

**Zehntner GmbH**  
Testing Instruments  
Gewerbestrasse 4  
CH-4450 Sissach  
Switzerland  
Tel +41 (0)61 953 05 50  
Fax +41 (0)61 953 05 51  
zehntner@zehntner.com  
www.zehntner.com



# Instruction manual

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## ZWW 2100 - 2108 Wet film wheels



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### Enclosures:

- Certificate of manufacturer

## Exclusion of liability

Illustrations, descriptions as well as the technical specifications accord with the instruction manual in hand for the time of printing. Subject to change resulting from technical improvement, modified construction or similar changes.

This instruction manual has been written with the utmost care. Nevertheless, errors can not entirely be eliminated. The manufacturer shall not be liable for errors contained herein or for incidental or consequential damages resulting from possible errors.

We would therefore welcome any suggestions and references to errors.

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## 1. Features

- The wheel consists of three disks and a finger grip assembly. The outer disks are profiled in order to enable an easier rotation. The central one is smaller in diameter and eccentric. Thus providing a groove with increasing depth.
- Easy to handle
- measuring results easily readable

## 2. Safety precautions and warnings

### 2.1. Dangers




#### **Attention!**

This note is included in this instruction manual wherever it is warned about dangers which will arise to life and limb of persons if the apparatus is handled improperly. Observe these notes and be particularly careful in these cases. Also inform other users on all safety notes. Besides the notes in these instruction manual the generally applicable safety instructions and regulations for prevention of accidents have to be taken into account.

#### **Caution**

This note comprises instructions to be observed in order to comply with guidelines, instructions, notes and the proper procedure of the work, and to avoid damaging or destruction of the apparatus.

### 2.2. Notes regarding safety at work

-  The ZWW 2100 - 2108 are exclusively designed for the determination of the thickness of all types of liquid coatings. Any other application is not in accordance with the regulations. The manufacturer is not liable for damages resulting from inappropriate application. The user bears the full responsibility.
-  Avoid any mode of operation, that could affect the safe working with the ZWW 2100 - 2108. Especially the determination of the thickness of all types of liquid coatings must take place as described in this operating manual.
-  Unauthorised modifications and changes of the ZWW 2100 - 2108 are not allowed. These will invalidate the guarantee. The manufacturer is not liable for damages resulting from unauthorised modifications; the user bears the full responsibility.

## 3. Delivery of apparatus

### 3.1. Transportation damages

During carriage the ZWW 2100 – 2108 is to be handled with the usual care. To ensure carriage without damages the device is to be transported in the original packaging and under normal freight conditions. Pushes during carriage are to be avoided.

At the receipt of the goods, you have to check if there are any visible damages at the outer packaging. If the packing is alright, you can sign the receipt documents. If you even suspect by your visual impression that damage has occurred, make a note of the suspected damage on the delivery receipt or freight papers and get the carrier to sign it. Moreover, the forwarding agent/courier service must be held responsible for the damage in writing.

If a hidden damage is discovered while unpacking, you have to inform and must held the forwarding agent / courier service immediately in the following way: "When opening the parcel we had to notice that .... etc. etc." This superficial checking of the goods has to be done before the time limit of the forwarding agent / courier service expires which is normally within 7 days. However, the period could be less. Hence, it is recommended to check the exact time limit when receiving the goods.

If there are any damages inform also immediately your authorized Zehntner trader or **Zehntner GmbH Testing Instruments** directly.

### 3.2. Standard delivery

The following parts are included in the delivery:

- 1 wet film wheel
- 1 certificate of manufacturer
- 1 carrying case

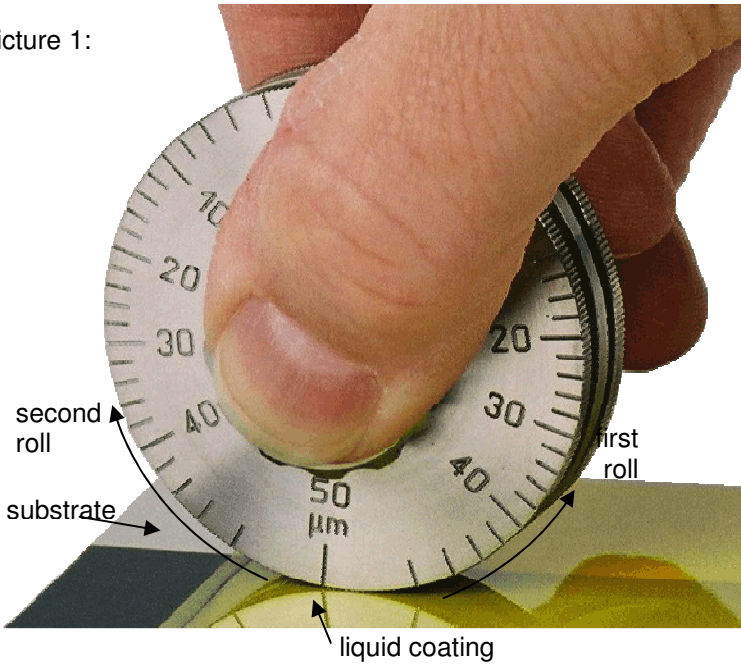
### 3.3. Options

- ZKZ 010 calibration and certification (incl. certificate)

## 4. Handling

- Take the Wet film wheel between thumb and the index finger.
- Press the wheel into the wet coating on the substrate (see picture 1)
- ❗ Place the highest value on the coating.

picture 1:



- Roll the wheel in one direction to the lowest scale value (picture 2-5).

picture 2:



picture 3:



picture 4:



picture 5:



If you placed the highest value on the coating, some coating material will be rolled beyond the application as shown in the picture below:



- Turn the wheel 180° and repeat the procedure in the opposite direction, also from the biggest value the lowest scale value.
- Read off thickness at the pick-up place on the wheel (see picture 6)

picture 6:



The pick up place is here approx. 8  $\mu\text{m}$

- Take the average of the two readings in order to obtain representative results
- Clean the wheel using diluted cleaning solvent

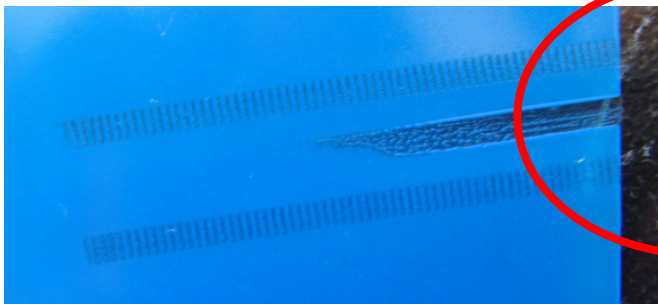
## 5. Malfunctions

### 5.1. Unclear result: no exact pick-up place visible

If you receive an unclear result as you do not have an exact pick-up place as shown below:



Then please check your test results if some coating material has been rolled beyond the application.



Wrong  
test direction  
was used.

In this case, the wet film thickness wheel was rolled in the wrong direction.

The wet film thickness wheel was placed with the zero value facing the coating. Please carry out the test again.

This time, please make sure that you place the highest value on the coating as described in chapter 4 “Handling” on page 5.

## 6. Technical specifications

versions:	measuring range:	scale division:
ZWW 2100	0 µm to 25 µm	1 µm
ZWW 2101	0 µm to 50 µm	2 µm
ZWW 2102	0 µm to 125 µm	5 µm
ZWW 2103	0 µm to 250 µm	10 µm
ZWW 2104	0 µm to 500 µm	20 µm
ZWW 2105	500 µm to 1'000 µm	20 µm
ZWW 2106	0 µm to 1'000 µm	50 µm
ZWW 2107	0 µm to 1'500 µm	50 µm
ZWW 2108	on request	on request

Material:	stainless steel
Standards:	ISO 2808, ASTM D1212
Dimensions:	Ø 50 mm x 22 mm
Weight:	approx. 165 g
Warranty:	2 years