

# OPERATING INSTRUCTIONS



## Control unit **MSE-600** **MSE-600 PRO**

## Legal

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## I. EXPLANATION OF SYMBOLS

Warning notices are indicated by symbols in this document. The hazard is clarified by a keyword below the hazard symbol.

To prevent accidents, personal injury, and property damage, the instructions must be followed at all times.

 <b>DANGER</b>	<b>Hazard statement</b> ... indicates an immediately dangerous situation which will result in death or serious injury if not avoided.
 <b>WARN</b>	<b>Warning</b> ... indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	<b>Caution</b> ... indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the inspection system.
 <b>NOTE</b>	<b>Information label</b> ... indicates information that is important for the economical use of the system and makes it easier for you to operate.
 <b>MAINTENANCE</b>	<b>Care label</b> ... indicates information that explains how to clean and maintain the system properly to prevent defects and major repairs. Proper maintenance can significantly extend the service life of your system.

## 2. AREA OF APPLICATION

The inspection system is comparable to an optical measuring device. Please treat it with appropriate care! It is designed exclusively for the optical inspection of sewers and pipes.


The inspection system is not suitable for use as a channel or pipe cleaning device and is not designed for this purpose. Removing obstacles with the camera head can cause serious damage and render it inoperable.


### 2.1. Permitted areas of application

Please note that only cleaned pipes/ducts are suitable for proper, thorough visual inspection:

- Rainwater sewer pipe systems
- Sewage and combined sewer pipe systems
- Industrial wastewater systems (only if treated in accordance with §54 WHG)

### 2.2. Prohibited areas of application

<b>Danger to life when used in hazardous environments</b>	
 <b>DANGER</b>	<ul style="list-style-type: none"><li>▪ The inspection system must not be used in gas pipes without special precautions!</li><li>▪ The control unit must not be operated in water or conductive media!</li><li>▪ Environments with explosive gases must not be inspected with the inspection system under any circumstances!</li></ul>

<b>Danger due to improper use</b>	
 <b>WARN</b>	<ul style="list-style-type: none"><li>▪ The inspection system must not be used in drinking water pipes without special precautions!</li><li>▪ The inspection system must not be used in environments where food is produced or processed!</li><li>▪ If the system has been operated in an environment with waste water, it may only be used in a fresh water environment after thorough cleaning. Without cleaning, this is strictly prohibited as it can lead to infections and fresh water contamination!</li></ul>

## 3. SAFETY REGULATIONS

Read the safety regulations thoroughly and follow them! They are for your own safety and that of your employees, as well as to prevent damage to the sewer inspection system and its system components.


### Fatal danger from electric current



- Ensure that no liquid can enter the control unit, control panel, or cable reel housing!  
If this should occur, immediately disconnect the power supply, secure the connection socket against reconnection, and notify appropriately trained personnel or RIEZLER customer service!
- Ensure that the electrical connection cables are undamaged and cannot be kinked or crushed! If you notice any damage, disconnect the power supply immediately, secure the connection socket against reconnection and notify or a suitably qualified specialist or RIEZLER customer service!
- Work on the electrical system—beyond normal cleaning and maintenance by the user—may only be carried out by qualified personnel at . Further maintenance and repair work may only be carried out by RIEZLER customer service or persons authorized by RIEZLER Inspection Systems at .
- Disconnect the system and all additional devices from the power supply and voltage during all maintenance and repair work.



## 4. WARNING

Our products are extremely robustly constructed to ensure that they will serve you for a long time. Nevertheless, there are a few points that we ask you to observe, as otherwise the service life of our products may be reduced.

Careful handling	
 <b>CAUTION</b>	<ul style="list-style-type: none"><li>▪ Always switch off the inspection system using the power button before disconnecting the power plug!</li><li>▪ The system must be switched off before changing a plug-in camera head!</li><li>▪ Do not place heavy objects on the device!</li><li>▪ Do not drop the product!</li><li>▪ Never open the product unless expressly instructed to do so in the operating instructions or by one of our technicians! There are no parts inside the system that can be serviced by the user.</li></ul>

## 5. DISPOSAL INFORMATION

Used batteries do not belong in household waste. Return them to suitable collection points or your dealer.


Disposal of old devices	
 <b>NOTE</b>	 Old devices marked with the symbol shown must not be disposed of with household waste, but must be disposed of in accordance with the Electrical and Electronic Equipment Act of March 24, 2005. Please take this device to the appropriate public collection point for disposal at the end of its service life.

## 6. NOTES ON USING THE OPERATING INSTRUCTIONS

The following pages provide an overview of all the operating elements and interfaces of the product. Throughout the operating instructions, you will find references in square brackets (e.g., "[2.2]") that refer to the operating elements and interfaces.

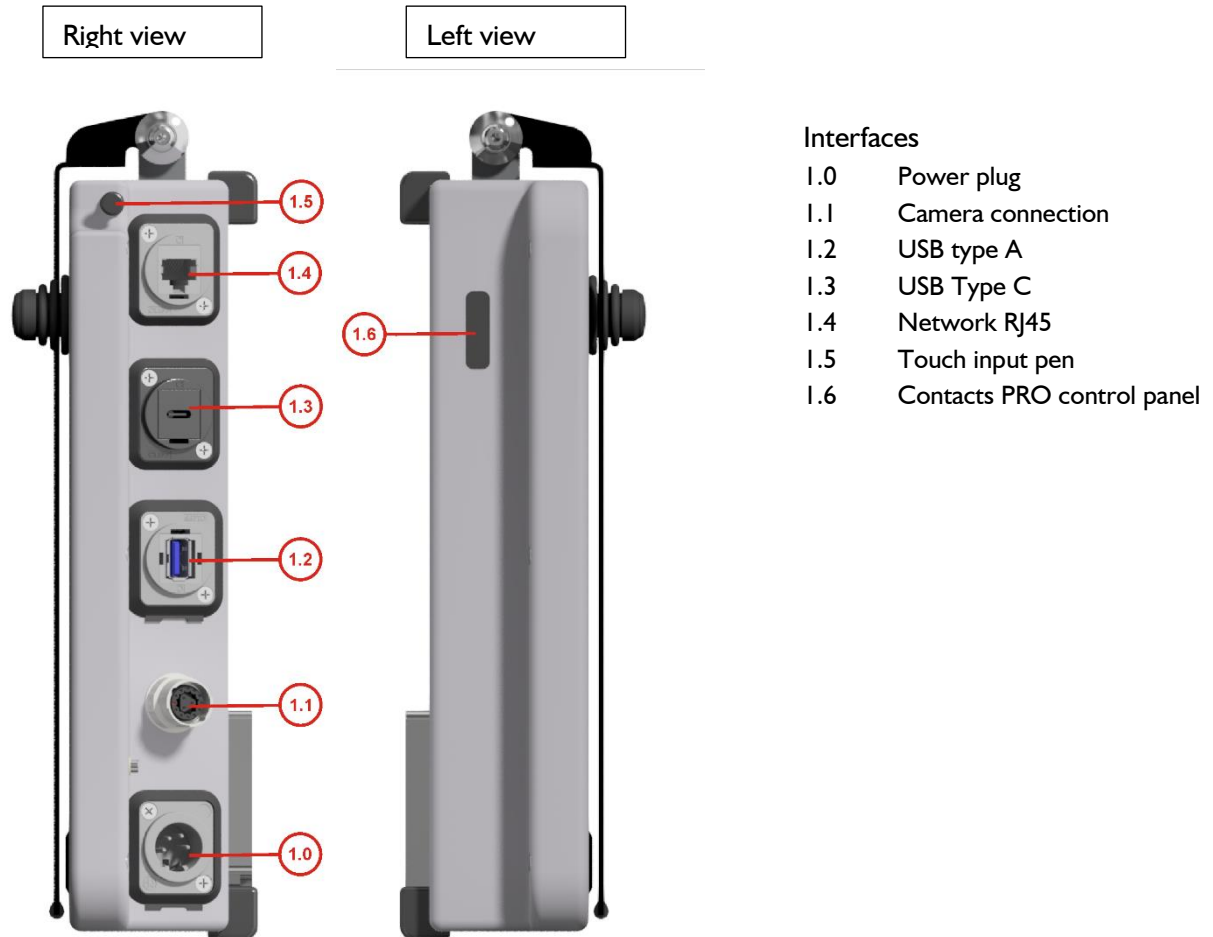
This will help you learn how to use the system quickly and easily.

### 6.1. Example

Overview page	Reference
 2.2 Camera On/Off	If the operating instructions refer to the camera button at a later point, it will be named as follows: "[2.2] Camera On/Off"

## 7. CONTROLS & INTERFACES

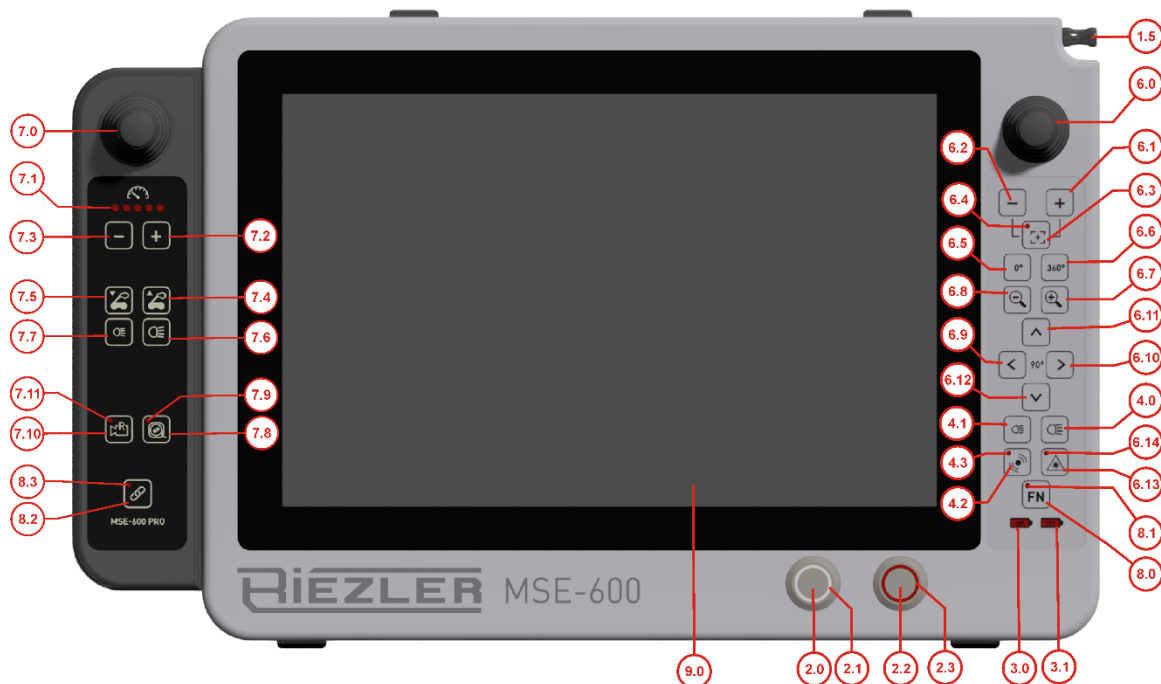
### 7.1. Page views MSE-600



### 7.2. RJ45 network connection

The MSE-600 control unit can be connected to a network via a network interface [I.5] using an Ethernet network cable. This allows program or catalog updates to be installed directly via the Internet. This connection enables remote access in the event of serious software problems.

## 8. FRONT VIEW OF MSE-600 PRO



### Interfaces

- 1. Touch input pen

### On/off switch

- 2. PC on/off
- 2.1 Status LED PC
- 2.2 Camera on/off
- 2. Status LED control

### Battery indicator

- 3.0 Battery status internal
- 3 Battery status external

### Camera general

- 4. Light +
- 4.1 Light -
- 4.2 Location transmitter on/off
- 4. Status LED location transmitter

### pan and tilt camera

- 6 Joystick
- 6.1 Focus +
- 6.2 Focus
- 6 Auto focus
- 6. Status LED Auto focus
- 6. Swivel head 0 position
- 6.6 360° inspection function
- 6. Zoom +
- 6.8 Zoom -
- 6.9 Pivot 90° left
- 6.10 Swivel 90° right
- 6.1 Starting from a standstill
- 6.12 Starting from the base
- 6.13 Laser on/off
- 6.14 Laser status LED

### crawler

- 7.0 Joystick
- 7.1 Status LEDs Cruise control
- 7. Cruise control +
- 7 Cruise control -
- 7.4 Camera lift up
- 7 Camera lift down
- 7. Additional light +
- 7.7 Additional light -
- 7.8 Cable reel Sync.
- 7.9 LED cable reel sync.
- 7.10 Reversing camera on/off
- 7.1 Status LED rear view camera

### Function buttons

- 8.0 Function key
- 8.1 Status LED Function button
- 8.2 APP pairing
- 8.2 Status LED APP pairing

### Screen

- 9 Touch

## 9. SUN VISOR

### 9.1. Mounting the sun visor

The sun visor is attached to the housing using a magnetic mechanism and can be removed by simply pulling it upwards. To install the sun visor, insert the magnetic holders into the openings provided on the top.



### 9.2. Using the sun visor as a stand

If the sun visor is mounted with a 180° rotation, it can be used as a stable stand.



## 10. START-UP

1. Make sure that the control unit is always standing on a flat, level surface. Alternatively, plug it into the holder provided on your reel/cable drum.
2. Remove the protective cap from the camera socket [1.1] and connect the control unit to the reel or cable drum using the connection cable.



NOTE

### Protective caps

We recommend keeping the protective caps closed when not in use. This prevents dirt and moisture from entering the device.

3. Start the industrial PC by pressing and holding the PC button [2.0] for about two seconds. The status LED [2.1] lights up as long as the PC is on.
4. Then switch on the camera using the camera button [2.2]. The status LED [2.3] lights up as long as the camera is switched on.
5. If the battery is low, please connect the external power supply to a 230 / 115 V AC power source via the power plug socket [1.0].



CAUTION

### Switching off the camera

Always switch off the camera using the camera button [2.2] before disconnecting the cable connection between the control unit and the cable reel! Otherwise, the camera may be permanently damaged.

6. Pressing the **QUICK START** menu item on the touchscreen takes you directly to the live image from the camera. This allows you to familiarize yourself with the controls when using the system for the first time.



CAUTION

### Operating the touchscreen

To avoid damage to the touchscreen [9], it should only be operated with your fingers or the stylus provided.



NOTE

### Camera image display

To display the camera image, activate the PC **and** camera button.

## 11. GENERAL FUNCTIONS

### 11.1. PC on/off



The PC system button [2.0] can be used to switch the computer on and off. To switch on the device, press and hold this button for approximately two seconds. The white LED ring [2.1] indicates the active operating status.

### 11.2. Camera on/off



Press the CAM system button [2.2] to switch the camera system on or off. The red LED ring [2.3] indicates the operating status.

### 11.3. Function button



The function button [8.0] allows you to perform special functions. A list of all available functions can be found on page 20 (Special functions). When the FN button is pressed, a status LED [8.1] lights up.

### 11.4. Battery indicator



The integrated battery unit allows you to work for up to four hours without mains power. With the SHP-9X PRO reel and the KTM-7X PRO manual cable reel, you can extend the running time as required using charged external Makita batteries.



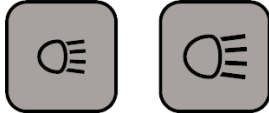
NOTE

#### Battery

As soon as the LED status indicator of the internal battery [3.0] lights up red, the battery should be charged using the supplied power supply unit.

## 12. CAMERA CONTROL GENERAL

### 12.1. light control Camera head



The light is controlled by pressing the [4.0] buttons. (+ )  
or [4.1]. (-).

The LED lights for the near range ensure that no shadows are visible in the near range. Their luminosity remains constant even when the light control is adjusted.

### 12.2. Location transmitter



If a location transmitter has been connected to the camera, it can be activated using the [4.2] button. When location is activated, the location transmitter status LED [4.3] lights up.



**NOTE**

#### Image distortion

When the location transmitter is activated, the video signal on the screen may cause slight image disturbances (distorted image, stripes in the image). This is due to technical reasons and does not impair the functions. For more information on the location transmitter, please refer to your camera head manual.

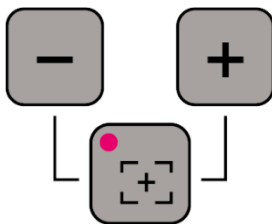
## 13. PAN AND TILT CAMERA CONTROL

### 13.1. Controlling the camera head



To move the camera angle to the left or right during the inspection, tilt the joystick [6.0] to the left or right. To change the rotation position, tilt the joystick up or down. This allows you to view the entire inspection area using the joystick.

### 13.2. Focus



To achieve optimum visual acuity for different pipe diameters, press the [6.1] or [6.2] buttons to adjust the focus to the different distances.

### 13.3. Optical zoom



The [6.8] (-) and [6.7] (+) buttons are used to zoom in and out of the camera image if the connected camera has an optical zoom.

### 13.4. Centering the camera head



The camera head can be returned to the zero position at the touch of a button. In this position, an upright alignment with a direct view to the front is guaranteed. To trigger this process, please press the [6.5] button.

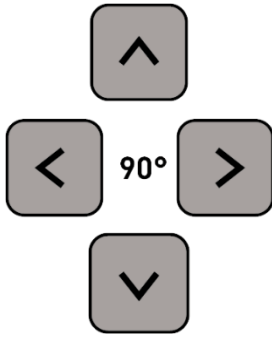
### 13.5. Automatic 360° inspection function



This function can be used, for example, to automatically scan a sleeve in its entirety. After pressing the [6.6] button, the camera head rotates 360° automatically.

The rotation process can be interrupted at any time. To do this, briefly tap the joystick [6.0] up or down. If the process is interrupted, for example due to damage being detected, the camera head saves the current position as the new starting position. When the 360° mode is restarted, the rotation begins at this point and then returns to it.

## 13.6. Automatic 90° left/right pan function ing and approaching the apex/base



This function allows you to pan the camera head to the left or right in 90° increments at the touch of a button. Use the [6.9] button to pan to the left and the [6.10] button to pan to the right.

Pressing the "Start at top" button [6.11] automatically aligns the camera vertically upwards. The "Start at bottom" button [6.12] automatically aligns the camera vertically downwards.

## 13.7. Laser



If the connected camera has a laser function, this can be switched on or off using the [6.13] button. When the function is activated, the laser status LED [6.14] lights up.



**CAUTION**

### **Risk of blindness**

Laser class 2: Never look directly into the laser with the naked eye!

## 14. CRAWLER CONTROL (OPTIONAL)

The **MSE-600 PRO** crawler is controlled directly using the buttons on the optional PRO control panel.



NOTE

### Operation only with PRO power supply unit or external battery

Due to the power consumption, the carriage control is only active when an external PRO power supply unit or an external battery is connected to the control unit.



The crawler can be controlled forwards, backwards, left and right using the joystick [7.0] on the left side of the PRO control unit. The speed of the crawler depends on the angle of the joystick: the further it is moved forwards or backwards, the higher the speed.

### 14.1. Cruise control



To make your inspection as comfortable as possible, the MSE-600 PRO has a cruise control [7.2 / 7.3] that allows the crawler to move forward or backward at a constant speed.



NOTE

### Speed control

The two buttons below the joystick are not used to control the speed of the crawler, but as cruise control. See next point.


#### 14.1.1. How to use cruise control when moving forward


1. Press the cruise control button [7.2] until at least 1 LED on the cruise control speed display [7.1] flashes.
2. Move the joystick [7.0] forward briefly to move the crawler forward at the selected cruise control speed.
3. The speed of the crawler can be controlled in cruise control mode using the two cruise control buttons [7.2 / 7.3] and no longer by the position of the joystick. The joystick can be released.
4. Cruise control can be deactivated by pressing the cruise control (-) button [7.3] several times or by briefly tapping the joystick backwards.

## 14.1.2. How to use cruise control when reversing

The cruise control function works in the same way as How to use cruise control when moving forward " – except that in this case, the joystick must be pushed backwards.

However, there is one restriction here: To prevent the crawler from driving over its own camera cable when reversing and possibly getting stuck, the control software waits for pulses from the meter counter. As long as the meter counter counts backwards, the crawler reverses continuously at the selected speed. As soon as the meter counter stops counting backwards, the crawler stops automatically. Continuing the journey is only possible if the cable is rewound correctly or by using the following function:

Moderate reverse speed	
 <b>NOTE</b>	<p><b>When using the FWL-150 with the DI 60 additional wheels, it is strongly recommended that the cruise control be turned up to a maximum of half speed when reversing.</b></p> <p>The wheel ratio allows the crawler to travel so fast that the automatic cable reel KTA-200/300 cannot wind up the camera cable quickly enough when the crawler is traveling backwards at full speed.</p>



## 14.2. Cable drum synchronization when reversing



The automatic synchronization with the cable drum during reverse driving can be deactivated with the [7.8] button. The status of an active synchronization is indicated by the status LED [7.9].

Deactivated synchronization allows the crawler to move backward at full speed without waiting for feedback from the meter counter. This carries the risk that the crawler will run over its own camera cable, become entangled, and be unable to continue. The manual reverse mode is therefore mainly intended for very short distances.

## 14.3. Additional light control



As soon as additional lighting is mounted on the crawler, it can be adjusted using the [7.6./ 7.7] buttons.

## 14.4. Reversing camera



If a rear view camera is installed on the crawler, it can be activated with the [7.10] button. The rear view camera status LED [7.11] lights up as long as the rear view camera is switched on.

The screen automatically switches to the rear view camera image.

## 14.5. Control of electric camera lift



The camera lift can be raised and lowered electrically using the [7.4] and [7.5] buttons to adjust the camera position to the respective pipe diameter.

## 15. SPECIAL FUNCTIONS

Here you will find a list of all special functions that can be performed using key combinations. First press the FN key [8.0] (the FN status LED [8.1] lights up) and then the specified key/joystick.

### 15.1. Pan head functions

		Switches the <b>horizontal compensation</b> of the pan and tilt camera on or off.
		Standard-compliant <b>swiveling</b> of a sleeve ( <b>180° / 180°</b> ).
		Starts the <b>laser measurement routine</b> for WinCan
		Makes the camera move toward the <b>apex</b> .
		Moves the camera to the <b>base</b> .
		Pivots the camera head <b>90° to the left</b> .
		Swivels the camera head <b>90° to the right</b> .

### 15.2. Change location transmitter mode

		Switches the <b>signal type</b> of the location transmitter from "continuous tone" to "pulse tone" and back.
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## 16. MAINTENANCE



**CAUTION**

### Before starting cleaning

Before starting cleaning work, switch off the inspection system and disconnect it from all power sources! Cover all connections with the protective caps provided by us.

When winding up the cable, we recommend wiping it with a damp cloth to remove as much dirt as possible. The camera head and cable should only be cleaned with soap and water. Do not use any solvents.

To clean the swivel heads, we recommend holding them vertically downwards in clear water and turning and swivelling them several times in all directions to remove sand or other abrasive substances. This will significantly extend the service life of the built-in seals.

Wipe the lighting and lens discs with a soft cloth or cotton swab only. Never scrape off dirt with tools!

The cable used has been specially developed for our systems. The outer sheath is cut and abrasion resistant and largely resistant to external influences.

However, improper handling or adverse working conditions can damage or destroy this sheathing. If the cable is defective, it must be checked, shortened if necessary, or replaced with a new cable.



**WARNING**

### Defective cables

A damaged cable sheath allows moisture to penetrate and can lead to failure of the inspection system. If the inner wires are also damaged, short circuits can occur! In this case, take the inspection system out of service immediately!



**NOTE**

### Prevent damage

- Never use a high-pressure cleaner to clean the inspection system. This can cause significant damage to the product.
- Clean the screens and camera lenses with extreme care and do not use harsh cleaning agents.

## **17. WARRANTY**

Congratulations on purchasing a RIEZLER inspection system.

Our devices are the result of many years of experience and continuous development.

Conscientious workmanship and quality control are the cornerstones of our company. However, should any defects occur, our warranty provides you with a high level of security.

With proper maintenance and operation, our devices can perform their function permanently .

### **17.1. Scope of warranty**

We grant a twelve-month warranty for the product you have purchased from RIEZLER Inspektionssysteme GmbH & Co.KG, which has been manufactured and tested in accordance with our production and quality guidelines.

Any defects that are demonstrably due to material and/or manufacturing faults will be repaired by us free of charge during the warranty period. We reserve the right, at our discretion, to repair the device, replace the defective parts, replace it completely, or refund the remaining value if repair or replacement is not possible.

### **17.2. Warranty conditions**

Opening the inspection system or individual components without the manufacturer's consent is prohibited. Failure to comply with this provision will void all warranty claims.

The warranty period begins on the date of delivery.

The warranty does not cover damage caused by improper use of the system, lack of maintenance, normal wear and tear, and force majeure (such as lightning, fire, frost, etc.).

The warranty also does not cover wear parts (such as front glasses, shaft seals, lamps, cables, etc.) or damage that does not impair the usability of the system.

If you wish to make a claim under the warranty, please contact us, the dealer, or your nearest service center with the original invoice.