

High-capacity load cell

With bilateral spherical force introduction up to 300 t [661,500 lb]

Model F1270

WIKA data sheet FO 51.36



For further approvals,
see page 3

Applications

- Container and silo weighing technology
- Truck scales
- Dosing systems
- Production lines and plants
- Measuring, testing and control equipment

Special features

- Rated loads from 0 ... 7.5 t to 0 ... 300 t
[0 ... 16,535 lb to 0 ... 661,500 lb]
- Relative linearity error from 0.04 % F_{nom}
- Rocker column load cell
- Robust design and long-term stability
- Encapsulation, hermetically sealed and welded



High-capacity load cell, model F1270

Description

The model F1270 high-capacity load cell with strain gauges is designed for measuring very high loads and has been specially designed for use in container and silo weighing technology.

The spherical cap with convex surface is used to transfer 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.

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.

Rocker column load cell

The special geometry allows for optimal integration, for example in truck scales, and ensures that the instrument automatically realigns itself within the force flow through minimal rocking motion. As a result, precise positioning of the vehicle on the weighing platform is no longer required - an important advantage in terms of installation effort and measurement accuracy.

The integrated radii at the load-receiving points allow installation with simple force-introduction components, significantly simplifying assembly and increasing operational safety.

Robust Design and long-term stability

With its robust stainless-steel construction, model F1270 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.

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 informations / Version per standard		
Standard	In accordance with VDI/VDE/DKD 2638	
Material of the measuring body	Stainless steel	
Ingress protection (per IEC/EN 60529)	IP69K	
	Down to a water depth of 2 m [6.56 ft]	IP68

Measuring element	
Type of measuring element	Strain gauges
Range of use	For static force measurement
Input resistance R_e	1,150 $\pm$ 50 Ω
Output resistance R_a	1,000 $\pm$ 2 Ω
Force introduction	Compression force applied axially and centrally to the spherical cap (one-sided).

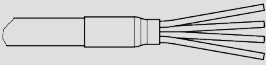
Accuracy specifications	
Relative linearity error d_{lin}	$\pm 0.04 \% F_{nom}$
Relative repeatability error in unchanged mounting position b_{rg}	$\pm 0.04 \% F_{nom}$
Relative creep, 30 min at F_{nom}	$\pm 0.04 \% F_{nom}$
Relative deviation of zero signal $d_{s,0}$	$\pm 5 \% F_{nom}$
Temperature effect on zero signal TC_0	$\leq \pm 0.04 \% / 10 K$
Temperature effect on characteristic value TC_C	$\leq \pm 0.02 \% / 10 K$

Rated load F_{nom}		Weight	
kg	lb	kg	lb
7.5	16,535	1.3	2.87
15	33,069	1.4	3.09
22.5	49,604	1.5	3.31
30	66,138	3.4	7.5
40	88,185	3.6	7.94
50	110,231	4.5	9.92
100	220,500	12.9	28.4
150	330,750	17.1	37.7
300	661,500	32.8	72.3

Further details on the measuring range	
Force limit F_L	200 % F_{nom}
Breaking force F_B	> 300 % F_{nom}

Output signal	
Rated characteristic value C_{nom}	2.0 $\pm$ 0.1 mV/V
Voltage supply	DC 5 ... 15 V for mV/V output

Electrical connection	
Connection type	Cable outlet, shielded, flying leads
Cable diameter	
Rated load F_{nom} : 7.5 ... 22.5 t [16,535 ... 49,604 lb]	Ø 5 mm [0.197 in]
Rated load F_{nom} : 30 ... 300 t [66,138 ... 110,231 lb]	Ø 7.8 mm [0.307 in]
Cable length	
Rated load F_{nom} : 7.5 ... 22.5 t [16,535 ... 49,604 lb]	12 m [39.37 ft]
Rated load F_{nom} : 30 ... 300 t [66,138 ... 661,500 lb]	18 m [59.1 ft]
Material	PUR (polyurethane)
Insulation resistance R_{is}	> 5 GΩ

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

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	
Operating temperature range $B_{T,G}$	-40 ... +80 °C [-40 ... +176 °F]
Humidity	35 ... 85 % relative humidity
Condensation	Non-condensing
Encapsulation	Completely hermetically sealed, cable connection by means of a glass feedthrough
Operating altitude	≤ 2,500 m [8,202 ft] above sea level

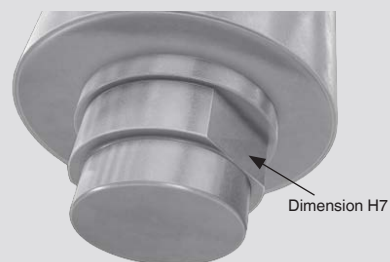
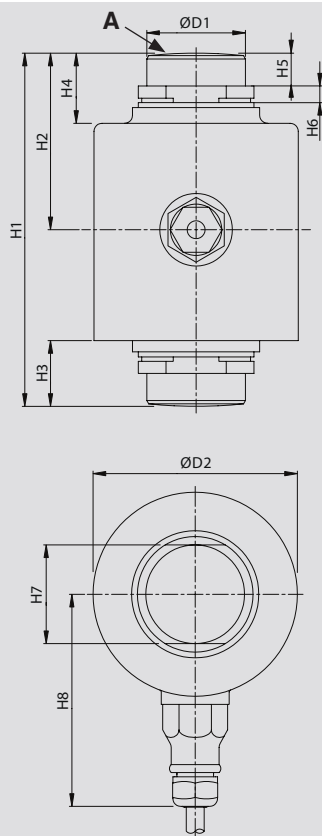
Packaging and instrument labelling	
Packaging	Individual packaging
Instrument labelling (product label)	→ See operating instructions 14723453

Approvals

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

→ For approvals and certificates, see website

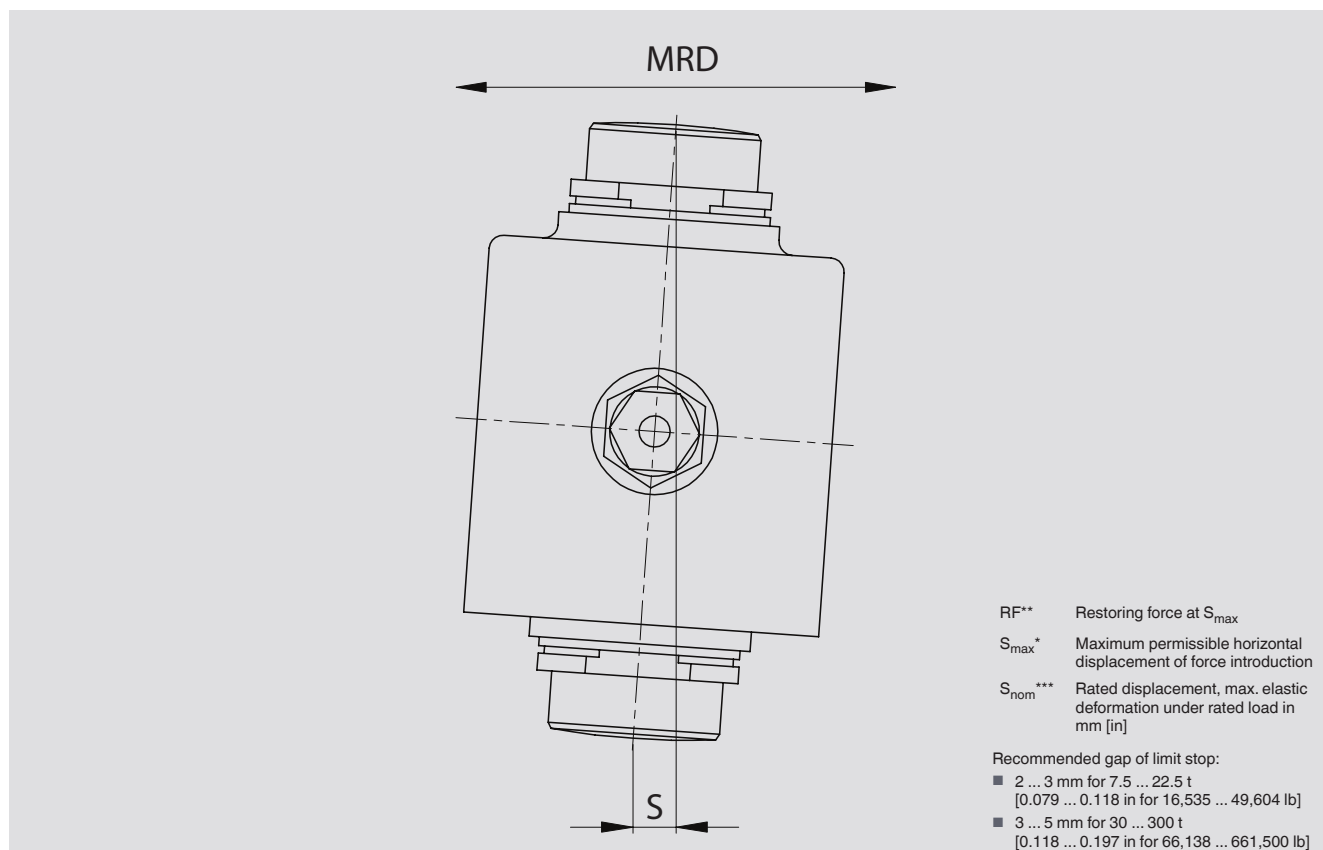
Dimensions in mm [in]



Rated load F_{nom} in t	Dimensions in mm									
	H1	H2	H3	H4	H5	H6	H7	H8	D1	D2
7.5	89	44	17	23	11	6	28	75	28	69
15	89	44	17	23	11	6	28	75	28	69
22.5	89	44	17	23	11	6	28	75	28	69
30	140	70	26	28	13	6.5	39	84	39	81
40	150	75	31	33	13	11.7	39	84	39	81
50	178	89	32	34	17	8.5	44	94	44	99
100	178	89	38.5	38.5	17	12	62	94	62	141.3
150	210	105	42.7	42.7	20.6	12.8	76.2	121.5	76.2	165
300	280	140	55.9	55.9	25	21.5	100	121.5	100	165

Rated load F_{nom} in lb	Dimensions in inch									
	H1	H2	H3	H4	H5	H6	H7	H8	D1	D2
16,535	3.5	1.73	0.67	0.91	0.43	0.24	1.11	2.95	1.11	2.72
33,069	3.5	1.73	0.67	0.91	0.43	0.24	1.11	2.95	1.11	2.72
49,604	3.5	1.73	0.67	0.91	0.43	0.24	1.11	2.95	1.11	2.72
66,138	5.51	2.76	1.02	1.10	0.512	0.256	1.54	3.31	1.54	3.19
88,185	5.91	2.95	1.22	1.30	0.512	0.46	1.54	3.31	1.54	3.19
110,231	7.01	3.50	1.26	1.34	0.67	0.335	1.73	3.70	1.73	3.898
220,500	7.01	3.50	1.44	1.52	0.67	0.472	2.44	3.7	2.44	5.56
330,750	8.27	4.13	1.68	1.68	0.811	0.504	3.0	4.78	3.0	6.5
661,500	11.02	5.51	2.20	2.20	0.984	0.846	3.94	4.78	3.94	6.5

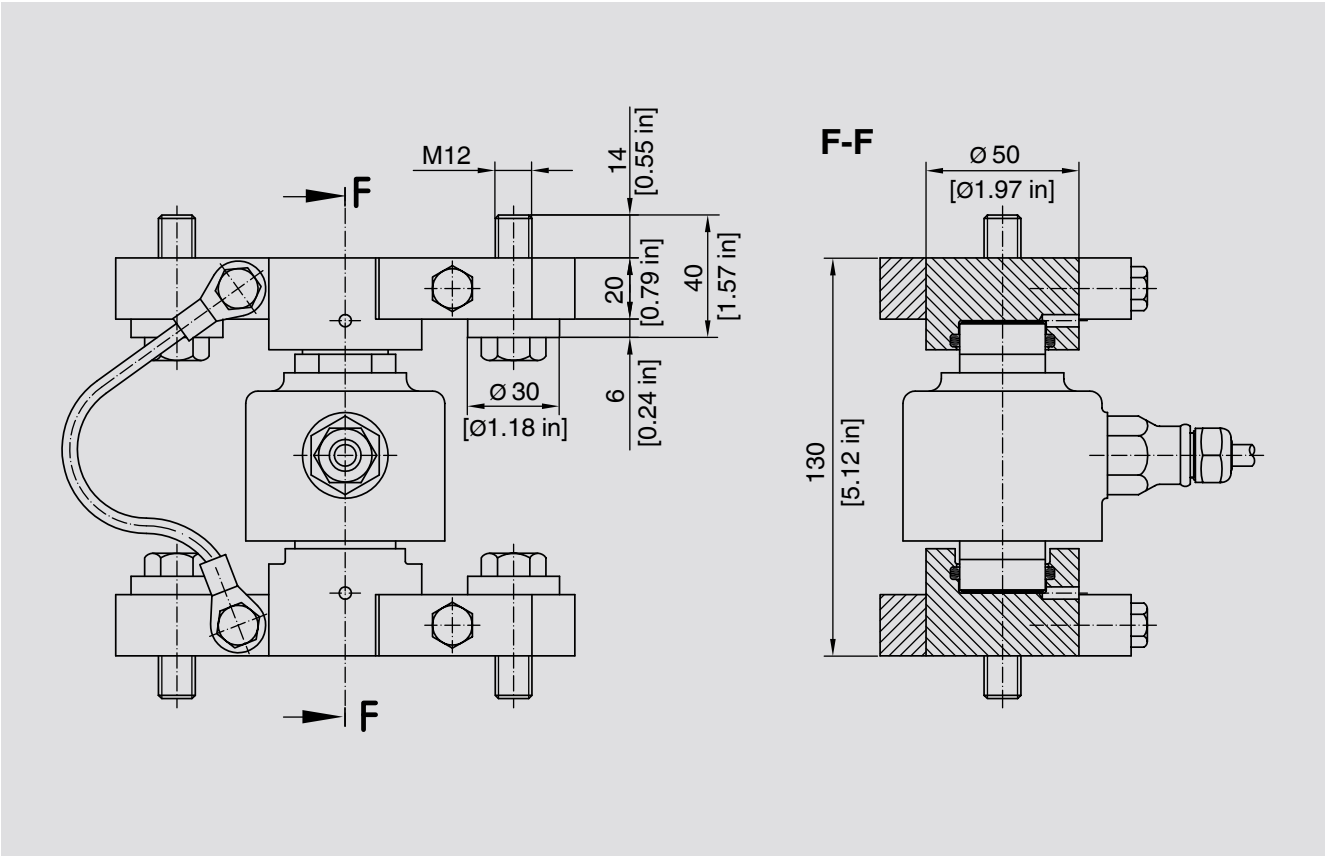
Main rocking direction [MRD]



Rated load F_{nom} in t	Restoring force RF** kN	Dimensions in mm	
		$S_{\max}^*$	S_{nom}^{***}
7.5	11	4.5	0.5
15	20	4.5	0.6
22.5	30	4.5	0.6
30	34	10.5	0.29
40	37	10	0.8
50	51	9	1
100	152	11.5	0.3
150	240	14.5	0.35
300	468	15	0.5

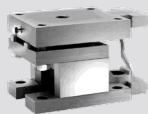
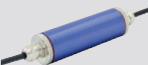
Rated load F_{nom} in lb	Restoring force RF** lb	Dimensions in inch	
		$S_{\max}^*$	S_{nom}^{***}
16,535	2,473	0.177	0.02
33,069	4,496	0.177	0.24
49,604	6,744	0.177	0.24
66,138	7,644	0.413	0.011
88,185	8,318	0.394	0.031
110,231	11,465	0.354	0.039
220,500	34,171	0.453	0.012
330,750	53,954	0.571	0.014
661,500	105,211	0.591	0.02

Mounting dimensions in mm [in]



Indicative image

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 / Accessories

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