

Deflection rollers  
Temco ULR/Temco ULW

**TEMCO**

# Deflection Rollers ULR/ULW

Bearing solutions for lithium-ion-battery production

Customized Temco bearings  
for different applications



# We Create Solutions

Temco products are key elements in the production of synthetic yarns and are used on the machines of all well-known manufacturers in the international textile industry. The core expertise of our company located in Hammelburg, Germany, are the development, manufacturing and distribution of standard as well as integrated bearing solutions. A team of over 150 employees is responsible for the design, manufacturing and worldwide distribution of customized Bearing solutions.

The rollers from Temco are particularly suitable for the production of Lithium-Ion Batteries. They can guide and divert the foils in the manufacturing process with extreme precision and guarantee a reliable production process thanks to exact concentricity, precise cylinder shapes and perpendicularity.

Long service life and lifetime lubrication of the components not only save maintenance costs, but minimize machine downtime. Especially in demanding start-stop processes, such as in the winding process of the round or prismatic cell, Temco components impress with highest performance. In addition to “winding”, the rollers also cover the complex process steps “coating”, “drying”, “calendering” and “slitting”.

With the products from Temco, the battery industry is not only well equipped now, but they also guarantee maximum output on the production lines for future developments - such as the production of the All Solid State or Lithium-Air battery variants.

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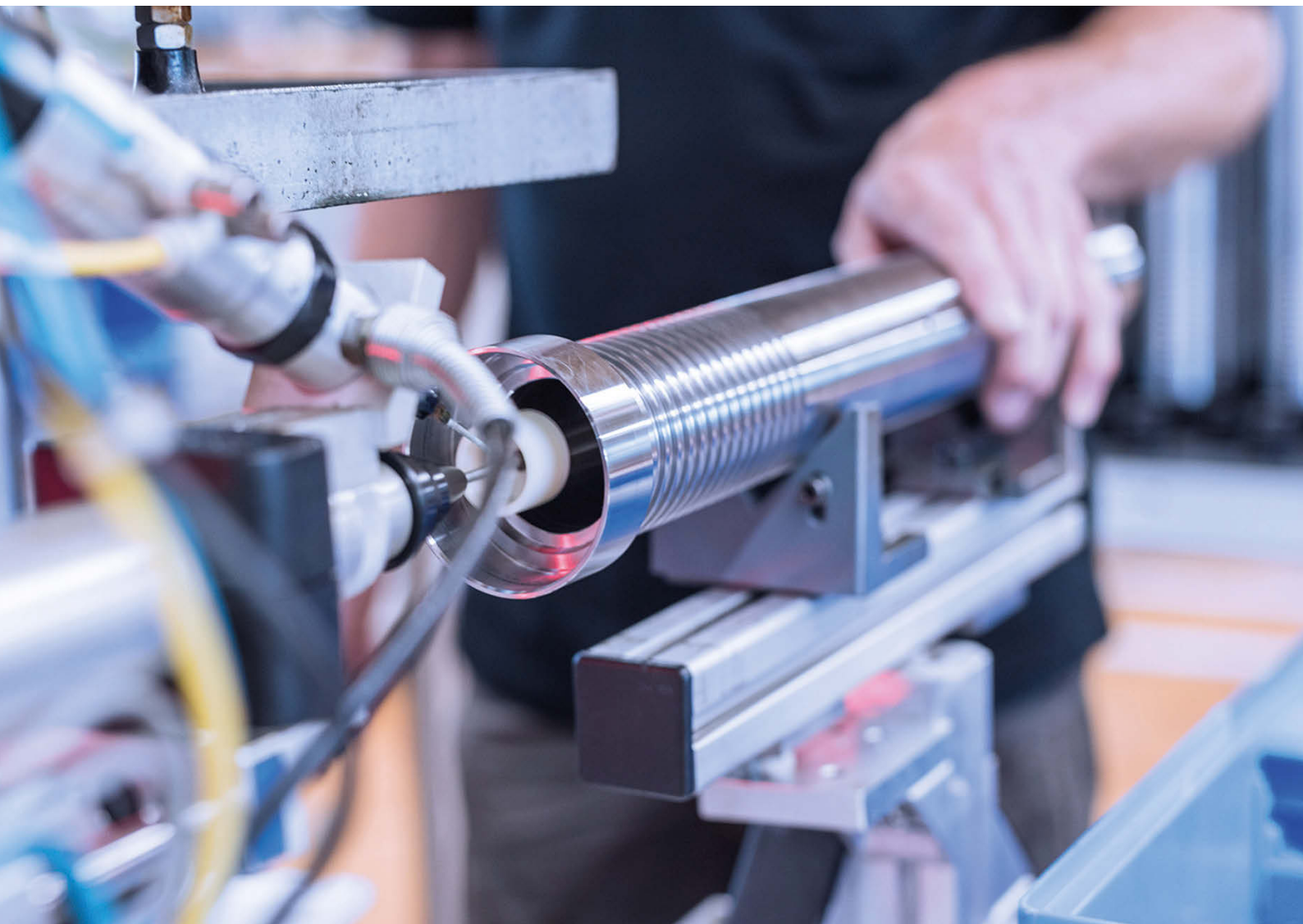
# Competence in Bearing Technology

**Do you intend to reduce your budget for spare parts without losses in quality? Are your machine downtimes too long due to maintenance work exchanging the wear parts? Then you should ask for an Engineered Bearing Solution.**

With a broad-based development department, we supply outstanding quality Temco bearing arrangements for use in battery production. Over 70 years of expertise in rolling

bearing technology, combined with state-of-the-art production and manufacturing machinery, we deliver premium quality Made in Germany.

High accuracies thanks to sophisticated manufacturing processes and ideal matching to individual customer requirements optimize their processes and thus their results.





**OUTSTANDING**

ADVANTAGES

# Deflection Rollers

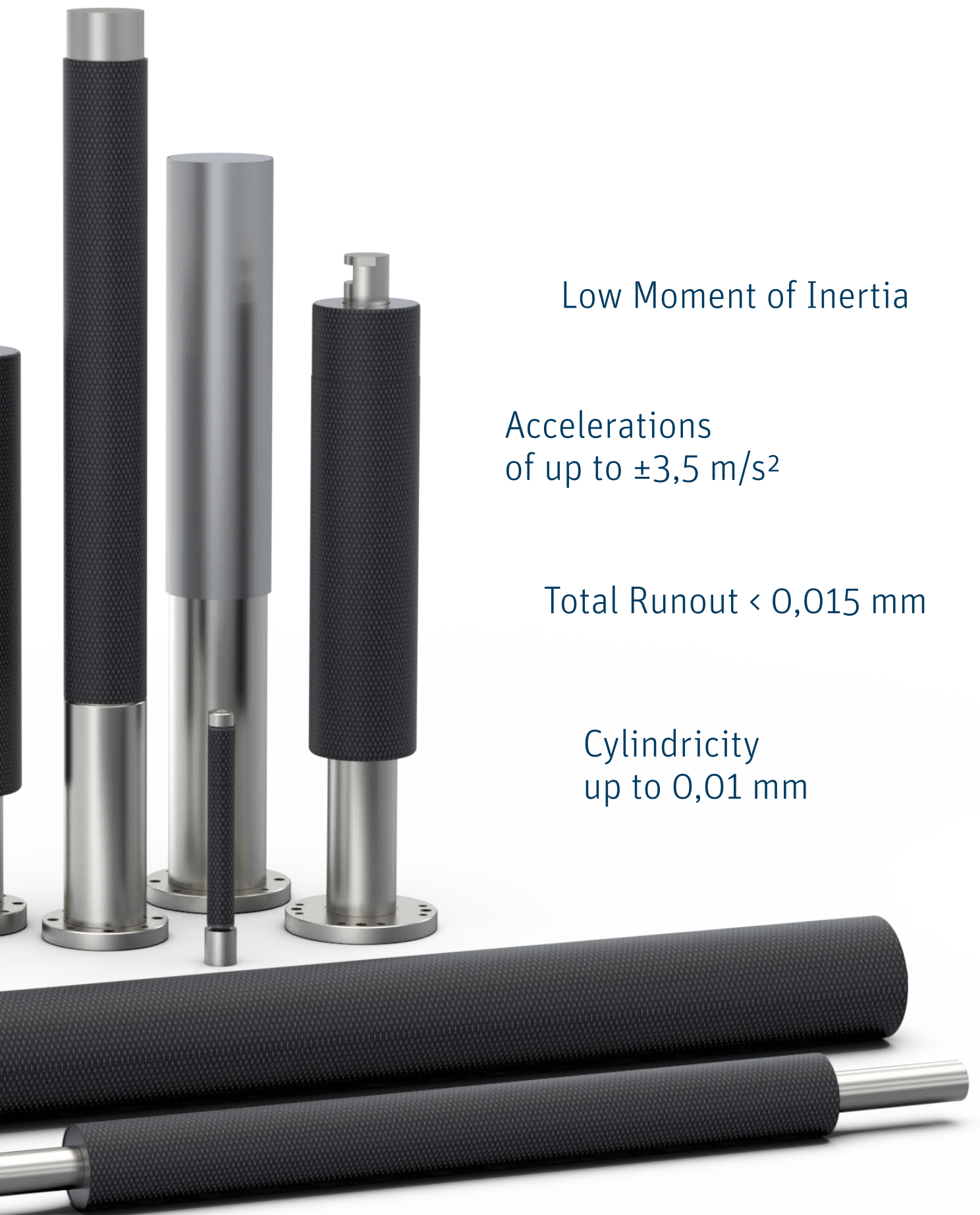
Maintenance free with  
Lifetime Lubrication

Axial Movement  $< 0,02$

Perpendicularity  
up to 0,015 mm

Low Friction Torque  
with optimized weight





Low Moment of Inertia

Accelerations  
of up to  $\pm 3,5 \text{ m/s}^2$

Total Runout  $< 0,015 \text{ mm}$

Cylindricity  
up to  $0,01 \text{ mm}$





# Deflection Rollers ULR + ULW

## Technical data

In the concept phase, we define all basic parameters based on product functionality, customer benefits and product reliability. In order to achieve the highest level of quality, flexibility and cost-effectiveness, we use state-of-the-art production equipment and implement key processes in-house. In all phases of project development, we rely on the most modern measurement technologies to ensure a high level of quality.

## Flexible coatings

We use different coatings for different applications. Adapted to bearing load, speed or velocity and process sequences. Please contact our sales team.

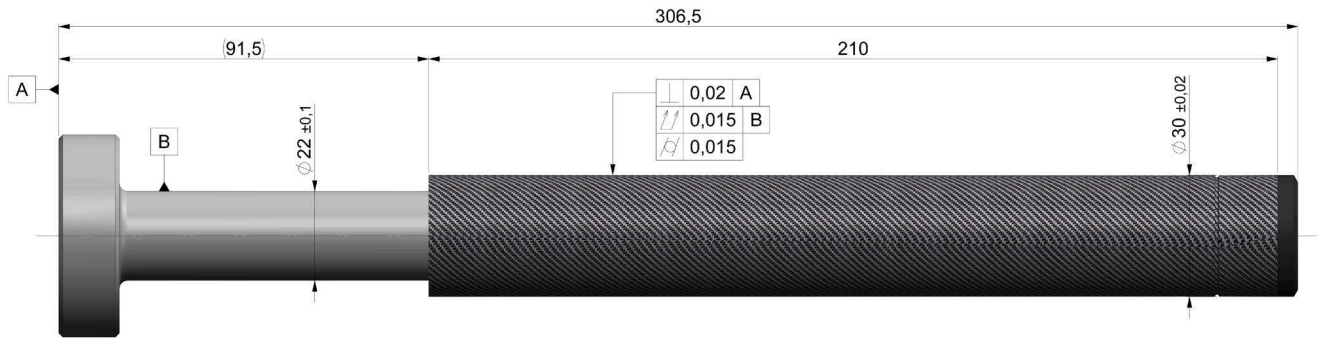
Coating	Purpose	Shell material
Plasma coating (e.g. XP0198 ; PC915S; etc)	non stick / wear resistance	CFRP; Aluminum
Anodizing	wear resistance; colouring	Aluminum
Hard-anodizing	wear resistance; colouring	Aluminum
Hard chromium plating (smooth, orange, etc.)	wear resistance	Aluminum
Rubber (NBR, etc.)	friction / pressure rollers	Aluminum

## Greases for lubrication

We use different greases for different applications. Adapted to bearing load, speed or velocity and process sequences. And always lubricated for life.

# Deflection Rollers ULR

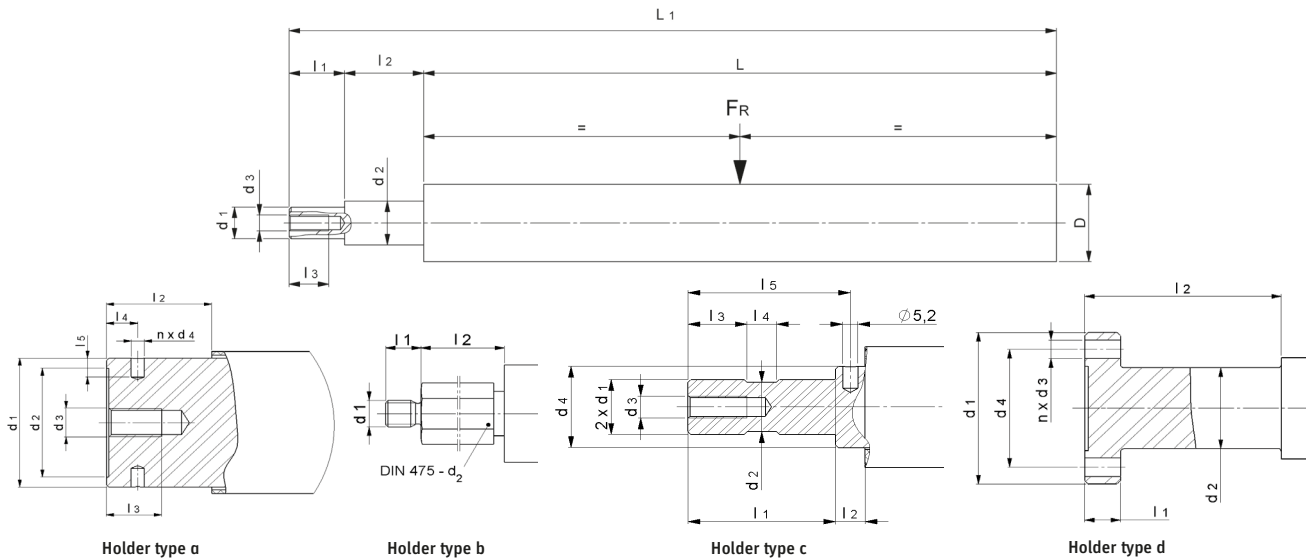
## ULR – Dimensions example



- Cylinder shape: 0,015 mm
- Radial runout: 0,015 mm
- Straightness of the cylinder barrel: 0,02 mm



## Figures



## Product overview

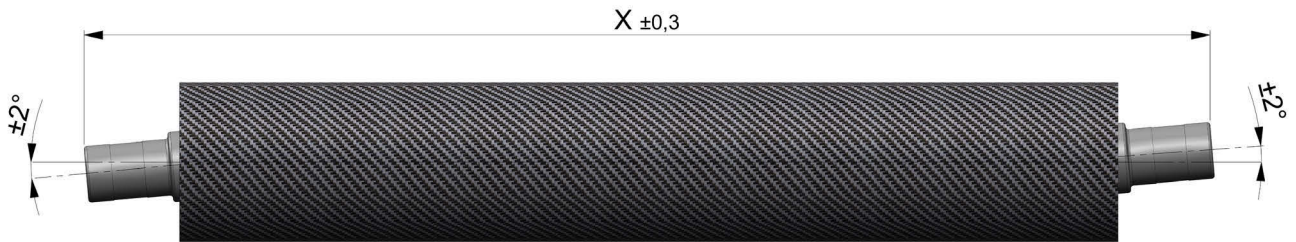
Type	Shell				Material	Coat	Holder											
	$v_{max}$ [m/min]	$F_{Rmax}$ [N]	D [mm]	L [mm]			Type	$d_1$ [mm]	$d_2$ [mm]	$d_3$ [mm]	$d_4$ [mm]	$l_1$ [mm]	$l_2$ [mm]	$l_3$ [mm]	$l_4$ [mm]	$l_5$ [mm]	L1 [mm]	n
ULR15-110-00	330	10	15	110	CFRP		a	Ø18	-	M6	-	-	21,2	10,5	-	-	139	-
ULR30250-00 <sup>1</sup>	440	50	30	250	CFRP		d	Ø45		Ø5,5	Ø25	10	100	-	-	-	355,0	4
ULR46350-01	25	50	46	350	Alu		d	Ø70	Ø46	Ø6,6/M5	Ø58	10	135,2	-	-	-	511	4/4
ULR60250-03	400	100	60	245	CFRP		d	Ø60	Ø35	Ø6,6/M6	Ø48	15	65	-	-	-	370	4/8
ULR60250-04	400	100	60	245	CFRP		d	Ø65	Ø39	Ø6,6/M6	Ø55	12	78	-	-	-	415	4/4
ULR60250-06	530	50	60	250	CFRP		d	Ø85	Ø39	Ø6,5/M6	Ø72	10	100	-	-	-	375,5	4/8
ULR60250-07	700	50	60	245	CFRP		d	Ø85	Ø39	Ø6,5/M6	Ø72	10	60	-	-	-	376,5	4/8
ULR60250-12	200	100	60	245	CFRP		d	Ø84	Ø56	Ø6,6/M5	Ø71	10	177,5	-	-	-	422,5	4/4
ULR60250-13	200	100	60	245	CFRP		c	Ø18	Ø17	-	Ø56	44	77,5	6	33	-	366,5	-
ULR60250-14	200	100	60	245	Alu	anodized	d	Ø84	Ø56	Ø6,6/M5	Ø71	10	177,5	-	-	-	422,5	4/4

### ULR XX YY(YY) (-E-EC(T)-R) - ZZ (-HP)

XX	Shell diameter [mm]
YY(YY)	Length of the shell [mm]
E	Eco variant
EC(T)	Shell coated with elastomer cover
R	Grooved shell surface
ZZ	Counting number for various versions and customised adaptations (e.g. holder variants, geometric adaptations, material, coating, H1 approval, etc.)
HP	High precision

# Deflection Rollers ULW

## ULW – Adaptation

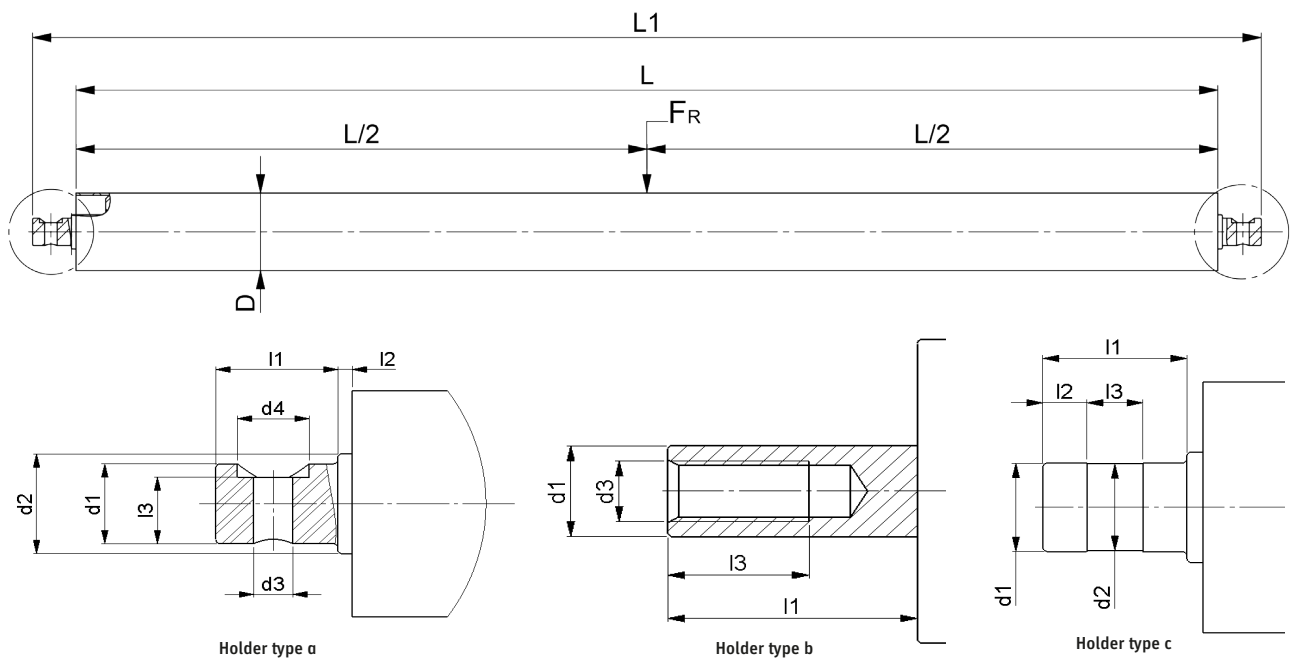


The flexible ULW-adapter is able to correct misalignments of the machine's walls and holes:

- length compensation with a range of  $\pm 0,3$  mm
- angle error compensation with a range of  $\pm 2^\circ$  (to correct coaxial errors of the holes or inclination of the walls).



## Figures



## Product overview

Type	Shell				Holder													
	$v_{max}$ [m/min]	$F_{Rmax}$ [N]	D [mm]	L [mm]	Material	Coat	Type	d1 [mm]	d2 [mm]	d3 [mm]	d4 [mm]	l1 [mm]	l2 [mm]	l3 [mm]	l4 [mm]	l5 [mm]	L1 [mm]	n
ULW1201000-00	660	200	120	1000	Alu	hard anodized	c	Ø15	-	-	-	-	-	-	-	-	1063	-
ULW30380-01	75	20	30	380	CFRP	-	b	Ø15	-	-	-	65/130	-	-	-	-	575	-
ULW40380-01	75	20	40	380	CFRP	-	b	Ø20	-	-	-	150/75	-	-	-	-	605	-
ULW46350-01	25	60	46	350	CFRP	-	b	Ø19,5	-	M8	-	67,4/26,2	-	-	-	-	443,6	-
ULW63580-00	200	120	63	580	CFRP	-	b	Ø26,2	-	2xM5	-	10	-	-	-	-	600	-
ULW79600-00	100	200	79	600	Alu	hard chrome	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-
ULW85600-00	100	200	85	600	Alu	NBR	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-
ULW85600-01	100	200	85	600	Alu	EPDM	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-

### ULW XX YY(YY) – ZZ

XX Shell diameter [mm]

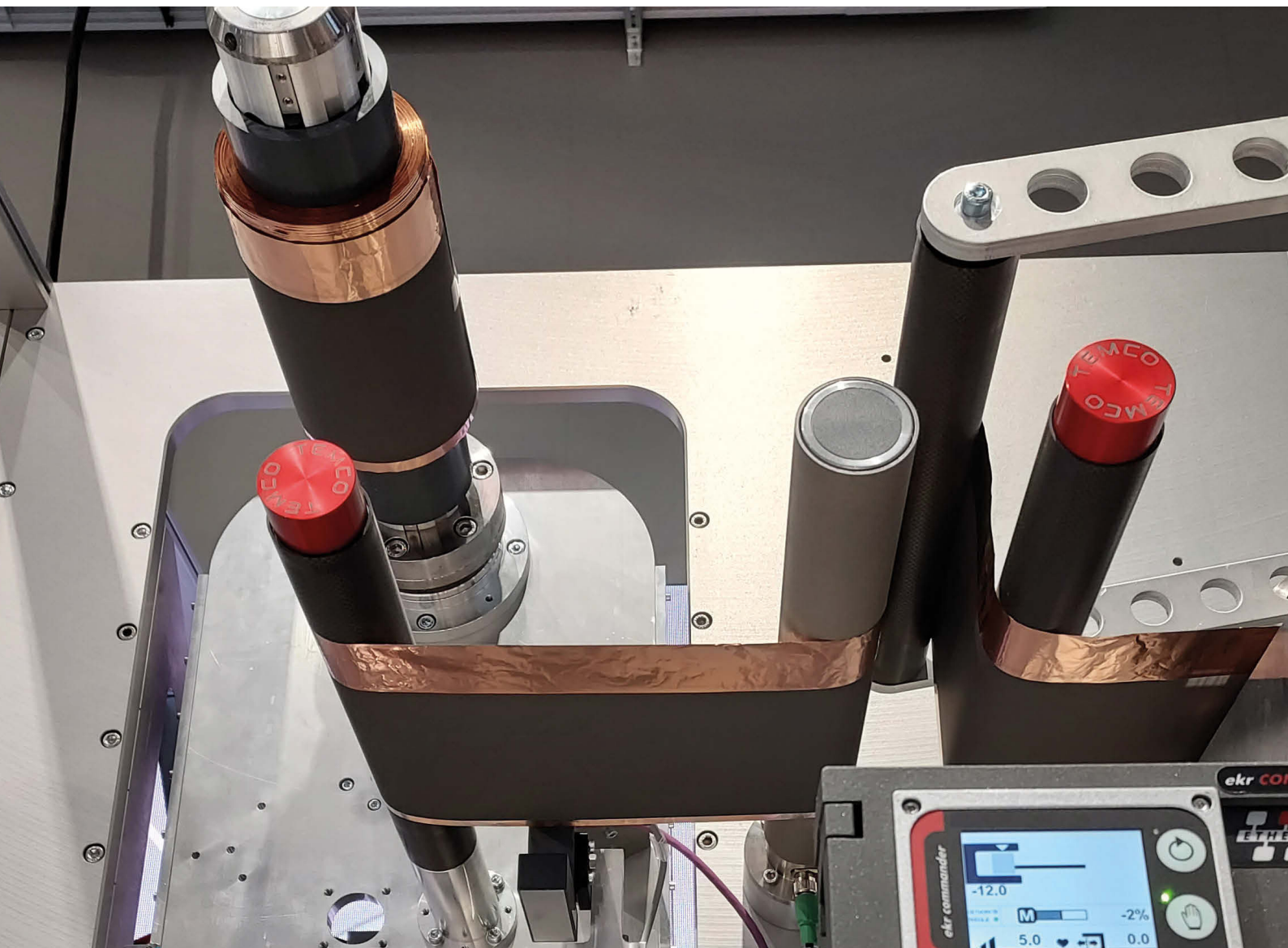
YY(YY) Length of the shell [mm]

ZZ Counting number for various versions and customised adaptations (e.g. holder variants, geometric adaptations, material, coating, H1 approval, etc.)

## Use in the Battery Industry

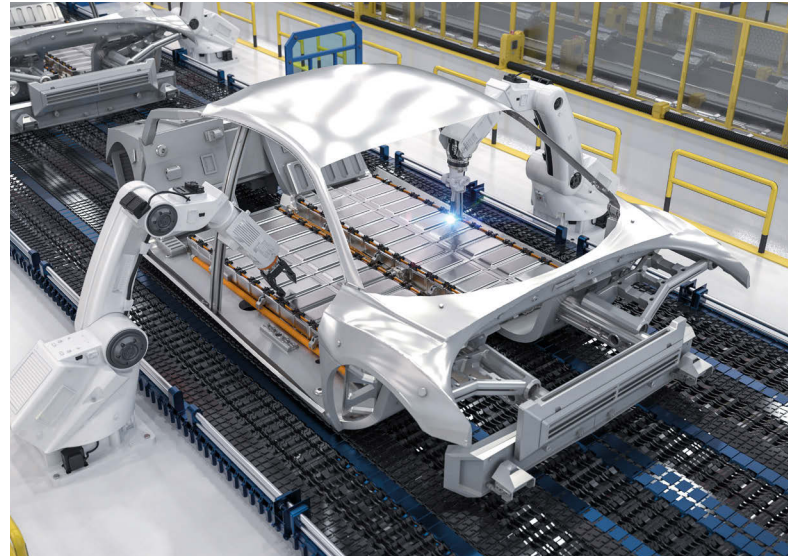
The Li-ion-battery industry is on the rise. However, the production of Lithium-Ion Batteries requires special conditions, especially in the deflection process. To prevent the fine foils from tearing or being damaged in any other way, the transport must be particularly smooth and the rollers used have to be especially highly precise. Whether for round, pouch or prismatic cells, our products cover the deflection processes of coating, drying, calendaring, cutting, separating, stacking and winding.

Even for the production of the cell types of the future, such as the All-Solid-State or Lithium-Air Battery, you are ideally equipped with deflection rollers and rolls from the Temco product line.



## Electrical vehicle (EV)

Sustainable locomotion will occupy mankind for a long time to come. The selection of the right battery and the optimal cell format is crucial in E-Mobility. While round, pouch and prismatic cells are currently still used in equal measure, a trend towards wound prismatic cells is emerging. Due to the significant quality features such as high tightness & strength, only the highest quality bearings of the Temco brand are recommended not only for winding but also for all other production steps, which are optimally matched to the production of batteries.



## Computer, communication, consumer electronic products (3C)

Smartphones, tablets and laptops have become an indispensable part of our daily lives. For the batteries or rechargeable batteries of these devices, a very high volumetric energy density is particularly important to ensure, that the device is handy and remains fully functional over its entire Service life. Perfectly matched rollers and rolls are needed to produce these compact rechargeable batteries. Due to the different lengths and diameters of our rollers, small, medium and large accumulators or batteries can be produced.





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