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Instruction manual

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ZMK 5050 - 5054 Road marking control kits



Index

Exclusion of liability.....	3
1. Description of device	4
1.1 Summary.....	4
2. Safety notes.....	4
2.1 Dangers.....	4
2.2 Safety notes.....	5
3. Delivery of device.....	6
3.1 Damages during carriage.....	6
3.2 Standard delivery.....	7
3.3 Options	9
4. Handling	9
5. Test report.....	9
6. Determination of the drop on materials quantity	11
7. Technical specification	11
Glossary.....	12

Enclosures:

- Certificate of manufacturer

Exclusion of liability

The features described in this instruction manual represent the complete technology of this instrument. These features are either included in the standard delivery or available as options at additional costs.

Illustrations, descriptions as well as the technical specifications conform to the instruction manual at hand at the time of publishing or printing. However, Zehntner GmbH Testing Instruments policy is one of continuous product development. All changes resulting from technical progress, modified construction or similar are reserved without obligation for Zehntner to update.

Some of the images shown in this instruction manual are of a pre-production model and/or are computer generated; therefore the design/features on the final version of this instrument may differ in various aspects.

The instruction manual has been drafted with the utmost care. Nevertheless, errors cannot be entirely excluded. The manufacturer will not be liable for errors in this instruction manual or for damages resulting from any errors.

The manufacturer will be grateful at any time for suggestions, proposals for improvement and indications of errors.

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1. Description of device

1.1 Summary

The ZMK 5050 - 5054 is specially designed for quality control of road markings with the entire range of measuring and test equipment for determination of wet film thickness, dry film thickness (only ZMK 5051 – 5053), temperature, relative humidity as well as the amount and embedding of drop-on-materials.

Application areas

- For traffic authorities, road laboratories, manufacturers of road markings and contractors
- To use in the field and in the laboratory
- To monitor and record measurements during the application of road markings as well as quality control checks
- For all types of road marking with or without drop-on materials

In particular, this instrument has the following **features**:

- Easy to handle
- Reliable and rapid results

2. Safety notes

2.1 Dangers



Caution!









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.



Note

This symbol marks instructions you should take notice of in order to follow directions, specifications, correct working processes and to avoid data loss, damage or destruction of the instrument.

2.2 Safety notes

-  Every person working with the ZMK 5050 - 5054 or maintaining the ZMK 5050 - 5054 must read and understand the manual completely. In particular the safety precautions and warnings.
-  The ZMK 5050 - 5054 Road marking control kits is exclusively intended for the quality control of road markings. Any other use is considered as not being in accordance with the intentions of the manufacturer. The manufacturer is not liable for damage resulting from inappropriate application. The user bears the full responsibility.
-  Avoid any mode of operation that could affect the safe working with the ZMK 5050 - 5054.
-  **Zehntner GmbH Testing Instruments** refuses all warranty and liability claims for damages caused by usage of the ZMK 5050 - 5054 in combination with **non-original accessories**, or accessories from 3rd party suppliers.
-  Unauthorized modifications and changes of the ZMK 5050 - 5054 are not permitted.
-  Reproduction without permission is not allowed.
-  Please pay attention to the enclosed separate instruction manuals.
-  For the operation of the ZMK 5050 - 5054 apply all local safety regulations.

3. Delivery of device

3.1 Damages during carriage

At the receipt of the goods, check for any visible damages at the outer packaging. If the packing is unharmed, you can sign the receipt of the documents. If you do suspect by your visual impression that damage has occurred, make a note of the visible damage on the delivery receipt or freight papers and get the carrier to countersign 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 hold the forwarding agent / courier service immediately liable 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.





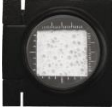


If there are any damages also immediately inform your authorized Zehntner agent or **Zehntner GmbH Testing Instruments** directly.

In case the device needs to be transported again at a later time, it has to be packaged properly. If the device was supplied in a carrying case or storage box, this original packaging shall be used also for later shipments.


3.2 Standard delivery

The following parts are included in the delivery:


ZMK 5050 - 5054 Road marking control kits standard delivery:

<p>1 ZND 2052 Zehntner-Wet Film Thickness Gauge (100 µm to 950 µm)</p>	
<p>1 ACC049 insertion thermometer (-10° to 220 °C)</p>	
<p>1 ACC047 hygrometer, 25 % to 95 % relative humidity</p>	
<p>1 ACC026 electronic balance, 0 to 2000 g</p>	
<p>1 ACC048 magnifying glass (6x magnification with scale)</p>	
<p>1 certificate of manufacturer</p>	
<p>1 carrying case</p>	


ZMK 5051 and 5051.inch Road marking control kits**Additionally to standard delivery of ZMK 5050:**

- | | |
|---|---|
| 1 ZMM 5000 Zehntner-Digital Marking Gauge
(display in mm or changeable inch/mm,
depending on version) |  |
|---|---|


**ZMK 5052 Road marking control kits****Additionally to standard delivery of ZMK 5050:**

- | | |
|---|---|
| 1 ZMP 5010 Zehntner-Marking-wedge Gauge |  |
|---|---|

**ZMK 5053 and 5053.inch Road marking control kits****Additionally to standard delivery of ZMK 5050:**

- | | |
|---|---|
| 1 ZMM 5000 Zehntner-Digital Marking Gauge
(display in mm or changeable inch/mm,
depending on version) |  |
|---|---|







- | | |
|---|--|
| 1 ZMP 5010 Zehntner-Marking-wedge Gauge |  |
|---|--|

**ZMK 5054 Road marking control kits**

With customer specified contents.

3.3 Options

<ul style="list-style-type: none"> • ACC050 insertion thermometer for measuring the temperatur of thermoplastic marking material -50 up to +600 °C 	
<ul style="list-style-type: none"> • ACC052 infrared thermometer with Laser -50 up to +550 °C 	
<ul style="list-style-type: none"> • ACC1092 measuring bridge adjustable in width for ZMM 5000 	
<ul style="list-style-type: none"> • ACC033 portable statistics printer incl. connection cable for ZMM 5000 	

- !** **Zehntner GmbH Testing Instruments** refuses all warranty and liability claims for damages caused by usage of the ZMK 5050 - 5054 in combination with **non-original accessories**, or accessories from 3rd party suppliers.

4. Handling

- !** Please refer to the separate instruction manuals enclosed.

5. Test report

A test report should be issued during the application and quality control checks.

A sample of such a test report of a quality control check is shown on the next page. This is according to the regulation of ZTV M 13 of the German Federal Ministry of Transport and is only an example. Your local requirements should always apply.

A 2.1 quality control check report for not prefabricated marking systems

Quality control check report No.:			
At application of not prefabricated marking systems			
road description (name):		(executing company)	
road surface:			
<input type="checkbox"/> concrete <input type="checkbox"/> asphalt			
at Km:	marking material	drop on materials	injected co-formulants
station:	(manufacturer)	(manufacturer)	
of hub:	(trade name)	(name, type)	(type)
after hub:	(BAST-test number)	(mixture ratio)	(name)
(Date)	(Time)	(charge number)	(charge number)
tests carried out		target	actual
1	diluting agent quantity (%)		
2	material temperature (°C)		
3	road surface temperature (°C)		
4	air temperature (°C)		
5	relative air humidity (%)		
6	notch length (m)		
7	notch width (cm)		
8	notch depth (cm)		
9	film thickness/excess height* (mm)		
10	drop on materials quantity (g/m ²)		
11	dispersal/embedding of drop on materials		
12	quantity of injected materials (g/m ²)		
13	rollover time (min)		
14	line width (m)		
15	line length (m)		
16	cycle length (m)		
17	laying system	---	
18	previous drying	yes <input type="checkbox"/>	no <input type="checkbox"/>
19	road condition	wet <input type="checkbox"/>	humid <input type="checkbox"/> dry <input type="checkbox"/>
20	special remarks		
Dated: _____			
Place: _____			
Name: _____		(Signature)	
* By agglomerates, instead of the film thickness the material quantity in (kg/m2) has to be given.			

6. Determination of the drop on materials quantity

- A receptacle (previously weighed) is fixed under the marking machine in order to collect the drop on materials.
- Then a distance of at least 10 m is driven with application speed but without application. The so collected quantity of drop on materials will be weighted and the weight of the receptacle subtracted.
- This test shall be repeated three times. The average value will be indicated in the application report.
- A separate determination of the quantity of reflective beads and anti-skid aggregates is required.

7. Technical specification

Standards: ASTM D 713, ASTM D 4414, ISO 2808, EN 13197,
ZTV M 13

Warranty: Zehntner instruments 2 years, external products
1 year

Glossary

D

Damages during carriage	6
Delivery of device	6
Description of device.....	4
Determination of the drop on materials quantity.....	11

E

Exclusion of liability.....	3
Extent of delivery.....	7

F

Features	4
----------------	---

H

Handling	9
----------------	---

I

Instrument	
<i>Description</i>	4
<i>Extent of delivery</i>	7

O

Options	9
---------------	---

S

Safety notes.....	4
Standard delivery.....	7

T

Technical specification	11
Test report	9
Transportation damage	6