

# SlimLine Quartz Force Links

Types 9173B, 9174B, 9175B,  
9176B, 9177B

## Measurement of tension and compression forces

Compact force link for measuring tension and compression forces. A SlimLine sensor (SLS) Type 9133B21 ... 9137B21\* is fitted under preload and ground-insulated between two steel parts with threads. The integral cable is additionally protected by a Viton cable covering. Already calibrated (only compression force range), the SLS force links are easy to install and are immediately ready for measurement.

- Calibrated quartz force link
- Compact design, extremely small dimensions
- Integral non-detachable cable with Viton® cable covering
- Coupling with mounting plate



### Description

The preloaded quartz force link can measure tension and compression forces and produces an electrical charge directly proportional to the force applied. This charge is converted by the charge amplifier (e.g. ICAM Type 5073A...) into a proportional voltage which can then be further processed as required. The mounting of the SLS sensor is ground-insulated thereby largely preventing problems with ground loops.

### Application

As a result of its high rigidity, the compact SLS quartz force link is especially suitable for measuring rapidly changing tension and compression forces. The elastic behavior of the test object is not thereby changed by more than a negligible amount. Quasistatic measurements are possible, i.e. measurements with relatively large time constants. Special information on integrated sensors are given in the sensor data sheet Type 9133B21 ... 9137B21 (9130B\_000-110).

### Examples of use

- Force measurement in robotic systems
- Monitoring on presses, automatic punching, coining and welding machines
- Clamping processes, e.g. quartz force link combined with hydraulic cylinder
- Joining technology, e.g. insertion, press fitting of components etc.

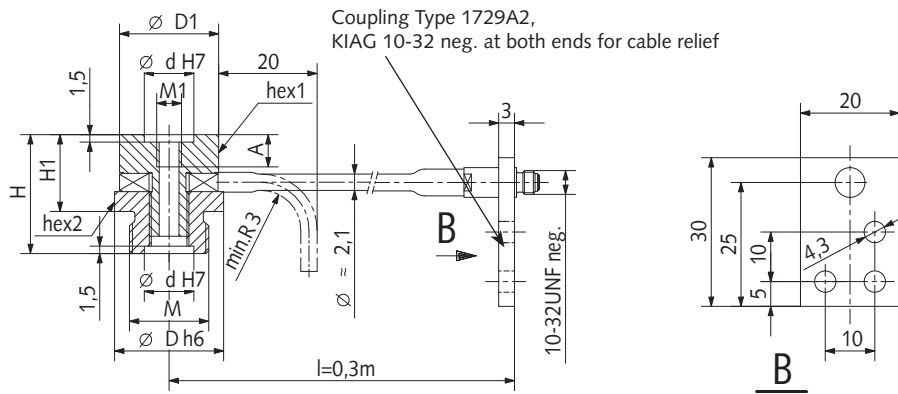
### Technical Data

Sensitivity	pC/N	≈-3,5
Linearity	% FS0	≤±1
Hysteresis	% FS0	≤1
Response threshold	N	≤0,02
Insulation resistance	Ω	10 <sup>13</sup>
Ground insulation	MΩ	≥100
Temperature coefficient	%/°C	-0,02
Operating temperature range	°C	-20 ... 80

\* see data sheet 9130B\_000-110 about integrated SlimLine sensors

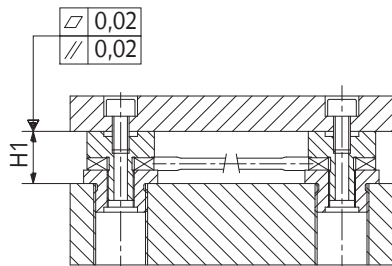
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Type	Range: tension (-) and compression (+) kN	Calibrated range kN	Overload kN	Bending moment (max., $F_z = 0$ ) N·m	Dimensions in mm									hex1 o.SW	hex2 o.SW
					D	D1	d	H	H1	A	M	M1			
9173B	-3 ... +12	0 ... 12	-3,3/14	15	18	16	8	22	14	5,5	M12x1,25	M4	14	16	
9174B	-5 ... +20	0 ... 20	-5/25	35	22	20	10	24	16	6,5	M16x1,5	M5	18	20	
9175B	-8 ... +30	0 ... 30	-9/35	62	26	24	12	28	19	7,5	M20x1,5	M6	22	24	
9176B	-16 ... +60	0 ... 60	-18/70	134	32	30	15	34	23	9,5	M24x2	M8	28	30	
9177B	-20 ... +75	0 ... 75	-22/95	244	38	36	18	38	28	12,5	M30x2	M10	34	36	

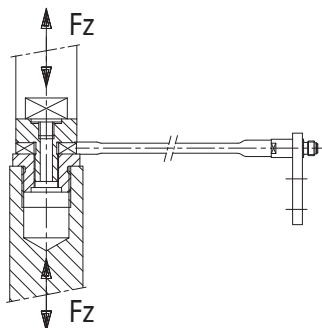
**Fitting Methods**



Mounting of SLS quartz force links in force plates or dynamometers with extremely low construction height.

**Installation**

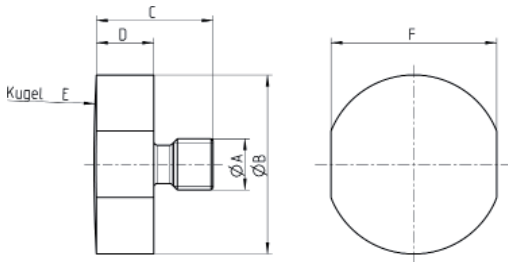
Before installing the quartz force link, please make sure that the contact surfaces are cleanly machined, flat and rigid. The screw threads of the fastening elements should be perfectly straight in the axial direction. To provide relief from tension force on the integral cable, the coupling Type 1729A2 should always be positioned at a suitable place on the test object.



Measurement of tension and compression forces.  
 Used in combination with hydraulic cylinders, for example.

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## Distributing Cap Type 9416A3 ... 9416A7



Sensor Type	Distr. cap Type	A	B	C	D	E	F
9173B	9416A3	M4	14	11,3	6	130	SW13
9174B	9416A4	M5	18	14,3	8	150	SW16
9175B	9416A5	M6	22	16,3	9	200	SW20
9176B	9416A6	M8	28	18,3	9	260	SW26
9177B	9416A7	M10	34	20,3	9,8	320	SW32

### Accessories

- Distributing cap
- Cable suitable for plug connection  
KIAG 10-32 neg.

### Type

9416A3 ... 9416A7  
 see data sheet  
 1631C\_000-346

### Scope of Delivery

- Quartz force link including  
coupling with mounting bracket

### Type

1729A2

### Ordering Key

Type 917  B

### SlimLine Quartz Force Links

Measuring range -3 ... +12 kN	<b>3</b>
Measuring range -5 ... +20 kN	<b>4</b>
Measuring range -8 ... +30 kN	<b>5</b>
Measuring range -16 ... +60 kN	<b>6</b>
Measuring range -20 ... +75 kN	<b>7</b>