FMS Tension Control / Force Sensors

**UMGZ.P-Series Force Measuring Block with increased stiffness as drop-in replacement for Philips series PR 9951**

- **Direct replacement of Philips PR 9951:** No mechanical changes on machine frame
- **Durability, corrosion resistant:** Overload capacity at 10-times nominal force, stainless steel construction
- **Highest reliability:** 2 year FMS warranty

**UMGZ.P-Series**
The force sensors of the UMGZ.P-Series, designed for the measurement of web tension on continuous processing lines, are used in combination with standard pillow blocks. They are designed as drop-in replacement for the discontinued Philips PR 9951 series. Block mounting is simple utilizing four fasteners into the bottom surface. The UMGZ.P force measuring blocks feature exceptional durability and operational reliability. Constructed of stainless steel and with their high overload protection these rugged products provide accurate web tension measurement even under the most stringent requirements. They are used in any application where an easy access to and fast change of rollers is vital.

**Functional Description**
The force is applied via the standard pillow block to the force measuring block. A Wheatstone full-bridge circuit, containing four foil-based strain gauges, measures the current material tension. This measuring signal is received in the FMS measuring amplifier for further processing. The used measuring principle eliminates angular deflection and ensures tension measurement with the highest accuracy and reliability even at low wrap angles and with heavy rollers. The UMGZ.P force measuring blocks are compatible with the full line of FMS electronics.
UMGZ.P-Series

**Dimensions**

Sketch: UMGZ.P measure in horizontal direction.

**Horizontal measuring direction**

Horizontal ↔ horizontal

Roller
Pillow block
Force measuring block

**Mechanical overload protection**

Sketch: All force measuring blocks of the UMGZ.P series feature an integrated mechanical overload protection. This design prevents the force sensor as well as your machine from damage during installation and operation.

**Orientation of the electrical connections**

Setup with one force measuring block with connection “S” South and one force measuring block with connection “N” North.

Setup with two identical force measuring blocks with connection “S” South.

**Setup with one force measuring block with connection “S” South and one force measuring block with connection “N” North.**

**Setup with two identical force measuring blocks with connection “S” South.**
**UMGZ.P-Series**

### Nominal forces, stiffness

<table>
<thead>
<tr>
<th>Size</th>
<th>Nominal force $F_{\text{Nom}}$ in N (lbf)</th>
<th>Weight in kg (lb)</th>
<th>Stiffness at $F_{\text{Nom}}$ in mm (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMGZ.P.080.1000</td>
<td>1000 (225)</td>
<td>23 (50)</td>
<td>0.4 (0.016)</td>
</tr>
<tr>
<td>UMGZ.P.080.2000</td>
<td>2000 (450)</td>
<td>23 (50)</td>
<td>0.3 (0.012)</td>
</tr>
<tr>
<td>UMGZ.P.080.3000</td>
<td>3000 (675)</td>
<td>23 (50)</td>
<td>0.2 (0.008)</td>
</tr>
</tbody>
</table>

### Technical Data

- **Sensitivity**: 0.5 mV/V
- **Tolerance of sensitivity**: < ±0.2%
- **Accuracy class**: ±0.5% ($F_{\text{Nom}}$)
- **Temperature coefficient**: ±0.1% / 10 K
- **Temperature range**: –10 to +60°C (14 to 140°F)
- **Input resistance**: 350 Ω
- **Excitation voltage**: 1 to 10 VDC
- **Overload protection**: up to 10 times nominal force $F_{\text{Nom}}$
- **Material measuring body**: Stainless steel
- **Protection rating**: IP 42
- **Repeatability error**: 0.05%

### Order Code

<table>
<thead>
<tr>
<th>UMGZ.P.</th>
<th>080.</th>
<th>2000.</th>
<th>H.</th>
<th>N.</th>
<th>H14</th>
</tr>
</thead>
</table>

**Options**

- **Electr. connection (N = North, S = South)**
- **Measuring direction (H = Horizontal)**

### Not included in scope of supply

- Installation material
- Cable
- Pillow block
**FMS Force Measuring Systems AG**

FMS Force Measuring Systems AG is a worldwide market leader in the fields of tension measurement/control, web guiding, and specialized telemetry technologies. Our standard and custom solutions are applied in the converting, metals, paper, textile and wire & cable industries. FMS Force Measuring Systems AG’s advanced technology, high quality components and extensive application knowledge supports customers around the world in maximizing productivity. Since 1993 our highly skilled workforce has crafted superior solutions and set the benchmark in the industry.

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**UMGZ.P-Series**

<table>
<thead>
<tr>
<th>Typical Application</th>
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</thead>
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**Other FMS Products**

<table>
<thead>
<tr>
<th>Measuring amplifiers</th>
<th>Tension controllers</th>
<th>ATEX-Intrinsically safe barriers</th>
</tr>
</thead>
</table>

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All data have been prepared and checked carefully. However, we cannot guarantee their accuracy. The information in this document is subject to modifications without prior notice.