

# PACEline CFW

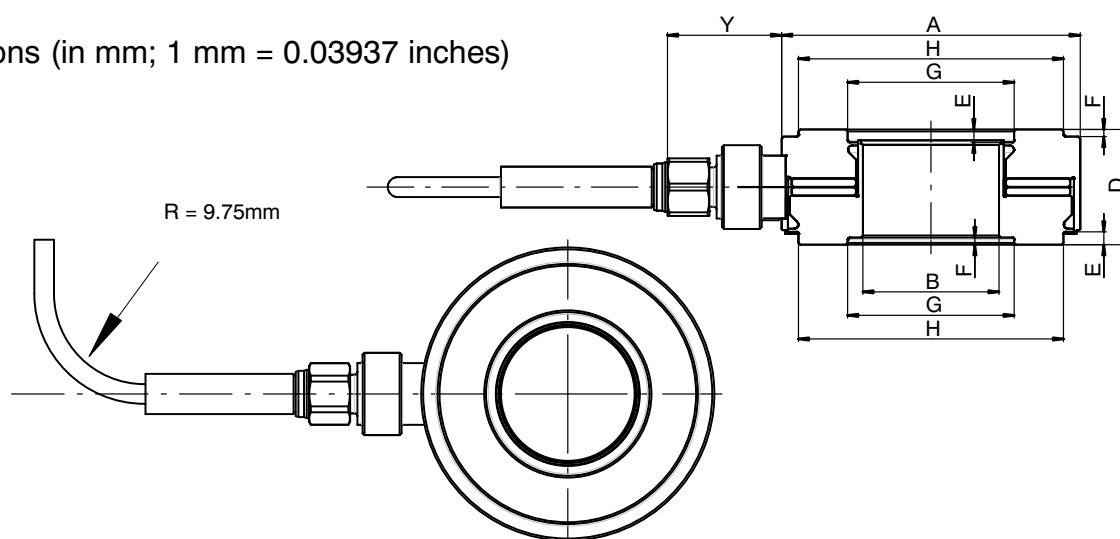
Piezoelectric force  
washer



## Special features

- Symmetrical structure for increased stability
- Nominal (rated) forces: 20 kN, 50 kN, 100 kN, 140 kN, 190 kN, 330 kN and 700 kN
- High cut-off frequency
- Robust charge cable connection

Dimensions (in mm; 1 mm = 0.03937 inches)



Type	A	B	D	E	F	G	H	Y
CFW/20kN	14.5 <sup>+0.05</sup>	6.5 <sup>H7</sup>	8 <sup>-0.05</sup>	0.88	0.38	8.4	11.9	~7.25
CFW/50kN	22.5 <sup>+0.05</sup>	10.5 <sup>H7</sup>	10 <sup>-0.05</sup>	0.83	0.48	13.5	18.7	~10.8
CFW/100kN	28.5 <sup>+0.05</sup>	13 <sup>H7</sup>	11 <sup>-0.05</sup>	1.23	0.68	15.9	25.3	~10.9
CFW/140kN	34.5 <sup>+0.05</sup>	17 <sup>H7</sup>	12 <sup>-0.05</sup>	1.28	0.68	20.6	30.6	~10.95
CFW/190kN	40.5 <sup>+0.05</sup>	21 <sup>H7</sup>	13 <sup>-0.05</sup>	1.68	0.78	24.9	36.3	~11
CFW/330kN	52.5 <sup>+0.05</sup>	26.5 <sup>H7</sup>	15 <sup>-0.05</sup>	1.88	0.88	30.5	48	~11.1
CFW/700kN	75.5 <sup>+0.05</sup>	40.5 <sup>H7</sup>	17 <sup>-0.05</sup>	2.28	1.08	45	70.5	~11.2

## Specifications (data per VDI/VDE 2638 standards)

Piezoelectric force washer		CFW / ...						
Nominal (rated) force	kN	20	50	100	140	190	330	700
Sensitivity (typical) <sup>1)</sup>	pC/N	-4	-4.3					
Relative reversibility error	% of E.	<1						
Relative linearity error <sup>2)</sup>	% of E.	<1						
Crosstalk <sup>3)</sup> from F <sub>x,y</sub> to F <sub>z</sub> from M <sub>x,y</sub> to F <sub>z</sub>	N/N	0.03	0.03	0.04	0.03	0.03	0.03	0.03
	N/Nm	0.002	0.002	0.002	0.002	0.003	0.003	0.003
Max. operating force	% of F <sub>nom</sub>	120						
Maximum bending moment with <sup>3)</sup> with F <sub>z</sub> = 0% with F <sub>z</sub> = 50% with F <sub>z</sub> = 100%	Nm	0	0	0	0	0	0	0
		21	80	220	395	650	1200	4000
		0	0	0	0	0	0	0
Max. permissible lateral force <sup>4)</sup>	% F <sub>z</sub>	10						
Breaking force	% of F <sub>nom</sub>	200						
Insulation resistance	Ω	> 10 <sup>13</sup>						
Nominal (rated) temperature range	°C	-40 ... +120						
Operating temperature range	°C	-40 ... +120						
Storage temperature range	°C	-40 ... +120						
Nominal (rated) displacement	μm	2	3.5	5.8	7.5	9.4	13.5	28
Fundamental resonance frequency	kHz	60	55	45	35	35	30	30
Permissible vibrational stress (vibration bandwidth)	% F <sub>nom</sub>	100 for compressive force						
Weight	g	7	22	37	57	78	155	365
Degree of protection per DIN EN 60529 (with connected charge cable)		IP65						
Connection		10-32 UNF						

1) Must be calibrated under mounting conditions

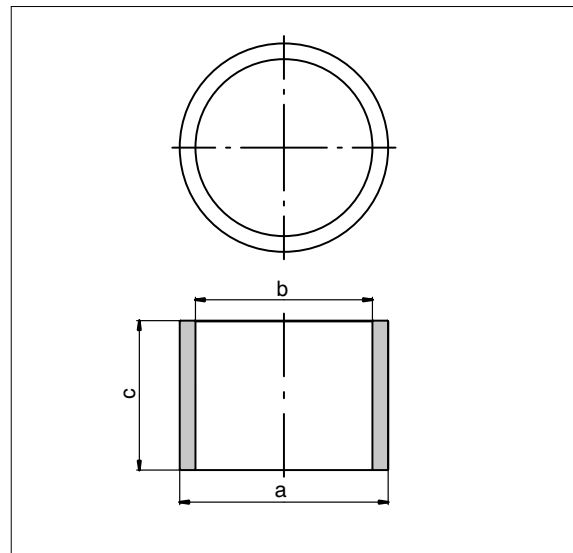
2) Pre-stressed, typically 0.5% of full scale

3) F<sub>z</sub> is the force in the measurement direction

4) related to a point of contact on the force application surface

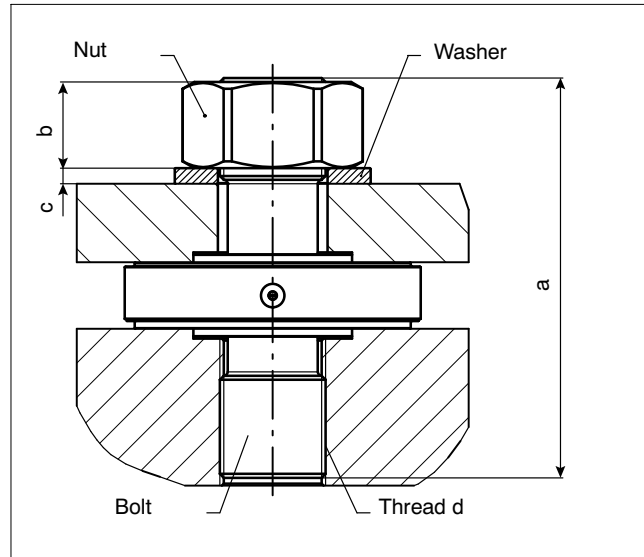
## Dimensions centering sleeve

Type	a	b	c
CFW/20kN	6.5 <sup>G7</sup>	5	12
CFW/50kN	10.5 <sup>G7</sup>	8.5	14
CFW/100kN	13 <sup>G7</sup>	11	15
CFW/140kN	17 <sup>G7</sup>	13	16
CFW/190kN	21 <sup>G7</sup>	17	17
CFW/330kN	26.5 <sup>G7</sup>	22.5	19
CFW/700kN	40.5 <sup>G7</sup>	36.5	21



## Dimensions pre-stressing set

Type	a	b	c	d
CPS/20kN	28	5	1.1	M5 x 0.5
CPS/50kN	40	8	1.6	M8 x 1
CPS/100kN	46	10	1.6	M10 x 1
CPS/140kN	60	12	2.5	M12 x 1
CPS/190kN	62	13	2.5	M14 x 1.5
CPS/330kN	80	19	3.0	M20 x 1.5
CPS/700kN	102	26	4.0	M27 x 2



## Scope of delivery

Order number	
1-CFW/20kN <sup>*)</sup>	Piezoelectric force washer CFW/20kN with test certificate and centering sleeve
1-CFW/50kN	Piezoelectric force washer CFW/50kN with test certificate, plug protection and centering sleeve
1-CFW/100kN	Piezoelectric force washer CFW/100kN with test certificate, plug protection and centering sleeve
1-CFW/140kN	Piezoelectric force washer CFW/140kN with test certificate, plug protection and centering sleeve
1-CFW/190kN	Piezoelectric force washer CFW/190kN with test certificate, plug protection and centering sleeve
1-CFW/330kN	Piezoelectric force washer CFW/330kN with test certificate, plug protection and centering sleeve
1-CFW/700kN	Piezoelectric force washer CFW/700kN with test certificate, plug protection and centering sleeve

<sup>\*)</sup> The CFW/20kN type is delivered without plug protection and does not have the corresponding thread.

## Accessories:

1-KAB143-3	Transducer connection cable (material: PFA), 3m long, connector plug 10-32 UNF at both ends
1-KAB145-3	Transducer connection cable, very robust design, length 3 m; connector plug 10-32 UNF at both ends, 30 cm steel-clad on transducer side, with O-ring seal; this design is not suitable for CFW/20kN, CFT/5kN and CFT/20kN
1-KAB176-2	Transducer connection cable (material: PFA), 2 m long; connector plug on transducer side 10-32 UNF, BNC on amplifier side (e.g. suitable for digital charge amplifier CMD600)
1-CPS/20kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/20kN
1-CPS/50kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/50kN
1-CPS/100kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/100kN
1-CPS/140kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/140kN
1-CPS/190kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/190kN
1-CPS/330kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/330kN
1-CPS/700kN	Pre-stressing set, comprising bolt, nut and washer for 1-CFW/700kN

Modifications reserved.

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