

Pretensioning elements

Pretensioning set for piezo force sensors

Type 9420A01 ... 9420A71

The standardized pretensioning elements are used for mounting piezo ring force transducers Type 9001C ... 9071C and 9101C ... 9107C.

- Elastic pretension screw, optimized for tension and compression force measurement
- Low force shunt
- Ground-isolated mounting warranted

Description

A Set of pretensioning elements consists of a pretensioning bolt (PB, high strength, stainless steel of the mold), a centring sleeve (CS), two insulating washers (IW) and a hexagon nut (HN). These accessories are separately available on request.

Application

- Preload of piezoelectric force sensors for optimized force application
- measurement of tensile forces
- ground insulated mounting

Specification

It is recommended to preload piezo force sensors with at least 20% of their nominal force to increase the accuracy. In addition, the expected tensile and lateral forces have a decisive influence on the specification of the pre-tension force. Details can be found on the data sheet and the manual of the corresponding sensor.

Mounting:

Detailed instructions for mounting can be found in the manual of the corresponding sensor.

Operation:

The use of a preload bolt results in a force shunt of the sensor and reduces the nominal sensitivity by the specified amount (-7...10%). To measure the sensitivity of the pretensioned sensor, recalibration is necessary.



Technical data

Type		9420A01	9420A11	9420A21	9420A31
for sensor	Type	9001C	9011C/ 9101C	9021C/ 9102C	9031C/ 9103C
Inner ø sensor	mm	4.1	6.5	10.5	13
Pretension bolt					
Thread		M4x0.5	M5x0.5	M8x1	M10x1
L, length	mm	22	28	40	46
max. force	kN	4	9	25	40
Shunt	%	≈10	≈7	≈8	≈9

Type		9420A41	9420A51	9420A61	9420A71
für Sensor	Type	9041C/ 9104C	9051C/ 9105C	9061C/ 9106C	9071C/ 9107C
Innen-ø Sensor	mm	17	21	26.5	40.5
Pretension bolt					
Thread		M12x1	M14x1.5	M20x1.5	M27x2
L, length	mm	60	62	80	102
max. force	kN	60	80	110	245
Shunt	%	≈8	≈7	≈7	≈7

Recommended materials for environment of sensor

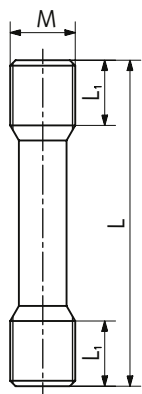
(e.g. cover and base plate, Fig. 5) Quenched and drawn

W.-Nr.	1.4045 ¹⁾	1.4021 ¹⁾	1.1191
DIN	x22CrNi17	x20Cr13	Ck45
AFNOR	Z15CN16-02	Z20C13	xC45
B.S.	431S29	420S37	M46
JIS	SUS431	SUS420J1	S45C
AISI/SAE	431	420	1045

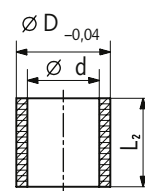
¹⁾ rust-resistant

Overview Set Components

Pretensioning Set	for Sensor	consisting of			
Type	Type	VB Type	ZH Type	IS Type	SM Type
9420A01	9001C	9502	9504	9508	9506
9420A11	9011C/9101C	9512	9514	9518	9516
9420A21	9021C/9102C	9522	9524	9528	9526
9420A31	9031C/9103C	9532	9534	9538	9536
9420A41	9041C/9104C	9542	9544	9548	9546
9420A51	9051C/9105C	9552	9554	9558	9556
9420A61	9061C/9106C	9562	9564	9568	9566
9420A71	9071C/9107C	9572	9574	9578	9576



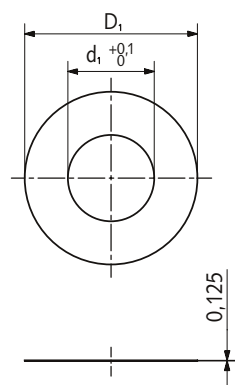
Type	H	M	L	L ₁
9502	6.5	M4x0.5	22	4
9512	8	M5x0.5	28	5
9522	10	M8x1	40	8
9532	11	M10x1	46	10
9542	12	M12x1	60	12
9552	13	M14x1.5	62	13
9562	15	M20x1.5	80	19
9572	17	M27x2	102	26



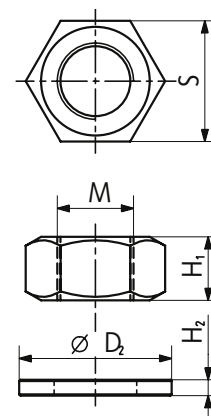
Type	D	d	L ₂
9504	4.1	3.0	10.5
9514	6.5	4.0	12
9524	10.5	8.5	14
9534	13	11	15
9544	17	13	16
9554	21	17	17
9564	26.5	22.5	19
9574	40.5	36.5	21

Fig. 1: Pretensioning bolt PB

Fig. 2: Centering sleeve CS



Type	D ₁	d ₁
9508	10.4	4.1
9518	14.4	6.5
9528	22	10.5
9538	28	13
9548	34	17
9558	39.6	21
9568	51.6	26.5
9578	75	40.5



Type	H ₁	S	D ₂	H ₂
9506	3.2	7	9	0.8
9516	4	8	10	1
9526	6.5	13	16	1.6
9536	8	17	18	1.6
9546	10	19	24	2.5
9556	11	22	28	2.5
9566	16	30	37	3
9576	22	41	50	4

Fig. 3: Insulating washer IS

Fig. 4: Hexagon a nut (incl. washer) HN

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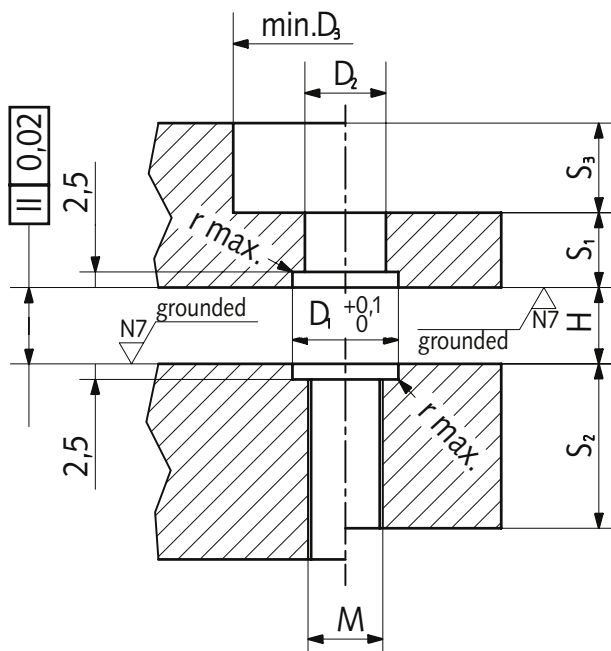


Fig 5: Preparing the mounting surfaces and the bores in the base and cover plates, recommended material see page 1 (Limit of elasticity $R_e > 500 \text{ N/mm}^2$)

Mounting Dimensions

Set Type	Dimensions							
	M	D ₁	D ₂	D ₃	S ₁	S ₂	S ₃	H
9420A01	M4x0.5	4.1	4.1	12	3.5	10	6	6.5
9420A11	M5x0.5	6.5	5.1	15	5.5	12	7	8
9420A21	M8x1	10.5	8.1	20	8	17	11	10
9420A31	M10x1	13	10.2	26	10	20	12	11
9420A41	M12x1	17	12.2	28	13	25	15	12
9420A51	M14x1.5	21	14.2	33	16	25	16	13
9420A61	M20x1.5	26.5	20.2	42	19	32	22	15
9420A71	M27x2	40.5	27.3	58	30	35	29	17

Ordering Key

for sensor Type 9001C	01
for sensor Type 9011C/ 9101C	11
for sensor Type 9021C/ 9102C	21
for sensor Type 9031C/ 9103C	31
for sensor Type 9041C/ 9104C	41
for sensor Type 9051C/ 9105C	51
for sensor Type 9061C/ 9106C	61
for sensor Type 9071C/ 9107C	71

Type 9420A

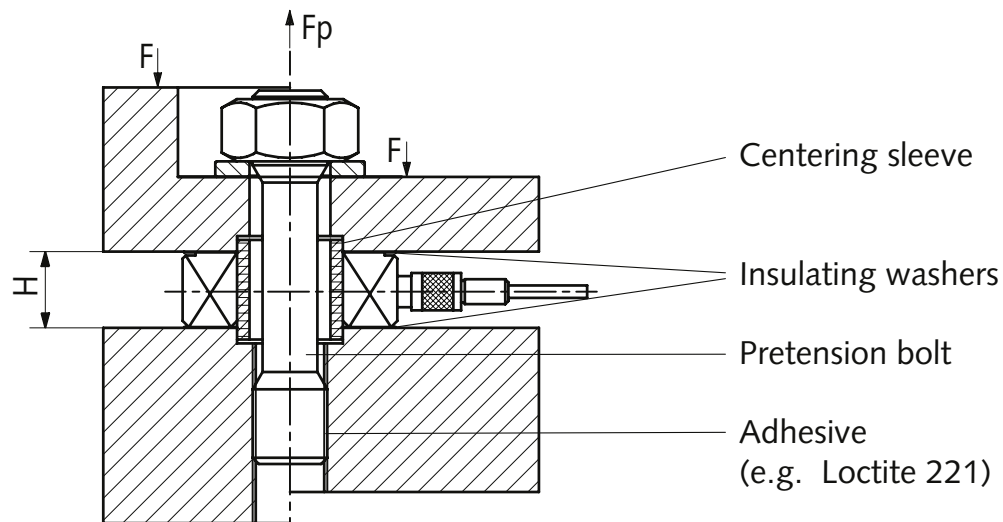


Fig. 6: Mounting example

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