

Hydraulic ring force transducer Geotechnical version to 3,200 kN Model F6160

WIKA data sheet FO 52.22

Applications

- Civil engineering and special construction
- Tunnel construction
- Mining (surface and underground)
- Surveying and bridge building
- Slope stabilisation, retaining walls and excavations

Special features

- Measuring ranges 0 ... 400 kN to 0 ... 3,200 kN
[0 ... 89,924 lbf to 0 ... 719,389 lbf]
- Relative linearity error
±1.0 % F_{nom} with analogue pressure gauge,
±0.5 % F_{nom} with digital pressure gauge or pressure sensor
- Piston stroke ≤ 0.5 mm [≤ 0.02 in]
- Operates without supply voltage
- Case and piston made of galvanised steel



Hydraulic ring force transducer, model F6160

Description

The model F6160 hydraulic ring force transducer, geotechnical version, is available in nominal size NS 383 to 3,200 kN [719,389 lbf]. The ring force transducers in geotechnical version are hydraulic force measuring units which, in conjunction with measuring or display instruments, can directly display the measured values or output them as an analogue signal. It is an extremely robust design in line with the requirements of geotechnical engineering.

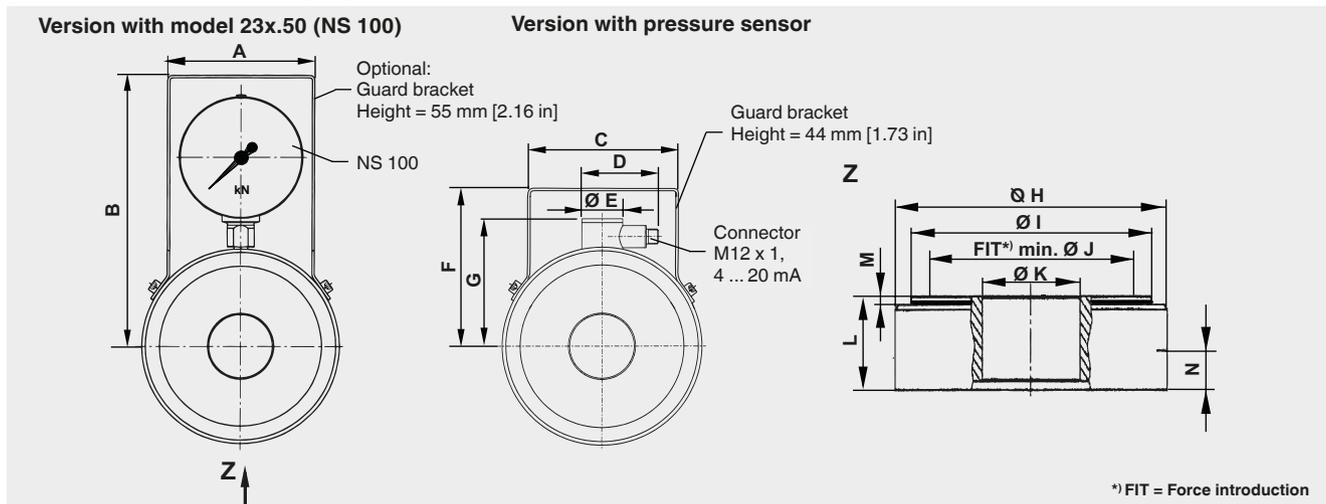
The force is measured using the principle of hydraulics: the force acting on a piston leads to a pressure increase. This is then visualised, either directly by a connected display instrument or converted by means of a pressure sensor into an analogue signal.

With these hydraulic force measuring units, clamping forces are detected at the anchor head in a simple way and brought directly to the display. The force measuring units are used for continuous monitoring of anchors and other bracing rods/cables. Applications for hydraulic force measuring units can be found in the field of geotechnology in various fields such as tunnel construction, bridge building and slope stabilisation.

Specifications per VDI/VDE/DKD 2638

Model F6160	
Rated force F_{nom}	0 ... 400 kN to 0 ... 3,200 kN [0 ... 89,924 lbf to 0 ... 719,389 lbf]
Nominal size	NS 383
Display	<ul style="list-style-type: none"> ■ Pressure gauge, model 23x.50 (NS 100) ■ Digital pressure gauge, model DG-10 ■ Pressure sensor (on request)
Relative linearity error d_{lin}	
Pressure gauge	$\leq \pm 1.0 \% F_{nom}$
Pressure sensor/digital pressure gauge	$\leq \pm 0.5 \% F_{nom}$
Temperature effect on	
the characteristic value TK_C	$1 \% F_{nom} / 10 K$
the zero signal TK_0	$1 \% F_{nom} / 10 K$
Force limit F_L	$100 \% F_{nom}$
Breaking force F_B	$> 130 \% F_{nom}$
Rated displacement s_{nom}	$< 0.5 \text{ mm} [< 0.02 \text{ in}]$
Rated temperature range $B_{T, nom}$	$-30 \dots +60 \text{ }^\circ\text{C} [-22 \dots 140 \text{ }^\circ\text{F}]$
Ingress protection (per IEC/EN 60529)	
Pressure gauge	IP65
Digital pressure gauge/pressure sensor	IP67
Case	<ul style="list-style-type: none"> ■ Steel, electrogalvanised ■ Stainless steel (option)
Piston	<ul style="list-style-type: none"> ■ Steel, electrogalvanised ■ Stainless steel (option)
Guard bracket	
Pressure gauge	Yes
Digital pressure gauge/pressure sensor	Optional
Mounting type	
Pressure gauge	Direct mounting
Digital pressure gauge/pressure sensor	Direct mounting
Option	<ul style="list-style-type: none"> ■ Capillary ■ Measuring hose for "separation without any loss less connection"
Output signal	4 ... 20 mA, 2-wire
Analogue output	
Supply voltage	DC 0 ... 30 V for current output
Load	$\leq (U_B - 6V) / 0.024 \text{ A}$
Electrical connection	<ul style="list-style-type: none"> ■ Circular connector M12 x 1, 4-pin Hand-held ■ Measuring instrument ViSens E3908 (option)
Fill fluid	Glycerine 70 % / water 30 %
Force introduction (FIT)	As full-faced as possible, min. 75 % of the piston diameter
Weight	36 kg [79.37 lbs]

Dimensions in mm [in]



Dimensions in mm [in]													
A	B	C	D	ØE	F	G	ØH	ØI	ØJ	ØK	L	M	N
120	316	132	71	33	225	186	325	294	262	165	75	5	20
[4.7]	[12,44]	[5.2]	[2.8]	[1.3]	[8.86]	[7.32]	[12.8]	[11.6]	[10.3]	[6.5]	[2.95]	[0.2]	[0.79]

Version		Pressure gauge
Rated force	System pressure	Model 23x.50 (NS 100)
kN [lbf]	bar	
400 [89,924]	100	■
600 [134,885]	160	■
1,000 [224,809]	250	■
1,200 [269,771]	315	■
1,500 [337,213]	400	■
2,000 [449,618]	500	■
2,400 [539,541]	600	■
2,800 [629,465]	700	■
3,200 [719,389]	800	■

Other rated loads and versions on request

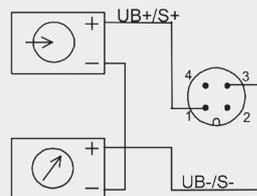
■ = possible selection

Pin assignment, analogue output

4...20 mA (2-wire)		
	Pin	Connection identification
Supply UB+/S+	1	Brown
Supply UB-/S-	3	Blue
Signal S+	1	Brown
Signal S-	3	Blue
Shield ⊕	case	case

Output 4...20 mA, 2-wire

Circular connector M12 x 1, 4-pin



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