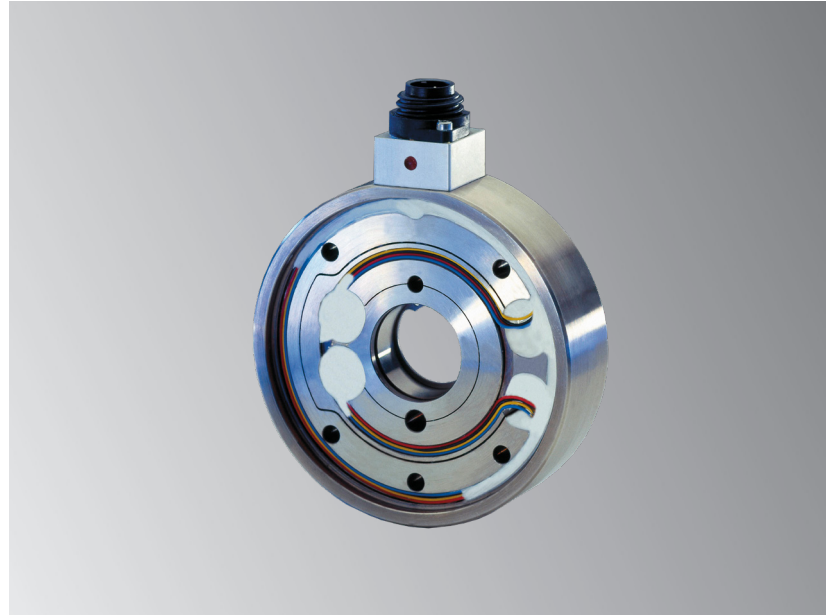


FMS Tension Control / Force Sensors

## **LMGZD-Series** Highly precise, stainless steel force measuring bearing with a measuring range > 500:1

- **Extremely wide measuring range with highest resolution**  
Measuring range 500:1  
Accuracy class  $\pm 0.3\%$
- **For a wide range of applications**  
3 sizes with nominal force from 33 to 6'000 N  
(7.5 to 1'350 lbf.)
- **Robust and durable**  
Overload protection up to 10-times nominal force, full stainless steel



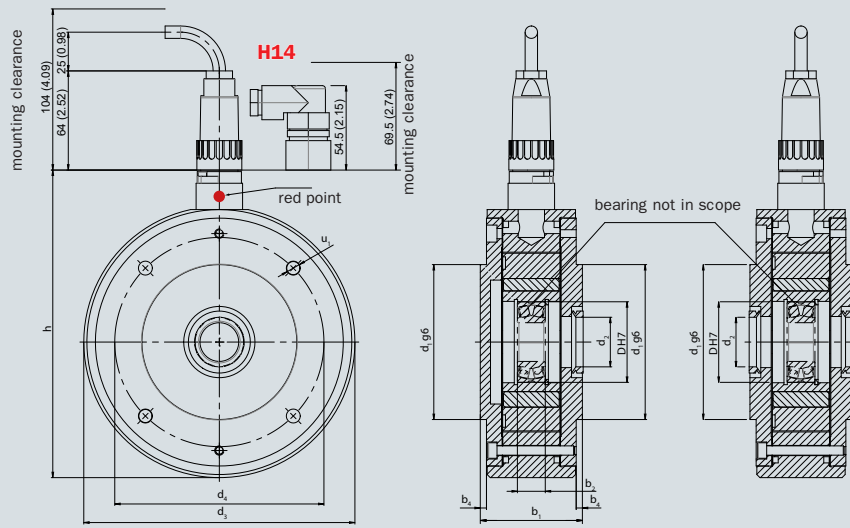
### **LMGZD-Series**

The force measuring bearings of the LMGZD-Series, designed for the measurement of tension on continuous material processing lines where live shaft idler rolls are utilized. The measuring range of 500:1 allows reproducible, highly precise measurements on widely varying web widths and materials. The mechanical overload protection of up to 10-times the nominal force provides unsurpassed robustness. With the superior performance of the LMGZD-Series, accurate tension readings are obtained even with low web wrap angles and high roll weights. For installations where a Pillow Block mount is required the optional bracket can be utilized.

### **Functional description**

The LMGZD-Series force measuring sensor combines the bearing seat and the force sensor within the same housing, thus minimizing the required installation space. The substantial overload protection translates to eliminated/minimized calibration issues due to machine upset conditions. The movement of the bending beam, which is proportional to the applied force, is detected by strain gauges arranged in a full bridge circuit and then converted into an electrical signal. This simple measurement principle delivers precise results even with low material tension and small web wrap angles. The Red Point, as located on the sensor body, should be aligned with the direction of the resultant force due to web tension.

**LMGZD-Series : Dimensions**



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Size Type	D mm (in.)	d1 mm (in.)	d2 mm (in.)	d3 mm (in.)	d4 mm (in.)	b1 mm (in.)	b2 mm (in.)	b4 mm (in.)	h mm (in.)	u mm (in.)
LMGZD202	35 (1.38)	70 (2.76)	20 (0.79)	125 (4.92)	95 (3.74)	44.1 (1.74)	14 (0.55)	4 (0.16)	148.5 (5.85)	6.6 (0.26)
LMGZD205	52 (2.05)	100 (3.94)	32 (1.26)	175 (6.89)	135 (5.31)	65.9 (2.59)	18 (0.71)	4 (0.16)	198.5 (7.81)	9 (0.35)
LMGZD307	80 (3.15)	130 (5.12)	45 (1.77)	225 (8.86)	175 (6.89)	75.9 (2.99)	21 (0.83)	4 (0.16)	249 (9.80)	11 (0.43)
LMGZD308	80 (3.15)	130 (5.12)	50 (1.97)	225 (8.86)	175 (6.89)	75.9 (2.99)	23 (0.91)	4 (0.16)	249 (9.80)	11 (0.43)

**LMGZD-Series : Bearings**

Force Sensor Type	Suitable bearing (bearing not in scope)			
	Type	Dimensions mm (in.)		
		d	D	B
<b>LMGZD202</b>	2202	15 (0.5906)	35 (1.3780)	14 (0.5512)
<b>LMGZD205</b>	22205, 2205	25 (0.9843)	52 (2.0472)	18 (0.7087)
<b>LMGZD307</b>	21307, 1307	35 (1.3780)	80 (3.1496)	21 (0.8268)
<b>LMGZD308</b>	22208, 2208	40 (1.5748)	80 (3.1496)	23 (0.9055)

**LMGZD-Series : Nominal forces, Deflection**

Size Type	Nominal force		Low nominal force		Deflection	
	N (.lbf)		N (.lbf)		mm (.in)	
<b>LMGZD202</b>	200	(44.96)	33	(7.42)	0.19	(0.0075)
	375	(84.30)	33	(7.42)	0.19	(0.0075)
	500	(112.40)	50	(11.24)	0.19	(0.0075)
	750	(168.60)	125	(28.10)	0.19	(0.0075)
	1000	(224.81)	100	(22.48)	0.19	(0.0075)
	1500	(337.21)	250	(56.20)	0.19	(0.0075)
	1500	(337.21)	375	(84.30)	0.19	(0.0075)
<b>LMGZD205</b>	375	(84.30)	100	(22.48)	0.19	(0.0075)
	500	(112.40)	100	(22.48)	0.19	(0.0075)
	750	(168.60)	125	(28.10)	0.19	(0.0075)
	750	(168.60)	250	(56.20)	0.19	(0.0075)
	1000	(224.81)	250	(56.20)	0.19	(0.0075)
	1000	(224.81)	500	(112.40)	0.19	(0.0075)
	1500	(337.21)	250	(56.20)	0.19	(0.0075)
	1500	(337.21)	750	(168.61)	0.19	(0.0075)
	3000	(674.43)	500	(112.40)	0.19	(0.0075)
	3000	(674.43)	750	(168.61)	0.19	(0.0075)
<b>LMGZD307</b>	3000	(674.43)	500	(112.40)	0.19	(0.0075)
	6000	(1348.85)	1000	(224.81)	0.19	(0.0075)
<b>LMGZD308</b>	3000	(674.43)	500	(112.40)	0.19	(0.0075)
	6000	(1348.85)	1000	(224.81)	0.19	(0.0075)

LMGZD-Series : Technical data	
<b>Sensitivity</b>	1.8 mV / V
<b>Tolerance of sensitivity</b>	< ±0.2%
<b>Accuracy class</b>	±0.3% (F <sub>Nom</sub> )
<b>Temperature coefficient</b>	±0.1% / 10 K
<b>Temperature range</b>	-10 °C to +60 °C (14 F to 140 F)
<b>Input resistance</b>	350 Ω
<b>Power supply</b>	1 to 10 VDC
<b>Overload protection</b>	10-times nominal force F <sub>Nom</sub>
<b>Material main body</b>	Stainless steel
<b>Protection class</b>	IP 42
<b>Electrical connection</b>	Male flange connector, plastics, 7-pole
<b>Repeatability error</b>	0.05%
<b>Measuring range</b>	500:1

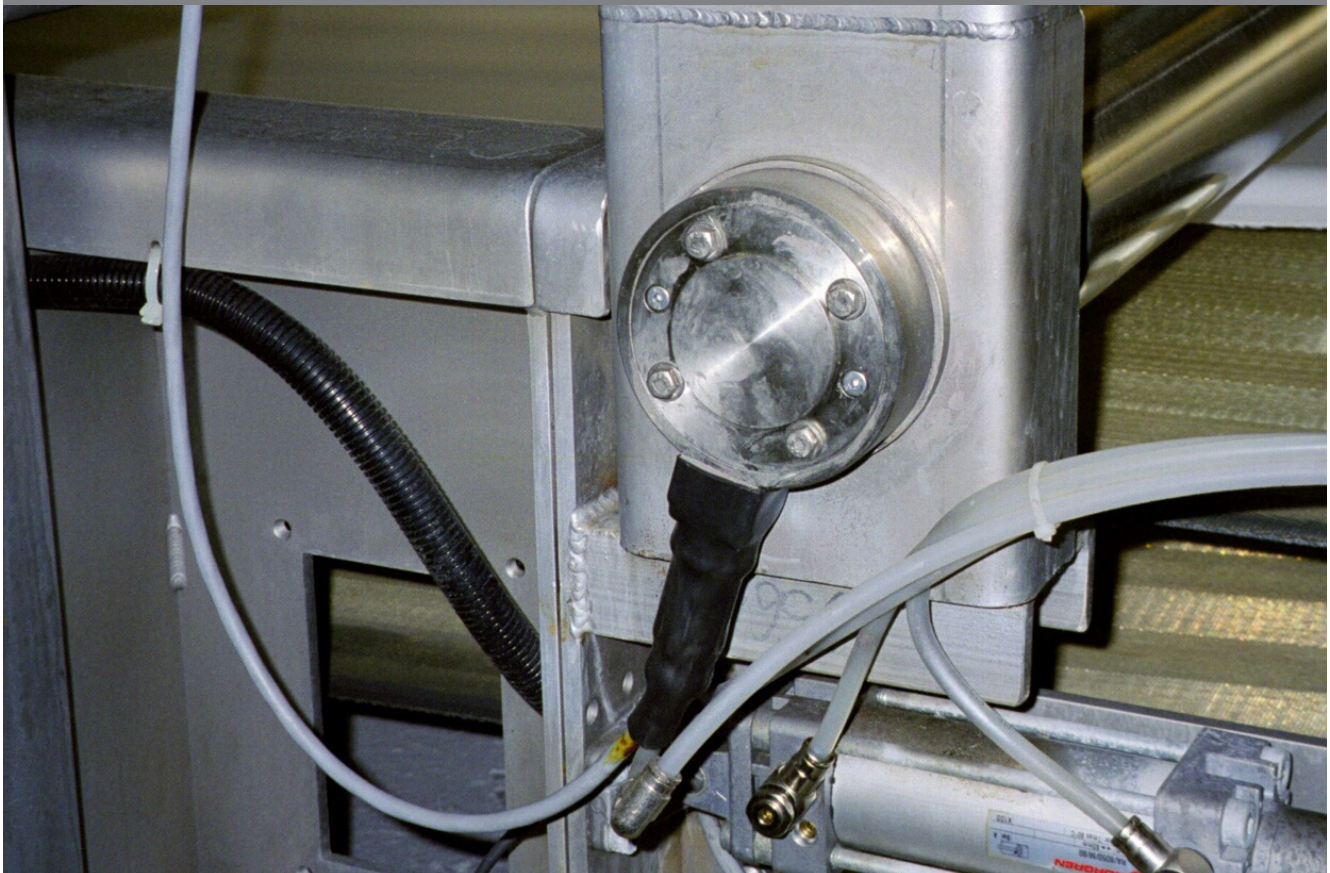
LMGZD-Series : Order code	
<b>LMGZD</b>	<b>202 .500 .50 .15 .H13.H14</b>
	Options
	Shaft diameter in mm
	Low nominal force in N
	Nominal force
	Size
	Series

LMGZD-Series : Options	
<b>H13</b>	open covers for both sides, additional scope of supply 1 pcs. V-ring
<b>H14</b>	right-angle connector in scope of supply, replaces straight connector
<b>H16</b>	temperature range up to 120°C (248°F)
<b>H19</b>	grease nipple
<b>H21</b>	electrical connection with PG gland with 5 m (16.4 ft.) cable, replaces connector
<b>H29</b>	resistant against aggressive media, especially acids (please specify), up to 120°C (248°F)
<b>H31</b>	for vacuum applications to 1E-7 hPa 1E-5 Torr, temperature range up to 120°C (248°F)
<b>H32</b>	vacuum to 1E-7 hPa 1E-5 Torr, up to 150°C (302°F), with pg-gland and 5 m (16 ft.) cable
<b>H33</b>	temperature range up to 150°C (302°F), with pg-gland and 5 m (16 ft.) cable

LMGZD-Series : Scope of supply
● force sensor ● straight, waterproof connector (female) ● open cover ● closed cover ● V-ring ● clip ring ● distance ring (for narrower bearing)

LMGZD-Series : Accessories
● connector amphenol, 4-pole, straight ● connector amphenol, 7-pole, right angle ● installation bracket GMGZ307 ● installation bracket GMGZ205 ● installation bracket GMGZ201 ● installation bracket GMGZ203 ● 2202 self-aligning ball bearing ● 22205 spherical roller bearing ● 21307 spherical roller bearing ● 22208 spherical roller bearing ● cable, 1 m (3.25 ft.) without connector ● cable, 10 m (32.8 ft.) without connector ● cable, 5 m (16.4 ft.) without connector ● cable, 2 m (6.5 ft.) without connector

**LMGZD-Series** : Typical application



**Other products** : Tension Control

Measuring Amplifiers	Tension Controllers	Intrinsically Safe Barrier
		

**About us**

FMS Force Measuring Systems AG is the market leader in the field of web tension measurement, control and specialist for web guiding solutions. For the wire industry we are the only manufacturer offering a complete range of technologies for force measurement, data processing and radio transmission of signals.

Our in house developed products are used in the manufacturing industry, converting, metals, paper, textiles, as well as in cable and wire rope production. Utilising the latest technology, high quality components and a firm understanding of customer applications, FMS supports customers worldwide in the effort to maximize the productivity of their machines. Since 1993, our highly qualified employees have been creating high-end solutions for machine builders and plant operators. As an owner-managed company, we pride ourselves on being personal and approachable with the ability to make decisive moves fast.

**World Headquarters: FMS Force Measuring Systems AG**

Aspstrasse 6 • 8154 Oberglatt (Switzerland) • Phone + 41 44 852 80 80 • Fax + 41 44 850 60 06  
 info@fms-technology.com • [www.fms-technology.com](http://www.fms-technology.com)