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## Force Transducer RF



# Precision force transducer for tension and compression static and dynamic

- Nominal loads from 400 kN up to 10 MN
- Accuracy class 0,05
- Low profile, small mass
- Insensitive to eccentric load application and lateral forces
- Simple mounting
- Fatigue proof





## Force Transducer RF

### **Technical Description**

The Series RF is fatigue proof (at alternating load tension/compression) with good support against bending moments and eccentric load.

The transducer can easily be mounted at crossheads and crossbars. It may be screwn in from only one side, through holes in the crossbar are not necessary.

The optimal adaptation of the strain gauges and the transducer geometry provide an excellent isolation from disturbing influences and a low creep error, even during sudden unloading. The brilliant sealing secures high long-term stability.

## **Applications**

The Series RF is especially developed for material testing in the upper load range (400 kN to 10 MN).

### **Options**

- Dual bridge
   The transducers are optionally available with two measuring bridges,
   which are identical in all their metrology specifications
- Bending moment instrumentation Option to check the quality of load introduction. Additionally to the axial force  $F_z$ , the horizontal bending moments  $M_x$  and  $M_y$  are measured separately and given out as individual channels





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## Force Transducer RF

## **Technical Data**

## General Data (relative to full scale output)

Nominal capacity tension/compression	F <sub>nom</sub>	± kN	400	500	630	1,000	2,000	2,500	3,000	4,000	5,000	10,000
Accuracy class			0.05									
Reproducibility error	f <sub>rep</sub>	± %	0.005									
Linearity error	d <sub>lin</sub>	± %	0.025									
Hysteresis	u	± %	0.2									
Temperature influence on zero	TK <sub>o</sub>	± %/K	0.0025									
Temperature influence on span	TK <sub>c</sub>	± %/K	0.004									
Maximum force	$F_L$	± %	150									
Maximum lateral force	F <sub>Q</sub>	± %	100									
Breaking force	F <sub>B</sub>	± %	>300									
Weight		kg		9		19	4	.6	81	122	on re	equest
Nominal displacement		mm	(	0.16		0.2	0.	29	0.32	0.34	on re	equest
Natural frequency		kHz	3									

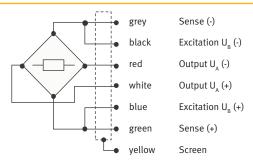
#### **Electrical Data**

Nominal sensitivity	C <sub>nom</sub>	mV/V	2
Bridge impedance nominal	$R_{\rm e}$	Ω	ca. 750
Maximum excitation	U <sub>e, max</sub>	V	15
Cable connection			5 m long, 6-wire, ø 6.5 mm
Environmental protection			IP 54 with fixed Connection (EN60529)

## Additional Data (relative to actual value)

Total error (incl. hysteresis, linearity and temperature error) in the range from 1% to 100% F <sub>nom</sub>	ΔF/F	± %	0.5
Rel. creep ( $t_B = 30 \text{ min}$ )	d <sub>cr, F, E</sub>	± %	0.025
Nominal temperature range	B <sub>t, nom</sub>	°C	+10 to +60
Lateral force influence	$d_{_{\mathrm{Q}}}$	± %/0,1 F <sub>nom</sub>	0.2
Torque influence	d <sub>M</sub>	± %/mm F <sub>nom</sub>	₹0.005
Eccentricity influence	d <sub>E</sub>	± %/mm	0.02

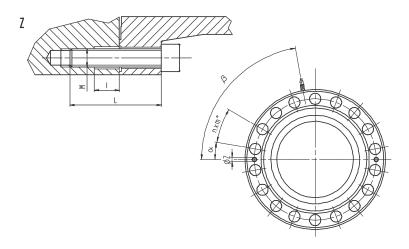
#### **Electrical connection**

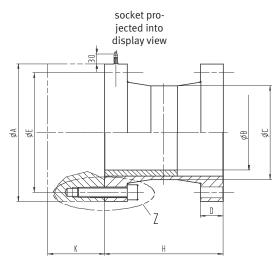


fixed connection at transducer (5 m, 6-wire, screened, open ended)

## Force Transducer RF

#### **Dimensions**





recommended plate thickness for fatigue-proof applications

Nominal capacity tension/compression	F <sub>nom</sub>	± kN	400, 500 630	1,000	2,000 2,500	3,000	4,000	5,000 10,000		
Outer diameter	øΑ	mm	197 - 0.1	240	305	415	536			
Through hole 3)	øΒ	mm	88	110	119.7	236	250			
Diameter at waist	ø C	mm	114.7	146.5 ± 0.2	171.4	282.4 ± 0.2	301.2 - 0.2			
Flange height	D	mm	25	40	57.5	69	80			
Pitch circle diameter	øΕ	mm	160 ± 0.1	200 ± 0.1	250 ± 0.1	360 ± 0.3	480 ± 0.2			
Overall height	Н	mm	160	230	326 - 0.4	358	400			
Chamfering	I	mm	30	25	45	35	25			
Plate thickness	K	mm	70	100	140	175	200			
Minimum bolt length	L	mm	80	100		150		on request		
Bolt thread	М		M20	M24	M	N30×2		request		
Pitch	n×m		12×30			18×20	24×15			
Dowel pin (2)	øΖ	mm	12 <sup>H8</sup>							
Angular position of dowel pin	α	o		15		10	7,5			
Angular position of cable entry	В	0	90	60	0	100	15 <sup>4)</sup>			
Bolt quality			12.9							
Bolt torque (oiled, $\mu = 0.12$ )	Н	N∙m	400 1.000 2.000							
Permissible dynamic load range 1)2)	2·F <sub>a</sub>		1.6⋅F <sub>nom</sub>							
electr. connection <sup>2)</sup>			Cable connected to transducer							

- 1) With alternating load acc. DIN 50100 not exceeding ± F<sub>nom</sub>
  2) For 2.500 kN however not exceeding 1.28-F<sub>nom</sub>
  3) special version with through hole, standard version without through hole 4) optionally additional connections at -15° and 30° for bending moments

Specifications subject to change without notice

all details describe our products in general form they are not to be understood as expressed warranty

and do not constitute any liability whatsoever RF\_p\_e 07/2007



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