

Hydraulic Ring Force Transducer

Geotechnics - Version

Forces from 80 kN up to 6000 kN

F6137 – ND 82
F6148 – ND 146
F6160 – ND 383
F6171 – ND 827



Description

The Geotechnics-Version of the ring force transducer is a hydraulic force measurement unit with either an indicating device or an analogue output signal. They are extremely robust to fulfill the high requirements in the geotechnics market.

With these hydraulic force measurement units the tension force at the anchor head can be measured and displayed in an easy way. Therewith anchors and other soil nails can be monitored continuously.

The force measurement utilizes the hydraulic principle: The force applied to a piston generates a hydraulic pressure, which is either displayed with an indicating device or converted with a pressure sensor into an analogue output signal.

Applications for the hydraulic ring force transducer can be found within the geotechnics market in various areas.

Features

- Zinc-plated steel housing and piston
- Accuracy $\pm 1,0\%$ F.S. with pressure gauge
- Accuracy $\pm 0,5\%$ F.S. with pressure sensor or digital pressure gauge
- One-piece design
- Operates without power supply
- Piston movement $\leq 0,5$ mm

Measuring range

- 0 ... 80 kN up to 0 ... 6000 kN

Applications

- Slope Monitoring
- Construction and civil engineering
- Tunnel construction
- Mining (above and below ground)
- Construction pits
- Foundation construction

Model: F6137, F6148, F6160, F6171

Selection - Dimension - Sheet: Hydraulic Ring Force Transducer – Geotechnics - Version

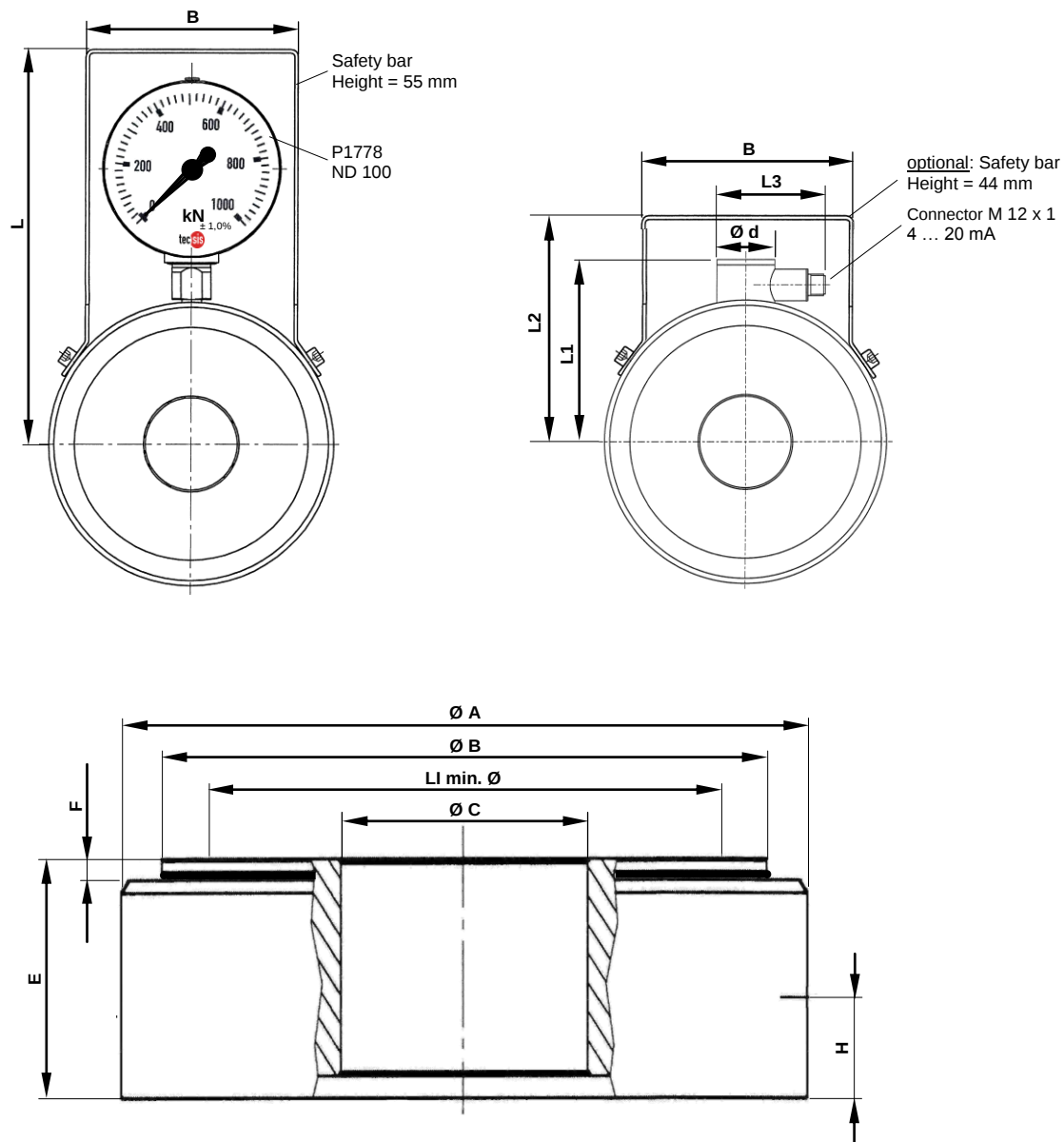
Model	F6137 / F6148 / F6160 / F6171		Options
Nominal diameter	ND 82 / ND 146 / ND 383 / ND 827		
Nominal load F_{nom}	0 ... 80 kN up to 0 ... 6000 kN		
Version	Analog Display	Digital Display	
Accuracy class	$\leq \pm 1,0\%$ F.S. at +21°C	$\leq \pm 0,5\%$ F.S. at +21°C	
Limit load	100% F_{nom} (dependent on measuring range)		
Breaking load	$> 130\%$ F_{nom} (dependent on measuring range)		
Piston movement	$< 0,5$ mm		
Nominal temperature range	$-30 \dots +60^\circ\text{C}$		
Protection type acc. EN60529 / IEC529	IP 65	IP 67	
Safety bar	yes	optional	
Housing	Zinc-plated steel		- Stainless steel
Piston	Zinc-plated steel		- Stainless steel
Connection type	direct	Integrated amplifier	- Capillary tube - Measuring tube for "leak free separation"
Display	Pressure gauge P1778 (ND100)	---	- Drag pointer - Digital pressure gauge P3962
Analogue output signal -Excitation voltage -Resistance -Electrical connection	---	P3342 - 4...20 mA - 2 wire - 10 ... 30 VDC for current output - $\leq (U_B - 6 \text{ V}) / 0,024 \text{ A}$ - Connector M12 x 1, 4-pins	- Portable measuring instrument ViSens E3908 (DE 978)
Filling liquid	Glycerin/Water 70%		
Temperature error	$< 1\% / 10^\circ \text{K F.S.}$		
Load introduction (LI)	preferable entire surface, min. 75% of the piston diameter		

Version					Display		Dimensions													
Model	ND [cm²]	Nominal load	Resolution	bar	P1778	P3342	Ø A	Ø B	Ø C	LI min. Ø	Ø d	E	F	H [mm]	L	L1	L2	L3	B	Weight [ca. kg]
F6137	82	80 kN	1 kN	100	■	■	161	132	52	112	33	55	5	19	215	103,5	124	71	120 (P1778) / 132 (P3342)	8
F6137	82	130 kN	2 kN	160	■	■														
F6137	82	200 kN	5 kN	250	■	■*														
F6137	82	250 kN	5 kN	315	■	■*														
F6137	82	350 kN	5 kN	400	■	■*														
F6137	82	400 kN	10 kN	500	■	■*														
F6137	82	500 kN	10 kN	600	■	■*														
F6137	82	600 kN	10 kN	700	■	■*														
F6137	82	700 kN	10 kN	800	■	■														
F6148	146	150 kN	2 kN	100	■	■	220	194	90 / 105	168 / 172	33	55	5	19	255	133,5	164	71	120 (P1778) / 132 (P3342)	13,5 / 13
F6148	146	250 kN	5 kN	160	■	■*														
F6148	146	350 kN	5 kN	250	■	■*														
F6148	146	450 kN	10 kN	315	■	■*														
F6148	146	600 kN	10 kN	400	■	■*														
F6148	146	750 kN	20 kN	500	■	■														
F6148	146	900 kN	20 kN	600	■	■														
F6148	146	1000 kN	20 kN	700	■	■*														
F6148	146	1200 kN	20 kN	800	■	■*														
F6148	146	1400 kN	20 kN	1000	■	■*														
F6148	146	1500 kN	50 kN	1000	■	■*														
F6160	383	400 kN	10 kN	100	■	■*	325	294	165	262	33	75	5	20	316	186	225	71	120 (P1778) / 132 (P3342)	36
F6160	383	600 kN	10 kN	160	■	■*														
F6160	383	1000 kN	20 kN	250	■	■*														
F6160	383	1200 kN	20 kN	315	■	■*														
F6160	383	1500 kN	50 kN	400	■	■*														
F6160	383	2000 kN	50 kN	500	■	■*														
F6160	383	2400 kN	50 kN	600	■	■														
F6160	383	2800 kN	50 kN	700	■	■														
F6160	383	3200 kN	50 kN	800	■	■														
F6171	827	800 kN	20 kN	100	■	■	430	389	165	333	33	130	11	50	370	240	280	71	120 (P1778) / 132 (P3342)	122
F6171	827	1300 kN	20 kN	160	■	■*														
F6171	827	2000 kN	50 kN	250	■	■*														
F6171	827	2500 kN	50 kN	315	■	■*														
F6171	827	3500 kN	50 kN	400	■	■*														
F6171	827	4000 kN	100 kN	500	■	■*														
F6171	827	5000 kN	100 kN	600	■	■*														
F6171	827	6000 kN	100 kN	700	■	■*														

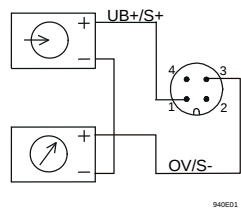
Other nominal loads and versions on request

*automatic measuring range detection with portable measuring instrument ViSens (E3908)

Model: F6137, F6148, F6160, F6171



Electrical connection: Output signal 4...20 mA (2-wire)
Connector M 12 x 1 - 4-pins



	4...20 mA (2 - wire)	
	Pin	line identification
Supply: UB+	1	brown
Supply: 0V	3	blue
Signal: S+	1	brown
Signal: S-	3	blue
Ground	threat M12x1	Screen

Remark: Couplings of the hydraulic force transducer must not be disconnected!
In case of violation there will be no guarantee and no measuring function.