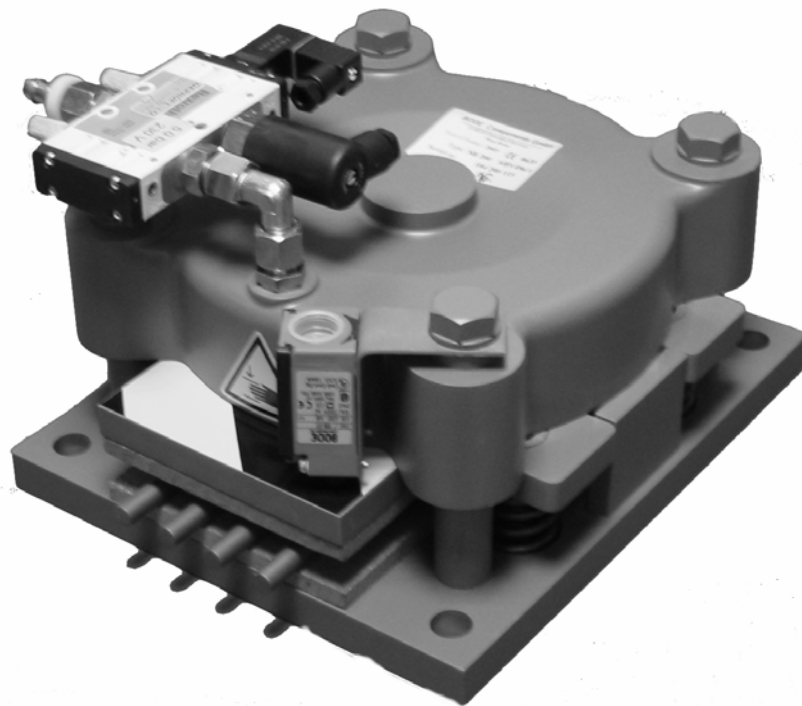


SB 200 – SB 330 – SB 380

Installation and Operation Manual for Rope Brakes

Acc. to EN 81-1

Type SB 200 – SB 380



Version 05.02 S

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BODE reserves the right to technical modifications without being obliged to inform the customer and/or needing to change any documents already having been made available.

Signs and Symbols:



Important notes to be imperatively observed.



Information on the rope brake

Abbreviations:

SB Rope brake

1.0 General Notes

1.1 General Notes on Safety

The safe and trouble-free handling and operation of the safety component requires the full understanding of and adherence to the basic safety regulations and safety-technical notes contained in this manual.

The notes on safety contained in this manual are to be observed by all people installing or operating the safety component.

In addition, all general rules and regulations for accident prevention are to be adhered to.

The personnel working on or operating the rope brake must observe the safety notes and warnings contained in this manual.

This installation and operation manual has to be kept at the rope brake's installation site.

1.2 Intended Use of the Rope Brake

The rope brake has been produced to the state of technology and in compliance with all relevant safety-technical regulations. It must be exclusively used for the intended purpose and in a safety-technically unobjectionable condition.

The rope brake is exclusively intended to be used as a safety component within the meaning of EN 81-1. Any use other than the intended is considered to be unconventional.

1.3 Warranty and Liability

BODE Components GmbH's General Terms and Conditions of Sales and Payment apply.

Any warranty or liability claims relating to personal injuries or damages being attributable to one or more of the following reasons are excluded:

- Improper installation, commissioning, operation or servicing of the rope brake.
- Operation of rope brake with defect and/or non working safety and protective devices.
- Non-conform use of the rope brake.
- Non-observance of the notes on transport, storage, installation, commissioning, operation and maintenance contained herein.
- Unauthorized readjustment of the rope brake settings.
- Unauthorized structural alterations of the rope brake.
- Insufficient monitoring of parts being subject to wear.
- Improper repairs.
- Improper installation of attachments or spare parts.
- Improper electrical wiring.
- External influences, catastrophes or force majeure.

The rope brake and components supplied for the operation of the rope brake have been tested and set by the manufacturer.

- As rope brakes are type approved safety components these settings must not be altered.

2.0 Transport and Storage

2.1 Packaging

The rope brake is supplied in suitable packaging – normally an enforced cardboard box.

Please observe the notes on the packaging.

The packaging is not returnable and must be disposed of in an environmentally sound way.

2.2 Inspection at the Customer's

Product and packaging are to be inspected with view to completeness and damages.

- ! Any transport damage is to be documented and immediately reported to BODE.

2.3 Intermediate Storage

If the rope brake is not to be installed upon receipt, it is to be stored in a way protecting it from wetness, moisture, dirt and damage.

- ! The regulations on machine and pulley rooms also apply with view to the environmental conditions prevailing at the rope brake's installation site.

2.4 Scope of Delivery

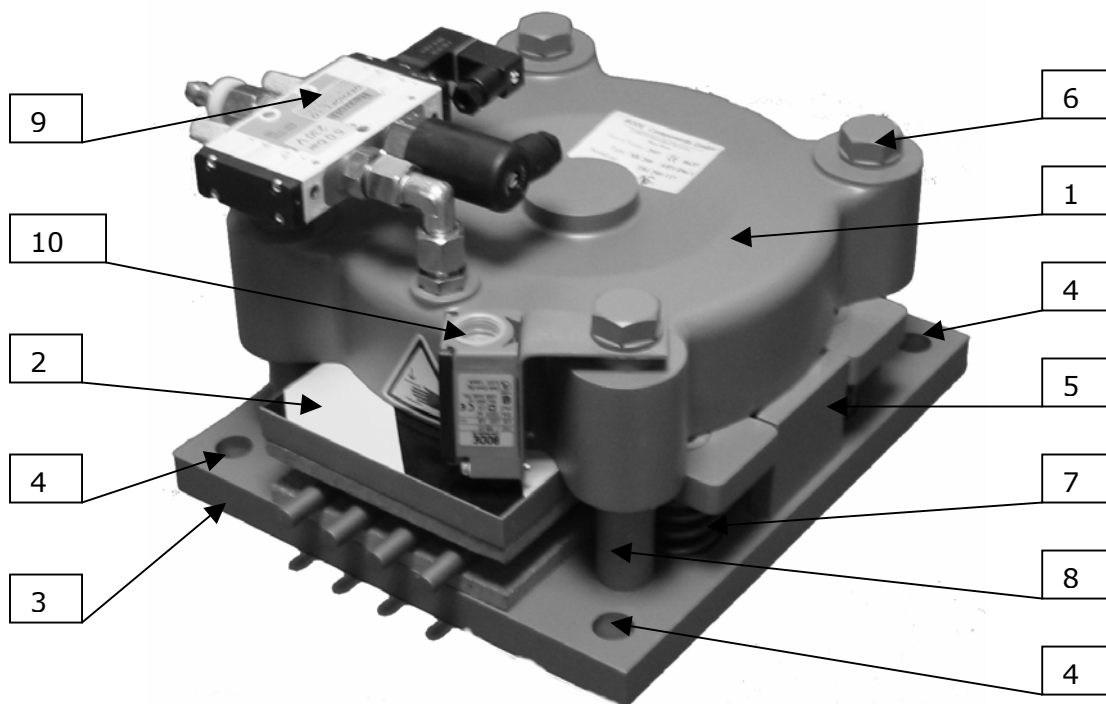
Included in delivery:

- 1) Rope brake consisting of:
 - Cylinder
 - Piston with movable plate and brake pad
 - Fix plate with brake pad
- 2) Magnetic valve with pressure switch
- 3) Power supply 230V AC/ 24V DC
- 4) Mounting bolt
- 5) RBC14 control for installation in the control cabinet
Alternatively: Add-on module SMC14 incl. pressure roller and two proximity switches
- 6) Installation and Operation Manual / Test Certificates

SB 200 – SB 330 – SB 380

3.0 Description: Rope Brake

3.1 Individual Parts (SB 200 fig. 5)



Pos.	Description	Pos.	Description
1	Cylinder	6	Positioning screws
2	Piston with movable plate	7	Pressure spring
3	Fix plate	8	Spacers
4	Mounting holes	9	Magnetic valve
5	Guide	10	Monitoring switch

3.2 Product Range

Type	Max. nominal load Q (kg)	Brake force (N)	B max. (N)
SB 200	700	7775-12440	13000
SB 330	1600	21167-33868	34000
SB 380	2200	45555-64465	43000

Nominal load (suspension 1:1)

B max. = Maximum forces acting on the rope brake mount.

Higher load capacities can be achieved by installing 2 rope brakes.

At a cabin suspension of 2:1 (or more) the rope brake is laid out for gripping on the rope leading from the sheave.

3.3 Setting of the Rope Brake

The rope brake is supplied ready for installation. The switches on the magnetic valve and the compressor have been factory-set.

3.4 Functional Description

The BODE rope brake is an EN 81 type approved safety component. It serves for protecting ascending cars against overspeed. The rope brakes SB200 und SB330 have been designed for rope speeds of 10 m/s, the rope brake SB380 for speeds of 7m/s.

In combination with the safety switch or pre-cut out at the overspeed governor and the rope brake control the following operating states of the lift system are monitored.

Control RBC 14:

1. Speed
The rope brake closes at overspeed in both directions of travel: the overspeed signal is generated by the governor's safety switch.
2. Power failure
The rope brake closes in the event of a power failure and automatically reopens when the power supply is re-established.
3. Operational Monitoring
The control automatically tests the rope brake's operability once every 24 hours. The time, the test shall be performed, can be set.

Additional features provided for when using the add-on module SMC14:

4. Stop Monitoring
Should the lift start moving at a landing with the doors being open, the rope brake is closed after a limited distance of travel.
5. Overspeed
In addition to the safety switch on the governor, the speed can be measured by the SMC14.

In the event of ascending or descending at overspeed, the safety switch (at $V_n < 1,01\text{m/s}$) or pre-cut out (at $V_n > 1,00\text{m/s}$) on the governor is switched (disconnected) thereby issuing a signal to the RBC14 / SMC14 control causing the rope brake to close.

The rope brake is closed by compressed air and reopened by spring force.

In the event of power failure, the rope brake is closed. The compressor's pressure reservoir allows for keeping the rope brake closed for some time. Upon re-establishing the power supply, the rope brake opens automatically.

In case of a pressure loss at the pneumatic unit, the current travel is completed and the lift is then shut off at the landing. The lift system's operational readiness is re-established when the operational pressure reaches 5.5 bar.

SB 200 – SB 330 – SB 380

Once within 24 hours the rope brake system's operability is tested. The test time can be set at the control and the lift system is tested at stillstand. Should the test fail, the lift system is shut off.

Rope brakes with the add-on module SMC14 provide for the following additional function.

By means of proximity switches having been either installed on the governor or a pressure roller pressing on the suspension ropes or governor rope the car's stop at a landing is monitored. Should the car sink with open doors by a limited distance, the rope brake is closed. The rope brake can be opened at the control. Furthermore, this module allows for measuring the speed in addition to the safety switch.



Monitoring the speed and releasing the rope brake requires an overspeed governor complying with EN 81-1.

Although the rope brake releases in both directions of travel, a safety gear for descending travels is indispensable.

Lift systems with a $V_n < 1,01\text{m/s}$ allow for simultaneously tripping the rope brake and safety gear in case of overspeed.



Re-starting the lift system after a malfunction must not be done until the lift system has been checked and the cause of malfunction has been eliminated by qualified and authorized service personnel.

Ambient air temperature for application of mechanic: -30° to $+60^\circ$ C

4.0 Description: Type Plate

	<u>BODE - COMPONENTS GmbH</u>		
	D 40233 Düsseldorf Germany		
	Seilbremse / Rope Brake		
1	Baujahr: 2000	CE 0635	5
2	Typ: SB 200	ABV: 496	6
3	Seriennummer: 100 200 215		
4	Geprüft:		

- 1 Year of manufacture
- 2 Type
- 3 Manufacturer – serial number
- 4 Initials of tester at the manufacturer's
- 5 Number auf certifying body
- 6 Number of type approval certificate

5.0 Installation Instructions

The BODE rope brake can be installed as follows:

1. On the car side.
2. On the counterweight side.
3. On the machine frame.
4. On the floor.
5. On the hoistway ceiling.

5.1 Mechanical Installation.

The rope brake is supplied ready for use.

- ! Cylinder, piston, and movable brake plate are tied together with a security tape. This tape must not be removed until the installation has been completed. The piston must not be taken out of the cylinder as otherwise the lipring would be damaged.

With new systems the ropes can be drawn in on the mounting console (to be provided by the customer) once the rope brake has been installed.

With existing systems, proceed as follows (fig. 5):

- Diagonally remove the two fixation screws (pos.6) and replace them by the dowel pins provided. Press down the cylinder by means of the dowel pin's nuts and remove the remaining fixation screws.
- Now, evenly untighten the nuts of the dowel pins. After slackening the pressure springs (pos.7), the complete unit including cylinder (pos.1), piston, and movable brake plate (pos.2) can be taken off.

- ! The spacers (pos.8) and pressure springs (pos.7) are not fixed. Prevent them from falling down when dismantling the unit.

- The fixed plate can now be mounted under the ropes. For anchoring we recommend using a:

SB 200	Heavy-load anchor and steel screws M16 8.8
SB 330	Heavy-load anchor and steel screws M24 8.8
SB 380	Heavy-load anchor and steel screws M24 8.8

- The suspension ropes should run centrally in relation to the rope brake's brake pad. The distance between the brake pad of the fixed plate and the suspension ropes must be 2mm.
- The rope brake can now be reassembled. For this, position the pressure springs. Shift the complete unit on the dowel pins again and pretension it with the nuts so that the screws (pos.6) can be screwed in again.

- ! Do not forget the spacers (pos.8).
- ! Position the monitoring switch (pos.10).
- The contacts 23-24 must be closed.

- Remove the dowel pins and screw in the remaining screws together with the spacers.

- ! Remove the security tape before commissioning.

5.2 Pneumatic Unit

5.2.1 Description

The rope brake's supply with compressed air can be made using the supplied compressor or present process air. Make sure that a sufficiently large storage reservoir (min 25 litres) has been added to supply the rope brake. The operational pressure must be between 6-8 bar.

The supplied compressor comes with a quick coupling. Shift the plug on a compressed-air hose with an inner diameter of 10mm (see mounting instructions).

- !
 - Exclusively use compressors the pressure controller of which has been set to an operational pressure of 6-8 bar.
 - Observe the compressor manufacturer's operating instructions.
 - The compressor must provide for a storage reservoir of min. 25 litres.
 - Do not install any oil-mist lubricators as the compressed air must be oil-free.
 - Exclusively use hoses of type R6 acc. EN 854-SAE 100 R6.



We recommend installing a filter with water separator between compressor and magnetic valve. The flow rate must be min. 1000 l/min.

In case of high humidity at the compressor's installation site heavy generation of condensation water has to be accounted for. For this, an automatic water separator can be installed at the compressor.

The magnetic valve should be mounted directly on the rope brake. When installing the rope brake in the hoistway, the magnetic valve must be accessible or a venting valve must be included between the rope brake and the compressor allowing for rescuing people. The electrical wiring depends on the rope brake control used.

- !
 - The connection of the magnetic valve to the rope brake can be made by fixed piping (ERMETO) or by means of a hose type R6 acc. EN 854-SAE 100A6.
 - If the pressure in the pneumatic unit falls below 5bar, the lift system is shut off by the pressure switch.

5.2.2 Installation in EXPLOSION-PRONE Environments.

The rope brake can be installed in explosion-prone environments. When doing so, the following must be observed:

1. An explosion-protected monitoring switch must be installed on the rope brake. (part number 580 047)
2. The magnetic valve must be installed in the machinery room. The feed piping to the rope brake must be made as described above.

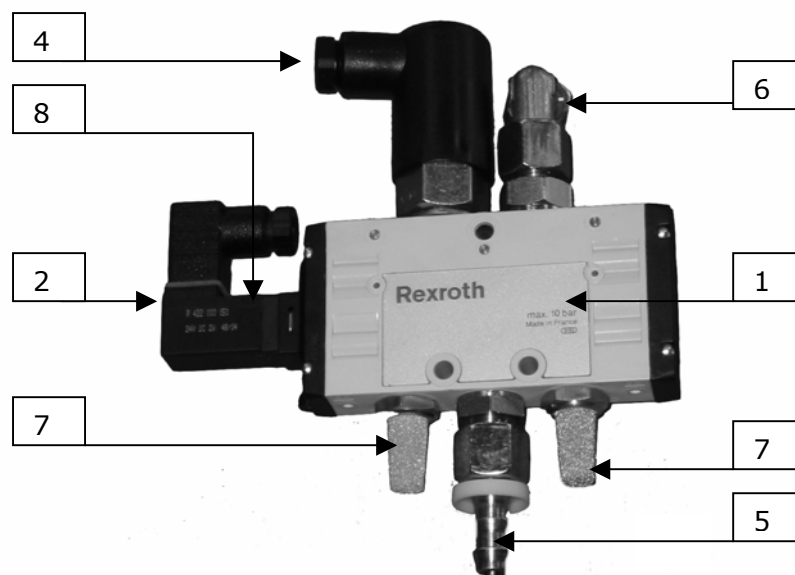
SB 200 – SB 330 – SB 380

5.2.3 Part List: Pneumatic Unit (fig. 10)

Pos	Description	Dimensions	Number	Part No.
1	5/2 directional valve		1	601 632
2	Mounting plate		1	601 633
3	Magnetic coil 24V DC	Form A	1	601 631
4	Coupling socket	Form A	1	601 635
5	Pressure switch		1	601 610
6	Hose connector	R ¼"	1	601 648
7	Sound absorber	R ¼"	2	601 636
8	Venting button			
10	Compressed-air hose			601 638
	Venting valve for opening the rope brake in case of power failure	Optional		601 660
	Water separator R1/4"	Optional		601 645
	Water separator R1/2"			601 651

Technical information on the currently used pneumatic unit is available on the REXROTH website.

Magnetic valve: fig. 10



5.2.4 Assembly Instructions for the self-grip hose

Easy Assembly without Tools

Self-grip hose connexions are *always* made without tools or other aids such as hose clips, tapes or wires. The hose is resistant to several media such as: hydraulic fluid, lube oil, coolants, and antifreezer.

Assembly

1. Cut the hose angled to size with a sharp knife. Moisten the nipple end with water, soap solution or low viscosity oil for easier installation.

! Please do not use any high viscosity oil.



Insert the nipple into the hose and push it in with a steady force until the stop. For this, the hose should be gripped ca. 25mm from the end.



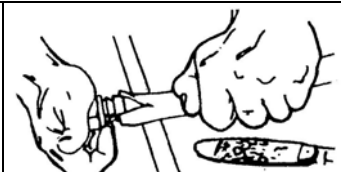
! Attention: When installing the hose, please ensure that the hose is pushed fully on the insert (until the stop at the plastic collar).

Disassembly

Cut the hose lengthwise with a knife slightly angled from the centre line of the hose. Be careful not to nick the barbs when cutting the hose.



2. Pull the nipple out of the hose.

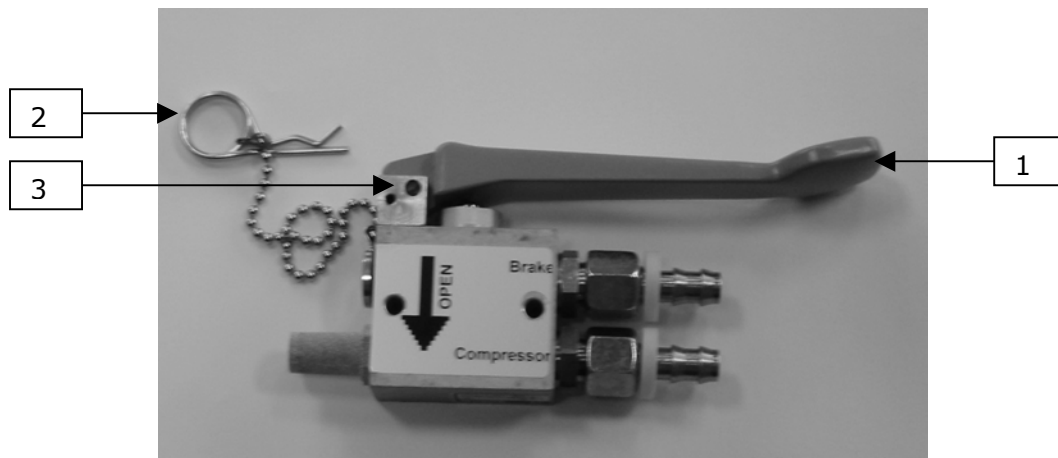


! Attention: Check the nipple for damages before reusing it.

5.2.5 Installation of the Venting Valve (optional, part no.: 601 660)

The venting valve is to be installed between the magnetic valve and the compressor. The hose connectors have been marked on the venting valve. For opening the rope brake the lever (pos.1) has to be pressed to the stop and the security pin (pos.2) must be inserted in the respective boring (pos.3). The rope brake now remains open.

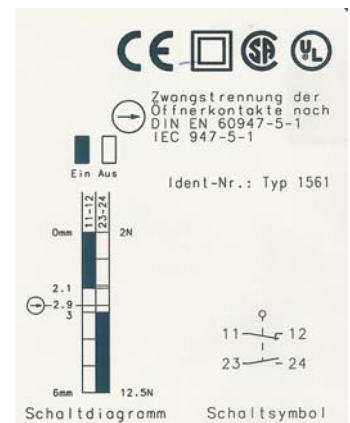
Venting valve: fig. 11 (part no.:601 660)



6. Connection of the Safety Switch to the Rope Brake

The mount of the safety switch (fig. 5 pos.10) on the rope brake is to be checked after installation. At closed rope brake the contacts 23-24 must be open and contacts 11-12 must be closed. The connection to the rope brake control has been described in the respective operating instructions.

Umgebungstemperatur:	-30°C bis +80°C
Kontaktart:	1 Öffner, 1 Schließer (Zb)
Mech. Lebensdauer:	10x10 ⁶ Schaltspiele
Schalzhäufigkeit:	max. 100/min
Befestigung:	2 x M4
Anschlußart:	4 Schraubanschlüsse (M3.5)
Kabeleinführung:	1 x M20x1.5
Gewicht:	ca. 0,06 kg
Elektrische Eigenschaften	
Max. Spannung:	500 V AC
Max. Dauerstrom:	1 th 10A
Max. Einschaltstrom:	gem. IEC 947-5-1, AC 15, DC 13
Aufbau:	nach EN 60204; EN 60947-1; EN 60947-5-1
Schutzart (IP-Code):	IP65 nach EN 60529; DIN VDE 0470 T1
CSA:	10A 300V AC, A300 (same polarity)
Kurzschlußfestigkeit:	Schmelzsicherung 10A gL/gG, IEC/EN 60947-5-1, Anhang K



7. Commissioning

Ensure that no other parts than the suspension ropes are between the brake pads of the rope brake.

Remove the security tape from the cylinder and piston.

When powering up the system, the rope brake is immediately operative.



Never grip between the brake pads!
DANGER OF CRUSHING

8. Maintenance

Servicing of the rope brake is to be made together with the lift system and is limited to the following:

- Testing of the rope brake's operativeness.

! When testing the system, no passengers must be in the car.



The brake pads may run in up to a gap width of 5mm at closed brake.



In case of any malfunctions, BODE must be contacted.

- The warnings of the compressor manufacturer are to be observed.

When using control SMC14 additional checks are required. For further information see the operating instructions provided with the control.

9. General Inspection of the Lift System

The operativeness of the rope brake can be checked as follows:

1. By manually actuating the safety switch or by remote triggering.
2. By travelling the lift at overspeed (e.g. test groove on the governor)
For operationally testing the safety gear, the rope brake must be inoperable as the rope brake will be actuated either simultaneously or before the safety gear. For this, the rope brake must be dead and depressurised. This can be achieved by disconnecting the hose from the compressor or using the venting valve. Now, the safety gear can be tested without the rope brake decelerating the car.



When testing, no passengers must be in the car.

After testing, the rope brake is to be put into operation again.

10. Rescuing People in Case of Power Failure

10.1 Using the magnetic valve

In case of power failure the rope brake is to be opened by means of the venting button on the magnetic valve (fig. 10 pos. 8).

- ! Attention: When opening the rope brake the lift system's suspension ropes must not move. Should they start moving, immediately release the venting button.

If the suspension ropes do not move, the rope brake is to be depressurised by disconnecting the hose from the compressor. Now, the rope brake remains open and the passengers can be rescued in accordance with the lift manufacturer's instructions.

10.2 Using the venting valve

To facilitate the rescuing of passengers, a venting valve can be installed.

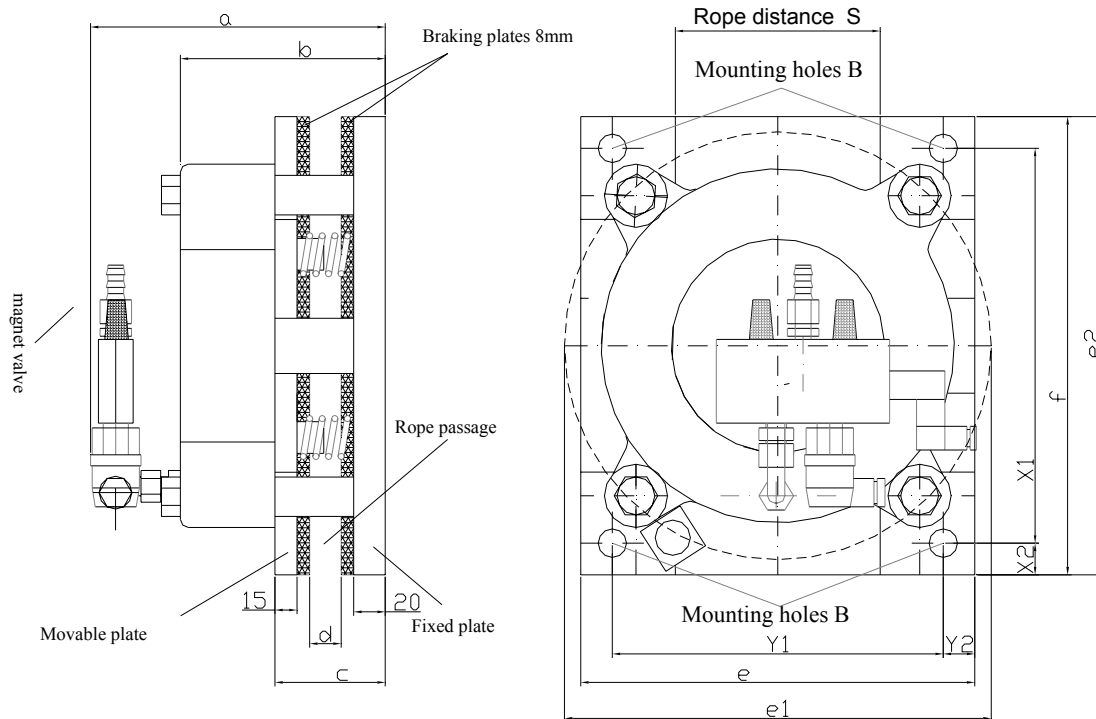
The venting valve (fig 11) is to be installed between the magnetic valve and the compressor. In the event of a power failure the lever (pos.1) is to be pressed down to the stop. The rope brake then opens.

- ! Attention: When opening the rope brake the lift system's suspension ropes must not move. Should they start moving, immediately release the venting button.

If the suspension ropes do not move, the security pin (pos.2) is to be inserted in the respective boring (pos.3). The rope brake now remains open and the passengers can be rescued in accordance with the lift manufacturer's instructions.

- ! The instructions for rescuing passengers at closed rope brake (because of overspeed or uncontrolled movements) can be found in the rope brake control's operating manual. Rescuing must exclusively be made by accordingly trained personnel.

9. Mounting Dimensions



Pos.	SB 200	SB 330	SB 331	SB 380
a	185	220	220	230
b	130	165	165	171
c	70	78	78	81
d	20	27	27	30
e	250	340	400	440
e1	/	365	/	/
e2	/	/	/	415
f	290	400	400	400
X1	250	260	360	240
X2	20	70	20	80
Y1	210	300	340	403
Y2	20	20	30	18,5
B	Ø 18	Ø 25	Ø 25	Ø 28
S	110	180	255	310
Kg*	37	81	81	110
Nm**	60	80	80	80

*Weight of the rope brake in kg

** Torque of the screws in Nm

The brake pad is asbestos-free.