Deflection rollers Temco ULR/Temco ULW



for different applications

Deflection Rollers ULR/ULW Bearing solutions for lithium-ion-battery production **Customized Temco bearings**

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 outstanding 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 do 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 cells, 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 by Temco.

With a broad-based development department, Temco supplies outstanding quality bearing arrangements for usage in battery production. Over 70 years of expertise in roller bearing technology, combined with state-of-the-art production and manufacturing machinery, Temco 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 up to 0,02 mm

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 up to 0,015 mm

Cylindricity up to 0,015 mm



Deflection Rollers ULR + ULW Technical data

In the concept phase, we define all 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.

Optimized coatings

We offer a variety of different coatings to meet every customers needs. Please contact our sales team for further information.

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 chrome plating (smooth, orange, etc.)	wear resistance / frictions	Aluminum
Rubber (NBR, etc.)	friction / pressure rollers	Aluminum

Customized lubrication

Temco uses a specialized grease for every application. The selection is always optimized for the specific usage. Different bearing loads, speed, accelaration and process sequences can be achieved. All Temco bearings are lifetime lubricated.

Grease	Purpose	Application
TLT	Low torque	Lithium-Battery
TUL	Ultra low torque	Lithium-Battery

Deflection Rollers ULR

ULR – Dimensions example*



* Achievable tolerances depend on the dimensions of the rollers

• Cylinder shape: 0,015 mm

• Radial runout: 0,015 mm

• Perpendicularity: 0,02 mm



Figures



Product overview (selection)

Туре			Shell				Bracket											
	v _{max} [m/min]	F _{Rmax} [N]	D [mm]	L [mm]	Material	Coat	Туре	dı [mm]	d₂ [mm]	d₃ [mm]	d4 [mm]	l1 [mm]	l2 [mm]	l₃ [mm]	l4 [mm]	Լ։ լՠՠյ	Lı [mm]	n
ULR15-110-00	330	10	15	110	CFRP	-	α	Ø18	-	M6	-	-	21,2	10,5	-	-	139	-
ULR30210-00	440	50	30	210	CFRP	-	d	Ø50	-	Ø6,6/M4	Ø38	15	91,5	-	-	-	306,5	4/4
ULR30250-001	400	100	30	250	CFRP		d	Ø45	-	Ø5,5	Ø25	10	100		-		355	4
ULR46350-01	400	100	46	350	Al		d	Ø70	Ø46	Ø6,6/M5	Ø58	10	135,2	-	-	-	511	4/4
ULR60250-03	650	100	60	245	CFRP	-	d	Ø60	Ø35	Ø6,6/M6	Ø48	15	65	-	-	-	370	4/8
ULR60250-04	650	100	60	245	CFRP	-	d	Ø65	Ø39	Ø6,6/M6	Ø55	12	78	-	-	-	415	4/4
ULR60250-06	650	50	60	250	CFRP	-	d	Ø85	Ø39	Ø6,5/M6	Ø72	10	100	-	-	-	375,5	4/8
ULR60250-07	650	50	60	245	CFRP		d	Ø85	Ø39	Ø6,5/M6	Ø72	10	60	-	-		376,5	4/8
ULR60250-12	650	100	60	245	CFRP		d	Ø84	Ø56	Ø6,6/M5	Ø71	10	177,5	-	-	-	422,5	4/4
ULR60250-13	650	100	60	245	CFRP		С	Ø18	Ø17	-	Ø56	44	77,5	6	33	-	366,5	-
ULR60250-14	650	100	60	245	Al	anodized	d	Ø84	Ø56	Ø6,6/M5	Ø71	10	177,5	-	-	-	422,5	4/4

¹ Acceptance only with minimum quantity

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

XX Shell diameter [mm]

YY(YY) Shell length [mm]

E Eco version

EC(T) Shell coated with elastomer cover

R Grooved shell surface

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

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 ±0,3 mm

• angle error compensation with a range of $\pm 2^{\circ}$ (to correct coaxial errors of the adaption of the machine walls).



Figures





Bracket type a

Bracket type b

Bracket type c

Product overview (selection)

Туре			Shell				Bracket											
	v _{max} [m/min]	F _{Rmax} [N]	D [mm]	L [mm]	Material	Coat	Туре	dı [mm]	d2 [mm]	d₃ [mm]	d4 [mm]	l1 [mm]	l2 [mm]	l3 [mm]	l4 [mm]	Լչ լmmյ	L1 [mm]	n
ULW30380-01	400	100	30	380	CFRP	-	b	Ø15	-	-	-	65/130	-	-	-	-	575	-
ULW40380-01	400	100	40	380	CFRP	-	b	Ø20	-	-	-	150/75	-	-	-	-	605	-
ULW46350-01	400	100	46	350	CFRP	-	b	Ø19,5	-	M8	-	67,4/26,2	-	-	-	-	443,6	-
ULW63580-00	400	120	63	580	CFRP	-	b	Ø26,2	-	2xM5	-	10	-	-	-	-	600	-
ULW79600-00	600	200	79	600	Al	hard chrome	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-
ULW85600-00	600	200	85	600	Al	NBR	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-
ULW85600-01	600	200	85	600	Al	EPDM	b	Ø19,5	-	M8	-	5	-	-	-	-	610	-
ULW1201000-00	660	200	120	1000	Al	hard anodized	с	Ø15	-	-	-	-	-	-	-	-	1063	-

ULW XX YY(YY) – ZZ

XX Shell diameter [mm]

YY(YY) Shell length [mm]

ZZ Consecutive 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, calendering, 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 transportation 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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