$: 150 bar (100 bar for side mounting)
Mass: 48 kg

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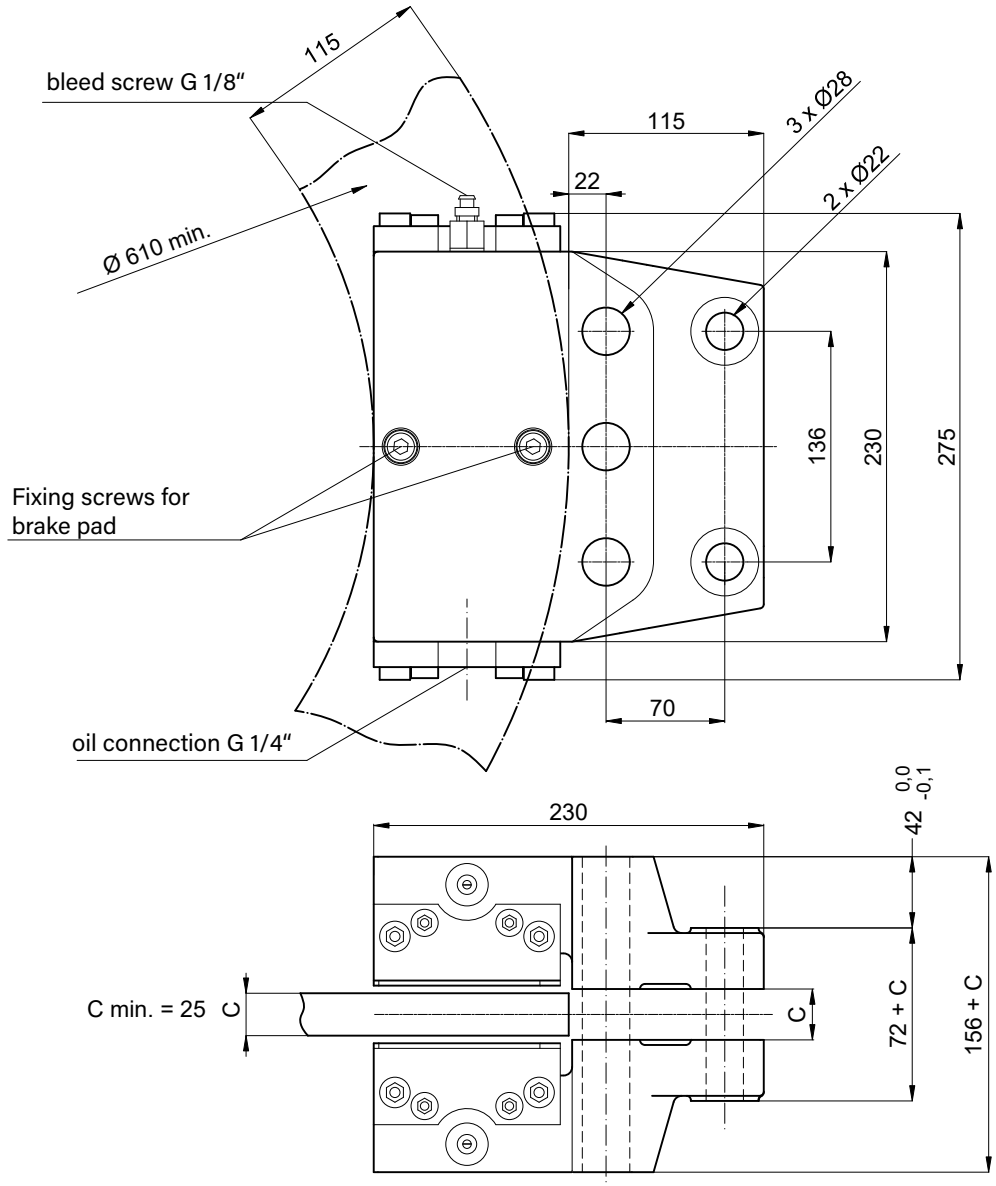

NOTE:
Bushes for side mounting available optionally
Part-No.: 13367

Fixing screws:
3 × M27 – 10.9;
2 × M20 – 10.9;
with hardened washers according to DIN 6916

For use with mineral oil.

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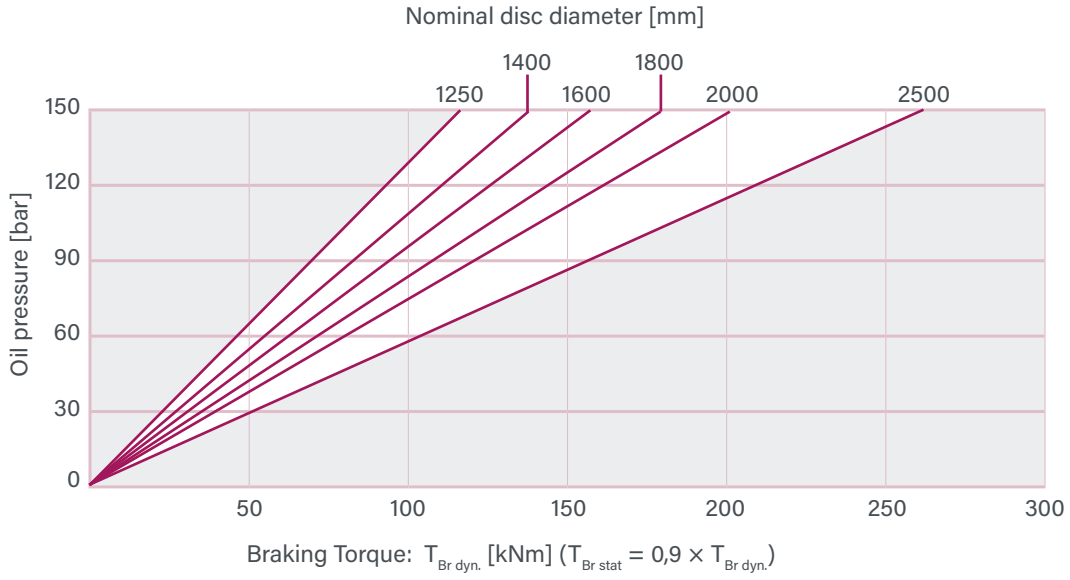

Oil demand at 2 mm stroke: 46 cm^3 per caliper half
Brake pad surface: 583 cm^2 per caliper half
$p_{max.}$: 150 bar
Mass: 234 kg

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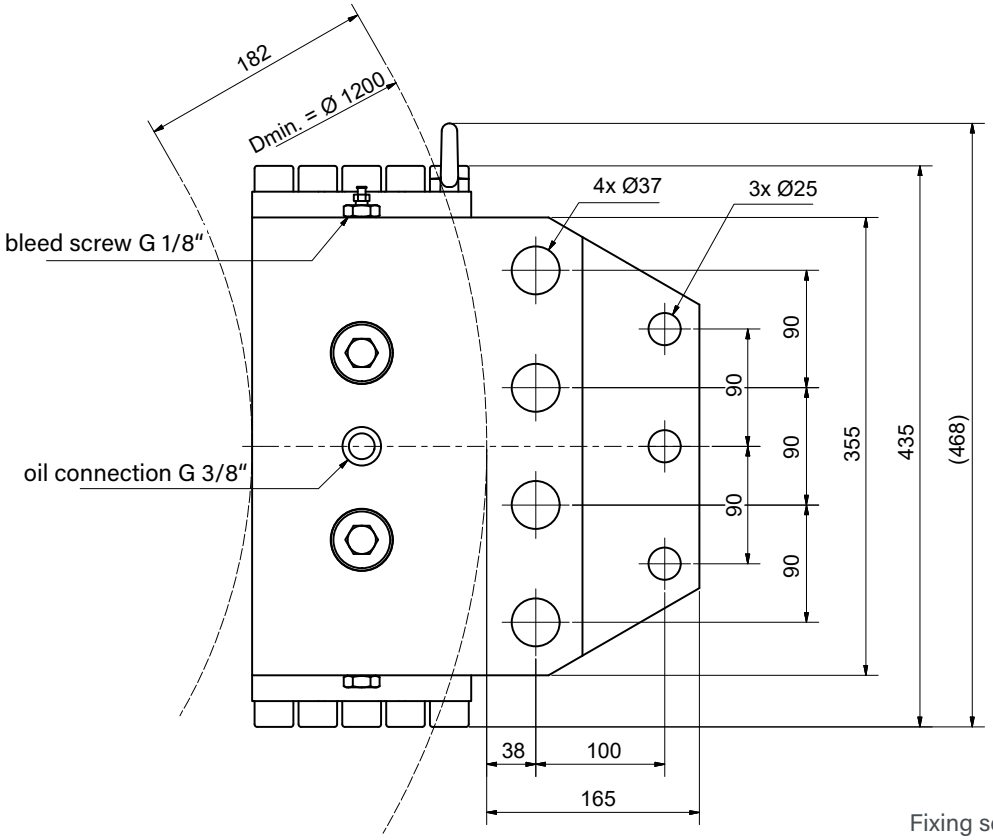
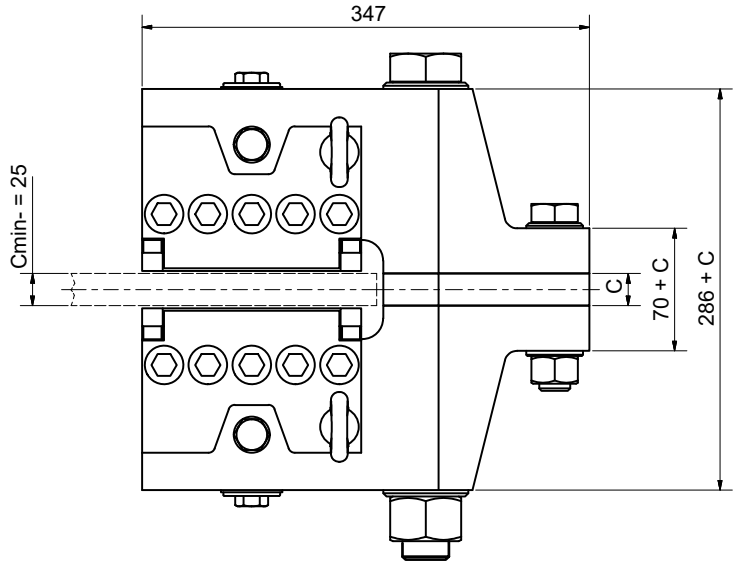


Fixing screws:
4 × M36 - 8.8;
3 × M24 - 8.8;
with hardened washers
according to DIN 6916



For use with mineral oil.

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BRAKES·GEARS·MOTORS

FIXED CALLIPER BRAKES

Active fixed calliper brakes (operating brakes)

Pneumatically operated closing, spring-operated opening

Hydraulically operated closing, spring-operated opening

Passive fixed calliper brakes (safety brakes)

Spring-operated closing, hydraulically operated opening

Features and applications

EBS stands for: Elephant Brakes Spring/ Safety
The modular brake type EBS series has been designed to be reliable, robust and corrosion-resistant. Important aspects are the long service life, low maintenance and the virtually wear-free disc springs.

All brakes in the EBS series ...

... develop braking forces between 15 and 400 kN.

... are equipped with different brake spring assemblies, the preload of which can be varied using spacer discs, which can also be retrofitted on-site.

... enable a very fine gradation of the braking force of each individual brake.

... offer optionally available release, adjustment and wear signalling systems.

... are equipped with a 'park-off function', which allows the brake spring to be released when the brake is fully opened.

... make assembly as well as maintenance and repair work considerably easier.

... have the hydraulic part located at the rear of the brake.

... allow access to all seal-relevant parts of the brake (which often weighs several hundred kilos) without having to unscrew them from the stand construction.

... feature hydraulic seals located as far away as possible from the brake disc to protect them from heat build-up resulting from highly dynamic braking.

... feature a rotatable hydraulic part so that the bleed screw can always be positioned upwards when the shaft is horizontal.

... have completely sealed parting lines so that neither dirt nor liquids can penetrate the brake from the outside.

... are particularly suitable for use outdoors or in offshore applications.

... feature brake linings with mining approval as standard.

... offer optionally available opening and wear signalling systems.

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Fixed caliper brake of the EBS series

Braking forces from 15 – 400 kN

EBS 001

- Braking force: 15 to 30 kN
- Opening pressure: 72 to 154 bar
- For brake discs ≥500 mm
- Total mass: 46 kg

EBS 002

- Braking force: 31 to 50 kN
- Opening pressure: 90 to 134 bar
- For brake discs ≥500 mm
- Total mass: 76 kg

EBS 004

- Braking force: 53 to 104 kN
- Opening pressure: 86 to 150 bar
- For brake discs ≥800 mm
- Total mass: 190 kg

EBS 006

- Braking force: 85 to 210 kN
- Opening pressure: 72 to 154 bar
- For brake discs ≥1200 mm
- Total mass: 495 kg

EBS 008

- Braking force: 200 to 400 kN
- Opening pressure: 105 to 200 bar
- For brake discs ≥1500 mm
- Total mass: 735 kg

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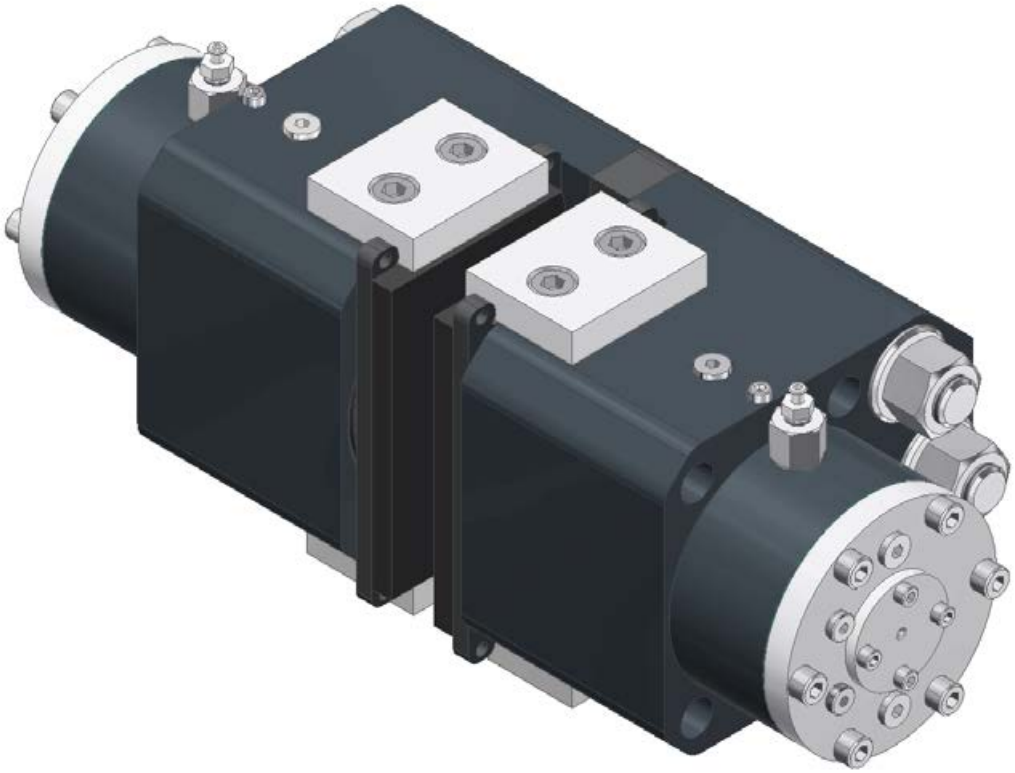

Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,049 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 001 – 30	60099-30	30	7,6	154	200
EBS 001 – 22	60099-22	22	7,9	103	149
EBS 001 – 15	60099-15	15	8,1	72	118

Oil demand at 1 mm air gap per side: 4 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 500 mm
Mass: 23 kg per caliper half (total mass: 46 kg)

All information based on 1 mm air gap per side, coefficient of friction μ = 0,34

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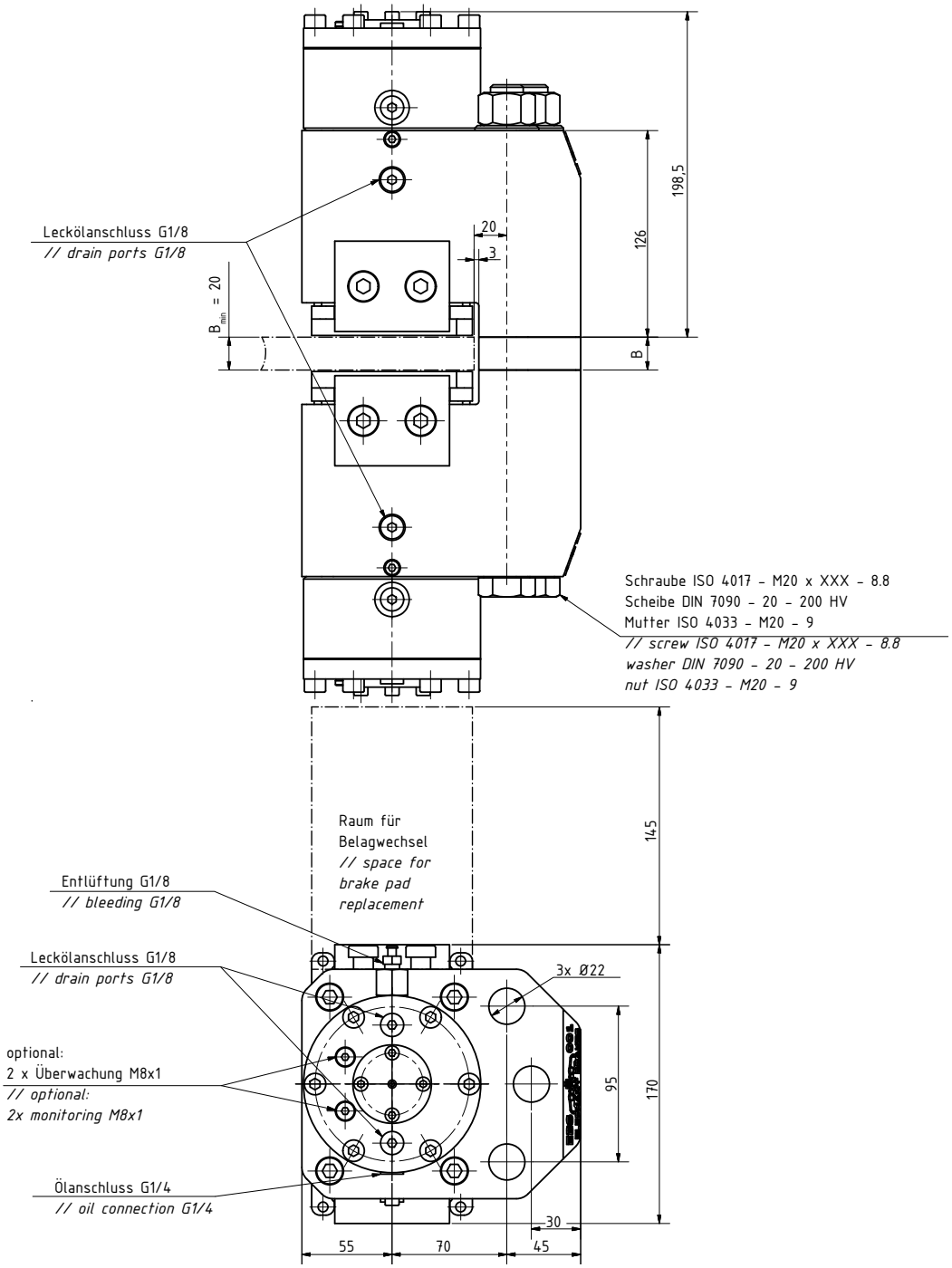

Fixing screws and nuts are not scope of supply.
Min. quality of fixing materials: 8.8

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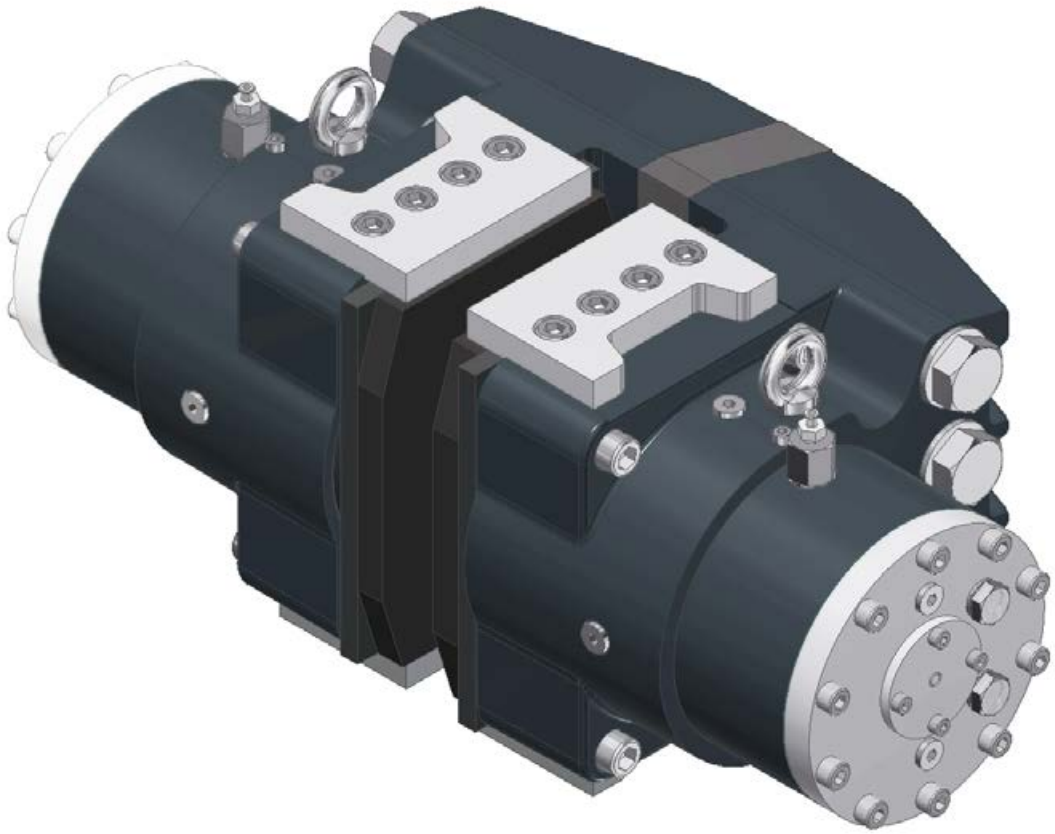

Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,078 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 002 – 50	60096-50	50	6,3	143	188
EBS 002 – 47	60096-47	47	6,9	134	176
EBS 002 – 43	60096-43	43	7,5	125	170
EBS 002 – 40	60096-40	40	8,2	116	161
EBS 002 – 38	60096-38	38	5	107	152
EBS 002 – 36	60096-36	36	5,4	102	147
EBS 002 – 34	60096-34	34	6	96	141
EBS 002 - 31	60096-31	31	6,7	90	135

Oil demand at 1 mm air gap per side: 14 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 500 mm
Mass: 38 kg per caliper half (total mass: 76 kg)

All information based on 1 mm air gap per side, coefficient of friction μ = 0.34

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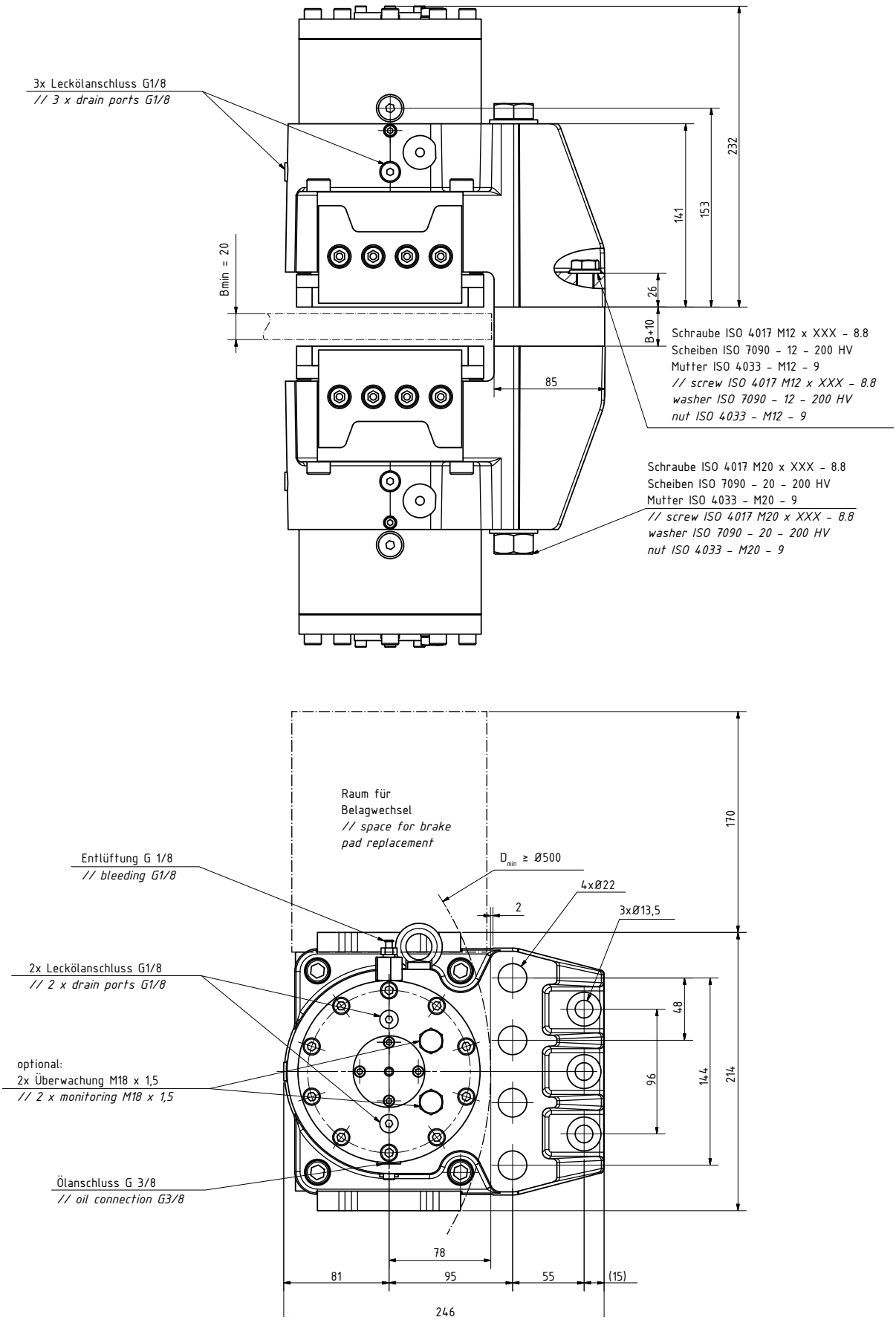

Fixing screws and nuts are not scope of supply.
Min. quality of fixing materials: 8.8

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Braking torque T_{Br} [kNm] = Braking force [kN] x eff. disc radius [m]
eff. disc radius = (0,5 x brake disc o/d [m]) – 0,095 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 004 – 104	60095-104	104	7,7	150	195
EBS 004 – 96	60095-96	96	7,9	138	183
EBS 004 – 88	60095-88	88	8,1	131	176
EBS 004 – 80	60095-80	80	8,3	121	166
EBS 004 – 72	60095-72	72	8,5	112	157
EBS 004 – 68	60095-68	68	8,8	105	150
EBS 004 – 61	60095-61	61	9	97	142
EBS 004 – 53	60095-53	53	9,3	86	131

Oil demand at 2 mm air gap: 56 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 800 mm
Mass: 95 kg per caliper half (total mass: 190 kg)

All information based on 2 mm air gap per side, coefficient of friction μ = 0.34

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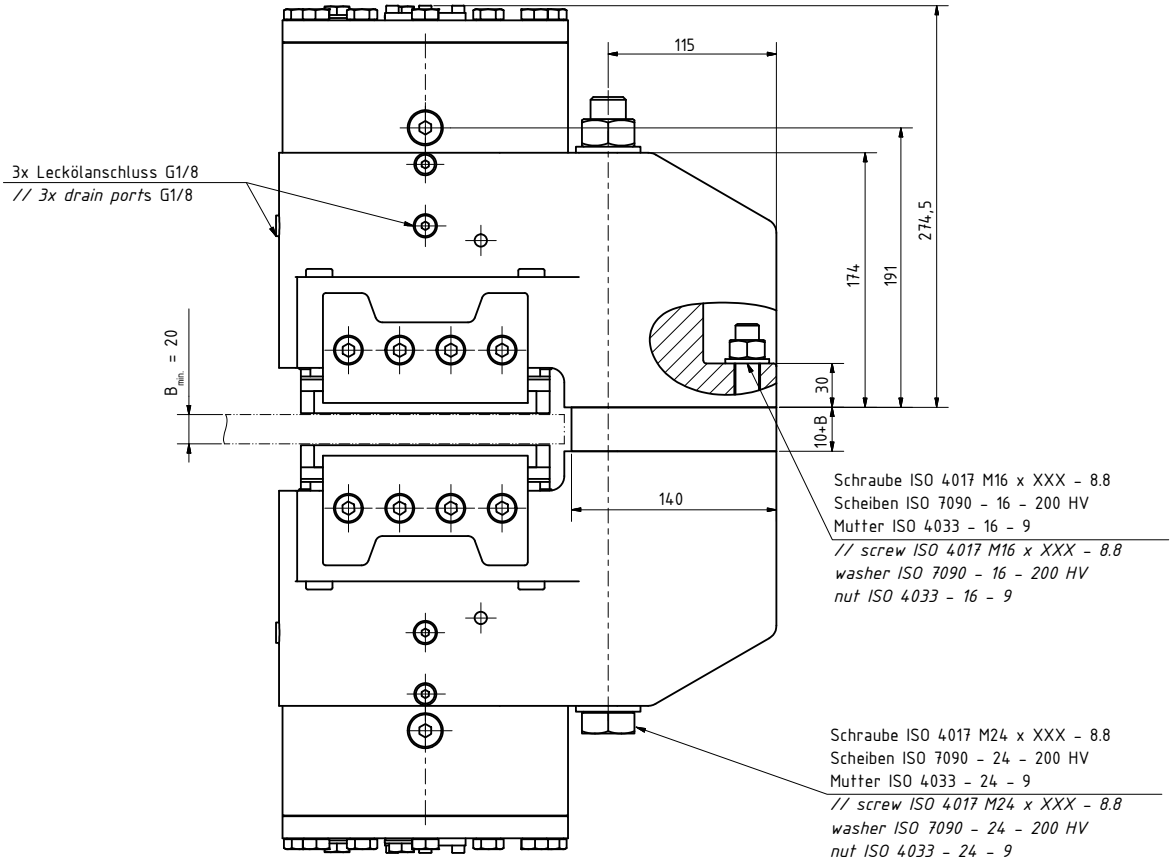

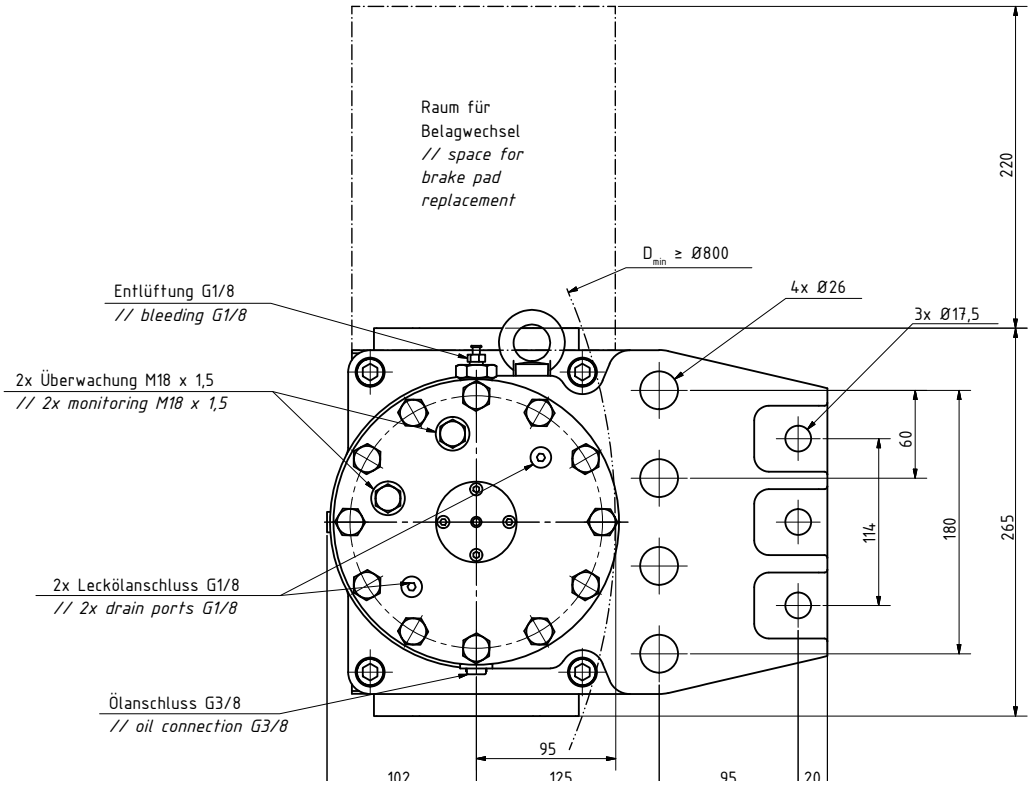

Fixing screws and nuts are not scope of supply.
Min. quality of fixing materials: 8.8

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Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 006 – 210	***60105-210***	210	12,7	165	215
EBS 006 – 185	***60105-185***	185	10,5	143	193
EBS 006 – 165	***60105-165***	165	11,8	131	181
EBS 006 – 145	***60105-145***	145	13,6	118	168
EBS 006 – 130	***60105-130***	130	16	106	156
EBS 006 – 105	***60105-105***	105	6,8	83	133
EBS 006 – 100	***60105-100***	100	7,4	78	128
EBS 006 – 90	***60105-90***	90	8,2	73	123
EBS 006 – 85	***60105-85***	85	9	68	118

Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,123 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 006 – 210	60105-210	210	12,7	165	215
EBS 006 – 185	60105-185	185	10,5	143	193
EBS 006 – 165	60105-165	165	11,8	131	181
EBS 006 – 145	60105-145	145	13,6	118	168
EBS 006 – 130	60105-130	130	16	106	156
EBS 006 – 105	60105-105	105	6,8	83	133
EBS 006 – 100	60105-100	100	7,4	78	128
EBS 006 – 90	60105-90	90	8,2	73	123
EBS 006 – 85	60105-85	85	9	68	118

Oil demand at 1 mm air gap: 40 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 1200 mm
Mass: 247,5 kg per caliper half (total mass: 495 kg)

All information based on 1 mm air gap per side, coefficient of friction μ = 0.34

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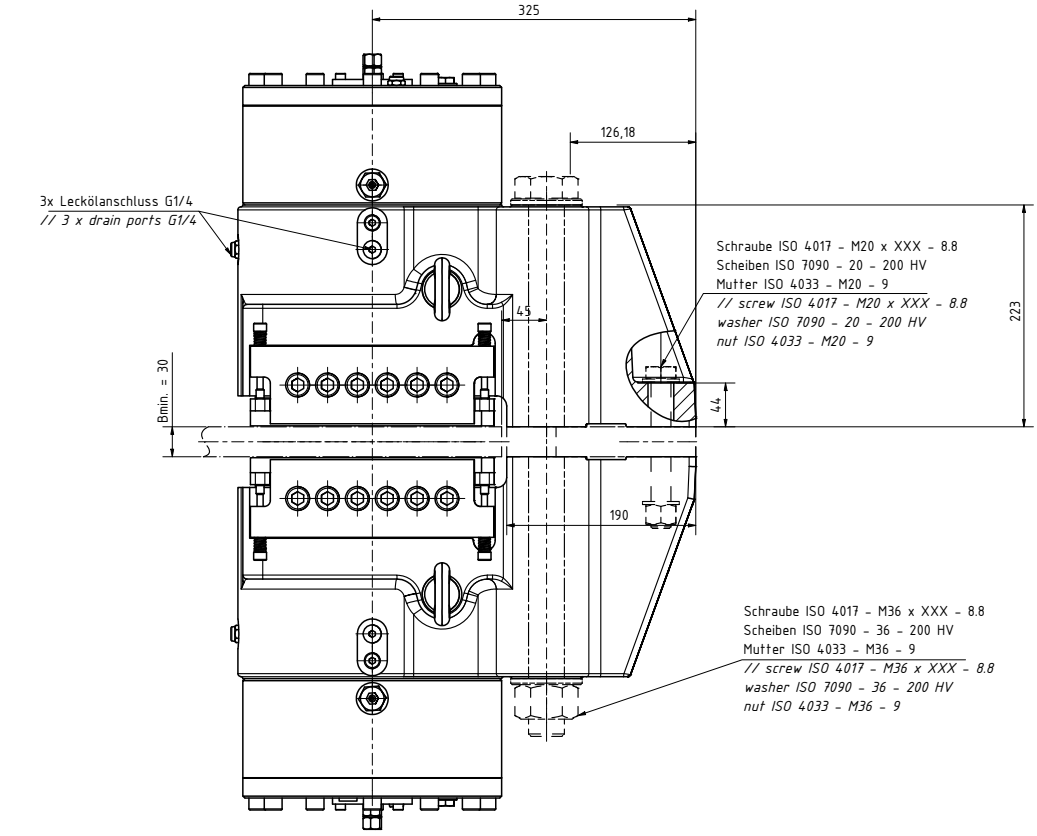

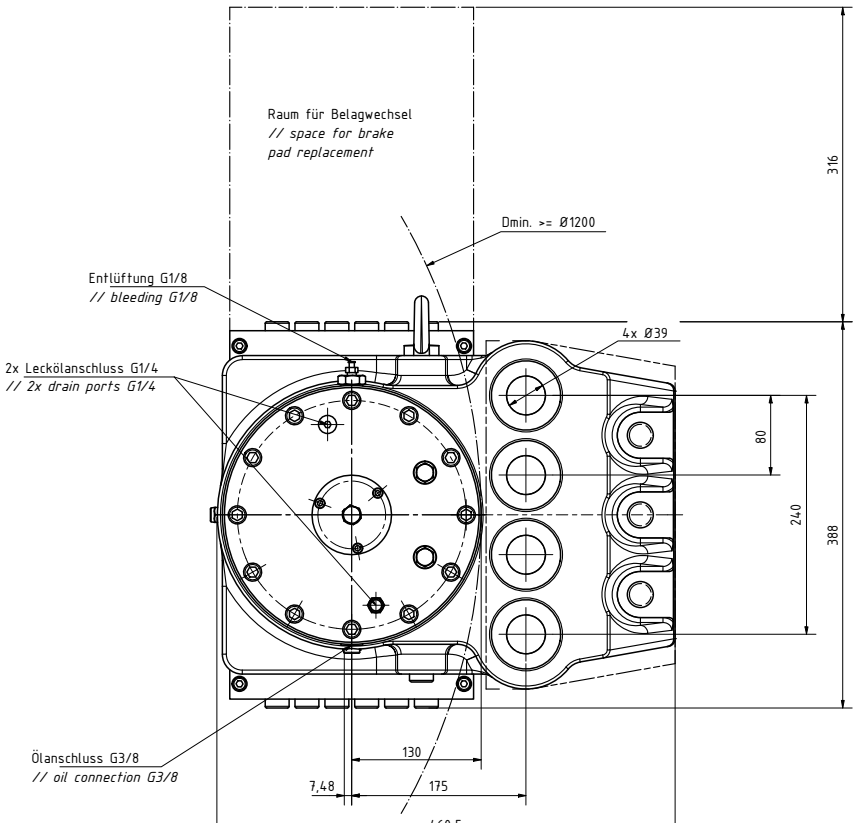

Fixing screws and nuts are not scope of supply.
Min. quality of fixing materials: 8.8

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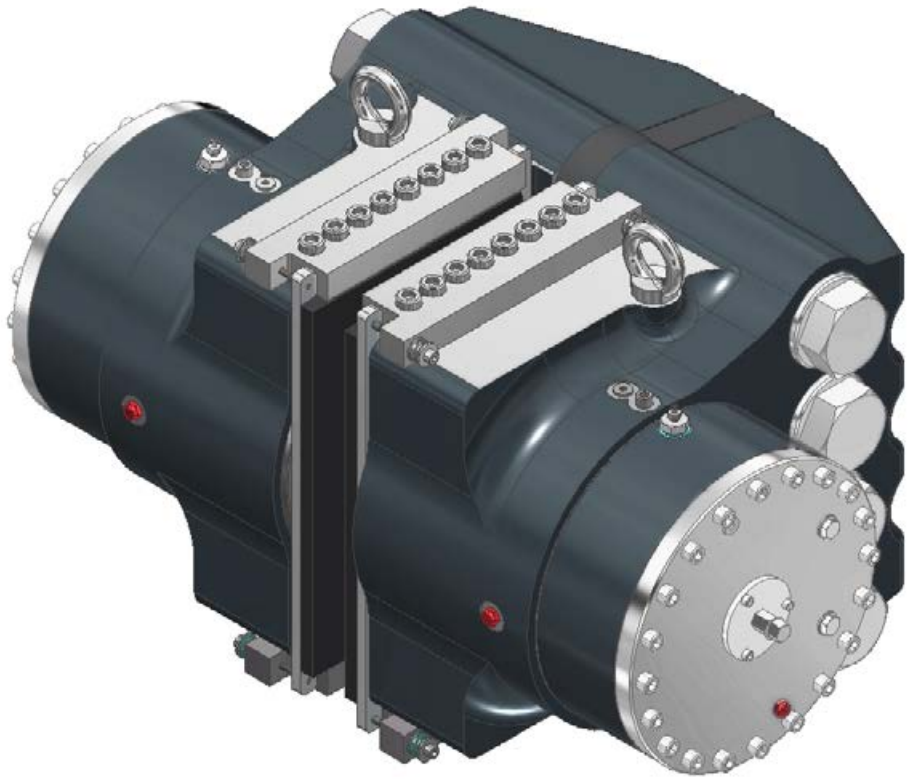

Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,142 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 008 – 400	60106-400	400	8,8	200	250
EBS 008 – 370	60106-370	370	9,8	185	235
EBS 008 – 330	60106-330	330	11,2	171	221
EBS 008 – 300	60106-300	300	12,9	155	205
EBS 008 – 270	60106-270	270	8,6	135	185
EBS 008 – 250	60106-250	250	9,6	125	175
EBS 008 – 225	60106-225	225	10,9	115	165
EBS 008 – 200	60106-200	200	12,7	105	165

Oil demand at 1 mm air gap: 51,5 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 1500 mm
Mass: 367,5 kg per caliper half (total mass: 735 kg)

All information based on 1 mm air gap per side, coefficient of friction μ = 0.34

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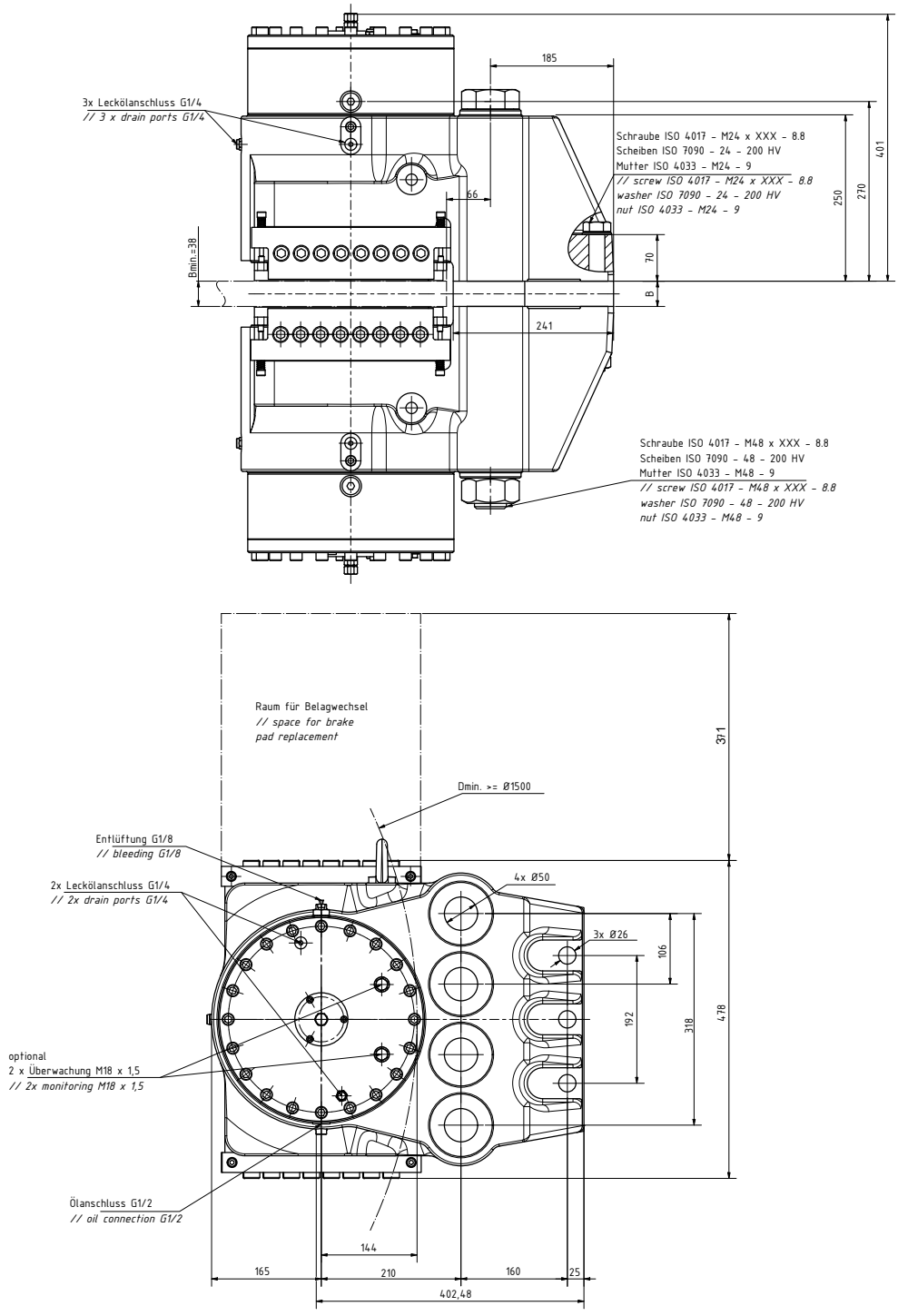

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ATEK
DRIVE SOLUTIONS
BRAKES·GEARS·MOTORS

FLOATING CALIPER BRAKES

Passive floating caliper brakes (safety brakes)

- **Spring-operated closing, hydraulically operated opening**

Features and applications

EBS FL stands for: Elephant Brakes Safety Floating
The modular floating caliper brake type EBS-FL has been designed to be reliable, robust and corrosion-resistant.
Important aspects are the long service life, low maintenance and the virtually wear-free disc springs.

The brakes in the EBS-FL series

... develop braking forces between 15 and 370 kN.

... are used where there is insufficient installation space for a two-module brake design or where economic interests are paramount.

... are designed in such a way that no significant moments are introduced into the upright construction.

... can be used with different brake disc thicknesses by arranging a lining plate between the spring brake module and floating calliper module.

... have an air gap prevention device to prevent the floating calliper module from touching the brake disc when the brake is released.

Typical areas of application for these spring-applied, hydraulically opening brake callipers are cranes, hoists and heavy industry.
A large area of application for these systems are holding and emergency stop brakes, which are closed by the spring when not in use.
Examples of applications include use as safety brakes in heavy industry, conveyor system construction and for lifting equipment of all kinds and, of course, in general mechanical engineering.

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Floating caliper brake of the EBS series

Braking forces from 15 - 370 kN

EBS 001 FL

- Braking force: 15 to 30 kN
- Opening pressure: 72 to 200 bar
- for brake discs ≥500 mm
- Total mass: 40 kg

EBS 002 FL

- Braking force: 29 to 47 kN
- Opening pressure: 91 to 135 bar
- for brake discs ≥500 mm
- Total mass: 80 kg

EBS 004 FL

- Braking force: 53 to 104 kN
- Opening pressure: 86 to 150 bar
- For brake discs ≥800 mm
- Total mass: 185 kg

EBS 006 FL

- Braking force: 80 to 180 kN
- Opening pressure: 68 to 165 bar
- For brake discs ≥1200 mm
- Total mass: 470 kg

EBS 008 FL

- Braking force: 180 to 370 kN
- Opening pressure: 105 to 200 bar
- For brake discs ≥1500 mm
- Total mass: 815 kg

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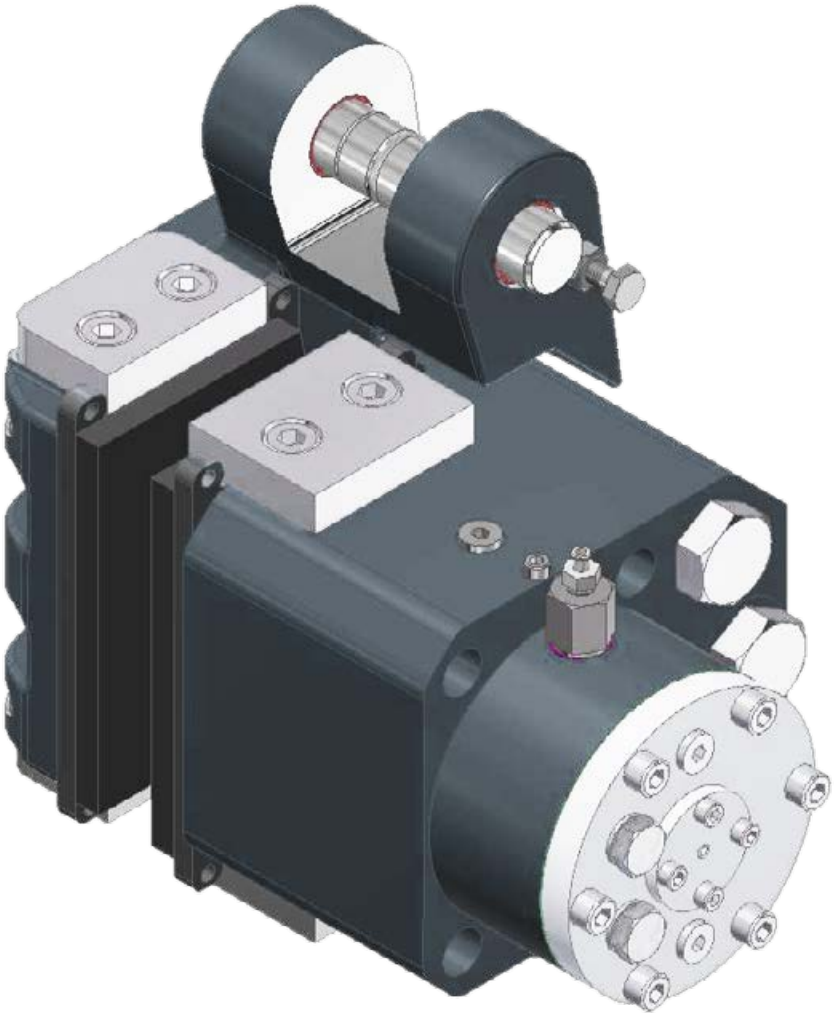

Bremsmoment M_{Br} [kNm] = Bremskraft [kN] eff. Bremsscheibenradius [m]
eff. Bremsscheibenradius = (0,5 × Bremsscheibenaußen-Ø [m]) – 0,049 m

Type	Part-No.	Braking force [kN]	Braking force loss per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 001 – 30 FL	60099-30FL	30	15,4	154	200
EBS 001 – 22 FL	60099-22FL	22	15,8	103	149
EBS 001 – 15 FL	60099-15FL	15	16,2	72	118

Oil requirement with 0.5 mm air gap per side: 2 cm^3
Brake suitable for mounting on brake discs to DIN 15432 Dmin. Ø ≥ 500 mm
Mass: 38 kg

All data based on 0.5 mm air gap per side, coefficient of friction μ = 0.34

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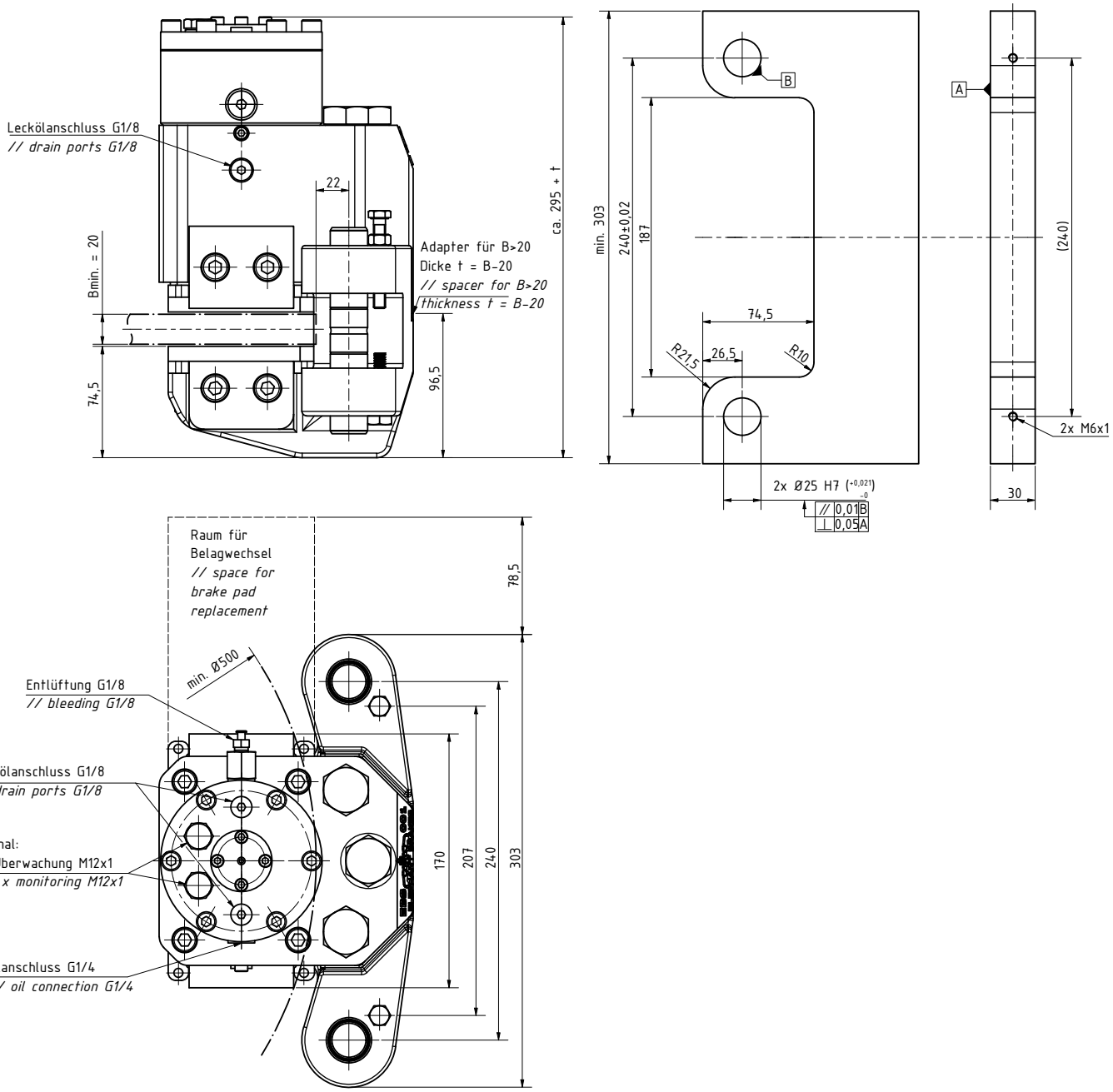

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Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,078 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 002 – 50 FL	60096-50FL	50	7,4	135	180
EBS 002 – 48 FL	60096-48FL	48	8	126	171
EBS 002 – 45 FL	60096-45FL	45	9	118	163
EBS 002 – 41 FL	60096-41FL	41	10	109	154
EBS 002 – 37 FL	60096-37FL	37	9,5	101	146
EBS 002 – 35 FL	60096-35FL	35	11,2	96	141
EBS 002 – 32 FL	60096-32FL	32	13,5	91	136

Oil demand at 1 mm air gap: 7 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 500 mm
Mass: 77 kg

All information based on 0,5 mm air gap per side, coefficient of friction μ = 0.34

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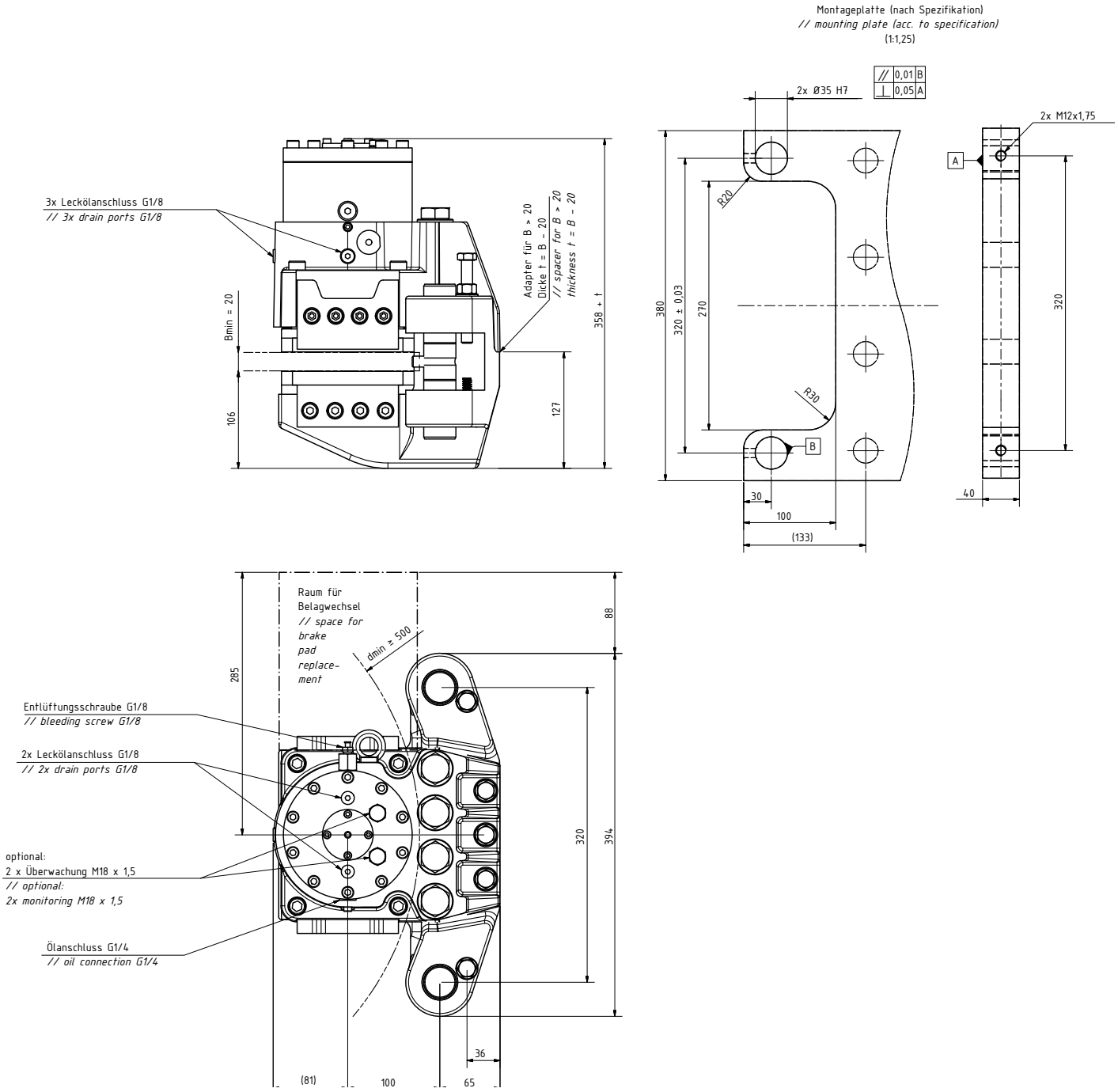

Fixing screws and nuts are not scope of supply.
Min. quality of fixing materials: 8.8

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Braking torque T_{Br} [kNm] = Braking force [kN] × eff. disc radius [m]
eff. disc radius = (0,5 × brake disc o/d [m]) – 0,095 m

Type	Part-No.	Braking force [kN]	Loss of force per 1 mm stroke [%]	$p_{min.}$ [bar]	$p_{max.}$ [bar]
EBS 004 – 104 FL	60095-104FL	104	7,7	150	195
EBS 004 – 96 FL	60095-96FL	96	7,9	138	183
EBS 004 – 88 FL	60095-88FL	88	8,1	131	176
EBS 004 – 80 FL	60095-80FL	80	8,3	121	166
EBS 004 – 72 FL	60095-72FL	72	8,5	112	157
EBS 004 – 68 FL	60095-68FL	68	8,8	105	150
EBS 004 – 61 FL	60095-61FL	61	9	97	142
EBS 004 – 53 FL	60095-53FL	53	9,3	86	131

Oil demand at 1 mm air gap per side: 28 cm^3
Brake suitable for mounting on brake discs according to DIN 15432 Dmin. Ø ≥ 800 mm
Mass: 126 kg

All information based on coefficient of friction μ = 0.34

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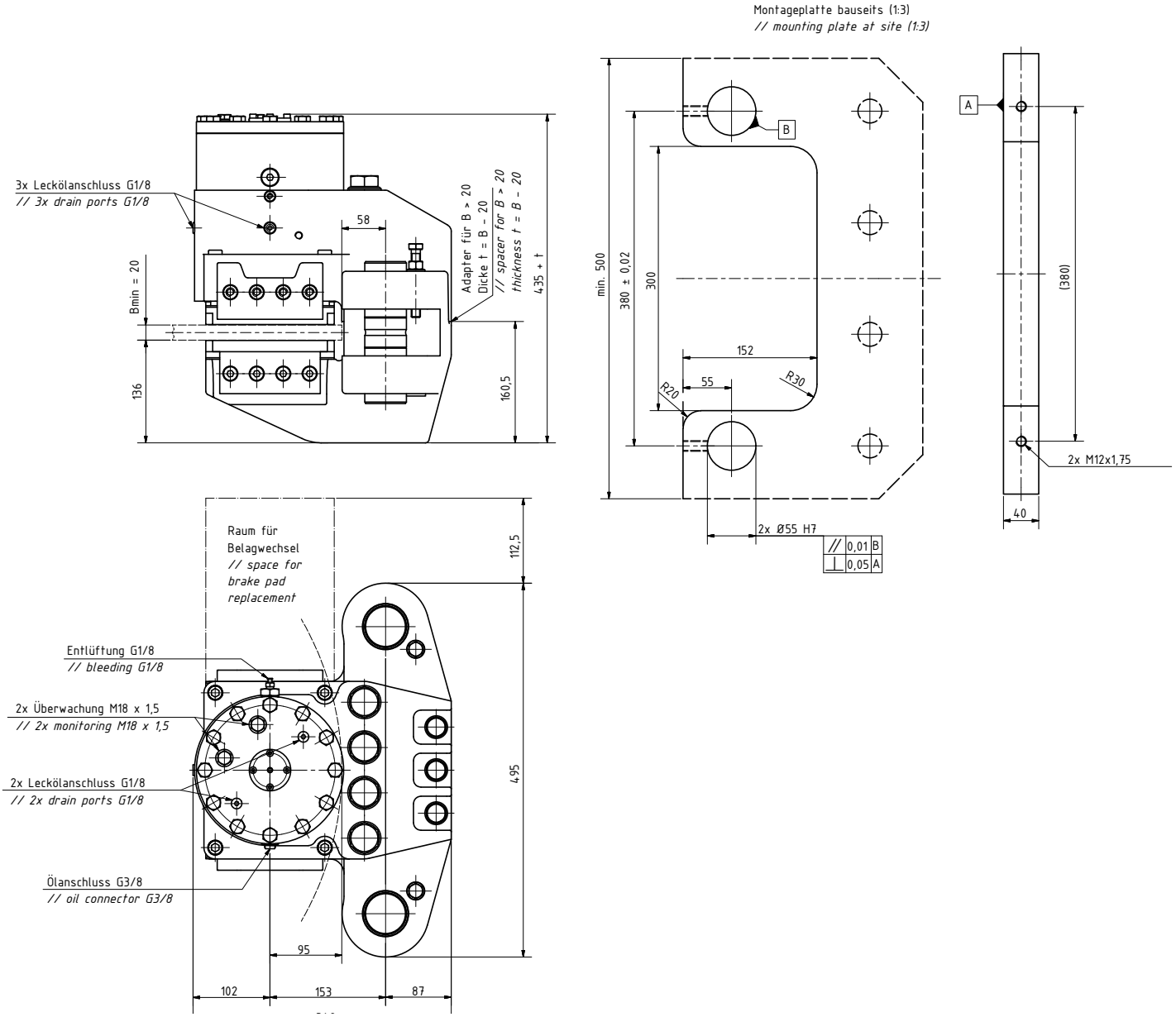

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ATEK
DRIVE SOLUTIONS
BRAKES·GEARS·MOTORS

SHAFT BRAKE SYSTEMS FOR SHIPS

Customized braking systems for your requirements

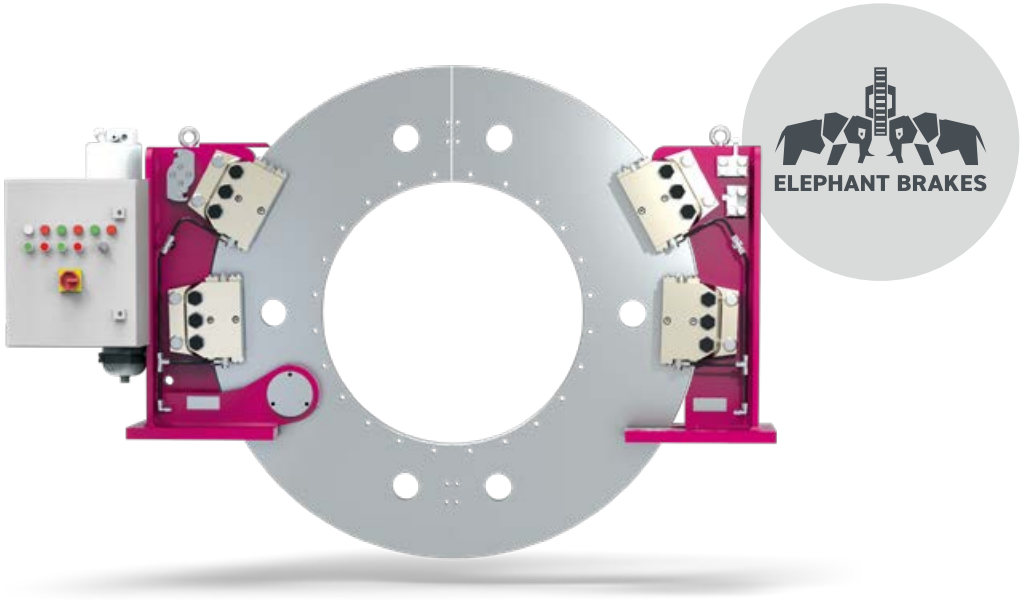
In the shipbuilding industry, ATEK Drive Solutions offers more than just individual components – we primarily provide completely customized, ready-to-install braking systems.

Our specialized services include:

- Design, calculation, and construction of hydraulic systems, steel structures, control systems, wiring, and piping.
- Custom painting according to customer requirements, up to the "Highest Yacht Standard."

We take into account the specific climatic challenges at sea, such as saltwater, humidity, heat, and frost. Thanks to special coatings, surface treatments, and the use of corrosion-resistant materials, we guarantee maximum durability and reliability.

To ensure the highest performance and safety at sea, we meet your individual requirements with maximum precision.



State-of-the-art quality and efficiency

To continuously ensure the highest technical standards, we rely on selected materials, modern machinery, and premium-grade materials. Our employees regularly participate in internal and external training to ensure precise delivery according to customer-specific requirements.

A key advantage is our short delivery times: optimized processes, efficient warehousing, and forward-looking production planning guarantee fast and punctual provision. This reduces your waiting times to a minimum and enables the reliable implementation of your projects.

In addition, we offer the delivery of our products as individual parts to allow for easy and flexible on-site assembly. This ensures you benefit from maximum efficiency, adaptability, and reliability.

Your advantages with our customized solutions:

- Secure locking of shafts and propellers.
- No impairment during maneuvering.
- Securing moving parts during maintenance and repair work, e.g., when divers are deployed.
- Safety and control when braking the propeller shaft during reversing maneuvers.

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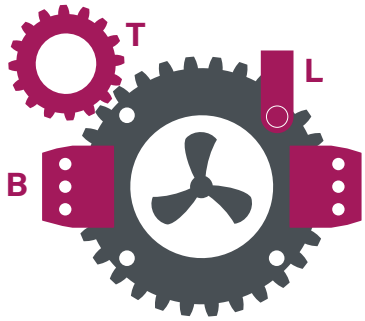
Our comprehensive range of services:

- Shock verification, e.g., according to British Naval Standard BR3021
- Splined and smooth brake discs
- Split and non-split brake disc designs with hubs for radial installation
- Mounting and removal devices for split brake discs
- Stainless steel brake discs
- Individual turning, locking, and braking options
- Component approval according to the requirements of international classification societies, such as DNV GL, Bureau Veritas, Lloyd's Register of Shipping
- Technical acceptance of systems including FAT (Factory Acceptance Test) directly at our facility
- Customer-specific painting available

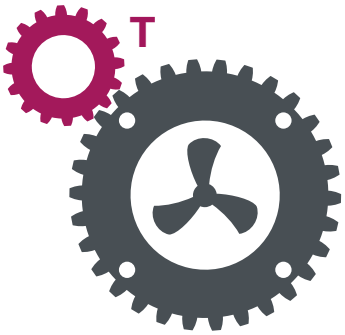
Turning, Locking, Braking – Combine As You Wish



A classic shaft brake system consists of a **turning unit (T = Turning), a locking device (L = Locking), and a shaft brake (B = Braking), a power unit for brake activation (e.g. hydraulics) and a control system.**

But there is a simpler way: We supply **custom-designed systems** ranging from straightforward, cost-effective solutions to complex premium configurations, with numerous possible combinations – for example, systems without a turning unit or with a cylinder-actuated turning system.

Combine according to your requirements and preferences.



Turning

- Shaft turning at low speed, e.g. in the harbor, even with the gearbox disengaged
- Controlled shaft rotation during installation, maintenance, and service

Locking

- Shaft locking during maintenance and service work
- Prevention of hydrodynamic rotation while not in operation

Braking

- Rapid shaft stoppage
- Support during reversing
- Improved maneuverability
- Support for shaft deceleration
- Prevent hydrodynamic rotation while out of operation

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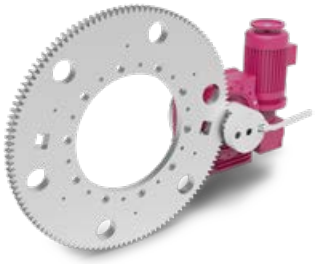
Turning gear

Turning gear
Type S200

Size 1 (BG1)

Breakaway torque:
32 kNm

Continuous torque:
16 kNm

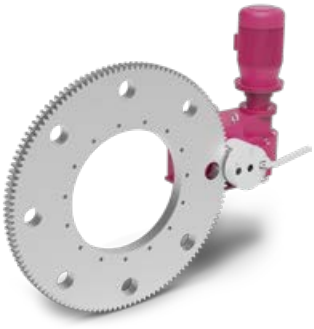


Turning gear
Type S250

Size 2 (BG2)

Breakaway torque:
72 kNm

Continuous torque:
36 kNm



Turning gear
Type S350

Size 3 (BG3)

Breakaway torque:
190 kNm

Continuous torque:
95 kNm

Locking device

Locking device

Locking bolt diameter:
up to 200 mm

Locking torque:
up to 3,500 kNm

Other sizes available
on request

Braking systems

Elephant brakes
4 × Type EB500

Hydraulically operated closing, spring operated opening

Braking force*:
> 400 kN

Elephant brakes
4 × Type EB600

Hydraulically operated closing, spring operated opening

Braking force*:
> 750 kN

Control system and power unit

Control System

The entire control of the braking system is handled by a freely configurable control system. This is, among other things:

Flood-proof

ATEX-compliant

CSA/UL-compliant

With analogue or digital design

Power Unit

Electrified/electro-hydraulic

Low maintenance

Powerful

Noise level:
<62 dB(A) possible

* Dependent on the coefficient of friction of the friction lining

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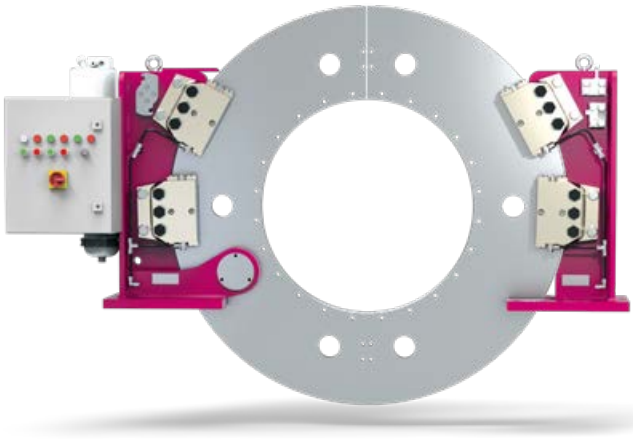
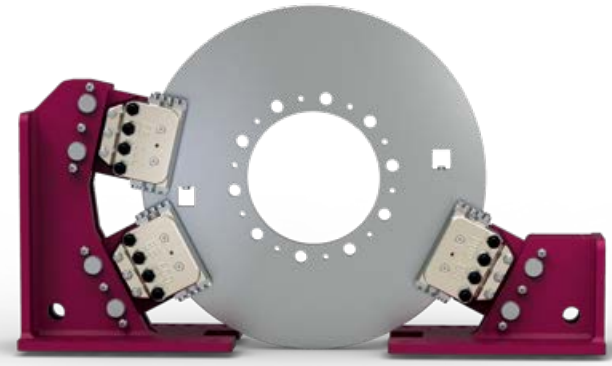


Shaft brake system with locking device

- Braking torque: 60 kNm
- Operating pressure: 50–60 bar
- Locking torque: 227 kNm
- Brake disc: 1500 × 50 mm
- Rotational speed: 50 rpm
- Hydraulic power unit: CA-2.4
- Incl. control systemw

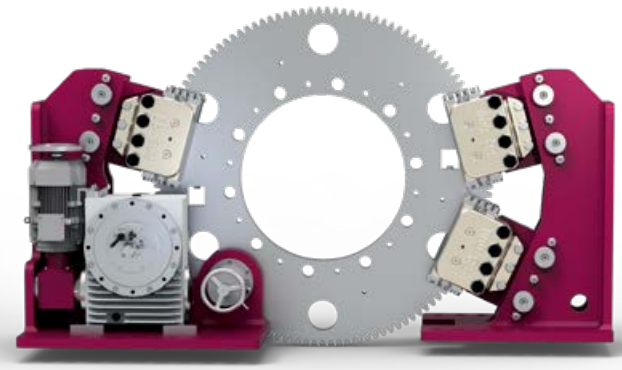
Shaft brake system

- Braking force at 100 bar: 274 kN
- Max. operating pressure (open): 0.5 bar
- Max. operating pressure (closed): 6 bar
- Pressure multiplier ratio: 1/16



Shaft brake system

- Braking torque (static): 370 kNm
- Brake disc: 1550 × 50 mm
- Operating pressure (static): 150 bar
- Rotational speed: 77 rpm



Shaft brake system with locking device and turning gear

- Braking torque (static): 370 kNm
- Brake disc: Ø 1536 × 65 mm
- Operating pressure (static): 150 bar
- Locking torque: 900 kNm
- Rotational speed: 70 rpm
- Turning gear breakaway torque: 50 kNm
- Turning gear continuous torque: 25–33.3 kNm
- Shockproof design of the brake system

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ATEK
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BRAKES·GEARS·MOTORS

BRAKE ACCESSORIES

Brake discs

Hubs

Clamping elements

Normex couplings

Tooth couplings

Controller, pneumatic

Electro-pneumatic tension control systems

Ultrasonic sensors

Assembly stands

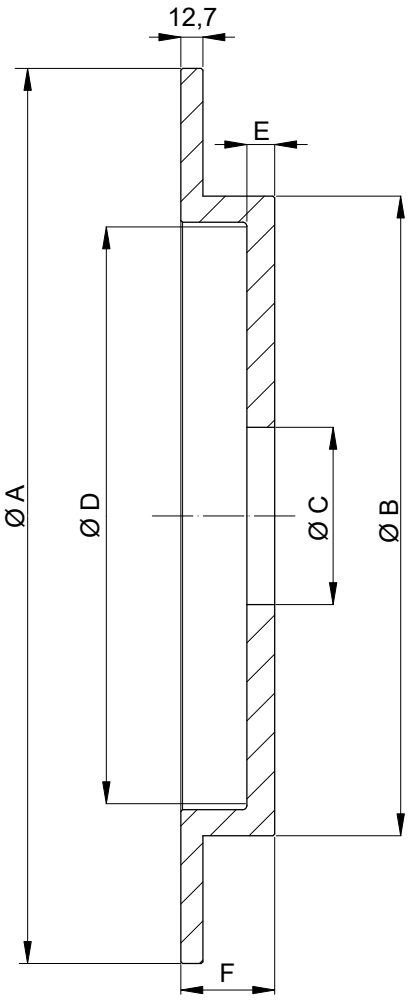
Compressor system

Mineral oil selection for hydraulic brakes

Mounting plates of the EBS-series

Lever stop for lever brake type RH 100

Lever stop for RH brakes



Material: EN-GJS-400-15
C = pilot bore

Nominal-Ø [mm]	Item-No.	Part-No.	Ø A [mm]	Ø B [mm]	Ø C [mm]	Ø D [mm]	E [mm]	F [mm]	J [kgm²]	Mass [kg]
915	502.091.001	10027	915	760	250	718	25	54	11,0	110
810	502.081.001	10026	812	660	102	616	25	54	6,5	87
710	502.071.001	10024	711	565	102	527	19	54	3,1	51
610	502.061.001	10017	610	464	102	434	16	54	1,6	34,2
515	502.051.001	10015	514	368	102	338	16	54	0,8	23,2
460	502.046.001	10011	457	311	102	281	16	54	0,5	18,2
400	502.040.001	10009	406	260	102	235	13	54	0,3	13
350	502.035.001	10007	356	210	60	185	16	54	0,2	10,9
300	502.030.001	10005	300	181	51	157	13	41	0,1	7
250	502.025.001	10002	250	128	30	112	6	36	0,035	4

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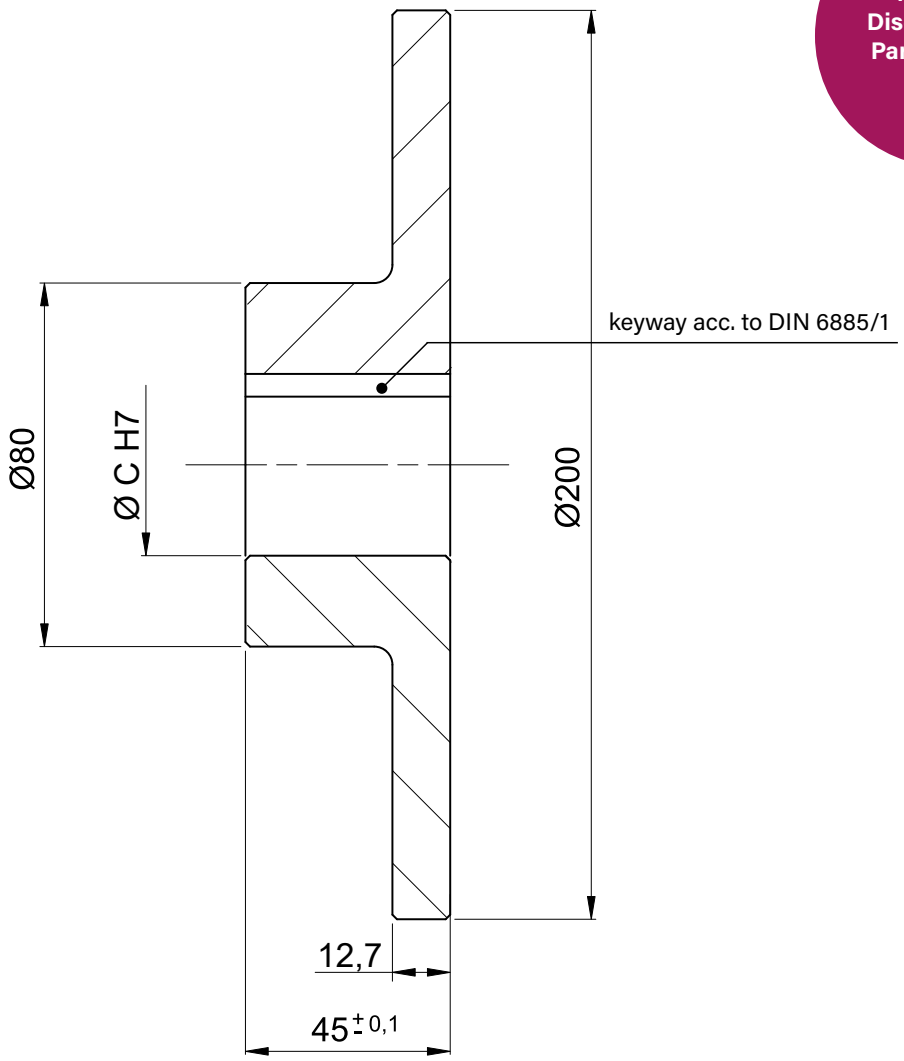
NOTICE:
Disc undrilled
Part number:
10831



Dimension C acc. to customer requirements max. Ø 60
Edges 1,5 × 45° chamfered
Material: EN-GJS-400-15
Mass: 4 kg (w/o centre bore)

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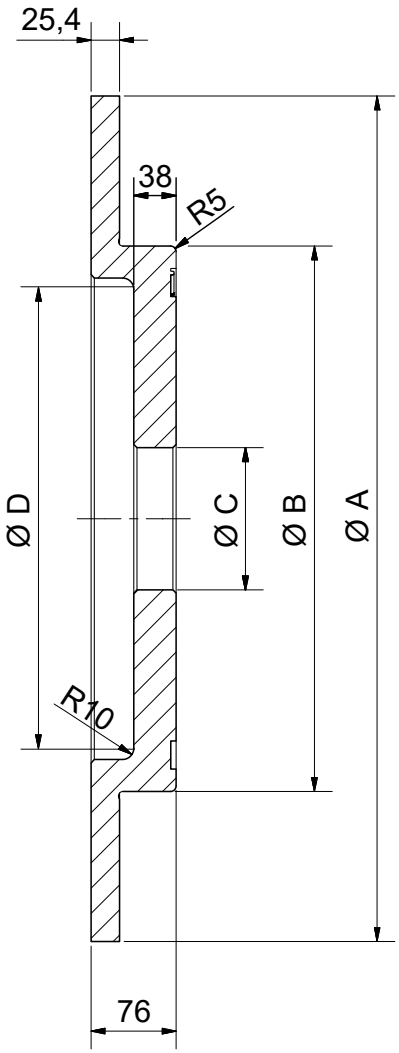

Material: EN-GJS-400-15
C = pilot bore

Part-No.	Ø A [mm]	Ø B [mm]	Ø C [mm]	Ø D [mm]	J [kgm²]	Mass [kg]
10751	1820	1523	915	1463	249	533
10032	1520	1220	450	1160	123	401
10031	1220	915	240	855	50	278
10029	1000	732	240	682	22,4	186
10028	915	647	240	587	16,2	150
10331	810	542	127	482	9,7	130
11465	755	487	127	420	6,6	107
10025	700	432	127	372	5	90
10018	610	343	127	283	2,9	67,2

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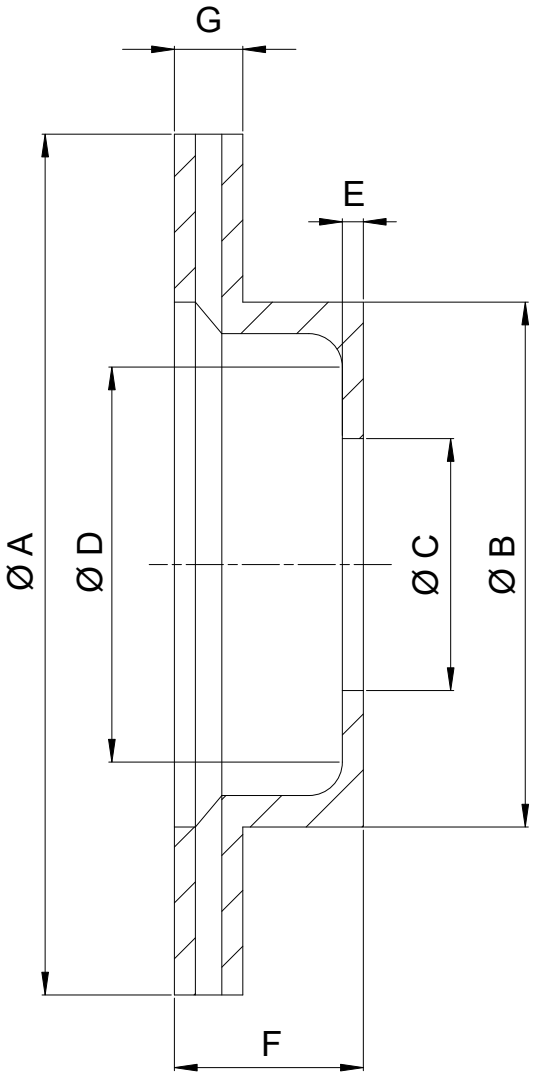

Material: EN-GJS-400-15
C = pilot bore

Nominal-Ø [mm]	Item-No.	Part-No.	Ø A [mm]	Ø B [mm]	Ø C [mm]	Ø D [mm]	E [mm]	F [mm]	G [mm]	J [kgm²]	Mass [kg]
610	504.061.001	10019	610	404	127	374	22	60	25,4	1,95	41
460	504.046.001	10012	457	311	102	286	16	60	25,4	0,65	21,5
270*	504.027.001	10003	270	140	88	127	8	59	22	0,06	5,8

*w/ 5 × Ø10,5 mm bolt circle: Ø108

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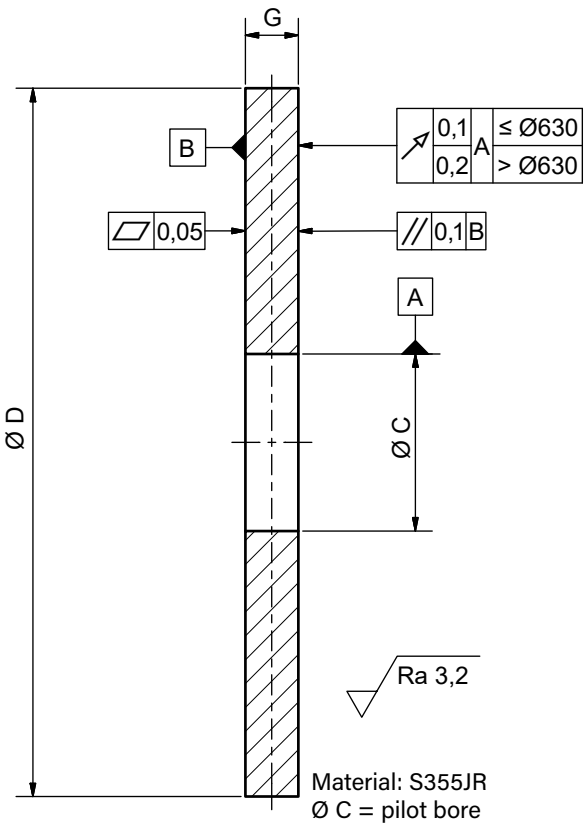

edges: 1 × 45°

tolerances:
ISO 2768-mH

Part-No.	Ø C [mm]	Ø D [mm]	G [mm]	J [kgm²]	Mass [kg]
12805	50	250	15	0,045	5,5
11055	50	315	15	0,045	9,0
12806	50	315	30	0,228	18,0
11056	75	355	15	0,184	11,2
12809	75	355	30	0,368	22,4
11057	100	400	15	0,298	14,0
12811	100	400	30	0,595	28,0
11058	100	450	15	0,475	17,9
12813	100	450	30	0,95	35,8
11059	100	500	15	0,725	22,3
12815	100	500	30	1,45	44,6
12816	125	560	15	1,14	27,7
12817	125	560	30	2,28	55,5
11061	125	630	15	1,83	35,5
12819	125	630	30	3,66	71,0
12820	125	710	15	2,96	45,5
12821	125	710	30	5,91	91,0
12822	150	800	15	4,76	57,5
12823	150	800	30	9,52	115,0
12824	150	900	30	15,26	146,6
12825	200	1000	30	23,23	178,7

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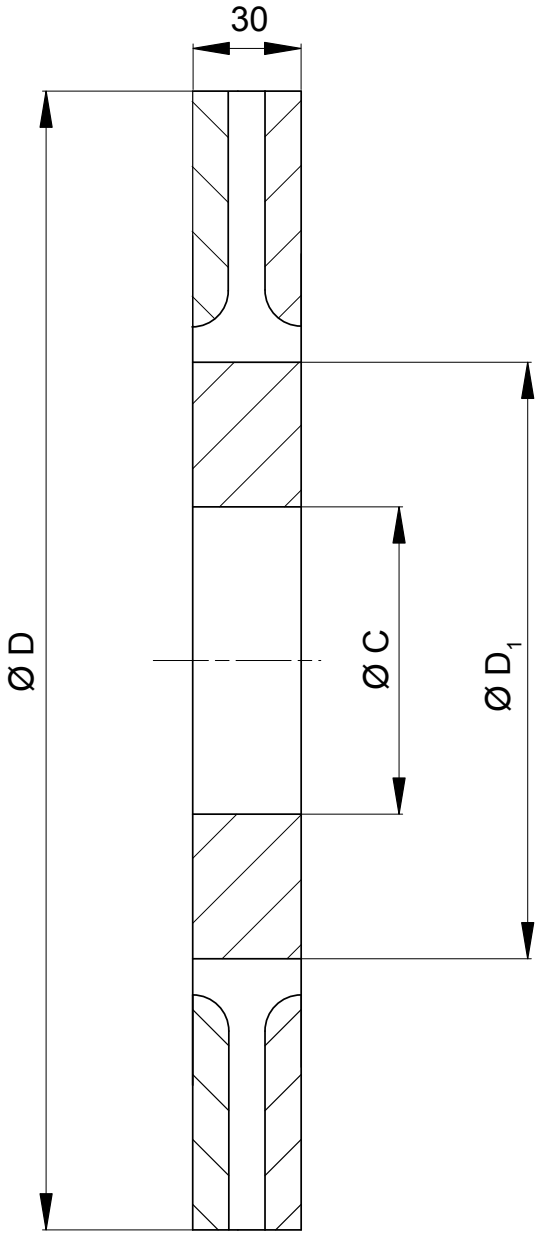

Material: EN-GJS-400-15

Nominal-Ø [mm]	Part-No.	Ø D [mm]	Ø C [mm]	Ø D_1 [mm]	Mass [kg]
315	11062	315	85	145	11
355	11063	355	105	185	13
400	11064	395	115	230	18,2
450	11065	445	120	276	23,2
500	11066	495	140	326	27
550	11067	550	170	380	31
630	11068	625	170	450	44

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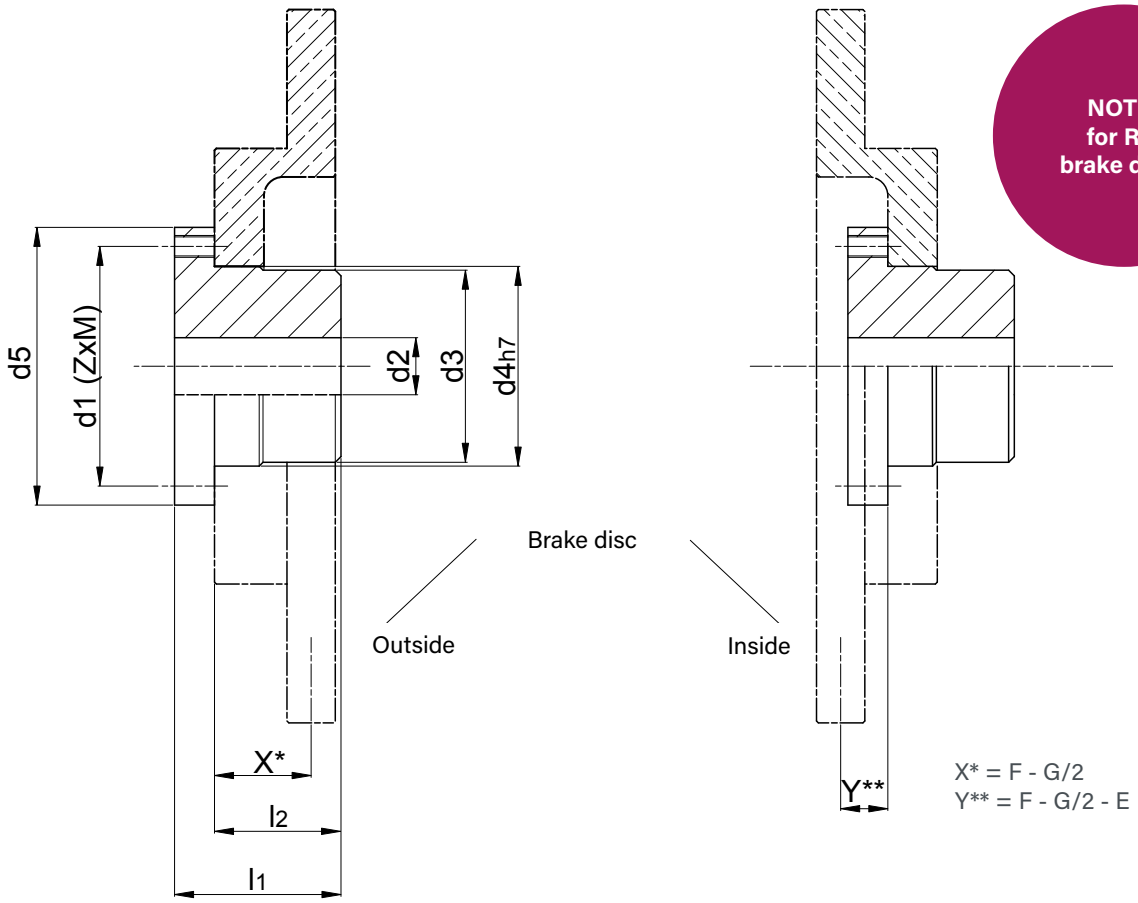

Material: S 355 / C 35
Hubs on request with finish bore (acc. to ISO-H7) and keyway (acc. to DIN 6885/1 available).

Size	Item-Nr.	Part-No.	Mass [kg]	J [kgm²]	for brake disc sizes [mm]
V	601.380.001	10752	190	3,9	Ø 810 – Ø 1600
IV	601.242.001	10154	54	0,68	Ø 515*** – Ø 810
III	601.147.001	10153	15,5	0,18	Ø 400 – Ø 810
II	601.105.001	10152	7	0,04	Ø 300 – Ø 610
I	601.055.001	10151	1	0,003	Ø 250 & Ø 300

***not Ø610 × 25,4

Size	Item-Nr.	d1 [mm]	d2 [mm]	d3 [mm]	d4 [mm]	d5 [mm]	l1 [mm]	l2 [mm]	Z [mm]	M
V	601.380.001	405	110 – 230	368	370	438	240	200	24	M 20
IV	601.242.001	274	100 – 150	241	242	308	176	143	11	M 16
III	601.147.001	175	60 – 95	146	147	200	117	93,5	10	M 12
II	601.105.001	126	28 – 65	104,5	105	146	87	66,5	8	M 10
I	601.055.001	69	12 – 35	54,5	55	81	49	38,5	5	M 6

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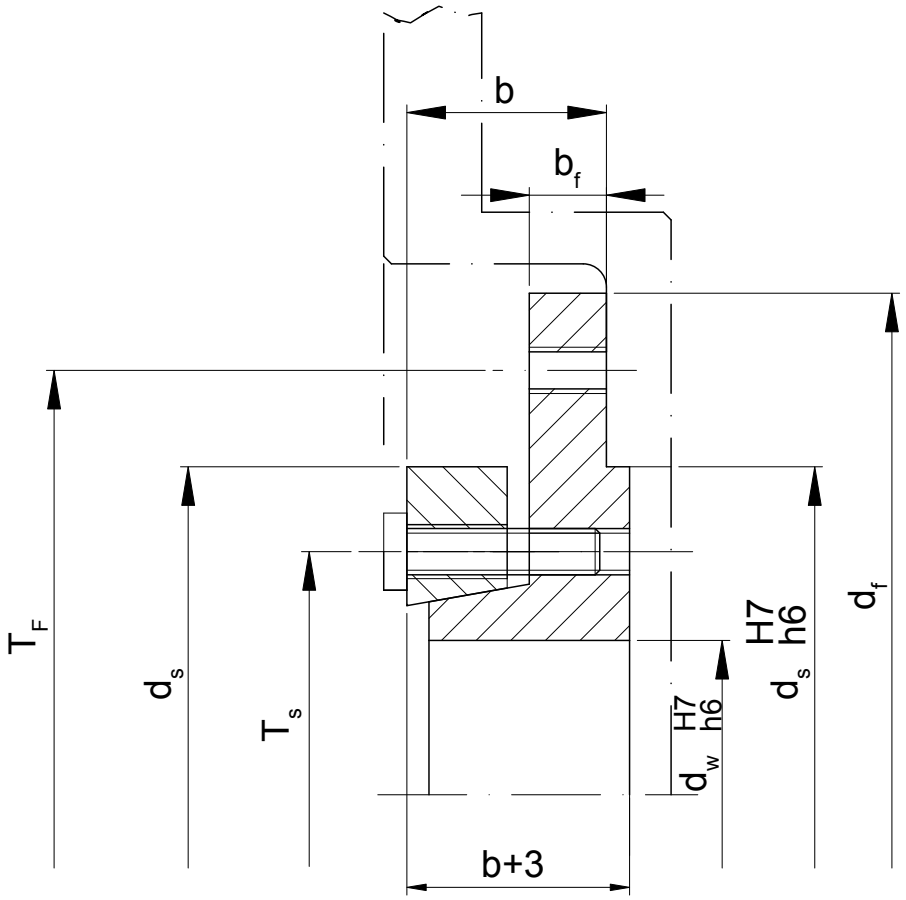

NOTE:
Observe pre-turning dimension C for offset brake discs

Part-No.	M_t [Nm]	d_w [mm]	d_F [mm]	b [mm]	d_s [mm]	T_s [mm]	Z_s	M_{As} [Nm]	T_F [mm]	Z_F	M_{AF} [Nm]	b_F [mm]	Mass [kg]
12855	310	30	105	23	70	54	6/M 6	12	90	4/M 6	12	8	1
12963	450	35	110	23	75	59	7/M 6	12	95	5/M 6	12	8	1,1
12964	645	40	130	26	85	64	8/M 6	12	110	4/M 8	30	10	1,3
12965	850	45	135	26	90	68	9/M 6	12	115	4/M 8	30	10	1,4
12966	1100	50	140	27	95	73	10/M 6	12	120	5/M 8	30	10	1,7
12967	1375	55	150	27	105	78	11/M 6	12	130	5/M 8	30	10	1,9
12868	1725	60	155	28	110	84	12/M 6	12	135	6/M 8	30	10	2
12968	1940	65	170	30	125	95	7/M 8	30	150	7/M 8	30	10	2,6
12955	2500	70	180	30	135	100	8/M 8	30	160	8/M 8	30	10	3,1
12791	3000	75	195	34	140	105	9/M 8	30	170	6/M 10	59	12	3,6
12969	3650	80	200	34	145	110	10/M 8	30	175	7/M 10	59	12	4,1
12970	4150	85	210	37	155	118	11/M 8	30	185	7/M 10	59	12	4,8
12971	4950	90	215	37	160	123	12/M 8	30	190	8/M 10	59	12	5,4
12883	7350	100	235	40	180	138	10/M 10	59	210	10/M 10	59	12	5,7

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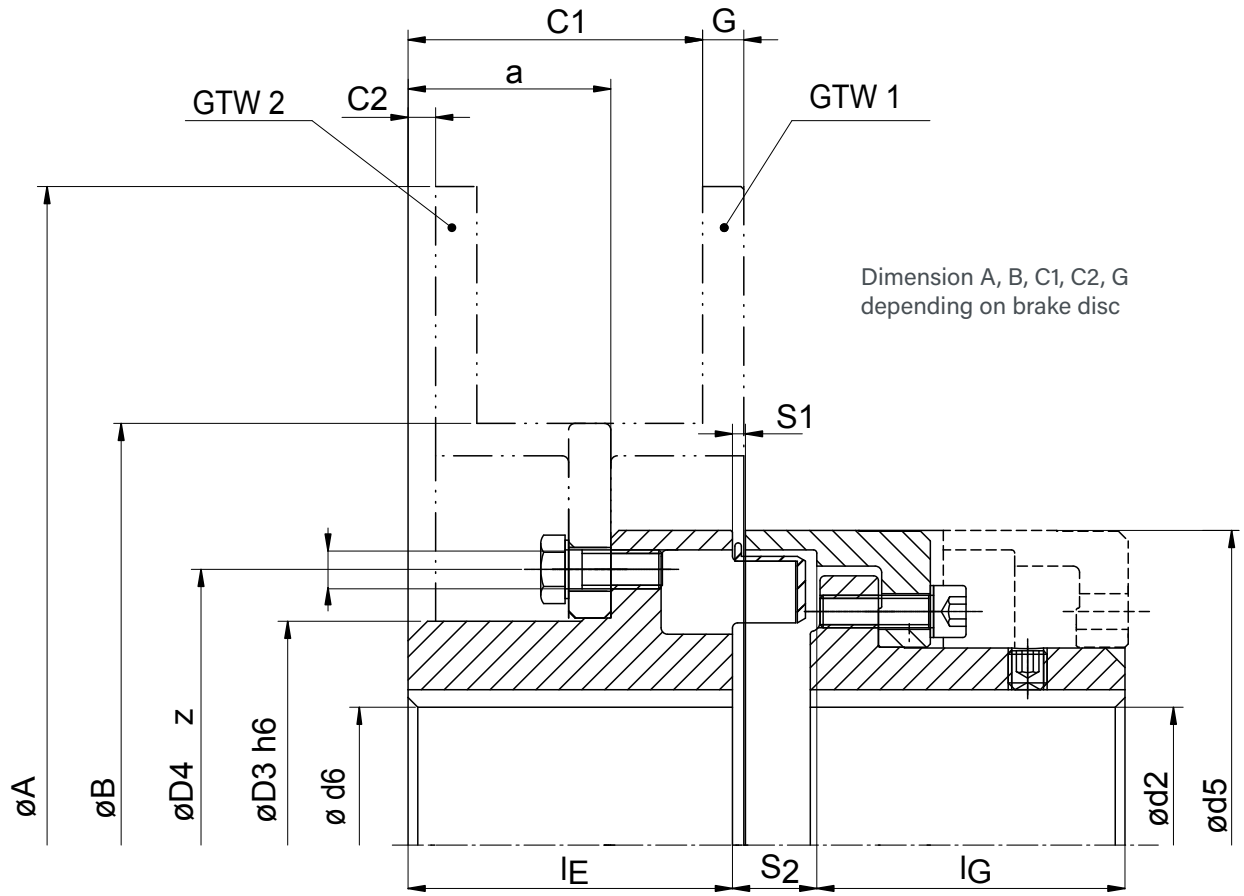

Part-No.	Ø d5 [mm]	TKN [Nm]	Tk_{max} [Nm]	N_{max} [min^{-1}]	max. Ø d2 [mm]	max. Ø d6 [mm]	l_E [mm]	l_G [mm]	a [mm]	S_1 [mm]	S_2 [mm]	D3 H7/h6 [mm]	D4 [mm]	z	M	m [kg]	J [kgm^2]
12391	112	150	310	6000	46	42	60	58	38,5	3,5 ± 1,0	15 ± 1,0	69	87	6	M 8	5	0,006
12392	128	250	500	5000	53	52	70	68	45,5	3,5 ± 1,0	16 ± 1,0	86	106	6	M 8	7,9	0,012
12786	148	390	800	4500	65	58	80	78	52,5	3,5 ± 1,0	18 ± 1,0	95	120	6	M 10	12,3	0,022
12794	168	630	1.300	4000	75	72	90	87	56,5	3,5 ± 1,5	21 ± 1,0	120	145	8	M 10	18,3	0,049
12795	194	1.050	2.200	3500	85	85	100	97	62,5	3,5 ± 1,5	24 ± 1,5	140	170	8	M 12	26,7	0,096
12796	214	1.500	3.100	3000	95	92	110	107	68,5	4,0 ± 2,0	26 ± 1,5	155	185	9	M 12	35,5	0,160
12393	240	2.400	4.800	2750	100	102	120	117	75,5	4,0 ± 2,0	30 ± 2,0	170	200	10	M 12	45,6	0,263
12300	265	3.700	7.500	2500	115	120	140	137	90,5	5,5 ± 2,5	33 ± 2,5	200	230	10	M 16	65,7	0,457
12977	295	4.900	10.000	2250	130	130	150	147	98,5	8,0 ± 2,5	37 ± 2,5	220	260	10	M 16	83,9	0,736
12394	330	6.400	13.000	2000	135	150	160	156	104,5	8,0 ± 2,5	40 ± 2,5	250	280	10	M 16	126	1,296
11463	370	8.900	18.200	1750	160	170	180	176	118,5	8,0 ± 2,5	43 ± 2,5	280	320	11	M 16	177	2,288
12395	415	13.200	27.000	1500	180	185	200	196	135,5	8,0 ± 2,5	45 ± 2,5	310	350	12	M 16	249	4

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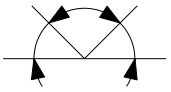
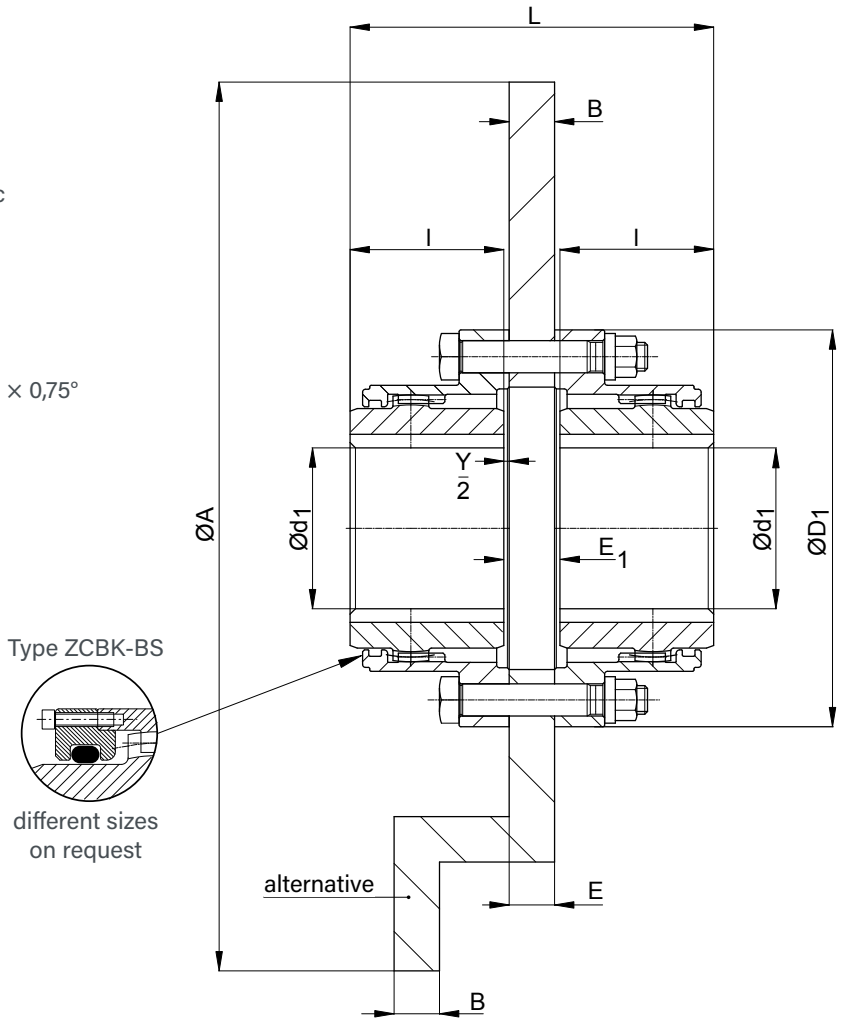
Dimensions A, B depending on brake disc
Dimension E1 = B + y or E + y
Dimension L = 2l + E1
Tk_{max} = 2 x Tkn

Angular misalignmen  2 × 0,75°



Part-No.	Size	TKN [Nm]	radial misali-gnment [mm]	n_{max} [min^{-1}]	d1 min - max [mm]	D1 [mm]	A min (cranked) [mm]	y [mm]	l [mm]	Mass [kg]	J (w/o bd) [kgm^2]
12556	ZCAK-BS 111	1750	0,42	6000	0 - 50	111	250	3	43	4	0,004
12557	ZCAK-BS 152	2750	0,51	4600	0 - 60	152	300	3	50	8,4	0,018
12558	ZCAK-BS 178	5500	0,66	4200	0 - 75	178	350	3	62	14,1	0,040
12559	ZCAK-BS 213	8500	0,77	4000	0 - 95	213	400	5	76	24,8	0,102
12560	ZCAK-BS 240	13500	0,99	3850	0 - 110	240	460	5	90	36,4	0,187
12561	ZCAK-BS 280	22000	1,15	3700	60 - 130	280	460	6	105	58	0,407
12562	ZCAK-BS 318	35000	1,33	3200	70 - 155	318	515	6	120	87	0,801
12563	ZCAK-BS 346	43000	1,5	2900	85 - 170	346	610	8	135	113,7	1,248
12564	ZCAK-BS 389	68000	1,75	2600	95 - 190	389	610	8	150	163,1	2,370

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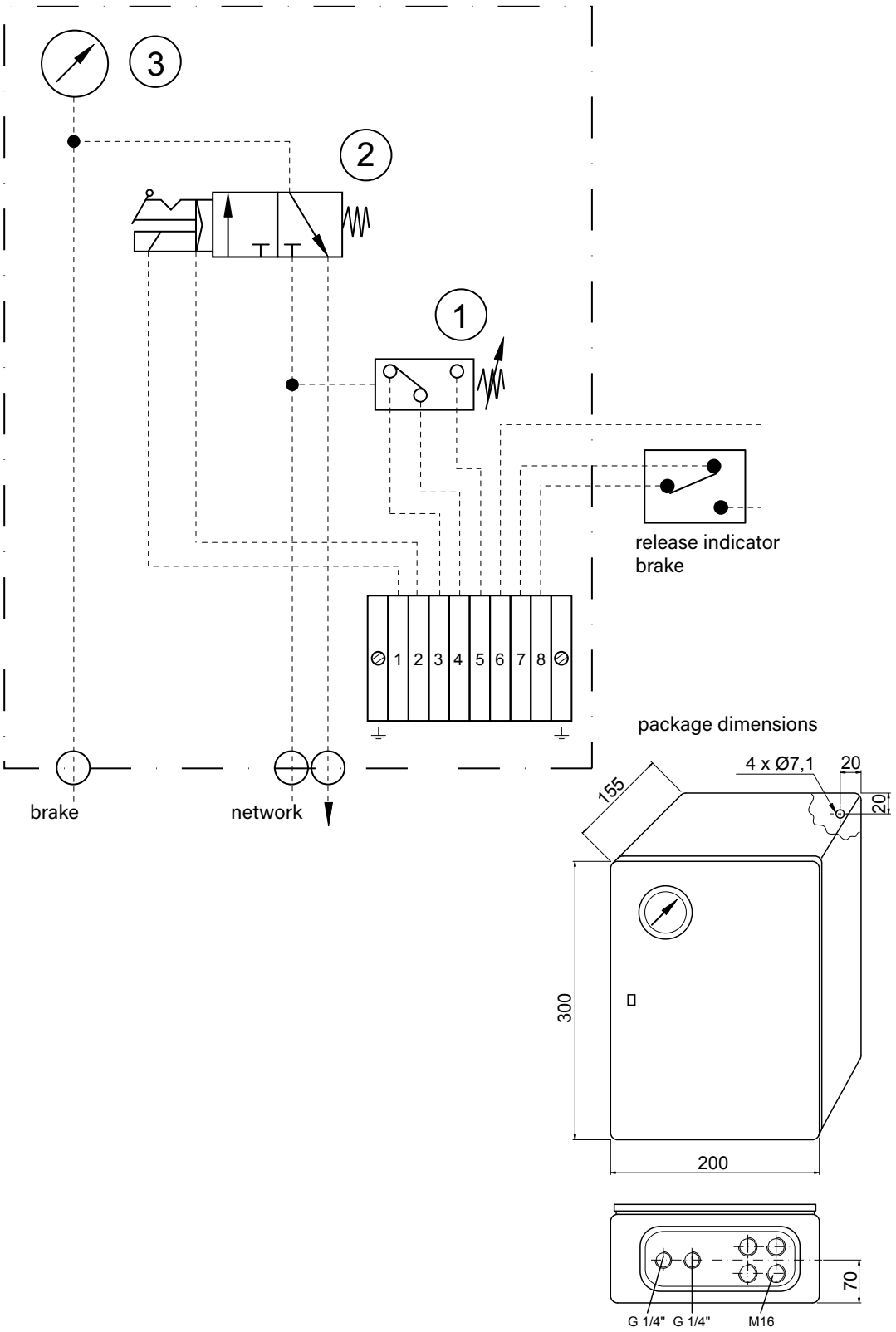

Valve voltage: 24 VDC

Item	Component	Part-No.
1	pressure switch – 0,5–10 bar	10197
2	electromagnetic valve 3/2 W, NW 7, 24 VDC	10170
3	manometer	12785

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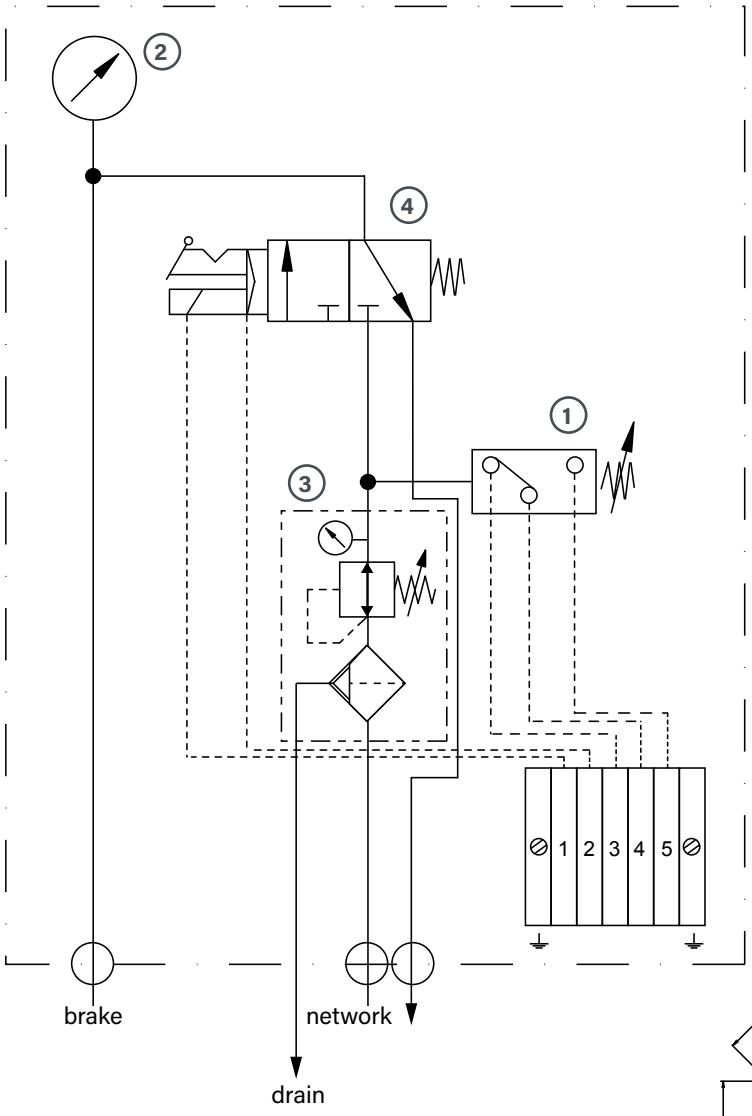

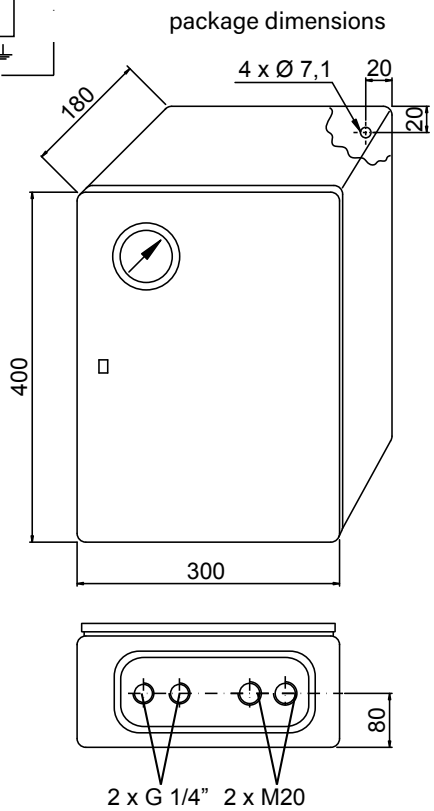

Item	Component	Part-No.
1	pressure switch – 0,5–10 bar	14297
2	manometer	12785
3	pressure regulation with filter oiler	13986
4	3/2-way-valve	13311

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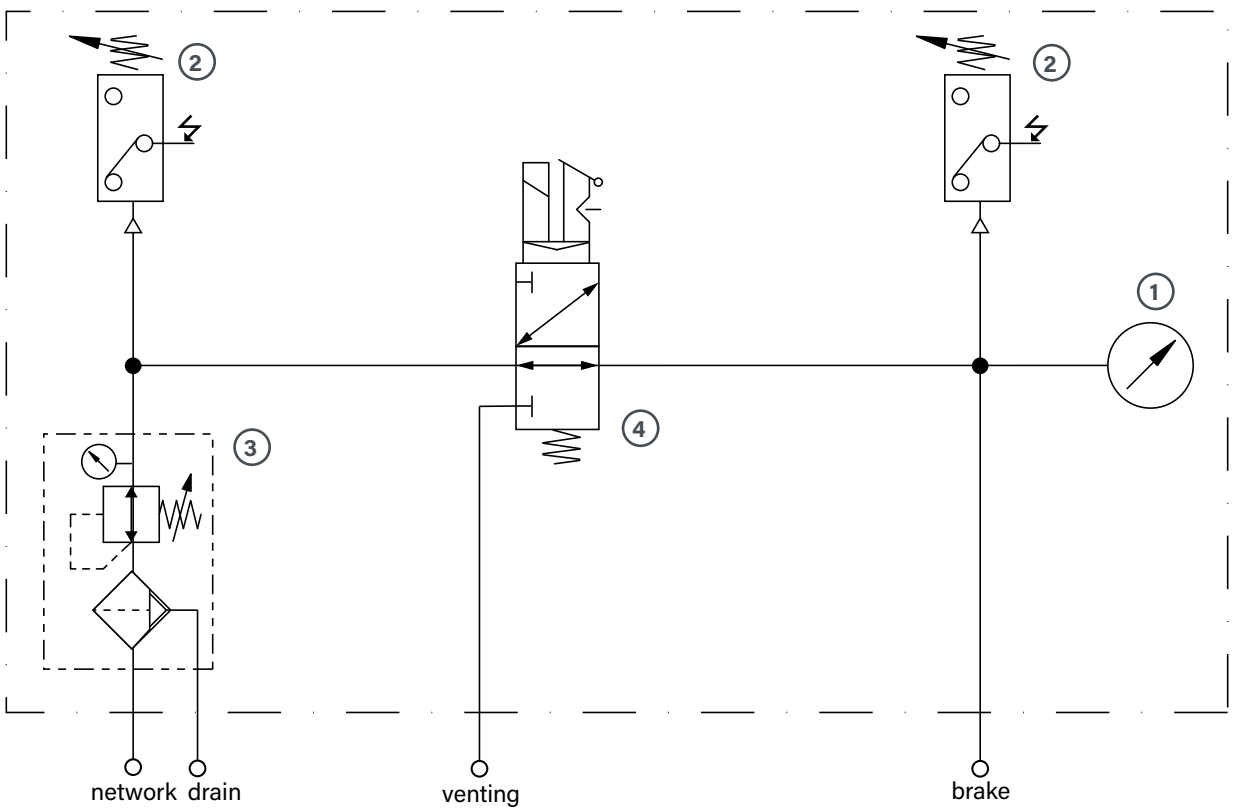
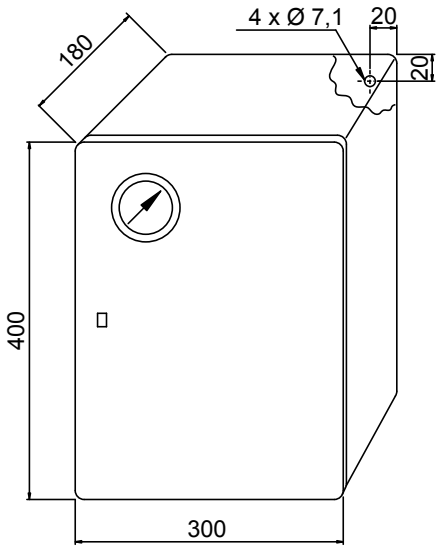
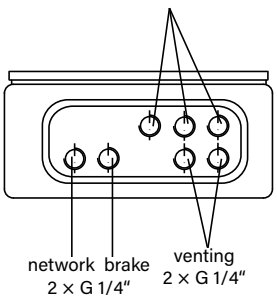


package dimensions



cable fitting M12



Item	Component	Part-No.
1	manometer	10195
2	pressure switch – 0,5–10 bar	10197
3	pressure regulation with filter oiler	13986
4	electromagnetic valve	10170

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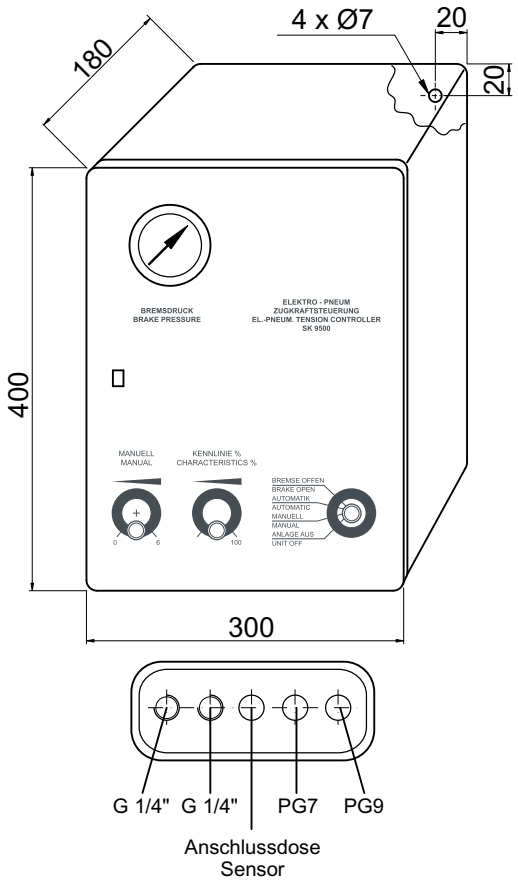
Technical Data:
(Standard – other values on request)

Input: Compressed air max. 6.5 bar (oil-free air 50 µ or better)
Output: Brake pressure 0 - 6 bar
Supply voltage: 230 VAC (+10 %) 50 / 60 Hz
Power consumption: 15 VA

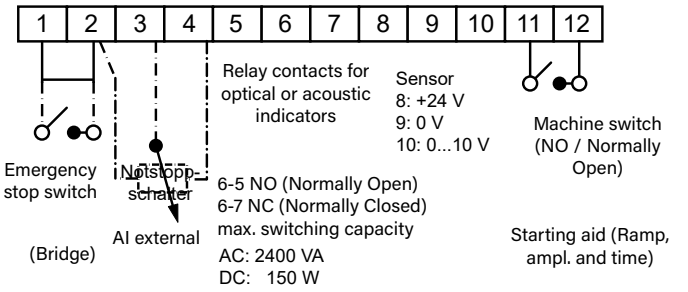
Additional Functions:

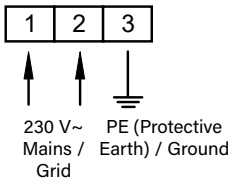
- Manual pressure control (switch position: Manual)
- Characteristic curve suppression in automatic mode
- Emergency stop
- Remaining roll detection
- Starting aid
- Damping elements

Housing dimensions



Connection diagram





Housing dimensions

Mode of Operation:

The electro-pneumatic tension control system adjusts the actuation pressure of pneumatic braking units as the winding diameter decreases. An ultrasonic sensor serves as the signal transmitter, detecting the distance to the respective winding diameter and outputting a proportional signal.

The device's electro-pneumatic converter transforms this signal into a corresponding brake pressure, which is then supplied to the brake. This ensures constant web tension throughout the entire winding process.

The braking force can be varied between 25% and 100% using a characteristic curve regulator. By switching the mode, it is possible to apply a manual control voltage. An additional switching option allows for brake venting (release).

Furthermore, the device includes a ramp control with adjustable time and amplitude. This function is activated by a closing machine switch (normally open or pulse contact) when the system is switched on. If the winding process becomes unstable, additional damping can be activated.

The device features an adjustable final pressure setting for the remaining roll. Additionally, the remaining roll status can be signaled optically or acoustically via a potential-free changeover contact.

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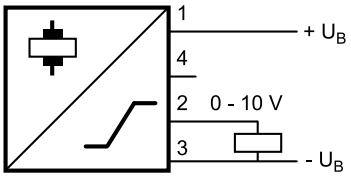

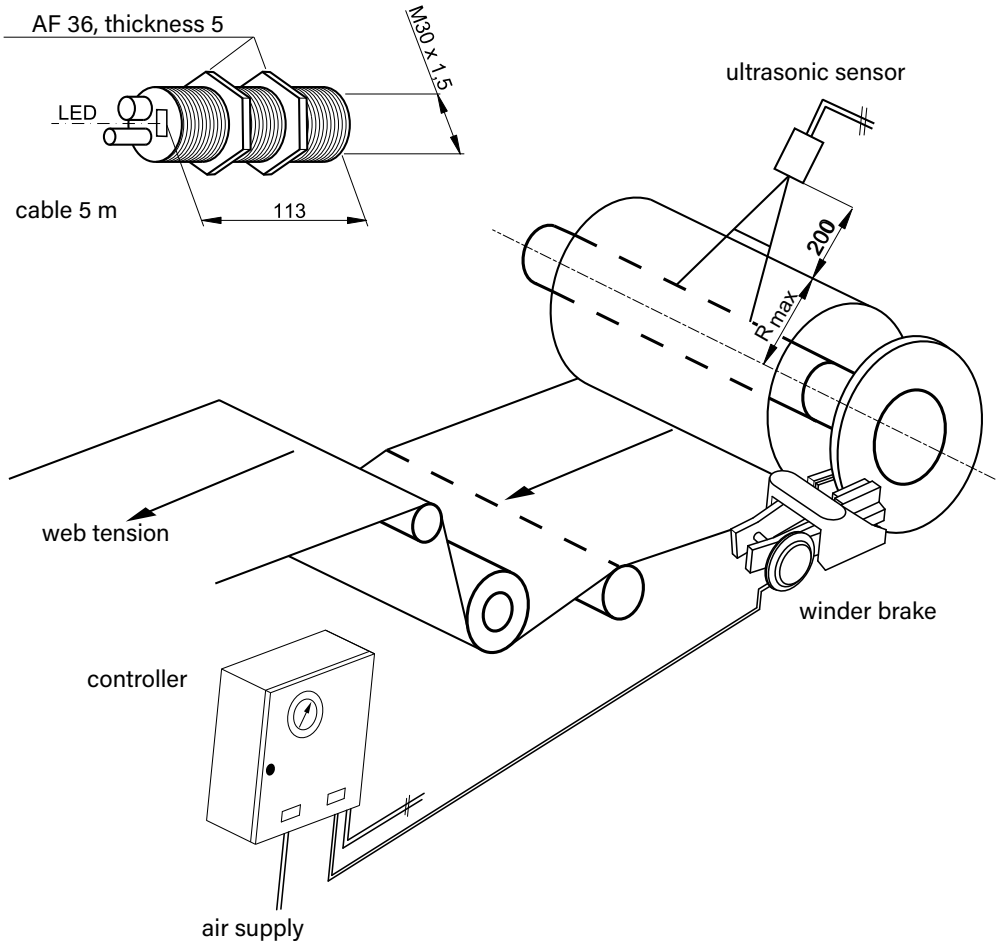

Techncal data:

- Sensor measuring zone (adjustable)
- 0,20 m – 2,00 m – Part-No.: 12511
- 0,03 m – 0,50 m – Part-No.: 12633
- Aperture angle of the sound beam: ca. 5°
- Linearity: ≤ 0,1 % of the terminal value
- Converter frequency: 175 kHz
- Analog signal output: 0...10 V
- Protection type: IP 65
- Ambient temperature: -25°C bis +70°C

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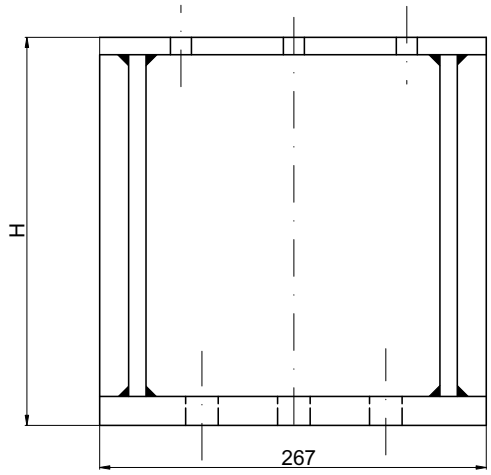
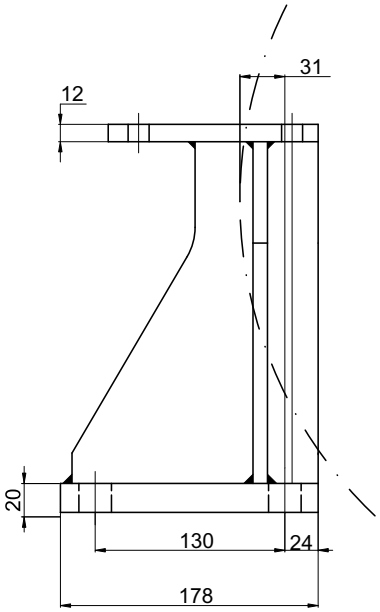
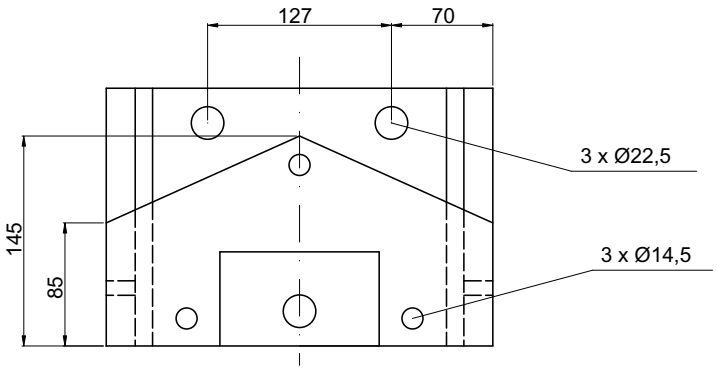
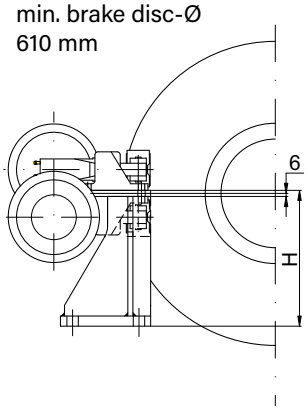
H [mm]	Part-No.
= 248	10144
to 300	10843
to 600	10822
to 800	10821



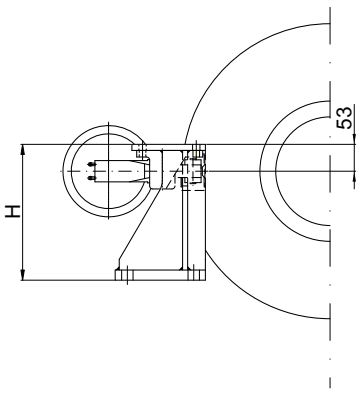


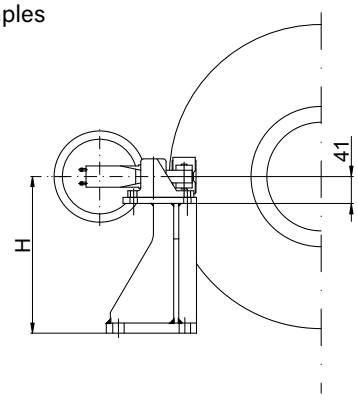


min. brake disc-Ø
610 mm



mounting examples





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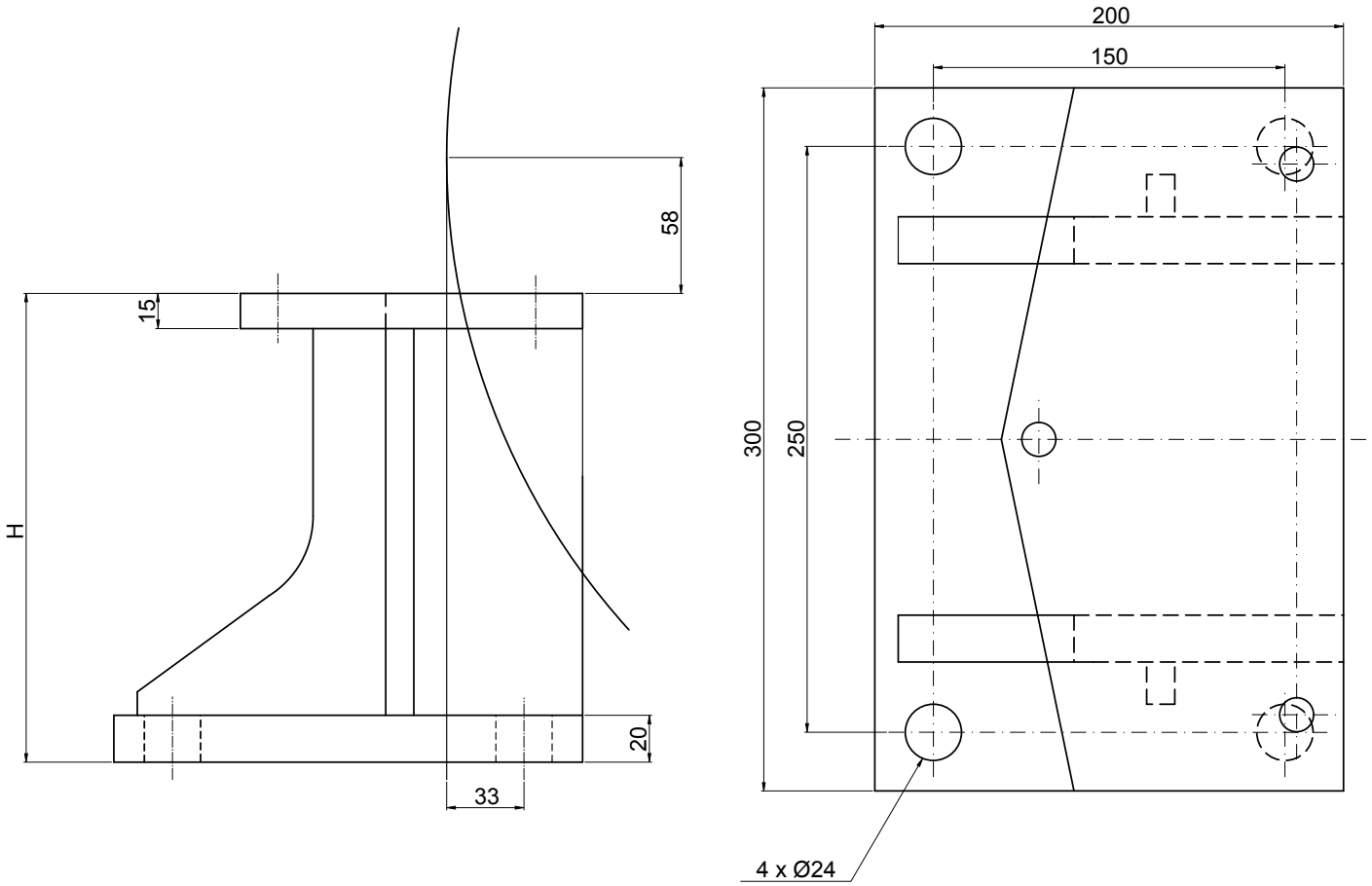
H [mm]	Part-No.
to 300	12686
to 500	12687
to 800	12688



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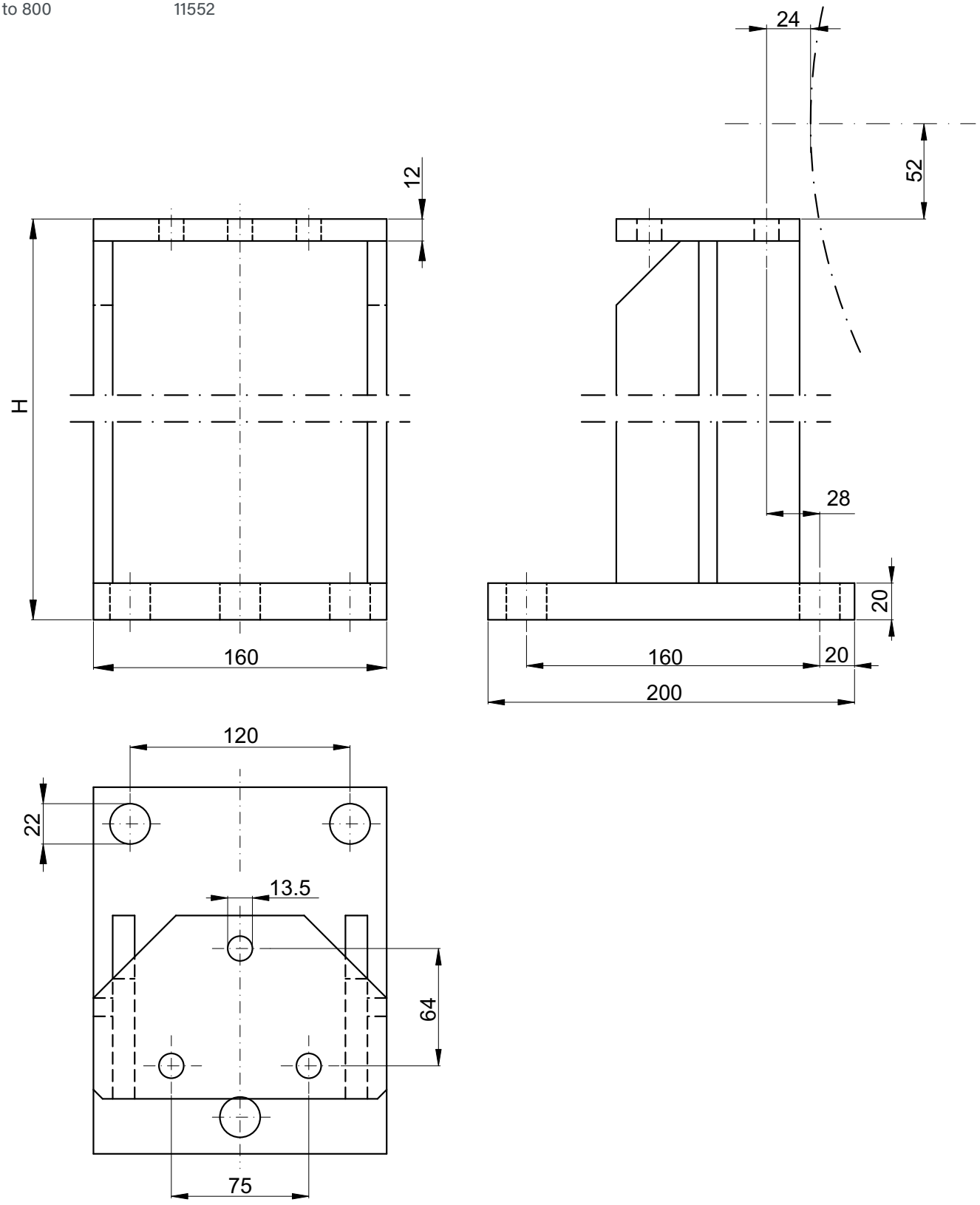
H [mm]	Part-No.
to 300	11550
to 500	11551
to 800	11552



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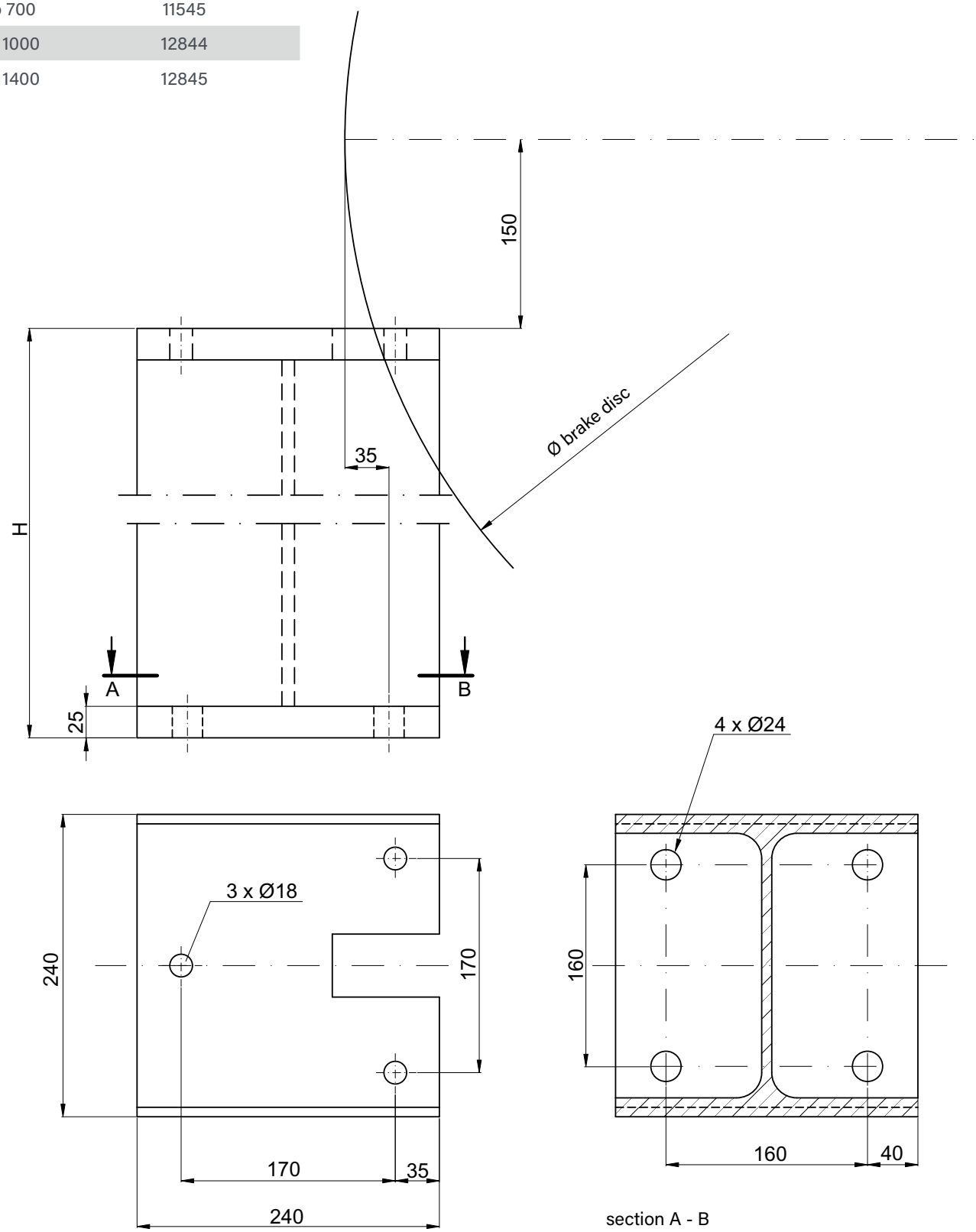
H [mm]	Part-No.
to 300	11475
to 500	11544
to 700	11545
to 1000	12844
to 1400	12845



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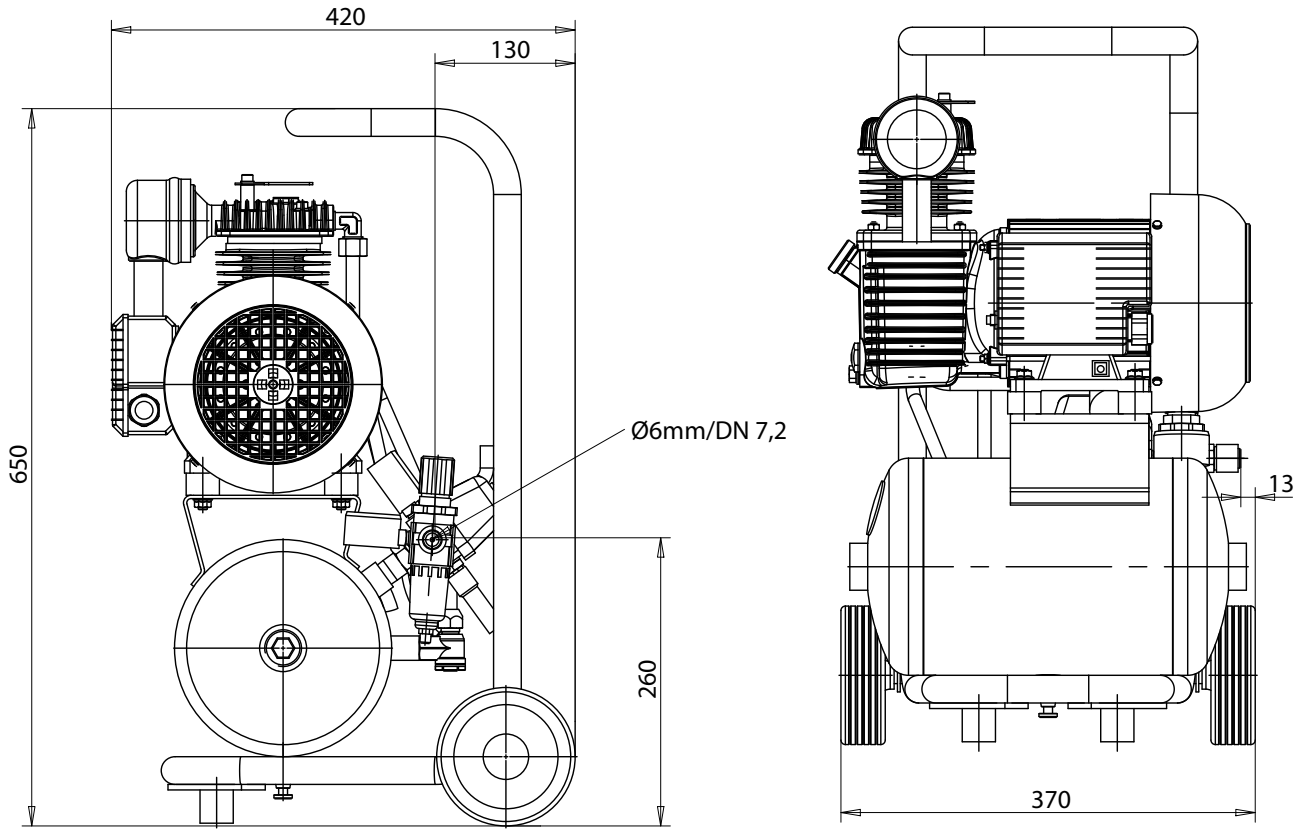

Technical data

- Inlet capacity: 210 l/min
- Filling volume: 140 l/min
- Max. pressure: 10 bar
- Electrical connection (50 Hz): 230 V AC
- Motor power: 1,5 kW
- Hose connection: 6 mm
- Mass: 29 kg
- Tank volume: 10 l
- Sound pressure level: 67 dB(A)
- Duty cycle: 60 %

Equipment

- Inlet filter with damper
- Manometer
- Safety valve
- Check valve
- Self-stopping hose coupling with plug-in sleeve
- Inside plastic-coated vessel
- Vessel drain cock
- Pressure switch for automatic operation
- Motor protection switch, mounted
- 3 m connection cable

Bigger units deliverable by request.

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This list makes no claim to completeness. It has been compiled in accordance wuth the manufacturer recommendations. The manufacturers are listed in alphabetical order, making no implications about the product quality.

Producer	Name	Kin. viscosity at 40° C [mm²/s = cSt]
ARAL	ARAL ÖL VITAM-GF46	46
AVIA	RCL 32	32
BP	BP Energol HLP 46	47,4
DEFROL	DEFROL I SO-VG46/ -68	46 / 68
ESSO	NUTO H 46	44
FINA	FINA Hydran 68 (HLP)	68
FUCHS DEA	Plantohyd*	47,4
MOBIL	Mobil DTE 26	64
TEXACO	Texaco Oil HDB 68	46

* biologisch abbaubar

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Optional accessories

Specially developed for the floating caliper brakes of the EBS series:

- for uncomplicated and quick installation of the brake
- with a precise design
- no own production is necessary
- no more fitting holes are required on the customer side

EBS 001 FL Mounting plate
Art. 60099-60

EBS 002 FL Mounting plate
Art. 60096-60

EBS 004 FL Mounting plate
Art. 60095-60

EBS 006 FL Mounting plate
Art. 60105-60

EBS 008 FL Mounting plate
Art. 60106-60

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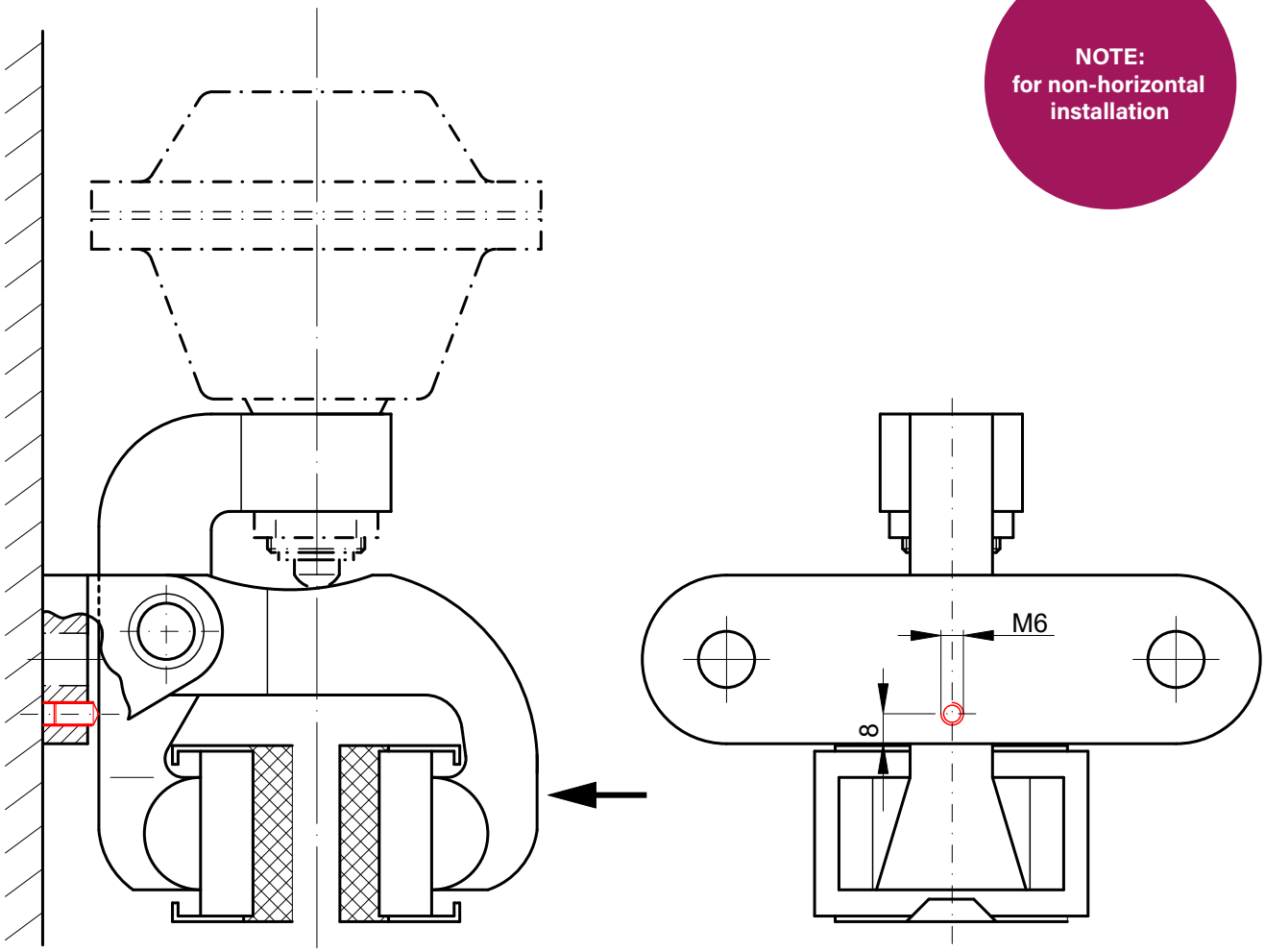

The brake caliper type RH 100 is preferably mounted on a horizontal brake disc axis in the position 3 h or 9 h. In the case of a deviation from this installation position of more than 10° and in the case of vertical brake disc axis, it must be prevented that a brake pad is unintentionally pressed against the brake disc by the weight of the brake thruster.

Depending on the mounting direction and the resulting torque from the thruster weight, the brake caliper must be intercepted by the adjusting screw or the counter lever (see arrow).

Secure the set screw M6 x 10 DIN 913 (Part-No. 11672) with Loctite after adjustment.

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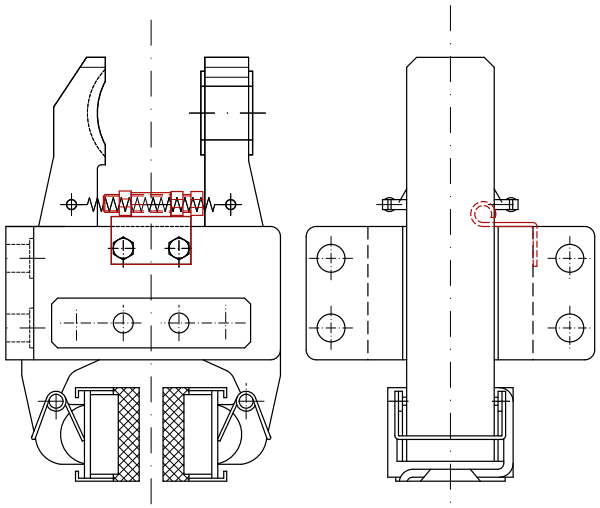
The RH brake calipers are preferably mounted on a horizontal brake disc axis in the position 3 h or 9 h. In the case of a deviation from this installation position of more than 10° and in the case of vertical brake disc axis, it is absolutely necessary to use an inclined mounting kit. It prevents a brake pad from constantly coming in contact with the brake disc as a result of the brake caliper's asymmetry.

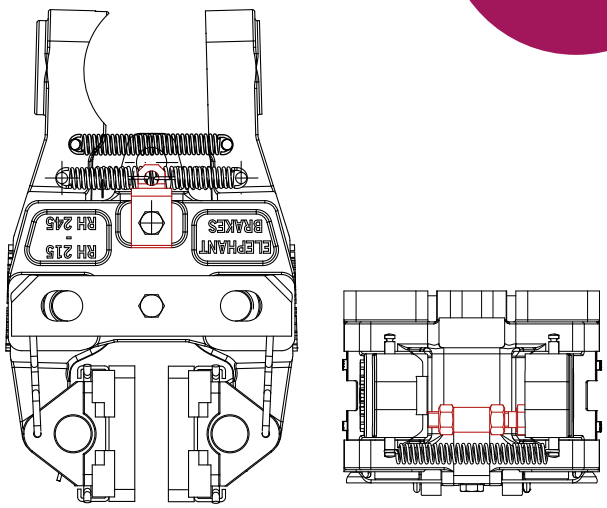
For a vertical brake disc axis choose an installation position where the thruster is positioned as far as possible above the brake caliper. In the case of an arrangement with a „downward thruster", the use of additional return springs may be required due to the mass of the thruster.

NOTE:
for non-horizontal installation

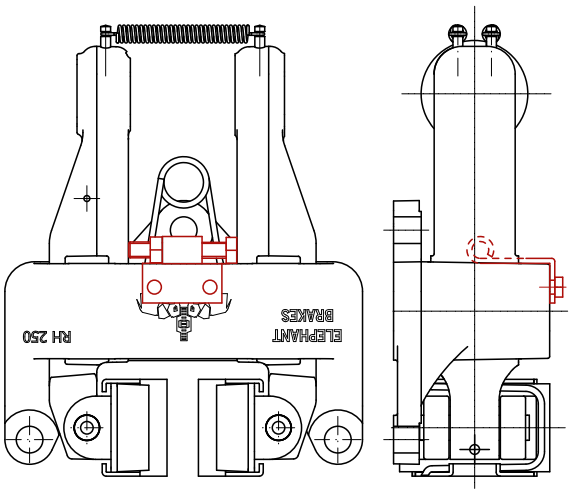
RH 200 – Part-No. 11296



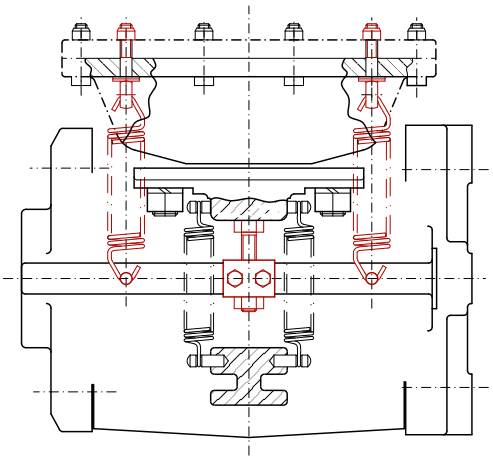
RH 215 - 245 – Part-No. 10087



RH 250 / RH 300 – Part-No. 13109



RH 350 – Part-No. 10379 bzw. 14641



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