Installation and operating instructions for Clamping Unit KEFP

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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; 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 agents.
- If a malfunction is indicated, the product or the machine into which it is installed, should be stopped immediately and either we or an accredited 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

Put clamping unit brake into operation. Observe the individual sections of these instructions.

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

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

Moving parts must be secured by the operator against unintentional touching.

1.2 Special safety instructions

Life-threatening danger!

When assembling, operating and maintaining the clamping unit it is to be ensured that the entire drive train is secured against being switched on unintentionally. Moving parts can cause severe injury. The moving parts must be secured by the operator against unintentional touching.

2. Design and function / parts list

2.1 Function

The clamping unit is a machine component with which masses can be held securely in position. In combination with a piston rod/clamping rod, you have a complete linear brake for the effective safeguarding of machines and systems. Thanks to its design, it fulfils the following functions:

- As a holding brake for linear movement, it prevents unintentional starting of piston rods/clamping rods from stationary position.

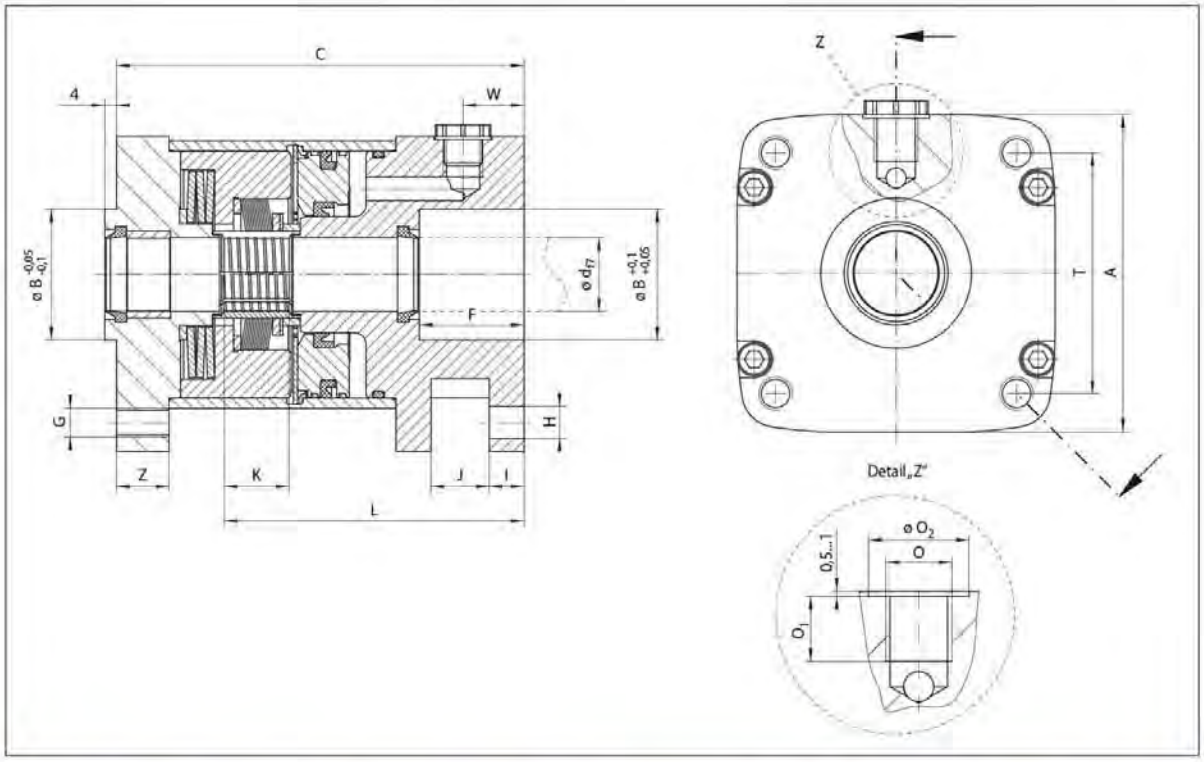
The holding force is produced with spring force, and the brake is opened by means of compressed air.

2.2 Identification

These operating instructions apply for:

- The KEFP standard execution as per catalogue
- The KEFP executions with special flange and high-grade steel screws
- The KEFP executions with special connections and seals

2.3 Drawing with dimensions



Size	Piston rod- ø d	Holding force F_H [1]	A	B	C	F	G	H	I	J	O	O_1	O_2	T	W	Z	Air vol. per activation	Weight
	mm	N	mm	mm	mm	mm		mm	mm	mm		mm	mm	mm	mm	mm	cm^3	kg
40	16	1 000	70	35	95	24	M6	6,6	6	14	G1/8	10,5	16	38	15,5	13	5,5	1,1
50	20	1 600	75	40	112	30	M8	9	8	16	G1/4	12,5	20	46,5	22,9	13	13,5	1,5
63	20	2 500	95	45	120	30	M8	9	8	16	G1/4	14	20	56,5	15,0	12	27	3,2
80	25	4 000	95	45	140	36	M10	11	12	20	G1/4	14	20	72	21,0	18	27	3,5
100	25	6 300	120	55	150	40	M10	11	12	20	G1/4	14	20	89	21,0	19	59	5,8

[1] Please note recommendations on page 132.

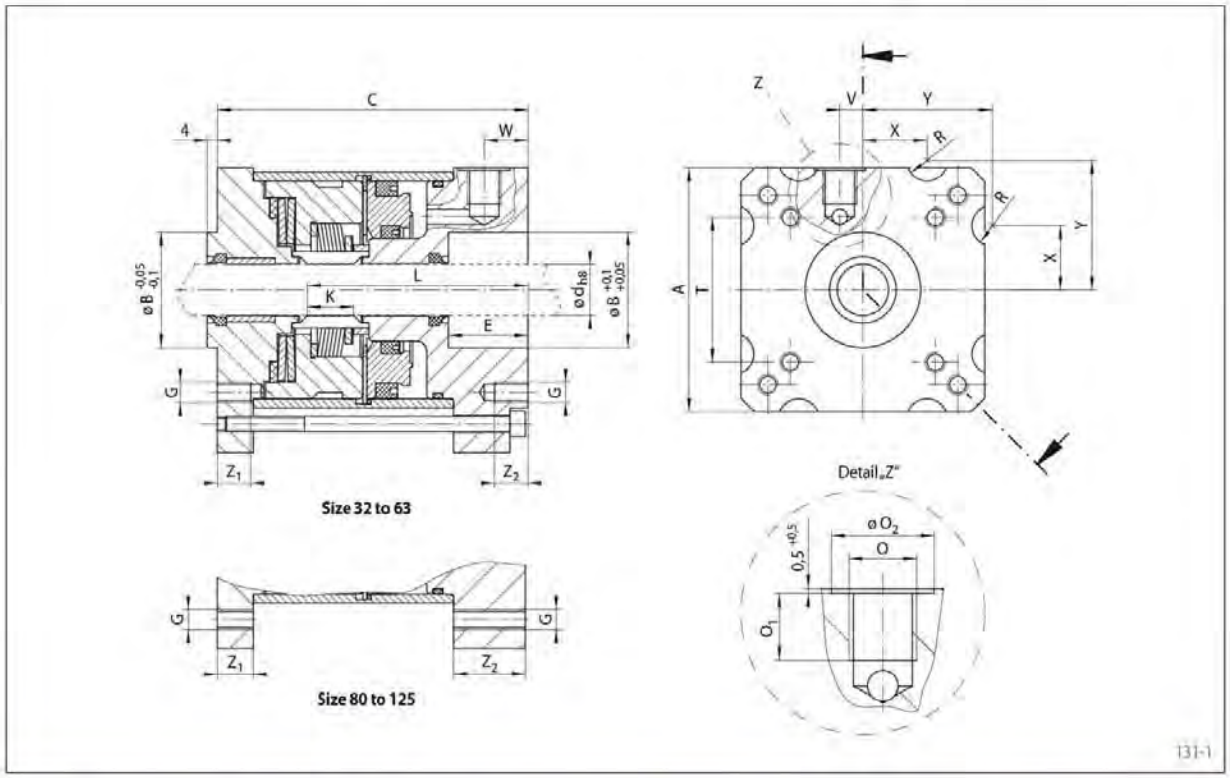
Features

- For continuous piston rod clamping
- Spring activated, pneumatically released
- Connection dimensions compatible with pneumatic cylinders according to ISO
- Direct mounting on pneumatic cylinders
- Holding forces transmissible in both directions of movement
- No application of force (lifting) to the piston rod required for release

Release pressure

The release pressure of the spring activated pneumatically released Clamping Unit KE ... FPK is min. 5 bar and max. 8 bar.

Fig. 2.1



Cylinder-ø	Piston rod-ø d	Holding force F_H [1]	A	B	C	E	G	K	L	O	O_1	O_2	R [2]	T	V	W	X [2]	Y [2]	Z_1	Z_2	Air vol. per activation	Weight	Article number
mm	mm	N	mm	mm	mm	mm		mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	cm^3	kg	
32	12	650	60	30	82	22	M 6	10,2	56,7	G1/8	19,5	16	5,5	32,5	7,5	14,0	16	32,0	10,0	10,0	5,5	0,85	4133-037953
40	16	1000	70	35	95	24	M 6	10,2	59,7	G1/8	10,5	16	7,0	38,0	0	15,5	18	36,5	13,0	13,0	5,5	1,10	4133-037954
50	20	1600	75	40	112	30	M 8	14,0	76,0	G1/4	12,5	20	-	46,5	12,0	22,9	-	-	13,0	13,0	13,5	1,50	4133-037952
63	20	2500	95	45	120	30	M 8	18,0	84,9	G1/4	14,0	20	8,0	56,5	0	15,0	25	50,5	14,0	13,0	27,0	3,20	4133-052952
80	25	4000	95	45	140	36	M 10	21,0	92,4	G1/4	14,0	20	-	72,0	0	21,0	-	-	28,0	34,0	27,0	3,50	4133-052953
100	25	6300	120	55	150	40	M 10	20,5	101,3	G1/4	14,0	20	-	89,0	0	21,0	-	-	28,0	37,0	59,0	5,80	4133-052954
125	32	9800	150	60	178	43	M 12	25,0	109,5	G1/4	14,0	20	-	110,0	0	25,0	-	-	42,5	41,5	85,0	10,90	4133-057951

[1] Please note recommendations on page 132.
[2] The dimensions R, X and Y are valid only for the flange on the right side.
Release pressure: min. 4 bar, max. 8 bar

Release pressure

The release pressure of the spring activated pneumatically released Clamping Unit KEFP is min. 5 bar and max. 8 bar

Fig. 2.2

3. Intended use

The clamping unit may only be operated with an air pressure from 5 to 8 bar and may only be used in accordance with the technical data.

The clamping unit has been designed for use as a holding brake.
Use for any other purpose will be deemed improper.

4. Impermissible use

It is not permissible to operate the clamping unit with a higher pressure than given in the technical data or with media other than compressed air. Unauthorised constructional changes to the brake are also not allowed. It is also not permissible to use the clamping unit in damp environments or to clean the clamping unit using high-pressure cleaners.

5. Condition as delivered

The clamping unit is tested prior to delivery. The test pressure is 8 bar
The clamping unit is delivered ready to install. The clamping unit is delivered depressurised.

6. Handling and storage

The technical data of the clamping unit such as holding force, air volume, dimensions and weight are shown on the catalogue pages for the brake.

The clamping unit is delivered packaged and 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 clamping unit for a period of 12 months or more, as well as after any transport, the brake must be activated ten times in order to prevent the seals from getting stuck down.

7. Technical prerequisite for reliable operation

Fastening the clamping unit to stable and low-vibration machine parts will ensure smooth operation. The piston rod/clamping rod for the brake should be made of hard chrome-plated steel (diameter in accordance with catalogue data, polished to roughness depth Rz).

8. Installing the clamping unit

8.1 General instructions regarding assembly and installation

Before installing the clamping unit, the piston rod/clamping rod 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 piston rod/clamping rod 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

clamping pieces. This must be ensured for pure holding procedures in particular, since no dynamic braking takes place that would remove any diluent residues.

Important!

No oils or greases must get onto the piston rod/clamping rod that contain friction-reducing additives such as MoS_2, graphite or teflon.Residues of oil and anti-rust agent will reduce the coefficient of friction and will thus reduce the transferable holding force substantially!

8.2 Assembly description

Important!

The permissible air pressure must be applied to the clamping unit for assembly.

Before assembling the clamping unit, it is to be checked that the mounting surface is even and that the surface of the piston rod/clamping rod shows no damage.

The piston rod/clamping rod is to be extended and lightly oiled.

The clamping unit should be attached using a flexible compressed air hose. Compressed air can then be applied to the clamping unit, which can in turn be pushed onto the piston rod/clamping rod.

Important!

A flexible compressed air hose should be used for the connection.
Before assembling the clamping unit directly, check that there is an air pressure of at least 5 bar.

8.3 Assembling the screw connection of the clamping unit

The clamping unit should be depressurised on the piston rod/clamping rod before fastening the screws. For this purpose, the clamping unit is pushed in position on the guide rod with compressed air applied.

The clamping unit is then depressurised. The clamping unit will clamp onto the piston rod/clamping rod. Now the screws and nuts are mounted and evenly tightened. This procedure is necessary in order to prevent the moving parts inside the clamping unit from warping.

The minimum screw-in depth of the fastening screws in the clamping unit should be 1.4x M

thread size. A maximum screw-in depth value of Z_1-1 mm or- Z_2-1 mm should not be exceeded.

The table shows the tightening torques of the fastening screws.

Clamping unit for cylinder size	Max. tightening torque in thread M	Thread M
32	7 Nm	M6
40	7 Nm	M6
50	15 Nm	M8
63	15 Nm	M8
80	30 Nm	M10
100	30 Nm	M10
125	55 Nm	M12

Important!

Flexible compressed air hoses should be used for the connection of the clamping unit so as to not inhibit the movements of the brake.

9. Start-up

The clamping unit may only be operated with an air pressure from 5 to 8 bar.

Important!

The clamping unit may only be operated with an air pressure from 5 to 8 bar and may only be used in accordance with the technical data.

10. Disassembling the clamping unit

Life-threatening danger!

Before disassembling the clamping unit 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. In order to prevent personal injury, secure the clamping unit using an assembly securing device.

Secure the opened position and then loosen the 4 fastening screws of the clamping unit. After loosening and removing the fastening screws, compressed air can be applied to the clamping unit and the clamping unit can be removed from the piston rod/clamping rod.

11. Lubrication

No lubrication is necessary. Please note:

Important!

No oils or greases must get onto the piston rod/clamping rod that contain friction-reducing additives such as MoS_2, graphite or teflon.
Residues from oil and anti-rust agent considerably reduce the coefficient of friction and thus also the transferrable holding force!

12. Maintenance

12.1 General maintenance

Depending on how much the clamping unit is used in operation, maintenance is to be carried out on it at intervals of 4 weeks to once a year.

The following is to be carried out when performing maintenance:

- Check that the clamping unit is functioning correctly.
- Check the screw connection of the clamping unit to the machine part and also check the firmness of the screw connection of the holding plates.
- Check the compressed air lines and connections for tightness.
- Visual check of the piston rod/clamping rod for scoring.

In the case of more than 500,000 switching operations, the clamping units are to be repaired after 500,000 switching operations each. The clamping unit is to be sent to us for maintenance.

Important!

After 500,000 switching operations, the clamping unit is to be sent to us for maintenance and repair.

Important!

Owing to its structure, the clamping unit may only be cleaned when necessary, using a damp rag to clean it from the outside. It is not permissible to clean the clamping unit using a high-pressure cleaner or other aggressive media.

Important!

Owing to its structure, the clamping unit may only be disassembled, maintained and repaired by authorised personnel. For this purpose, the clamping unit is to be sent to us.

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