



FMS Tension Control / Force Sensors

## **PMGZ-Series** Hermetically sealed measuring block for the paper industry

- **Increased stiffness, robust Design**  
IP 67, inert gas filled, resistant against moisture and increased temperature
- **Highest reliability**  
Overload capacity at 10-times nominal force, stainless steel construction
- **Durability, corrosion resistant**  
2 year FMS warranty
- **Maximum Flexibility**  
Nominal forces from 1 to 80 kN  
(225 to 17'985 lbf.)

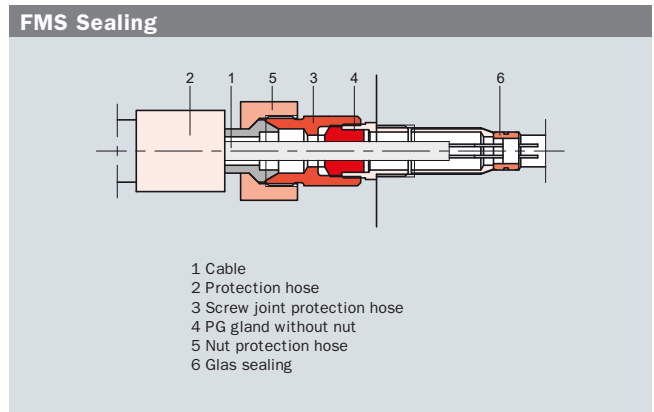
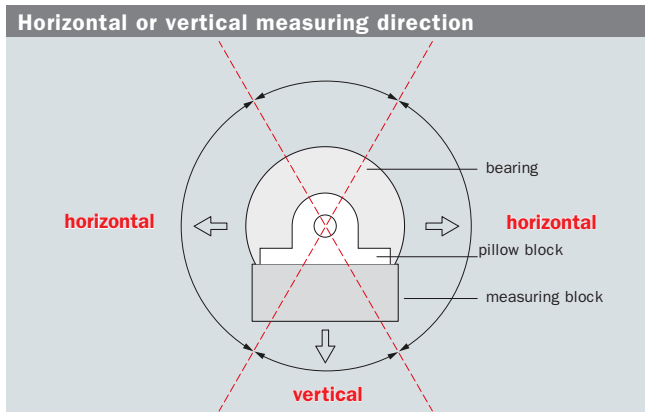
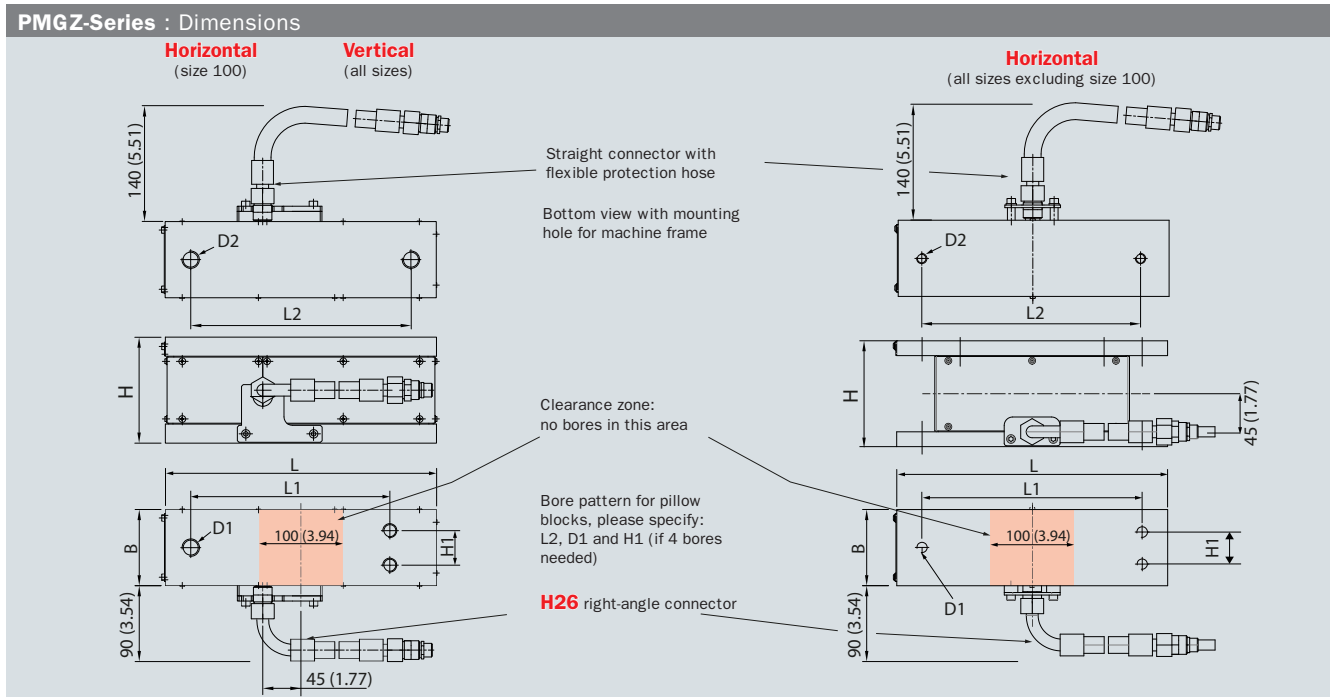


### **PMGZ-Series**

The force sensors of the PMGZ-Series, designed for the measurement of strip tension on continuous paper processing lines, are used in combination with standard pillow blocks. This feature allows for easy maintenance or exchange of the blocks, bearings and roll. Block mounting is simple utilizing four fasteners into the bottom surface and mounting holes for the pillow block bearing are included based on your specifications. In addition, the 6 m cable allows for an electrical connection away from the harsh environment. The PMGZ-Series is available in two measuring, horizontal and vertical, and thus can be specified for use in any mounting orientation and strip wrap configuration. With the superior performance of the PMGZ-Series, accurate tension readings are obtained even with low web wrap angles and high roll weights.

### **Functional description**

The PMGZ-Series design, incorporating dual bending beams, eliminates the load-specific influences of torque. The movement of the bending beams is detected by a set of strain gages arranged in a full bridge circuit. The resulting electrical signal, which is proportional to the applied force, is then amplified for use in monitoring or controlling web tension. The red point located on the sensor body indicates the positive measuring direction, and the substantial overload protection (10-times nominal force) translates to eliminated/minimized calibration issues due to machine upset conditions. The hermetically sealed sensor cover will provide protection for the measuring electronics inside the sensor body from dirt, etc.



Sketch: depending on the direction of the resulting force, a horizontal or vertical version must be selected.

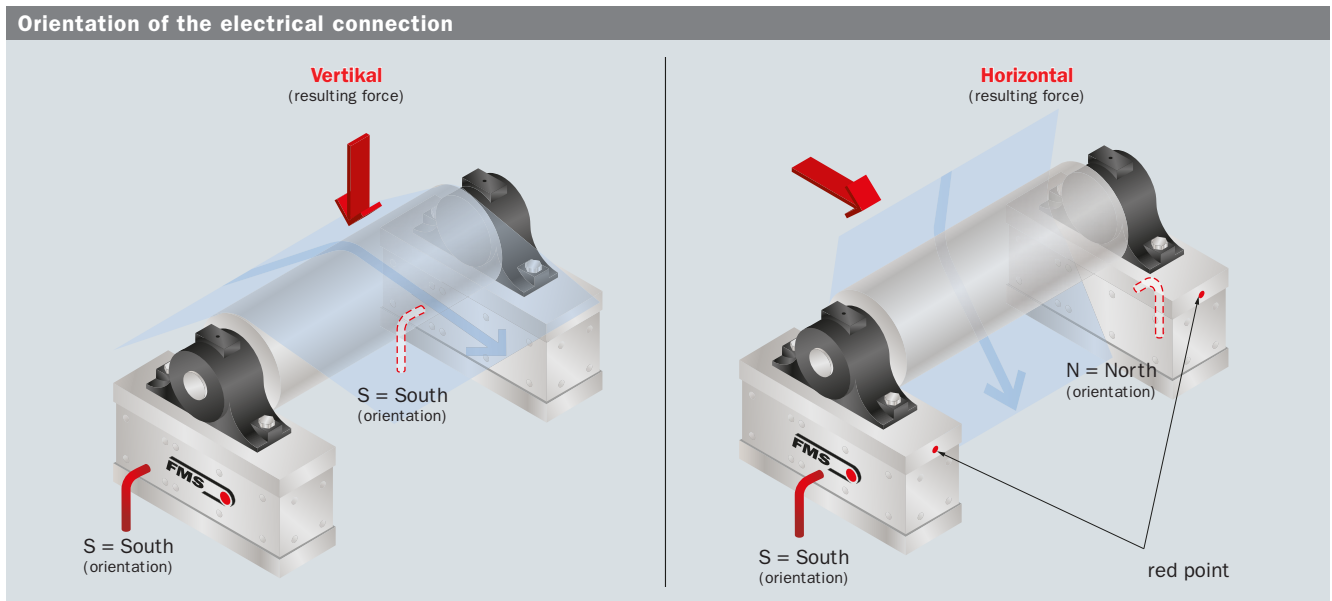


Illustration with two measuring blocks with S = South oriented electrical connections. The version "vertical" does not have a red point.

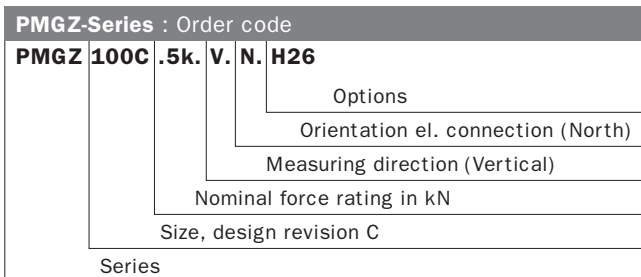
Illustration with one measuring block with S = South oriented and one with N = North oriented electrical connection.

PMGZ-Series : Shaft diameter, Nominal forces				
Size Type	Shaft diameter mm (in.)		Nominal force kN (lbf.)	
<b>PMGZ100C</b>	20/50	(0.79/1.97)	1 000, 2000, 5000, 10kN, 20kN (225, 450, 1124, 2248, 4496)	
<b>PMGZ200C</b>	40/85	(1.57/3.35)	1000, 2000, 5000, 10kN, 20kN (225, 450, 1124, 2248, 4496)	
<b>PMGZ300C</b>	75/100	(2.95/3.94)	5000, 10kN, 20kN, 30kN (1124, 2248, 4496, 6744)	
<b>PMGZ400C</b>	85/120	(3.35/4.72)	10kN, 20kN, 40kN, 60kN, 80kN (2248, 4496, 11014, 13489, 17985)	
<b>PMGZ500C</b>	110/160	(4.33/6.30)	10kN, 20kN, 40kN, 60kN, 80kN (2248, 4496, 11014, 13489, 17985)	

PMGZ-Series : Dimensions, Installation bores							
Size Type	Dimensions mm (in.)						Installation bores bottom L 2 x D 2 mm (in.)
	L	B	H				
<b>PMGZ100C</b>	230 (9.06)	90 (3.54)	125 (4.92)				170 x M16 (6.69 x M16)
<b>PMGZ200C</b>	320 (12.60)	90 (3.54)	125 (4.92)				260 x M20 (10.24 x M20)
<b>PMGZ300C</b>	380 (14.96)	110 (4.33)	125 (4.92)				320 x M24 (12.60 x M24)
<b>PMGZ400C</b>	450 (17.72)	130 (5.12)	125 (4.92)				390 x M24 (15.35 x M24)
<b>PMGZ500C</b>	560 (22.05)	170 (6.69)	150 (5.91)				470 x M30 (18.50 x M30)

PMGZ-Series : Deflection, Weight						
Size Type	Deflection mm (in.)				Weight kg (lbs.)	
	horizontal		vertical		vertical	horizontal
<b>PMGZ100C</b>	0.03 (0.0012)	0.05 (0.0020)	20 (44.09)	20 (44.09)		
<b>PMGZ200C</b>	0.03 (0.0012)	0.09 (0.0035)	28 (61.73)	24 (52.91)		
<b>PMGZ300C</b>	0.05 (0.0020)	0.16 (0.0055)	41 (90.39)	35 (77.16)		
<b>PMGZ400C</b>	0.10 (0.0039)	0.54 (0.0213)	57 (125.66)	51 (112.44)		
<b>PMGZ500C</b>	0.06 (0.0024)	0.33 (0.0130)	105 (231.49)	90 (198.42)		

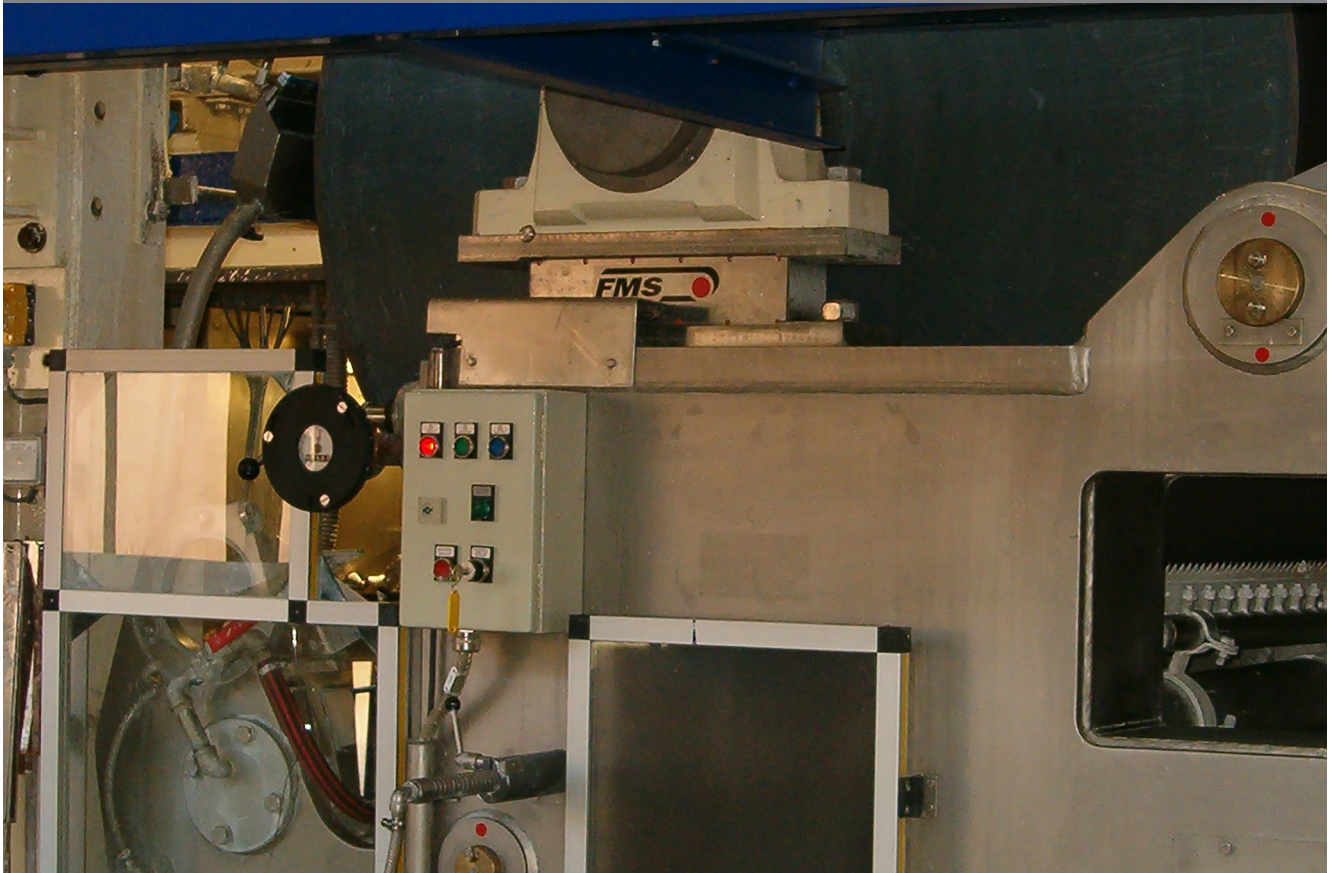
PMGZ-Series : Technical data	
<b>Sensitivity</b>	0.5 mV / V
<b>Tolerance of sensitivity</b>	< ±0.2%
<b>Accuracy class</b>	±0.5% (F <sub>Nom</sub> )
<b>Temperature coefficient</b>	±0.1% / 10 K
<b>Temperature range</b>	-10 °C to +120 °C (14 F to 248 F)
<b>Input resistance</b>	350 Ω
<b>Power supply</b>	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 67
<b>Electrical connection</b>	PG-gland
<b>Repeatability error</b>	0.05%
<b>Measuring range</b>	30:1



PMGZ-Series : Options	
<b>H</b>	horizontal measuring direction, appr. ±60 deg. from the horizontal
<b>V</b>	vertical measuring direction
<b>N</b>	electrical connection North, in direction of the moving web/strip
<b>S</b>	electrical connection South in direction of the moving web/strip
<b>H26</b>	right-angle connector in scope of supply, replaces straight connector

PMGZ-Series : Scope of supply	
●	force sensor ● straight electrical connection ● 6 m (19.7 ft.) cable ● 5 m (16.4 ft.) cable protection hose, other lengths on request
●	the sealing of the open end of the cable is provided with a threaded connection M16 x 1.5mm (female thread required)

**PMGZ-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**

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