

English translation of German original

Technical Data Sheet TI-F15

Locking Unit KB Rod diameter 40 mm - 80 mm

For detailed functional description refer to „Technical Information TI-F10“. Furthermore important practical advices are given in the „Operating Manual BA-F15“.

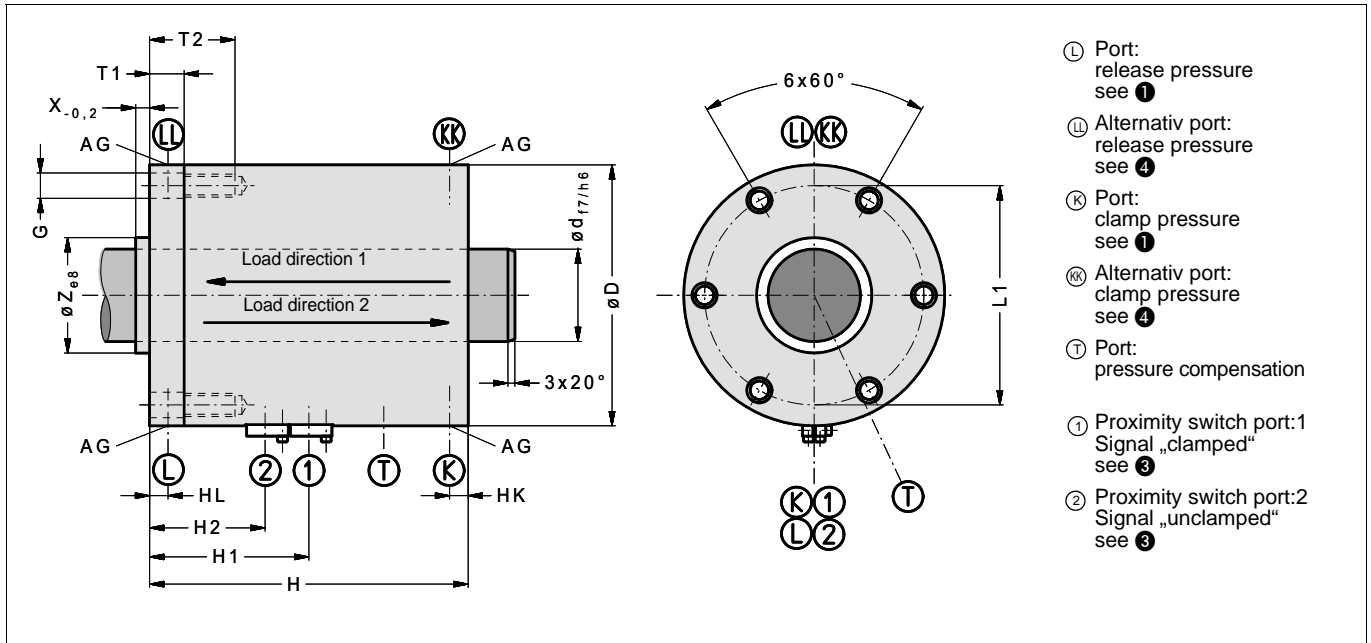


Fig. 1: Dimensions Locking Unit KB (CAD-Files download at www.sitema.com)

Type	Ident.-No.	① ① ②																
		d	F	p	D	H	L1	T1	T2	Z	X	G	AG	HL/HK	V	H1	H2	Weight
		mm	kN	bar	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	cm ³	mm	mm	ca. kg
KB 40	KB 040 05	40	80	160	138	196	118	20	45	52	3	M12	G1/4	10	30	110,5	82,5	20
KB 56	KB 056 03	56	140	160	170	230	145	21,5	55	70	3	M16	G1/4	11	55	130,5	102,5	36
KB 80	KB 080 06	80	210	160	226	270	190	30	70	100	4	M20	G3/8	15	80	159	107	75

Subject to modification without prior notice

① F is guaranteed as minimum holding force for dry or mineral oil wetted shafts, when the specified pressure p is applied. If the actual needed holding force is less than F, then a reduction of the clamping pressure is recommended.

For releasing same pressure as for clamping is most useful.

The permissible working pressure is 160 bar.

② Hydraulic volume for both ports.

③ Proximity switch holders are provided for standard proximity switches M12x1 shielded and with a nominal switching distance of 2 mm.

④ Plugged hydraulic ports LL and KK alternative to L and K ,also useful for bleeding.

Technical Data Sheet TI-F15 Locking Unit KB Rod diameter 100 mm - 200 mm

For detailed functional description refer to „Technical Information TI-F10“. Furthermore important practical advices are given in the „Operating Manual BA-F15“.

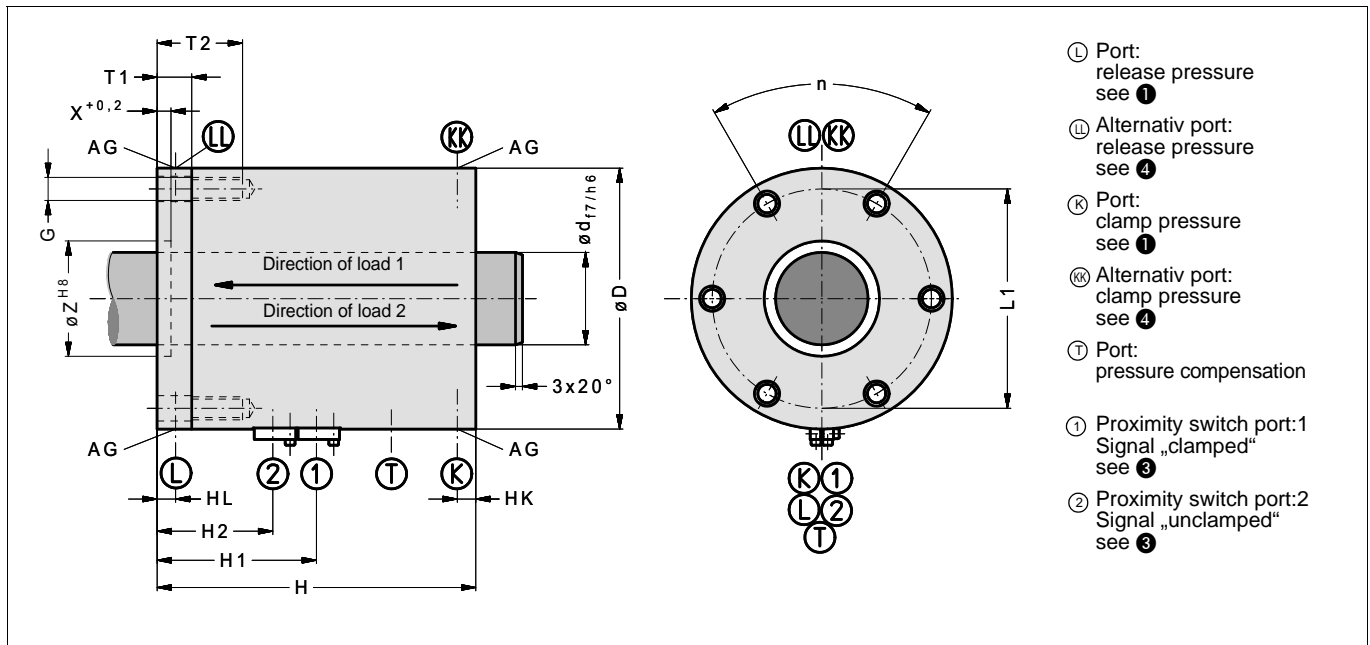


Fig. 2: Dimensions Locking Unit KB (CAD-Files download at www.sitema.com)

Type	Ident.-No.	①																	②		Weight
		d	F	p	D	H	L1	T1	T2	Z	X	n	G	AG	HL	HK	V	H1	H2	ca. kg	
		mm	kN	bar	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	cm ³	mm	mm	
KB 100	SK 100 059	100	330	130	280	322	240	44	90	140	10	6x60°	M24	G1/2	25	25	130	174	122	134	
KB 110	SK 110 032	110	450	130	300	344	260	44	90	180	10	6x60°	M24	G1/2	25	25	150	185	133	164	
KB 125	SK 125 034	125	450	130	300	344	260	44	90	180	10	6x60°	M24	G1/2	25	25	150	185	133	164	
KB 140	SK 140 030	140	600	130	335	392	290	50	100	230	10	6x60°	M30	G1/2	30	30	180	200	148	222	
KB 160	SK 160 021	160	800	130	375	402	330	50	100	270	15	6x60°	M30	G1/2	30	30	240	200	148	283	
KB 180	SK 180 013	180	950	130	405	434	360	50	100	290	15	8x45°	M30	G1/2	30	30	300	206	154	350	
KB 200	SK 200 013	200	1100	130	425	444	380	50	100	310	15	8x45°	M30	G1/2	30	30	360	206	154	382	
KB 200	KB 200 10	200	1500	140	455	544	400	70	120	300	15	12x30°	M30	G1/2	50	40	400	380	328	521	

Subject to modification without prior notice

① F is guaranteed as minimum holding force for dry or mineral oil wetted shafts, when the specified pressure p is applied. If the actual needed holding force is less than F, then a reduction of the clamping pressure is recommended.

For releasing same pressure as for clamping is most useful.

The permissible working pressure is 140 bar.

② Hydraulic volume for both ports.

③ Proximity switch holders are provided for standard proximity switches M12x1 shielded and with a nominal switching distance of 2 mm.

④ Plugged hydraulic ports LL and KK alternative to L and K ,also useful for bleeding.

Operational purpose

The Locking Unit KB clamps a shaft in any position. It is commonly used on a cylinder rod or an other round shaft and holds axial forces in both axial directions.

Load direction

A force in load direction 1 is always held without backlash

If the force acts in load direction 2 a backlash also does not occur, provided the force is not exceeding approx. 80% of the nominal holding force F . Otherwise the possible axial displacement is 0.1 - 0.3 mm.

Choosing the right size

The table (Page 1 and Page 2) shows the nominal holding force F of the various items. The value F must be higher than the maximal axial load in the particular application.

T- port

The tapped hole marked T (tank, oil leakage) is used for pressure compensation (breathing). It is plugged with a filter element when supplied from the factory.

In case the Locking Unit KB is to work in corrosive environment, e.g. coolant spray, port T must be connected to clean atmosphere or hydraulic tank by a pipe or hose

Rod material

The Locking Unit KB will operate correctly only if the rod has the correct surface:

- ISO tolerance field f7 or h6
- Surface roughness: $R_z = 1$ to $4 \mu\text{m}$.
- Rod surface hardened (min HRC 56).
- Hard chrome plating $20 \pm 10 \mu\text{m} / 800 - 1000 \text{HV}$
- Lead-in chamfer $3 \times 20^\circ$, rounded.

As the actual holding force can be as high as two times the nominal holding force F (for F see data sheets or dimensional drawing), care must be taken to ensure that the strength of rod material is adequate. In the case of compression-loaded rods, sufficient buckling resistance must be assured.

In practice, suitable and commercially available rods are:

1. Piston rods, hard chrome plated (ISO tolerance f7)
 Basic material: Yield strength, min. 580N/mm^2
 Induction hardened HRC 56 - 64 / min. 1 mm deep
 Hard chrome plating: $800-1100 \text{HV}$ min. $13 \mu\text{m}$ deep
 Surface finish: RA 0,15 - 0,25
2. Shafts for linear ball bearings (ISO tolerance h6)
 Induction hardened HRC > 60
 Surface finish: RA 0,15 - 0,25

Pressure fluid

Hydraulic oil (HLP) in accordance with DIN 51524-2 must be used as pressure medium. Please consult us before using any other media.

Control

In most applications the actuation suggested in Abb. 2 is used.

During every operational cycle the 4/2-way valve is actuated electrically and releases the locking unit. In case the pressure should fail, the load is secured in the same way.

If the hydraulic pressure fails, a gradual but rather unpredictable release of the clamping force is to be expected.

To avoid possible problems, the shaft should not be driven unless the proximity switch 2 indicates "unclamped".

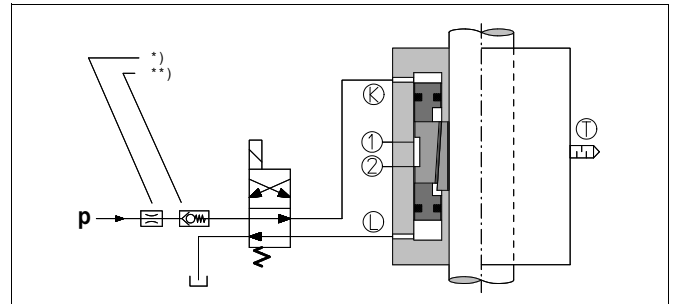


Fig. 3: Schematic diagram of hydraulic circuit

- * If impact noises are audible when pressuring the Locking Unit KB due to excess pressure, they can be suppressed by means of a flow control valve in the p-line.
- ** If the pressure (p) is not sufficiently constant (e.g. pressure drop at the beginning of a downward stroke) we recommend a check valve in the p-connection of the valve.

If a particular quick response of the Locking Unit KB is required, the following preconditions must be met:

- Short piping distances
- large valve and pipe cross-sections
- fast valve response times

Operating conditions

The Locking Unit KB is designed to operate in usual clean and dry shop atmosphere.

In case of other environments at least the T-port for breathing purposes is to be connected to a clean and dry volume (tank). Should heavy soiling conditions (grinding dust, chips, other liquids, etc.) exist, please contact SITEMA.

Grease on the rod may reduce the holding force. The permissible ambient temperature is 0 - 60°C.

Regular functional checks

The Locking Unit KB must be functionally checked at regular intervals. Regular checking is the only way to ensure that the unit will safely operate in the long term.

Testing must be carried out at least once every 6 months..

For testing a force at least equal to the working force, but normally equal to the nominal holding force F is applied.

In every case the criteria is, that the test force is held without slipping.

Maintenance

Maintenance is limited to the regular test of the holding force as prescribed above.

Any repair or refurbishing must be carried out by SITEMA. SITEMA cannot take any responsibility for repairs by another party.