Delivery: ex stock | Warranty: 24 months

Precision Tension and Compression Load Cell

Designed for dynamic applications and a long service life!

MODEL **8525** NEW

Preliminary data sheet

Large measuring ranges

Medium measuring ranges

View of connector
Small measuring ranges

With load button 8591-ZxxM

Highlights

- Measuring ranges from 0 to 10 kN up to 0 to 200 kN
- Non-linearity of 0.1 % F.S.
- Highly resistant to against lateral thanks due to supporting diaphragms
- Degree of protection IP65
- 6-wire version

Options

- Improved linearity deviation of 0.05 % F.S.
- Extended temperature range of –30 to +120 °C
- Standardized characteristic value 2.0 mV/V
- Rated output in tension direction
- burster TEDS
- Pull plate and rod end bearings

Applications

- Reference measurements
- Material testing
- Tensile forces (tension in cables, chains etc. with pull plate)
- Weights

Product description

The high-precision low-profile force transducer of model 8525 is versatile and suitable for demanding static and dynamic tension and compression applications thanks to its flat design.
The inner structure and the two additionally mounted support diaphragms above and below the actual measuring element desensitize the sensors to extraneous lateral forces and torques.

Technical data

8525	–	6010	6020	6050	6100	6200
Measuring range calibrated in N and kN from 0 to		±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
		±2.2 klbs	±4.5 klbs	±11.2 klbs	±22.5 klbs	±45.0 klbs
Accuracy						
Relative non-linearity*		< ±0.1 % F.S.				
Relative combined error*		< ±0.1 % F.S.			< ±0.15 % F.S.	
Relative hysteresis		< ±0.1 % F.S.			< ±0.2 % F.S.	
Temperature effect on zero signal		≤ 0.02 % F.S./K				
Temperature effect on characteristic value		≤ ±0.02 % F.S./K				
Electrical values						
Nominal characteristic value		2.2 mV/V				
Standard measurement direction		Compression and tension direction. Calibration in the reference direction of compressive force. If used in the tension direction, a slight change in the characteristic value is to be expected.				
Standardization**		Optional 2.0 mV/V(±0.25 %)				
Bridge resistance		Approx. 350 Ω nominal				
Excitation voltage		Recommended 5 V DC or AC/max. 10 V DC or AC				
Insulation resistance		> 30 GΩ at 45 V				
Ambient conditions						
Rated temperature range**		+15 °C to +70 °C (optional –30 °C to +120 °C)				
Operating temperature range		–30 °C to +80 °C				
Mechanical values						
Full-scale deflection	[µm]	30	40	60		70
Max. operational force		150% of rated load				
Breaking force		> 250% of rated load				
Dynamic stress		Recommended: 70% of the rated load, maximum: 100% of rated load				
Degree of protection (EN 60529)			IP65			
Miscellaneous						
Material		Stainless steel 1.4542				
Resonant frequency	[kHz]	4.3	5.1	1.9	2.3	3.0
Weight	[kg]	0.9		3.5	4.2	4.4

*Specifications in the range of 20 % to 100 % of rated (nominal) load F_{nom}

**Temperature range for the optional TEDS or standardization board 0 to 60 °C

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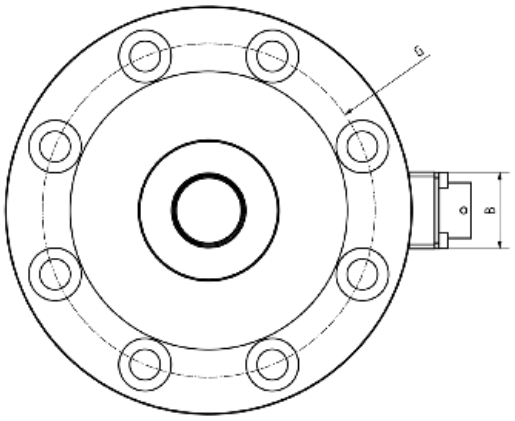
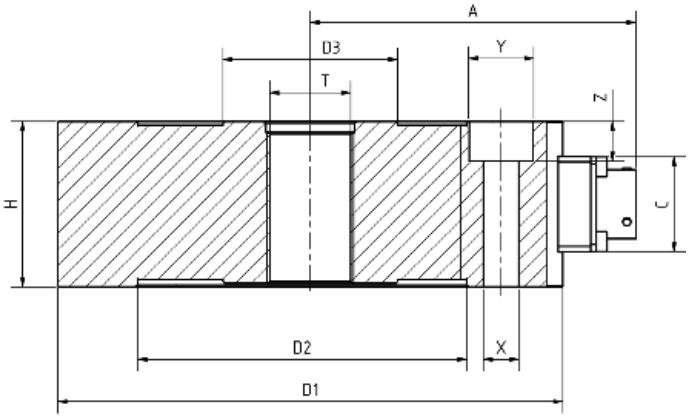
Dimensional drawing





8525	–	6010	6020	6050	6100	6200
Measuring range from 0 to		±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
Geometry						
Dia. D1	[mm]	88.9		139.7	152.4	
Dia. D2	[mm]	51.5		95.2	105.9	
Dia. D3	[mm]	18		48.3	58.9	
Dia. G	[mm]	66.7		114.3	123.8	
A	[mm]	64		90.1	96.6	
B/C	[mm]	26.3				
H	[mm]	27		45.7	45.7	
Central internal thread T	[mm]	M12 x 1.5		M24 x 1.5	M36 x 3.0	
Dia. X	[mm]	9		10.5	13	
Dia. Y	[mm]	14		18	-	
Dia. Z	[mm]	9		11	-	
Number of through-holes to dia. G		6		8	8	
Installation						
Intended mounting screws		6 x M8		8 x M10	8 x M36	
Tightening torques of mounting screws (when used in tension direction)	[N*m]	20		50	120	
Mounting screws		Strength 10.9 or higher			Strength 12.9 or higher	
Mounting instructions		The entire mounting surface of the sensor must rest on a fully hardened (60 HRC), flat, ground (better yet, lapped) surface.				

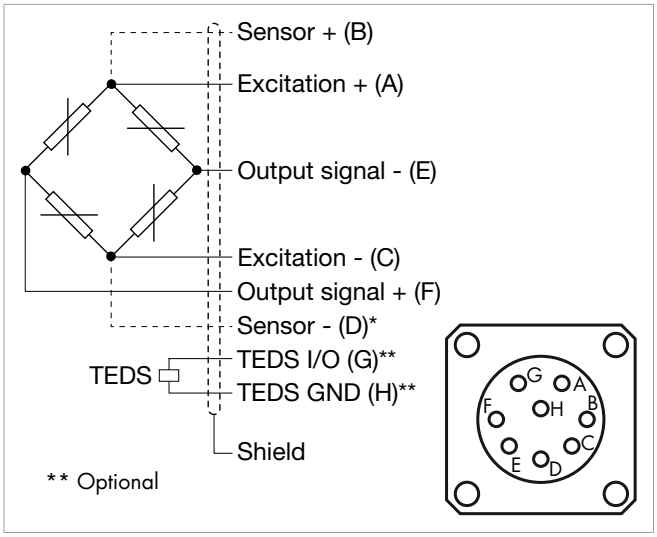
Electrical connection

Output signal

buster load cells are based on a strain-gage Wheatstone bridge. With this measuring principle, the output voltage (mV/V) is highly dependent on the sensor supply voltage. Suitable instrumentation amplifiers, indicator and display devices and process instruments can be found on our website.

burster TEDS

The "**burster T**ransducer **E**lectronic **D**ata **S**heet" (TEDS) is memory in which sensor identification data, calibration data and other sensor parameters are stored. In conjunction with your own suitable burster device, it is possible to carry out a simple adjustment to achieve maximum accuracy of the measuring chain. This makes it easy to replace the sensor in just a few steps without losing precision.



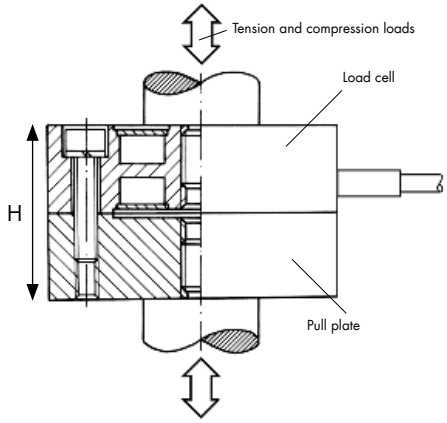
8525	–	6010	6020	6050	6100	6200
Measuring range from 0 to		±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
Electrical connection						
Description		Bayonet plug, 8-pin 9900-V643; mating connector included with device				

Options

Pull plates (8590-V...)

A pull plate extends the possible uses of tension-compression load cells to include tensile force measurement in a movable arrangement (cable system or joint forces). The pull plate is attached to the flange of the sensor with its outer flange. Customer-specific threaded parts or rod end bearings can be mounted in the central internal thread. Pull plates are part of the sensor after installation. The sensor and plate are calibrated as a unit and are only supplied assembled together. Screws with a strength of 12.9 are required to mount the pull plates.

Sensor with pull plate



Item number		See order code				
Compatible for measuring range from 0 to		±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
Geometry						
Central internal thread T		M12 x 1.5		M24 x 1.5	M36 x 3.0	
Total height H	[mm]	52.4		91.4		
Installation						
Mounting screw tightening torques	[N*m]	20		50	120	
Miscellaneous						
Weight	[kg]	0.9		5	6	

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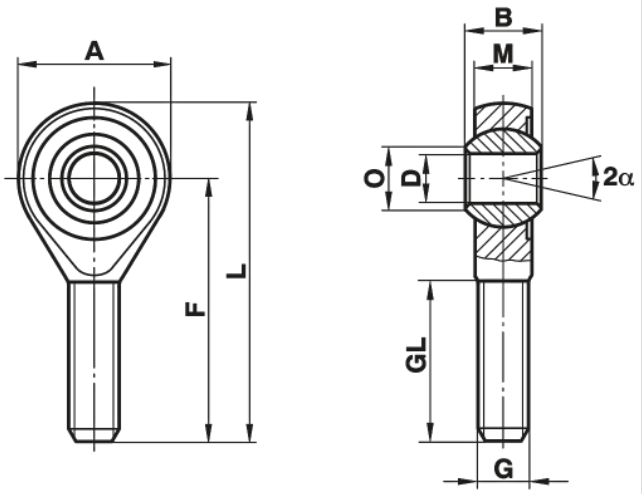
Accessories

Rod end bearings

The load cell of model 8525 can optionally be equipped with a rod end bearing. Up to two rod end bearings can be used in combination with a pull plate (see option). Rod end bearings ensure optimum force transmission when the sensor is used in the tension direction. Slight misalignments can also be compensated for in the compression direction.

- Optimum load application
- Corrects alignment errors
- Suitable for very high dynamic and static loads
- Made of stainless steel
- Temperature range: –45 °C to +120 °C
- PTFE insert, maintenance-free
- DIN 648 dimension series K
- Ball holes H7, recommended connection spigot: g6
- Inner ring not suitable for continuous rotation

Rod end bearings with external thread

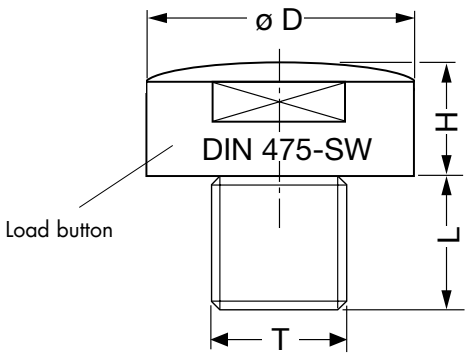


Order code

8591	-	Z12M	Z24M	Z36M
B	[mm]	16	31	43
M	[mm]	12	22	28
A	[mm]	32	60	80
F	[mm]	54	94	125
L	[mm]	70	124	165
O	[mm]	15.4	29.6	37.7
D	[mm]	12	25	35
G		M12 x 1.5	M24 x 1.5	M36 x 3.0
GL	[mm]	33	57	73
α	[°]	13	15	19
Miscellaneous				
Stat. load rating	[kN]	42.0	118.0	230.0
Dyn. load rating	[kN]	32.0	122.0	205.0
Weight	[g]	87	600	1600

Load buttons

Load buttons are used when pure compression loads are to be introduced into a load cell and a direct coupling to the mechanical environment via the central sensor thread is not necessary/possible. The crowned surface of the load button minimizes angular errors in load application of up to 3°. The compression load must be applied to the button via a flat and hardened contact surface. The optimum hardness is 60 HRC or more.



Order code

8580	–	V012		V024	V036	
Compatible for measuring ranges from 0 to		±10 kN	±20 kN	±50 kN	±100 kN	±200 kN
Geometry						
Dia. D	[mm]	20.0		40.0	57.0	
H	[mm]	15.1		20.0	30.0	
L	[mm]	12.0		17.0	40.0	
T		M12 x 1.5		M24 x 1.5	M36 x 3	
TH	[mm]	16		32	46.0	
R		25		100	200.0	
Installation						
Tightening torques	[N*m]	Max. 10		Max. 20	Max. 50	
Miscellaneous						
Weight	[kg]	0.05		0.25	1	

Connectors and devices

Order code		
Connection cable		
99643-000A-0570030		Connection cable, length 3 m, open at one end
Connector		
9941		12-pin connector, suitable for all desktop units
9900-V148		4-pin connector plug, suitable for I/O-Link 9210 (only possible with 4-wire technology)
9900-V209		9-pin connector plug, suitable for SENSORMASTER ,DIGIFORCE® and TRANS CAL
9900-V229		9-pin connector plug with TEDS
9900-V245		8-pin connector plug, suitable for ForceMaster
Devices		
7281-V0001		Mobile measuring device with strain gage simulator and sensor test (R_i, R_o, Shunt and R_{ISO})
See Section 9		Evaluation instrumentation, amplifiers and process monitoring devices such as digital indicators of model 9180, model 9163, amplifier module of model 9250 or DIGIFORCE® of model 9307

Calibration

Test and calibration certificate		
Included with the sensor		With details of the zero point, full-scale output and shunt calibration.
Standard factory calibration certificate for load cells or measuring chains (WKS)		
Optionally available		Our standard factory calibration is carried out in 20-percent increments from zero until the rated load is reached for increasing and decreasing loads with an unchanged installation position. The factory calibration can be carried out in the compression and/or tension direction.
Special factory calibration certificate for load cells or measuring chains (WKS)		
On request		We are happy to calibrate sensors and measuring chains to the customer's specifications.
Calibration certificate with accreditation symbol for product group load cell 8525		
Optionally available		Calibration certificate with accreditation symbol for load cell 8525. Calibration is based on the accreditation of calibration laboratory D-K-15141-01-00 for the scope of parameters listed in the annex of the accreditation certificate. Traceability to national standards and wide international recognition is therefore assured (DAkkS is a signatory to the EA, ILAC and IAF Multilateral Recognition Arrangements). Calibration is carried out in accordance with ISO 376 in 10 force levels (10-percent increments) from zero until the rated force is reached for increasing and decreasing loads in various installation positions.

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Order code

Measurement range	Code				Measurement range
0 to ±10 kN	6	0	1	0	0 to ±2.2 klbs
0 to ±20 kN	6	0	2	0	0 to ±4.5 klbs
0 to ±50 kN	6	0	5	0	0 to ±11.2 klbs
0 to ±100 kN	6	1	0	0	0 to ±22.5 klbs
0 to ±200 kN	6	2	0	0	0 to ±45.0 klbs

						Available from stock on short notice							
						N	X	R	0	S	0	0	0
8	**5**	**2**	**5**	**–**			**X**		**0**	**S**		**0**	

- Nominal characteristic value/not standardized: N
- Standardization to 2.0 mV/V: F

- burster TEDS in sensor connector*: S
- Without TEDS: R

*Temperature range limited to 0 to +60 °C

- No option: 0
- Pull plate: 5

- Rated temperature range of +15 °C to +70 °C: 0
- Extended rated temperature range of –30 °C to +120 °C: J

Note

- **Brochure**
  Our brochure **"Load cells for production, automation, R&D and quality assurance"** is available for download at our website or can be requested. It contains numerous applications, detailed product descriptions and overviews.

- **Product videos**
  You can find our **installation videos** at: **www.youtube.com/bursterVideo** YouTube

- **CAD data**
  Download via **www.burster.de** or directly from **www.traceparts.de**