# Measuring wheel system

**Performance-Line** | **Measuring wheel system MWE61** | **With spring arm, contact force max. 40 N**

**With incremental or absolute encoder with clamping flange ø 58 mm.**

Measuring wheel systems from Kübler are the ideal solution for reliable speed, position and distance 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.

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.

Push-Pull HTL | RS422 TTL | Open Collector NPN | Analog output | SSI

CANopen | IO-Link | EtherNet/IP | PROFINET | PROFIBUS

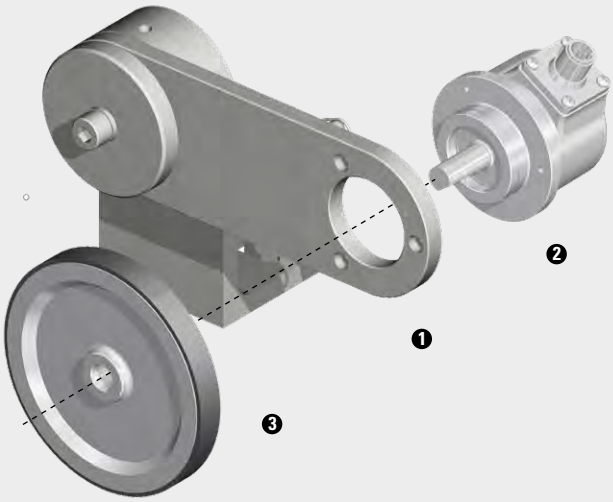
RoHS

## Features

- **Robust design**
  With flexible mounting options: vertical, horizontal or overhead. Encoder can be mounted on the spring arm in 120° steps.
- **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**
  With 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.

## Construction

| | | |
|---|---|---|
| ❶ | Spring arm: | MWE60 |
| ❷ | Encoder: | Clamping flange ø 58 mm |
| ❸ | Measuring wheel: | Circumference 300 mm or 12" (Circumference 200 mm or 500 mm on request) |



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## Order code with incremental encoder

8.MWE61 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ

Type

❶ *Measuring wheel, circumference / coating*

31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
39 = 300 mm / plastic corrugated (PU)

71 = 12" / diamond knurl (aluminum)
74 = 12" / plastic smooth (PU)
76 = 12" / tufted rubber (PU)
77 = 12" / O-Ring (NBR)
78 = 12" / double O-ring (NBR)
79 = 12" / plastic corrugated (PU)

(Measuring wheels with circumference 200 mm and 500 mm on request)

❷ *Mounted encoder* [1]

| | | | |
|---|---|---|---|
| **50** | = KIS50 | incremental | to the datasheet > |
| **05** | = 5805 | incremental | to the datasheet > |

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ *Pulse rate*
see data sheet encoder

## Order code with absolute encoder

8.MWE61 . 1 2 1 . XX ❶ . XX ❷ X ⓒ X ⓓ . XXXX ⓔ ⓕ ⓖ

Type

❶ *Measuring wheel, circumference / coating*

31 = 300 mm / diamond knurl (aluminum)
34 = 300 mm / plastic smooth (PU)
36 = 300 mm / tufted rubber (PU)
37 = 300 mm / O-ring (NBR)
38 = 300 mm / double O-ring (NBR)
39 = 300 mm / plastic corrugated (PU)

71 = 12" / diamond knurl (aluminum)
74 = 12" / plastic smooth (PU)
76 = 12" / tufted rubber (PU)
77 = 12" / O-Ring (NBR)
78 = 12" / double O-ring (NBR)
79 = 12" / plastic corrugated (PU)

(Measuring wheels with circumference 200 mm and 500 mm on request)

❷ *Mounted encoder* [1]

| | | | |
|---|---|---|---|
| **M1** | = M5861 | Analog output | to the datasheet > |
| **M3** | = M5863 | SSI | to the datasheet > |
| **M8** | = M5868 | CANopen | to the datasheet > |
| **M8** | = M5868 | IO-Link | to the datasheet > |
| **F8** | = F5868 | EtherNet/IP | to the datasheet > |
| **F8** | = F5868 | PROFINET | to the datasheet > |
| **68** | = 5868 | PROFIBUS | to the datasheet > |

(other encoders on request)

ⓒ *Output circuit / supply voltage encoder*
see data sheet encoder

ⓓ *Type of connection*
see data sheet encoder

ⓔ + ⓕ + ⓖ *Interface specifications*
see data sheet encoder

### Calculation of the linear resolution

| | Measuring step (mm/pulse) | | Resolution (pulses/mm) | | |
|---|---|---|---|---|---|
| Calculation | $\frac{\text{mm}}{\text{ppr}}$ | = $\frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$ | $\frac{\text{ppr}}{\text{mm}}$ | = $\frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$ | |
| Example<br>Measuring wheel circumference = 300 mm<br>Pulse number encoder = 3000 ppr | $\frac{300\text{ mm}}{3000\text{ ppr}}$ | = 0.1 mm / puls | $\frac{3000\text{ ppr}}{300\text{ mm}}$ | = 10 pulses / mm | |

1) Clamping flange 58 mm / shaft ø 10 mm - only relevant for ordering an encoder as a single component.

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## Single components

Order no.

### Spring arm MWE60

combinable with Kübler encoders:

clamping flange ø 58 mm
incremental: Sendix Base KIS50, 5805
absolute: Sendix F58xx, M58xx, 58xx

**8.MWE60.121.00.0000.0000**

Details s. datasheet >

### Measuring wheels

| Option ❶ | circumference / coating | |
|---|---|---|
| **31** | 300 mm / diamond knurl (aluminum) | **8.0000.3317.0010** |
| **34** | 300 mm / plastic smooth (PU) | **8.0000.3347.0010** |
| **36** | 300 mm / tufted rubber (PU) | **8.0000.3367.0010** |
| **37** | 300 mm / O-ring (NBR70) | **8.0000.3377.0010** |
| **38** | 300 mm / double O-ring (NBR70) | **8.0000.3387.0010** |
| **39** | 300 mm / plastic corrugated (PU) | **8.0000.3397.0010** |
| **71** | 12" / diamond knurl (aluminum) | **8.0000.3717.0010** |
| **74** | 12" / plastic smooth (PU) | **8.0000.3747.0010** |
| **76** | 12" / tufted rubber (PU) | **8.0000.3767.0010** |
| **77** | 12" / O-ring (NBR70) | **8.0000.3777.0010** |
| **78** | 12" / double O-ring (NBR70) | **8.0000.3787.0010** |
| **79** | 12" / plastic corrugated (PU) | **8.0000.3797.0010** |

(Measuring wheels with circumference 200 mm and 500 mm on request)

Details s. datasheet >

## Evaluation

Order no.

### Preset counter Codix 924


Multifunction device:
- Tachometer with limit values
- Position indicators with limit values
- Time preset counter

**6.924.01XX.XXX**

## Accessories

Order no.

### O-rings

| | |
|---|---|
| For measuring wheels with O-ring: | |
| Measuring wheel circumference 300 mm, ❶ = 37 | **8.0000.7000.0074** |
| Measuring wheel circumference 12", ❶ = 77 | **8.0000.7000.0075** |
| For measuring wheels with double O-ring: | |
| Measuring wheel circumference 300 mm, ❶ = 38 | **8.0000.7000.0077** |
| Measuring wheel circumference 12", ❶ = 78 | **8.0000.7000.0078** |

Further accessories can be found at: kuebler.com/accessories
Cables and connectors can be found at: kuebler.com/connection-technology

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## Technology in detail

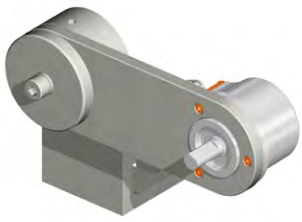
### Mounting

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

For a flexible outlet direction of the cable or connector, the encoder can additionally be mounted in 120° steps.

**0°** (delivery state)

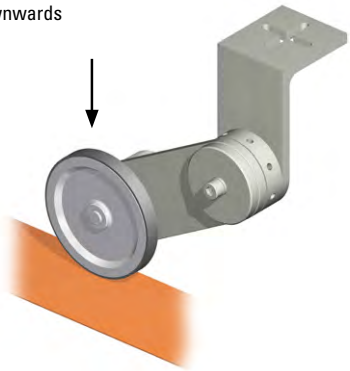
**120°**



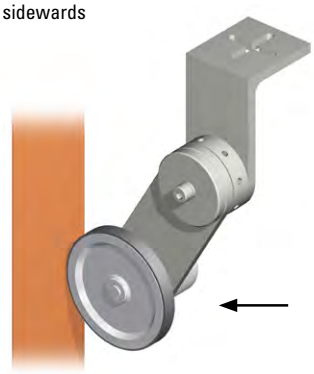
**240°**

### Various mounting options

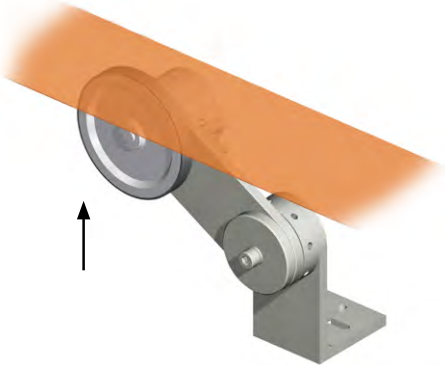
downwards



sidewards



upwards (overhead)



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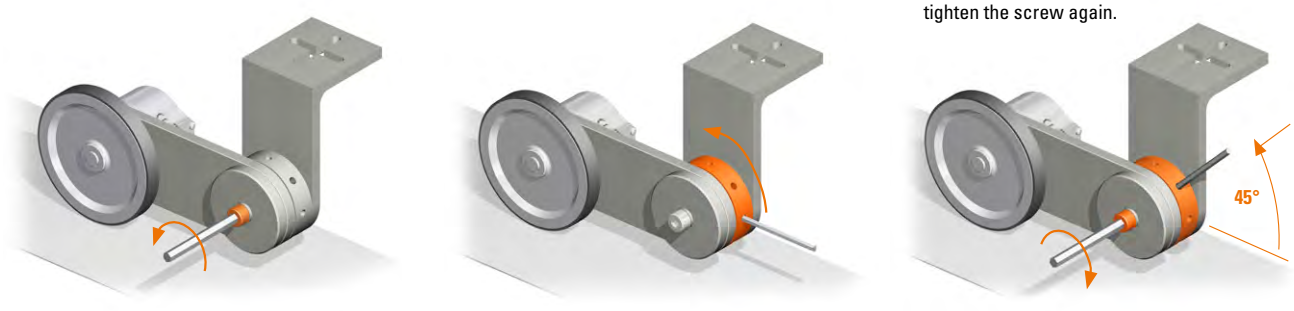
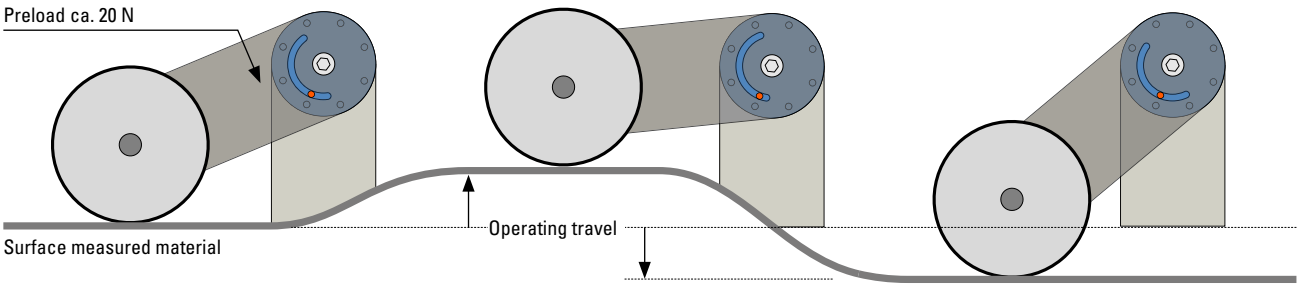
## Technology in detail

### Setting the preload

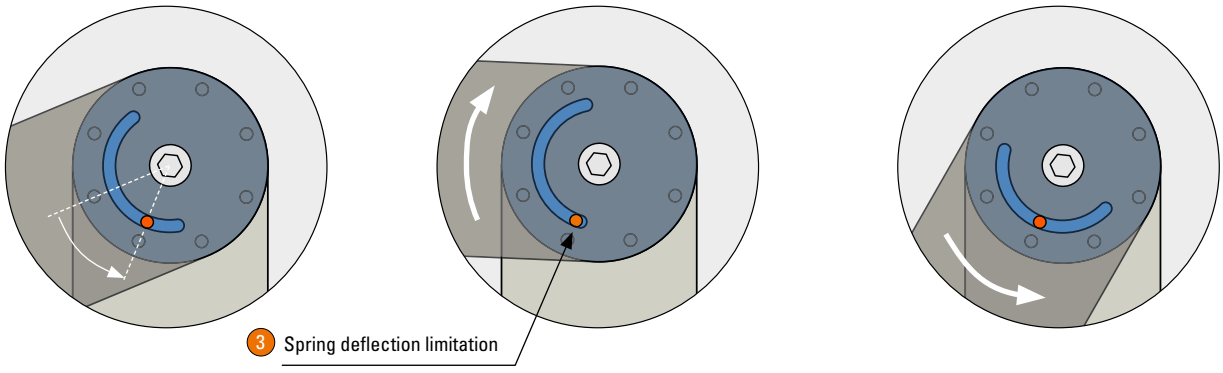
1. Mount the measuring wheel system on the application and release screw.
2. Turn the adjustment ring with a thin allen key or screwdriver until the desired preload is reached.
3. As a guide: Internal detent points in 45° steps correspond to approx. 20 N.
   Hold the position of the adjustment ring and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



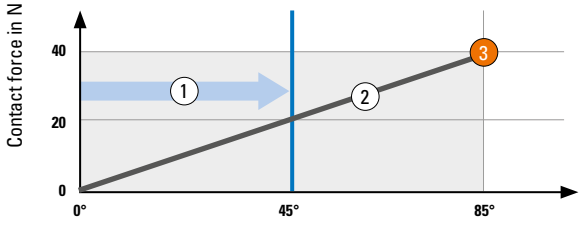

### Installation example




**Preload** | **Contact force max.** | **Contact force min.**




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




1 Preload (example): 20 N
by turning the setting wheel by approx. 45°
- corresponds to a detent point

2 Contact force

3 Spring deflection limitation to protect against overload

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## Technical data

### Mechanical characteristics spring arm

| | | |
|---|---|---|
| **Materials** | spring<br>spring bracket | spring steel<br>aluminum |
| **Weight** | | 670 g |
| **Contact force, max.** | | 40 N |
| **Operating travel, max.** | | 80 mm |
| **Working temperature range** | | -20 °C ... +70°C [-40 °F ... +176 °F] |
| **Shock resistance** acc. EN 60068-2-27 | | 1000 m/s², 6 ms |
| **Vibration resistance** acc. EN 60068-2-6 | | 100 m/s², 55 ... 2000 Hz |

### Approvals

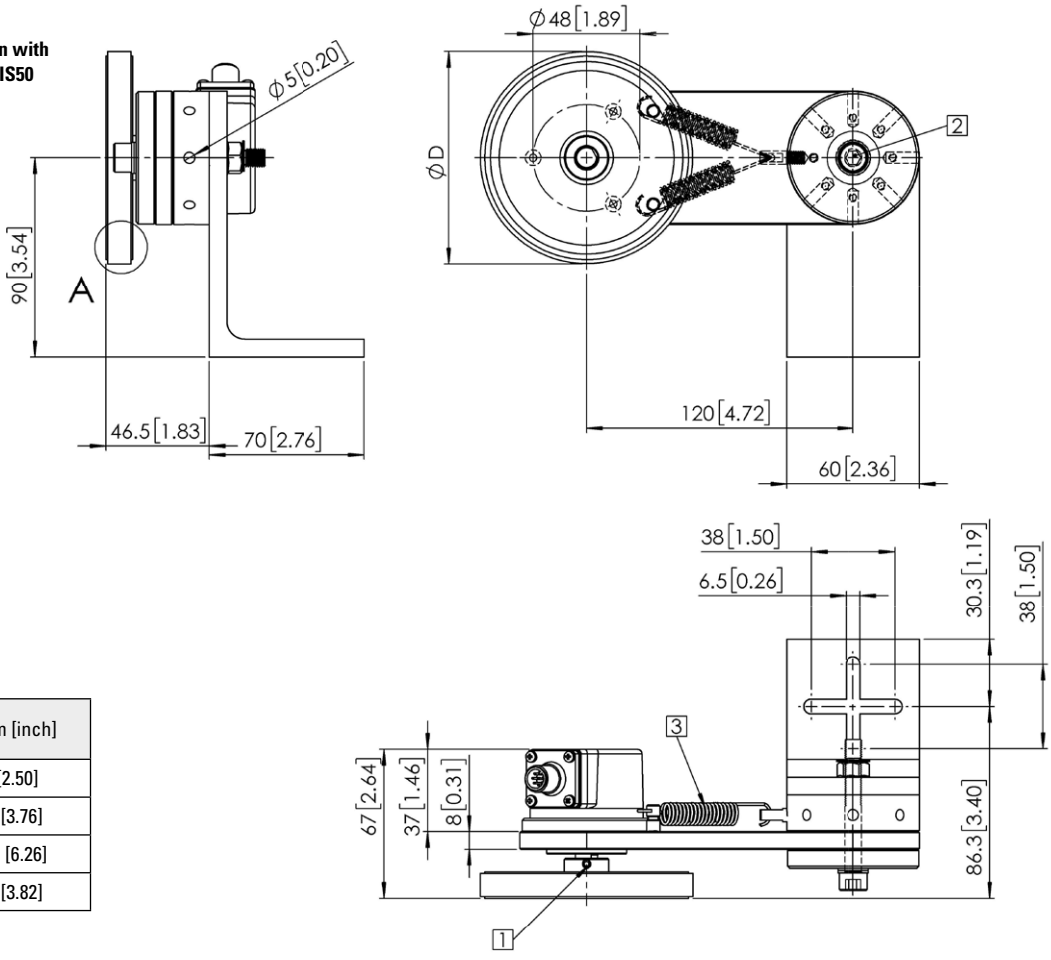
| | |
|---|---|
| **UL compliant** acc. to | File no. E224618 |
| **CE compliant** acc. to | EMV guideline 2014/30/EU<br>RoHS guideline 2011/65/EU |
| **UKCA compliant** acc. to | EMC Regulations S.I. 2016/1091<br>RoHS Regulations S.I. 2012/3032 |

## Dimensions

Dimensions in mm [inch]

**Spring arm MWE60 in combination with meeasuring wheel and encoder KIS50**

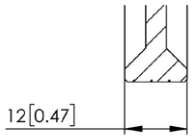
1 Fixing screw M4 x 6 for measuring wheel
2 SW5
3 Spring



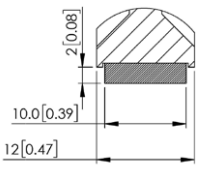

| Measuring wheel circumference | ø D mm [inch] |
|---|---|
| 200 mm | 63.7 [2.50] |
| 300 mm | 95.54 [3.76] |
| 500 mm | 159.23 [6.26] |
| 12" | 97.07 [3.82] |

**A** for measuring wheel with coating:

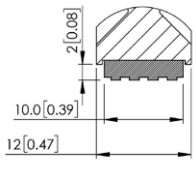
Diamond knurl (aluminum)



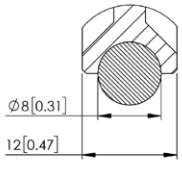

Plastic smooth (PU)



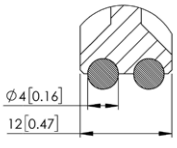

Tufted rubber (PU)




O-ring (NBR)




Double O-ring (NBR)




Plastic corrugated (PU)