

# Technical Data Sheet TI-B12

## KSE Series Electric Safety Brakes

Self-intensifying clamping (SiForce). Electromagnetically released clamping.

Basic information on use, operating principle, assembly and control can be found in Technical Information TI-B10E. See also Operating Manual BA-B12.

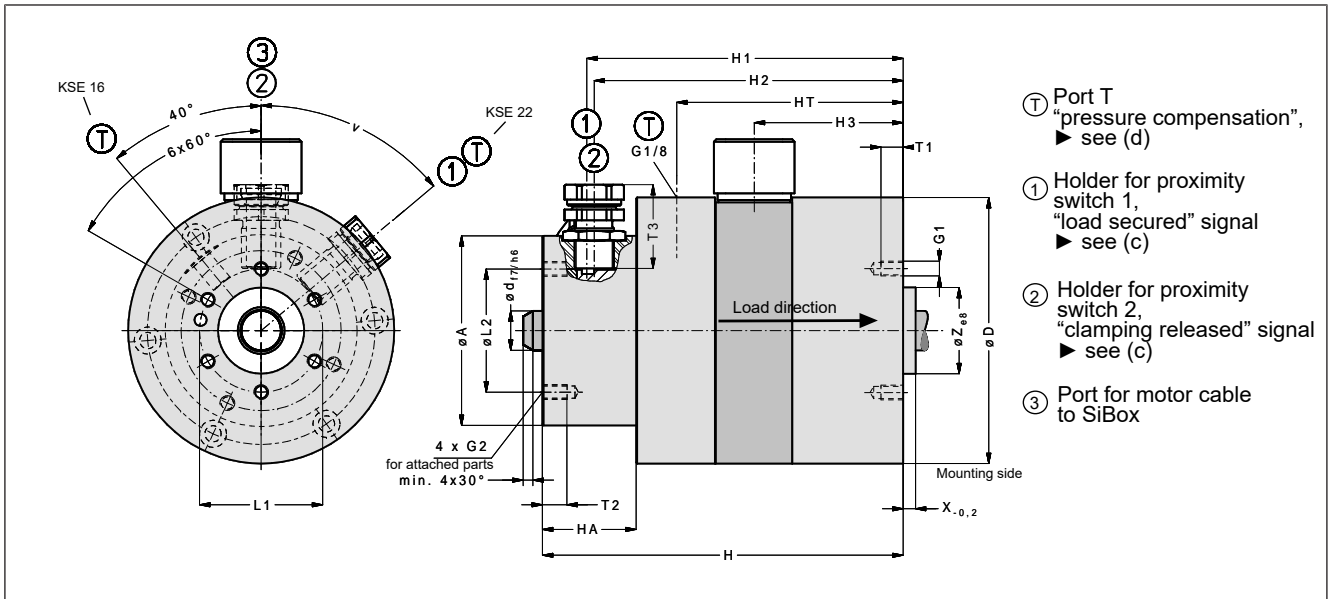


Fig. 1: KSE Safety Brakes ports and dimensions

Type	ID no.	(a)		(b)		(c)																	Wt.			
		d	M	F <sub>L</sub>	A	D	G1/G2	H	HA	HT	H1	H2	H3	L1	L2	T1	T2	T3	X	Z	v					
	(item no.)	mm	kN	kN	mm		mm																	mm	Degree	kg
KSE 16	KSE 016 01	16	2.5	1.0	77	108	M6	146.5	38	128.5	128.5	125.5	60.5	50	65	9	10	34	5	35	50°	5.3				
KSE 22	KSE 022 01	22	10	1.5	100	132	M6	178	37	125	156	161	77.5	60	80	11	10	44.5	8	40	40°	10.3				

Subject to modification without prior notice

- (a) The admissible load M is the load that the mass to be secured exerts on the Safety Brake. The holding (braking) force with a dry or hydraulic-oil wetted rod is at least 2 x M but will not exceed 3.5 x M.
- (b) Minimum value F<sub>L</sub>: The Safety Brake has the advantage that it cannot be released under load. When under load, the Safety Brake can only be released if the unit is actuated and the load is simultaneously lifted, i.e., if the load has already been taken over elsewhere. To ensure this safety advantage, the load must have a minimum value during operation. If the load during operation is less than the minimum value F<sub>L</sub>, the clamping can be released by actuation alone, without lifting the load.
- (c) Proximity switch holders are mounted for standard inductive proximity switches: M12 x 1, nominal switching distance 2 mm, flush mountable, NO (normally open). The dimension T3 indicates how deep the proximity switch immerses into the unit measured from the holder's top. For easier mounting, the proximity switch holders have a depth stop and are preset to the correct depth at delivery. The proximity switches only need to be inserted to the stop and then clamped. The proximity switches are not included in the standard scope of delivery but are available as accessories.
- (d) Port T compensates internal volume changes during switching. At delivery, the port is plugged with an air filter which, in a dry and clean factory environment, offers sufficient protection against dust etc. If moisture or aggressive media can be sucked up, replace the filter by an unpressurized line which leads to a clean atmosphere (e.g. a clean, dry, and unpressurized vessel).
- (e) The aluminum surfaces of the housing parts are anodized.

## 1 Electrical data

Type		KSE 16	KSE 22	Remarks
Control and power supply with SITEMA SiBox	Current for keeping the clamping open $I_N$	1.2 amperes	0.9 amperes	
	Power for keeping the clamping open $P_N$	12.5 watts	10.5 watts	
	Maximum current $I_{max}$	approx. 7.5 amperes		< 0.5 seconds
Overexcitation time		< 0.5 seconds		
Winding resistance		8.6 $\Omega$	13.0 $\Omega$	at 20 °C ambient temperature

Electrical data KSE Safety Brake

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## 2 Admissible switching times

Incorrect control can cause the KSE to overheat. To avoid this, each custom-parameterized KSE SiBox limits the switching times.

Only a limited number of switching commands for opening the clamping head can be issued per minute. A minimum time interval between two switching commands must be maintained. The admissible switching times depend on the type of KSE that is connected.

The admissible switching time has two components:

- Switching frequency: admissible number of switching commands within a time window of 60 seconds.

- Switching interval: minimum time interval between two switching commands.

The SiBox is delivered pre-parameterized for the type of clamping head connected. This parameter assignment defines the admissible switching times.

Important: SITEMA can adapt the admissible switching times to suit customer requirements by parameterizing the SiBox accordingly. The ambient temperature at the clamping head must be taken into account. The table below shows the standard setting at an ambient temperature of 20 °C. We will be happy to advise you on your specific application.

Function		KSE 16	KSE 22	Remarks
Admissible switching times	Switching frequency	5 x per 60 seconds		at 20 °C ambient temperature
	Switching interval	3 seconds		
Switching duration	Clamp	About 60 ms		with active demagnetization
	Release	About 100 ms		

Admissible switching times for KSE Safety Brakes

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### Temperature dependence of the admissible switching times

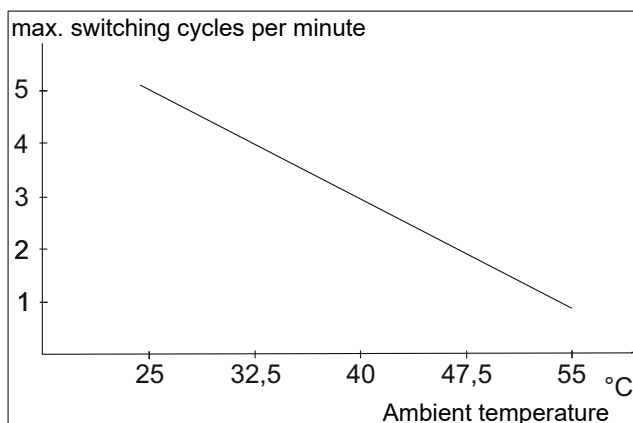


Fig. 2: Dependence of switching cycles/ambient temperature

The admissible switching times depend on the ambient temperature of the clamping head. They can be customized via the SiBox parameters.



If the ambient temperature at the clamping head exceeds 25 °C, then (depending on the customized parameters) the high-level control system must (also) limit the switching times to prevent the clamping head from overheating.

### 3 Connection cables and plugs

#### 3.1 Valve connector base on clamping head

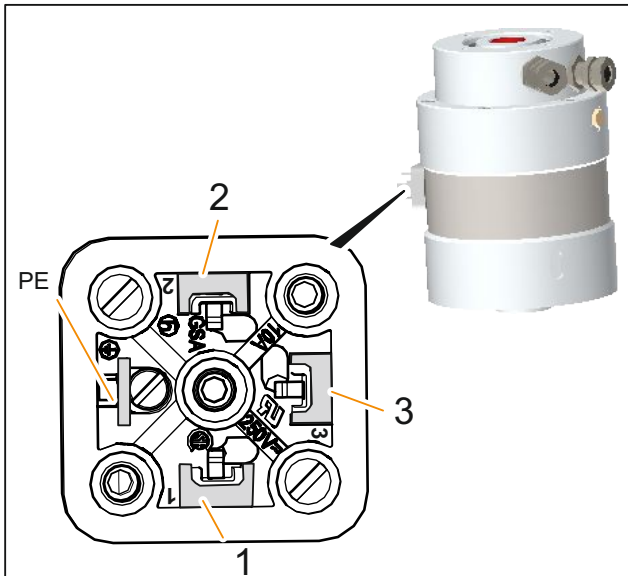


Fig. 3: Pin assignment

1	M + (SiBox - actuator port 1)
2	M - (SiBox - actuator port 2)
3	not connected
PE	PE conductor/grounding

Here are the specifications for the valve connector base on the clamping head:

<b>Valve connector base on clamping head</b>	Valve connector base, style A
	Operating Voltage 400 VAC/DC
	Rated Current: 16 A
	Type GSA 3000

Table 4: Specifications for valve connector base on clamping head

- Observe the pin assignment of the valve connector base when connecting the motor cable.

#### 3.2 Motor cable: Connecting the clamping head to the SiBox

Mounting screws and valve connector are not in the scope of delivery.

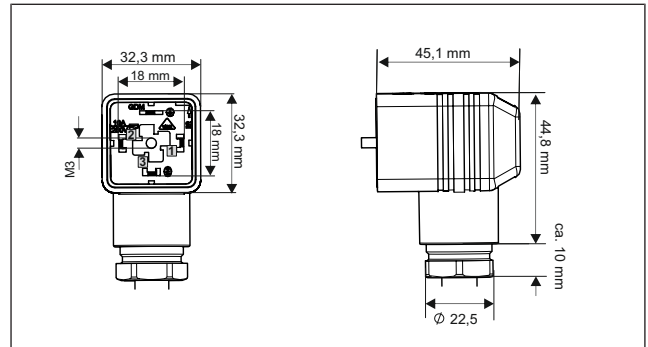


Fig. 4: Valve connector at the motor cable

<b>Connector at the motor cable</b>	Valve connector, style A
	Operating Voltage 400 VAC/DC
	Rated Current: 16 A
<b>Motor cable (cable connection clamping head with SiBox)</b>	Type GDMW 3011
	3-core, including 1 x PE
	Nominal conductor cross section: 1.5 mm <sup>2</sup>
	Temperature stability 0 to +70 °C
	Rated voltage: 300 / 500 V
	flame retardant
shielded	

Table 5: Specifications for motor cable, KSE – SiBox

**Motor cable:** The PE conductor and pins 1 and 2 are connected. Pin 3 on the connector (GDMW 3011) remains unused.

Observe the following important points:

- It is essential to route the PE conductor cable in the motor cable.
- Cables suitable for drag chains must be used if the cable is moved.

SITEMA recommends a cable from igus, type CF140.15.03.UL.

## 4 Accessories

We recommend the following accessories: All these parts are available from SITEMA:

Accessories	Description
SiBox SB-20	Standard SITEMA controller, pre-parameterized for the KSE
Proximity switch holder	Type NHT
Proximity switches	From SITEMA on request
Switch module (install in manual mode)	From SITEMA on request, suitable for the supplied combination of controller + clamping head
Spring base	From SITEMA on request. A spring base compensates for inaccuracies in alignment, ensures easier release of the SITEMA Safety Brake and extends its service life.
Rod attachment	For securely attaching the rod to the machine part; already designed for the maximum force of the clamping head, see <i>TI-STB10</i>