

Compression load cell

With bilateral spherical force introduction up to 50 t [110,231 lb]

Model F1861

WIKA data sheet FO 51.61



For further approvals,
see page 3

Applications

- Industrial weighing technology
- Truck scales, tank scales
- Floor scales
- Production lines and plants
- Measuring, test and control equipment

Special features

- Rated loads from 0 ... 10 t to 0 ... 50 t
[0 ... 22,046 lb to 0 ... 110,231 lb]
- Relative linearity error from 0.03 % F_{nom}
- Self-centring rocker pin with anti-rotation tilting lever pin
- Compact design and long-term stability
- Encapsulation, hermetically sealed and welded



Compression load cell, model F1861

Description

The model F1861 compression load cell with strain gauges is designed for measuring high static compression forces and loads and has been specially designed for use in industrial force and weight measurement, particularly in weighing technology.

Self-centring rocker pin

The version designed as a self-centering rocker pin with bilateral spherical convex surfaces is used for transmitting compressive forces and ensures axial, perpendicular and centred force introduction. The force is thus transmitted centrally and evenly into the instrument. This enables precise measurement of the actual compression forces in a wide variety of applications and reduces measured errors caused by transverse forces or asymmetrical loading.

The measuring body is elastically deformed by a compression force introduced in the force direction. The resulting mechanical tensions are measured by the strain gauges, converted into an electrical output signal and output as an mV/V signal.

In addition, the instrument also features an anti-rotation tilting lever pin. This self-resetting mechanism is equipped with a rotation stop pin that reliably prevents rotation around the y-axis.

Compact design and long-term stability

With its compact stainless-steel design, model F1861 is also suitable for harsh operating conditions in industrial automation, testing equipments, and production plants where high reliability and long-term stability are required.

Encapsulation, hermetically sealed and welded

The hermetically welded enclosure provides reliable protection against moisture and dirt. The glass-to-metal feedthrough for the cable connection additionally ensures high operational safety and long-term stability, even under harsh environmental conditions. Even in conditions involving high air humidity, dust or temperature fluctuations, the instrument delivers reliable and stable measurement results.

If required, the instrument can be equipped with a signal amplifier for strain-gauge measuring systems.

Suitable mounting kits are also available as an accessory for simple and secure installation.

Specifications

Basic information / Version per standard	
Standard	In accordance with VDI/VDE/DKD 2638
Material of the measuring body	Steel
Ingress protection (per IEC/EN 60529)	IP67
Weight	4.3 kg [9.48 lb]

Measuring element	
Type of measuring element	Measuring spring with strain gauges
Range of use	For static force measurement
Input resistance R_e	$400 \pm 20 \Omega$
Output resistance R_a	$352 \pm 3 \Omega$
Force introduction	Compression force applied axially and centrally to the spherical cap (bilaterally).

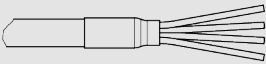
Accuracy specifications	
Relative linearity error d_{lin}	$0.03 \% F_{nom}$
Relative repeatability error in unchanged mounting position b_{rg}	$0.03 \% F_{nom}$
Relative reversibility error v	$0.03 \% F_{nom}$
Relative creep, 30 min at F_{nom}	$0.03 \% F_{nom}$
Relative deviation of zero signal $d_{s,0}$	$\pm 2 \% F_{nom}$
Temperature effect on zero signal TC_0	$0.02 \% / 10 K$
Temperature effect on characteristic value TC_C	$0.02 \% / 10 K$

Rated load F_{nom}	
t	lb
10	22,046
20	44,092
30	66,138
40	88,185
50	110,231

Further details on the measuring range	
Force limit F_L	$150 \% F_{nom}$
Breaking force F_B	$250 \% F_{nom}$

Output signal	
Rated characteristic value C_{nom}	$2.0 \pm 0.2 mV/V$
Voltage supply	DC 5 ... 10 V (max. 15 V)

Electrical connection	
Connection type	Cable outlet, shielded, flying leads
Cable diameter	$\varnothing 5 \text{ mm}$ [0.197 in]
Cable length	15 m [49.21 ft]
Material	PUR (polyurethane)

Cable outlet, shielded, flying leads		
	4-wire	
	Exc ₊	Red (RD)
	Exc ₋	Black (BK)
	Sig ₊	Green (GN)
	Sig ₋	White (WH)
	Shield ⊕	-

Legend

Exc ₊	Positive excitation voltage	Sig ₊	Positive signal output
Exc ₋	Negative excitation voltage	Sig ₋	Negative signal output

→ For pin assignment of the cable see operation instructions 14723453.

Operating conditions	
Rated temperature range B _{T, nom}	-10 ... +40 °C [+14 ... +104 °F]
Operating temperature range B _{T, G}	-20 ... +60 °C [-4 ... +140 °F]
Humidity	35 ... 85 % relative humidity
Condensation	Non-condensing
Operating altitude	≤ 2,500 m [8,202 ft] above sea level

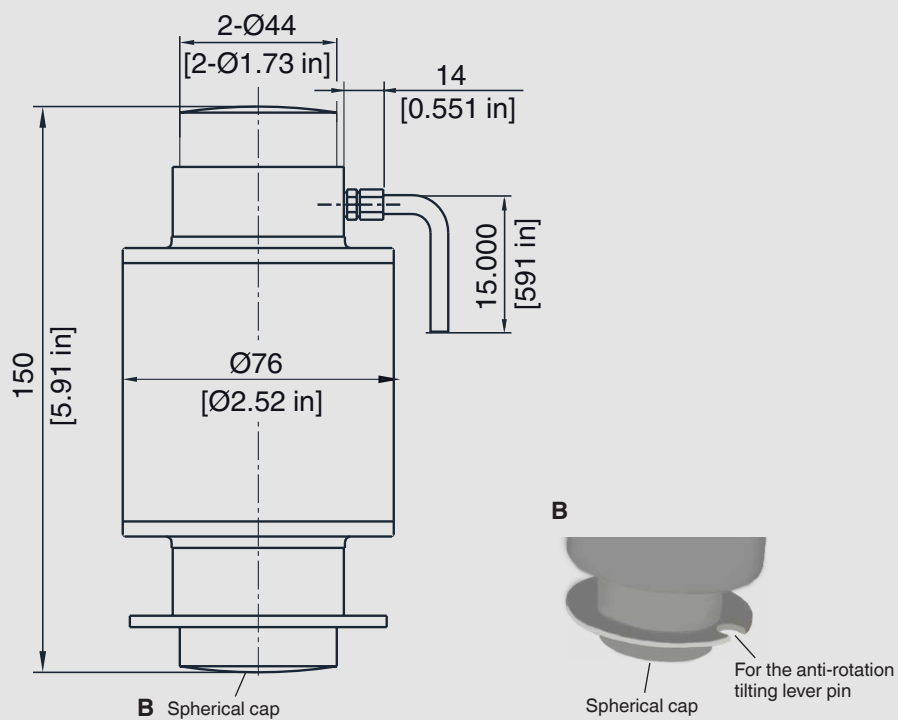
Packaging and instrument labelling	
Packaging	Individual packaging
Instrument labelling (product label)	→ See operating instructions 14723453

Approvals

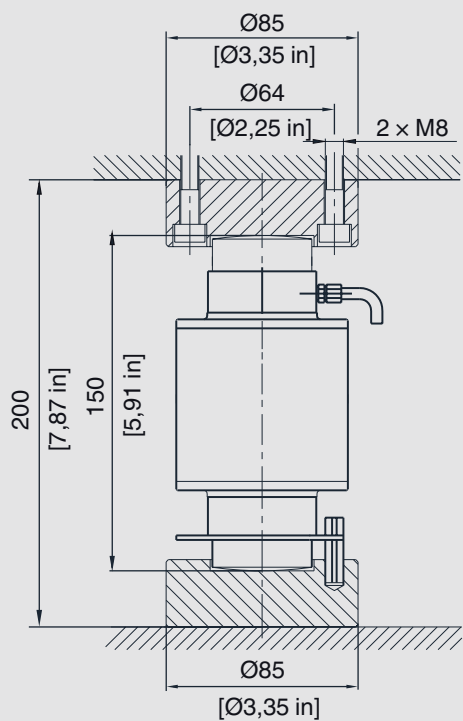
Logo	Description	Region
	EU declaration of conformity	European Union
	RoHS directive	
	EAC	Eurasian Economic Community
	RoHS directive	

→ For approvals and certificates, see website.

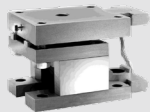
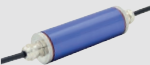
Dimensions in mm [in]



Mounting dimensions in mm [in]



Accessories

Logo	Description	Order number
	Mounting kit, model AZK01 (Indicative image)	On request
	Analogue cable amplifier, model B1940 Analogue cable amplifier for adapting the output signal of the strain gauge instruments to 4 ... 20 mA, 0 ... 20 mA or 0 ... 10 V for indicators or to the downstream controller	83805811
	Junction box, model B6578 For the parallel connection of up to 4 force transducers or load cells	64418893
	Weighing transmitter, model FE230 An amplifier for sensors with mV/V signal, DIN-rail mounting.	On request
	Weighing indicator, model FE430 For the connection of 4- or 6-wire load cells with mV/V output	On request
	Hand-held indicator, Typ FE630 A mobile indicator and data logger for instruments with mV/V output	14785125

→ WIKA accessories see online at www.wika.de

Ordering information

Model / Ingress Protection / Relative linearity error / Rated load / Output signal / Electrical connection / Rated temperature range / Approval

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We reserve the right to make modifications to the specifications and materials.



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