

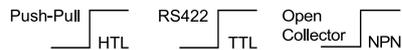
Compact-Line **Measuring wheel system MWE21** **With spring arm, contact force max. 25 N**



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.



Analog output



CANopen

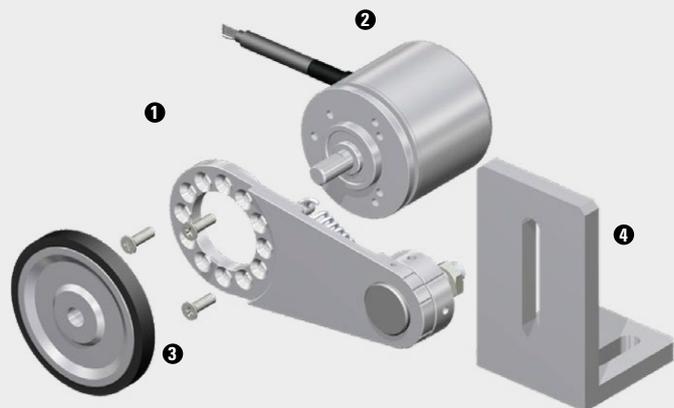


Features

- 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

- Spring arm MWE20 with fixing screws
- Encoder with clamping flange \varnothing 36 mm or \varnothing 40 mm
- Measuring wheel with circumference 200 mm or 6"
- Optional mounting bracket



Measuring wheel systems

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

Order code with incremental encoder KIS40

8.MWE21 . 3 X 1 . XX . 40 XX . XXXX

Type ① ② ③ ④ ⑤ ⑥ ⑦

- ① **Clamping flange of the encoder**
3 = for clamping flange ø 40 mm
- ② **Mounting bracket**
1 = without mounting bracket
2 = with mounting bracket
- ③ **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)

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

(other measuring wheels on request)
AA = without measuring wheel
- ④ **Mounted encoder ¹⁾**
40 = KIS40 incremental
(other encoders on request)
- ⑤ **Output circuit / supply voltage encoder**
see data sheet encoder
- ⑥ **Type of connection**
see data sheet encoder
- ⑦ **Pulse rate**
see data sheet encoder

Order code with absolute encoder

8.MWE21 . 4 X 1 . XX . XXXX . XXXX

Type ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

- ① **Clamping flange of the encoder**
4 = for clamping flange ø 36 mm
- ② **Mounting bracket**
1 = without mounting bracket
2 = with mounting bracket
- ③ **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)

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

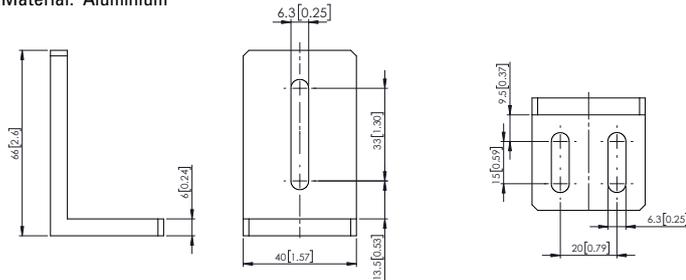
(other measuring wheels on request)
AA = without measuring wheel
- ④ **Mounted encoder ¹⁾**
M1 = M3661 Analog output
M3 = M3663 SSI
M8 = M3668 CANopen
M8 = M3668 IO-Link
(other encoders on request)
- ⑤ **Output circuit / supply voltage encoder**
see data sheet encoder
- ⑥ **Type of connection**
see data sheet encoder
- ⑦ + ⑧ + ⑨ **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	$\frac{200 \text{ mm}}{2000 \text{ ppr}} = 0,1 \text{ mm / pulse}$	$\frac{2000 \text{ ppr}}{200 \text{ mm}} = 10 \text{ pulses / mm}$
Example 2 Measuring wheel circumference = 6 inch Pulse number encoder = 600 ppr	$\frac{6 \text{ inch}}{600 \text{ ppr}} = 0,01 \text{ inch / pulse}$	$\frac{600 \text{ ppr}}{6 \text{ inch}} = 100 \text{ pulses / inch}$

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

Measuring wheel systems

Compact-Line		Measuring wheel system MWE21	With spring arm, contact force max. 25 N
Single components			Order no.
Spring arm MWE20		combinable with Kübler encoders: incremental: Sendix Base KIS40, 3610 absolute: Sendix F36xx, M36xx	8.MWE20.311.00.0000.0000 8.MWE20.411.00.0000.0000
			
Measuring wheels		Option ③ circumference / coating	
		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
		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)	
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.
Mounting bracket		Material: Aluminium	8.0000.7000.0065
			
O-rings		For measuring wheel circumference 200 mm For measuring wheel circumference 6"	8.0000.7000.0067 8.0000.7000.0066
			

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

Measuring wheel systems

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

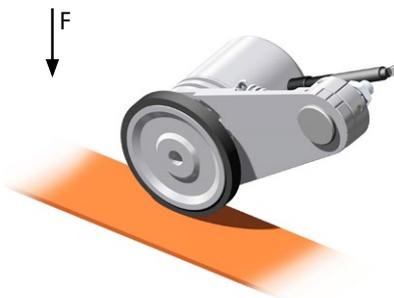
30°

60°

90°

Various mounting options

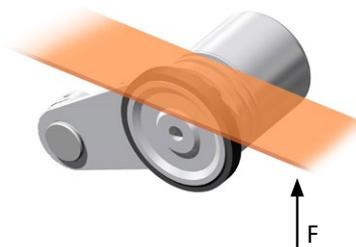
horizontal from above



vertically



horizontally from below (overhead)



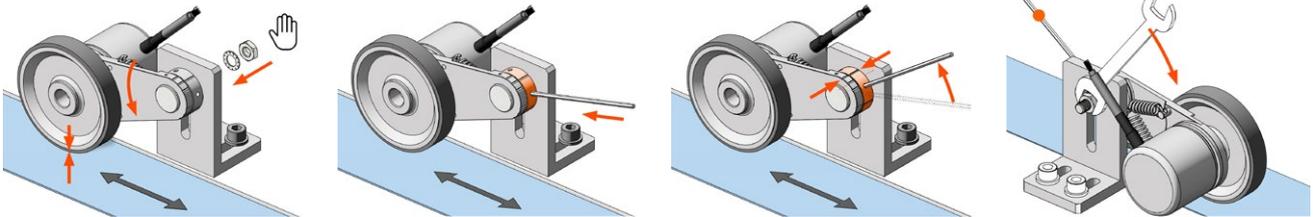
Measuring wheel systems

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

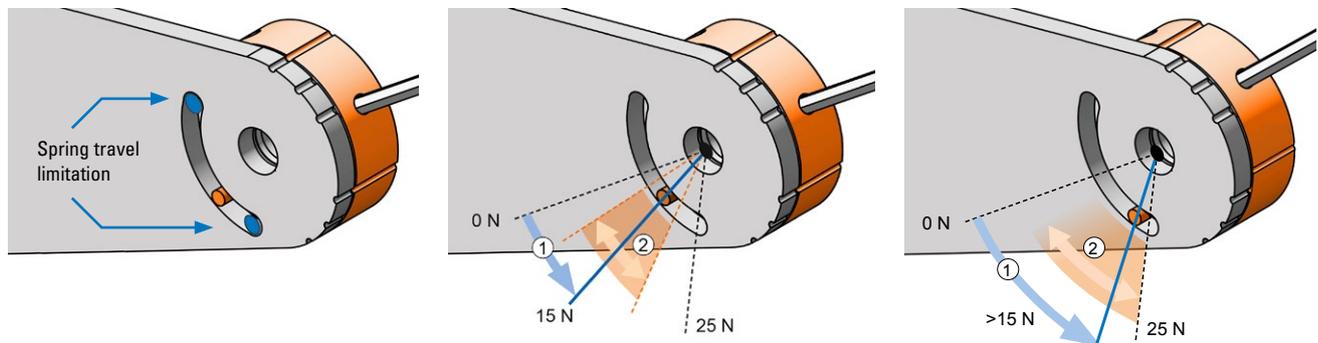


Spring travel limitation / preload deviating from the recommendation

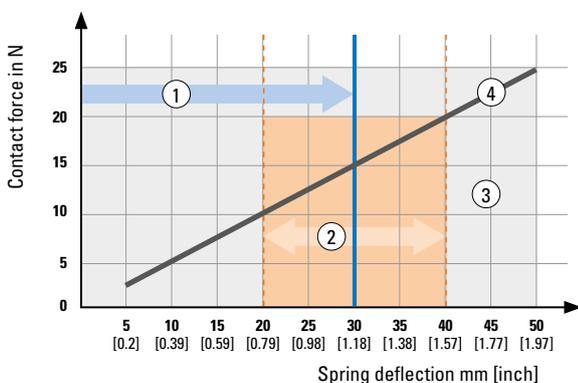
The spring arm has a spring travel limiter that prevents the spring from being overstressed.

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 deflection)
- 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)

Measuring wheel systems

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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.

Measuring wheel systems

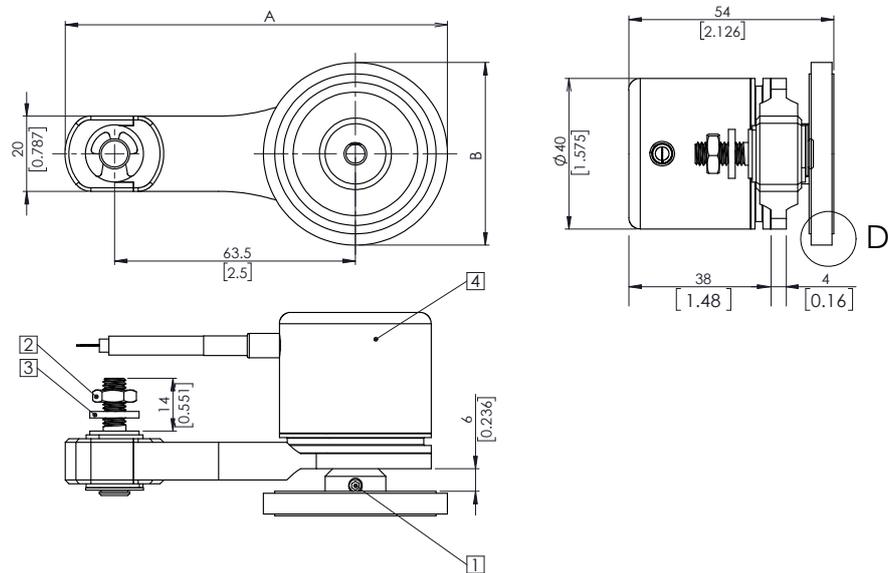
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Dimensions

Dimensions in mm [inch]

Spring arm MWE20 in combination with measuring wheel and encoder KIS40

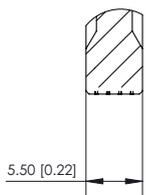
- 1 Spring
- 2 Toothed washer
- 3 Hexagon nut M6
- 4 Encoder
- 5 Fastening screw M4 x 6 for measuring wheel



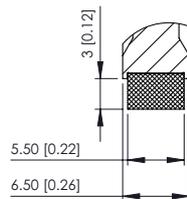
Measuring wheel circumference	A mm [inch]	ø B mm [inch]
200 mm	108.4 [4.27]	63.7 [2.52]
6"	100.8 [3.97]	48.5 [1.91]

D for measuring wheel with coating:

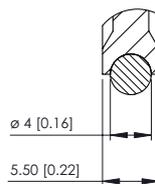
Diamond knurl (aluminum)



Plastic smooth (PU)



O-ring (NBR)



Mounting bracket

