

# Ring force transducer

## For bolt forces up to 500 kN

### Model F6210



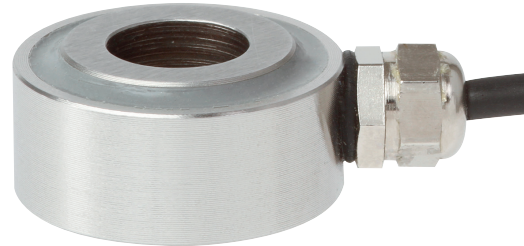
WIKA data sheet FO 51.20

#### Applications

- Measuring of pretensioning forces on screw connections
- Plant engineering
- Cutting tools
- Measurement and inspection equipment
- Test setups

#### Special features

- Measuring ranges 0 ... 15 kN up to 0 ... 500 kN
- Force measurements, 2 adapter disks included
- Compact and small dimensions, simple installation
- Protection class IP65
- Relative linearity error 1 %  $F_{nom}$



Ring force transducer, model F6210

#### Description

Ring force transducers are designed for static measurement tasks in the direct flux of force. They determine the compression forces in a wide scope of applications.

The miniature ring force transducers are specially designed for small dimensions and measure compression and pre-tension forces.

Due to its compactness, this force transducer can be used in a wide range of industrial and laboratory areas. Application areas are the simple determination of screw prestresses in which the force transducer is used as a measuring washer or a ring geometry in a compact design is required. The series is designed for screw sizes from M6 (15 kN) to M30 (500 kN).

#### Note

In order to avoid overloading, it is advantageous to connect the load cell electrically during installation and to monitor the measured value.

The force to be measured must be applied concentrically and free of transverse force. When mounting the force transducer, a flat and hard surface should be ensured. Due to its small geometry, this force transducer reacts very sensitively to changing or different installation positions. Accessories are two ground adapter discs for protection and optimized force transmission.

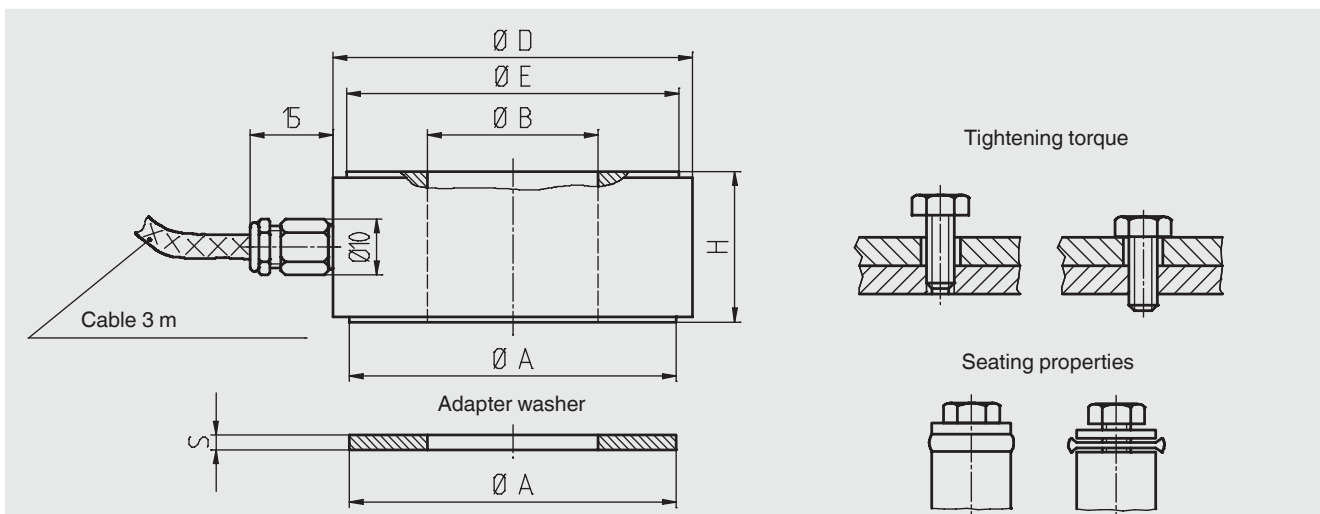
#### Options

- Calibration control 100 % signal
- Sensitivity calibration 1 mV/V
- Cable amplifier 4 ... 20 mA or 0 ... 10 V output

## Technical data in accordance with VDI/VDE/DKD 2638

Model F6210								
Rated force $F_{nom}$ kN	15	30	60	80	120	160	350	500
For diameter thread	M6	M8	M10	M12	M16	M20	M24	M30
Relative linearity error $d_{lin}$	<ul style="list-style-type: none"> <li>■ with compression force measurement <math>\leq \pm 1 \% F_{nom}</math></li> <li>■ with pretonisioning force measuring <math>\leq \pm 3 \% F_{nom}</math></li> </ul>							
Relative repeatability error in unchanged mounting position $b_{rg}$								
Relative creep, 30 min.	$< \pm 2 \% F_{nom}$							
Temperature effect on zero signal $TK_0$	$< \pm 0.3 \% / 10 K$							
Temperature effect on characteristic value $TK_C$	$< \pm 0.3 \% / 10 K$							
Force limit $F_L$	150 % $F_{nom}$							
Breaking force $F_B$	$> 300 \% F_{nom}$							
Permissible oscillation stress acc. to DIN 50100 $F_{rb}$	70 % $F_{nom}$							
Rated displacement $s_{nom}$	$< 0.1 \text{ mm}$							
Material	Stainless steel							
Rated temperature range $B_{T, nom}$	0 ... 60 °C							
Operating temperature range $B_{T, G}$	-10 ... +70 °C							
Storage temperature range $B_{T, S}$	-30 ... +95 °C							
Reference temperature $T_{ref}$	23 °C							
Output signal (rated output) $C_{nom}$	1.0 mV/V							
Input-/output resistance $R_e/R_a$	350 $\Omega$							
Insulation resistance	$> 2 \text{ G}\Omega$							
Electrical connection	Cable 3 m							
Rated range of excitation voltage $B_{U, nom}$	DC 2 ... 6 V (max. 8 V)							
Supply voltage	<ul style="list-style-type: none"> <li>■ Standard DC 12 ... 28 V</li> <li>■ Option For optional integrated or cable amplifier mA/V 0(4) ... 20 mA DC 0 ... 10 V</li> </ul>							
Protection (acc. to IEC/EN 60529)								
Calibration control (Option)								
Weight in kg	<ul style="list-style-type: none"> <li>■ 15 kN 0.05</li> <li>■ 30 kN 0.06</li> <li>■ 60 kN 0.07</li> <li>■ 80 kN 0.08</li> <li>■ 120 kN 0.1</li> <li>■ 160 kN 0.12</li> <li>■ 350 kN 0.12</li> <li>■ 500 kN 0.5</li> </ul>							
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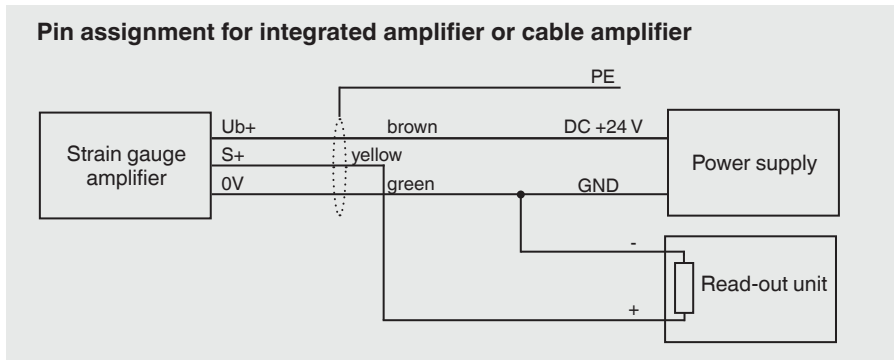
## Dimensions in mm



Rated force in kN	Dimensions in mm						
	For screws	$\delta A$	$\delta B$	$\delta D$	$\delta E$	H	S
15	M6	10.5	6.3	18	11	12	2
30	M8	15	8.3	22	16	12	2
60	M10	17	10.3	24	17.8	12	2
80	M12	22.5	12.3	28	22.5	15	2.5
120	M16	27.6	16.3	32	28	15	2.5
160	M20	37.5	20.3	46	38	15	3
350	M24	47	24.5	54	48	22	3
500	M30	59	30.8	65	60	27	3

## Pin assignment

Electrical connection	
Excitation voltage (+)	Brown
Excitation voltage (-)	Green
Signal (+)	Yellow
Signal (-)	White
Control	Grey
Screen $\oplus$	Screen



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