Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 25 N**



Measuring wheel system consisting of spring arm MWE20, compact incremental or absolute Sendix encoders and suitable measuring wheels

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.

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

Push-Pull HTL | RS422 TTL | Open Collector NPN

RoHS | Analog output | SSI | CANopen | IO-Link

Features

- **Compact measuring wheel system**
  For the tightest installation spaces with flexible mounting options: vertical, horizontal or overhead. Encoders can be mounted on both sides of the spring arm in 30° steps.
- **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 or 6“ - measuring wheel coating available with O-ring, smooth plastic or diamond knurl surface.
- **Contact force up to max. 25 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.

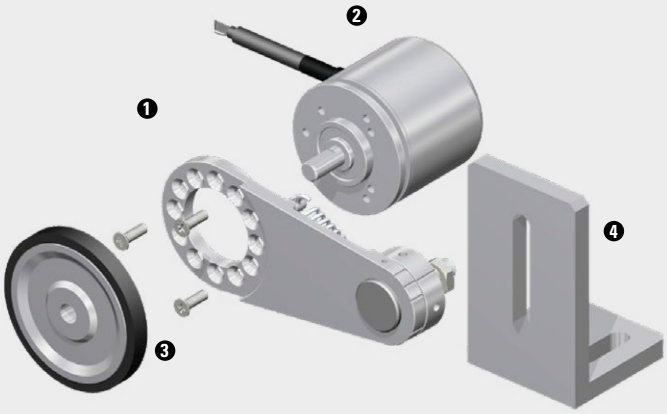
Construction

❶ Spring arm MWE20 with fixing screws

❷ Encoder with clamping flange ø 36 mm or ø 40 mm

❸ Measuring wheel with circumference 200 mm or 6”

❹ Optional mounting bracket



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Order code with incremental encoder KIS40

8.MWE21 . 3 X 1 . XX . 40 X X . XXXX
Type ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽

❶ *Clamping flange of the encoder*
3 = for clamping flange ø 40 mm

❷ *Mounting bracket*
1 = without mounting bracket
2 = with mounting bracket

❸ *Mounting orientation of the encoder (see page 4)*
1 = Left-hand installation (Right-hand installation on request)

❹ *Measuring wheel, circumference / coating*
(Width of tread 5.5 mm, bore ø 6 mm)
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)
2B = 200 mm / plastic smooth, FDA-compliant

61 = 6" / diamond knurl (aluminum)
64 = 6" / plastic smooth (PU)
67 = 6" / O-ring (NBR)

(other measuring wheels on request)

AA = without measuring wheel

❺ *Mounted encoder* [1]

40	= KIS40	incremental	to the datasheet >

(other encoders on request)

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

❼ *Type of connection*
see data sheet encoder

❽ *Pulse rate*
see data sheet encoder

Order code with absolute encoder

8.MWE21 . 4 X 1 . XX . XX X X . XXXX
Type ❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ⓕ ⓖ

❶ *Clamping flange of the encoder*
4 = for clamping flange ø 36 mm

❷ *Mounting bracket*
1 = without mounting bracket
2 = with mounting bracket

❸ *Mounting orientation of the encoder (see page 4)*
1 = Left-hand installation (Right-hand installation on request)

❹ *Measuring wheel, circumference / coating*
(Width of tread 5.5 mm, bore ø 6 mm)
21 = 200 mm / diamond knurl (aluminum)
24 = 200 mm / plastic smooth (PU)
27 = 200 mm / O-ring (NBR)
2B = 200 mm / plastic smooth, FDA-compliant

61 = 6" / diamond knurl (aluminum)
64 = 6" / plastic smooth (PU)
67 = 6" / O-ring (NBR)

(other measuring wheels on request)

AA = without measuring wheel

❺ *Mounted encoder* [1]

M1	= M3661	Analog output	to the datasheet >
M3	= M3663	SSI	to the datasheet >
M8	= M3668	CANopen	to the datasheet >
M8	= M3668	IO-Link	to the datasheet >

(other encoders on request)

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

❼ *Type of connection*
see data sheet encoder

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

Calculation of the linear resolution

	Measuring step (distance/pulse)		Resolution (pulses/distance)	
Calculation	$\frac{\text{distance}}{\text{ppr}} = \frac{\text{Measuring wheel circumference}}{\text{Pulse number encoder}}$		$\frac{\text{ppr}}{\text{distance}} = \frac{\text{Pulse number encoder}}{\text{Measuring wheel circumference}}$	
Example 1 Measuring wheel circumference = 200 mm Pulse number encoder = 2000 ppr	$\frac{200\text{ mm}}{2000\text{ ppr}}$	= 0,1 mm / pulse	$\frac{2000\text{ ppr}}{200\text{ mm}}$	= 10 pulses / mm
Example 2 Measuring wheel circumference = 6 inch Pulse number encoder = 600 ppr	$\frac{6\text{ inch}}{600\text{ ppr}}$	= 0,01 inch / pulse	$\frac{600\text{ ppr}}{6\text{ inch}}$	= 100 pulses / inch

1) Clamping flange 36 or 40 mm / shaft ø 6 mm – only relevant for ordering an encoder as a single component.

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Single components

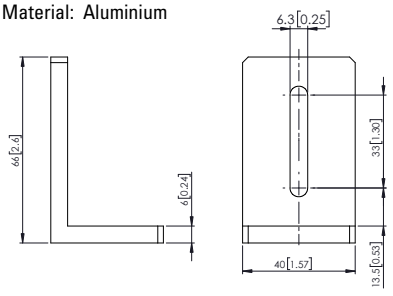
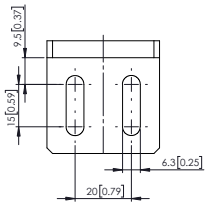
		Order no.
Spring arm MWE20	combinable with Kübler encoders:	
	incremental: Sendix Base KIS40, 3610	**8.MWE20.311.00.0000.0000**
	absolute: Sendix F36xx, M36xx	**8.MWE20.411.00.0000.0000**
		Details s. datasheet

	Option ❹	circumference / coating	Order no.
Measuring wheels			
 Width of tread 5,5 mm, Bore ø 6 mm	**21**	200 mm / diamond knurl (aluminum)	**8.0000.3215.0006**
	24	200 mm / plastic smooth (PU)	**8.0000.3245.0006**
	27	200 mm / O-ring (NBR70)	**8.0000.3275.0006**
	2B	200 mm / plastic smooth, FDA-compliant	**8.0000.32B5.0006**
	61	6“ / diamond knurl (aluminum)	**8.0000.3615.0006**
	64	6“ / plastic smooth (PU)	**8.0000.3645.0006**
	67	6“ / O-ring (NBR70)	**8.0000.3675.0006**
		(other measuring wheels 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**
		Details s. datasheet

Accessories

		Order no.
Mounting bracket	Material: Aluminium	**8.0000.7000.0065**
	 	

		Order no.
O-rings	For measuring wheel circumference 200 mm	**8.0000.7000.0067**
	For measuring wheel circumference 6“	**8.0000.7000.0066**

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

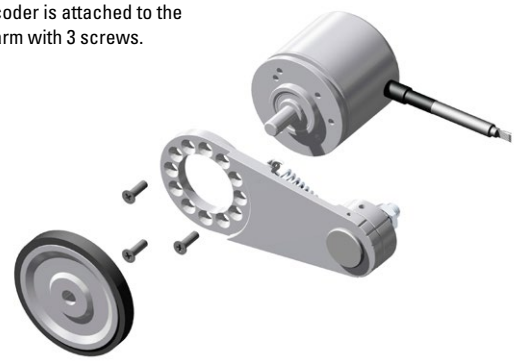
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Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 25 N**

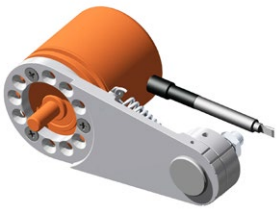
Technology in detail

Mounting options encoder on spring arm

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



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



Mounting left (delivery state)



Mounting right

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



0° (delivery state)



30°



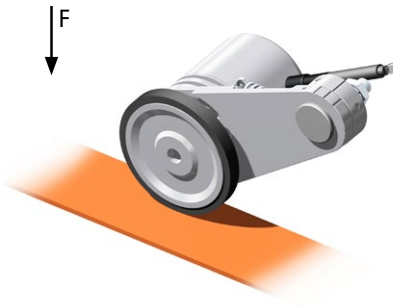
60°



90°

Various mounting options

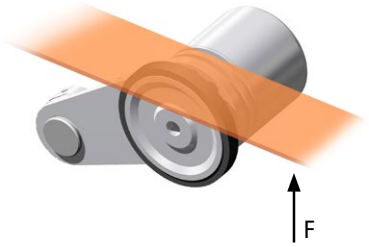
horizontal from above



vertically



horizontally from below (overhead)



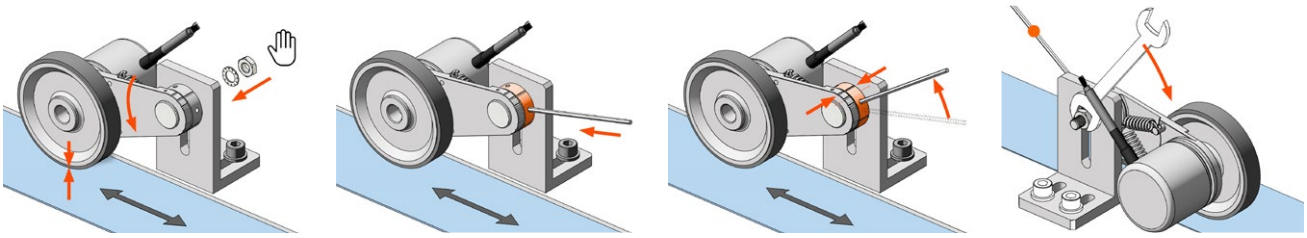
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Technology in detail

Setting the preload

1. Mount the measuring wheel system on the application by hand. Position the spring arm so that the measuring wheel rests lightly on the material to be measured.
2. Turn the adjustment ring with a thin Allen key or screwdriver to the desired preload.
3. The preload of 15 N recommended by Kübler is achieved when the markings on the adjusting ring and spring arm match.
4. After adjusting the preload, hold the Allen key in position and tighten the hexagon nut.

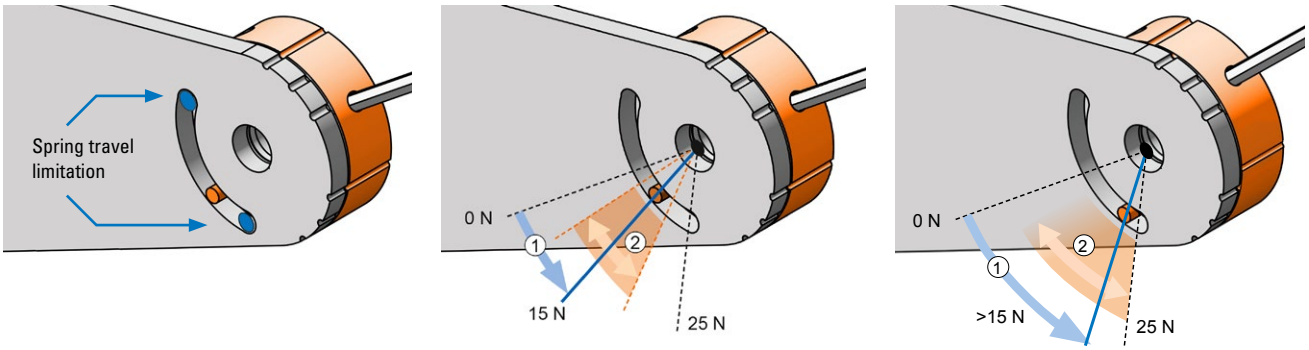


Spring travel limitation / preload deviating from the recommendation

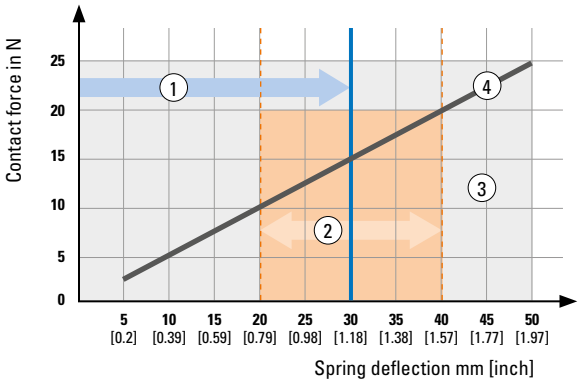
The spring arm has a spring travel limiter that prevents the spring from being overstressed.

Based on the recommended preload ① of 15 N, we recommend a working range ② of ±10 mm (corresponds to ±5 N). All technical specifications are based on these settings

If the preload is set lower or higher than the recommended 15 N ①, please note that the working range ② in one direction may be severely restricted.



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



①	Preload, recommended:	15 N (approx. 30 mm spring defection)
②	Operating travel, recommended:	± 10 mm (from the preload set)
③	Spring deflection, max.:	50 mm
	Contact force, max.:	25 N
④	Contact pressure in relation to spring travel (Functional principle based on 2 integrated springs)	

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Technical data

Mechanical characteristics

Materials	spring spring arm	spring steel aluminum
Weight		53 g
Contact force, max.		25 N
Spring deflection, max.		50 mm
Preload, recommended		15 N (approx. 30 mm spring deflection)
Operating travel, recommended (continuous)		±10 mm [1] (von der empfohlenen Vorspannung)
Spring operating life		2.0 Mio. cycles [2]

Approvals

UL compliant in accordance with	File no. E224618
CE compliant in accordance with	
EMC Directive	2014/30/EU
RoHS Directive	2011/65/EU

1) Operating deflection is measured after preload applied and with/for continuous operations.
2) Life of spring is measured with operating deflection at 1 Hz.

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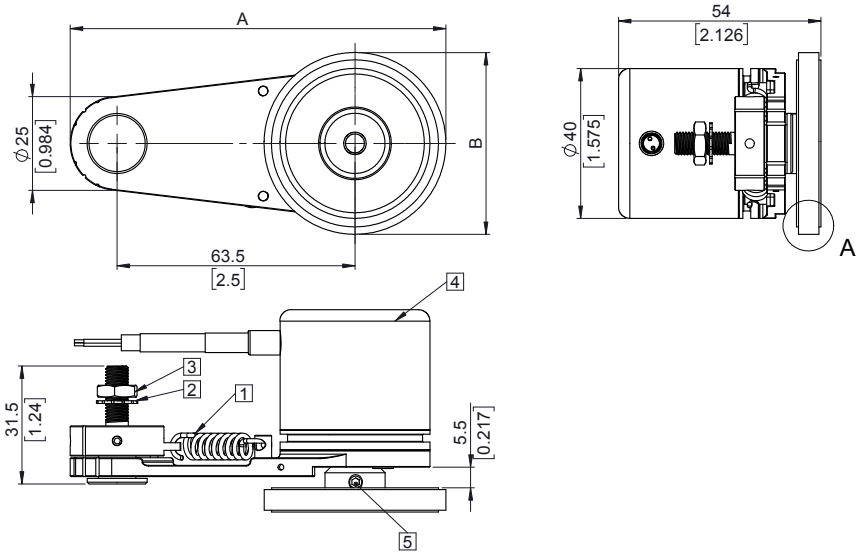
Compact-Line | **Measuring wheel system MWE21** | **With spring arm, contact force max. 25 N**

Dimensions

Dimensions in mm [inch]

Spring arm MWE20 in combination with measuring wheel and encoder KIS40

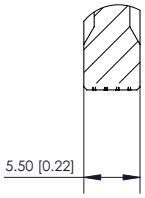
1 Spring
2 Toothed washer
3 Hexagon nut M6
4 Encoder
5 Fastening screw
M4 x 6 for measuring wheel



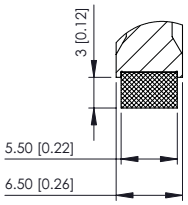
Measuring wheel circumference	A mm [inch]	ø B mm [inch]
200 mm	108.4 [4.27]	63.7 [2.52]
6“	100.8 [3.97]	48.5 [1.91]

A for measuring wheel with coating:

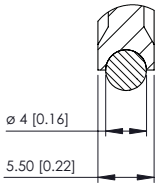
Diamond knurl (aluminum)



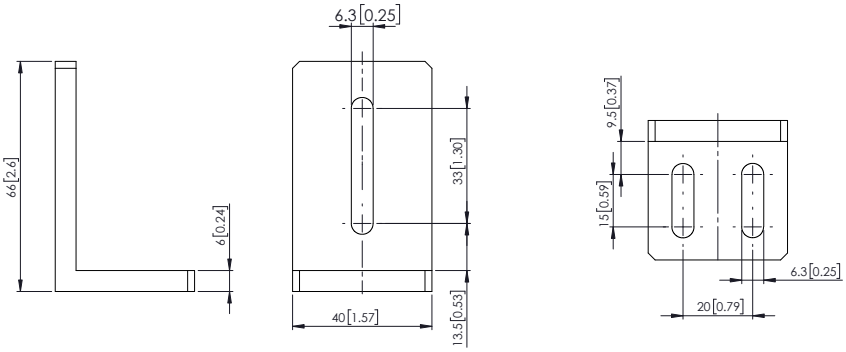
Plastic smooth (PU)



O-ring (NBR)



Mountig bracket



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