

Compression and Tension Force Sensor K-11 with Rated Force from 0.5 ... 2000 kN



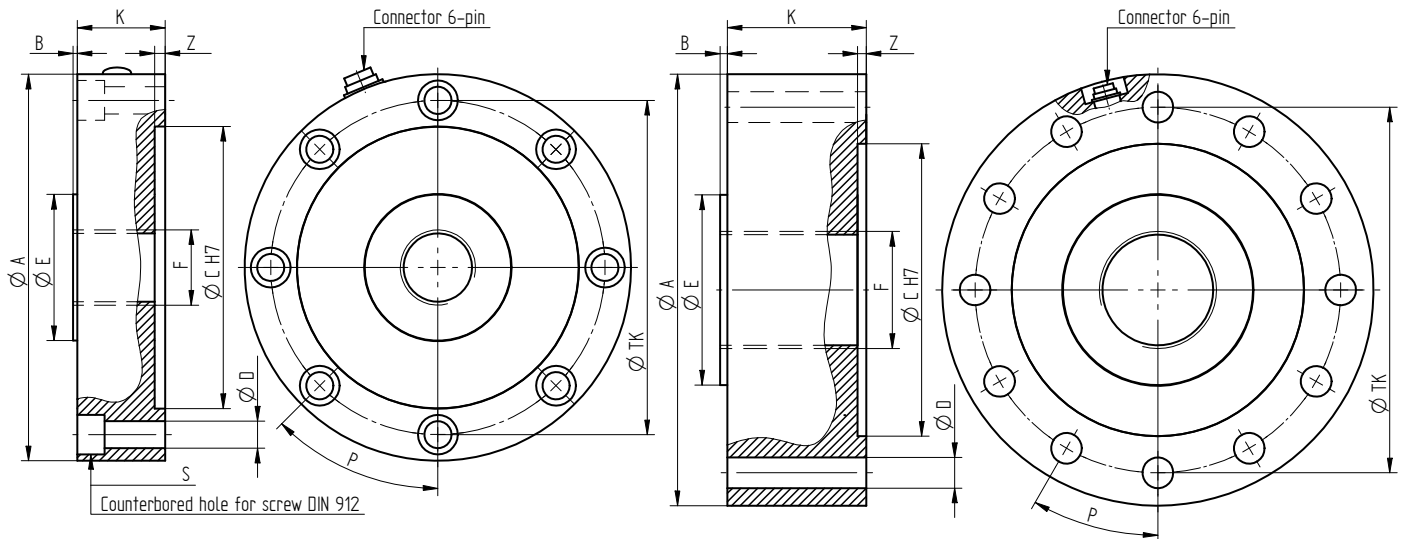
Performance Features

- Sensor for compression and tension force measurement
- TEDS (Transducer Electronic Data Sheet) Standard IEEE 1451.4 (optional)
- High accuracy
- Simple handling and assembly
- Reliable and durable
- Long-term stability
- Level of protection IP60
- Special versions on request

Application

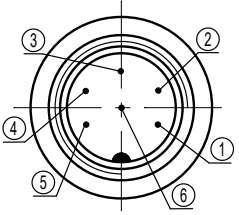
- Equipment engineering
- Fully automated machining centres
- Measuring and control devices
- Materials testing machines
- Tool engineering
- Special mechanical engineering

Dimensions in mm



Article-No.	Rated Force [kN]	Accuracy class [% F _{nom}]	Dimensions [mm]											Screws		Weight [kg]	
			ØA	B	ØC	ØD	ØE	F	K	P	S	ØTK	Z	Tightening Torque [N·m]	Property class		
100086	0.5	0.05/0.1															
100083	1																
100080	2																
100077	5																
100074	10																
100087	0.5	0.2/0.4	90	2	60	6.6	25	M12	32	4x90°	M6	75	2	14	10.9	1.2	
100084	1																
100081	2																
100078	5	0.5/1.0															
100075	10																
100088	0.5																
100085	1	0.05/0.1															
100082	2																
100079	5																
100076	10	0.2/0.4	150	2	105	11	55	M24x2	38	8x45°	M10	130	2	71	10.9	3.5	
100071	20																
100024	50																
102391	20	0.5/1.0															
100022	50																
100073	20	0.05/0.1															
100023	50																
100026	100																
100028	200	0.2/0.4	185	2	135	13	70	M36x3	42	8x45°	M12	160	3	123	10.9	6.1	
100020	100																
100021	200																
100025	100	0.5/1.0															
100027	200																
100062	500	0.05/0.1	240	2	160	17	90	M45x3	60	12x30°	M16	200	3	302	10.9	15.1	
100063	500																
100064	500																
120009	1000	0.05/0.1	295	5	200	21	130	M80x4	95	12x30°	-	250	4	592	10.9	34.3	
100065	1000																
100066	1000																
120010	2000	0.05/0.1	390	3	270	26	190	M120x4	117	24x15°	-	330	4	1017	10.9	70.1	
100068	2000																
100069	2000																

Connection Assignment

6-pin	K-11	Series 723
Pin 1	Excitation (-)	
Pin 2	Excitation (+)	
Pin 3	Shield	
Pin 4	Signal (+)	
Pin 5	Signal (-)	
Pin 6	Control signal or TEDS (option)	

Technical Data acc. to VDI/VDE/DKD 2638

Compression and Tension Force Sensor K-11

Rated force F_{nom}	kN	0.5 ... 2000		
Accuracy class compression force or tension force	% F_{nom}	0.05	0.2	0.5
Accuracy class compression force and tension force	% F_{nom}	0.1	0.4	1.0
Rel. repeatability error in unchanged mounting position b_{rg}	% F_{nom}	0.03	0.08	0.15
Relative creep	% $F_{nom}/30 \text{ min}$	< ± 0.03	< ± 0.08	< ± 0.15
Rated characteristic value C_{nom}	mV/V	2.00 ± 0.1 %		
Input/output resistance R_e/R_a	Ω	350		
Insulation resistance R_{is}	Ω	> $2 \cdot 10^9$		
Rated range of excitation voltage $B_{U, nom}$	VDC	2 ... 12		
Electrical connection		6-pin series 723 ¹		
Reference temperature T_{ref}	$^{\circ}\text{C}$	23		
Rated temperature range $B_{T, nom}$	$^{\circ}\text{C}$	-10 ... 70		
Operating temperature range $B_{T, G}$	$^{\circ}\text{C}$	-30 ... 80		
Storage temperature range $B_{T, S}$	$^{\circ}\text{C}$	-50 ... 95		
Temperature effect on zero signal TK_0	% $F_{nom}/10 \text{ K}$	± 0.03	± 0.05	± 0.10
Temperature effect on characteristic value TK_C	% $F_{nom}/10 \text{ K}$	± 0.05	± 0.07	± 0.12
Maximum operating force F_G	% F_{nom}	130		
Force limit F_L	% F_{nom}	150		
Breaking force F_B	% F_{nom}	>300		
Permissible oscillation stress F_{rb}	% F_{nom}	70		
Rated displacement S_{nom}	mm	<0.12		
Preferential direction		Compression direction		
Material		Stainless steel		
Level of protection		IP60		

Options

Article-No.	Description	
100218	Control signal	100 % F_{nom}
100739	Control signal	80 % M_{nom}
106154	Control signal	50 % M_{nom}
113134	TEDS-standard IEEE 1451.4	
42828	Extended temperature range	-30 $^{\circ}\text{C}$... 100 $^{\circ}\text{C}$
42829	Extended temperature range	-30 $^{\circ}\text{C}$... 120 $^{\circ}\text{C}$ [$\geq 2 \text{ kN}$]
42830	Extended temperature range	-40 $^{\circ}\text{C}$... 150 $^{\circ}\text{C}$ [$\geq 2 \text{ kN}$]
103954	Calibration in kg or t	
107592	6-wire connection	

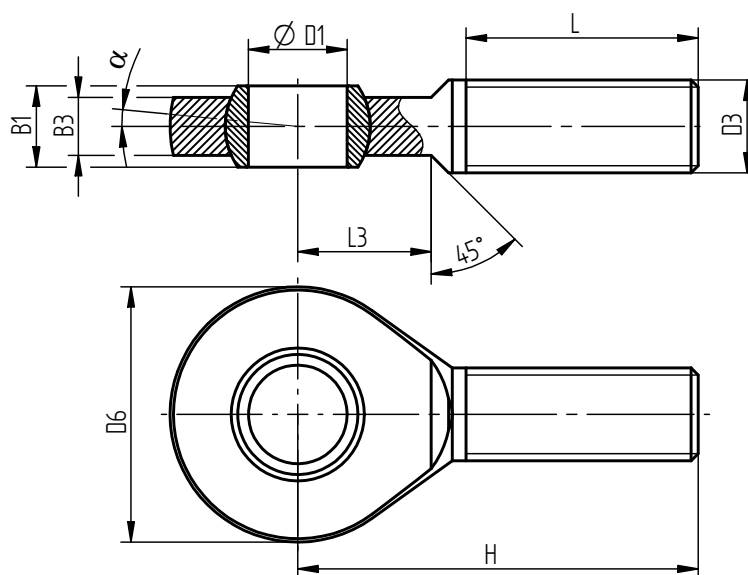
¹ Female cable connector in scope of delivery at first delivery

Calibrations

Article-No.	Description	
400628	Linearity diagram in accordance to factory standard	25 % steps
400170	Linearity diagram in accordance to factory standard	10% steps
400960	Proprietary calibration acc. to DIN EN ISO 376 and DAkkS-DKD-R 3-3	3 steps
400652	Proprietary calibration acc. to DIN EN ISO 376 and DAkkS-DKD-R 3-3	5 steps
400640	Proprietary calibration acc. to DIN EN ISO 376 and DAkkS-DKD-R 3-3	8 steps
	DAkkS-Calibration/Standard on request	

Accessories

Dimensions of Joint Eye with Male Thread in mm



Article-No.	Type - EM	Dimensions [mm]									Weight [kg]	Load rating stat. C ₀ [N]
		B1	B3	ØD1	D3	D6	H	L	L3	α		
40183	EM 12	10	7	12	M12	32	54	33	15	5°	0.07	23000
40294	EM 25	20	16	25	M24x2	62	94	57	32	3.5°	0.51	119100
40587	EM 35	25	20	35	M36x3	82	140	92	38	3.5°	1.33	180800
40592	EM 45	32	25	45	M45x3	102	165	100	50	4°	2.62	276200

Tolerances for Type EM

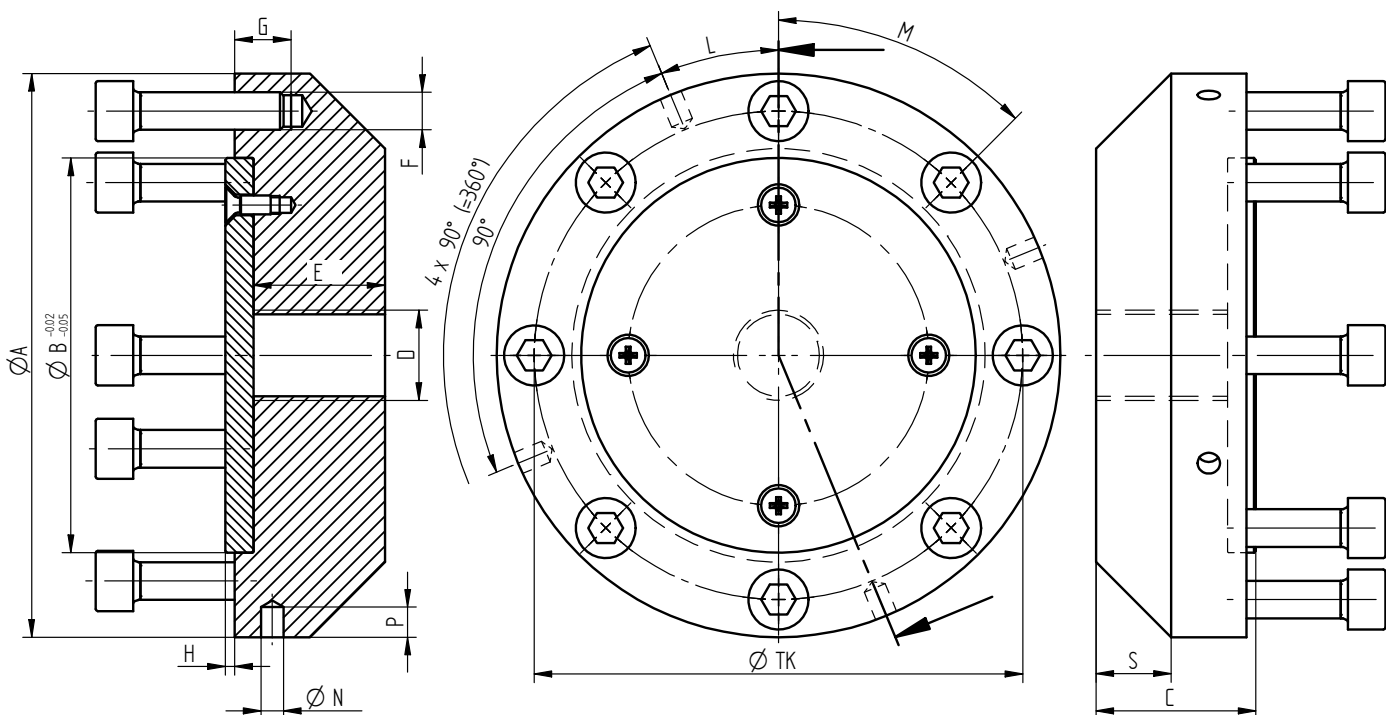
ØD1		ΔD1		ΔB1		ΔH	
>	≤	Tolerance		Tolerance		Tolerance	
5	18	0	-0.008	0	-0.12	+1.2	-1.2
18	30	0	-0.010	0	-0.12	+1.7	-1.7
30	50	0	-0.012	0	-0.12	+2.1	-2.1

Dimensions of Thrust Piece Type E2 in mm

Article-No.	Rated Force [kN]	Dimensions [mm]							Weight [kg]
		$\varnothing D$	A	B	C	SW	R	T	
40324	0.5/1/2/5/10	22	12	24	M12	18	60	~1	0.05
40325	20/50	52	15	30	M24x2	45	230	~1.5	0.28
43914	100/200	65	15	30	M36x3	45	295	~1.8	0.41
43732	500	85	20	40	M45x3	50	450	~2.0	0.84
44087	1000	125	50	90	M80x4	95	780	~2.5	5.15
48231	2000	190	70	120	M120x4	170	1000	~4.5	16.29

Please specify requested rated force at order!

Dimensions of Adapter Type E3 in mm



Article-No.	Rated Force [kN]	Dimensions [mm]													Weight [kg]	
		$\varnothing A$	$\varnothing B$	C	D	E	F	G	H	L	M	$\varnothing N$	P	S		$\varnothing TK$
47625	0.5/1/2/5/10	90	60	36	M12	30	M6	13	2	22.5°	4x90°	4	6	15x45°	75	1.51
47626	20/50	150	105	42.5	M24x2	35	M10	15	2.5	22.5°	8x45°	6	8	20x45°	130	5.24
47627	100/200	185	135	46.5	M36x3	39	M12	19	2.5	22.5°	8x45°	6	8	20x45°	160	8.69
47628	500	240	160	64.5	M45x3	57	M16	27	2.5	15°	12x30°	8	10	28x45°	200	20.25
47629	1000	295	200	104.5	M80x4	94.5	M20	30	4.5	15°	12x30°	10	12	40x45°	250	49.00
47630	2000	390	270	140	M120x4	124	M24	38	3	7.5°	24x15°	12	14	60x45°	330	115.93

Electrical Connection

Article-No.	Description
10301	Female cable connector 6-pin series 581
10315	Female angled connector 6-pin series 682
10266	Connection cable, 3 m, with 6-pin female cable connector series 581 and free strands
10387	Connection cable angled, 3 m, with 6-pin female angled connector series 682 and free strands

Amplifiers

Examples of suitable amplifiers for the compression and tension force sensor K-11:

LCV	SI-USB3	GM 40	GM 80	eNod4-T-DIN
				

Further suitable amplifiers you can find on our homepage under <https://www.lorenz-messtechnik.de/english/products/>