

Installation and operating instructions for Brake DV/DH 025/030/035 PFM

E 09.760e



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Issue: 18.02.2022	Version: 4	Drawn: FRMA	Checked: EISF	Pages: 12	Page: 2

Important

Please read these instructions carefully before installing and operating the product. Your particular attention is drawn to the notes on safety.

These installation and operating instructions are valid on condition that the product meets the selection criteria for its proper use. Selection and design of the product is not the subject of these installation and operating instructions.

Disregarding or misinterpreting these installation and operating instructions invalidates any product liability or guarantee by RINGSPANN; the same applies if the product is taken apart or changed.

These installation and operating instructions should be kept in a safe place and should accompany the product if it is passed on to others -either on its own or as part of a machine- to make it accessible to the user.

Safety Notice

- Installation and operation of this product should only be carried out by skilled personnel.
- Repairs may only be carried out by the manufacturer or accredited RINGSPANN agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either RINGSPANN or an accredited RINGSPANN agent should be informed.
- Switch off the power supply before commencing work on electrical components.
- Rotating machine elements must be protected by the purchaser to prevent accidental contact.
- Supplies abroad are subject to the safety laws prevailing in those countries.

This is a translation of the German original version!

In case of inconsistencies between the German and English version of this installation and operating instruction, the German version shall prevail.

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1. General notes

1.1 General safety instructions

Read these installation/operating instructions carefully before putting the brake into operation. Consider these instructions as well as the drawings in the individual sections.

All work with and on the brake is to be carried out taking into account that "safety is top priority".

Switch the drive unit off before carrying out work on the brake.

Rotating parts (e.g. brake disc) must be secured by the operator against unintentional touching.

1.2 Special safety instructions



Life-threatening danger!

When assembling, operating and maintaining the brake it is to be ensured that the entire drive train is secured against being switched on unintentionally. Moving parts can cause severe injury. Rotating parts (e.g. brake disc) must be secured by the operator against unintentional touching.

2. Design and function / parts list

2.1 Function

The brake is a machine element with which accelerated masses can be safely slowed down. In combination with a brake disc, you have a complete brake for the effective safeguarding of machines and systems. Thanks to its universal design, it fulfils the following functions:

- As a holding brake, it prevents a stationary shaft from starting unintentionally.
- As a stopping brake, it brings a rotating shaft to a halt.
- As a control brake, it maintains a particular tensile force within the material.

The braking force is produced by air pressure, and the brake is opened by springs of air pressure.

2.2 Identification

These operating instructions apply for:

- The execution V, parallel attachment to the machine.
- The execution H, right-angled attachment to the machine.
- For brake disc thickness $W = 12.5, 25, 30, 40$ and for special widths.
- With thruster mounted right.
- With thruster mounted left.

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- With signal transmitter installation.
- With different friction pad variants (e.g. with cable for wear monitoring, higher sliding speed, double friction surface or special friction materials.)
- With special frame.

There is a type plate on the brake with a 16-digit article number. The exact design of the brake is defined by this article number only.

As well as these instructions, please also consider the catalogue data for the brake at www.ringspann.com and the drawings in the individual sections.

2.3 Drawing and parts list

Drawing of brake DH, for model DV see catalogue data

Frame: In V execution DV 035 thruster only right version

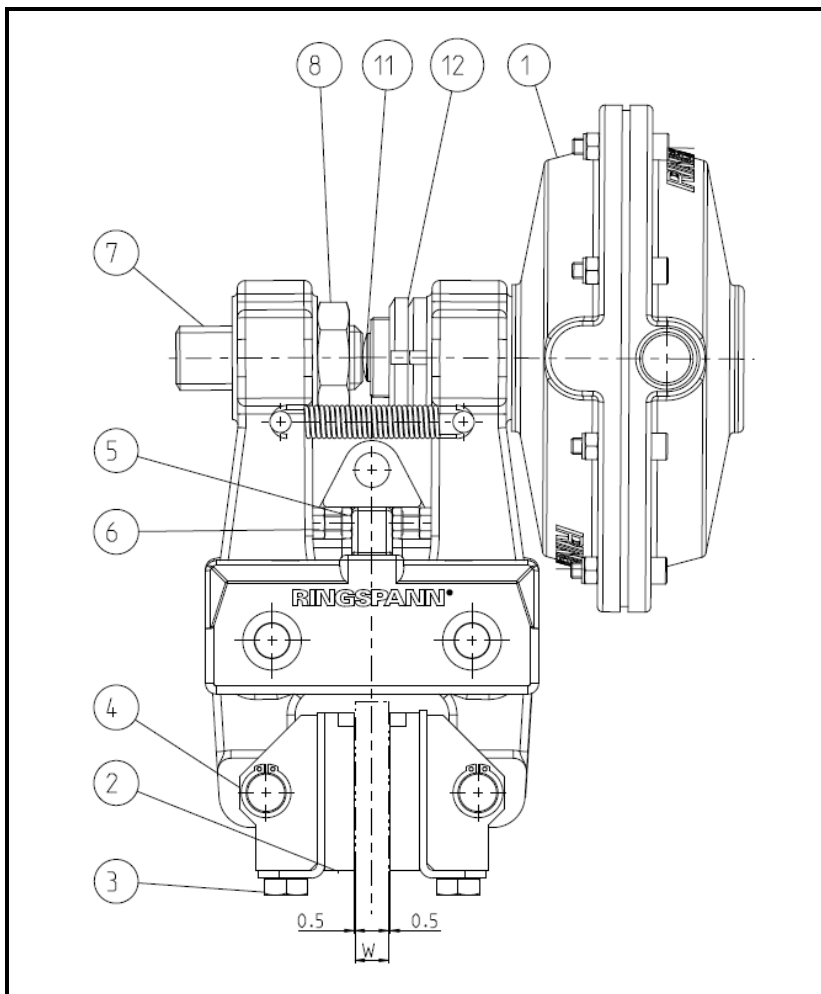


Fig. 2.1

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Part	Designation	Quantity
1	Thruster	1
2	Friction pad	2
3	Screw for friction pad	4
4	Swivel piece	2
5	Adjusting screw	2
6	Nut	2
7	Set screw	1
8	Nut	1
11	Tappet	1
12	Grooved nut KM 6	2

3. Intended use

The brake has been designed for use as a holding, control and stopping brake. Use for any other purpose will be deemed improper.

4. Impermissible use

It is not permissible to operate the brake with a higher pressure than prescribed in the technical catalogue data or with other media. The application of compressed air must be carried out using air that is freed from dirt, pipe sinter, rust and condensation by a filter. Unauthorised constructional changes to the brake are also not allowed.

5. Condition as delivered

The brake is tested prior to delivery. The brake is delivered ready to install. The brake is delivered depressurised. Sensors are delivered separately.

6. Handling and storage

The technical data of the brake such as air pressure, clamping force, air volume, dimensions and weight are shown on the catalogue pages of the brake. The current data can also be found on the RINGSPANN website www.ringspann.com.

The brake can be stored for 12 months in an enclosed and dry place. It is to be made sure that no condensation develops. Damp storage rooms are not suitable. If storing the brake for a period

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longer than 12 months, as well as after any transport, the brake must be activated once in order to prevent the seals from getting stuck down.

7. Technical prerequisite for reliable operation

Fastening the brake to stable and low-vibration machine parts will ensure quiet braking without creaking.

8. Installing the RINGSPANN brake

8.1 General instructions regarding assembly and installation

Before installing the brake, the brake disc must be cleaned with alcohol (e.g. spirit (ethanol) or isopropyl alcohol) or with water-based tenside solutions (soapy water or the like).

If cleaning the brake disc with a diluent, acetone or brake cleaning agent, it must be ensured that these agents and no residues of these agents come into direct contact with the friction blocks. This must be ensured for pure holding brakes in particular, since no dynamic braking takes place that would remove any diluent residues from the brake disc.



Important!

Residues from oil and anti-rust agent considerably reduce the coefficient of friction and thus also the braking and holding torque!

8.2 Assembly description

The standard brake callipers are fastened to the machine part with screws of strength class 8.8 or higher. (The screws are not included in the scope of supply. Please see the catalogue pages for quantities, sizes and lengths).



Caution - danger of injury!

If compressed air activated during assembly, the brake can suddenly close!

Before assembly it is to be checked that the customer connection part is even and that the axial run-out between the brake disc and the mounting surface of the brake is within a tolerance of 0.3 mm.

Examine the axial movement of the brake disc. The axial movement must not be greater than ± 0.3 mm.

The maximum permissible lateral run-out of the brake disc is 0.1 mm. A greater lateral run-out can cause the brake unit to rattle and shake.

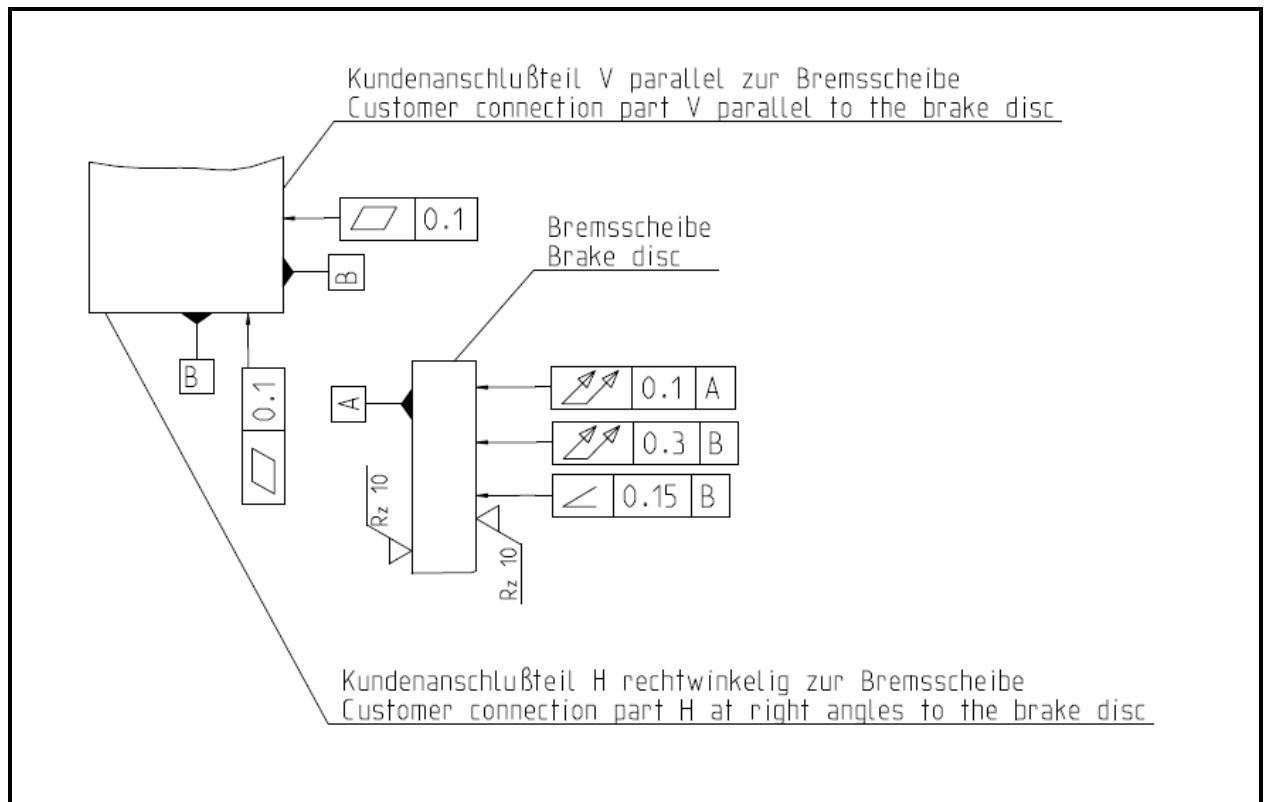


Fig. 8.1

The connecting plate for the brake as well as the brake disc must be checked for dimensional accuracy. For this purpose, the connection dimensions shown on the catalogue data sheet or installation drawing are to be checked.



Important!

Check whether the brake disc can be freely rotated.

8.3 Adjusting/readjusting the friction pad distance

The friction pad distance is set after the brake calliper has been assembled and after friction block wear through adjusting/readjusting. See also Fig. 2.1.

- For the purpose of adjusting, loosen the nut (item 6) and turn the adjusting screw (item 5) into the lever by approx. 2 rotation.
- Loosen the nut (item 8) at the set screw (item 7)
- With the set screw (item 7), set a total clearance between the brake pad and brake discs of 0.5 on both side or of 1 mm on one side.
- Secure the position of the set screw (item 7) using the nut (item 8).
- With the adjusting screws (item 5), the total clearance of 1 mm on one side is evenly spread to 0.5 mm on both side. Once the adjustment has been carried out, secure the position of the adjusting screws (item 5) using the nuts (item 6).

- If there is wear to the friction blocks, a braking setting must be performed as well as an adjustment/readjustment of the friction pads.



Important!

Before start-up, the air gap must be adjusted to 0.5 mm on both side!



Important!

If the friction pads are worn, a braking force setting must be performed through readjusting the friction pads.



Important!

It must be ensured that the friction pads (item 2) do not grind on the brake disc while the brake is released!

8.4 Connecting the signal cable (optional)

Attach the signal cable (e.g. via a signal lamp) to a 24V control voltage. If the maximum friction lining abrasion limit is reached, contact with the neutral conductor will be made and the signal lamp will light up.

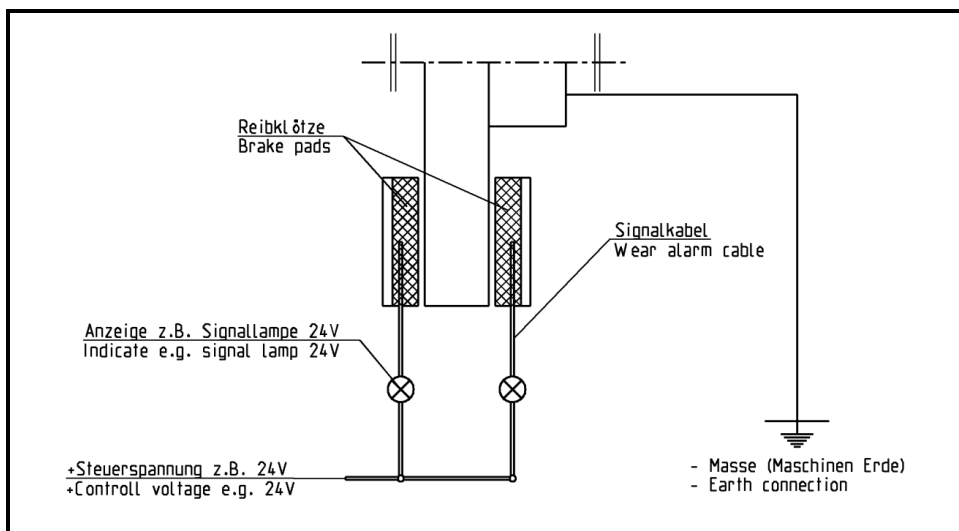


Fig. 8.2

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9. Start-up

Only full-face contact of the two friction pads (item 1) on the brake disc as well as a rapid heating of the friction linings to approx. 200°C will ensure an optimal braking effect. It is therefore necessary to brake several times and for a short duration when the brake disc is rotating.



Important!

If the brakes are used as holding brakes, then the braking torques indicated in the catalogue will not be reached. Reductions of up to 50% are possible if the brake will use as a parking brake.

10. Disassembling the brake



Life-threatening danger!

When disassembling the brake it is to be ensured that the entire drive train is secured against being switched on unintentionally. Rotating parts can cause severe injury. Rotating parts (e.g. brake disc) must be secured by the operator against unintentional touching.

Remove the screws that serve for fastening the brake to the machine frame. The brake calliper can now be removed from the mounting surface.

11. Maintenance

11.1 General maintenance

Depending on how much the brake is used in operation, maintenance is to be carried out on it at intervals of 4 to 12 weeks.

The following is to be carried out when performing maintenance:

- Check the friction pads for wear.
- Check in released status. The friction pads do not grind on the brake disc and that there is an even air gap on both sides.
- Check the screw connection of the brake calliper and the screw connection of the friction blocks for firmness.
- Check both brake calliper levers for ease of movement.
- Clean the bearing and sliding points.
- Oil or grease the bearing and sliding points.
- Check the thruster and hose connection for tightness.

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Important!

The friction linings must not come into contact with the lubricant!

11.2 Permissible friction lining wear and exchanging of the friction pad



Life-threatening danger!

Friction pads may only be changed when the system or the work machine is stationary!



Important!

If the friction pads has 5 mm thickness, the friction pads has to be change. The friction pads always change in pairs.

Only original RINGSPANN friction pads may be used.

Before exchanging the friction pads, ensure that the mass held by the brake is secured against moving, since parts of the brake need to be loosened for this purpose.

Loosen the nuts at the screws (item 6 and 8). Turn the adjusting screw (item 5) and set screw (item 7) back until the friction pads (item 2) can be exchanged without any problems. Re-secure the adjusting screws and the set screw with the nuts (item 6 and 8).

After exchanging the friction pads, tighten the screws (item 3) at the friction pads (item 2) slightly at first.

Apply the brake. The clamping force of the brake will cause the friction pads (item 2) to be pushed flat onto the swivel pieces (item 4), eliminating any air gap.

You can now tighten the screws (item 3) with a tightening torque of 30 Nm.

After exchanging friction pads, you must reset the brake torque and clearance as described in point 8.3.



Important!

After exchanging friction pads, a running-in process should be performed in order to reach the maximum brake torque.

12. Accessories: Sensor for operating state monitoring

12.1 Mounting and connection of inductive transmitter for position monitoring:

Installation of the inductive proximity switch provided



Life-threatening danger!

The inductive transmitter may only be assembled and changed when the system or the work machine is stationary!

The inductive proximity switches are enclosed loose with the delivery.

If a holder is needed to attach the inductive proximity switch to the brake, this can either be ordered separately or can be purchased as part of the sensor kit.

Switching function	: PNP (normally open contact)	Switching distance	: 1.5 mm, flush-mountable
Operating voltage	: 10....30 V DC	Max. switching current	: 200 mA
Voltage drop	: < 2.5 V	Inverse-polarity protection	: Yes
Temp. range	: -25 to +70°C	Protection class	: IP 68

Connection diagram of the inductive transmitter

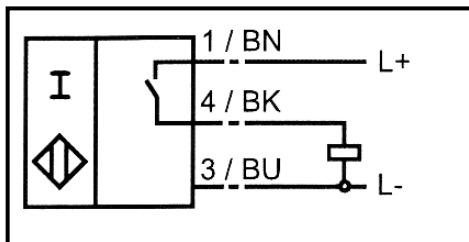


Fig. 12.1