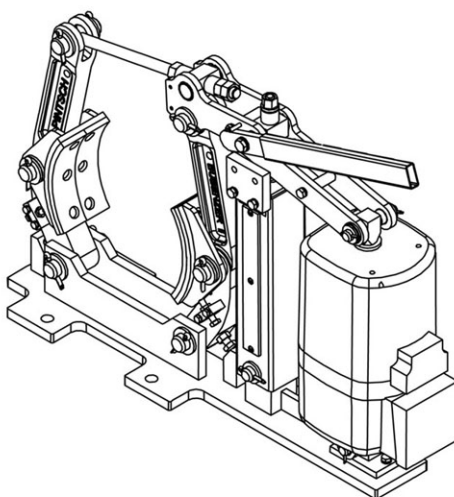




Operating Manual for Drum Brake Type: **EBA**



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1 Safety regulations

1.1 Symbols in this manual

The following symbols / pictographs are used throughout this manual to point out dangers and information.



Danger for health and life!



Danger of damage to or destruction of the installation or parts of the installation!



Danger for health and life due to electrical shock!



Warning of hot surfaces! Danger of burning!



Warning of rotating machine parts!



Warning of moving parts! Danger of squeezing!



Warning of possible pollution and dangers to the environment!

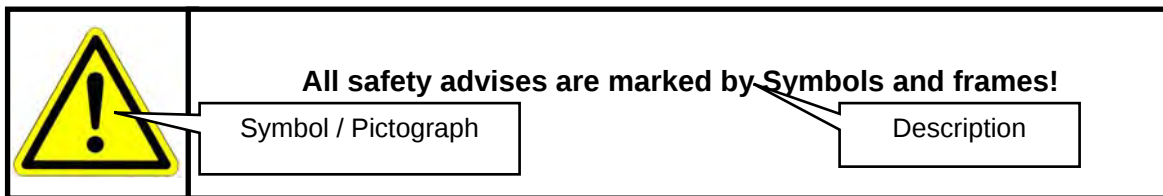


Additional important information!

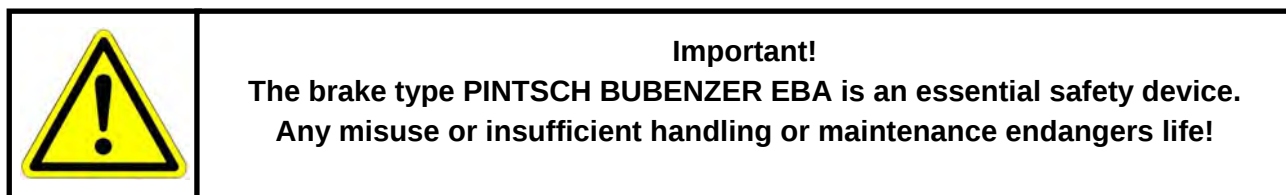
There may be other specific warning symbols/ pictographs used to point out dangers more precisely in certain situations.

1.2 Warnings

Note: warnings and other security rules are presented like this throughout the manual:



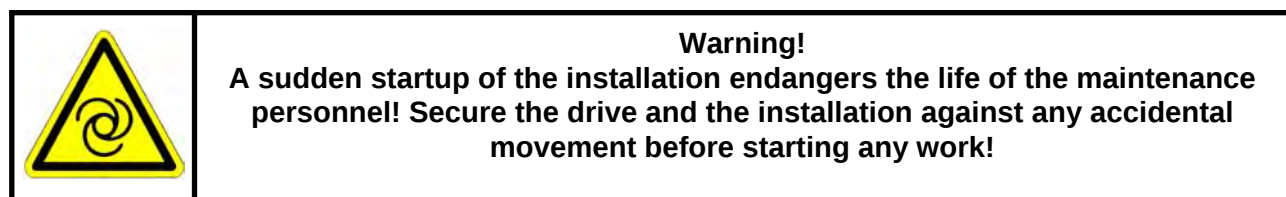
The brake may only be used in the way described in chapter 2.5 “Description and designated use”. The safety of your brake / brake-system depends on proper and regular inspection and maintenance. Study the manual before starting the installation. If in doubt, please don’t hesitate to contact our service-department or your local retailer.



Also study the following manuals and Regulations:

- Operating manual of the installation
- Safety precautions of the installation
- Valid Safety regulations

Before starting any work with the brake:



- Don’t use any mechanical devices to block the brake.
- Ensure that the drive is disconnected from the electrical power supply.
- Ensure that the brake is disconnected from the electrical power supply.
- Any electrical work is only to be done by a trained electrician.
- Use only genuine PINTSCH BUBENZER spare-parts.
- Ensure that the brake is set to its proper values according to the manual after finishing any work!



Danger of crushing

When working on the brake, heavy tools are used. Particular attention should therefore be paid to possible crushing points when: Using tools, fitting and removing the brake, accessories or spare parts or unbolting the brake from the pallet



Avoid negligent behaviour

Refrain from any actions that could affect the safety of the brake. Always take measures against imminent dangers for life and health or against the safety of the brake before starting any work on the brake!



Safety distance

A safety distance must be maintained to all hazardous zones to ensure safety of personnel and prevention of damage to the brake.

The standard common safety rules and regulations must also be observed under the pressure of time. Accidents cannot be reversed. Work with care!

Before carrying out any work on the brake, measures must be taken against any dangers to the life and health of persons and damage to the brake:

- Only closed shoes in a perfect condition must be worn. Open sandals, damaged or unsuitable shoes must not be worn.
- Closed, tight-fitting working clothes must be worn. Wide work jackets and wide sleeves can be dangerous.
- Long hair must be tied back.

Work must only be carried out on the brake when:

- All dangerous movements have stopped
- Accidental and unexpected operation of the brake is made impossible by suitable measures
- If the brake is loaded, other safety devices provide a braking and holding function.



Do not disassemble the brake completely!

The brake must never be disassembled further than described in the manual!



Important!

Ensure that the brake is set to its proper values according to the manual after finishing any work!

2 Brake

2.1 Introduction

This manual has been written to the best of our knowledge. It is intended to familiarize the operation and maintenance personnel with the function, the handling, the maintenance and the safety regulations of the power unit. Furthermore these instructions should make sure that **trained and qualified personnel** is able to handle the power unit according to its designated use. However the manual can't cover all the possible circumstances at the place of operation. If you have any questions concerning the power unit or this manual, please contact PINTSCH BUBENZER quoting the type and serial number of the power unit as given on the typeplate.

Copyright: The reprinting and duplication of all this technical documentation or extracts from it is - except for internal requirements in connection with the operation of the device - permitted only with the approval thereto in writing of PINTSCH BUBENZER GmbH. Permitting third parties to inspect the device as described is prohibited. Similarly prohibited is the handing over of the device to third parties and its replication.

2.2 Warranty

The warranty and its duration depend on the contract. For details on the supplier's warranty please refer to the terms of the contract. Any warranty- or liability-claims are excluded in case they occur because of one or more of the following conditions:

- Non-designated use of the brake.
- Improper handling, setup, operation and maintenance of the brake by the operating company.
- Neglection of the regulations and notes in this manual concerning transport, setting up, operation and maintenance of the brake.
- Improper maintenance and repairs of the brake.
- Improper monitoring of components, which are prone to wear.
- Catastrophes, external objects and forces and force majeure.
- Changes at the brake without approval of PINTSCH BUBENZER.

The information in this manual has been checked thoroughly. Nevertheless we can't accept liability for errors.

2.3 Limitation of liability

All the technical information, data and instructions on or for the operating and maintenance of the product as contained in these operating instructions are up to date at the time of printing and are given to the best of our knowledge and with account being taken of our experience and findings up to the present time.

We undertake no liability for losses and operational disruptions which come about as a result of operating errors, non-observation of these operating instructions or unprofessional repairs. We draw explicit attention to the fact that only original spare parts and original accessories have been checked and approved by us.

Every form of liability is excluded for the use of spare parts and accessories that are not original ones. Conversions and changes of every form to the two-surface solenoid-released, spring-applied brake are not permitted for reasons of safety and any such conversions and changes made render liability for any loss/damage resulting there from to be excluded.

We are liable for any errors of omission or commission for which we are responsible within the framework of the warranty obligations entered into in the main contract whereby the advancing of further claims is excluded. The advancing of claims for damages - regardless of the legal foundation on which they are based - is excluded.

2.4 Instructions and information for and obligations of the operator

The operating instructions represent an important component of the product. Thus, for example, if the brake is passed on to a third party as a component of a system, then these operating instructions are to be passed on to this third party as operator of this system. The operator of the brake or of the system containing the brake is to ensure that these operating instructions are available to his operating personnel at all times!

In order to ensure that the health and safety of the operating personnel is not endangered as well as to ensure the proper working of the device, the operator is obliged to instruct his personnel on the safe and proper operating, maintaining and servicing of the device as well as on how the device should be operated in the proper manner. In this connection the relevant supervision and notifying obligations are to be observed and any special operational circumstances taken account of!

Our customer service department is at your disposal should you require technical information on any of PINTSCH BUBENZER GmbH's products and how to use these correctly. See below for the address and telephone number.

Should you have any questions of this device, please contact our customer service department.

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Managing Directors: Markus E. Topp, Stefan Kröger

2.5 Brake-description and designated use

The drum brakes of the PINTSCH BUBENZER EBA-series are meant exclusively for the conditions specified in the order. The brake is designed as a holding brake and emergency brake. It is designed for dynamic braking within the limits given in section 2.6. The brake may be mounted upright or – equipped with suitable guide rollers – lying on its side. The brake is not suitable for use in areas with explosion hazards and is not certified according to ATEX!



**Any other use or any further change of the brake is strictly forbidden!
Ignoring the regulations for the designated use and /or the instructions for
setup and maintenance endangers life and leads to the loss of any
warranty by the manufacturer!**

The brake is released (opened) electro hydraulically by a thruster and is actuated (closed) by spring force. In case of an emergency-stop or a power failure the brake sets automatically. A manual release lever allows to open the brake manually e.g. in case of a power failure. Braking distance and braking time are designed for the designated use but may vary depending upon the circumstances (e.g. load, direction of movement). The braking torque can be adjusted continuously by means of an adjustment nut. The brake is equipped with non-asbestos organic linings. The wear has to be compensated manually.



Notice!
**Depending on the size of the brake differences in the construction can
occur. In case this has influences on the handling it is pointed out. Else
only one size is depicted.**

2.6 Technical data

Maximum running speed: 30 m/s
Maximum drum temperature: 200°C
Maximum braking time: 5 Seconds
Maximum braking torque: refer to Data sheet in the appendix.

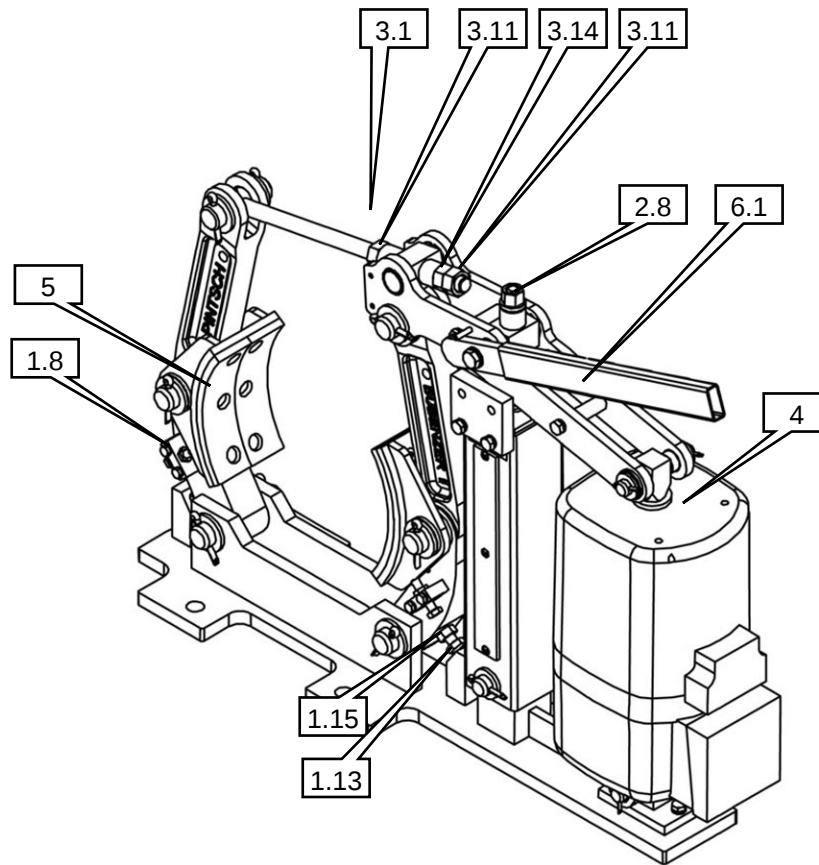


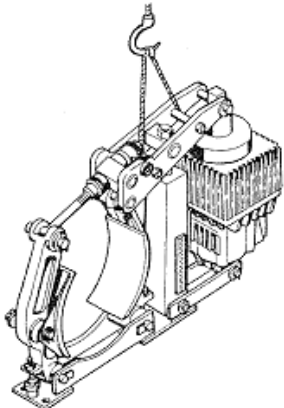
Fig.1:

Pos.	Item	Pos.	Item
1.8	Thrust piece	3.1	Adjusting Spindle
1.13	Stop Screw	3.11	Lock nuts
1.15	Lock-nut(s)	3.14	Adjusting Nut for Reserve Stroke
2	Brake Spring	4	Thruster
2.8	Adjusting Nut for braking torque	5	Brake Shoe with Lining
2.18	Braking torque scale	6.1	Manual release lever (Option)

2.7 State of shipment and storage instructions

The brake is shipped ready to mount. The braking torque has been tested by the supplier and the AWC has been adjusted (if ordered). The setting of the braking torque and the equal brake pad lift off as well as the running in of the brake pads can only be done, when the brake is mounted. These tasks are described in chapter 3.

The brake is delivered without mounting devices.

 Important! Depending on the size (refer to type plate) the brake can have a weight of more than 80 Kg. Always use proper lifting devices and transport the brake according to this picture!	
---	--

- Store and transport the brake dust- and waterproof.
- Protect the brake during the whole storage- and transport time against damage.

In case of additional painting, do **NOT** contaminate:

- Hinges or joints
- Brake drum surfaces
- Brake pads
- Spindle and AWC (option)
- Rod of the thruster
- Electrical components
- Signs and plates

If the brake isn't installed directly after delivery heed the following instructions:

- Store and / or transport the brakes dust- and waterproof with drying agent until installation.
- Protect the brake against external damages during the complete storage- / transport-period.

3 Setup of the brake

	Danger! A sudden startup of the installation endangers the life of the maintenance personnel! Secure the drive and the installation against any accidental movement before starting any work!
	Warning! Fingers and other limbs can be squeezed or crushed by the brake linkage! Danger of injury! Stay clear of the brake linkage during operation of the brake!

3.1 Mounting and aligning of the brake

	Notice! For the safe use, the drum brake type PINTSCH BUBENZER EBA has to be centered to the brake drum! Heed the following instructions!
---	---

- Mount the brake on the brake drum.
- Screw bolts (Class 8.8) into the base but don't tighten them yet.
- Use shims to adjust differences in height if necessary.
→ Bolts and shims are not included in our scope of supply.
- If the brake is mounted lying on its side, the guide rollers must have contact with the base surface and have to be freely movable.

The brake levers and the brake shoes are movable. The brake pads would have full contact on the brake drum, even when the brake is not aligned correctly. But in this case the brake pads wouldn't be loaded equally. Thus one pad would heat up more and wear faster.

The coupling (K) is centred to the brake drum. The two bolts (1.4) are centred to the brake. The brake can be aligned with these reference points that are easily accessible.

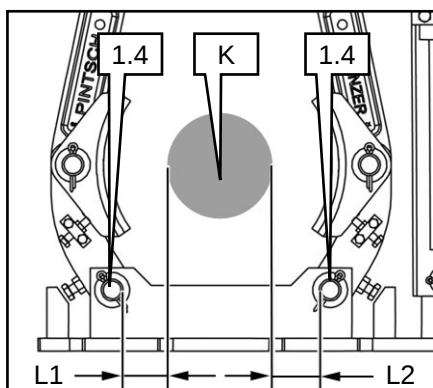


Fig. 2

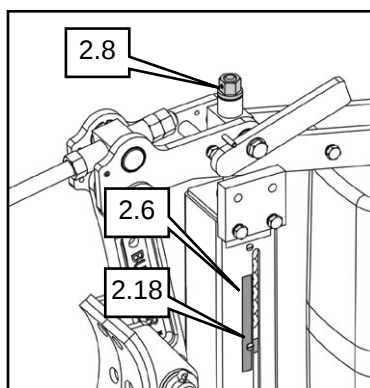


Fig.3:

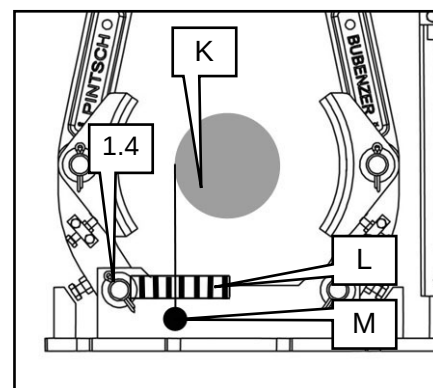


Fig. 4:

- Close brake manually:
- Turn braking torque adjusting nut (2.8) clockwise until the **upper edge** of the torque indicator (2.18) reaches 1/3 of the braking torque at the braking torque scale (2.6).

Both brake pads have to have full contact on the brake drum

- Attach a perpendicular (L) to the coupling (K). When the base is even and clean a right angle may also be used.
- Hold a ruler (M) horizontally to the inner side of the corresponding bolt (1.4).
- Now read L1 where the perpendicular meets the ruler.
- Repeat these steps at the other side for L2.
 - **Attention:** Check the chamfer of the bolt. Don't hold the ruler to the chamfer at one side and on the other side to the outer diameter of the bolt.
- L1 and L2 must not differ more than **2 mm!**
- If necessary move brake. **Attention: The brake has to be completely released!**
- Repeat measurements.
- Make sure, both braking shoes have full contact on the brake drum.
- Tighten the Mounting bolts with a torque-wrench to the necessary tightening torque (refer to. appendix).

3.2 Electrical connection of the brake



Danger!
The applied electrical voltages are dangerous to life!
The electrical connection and all other electrical tasks must only be done
by a trained electrician!

Connect thruster according to supplier's data. Please refer to setup-manual for ELDRO / ELHY-thrusters, included in this documentation! Refer to the type plate for the electrical data.

3.3 Setting of equal air gap width

The brake levers are centered by adjusting bolts which are set by lock-nuts. The centering of the brake levers is done with the brake **completely released!**

- Release (open) the brake by energizing the thruster.
- Loosen lock-nuts (1.15) on both levers.
- Turn stop-screw (1.13) until the space between linings and brake drum surface is equal on both sides.
- Tighten both lock-nuts (1.15).

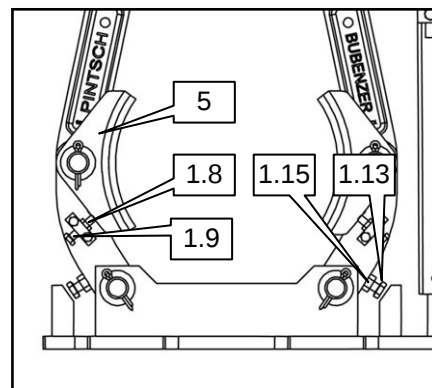


Fig. 5



Caution!

When the brake pad wear is compensated, the levers are “lifted out of the adjusting bolts”. Check the adjusting bolts regularly. Reset if necessary!

3.4 Set braking torque

The typeplate displays the maximum torque (Data provided by PINTSCH BUBENZER) and – on customer demand – the set / necessary braking torque (Data provided by installation manufacturer).

Note: Older brakes show only the maximum braking torque on the typeplate.

- Turn adjusting nut (2.8) clockwise until the upper edge of the indicator block (2.6) shows the necessary torque given by the installation manufacturer (refer to documentation of installation manufacturer) on the scale (2.18)

In case this data is not available:

- Set braking torque to 100%.
- Find out necessary torque immediately and set it.
- Actuate brake several times to check the setting.
- Reset if necessary.

Note: The torque must not be set below 50% of the maximum braking torque.

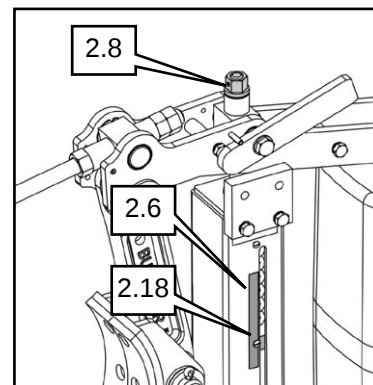


Fig. 6

3.5 Set reserve stroke



Warning!

**A reserve stroke of less than S_{1min} can lead to a brake failure! Always check and if necessary reset brake!
Mortal danger!**

- Measure S_1 (Fig. 8) with brake closed.
- Loosen lock-nuts (3.11).

Increase reserve stroke:

- Turn Nut (3.14) **clockwise** until the piston rod of the thruster (Fig. 8) has reached the necessary value for S_1 (table 1 for inch / table 2 for mm).

Decrease reserve stroke:

- Turn Nut (3.14) **counter clockwise** until the piston rod of the thruster (Fig. 8) has reached the necessary value for S_1 (table 1 for inch / table 2 for mm).

After finishing all tasks:

- Reset lock-nuts (3.11).

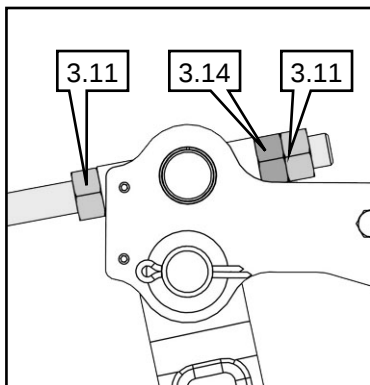


Fig. 7:

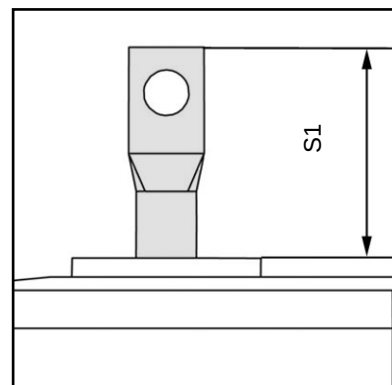


Fig. 8:

Thruster Type	S_0 = Piston rod in lowest pos.	S_1 = Brake set	S_2 = Brake released	$S_1 = S_{1 \min} \Rightarrow$ Readjust Brake!
Ed 12/4	1.18 in	1.57 in	2.76 in	1.38 in
ED 23/5	1.49 in	1.89 in	3.46 in	1.69 in
ED 30/5	1.93 in	2.32 in	3.90 in	2.13 in
ED 50/6	2.13 in	2.52 in	4.49 in	2.32 in
ED 80/6	2.13 in	2.52 in	4.49 in	2.32 in

Table 1: Tolerance S_1 : + 0.12 mm / -0.04 in

Thruster Type	S_0 = Piston rod in lowest pos.	S_1 = Brake set	S_2 = Brake released	$S_1 = S_{1 \min} \Rightarrow$ Readjust Brake!
Ed 12/4	30 mm	40 mm	70 mm	35 mm
ED 23/5	38 mm	48 mm	88 mm	43 mm
ED 30/5	49 mm	59 mm	99 mm	54 mm
ED 50/6	54 mm	64 mm	114 mm	59 mm
ED 80/6	54 mm	64 mm	114 mm	59 mm

Table 2: Tolerance S_1 : + 3 mm / -1 mm

3.6 Function control

Release and set the brake several times. Check the following:

- Is dimension "S₁" reached, when the brake is set? (Table 2)
 - If not: Repeat section 3.5.
- Is there an equal air gap between brake shoes and brake drum, when the brake is released?
 - If not: Repeat section 3.3.
- Is the required braking torque set?
 - If not: Repeat section 3.4

3.7 Running in of the brake

	Warning! Brake drum and brake pads are heated up during operation. Danger of Burning. Allow brake and brake drum to cool down before commencing any work!
	Important! In case the motor starts running with the brake closed the brake may be damaged due to overload! Make sure this situation cannot occur!
	Do not exceed technical data / limitations! To help preventing damages to the brake the brake must not be operated outside its technical limits even during running in. Heed the data given in the manuals and data sheets!

The running in of the brake pads is essential to insure an even contact pattern on the pad, which will avoid uneven loading of part of the surface and any resultant damage. The brake can be damaged when it is run in under unsuitable conditions! Do not exceed the following values during running in.

Maximum running speed: 30 m/s
Maximum drum temperature: 200°C
Maximum braking time: 5 Seconds
Maximum braking torque: s. Data sheet

- The braking torque achieved can be related to the current take-up of the electric motor.
- Running-in is completed as soon as the stopping distance at rated load and maximum speed is not reducing any further after repeated braking operations.
- During running in the reserve stroke has to be checked and – if necessary – reset after 25 – 30 braking cycles (section 3.5).

The running in can be done in two ways

Running in under load

- Load drive with approx. half rated load.
- Run drive with half lowering speed.
- Carry out approx. 10 to 15 emergency-stops.
- Repeat procedure several times at gradually increasing speed up to maximum speed.
- Check reserve stroke at the thruster.
- Readjust if necessary.
- Load drive with rated load.
- Run drive with half lowering speed.
- Carry out approx. 10 to 15 emergency-stops.

Running-in with brake applied

- Adjust braking torque to approx. 50 % of the required braking torque
- Run drive motor with half speed against the closed brake for approx. 5 cycles.
- Release brake after each cycle.
- Increase braking torque to 75 % of the required braking torque.
- Run drive motor with full speed against the closed brake for approx. 5 cycles.
- Release brake after each cycle.
- Adjust braking torque to 100 %.
- Run drive motor with full speed against the closed brake for approx. 5 cycles.
- Release brake after each cycle.
- Attention: Don't brake longer than 5 seconds! (s. above)

Check: Is the required braking distance achieved?

If YES: Setup finished!

If NO: Reset braking torque (Section 3.4)

4 Operation

4.1 Normal operation mode

	Warning! Fingers and other limbs can be squeezed or crushed by the brake linkage! Danger of injury! Stay clear of the brake linkage during operation of the brake!
---	--

In normal operation mode the following states are possible:

Thruster not energized	Brake set
Thruster energized	Brake opens and remains open
Thruster is being switched off	Brake sets automatically
Power down, emergency off	Brake sets automatically

These states can be monitored by limit switches (check scope of supply). The functions are described in section 4.2.

4.2 Manual operation

	Warning! When using the manual release lever, there is no safety device active any more! Mortal danger! Always make sure nothing can move out of control.
	Warning! The lever is not suited to keep the brake open for maintenance tasks. Mortal danger!
	Danger! Release brake SLOWLY, so an attached load can't move out of control! Mortal Danger!

By means of the manual release lever (6.1) the brake may be released manually in case of an emergency-situation, e.g. to lower a load after an emergency stop. As an option the manual release lever can be equipped with a limit-switch for release control.

- Always watch the load (2nd operator) so you don't miss the point, where the brake releases.
- With the standard execution (Fig.16) an additional tube has to be mounted to the lever (scope of supply).

- Pull the lever upwards SLOWLY to open the brake.
- If the lever is released, before it has reached its locking position (completely released), the brake automatically closes. It is possible to provide the brake without a catch for the lever. Check scope of supply. By means of the lever the load can be released controlled.
- After finishing all tasks:
 - Manually set brake again
 - Store extension lever safely in its proper place.

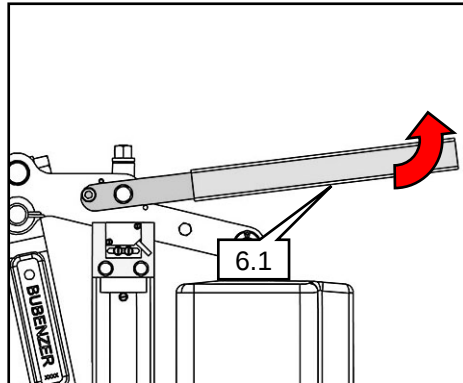


Fig. 9:

5 Maintenance

	Danger! A sudden startup of the installation endangers the life of the maintenance personnel! Secure the drive and the installation against any accidental movement before starting any work!
	Warning! Fingers and other limbs can be squeezed or crushed by the brake linkage! Danger of injury! Stay clear of the brake linkage during operation of the brake!
	Before starting any work at the brake make sure the electrical /hydraulic power supply is switched off and secured against switching on again. Any task at parts under electrical current must only be performed by a trained electrical engineer.
	Notice! Ensure that the brake is set to its proper values according to the manual after finishing any work!

5.1 Regular maintenance tasks

Check:

All 100 - 150 operating hours

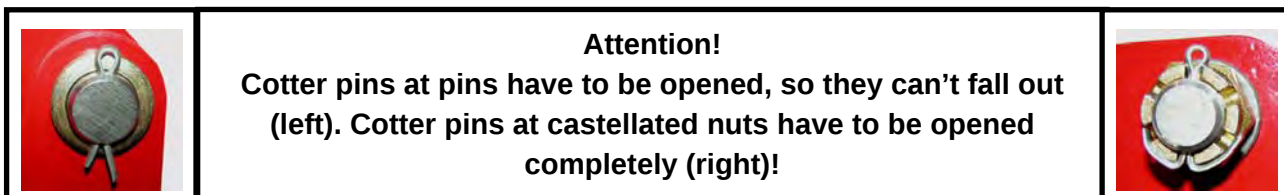
All 450 operating hours or monthly (Holding brakes without dynamic braking)

In case the brake hasn't been used for six months

- Function of the brake/brake system
- brake shoe lift-off
- lining wear/lining thickness
- condition of the brake drum
- thruster reserve stroke
- easy mobility of the brake linkage
- brake spring tension (torque)

Check the brake/brake system outside the regular inspection intervals if:

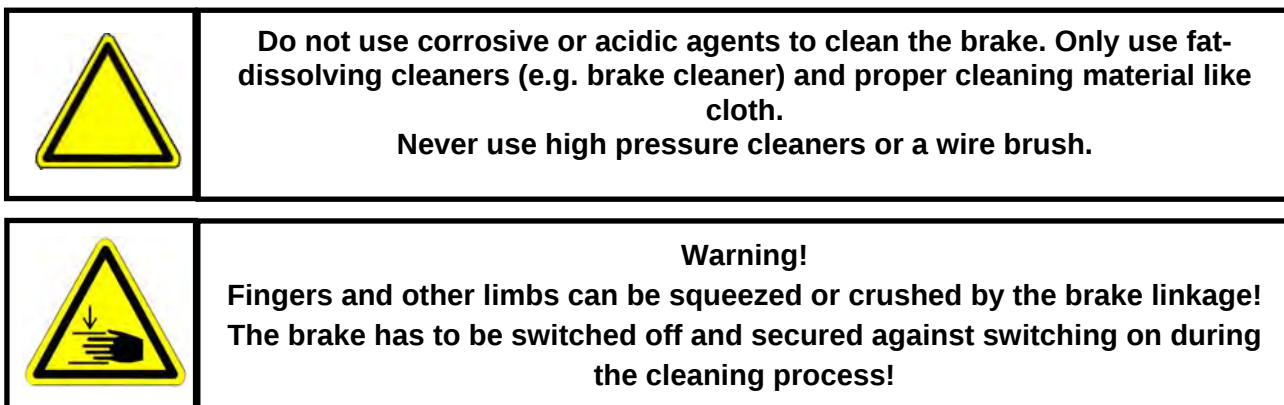
- Prolonged braking times or -distances appear
- Extreme operating conditions appear:
 - ⇒ Overspeeding of the brake drum
 - ⇒ and/or excessive braking times
- After a longer period of brake-standstill or drive standstill.



5.2 Lubrication

Because of the maintenance-free bushings installed on the brake, no lubrication is needed.

5.3 Cleaning



The braking force can only be transferred to the brake drum when both contact surfaces (brake drum and brake pads) are clean.

Make sure they are free from fat, oil, rust and other contaminations.

The brake itself especially the moving parts have to be kept clean as well.

5.4 Brake drum wear

Replace brake drum when:

- Cracks appear
- The wear exceeds 2mm of brake drum diameter

In case of brake drum wear:

- Check/Readjust the braking torque (section 3.4).
- Check/Readjust brake shoe lift-off (section 3.2).
- Check/Readjust the reserve stroke at the thruster (section 3.5).

5.5 Brake shoe replacement



Warning!
During the braking process the brake drum and the brake shoes heat up!
Danger of burning!
Let brake drum and brake cool down before changing the brake pads!

Minimum thickness of the linings:

- Glued linings: 3 mm
- Riveted linings / Glued and riveted linings: 5 mm

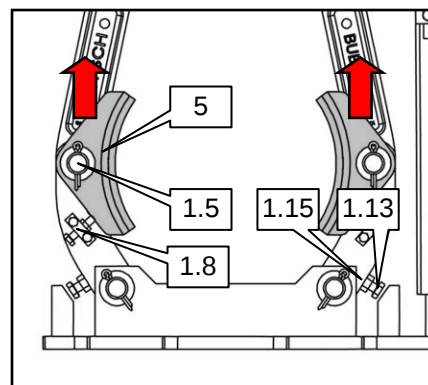


Fig. 20:

- Loosen Lock-nuts (3.11).
- Loosen lock-nuts (1.15).
- Loosen adjusting bolts (1.13) for some revolutions.
- Turn Nut (3.14) counter clockwise.
⇒ Brake shoes (5) move away from brake drum.
- Remove cotter pins and washers from brake shoe pin (1.5).
- Remove brake shoe pin (1.5).
- Pull out brake shoes (5) towards spindle (Arrow).
- Insert new brake shoes (5).
- Insert brake shoe pin (1.5) and secure it with cotter pins and washers.
- Turn stop-screw (1.13) until the space between linings and brake drum surface is equal on both sides.
- Tighten both lock-nuts (1.15).
- Loosen lock-nuts (1.9)
- Adjust equal air gap over the whole gaps by turning adjusting screws (1.8) if necessary.
- Retighten lock-nuts. (1.9).
- Release and close the brake.
- Check function and adjust if necessary.

5.6 Exchanging bolts and bushes

To exchange the bushes, the brake has to be disassembled. This means it has to be dismantled, depending on the installation. **Secure the installation against any accidental movement!**

- Open brake by releasing the brake tension.
- Open centring bolts.
- Release brake completely by adjusting nut.
- Dismount brake.
- Before removing the bushes note positions.

- Don't damage the bores when removing the bushes.
- Clean and debur bores if necessary.
- Note the mounting-direction of the bushes.
- Don't damage or jam the bushes when driving / pressing them into the levers.
- Reset brake to operating values according to section 3!

5.7 Exchanging the thruster

- Secure the movable parts (levers, etc.) against tilting! Danger of squeezing.
- Release brake spring tension (2.8).
- Open brake completely by adjusting nut (3.14).
- Dismount limit switch if mounted (Refer to section 4.7).
- Disconnect thruster (4).
- Remove cotter pins and washers from Eldro (upper pin 4.2) and (lower pin 4.3).
- Attach thruster (4) with e.g. a rope to a suitable lifting device.
- Loosen and remove bolts (upper pin 4.2) and (lower pin 4.3).
- Exchange thruster (4).
- Reassemble brake.
- Reset brake to its original values.

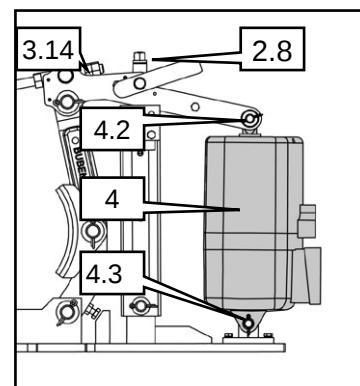


Fig.11:

5.8 Exchanging the spring unit

- Secure the movable parts (levers, etc.) against tilting! Danger of squeezing.
- Release brake spring tension (2.8).
- Open brake completely by adjusting nut (3.14).
- Dismount limit switch if mounted (Refer to section 4.7).
- Remove cotter pins and washers from Eldro (upper pin) (4.2) and lever (1.6).
- Remove bolts (1.14).
- Remove upper levers.
- Remove lower bolt (2.5) at spring tube (2).
- Exchange spring unit (2) with crosspiece.
- Reassemble brake
- Reset brake to its original values.

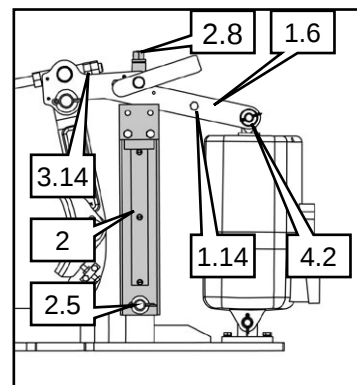


Fig.11:

6 Putting out of service and disposal

When the brake is put out of service, the following instructions have to be heeded, to help avoiding dangers to life, material and environment:

The brake must only be put out of service and disposed by trained and qualified personnel.

Always heed the applying laws and regulations to avoid dangers to live and health and to prevent damages to the installation and environment!



Important!
Because of the weight of the brake always use proper lifting devices and transport the brake using the lifting ore!
Danger of injury!



Warning!
A sudden startup of the installation endangers the life of the working personnel! Secure the drive and the installation against any accidental movement before starting any work!

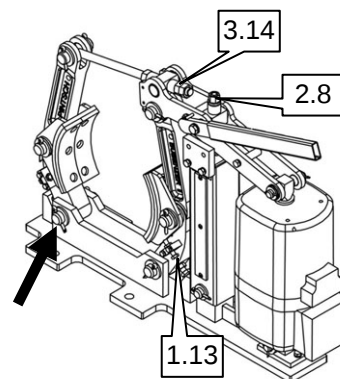


Danger!
The applied electrical voltages are dangerous to life!
The electrical connection and all other electrical tasks must only be done by a trained electrician!



Take care that the hydraulic fluids, lubricants and other used substances as well as oil-soiled parts are disposed environmental friendly and in compliance with the corresponding laws and regulations!
Electronic scrap has to be disposed separately.

- Disconnect thruster.
- Release brake spring tension (2.8).
- Open centring screws (1.13).
- Open brake manually via main spindle (3.14).
- Depending on the mounting situation.
 - Screw spindle has to be screwed out of the crosspiece to open the levers.
 - Dismount lower bolt(s) at lever(s) if necessary (arrow).
 - Dismount levers, if necessary.
- Loosen mounting bolts.
- Dismount brake.



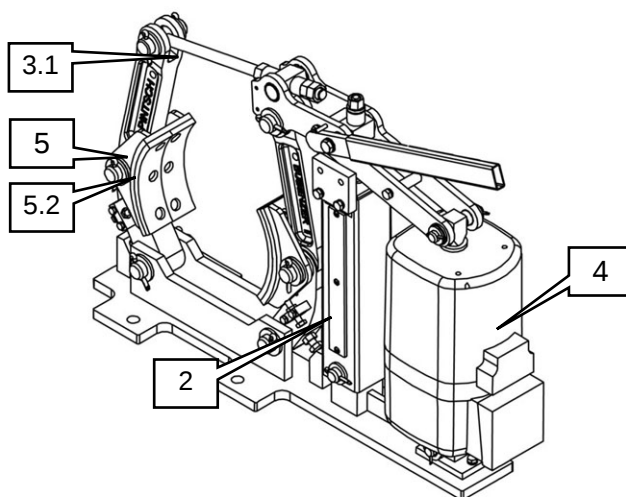
7 Troubleshooting

Symptom	Possible reason	Action	Section
Brake doesn't close	Brake is mechanically blocked	Check	-
	Brake is manually released	Manually close	-
	Spring tension to low	Adjust spring tension	3.4
	Spring damaged	Exchange spring unit	5.8
	Signal „open“ is active	Check connection	-
	Reserve stroke to small	Adjust reserve stroke	3.5
	Brake pads worn	Exchange brake pads	5.5
Brake doesn't open	Brake is mechanically blocked	Check	-
	Adjusting bolt (3) has been tightened while brake was closed.	Adjust equal brake pad lift off	3.3
	Spring tension to high	Adjust spring tension	3.4
	Signal „close“ is active	Check connection	-
	Reserve stroke to big	Adjust reserve stroke	3.5
	No power supply	Check electrical supply and connection	3.2
	Thruster damaged	Exchange thruster	5.7
Braking distance to long	Spring tension to low	Adjust spring tension	3.4
	Brake pads have uneven contact	Align brake	3.1
	Brake pads haven't been run in correctly	Run in brake pads	3.7
	Reserve stroke to small	Set Reserve-stroke	3.5
	Brake pads soiled	Brake clean	-
	Brake soiled	Clean brake	-
	Brake pads worn	Exchange brake pads	5.5
	Brake drum worn	Exchange brake drum	-

8 Spare parts

	Important! In case of ordering, please indicate the type and the serial no. of the brake which is located on the type plate of the brake!
	Notice! The use of spare parts, not meant for this brake, can lead to a malfunction of the brake or damage the brake! Only use original PINTSCH BUBENZER spare parts!!

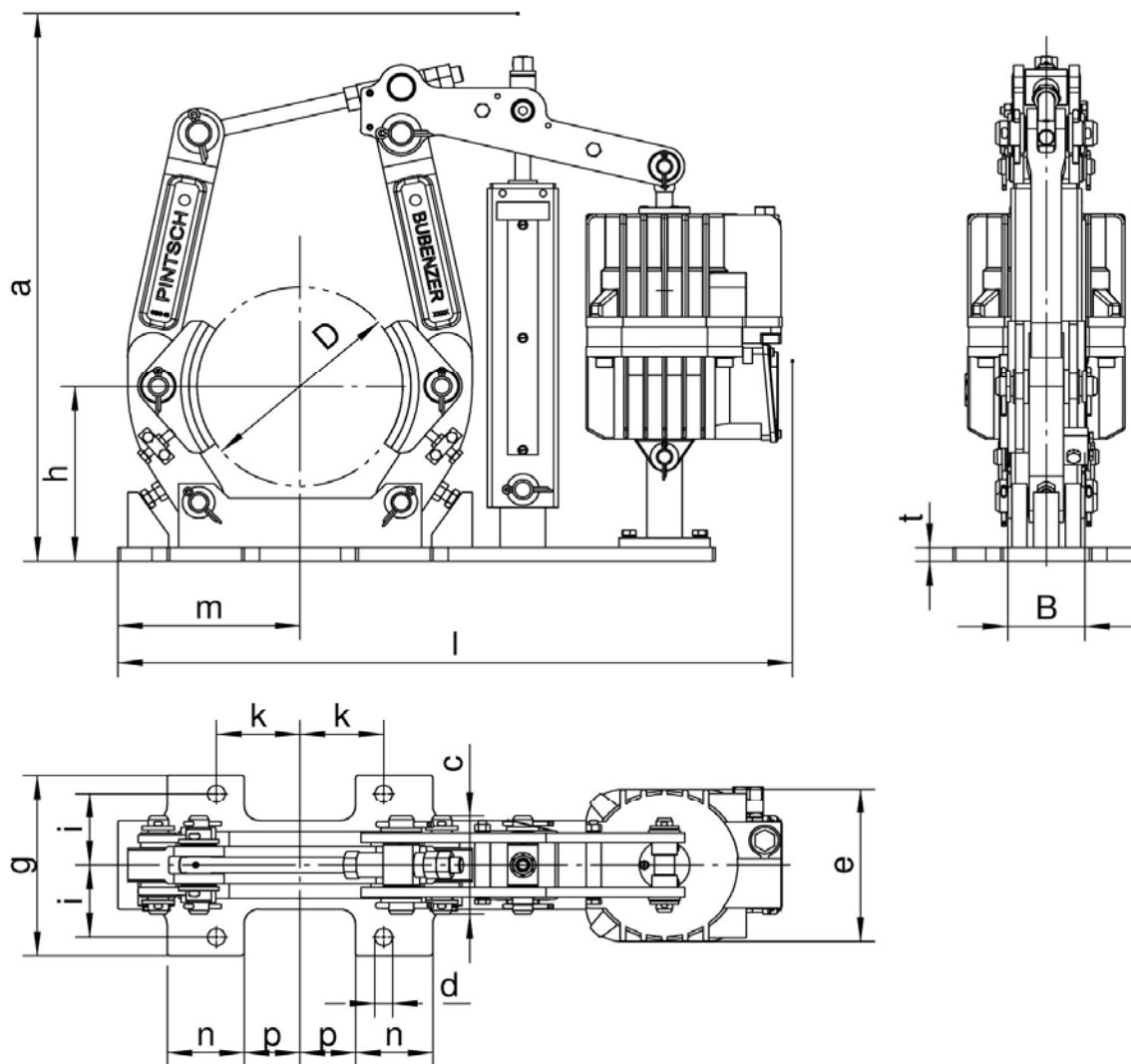
No.	Quantity / brake	Part designation	Remarks
2	1	Brake spring unit	Ready for installation
3.1	1	Spindle	
4	1	Thruster	See data plate for specifications
5	2	Brake shoe	Complete w/ lining (riveted or glued)
5.2	2	Brake lining	Incl. rivets
W/o	1	Bushing kit	Does one brake
W/o	2	Pin kit	Does one brake



9 Appendix

	Important! These tightening torques apply for: $\mu_{\text{compl.}} = 0.12$ (black or bonderd, slightly oiled) Used Nordlock-washers must not be used again!
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Coarse-pitch thread – with or without NORD-LOCK-washers							
Size	Tightening Torques M_A						SW [mm]
	8.8 [Nm]	8.8 [Lbf*ft]	10.9 [Nm]	10.9 [Lbf*ft]	12.9 [Nm]	12.9 [Lbf*ft]	
M4	3	2.3	4.6	3.4	5.1	3.8	7
M5	5.9	4.4	8.6	6.3	10	7.4	8
M6	10.1	7.5	14.9	11.0	17.4	12.8	10
M8	24.6	18.2	36.1	26.6	42.2	31.1	13
M10	48	35.4	71	52.4	83	61.3	17 (16)
M12	84	62.0	123	90.8	144	106.3	19 (18)
M14	133	98.2	195	143.9	229	169.0	22 (21)
M16	206	152.0	302	222.9	354	261.3	24
M18	295	217.7	421	310.7	492	363.1	27
M20	415	306.3	592	436.9	692	510.7	30
M22	567	418.4	807	595.6	945	697.4	32 (34)
M24	714	526.9	1015	749.1	1190	878.2	36
M27	1050	774.9	1496	1104.0	1750	1291.5	41
M30	1428	1053.9	2033	1500.4	2380	1756.4	46



Alterations reserved without notice

Brake Type	TORQUE	DRUM SIZE	SHOE WIDTH	DIMENSIONS														WEIGHT		PART NUMBER	
	$\mu=0,4$ ⁽¹⁾	D	B	h	a	c	d	e	g	t	i	k	l	m	n	p	w/o thruster	with thruster			
	lbft	INCHES														lbs		BRAKE	RELEASE UNIT		
EBA 6"-12/4 ⁽²⁾	50	6	2.50	5.25	16.00	3.46	0.47	6.00	5.91	0.31	2.25	2.75	21.25	5.31	2.76	1.96	31	48	00200500.00001	245.00057	
EBA 6"-23/5 ⁽²⁾	110				16.75	6.10	53	245.00060													
EBA 8"-23/5	180	8	3.00	7.00	21.00	4.00	0.69	6.10	7.25	0.55	2.88	3.25	26.00	7.09	3.00	2.17	79	101	00200500.00002	245.00067	
EBA 8"-30/5	260				21.50	6.30	110	245.00071													
EBA 10"-23/5	230	10	3.50	8.38	21.46	4.49	0.69	6.10	8.00	0.59	3.13	4.00	30.75	8.27	3.50	2.76	95	117	00200500.00003	245.00069	
EBA 10"-30/5	330				22.00	6.30	126	245.00068													
EBA 13"-30/5	400	13	5.50	9.88	28.50	5.51	0.81	6.30	11.00	0.59	4.5	5.75	35.50	11.02	4.33	4.53	179	210	00200500.00004	245.00048	
EBA 13"-50/6	750							8.66					38.75					230		245.00049	
EBA 16"-50/6	675	16	6.50	12.13	29.50	6.58	1.06	8.66	13.25	0.79	5.38	7.50	43.00	12.60	5.12	5.51	241	292	00200500.00005	245.00070	
EBA 16"-80/6	1250							294										245.00071			

⁽¹⁾ Average friction factor of standard material combination

⁽²⁾ AISE-NEMA does not define a 6-inch brake size