MEASURING WHEEL SYSTEMS

SPEED MEASUREMENT
POSITION DETECTION
LENGTH MEASUREMENT
Measuring wheel systems

Systems for speed measurement, position detection and length measurement

Measuring wheel systems from Kübler are the ideal solution for reliable speed measurement, position detection and length measurement in applications with linear movements. These are recorded rotationally via the measuring wheel with attached encoder directly on the surface of the material to be measured and converted into linear data. Integrated springs ensure the necessary contact force of the measuring wheel on the measuring surface for reliable measured value acquisition.
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Measuring wheel systems - operating principle

Measuring wheel systems are used for the detection of linear movements.

The linear movement (a) of a material to be measured is converted into a rotational movement (b) by a contacting measuring wheel (or pulley or pinion). An mounted incremental or absolute encoder (c) detects this rotation and converts it into speed, position and distance values.

The linear resolution of the measuring wheel system (mm or inch) results from the ratio of the measuring wheel circumference and the rotary resolution of the encoder (ppr).

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Measuring step (distance/pulse)</th>
<th>Resolution (pulses/distance)</th>
</tr>
</thead>
</table>
|             | \[
|             | \[ \frac{\text{distance}}{\text{ppr}} = \frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}} \] | \[
|             | \[ \frac{\text{ppr}}{\text{distance}} = \frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}} \] | |
| Example 1   | Measuring wheel circumference = 300 mm Pulse number encoder = 3000 ppr | \[
|             | \[
|             | \frac{300 \text{ mm}}{3000 \text{ ppr}} = \frac{0.1 \text{ mm}}{\text{puls}} \] | \[
|             | \[
|             | \frac{3000 \text{ ppr}}{300 \text{ mm}} = 10 \text{ pulses / mm} \] | |
| Example 2   | Measuring wheel circumference = 12 inch Pulse number encoder = 1200 ppr | \[
|             | \[
|             | \frac{12 \text{ inch}}{1200 \text{ ppr}} = \frac{0.01 \text{ inch}}{\text{puls}} \] | \[
|             | \[
|             | \frac{1200 \text{ ppr}}{12 \text{ inch}} = 100 \text{ pulses / inch} \] | |
Due to the functional principle, the measuring wheel systems have a 3-part structure

1. Detection of the linear movement
The linear movement is detected by means of a measuring wheel that runs directly on the material to be measured.

Different measuring wheel coatings
Measuring wheels with different coatings are available for different surfaces of the material to be measured. They ensure slip-free contact between the material to be measured and the measuring wheel.

Different measuring wheel circumferences
The interaction of encoder resolution and measuring wheel circumference is decisive for the calculation of the measurement result.

Special versions
Systems with a combination of pinion/rack or pulley/toothed belt offer 100 % measuring accuracy without slip.

2. Data detection / data transfer
The measuring wheels are connected directly to the shaft of a Kübler Sendix encoder.
Incremental encoders, encoders for all relevant fieldbus systems and versions for Industry 4.0 concepts - the Kübler portfolio offers the right solution for every network requirement.

3. Spring-loaded encoder mounting
Spring arms and spring brackets are available in different sizes and with different contact forces for different applications.
Integrated springs press the measuring wheel onto the surface of the material to be measured. This enables slip-free measurement and also compensates for tolerances perpendicular to the movement of the material being measured.
Portfolio overview measuring wheel systems

<table>
<thead>
<tr>
<th>Compact-Line</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>MWE11</td>
<td>MWE21</td>
</tr>
<tr>
<td>Design spring element</td>
<td>Spring bracket</td>
<td>Spring arm MWE20</td>
</tr>
<tr>
<td>Highlights</td>
<td>Smallest size</td>
<td>Adjustable preload Flexible mounting options</td>
</tr>
<tr>
<td>Measuring wheel circumference recommended other options</td>
<td>100 mm</td>
<td>200 mm / 6”</td>
</tr>
<tr>
<td>Contact force max.</td>
<td>10 N</td>
<td>20 N</td>
</tr>
<tr>
<td>Spring travel max.</td>
<td>10 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td>Encoder clamping flange / shaft</td>
<td>ø 24 mm / ø 6 mm</td>
<td>ø 36 or 40 mm / ø 6 mm</td>
</tr>
<tr>
<td>Encoder interfaces incremental</td>
<td>Push-Pull</td>
<td>Push-Pull RS422</td>
</tr>
<tr>
<td>Encoder interfaces absolute</td>
<td>–</td>
<td>Analog output SSI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CANopen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IO-Link</td>
</tr>
</tbody>
</table>

Further encoders / interfaces on request
# Performance-Line

<table>
<thead>
<tr>
<th>MWE41</th>
<th>MWE61</th>
<th>MWE62</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring bracket MWE40</td>
<td>Spring arm MWE60</td>
<td>Spring arm MWE60</td>
</tr>
<tr>
<td>Compact design</td>
<td>Highest contact force, adjustable</td>
<td>Highest contact force, adjustable</td>
</tr>
<tr>
<td>Internal springs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>MWE41</th>
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<th>MWE61</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 mm</td>
<td>300 mm / 12&quot;</td>
<td>300 mm / 12&quot;</td>
<td></td>
</tr>
<tr>
<td>12&quot;</td>
<td>200 mm, 500 mm</td>
<td>200 mm, 500 mm</td>
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<tr>
<td>25 N</td>
<td>40 N</td>
<td>40 N</td>
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<tr>
<td>10 mm</td>
<td>80 mm</td>
<td>80 mm</td>
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<tr>
<td>ø 58 mm / ø 10 mm</td>
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</tbody>
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<tr>
<td>MWE41</td>
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<td>IO-Link</td>
<td></td>
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<td>IO-Link</td>
<td>EtherNet/IP</td>
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<th>PushPull HTL</th>
<th>RS422 TTL</th>
<th>Open Collector</th>
<th>NPN</th>
</tr>
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<tr>
<td>MWE62</td>
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</tr>
</tbody>
</table>
Portfolio overview system components

Spring arms / spring brackets

| Compact-Line |
|-----------------|-----------------|-----------------|
| **Type** | **MWE20** Spring arm | **MWE30** Spring bracket |
| **Highlights** | Adjustable contact force | Flexible mounting options | Compact design | Internal springs |
| **For encoder clamping flange / shaft** | ø 36 or 40 mm / ø 6 mm | ø 36 or 40 mm / ø 6 mm |
| **Measuring wheel circumference** | recommended 200 mm / 6” | 200 mm |
| **Contact force max.** | 20 N | 15 N |
| **Spring travel max.** | 16 mm | 10 mm |

Measuring wheels

<table>
<thead>
<tr>
<th>Measured material surface / Application</th>
<th>Diamond knurl (aluminum)</th>
<th>Rubber / Plastic smooth (polyurethane)</th>
<th>Tufted rubber (polyurethane)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardboard, wood, textile</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Plastic, paper</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Wire, greased metals, steel profiles, leather</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Carpet, cables, nonwoven</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Greased metals, glass, floor coverings</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Painted surfaces</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Rubber, soft plastic</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>Measuring wheel circumference</strong></td>
<td>100 mm</td>
<td>6”</td>
<td>200 mm</td>
</tr>
<tr>
<td></td>
<td>200 mm</td>
<td>6”</td>
<td>300 mm</td>
</tr>
<tr>
<td></td>
<td>300 mm</td>
<td>6”</td>
<td>500 mm</td>
</tr>
<tr>
<td></td>
<td>500 mm</td>
<td>6”</td>
<td>12”</td>
</tr>
</tbody>
</table>
# Measuring wheel systems

### Measured material

- Cardboard, wood, textile
- Plastic, paper
- Wire, greased metals, steel profiles, leather
- Carpet, cables, nonwoven
- Greased metals, glass, floor coverings
- Painted surfaces
- Rubber, soft plastic

### Measuring wheel circumference

- 100 mm
- 200 mm
- 300 mm
- 500 mm
- 6"
- 12"

### Spring arm / spring bracket

<table>
<thead>
<tr>
<th>Type</th>
<th>Highlights</th>
<th>Contact force max.</th>
<th>Spring travel max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MWE20</td>
<td>Adjustable contact force</td>
<td>20 N</td>
<td>16 mm</td>
</tr>
<tr>
<td>MWE30</td>
<td>Compact design</td>
<td>15 N</td>
<td>10 mm</td>
</tr>
<tr>
<td>MWE40</td>
<td>Flexible mounting options</td>
<td>25 N</td>
<td>10 mm</td>
</tr>
<tr>
<td>MWE60</td>
<td>Internal springs</td>
<td>40 N</td>
<td>20 mm</td>
</tr>
</tbody>
</table>

### Double O-ring

- -
- -
- -
- -

### O-ring

- -
- -
- -
- -

### Plastic corrugated (polyurethane)

- -
- -
- -
- -

### Pinion + rack

- -
- -
- -
- -

### Belt pulley + Toothed belt

- -
- -
- -
- -

### Performance-Line

<table>
<thead>
<tr>
<th>MWE40</th>
<th>Spring bracket</th>
<th>MWE60</th>
<th>Spring arm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Compact design</td>
<td></td>
<td>Highest contact force, adjustable</td>
</tr>
<tr>
<td></td>
<td>Internal springs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ø 58 mm / ø 10 mm</td>
<td></td>
<td>ø 58 mm / ø 10 mm</td>
</tr>
<tr>
<td>300 mm</td>
<td>12&quot;</td>
<td>300 mm / 12&quot;</td>
<td></td>
</tr>
<tr>
<td>25 N</td>
<td></td>
<td>40 N</td>
<td></td>
</tr>
<tr>
<td>10 mm</td>
<td></td>
<td>20 mm</td>
<td></td>
</tr>
</tbody>
</table>
**Portfolio overview Kübler Sendix encoders**

**Kübler Sendix encoders**

(recommended selection - for further variants see short form catalog)

<table>
<thead>
<tr>
<th>Incremental</th>
<th>Technology</th>
<th>Interface</th>
<th>Resolution max.</th>
<th>Suitable for measuring wheel system</th>
<th>Clamping flange</th>
<th>Shaft diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>1.024 ppr</td>
<td>MWE11 MWE2x / MWE3x</td>
<td>ø 24 mm</td>
<td>6 mm</td>
</tr>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>2.500 ppr</td>
<td>MWE2x / MWE3x</td>
<td>ø 40 mm</td>
<td>6 mm</td>
</tr>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>5.000 ppr</td>
<td>MWE4x / MWE6x</td>
<td>ø 58 mm</td>
<td>10 mm</td>
</tr>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>36.000 ppr</td>
<td>MWE2x / MWE3x</td>
<td>ø 58 mm</td>
<td>10 mm</td>
</tr>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>12 bit ST 16 bit MT</td>
<td>MWE2x / MWE3x</td>
<td>ø 36 mm</td>
<td>6 mm</td>
</tr>
<tr>
<td>Incremental</td>
<td>optical sensor</td>
<td>Push-Pull HTL</td>
<td>14 bit ST 24 bit MT</td>
<td>MWE2x / MWE3x</td>
<td>ø 36 mm</td>
<td>6 mm</td>
</tr>
</tbody>
</table>

"Industry 4.0 / IIoT ready" means: In addition to the classical measuring task and transmission of measured values, encoders must also provide further functionalities for networking the products and collecting or transmitting additional information.

Which Industry 4.0 / IIoT functionalities an encoder needs to be "Industry 4.0 / IIoT ready" depends on the overall concept. The decisive factor here is the role assigned to the encoder. Either as a part of or as an independent Industry 4.0 / IIoT object (asset). This determines whether the encoder must have its own administration shell or be integrated into an existing administration shell.

kuebler.com/iiot
IO-Link is establishing itself more and more on the market - and the trend is rising. IO-Link is used today in machine tools, production lines, intralogistics and packaging machines. IO-Link stands for simplicity, cost reduction and as a starting point for implementing future Industrie 4.0 / IIoT concepts. IO-Link products from Kübler open up new possibilities for your application.

[kuebler/io-link](kuebler.com/io-link)

**Industrial Ethernet**

The use of Industrial Ethernet communication in modern industry is continuously increasing. In the future, in line with the Industrie 4.0 idea, all areas of industrial production plants will be united in a single network on the Industrial Ethernet platform, from the field devices to the control level to the cloud. And this with real-time data exchange. The corresponding communication capability of the sensors plays an essential role here.

[kuebler/industrial-ethernet](kuebler.com/industrial-ethernet)

### Time and cost savings

### Independent in use

### Efficient production thanks to Smart Sensor profile

### Remote diagnosis and condition monitoring
Measuring wheel systems - applications

Measurement of speed, position and distance directly on conveyor belts, steel and sheet metal working machines, storage and conveyor systems, sorting systems, conveyor belts, textile machines, printing and paper industry etc.

Application examples:

### Speed measurement on a guide shaft

**Requirement**
- Reliable speed measurement
- Continuous contact force
- Easy to integrate
- Compact design

**Kübler solution**
Measuring wheel system **MWE21** consisting of

1. Measuring wheel circumf. 200 mm, plastic smooth
2. Encoder Sendix KIS40, 1000 ppr
3. Spring arm MWE20
4. Preset counter Codix 924

The integrated speedometer function makes it easy to visualize and control speeds.

### Speed measurement on a conveyor belt

**Requirement**
- Direct measurement on the material to be measured  
  (not via a motor encoder -> slip in the system)
- Can be mounted from below against the conveyor belt (overhead mounting)
- High contact pressure
- Large spring travel (tolerance compensation from conveyor belt)
- Redundant double measuring wheel system  
  (two support points for the measuring wheels)

**Kübler solution**
Measuring wheel system **MWE62** consisting of

1. Measuring wheel circumf. 300 mm, double O-ring
2. Encoder Sendix KIS50, 1000 ppr
3. Spring arm MWE60
4. Preset counter Codix 571T

In addition to a touch function, the LED preset counter has the option of visualizing measured values (presets) with color changes when they are reached or fallen short of.
Length measurement - example wooden boards

Kübler solution
Measuring wheel system **MWE61** consisting of:

1. Measuring wheel  Pulley with toothed belt
2. Encoder  Sendix F5868 PROFINET
3. Spring arm  MWE60
4. Preset counter Codix 560

The desired measuring length can be set via the LED preset counter. When the set value is reached, a cut-to-length process is triggered.

Position measurement on gantry cranes

Kübler solution
Measuring wheel system **MWE61** consisting of:

1. Measuring wheel  Pulley with toothed belt
2. Encoder  Sendix F5868 PROFINET
3. Spring arm  MWE60

Direct communication with the controller via PROFINET interface.

Requirement

- Precise length measurement
- High contact forces
- Easy maintenance
- Robust overall system

Requirement

- 100 % slip-free measurement
- Exact positioning
- Absolute position feedback
- High contact force
- High shock resistance
Measuring wheel system MWE11
Incremental encoder 2400

The compact measuring wheel system MWE11 with the smallest size can be integrated very flexibly, even in the tightest installation spaces.

- **Easy handling**
  Measuring wheel, sensor and spring bracket are pre-assembled and therefore easy to install: screw on - connect - done.

- **Compact design**
  Dimensions of the complete unit only 74 x 50 x 52 mm.

- **Measuring wheels in 2 variants**
  Circumference 100 mm - measuring wheel coating available with diamond knurl or rubber surface.

**FEATURES AT A GLANCE**
- Contact force max. 10 N
- Spring travel max. 10 mm
- Measuring wheel circumference 100 mm
- Encoder size ø 24 mm
- Incremental
Technology in detail

Various mounting options
The measuring wheel system can be placed on the material to be measured in different ways.

Setting the preload
The distance between the MWE11 measuring wheel system and the material to be measured can be adjusted via 2 slotted holes. This simultaneously sets the desired preload of the spring.

Contact force of the measuring wheel on the material to be measured

<table>
<thead>
<tr>
<th>Preload, recommended</th>
<th>5 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating travel, max.</td>
<td>10 mm</td>
</tr>
<tr>
<td>Contact force in relation to spring deflection</td>
<td></td>
</tr>
</tbody>
</table>
MEASURING WHEEL SYSTEMS

Measuring wheel system MWE21
Incremental or absolute encoders size ø 36 / 40 mm

The compact measuring wheel system MWE21 with adjustable preload can be integrated very flexibly even in the tightest installation spaces.

- **Wide range of encoders**
  Incremental Sendix encoder with a max. resolution of up to 2500 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link for integration in Industry 4.0 concepts.

- **Suitable measuring wheels for all measured material surfaces**
  Circumference 200 mm or 6” - measuring wheel coating available with O-ring, smooth plastic or diamond knurl surface.

- **Contact force up to max. 20 N**
  With adjustable preload and mechanical spring deflection limitation for a long service life. The integrated spring ensures a working range of the measuring wheel of up to 16 mm vertical to the measuring surface to compensate for tolerances.

**FEATURES AT A GLANCE**
- Contact force max. 20 N
- Spring travel max. 16 mm
- Measuring wheel circumference 200 mm / 6”
- Encoder size ø 36 / 40 mm
- Incremental or absolute
Technology in detail

**Mounting options encoder on spring arm**

The encoder is attached to the encoder spring arm with 3 screws.

The fastening points are designed in such a way that mounting on both sides of the encoder spring arm is possible.

For a flexible cable outlet direction, the encoder can additionally be mounted in 30° steps.

**Various mounting options**

- **horizontally**
- **vertically**
- **overhead**

**Contact force of the measuring wheel on the material to be measured**

<table>
<thead>
<tr>
<th>Contact force in N</th>
<th>5 N (approx. 6.5 mm deflection)</th>
<th>± 4 mm (from the rec. preload)</th>
<th>16 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring deflection mm [inch]</td>
<td>2 [0.08]</td>
<td>4 [0.16]</td>
<td>6 [0.24]</td>
</tr>
</tbody>
</table>

- **Contact force in relation to spring deflection** (Functional principle based on 2 integrated springs)
Measuring wheel system MWE31
Incremental or absolute encoders size ø 36 / 40 mm

The compact MWE31 measuring wheel system with internal springs can be quickly and easily integrated into even the tightest installation spaces.

- **Wide range of encoders**
  Incremental Sendix encoder with a max. resolution of up to 2500 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link for integration in Industry 4.0 concepts.

- **Suitable measuring wheels for all measuring surfaces**
  Circumference 200 mm - measuring wheel coating available with O-ring, smooth plastic or diamond knurl surface.

- **Contact force up to max. 15 N**
  The integrated spring ensures a working range of the measuring wheel of up to 10 mm vertical to the measuring surface to compensate for tolerances.

### FEATURES AT A GLANCE
- Contact force max. 15 N
- Spring travel max. 10 mm
- Measuring wheel circumference 200 mm
- Encoder size ø 36 / 40 mm
- Incremental or absolute
Technology in detail

**Mounting options encoder on spring bracket**
The encoder is attached to the spring bracket with 3 screws.

For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 30° steps.

**Mounting on the application**
Install the MWE31 on the material to be measured 1 in such a way that the requested preload is obtained. (ideally approx. 5 mm of the spring deflection 2)

The working range is from 0 mm 3 (equivalent to 3 N) to 10 mm 4 (equivalent to 15 N)

**Contact force of the measuring wheel on the material to be measured**

- Preload, recommended: 9 N (approx. 5 mm deflection)
- Operating travel, max.: 10 mm
- Contact force in relation to spring deflection (Functional principle based on 2 integrated springs)
Measuring wheel system MWE41
Incremental or absolute encoders size ø 58 mm

The MWE41 measuring wheel system with internal springs can be quickly and easily integrated into many applications.

- **Wide range of encoders**
  Incremental Sendix encoders with a max. resolution of up to 36,000 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link or Profinet for integration in Industry 4.0 concepts.

- **Suitable measuring wheels for all measuring surfaces**
  Circumference 300 mm – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.

- **Contact force up to max. 25 N**
  The internal spring ensures a working range of the measuring wheel of up to 10 mm vertical to the measuring surface to compensate for tolerances.

**FEATURES AT A GLANCE**
- Contact force max. 25 N
- Spring travel max. 10 mm
- Measuring wheel circumference 300 mm
- Encoder size ø 58 mm
- Incremental or absolute
Technology in detail

### Mounting options encoder on spring bracket

The encoder is attached to the spring bracket with 3 screws.

For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 30° steps.

### Mounting on the application

Install the MWE41 on the material to be measured in such a way that the requested preload is obtained. (ideally approx. 5 mm of the spring deflection)

The working range is from 0 mm (equivalent to 5 N) to 10 mm (equivalent to 25 N)

### Contact force of the measuring wheel on the material to be measured

- **Preload, recommended:** 15 N (approx. 5 mm deflection)
- **Operating travel, max.:** 10 mm
- **Contact force in relation to spring deflection**
  (Functional principle based on 2 integrated springs)

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Measuring wheel system MWE61
Incremental or absolute encoders size ø 58 mm

The robust MWE61 measuring wheel system offers maximum spring deflection at maximum contact force to compensate for tolerances vertical to the transport movement of the material to be measured.

• **Wide range of encoders**
  Incremental Sendix encoders with a max. resolution of up to 36,000 pulses/revolution as well as absolute encoders for different communication interfaces such as IO-Link or Profinet for integration in Industry 4.0 concepts.

• **Suitable measuring wheels for all measuring surfaces**
  Circumferences 300 mm or 12” – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.

• **Contact force up to max. 40 N**
  Utilizes a stepless adjustable preload. To compensate for tolerances, the integrated spring ensures a working range of the measuring wheel up to a maximum of 80 mm vertical to the measuring surface.

**FEATURES AT A GLANCE**
- Contact force max. 40 N
- Spring travel max. 80 mm
- Measuring wheel circumference 300 mm / 12”
- Encoder size ø 58 mm
- Incremental or absolute
Technology in detail

Setting the preload
1. Mount the measuring wheel system on the application and release screw.
2. Turn the adjustment ring with a thin allen key or screwdriver until the desired preload is reached.
3. As a guide: Internal detent points in 45° steps correspond to approx. 20 N. Hold the position of the adjustment ring and tighten the screw again.

Installation example
Preload ca. 20 N
Surface measured material
Operating travel
Preload
Contact force max.
Contact force min.
Spring deflection limitation

Contact force of the measuring wheel on the material to be measured
Preload (example): 20 N by turning the setting wheel by approx. 45° - corresponds to a detent point
Contact force
Spring deflection limitation to protect against overload
Double measuring wheel system MWE62
Incremental encoder KIS50

The robust MWE62 measuring wheel system offers maximum spring deflection at maximum contact force to compensate for tolerances perpendicular to the transport movement of the material to be measured. The use of 2 measuring wheels guarantees optimum contact with the material to be measured, even under difficult conditions.

- **High contact reliability to the measured material**
  The use of a second measuring wheel on the encoder ensures a high degree of contact with the measuring surface even under difficult conditions - high vibrations or unevenness.

- **Suitable measuring wheels for all measuring surfaces**
  Circumferences 300 mm or 12” – measuring wheel coating available with O-ring or double O-Ring, smooth or corrugated plastic, diamond knurl surface and tufted rubber.

- **Contact force up to max. 40 N**
  Utilizes a stepless adjustable preload. To compensate for tolerances, the integrated spring ensures a working range of the measuring wheel up to a maximum of 80 mm vertical to the measuring surface.

**FEATURES AT A GLANCE**
- Contact force max. 40 N
- Spring travel max. 80 mm
- Measuring wheel circumference 300 mm / 12”
- Encoder size ø 58 mm
- Incremental
**Setting the preload**

1. Mount the measuring wheel system on the application and release screw.
2. Turn the adjustment ring with a thin allen key or screwdriver until the desired preload is reached.
3. As a guide: Internal detent points in 45° steps correspond to approx. 20 N. Hold the position of the adjustment ring and tighten the screw again.

**Installation example**

- Preload ca. 20 N
- Contact force max.
- Contact force min.

**Contact force of the measuring wheel on the material to be measured**

- Preload (example): 20 N by turning the setting wheel by approx. 45° - corresponds to a detent point
- Contact force
- Spring deflection limitation to protect against overload
We offer solutions for the following industries:

**MEASUREMENT**
Rotary speed and position detection, linear position, and speed measurement as well as inclination angle detection.
- Encoders
- Bearingless encoders
- Motor Feedback Systems
- Linear measuring systems
- Shaft copying systems
- Inclinometers

**TRANSMISSION**
Reliable and interference-free transmission of power, signals, and data. Communication between control system and sensors.
- Slip rings
- Slip rings, customized solutions
- Signal converters and optical fiber modules
- Cables and connectors

**EVALUATION**
Recording of quantities, counting of units of any kind, and reliable speed and position recording for functional safety.
- Displays and counters
- Process devices
- Safe speed monitors up to SIL3/PLe

The high performance level and reliability of the Kübler products are based on our long experience in these demanding application sectors. Learn more about our application-specific solutions under:

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Kübler Service for worldwide planning reliability

24one delivery promise
Manufacturing in 24 hours. For orders placed on working days before 9 AM, the product will be ready for dispatch on that same day. 24one is limited to 20 pieces per delivery.

10 by 10
We will manufacture and deliver 10 encoders within 10 working days (365 days a year - with the exception of 24th Dec. until 2nd Jan.)

48 h Express-Service
We can process your order within 48 hours; we can ship stock items the same day.

Sample Service
We manufacture samples of special designs or according to customer specification within shortest time.

Safety Services
Individual customer solutions.

Tailor-made Solutions – Kübler Design System (KDS)
OEM Products and Systems (OPS)
We develop jointly with our customers product and engineering solutions for customer-specific products, integrated drive solutions, up to complete systems.

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