

EFIS® 1

UNIVERSAL SEARCH MIRROR

Portable Search and Inspection Mirror





Service address

Ebinger Prüf- und Ortungstechnik GmbH
Technology center Wiesbaum

Vulkanstraße 14
54578 Wiesbaum
Germany

Tel: + 49 6593 99894-0

Fax: + 49 6593 99894-50

Email: eifel@ebingergmbh.de

Web: www.ebinger.org

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Ebinger retains the right to changes technical specifications at any time without prior notice. The scope and timing of such changes are at the discretion of the manufacturer. Both minor and fundamental changes are possible, as part of our programme of continuous product improvement.

The information presented in this document relates to an entire range of products. The technical data for individual units can be requested from Ebinger, by quoting the model name and serial number.

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1. GENERAL SAFETY GUIDELINES

This section presents some important safety guidelines that must be observed must observe at all times when using the unit.

1.1 About these operating instructions

Important:

Before starting to use this unit, you must read and observe the following safety guide lines:

- ❶ Read this manual carefully before assembling the unit, and before switching on and working with the unit!
- ❷ Ensure that you follow the instructions in this manual for all work involving this unit! EBINGER and EBINGER's representatives accept no liability for losses that resulting from actions or activities that have not been described in this manual.
- ❸ Use the device only for the intended purpose as described in this manual!

Warning notices, precautionary measures, instructions and tips present information of particular importance for the user and are marked as follows:



WARNING

Warning notices indicate situations that can present health hazards or endanger life. Instructions in these sections must be followed strictly at all times!



CAUTION

Precautionary measures relate to situations in which damage to the unit or consequential damages or loss (e.g. data loss) may occur. Instructions in these sections must be followed strictly at all times!



ADVICE

Follow the advice given in these sections to avoid faults, which may occur when operating the unit.



TIP

Follow the advice given in these sections to improve operating.

1.2 Handling technical faults



WARNING

Do not continue to use devices with broken connection leads or components if they are damaged, since this presents a risk of electric shock!

If parts are defective or missing, replace only with original EBINGER spare parts. Failure to do so may present a risk of short-circuits, overloading, incorrect polarity or electric shock.

Perform maintenance activities only as described in this manual or as instructed during specialist training courses provided by the manufacturer.



TIP

If problems occur, please first read the „Maintenance and Troubleshooting“ section thoroughly before contacting your local EBINGER Service.

1.3 Instructions for LEDs



WARNING

Do not look directly into the LEDs or point the torch into a person's eyes!

1.4 Instructions for devices powered by disposable or rechargeable batteries



WARNING

Batteries and rechargeable batteries can explode if used incorrectly! Always ensure you follow below the warning notices:

- Use only disposable or rechargeable batteries as specified in the Operating Instructions.
- When inserting batteries into the device, ensure correct polarity.
- Do not expose batteries to fire or high temperatures.
- Do not attempt to short-circuit, disassemble or recharge disposable dry batteries.
- In case of short-circuited, rechargeable batteries generate especially high currents that can cause cable fires, sparks or injury.
- Keep disposable or rechargeable battery contacts dry and avoid short circuits, do not let them come into contact with conductive materials.

**CAUTION**

Observe the following safety precautions to avoid damage:

- If the unit is to be stored or not used for a longer period, remove its disposable or rechargeable batteries.
- Avoid deep discharge of rechargeable batteries. As resulting damage cannot be claimed against product warranty.
- Before operating the battery charger, check for correct voltage of mains supply.

**ADVICE**

Dispose of used disposable and rechargeable batteries only as per applicable local regulatory provisions that apply.

1.5 Instructions for cleaning

**CAUTION**

Do not use chemical substances to clean the unit. Chemical substances may react with housing components and cause irreparable damage. For cleaning, please use a soft cloth dampened with water.

1.6 Usage in professional security work

**WARNING**

Any equipment used to support the search for potentially dangerous objects should be used for such tasks only by personnel who possess the necessary qualifications according to the applicable international and/or national regulations.

Before deployment in a potentially danger inclined work qualified personnel must assess and decide on the tactical suitability of the unit.

2. PRODUCT DESCRIPTION

This section informs you about the key properties of this unit and/or of the unit's corresponding product range.

2.1 EFIS® – Ebinger vehicle inspection mirror

Ebinger Prüf- und Ortungstechnik GmbH offers a complete range of search and inspection mirrors and systems.

The EFIS® – search mirrors let you rapidly inspect areas that are difficult or impossible to view directly. Our mirrors have a wide range of applications. For example, they can be used to look under vehicles, packing nets, spaces between or above items of furniture, as well as in cavities and gaps or areas of buildings hidden from direct view. The mirrors enable police, customs, military and security personnel to make a much more precise and thorough search or improve checkpoint processing times. Our inspection mirrors stand out from the average thanks to their robust, all-weather design.

We have mirrors to fit a wide range of requirements, including:

- Hand held and or wheeled mirror systems
- Torch can be switched on to enable detailed inspection even in low lighting conditions
- Convex mirror designs used to enlarge the field of view
- Video search apparatus using videocamera and colour monitor

2.2 EFIS® 1 Universal search mirror

The EFIS® 1 – Search mirrors are characterised by the following features:

- Light, rugged and weatherproof
- Illuminates
- Extensible telescopic tube handle
- Range of mirror sizes available (optional)
- Support wheel for large-diameter mirror (optional)

The following special models are available:

- Rectangular mirror head 250 x 150 mm
- Rectangular mirror head 310 x 220 mm, (wheeled)
- Halo mirror head Ø 305 mm, (wheeled)
- Rugged mirror plate in polished stainless steel

Our mirrors have a wide range of application. They support the inspection of the underside of vehicles, packing nets, spaces between or above items of furniture, as well as cavities and gaps or areas of buildings hidden from direct view. This allows a significantly better and thorough search, plus complete handling of inspection points.

The lightweight yet rugged design of the portable EFIS® 1, is a versatile tool in a wide range of applications not least due to its long, stepless extendable handle, the freely adjustable mirror and the illumination. The mirror's illumination ensures a detailed inspection even under low light conditions, while the mirror's slightly convex mirror plate increases the field of view.

3. UNIT COMPONENTS

This section informs you about the components of the EFIS®1 inspection mirror, and the features to unambiguously identify the unit.

3.1 Components

The EFIS® 1 Search and Inspection Mirror consists of the following components:

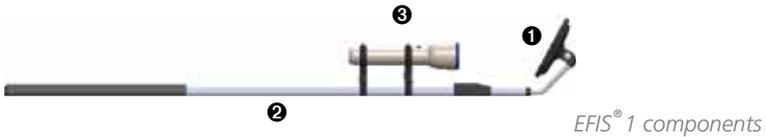
- ❶ Mirror head (185 x 135 mm) with edge protection and knurled nuts
- ❷ Telescopic handle (2 x 100 cm) with cover, torch bracket and locking mechanism
- ❸ Premium LED torch

Battery operation:

2 x D-cell, (HR 20 type)

Rech. battery operation:

2 x D-cell 1.2 V (HR 20 type, rech.)



- Operating instructions (not shown)

3.2 Identification

Information about the unit type and serial number, as well as any customer-specific reference codes, can be found at the following location:

- Marking showing type and serial no. on the telescopic tube



4. ASSEMBLY AND COMPONENT EXCHANGE

As supplied, the EFIS®1 search mirror is already partly assembled. The section provides you with information on how to change the mirror head and the torch (e.g. to change its batteries).



ADVICE

Before assembling components and parts, inspect these to ensure they are clean, undamaged and complete.

4.1 Replacing the mirror head

1. Loosen the knurled nut on the mirror by turning it anticlockwise and then slide the mirror head from its bracket.
2. Slide the new mirror head onto the mirror bracket.
3. Now re-tighten the knurled nut by turning them clockwise.



Replacing the mirror head

4.2 Replacing the mirror reflector

1. Hold the mirror firmly as you remove the rim protection on the mirror head.
2. Now replace the reflector.
3. Fit mirror back in place by pushing onto the rim protection.



Replacing the mirror reflector



WARNING

Take great care not to damage the reflector; equally, also take care not to cut yourself on any existing sharp edges or splinters!

4.3 Removing the torch

1. Loosen the two wingnut bolts on the torch brackets.
2. Pull the torch free from both torch brackets.
3. Follow the above steps in reverse order to replace the torch.



Removing the torch

4.4 Changing the torch batteries

The torch is powered by:

- 2 disposable D-cell dry batteries 1,5 V (IEC no. LR 20) or 2 rechargeable D-cell type batteries 1,2 V (IEC no. LR 20 rech.)



CAUTION

Do not mix dry batteries and rechargeable batteries!

Take care not to damage the thread of the protective cap when replacing it!

When using rechargeable batteries, follow manufacturer instructions.



ADVICE

Remove (rechargeable) batteries if unused for a longer period of time.

The torch's LED cannot be replaced. If the LED fails please return the complete torch!

To fit or change batteries proceed as follows:

1. Open battery compartment by turning the protective cap in an anticlockwise direction.
2. Remove any batteries if still in the compartment.
3. Fit 2 (dry or rechargeable) batteries into the battery compartment.
4. The batteries' positive terminals must point towards in the direction of the torch head.
5. Close and lock the battery compartment by turning the protective cap in a clockwise direction.



Opening the battery compartment and replacing the batteries

5. START-UP PROCEDURE AND OPERATION

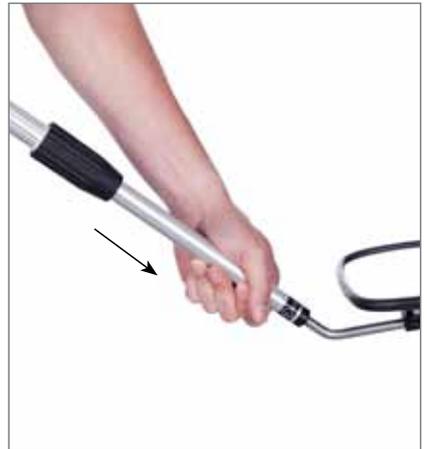
This section familiarises you with the unit's various operating and display components. It provides you with details of the various procedures required for unit start-up and for checking the unit is functioning properly.

i**TIP**

To make this section easier to understand, we assume that you have assembled the unit according to the instructions in the previous section.

5.1 Length adjustment of the telescopic handle

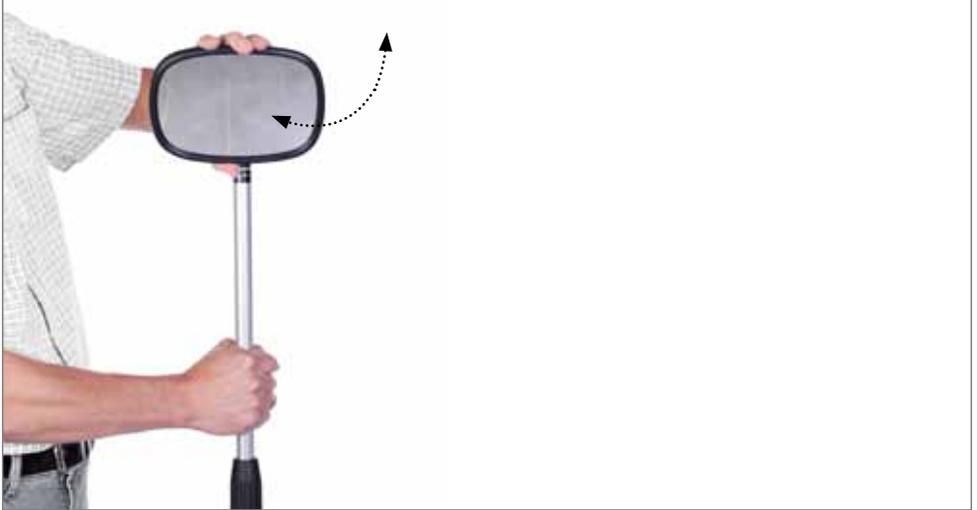
The telescopic handle can be adjusted steplessly to any length between 1m and 2 metres; an internal stopper prevents the tube being pulled completely apart. To change the length, unscrew the black locking nut by clockwise rotation as shown in below picture. Pull out the lower telescopic tube as required. Now lock the telescopic tube by rotating the lock nut in anti-clockwise direction.



Unscrewing the locking mechanism and pulling out the telescopic handle

5.2 Changing the orientation of the mirror head

The mirror can be set with its long side parallel or perpendicular to the handle and tilted left/right by approximately 50°.



Changing the orientation of the mirror head

5.3 Using the torch

To improve visibility in low light conditions, the torch can be used to illuminate the viewing area of the mirror.

To switch the torch on/off, use the splashproof pushbutton. The light beam can be focused by rotating the head.

Torch technical data:

- Range up to 100 metres
- Luminous flux 100 lm
- Light beam: stepless adjustable
- Shock-resistant



WARNING

Do not look directly at the LEDs or point torch into a person's eye!

5.4 How to use the search and Inspection mirror

The Search and Inspection Mirror can now be used. Use the telescopic handle to guide the mirror towards the object to be investigated. The rubber rim of the mirror prevents scratching if it comes into contact with the object's surface.



Application sample



6. CARE AND TROUBLESHOOTING

This section describes both general and specific care procedures that you should carry out as user. The section also gives some advice for troubleshooting concerning faults in the unit.

6.1 General equipment care

Users should carry out the following maintenance procedures:

- The unit must be switched off when not in use.
- Electrical contacts, terminals, and mechanical connection points, especially the screw thread, etc. should be kept clean.
- Clean the unit before and/or after use with a damp cloth if dirty. To clean the mirror surface we recommend using a lint-free cloth or paper towel and standard commercial glass cleaner.



ADVICE

During winter conditions in particular, clean all salt water off the unit! If the LED no longer lights despite inserting new batteries, please return the entire torch unit!



CAUTION

Replace the batteries if the LEDs start losing their brightness!

Before storing the unit, ensure the torch is switched off to avoid inadvertent battery discharge. Remove batteries if the unit is to be stored unused for longer periods.

Charge rechargeable batteries at least monthly to protect them against becoming fully discharged!

Always charge and use the rechargeable batteries as a set (2 batteries)!

6.2 Troubleshooting

Type of fault

- Telescopic handle cannot be locked
- Torch cannot be switched on or goes off randomly when in use

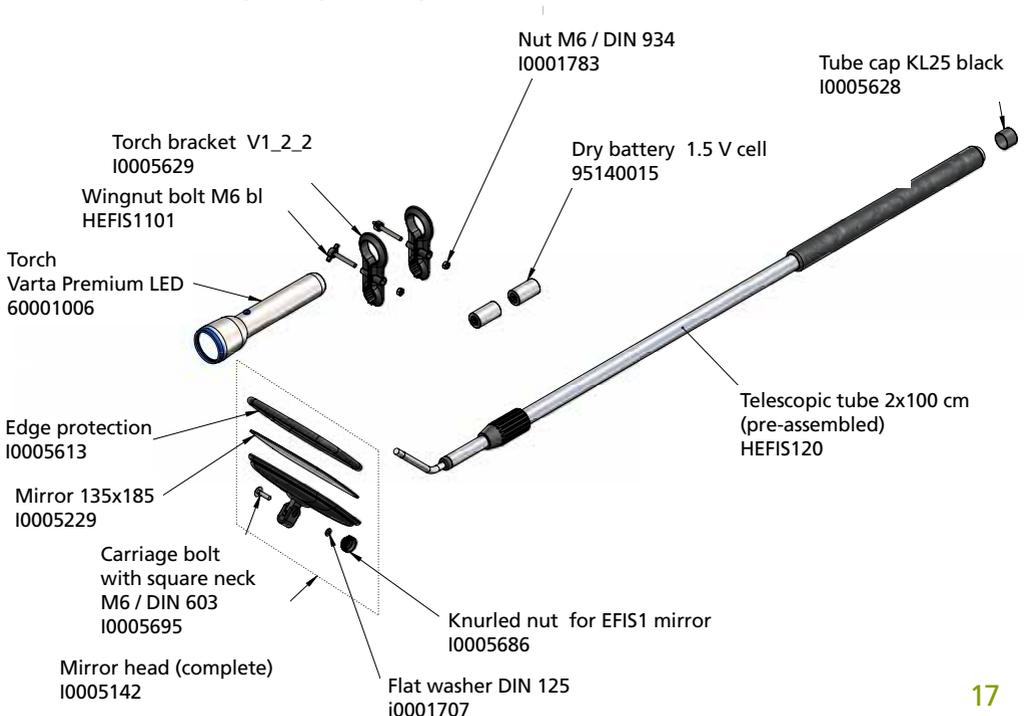
Possible solution

- Check if dirt has got into mechanism and if so, clean unit
- Check that there are batteries in the battery compartment. Check for correct polarity and clean contacts.
- If rechargeable batteries used, check charge status and recharge as required
- Return the torch to service

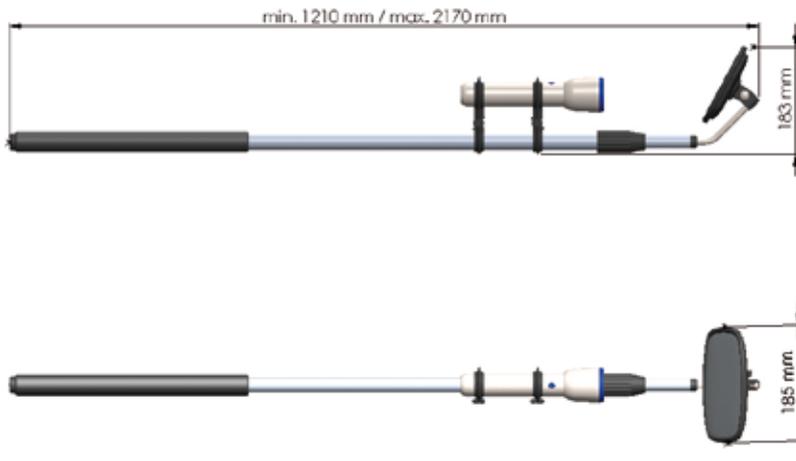
7. ACCESSORIES AND ORDER DETAILS

This section gives you an overview of the spare parts available and on the dimensions of the EFIS® 1. In addition, the section also lists all details for components and accessory parts.

7.1 Available spare parts / part numbers



7.2 Dimensions



7.3 Components / part numbers / weight

Description	Part no.	Weight
1. Telescopic tube 2 x 100 cm (pre-assembled)	HEFIS1 20	542g
2. Tube cap KL 25 black	I0005628	4g
3. Torch bracket V 1_2_2	I0005629	24g
4. Nut M6 / DIN 934	I0001783	2g
5. Wingnut bolt M6	HEFIS1 101	11,5g
6. Torch Varta Premium LED	60001006	187g
7. Dry battery 1.5 V cell	95140015	149g
8. Mirror head (complete)	I0005142	284g
- Mirror 135 x 185	I0005229	99g
- Edge protection	I0005613	39g
- Carriage bolt M6 x 25 / DIN 603	I0005695	9g
- Flat washer 6.4 / DIN 125	I0001707	0,8g
- Knurled nut for EFIS® 1 mirror	I0005686	7g

7.4 Optional accessories

1. Mirror head, 250 x 150 mm

Part number: I0001977



2. Mirror head, wheeled 310 x 220 mm

Part number: I0005200

❶ Mirror reflector 310 x 220 mm
(without fixtures)

Part number: I0005201



❷ Replacement wheel 50 x 19 x 6 mm G1

Part number: I0005293

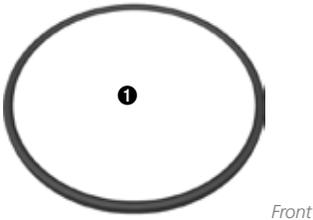


3. Mirror head Ø305 mm, wheeled 360°, with holder

Part number: HEFIS1110

❶ Mirror reflector Ø305 mm
(without fixtures)

Part number: I0004362



❷ Replacement wheel 360°, 38 x 38 mm, Ø30 mm

Part number: I0006054

❸ Star type screw black M 6 x 10 mm

Part number: I0005226



4. Transport bag for EFIS® 1

Part number: 60001611



If required, other mirror sizes and rugged models in polished steel can also be supplied.

8. TECHNICAL DATA

Telescopic tube handle	approx. 1100 - 2000 mm length
Materials	Aluminium tube section with natural anodised finish, torsion-proof
Mirror head <i>Dimensions without protective frame</i>	approx. 185 x 135 mm can be pivoted approx. 135° horizontally and approx. 90° vertically
Lamp type	Splash-proof
Lamp	1 Watt high-power LED
Power supply <i>Using disposable batteries</i> <i>Using rechargeable batteries</i>	2 x D-cell type 1,5 V (LR 20) alkaline or 2 x D-cell type 1,2 V (HR 20) rechargeable version
Weight with lamp	approx. 1,4 kg
Battery life	approx. 10 h (continuous use)

NSN 5120 - 12 - 349 - 3304



EBINGER-Technology center Wiesbaum



EBINGER

Prüf- und Ortungstechnik GmbH

Headquarter:

Hansestraße 13

51149 Cologne

Germany

Tel: +49 2203 97710 - 0

Fax: +49 2203 36062

Email: info@ebinger.org

www.ebinger.org

EBINGER

Prüf- und Ortungstechnik GmbH

Sales international:

Hansestraße 19

51149 Cologne

Germany

Tel: +49 2203 95900 - 0

Fax: +49 2203 95900 - 20

Email: info@ebinger.org

EBINGER

Prüf- und Ortungstechnik GmbH

Technology centre

Sales Germany/ Benelux:

Vulkanstraße 14

54578 Wiesbaum

Deutschland

Tel: +49 6593 9989 - 40

Fax: +49 6593 9989 - 450

E-Mail: eifel@ebingergmbh.de

