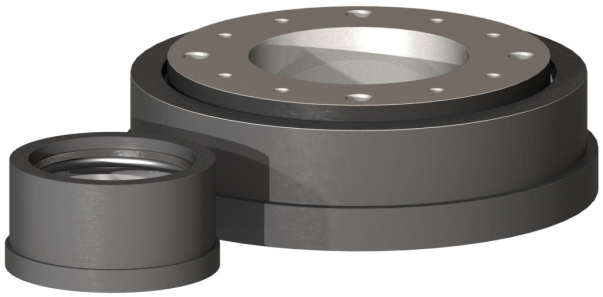
Technical Data Sheet TI-A20
Spring bases for Safety Catchers KR, KRP and K series



☑ Release without lifting the load after minor lowering of the load

☑ Compensates lateral misalignments between axis guidance and clamping rod

Table of Contents

1 Purpose

For safety reasons, the clamping system of a Safety Catcher can only be released if it is not under load.

If the vertical axis of a machine overshoots after reaching its top cut-off position or moves slightly downwards for any particular reason, the Safety Catcher is subjected to a partial load. In practice, this means that the load must first be raised before the clamping systems of the Safety Catcher can open and before a movement in load direction is possible.

This effect, often found to be disturbing and time-wasting, can be avoided by not bolting the Safety Catcher directly to the machine frame, but rather on top of a spring-base.

A spring base can compensate a minor lowering movement of the load, making it possible to release the clamping without lifting the load. The same applies for horizontal and oblique axes

The spring base also can compensate to a certain extent misalignments between axis guidance and clamping rod. No further compensating methods are required.

For more information and a simulation of a spring base, see the SITEMA website *www.sitema.com* and navigate to *Products, Accessories, Flanges and Spring Bases*.

2 Advantages of a spring base

Here the advantages of spring bases:

- The axis does not need to be lifted before a downward movement when minor lowering occurs during the normal cyclic operation.
- Releasing the clamping is possible in the final position of the axis.
- The spring base compensates for lateral misalignment between the axis guidance and the clamping rod. No further compensating methods are required.
- Longer service life of the Safety Catcher as fewer constraint forces act on the Safety Catcher.

3 Design and function

3.1 Design

3.1.1 Design of spring bases for KR 25 to KR 80 and KRP 25 to KRP 80 series

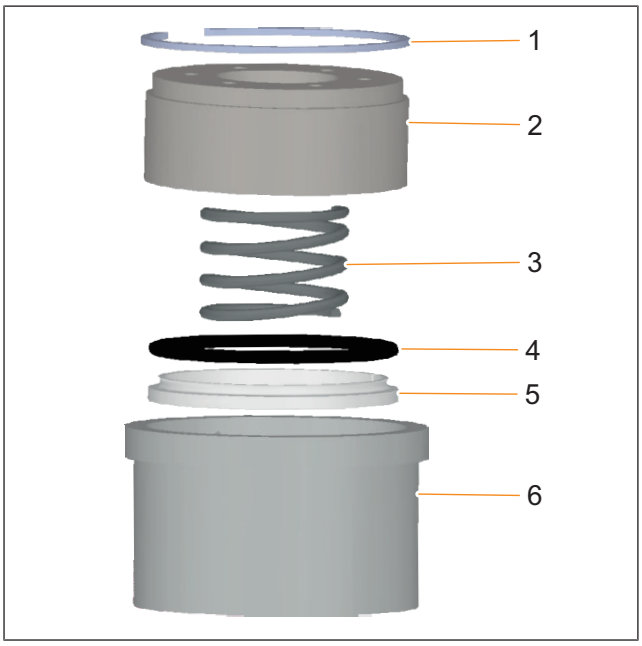


Fig. 1: Design of the spring base FS 25 (example)

1	Retainer ring	2	Bottom plate
3	Spring	4	O-ring seal
5	Back-up ring	6	Housing

The bottom plate (2) firmly connects the housing (6) with the machine frame. If the Safety Catcher is not under load, the spring (3) presses the bottom plate against the stop.

The Safety Catcher can move within the housing vertically (stroke h) and horizontally (radial play X) against the machine frame.

Anti-rotation lock

The spring bases FS 25 (FS 025 10) to FS 80 (FS 080 10) for the hydraulic Safety Catchers of the KR 25 to KR 80 series have no anti-rotation lock. The housing can align itself to the forces of the connecting hose.

The spring bases FS 25 (FS 025 11) to FS 80 (FS 080 11) for the pneumatic Safety Catchers of the KRP 25 to KRP 80 series are delivered with a pin which serves as anti-rotation lock. The anti-rotation lock prevents the kinking of the pneumatic hoses.

3.1.2 Design of spring bases for KRP 100 and K 100 to K 140 series

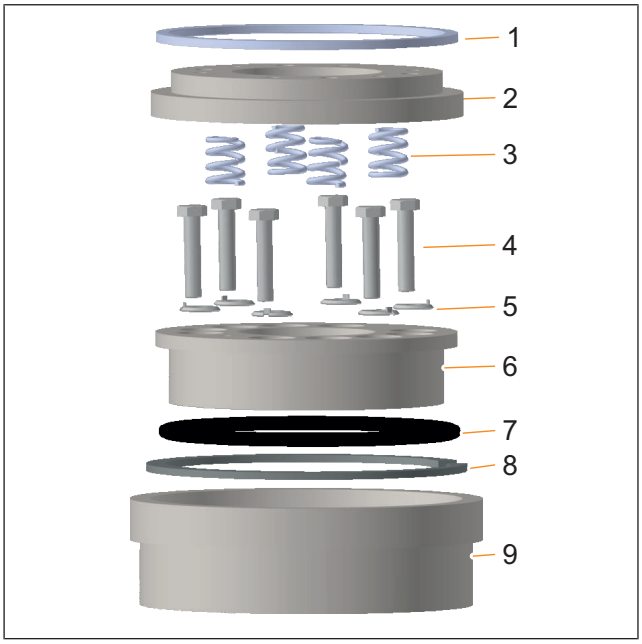


Fig. 2: Design of the spring base FS 100 (example)

1	Retainer ring	2	Casing cover
3	Springs	4	Mounting screws
5	Lock washers	6	Bottom plate
7	O-ring seal	8	Back-up ring
9	Housing		

The casing cover (2) connects the housing (9) with the machine frame.

The bottom plate (6) carries the Safety Catcher and is firmly attached to it.

If the Safety Catcher is not under load, the spring (3) pushes it with the casing cover against the stop.

The casing cover is free to move vertically (stroke h) as well as horizontally (radial play X) against the machine frame.

Anti-rotation lock

The spring bases FS 100 (FS 100 10) to FS 140 (FS 140 10) for the hydraulic Safety Catchers of the K 100 to K 140 series have no anti-rotation lock. The housing can align itself to the forces of the connecting hose.

The spring bases FS 100 (FS 100 11) for the pneumatic Safety Catcher KRP 100 are delivered with a pin which serves as anti-rotation lock. The anti-rotation lock prevents the kinking of the pneumatic hoses.

3.2 Function

If the slide should settle slightly (due to leakage, for example) while the Safety Catcher is engaged, at first only the spring force is exerted on the Safety Catcher. In this situation, the clamping can be released without any lifting.

If the lowering movement exceeds the stroke length h, the Safety Catcher takes the full weight of the load. Now a short upward movement is required to release the clamping.

The crucial safety criterion *Safety Brake can only be released if the rod is free of load* is satisfied without restriction.

The stroke length h of the spring base has to be added to the length of the lowering movement (see Table 1: Technical data of the spring bases). This value is important for construction and engineering safety analyses.

4 Ordering and mounting

If a spring base and Safety Catcher are ordered together, the spring base is already mounted on the Safety Catcher, ready for use.

All spring bases are also available separately and are delivered together with assembly instructions. (For administrative reasons, there are two items on the offer and the invoice.)

5 Release pressure

For hydraulic standard designs, the release pressure is 60 bar, for pneumatic standard designs, the release pressure is 6 bar.

6 Mounting and Dimensions

There are two ways for attaching a spring base to the machine frame:

- Direct screw mounting using the threaded holes and drilling patterns which correspond to the ones on the Safety Catcher.
- With the mounting flange FL/FS (see *Technical Data Sheet TI-A30*) which is attached to the shoulder of the Safety Catcher.

All fastening elements which take up the load must be dimensioned to take up at least 3.5 times the admissible load M of the Safety Catcher. (Mounting screws are not included in the scope of delivery.)

On the machine, threads have to be prepared with the appropriate dimensions (see *Table 1: Technical data of spring bases*).

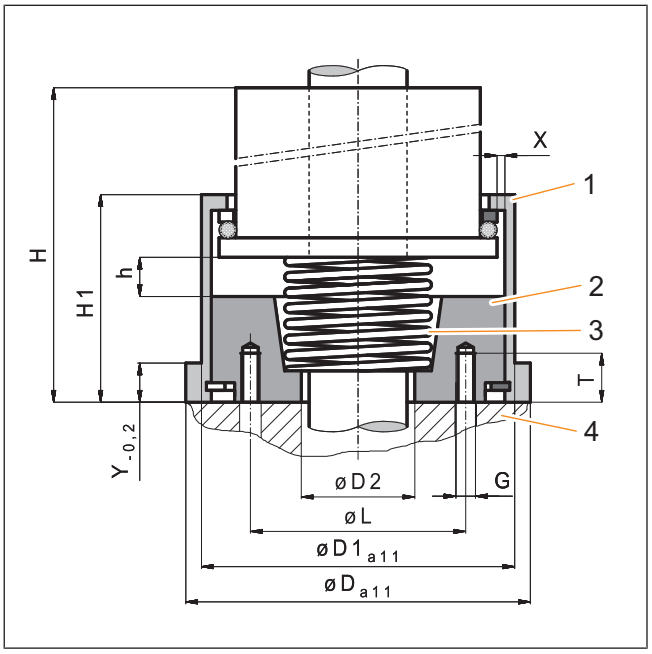


Fig. 3: Dimensions of spring bases for Safety Catchers of the KR 25 to KR 80 and KRP 25 to KRP 80 series

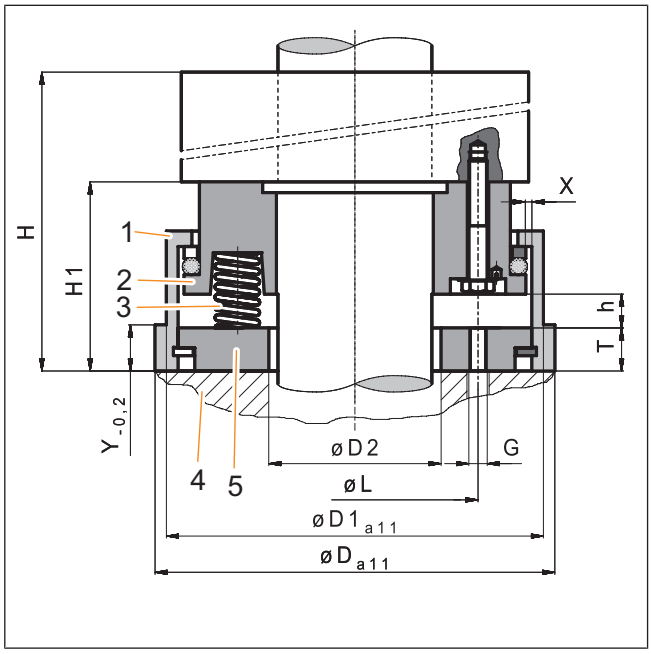


Fig. 4: Dimensions of spring bases for Safety Catchers of the KRP 100 and K 100 to K 140 series

1	Housing	2	Bottom plate
3	Spring	4	Machine frame
5	Casing cover		

Technical data

Safety Catcher		Spring base		Release pressure	H	H1	D	D1	D2	Y	L	G	T	h	X	Wt.
	ID no. *(order no.)*		ID no. *(order no.)*	*bar*	*mm*	*mm*	*mm*	*mm*	*mm*		*mm*			*mm*	*mm*	*kg*
KR 25	**KR 025 30**	**FS 25**	**FS 025 10**	60	192	58	98	92	40	10	56	6 x M6	12	6	2	1.5
KRP 25	**KR 025 31**		**FS 025 11**	6												
KR 40	**KR 040 30**	**FS 40**	**FS 040 10**	60	257	75	146	140	50	16	80	6 x M8	20	8	3.5	4.5
KRP 40	**KR 040 31**		**FS 040 11**	6												
KR 56	**KR 056 30**	**FS 56**	**FS 056 10**	60	339	106	192	176	70	20	115	6 x M10	20	8	4	11
KRP 56	**KR 056 31**		**FS 056 14**	6												
KR 80	**KR 080 30**	**FS 80**	**FS 080 10**	60	390	102	246	236	100	20	160	6 x M10	25	8	4	17.5
KRP 80	**KR 080 31**		**FS 080 11**	6												
K 100	**K 100 30**	**FS 100**	**FS 100 10**	60	404	94	260	245	112	30	160	6 x M12	32	10	4	19
KRP 100	**KR 100 21**		**FS 100 11**	6	459											
K 125	**K 125 30**	**FS 125**	**FS 125 10**	60	450	94	325	310	150	30	220	4 x M16	31	10	4	33
K 140	**K 140 30**	**FS 140**	**FS 140 10**	60	484	94	355	340	170	30	250	4 x M16	31	10	4	36
K 160	**K 160 30**	**FS 160**	**FS 160 10**	70	601	96	405	390	190	30	300	4 x M16	32	10	4	55

Table 1: Technical data of spring bases

Subject to modification without prior notice

7 Further information

The following Assembly instructions exist for the different spring base series and types:

Spring base	ID no.	For Safety Catcher	Assembly instructions
FS 25	FS 025 10	KR 25	MA-FS-004
FS 25	FS 025 11	KRP 25	MA-FS-005
FS 40	FS 040 10	KR 40	MA-FS-002
FS 56	FS 056 10	KR 56	
FS 80	FS 080 10	KR 80	
FS 40	FS 040 11	KRP 40	MA-FS-003
FS56	FS 056 11	KRP 56	
FS 80	FS 080 11	KRP 80	
FS 100	FS 100 11	KRP 100	FS-BA-007
FS 100	FS 100 10	K 100	MA-FS-001
FS 125	FS 125 10	K 125	
FS 140	FS 140 10	K 140	
FS 160	FS 160 10	K 160	

The corresponding assembly instructions are provided upon delivery. Upon request, we will send it to you.

SITEMA GmbH & Co. KG • G.-Braun-Straße 13 • 76187 Karlsruhe (Germany) • Phone: +49(0)721/98661-0 • Fax: -11 • www.sitema.com