

# Profi 3



Instruction Manual Hardware

Keep for future reference!

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## 1. GENERAL INFORMATION

### 1.1 Product Label and Classification

This manual is part of the device. In the event that the device will be resold, the manual is to be handed over to the next owner.

### 1.2 About the Manual

The manual ensures the safe operation of the devices and must be kept in the devices' close proximity, immediately accessible for any personnel.

All personnel are to carefully read and understand this manual before taking up work. As a precondition for safe operation, all safety instructions and operational procedures given in this manual must be observed.

Furthermore, the local accident prevention regulations and general safety provisions applicable for the devices' range of use are to be heeded.

The instruction manual applies to individuals, who have been trained by the owner and have confirmed such training with their signature. A technical vocational training is not required.

It also applies to trained experts, who have been authorized to put into operation, set up, convert and dismantle the devices.

### 1.3 Manufacturer and Technical Support

#### **Manufacturer:**

Kummert GmbH  
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D - 97447 Gerolzhofen

#### **Contact:**

Phone: +49 (0) 9382 - 9727 - 0  
Fax: +49 (0) 9382 -9727 - 900  
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#### **Technical Support:**

Phone: +49 (0) 9382 - 9727 - 710  
Fax: +49 (0) 9382 - 9727 - 9700  
Email: [service@kummert.de](mailto:service@kummert.de)

### 1.4 Copyright

This manual and all information, photos and drawings contained herein are subject to intellectual property rights by Kummert GmbH.

Their use is permitted while utilizing the devices. Any use beyond that is prohibited without the manufacturer's written approval.

## 1.5 Explanation of Symbols Used

Safety instructions in this manual are indicated by means of symbols. The safety instructions express the extent of the hazard.



### WARNING!

#### **Dangerous situation, which may cause death**

This combination of symbol and signal word identifies a possibly dangerous situation, which may cause death or severe injuries if not avoided.



### CAUTION!

#### **Possibly dangerous situation, slight injuries**

This combination of symbol and signal word identifies a possibly dangerous situation, which may cause minor or slight injuries if not avoided.



### NOTE

#### **Possibly dangerous situation, damage to property and environment**

This combination of symbol and signal word identifies a possibly dangerous situation, which may cause damage to property and environment if not avoided.



### TIP

#### **Tips and information, efficient and troublefree operation**

This symbol highlights useful tips and information for an efficient and troublefree operation of the device.

## 1.6 Limitation of Liability

All information and instructions given in this manual were compiled in consideration of applicable standards and regulations, the current state-of-the-art technical development and our long-term insights and experiences.

The manufacturer is not liable for damage in the following cases:

- nonobservance of this manual
- improper use of the device
- assignment of untrained personnel
- unauthorized modifications
- technical alterations
- use of unauthorized spare parts

The manual was translated to the best of our knowledge. However, we are not liable for any translation errors. The German version of this manual overrides any translation.

In case of special versions, utilization of additional ordering options or newest technical modifications, the actual scope of delivery may differ from the product explained and illustrated in this document. If you have any questions, please contact the manufacturer.

## 1.7 Warranty Conditions

The warranty conditions are included in the manufacturer's General Terms and Conditions, which you can find under [www.kummert.de](http://www.kummert.de).

## 2. SAFETY

### 2.1 Proper Use

The devices are solely intended to be used for the inspection of cleaned water and sewer pipes in combination with original accessories and components made by Kummert GmbH. Without prior agreement by the manufacturer in writing, inspections of pipes at industrial plants, etc. are considered improper use of the device.

Observing all instructions given in this manual constitutes yet another aspect of proper use. Any use of the device beyond and/or other than the above specified application is considered improper use.

### 2.2 Basic Risks

The following chapter lists residual risks which remain, even when the devices are used in a proper manner.

To reduce the risk of personal injuries and property damage and avoid dangerous situations, the safety instructions listed below as well as the safety instructions listed in the sections to come are to be observed strictly!



### WARNING!

#### **Explosion hazard!**

The device is not explosion-proof. Therefore:

- Never operate the device in an explosive atmosphere. In this context, also make sure that the pipes to be inspected do not contain or leak explosive gases/liquids.



### WARNING!

#### **Electrical hazard!**

Electric current can cause severe injuries or death. In case of damaged insulation or other components, there is a risk of death by electric shock. Therefore:

- Always shut down the device and, if applicable, unplug the power cord before performing work on the device (e.g. cleaning it).
- Ensure the power cord will not be damaged by crushing, yanking, rubbing, etc.
- Never run over the power cord.
- Before each use, check the power cord for damage.
- Work on the power cord may only be performed by the manufacturer or their authorized agents.



## WARNING!

### **Risk of injury!**

Incorrect operation of the device may cause serious injuries by means of crushing or rolling over a person.

Therefore observe the following:

- Always move the device carefully and in consideration of other people and objects; keep a safe distance to other people and objects.
- Never endanger other people by working with the device.
- Unauthorized people, especially children, must not have access to the device.
- As long as the device is not being moved, apply the handbrake.
- When working with the device, always wear protective gloves.
- Never reach into the reel/cable drum unless it is locked.



## WARNING!

### **Hazard of chemical or biological materials/liquids!**

When inspecting pipes that hazardous materials/liquids run through, observe the following:

- Start the inspection only once it has been determined that no danger will arise from the materials or liquids.
- Rinse pipes before the inspection with a suitable liquid (e.g. water).
- Adhere to the Material Safety Data Sheets (MSDS) on the chemical or biological materials/liquids.
- Clean the push rod/cable thoroughly after each use.



## CAUTION!

### **Risk of injury from dirt and scattered objects!**

Dirt and scattered objects constitute slip and stumble hazards. As falling accidents may cause injuries, observe the following:

- Always keep work area clean.
- Remove objects no longer needed from the work area, particularly from ground level.
- Set up the device as close to the pipe opening as possible.
- Mark unavoidable stumble-risk areas with noticeable tape.



## CAUTION!

### **Workplace ergonomics**

The operating position in front of the monitor does not meet the requirements for ergonomic design of computer workplaces. Therefore:

- Avoid remaining in the operating position for lengthy periods of time.

### **2.3 Behavior in the Event of Danger and Accidents**

In the event of danger and accidents, the device must be stopped, shut down and secured against inadvertent rolling immediately (see chapter "7.6 Work Conclusion").

First-aid equipment (first-aid kit, eye rinsing bottle, etc.) and a fire extinguisher must be stored in close proximity. All personnel must be familiar with the use and location of safety, accident reporting, first-aid and rescue equipment. This ensures the prevention of dangers and the best possible help in the event of accidents.

The device requires a responsible and circumspect operation. Incorrect operation or operation by unauthorized individuals endangers others.

### **2.4 Responsibility of the Owner**

Owner is the person, who him-/herself operates the device for industrial or business purposes or leaves the device to a third party to be used, and who, during the device's operation, bears legal product responsibility for the protection of the operator, all personnel or third parties.

#### *Owner responsibilities*

The device is being deployed in the industrial field. Therefore, the owner of the device is required to comply with occupational safety regulations.

In addition to the safety instructions in this manual, the regulations for safety and accident prevention, as well as the environmental regulations, effective at the device's area of application must be observed.

#### *Furthermore, the following applies:*

- The owner is to gather information on the applicable occupational safety regulations and to identify additional risks, which result from specific working conditions at the device's place of operation, in a risk assessment. In a company directive, the owner is to specify any additional procedure and safety instructions resulting from the risk assessment.
- During the device's entire time of operation, the owner is to verify, whether the company directives issued by him/her comply with the current version of regulations, and to conform them if necessary.
- The owner must precisely direct and define the responsibilities in respect of installing, operating, trouble-shooting and cleaning the device.
- The owner is to ensure that all individuals handling the device have read and understood this manual. Furthermore, the owner must periodically train all personnel and inform them about the dangers.
- The owner has to provide the personnel with the necessary protective equipment and must require the mandatory wear thereof.

#### *Furthermore, the owner bears responsibility that the device is in a technically sound state at all times. Therefore the following applies:*

- The owner is to ensure that the instructions on transporting, storing and cleaning the device are being observed as described in this manual.

## 2.5 Personnel Requirements

### Qualifications

Only individuals who can be expected to do their work in a reliable manner are authorized to work on or with the device. Individuals, whose reactions are impaired, e.g. by drugs, alcohol or medication, are not authorized.



### WARNING!

#### **Risk due to insufficiently qualified individuals!**

Insufficiently qualified individuals cannot assess the risks when handling the device and subject themselves and others to the risk of severe or deadly injuries.

- All work must be conducted by qualified individuals only.
- Insufficiently qualified individuals must be kept out of the work area.

### Training

The owner must periodically train all personnel. For best-possible tracking purposes, training minutes must be drawn up with the following minimal contents:

- Date of training
- Name of trainee(s)
- Training objectives
- Name of trainer
- Signatures of trainee(s) and trainer

## 2.6 Personal Protective Equipment

Personal Protective Equipment protects individuals against occupational health and safety infringements.

Throughout work, individuals working with or on the device are required to wear their personal protective equipment, which is, in particular, being pointed out in the individual chapters of this manual.



### Protective Gloves

Protective gloves protect hands against friction, abrasions, punctures or deeper injuries, as well as contact with hot surfaces.

## 2.7 Spare Parts

Spare parts can be obtained from authorized dealers or directly from the manufacturer (see chapter „1.3 Manufacturer and Technical Support“).



### TIP

#### **Loss of warranty!**

Use of unauthorized spare parts will void the manufacturer's warranty.



### NOTE

#### **Risk of injury due to using incorrect spare parts!**

The use of incorrect or faulty spare parts may pose a risk to the personnel, as well as cause damage, malfunctions or breakdown. Therefore:

- Use only original spare parts supplied or authorized by the manufacturer.
- Always contact the manufacturer in case of questions.

## 3. SPECIFICATIONS

### 3.1 Specifications Profi 3

Dimensions (W x H x L)	440 mm x 630 mm x 620 mm
Weight	approx. 22 kg
Housing	plastics, aluminum
Monitor	daylight viewable 12.1" LCD-TFT color display, antireflection, resolution 1024x768
Control camera	3-axis-joystick
Control crawler	1-axis-joystick
Storage media	min. 200 GB SSD hard drive
Removable memory	USB 3.0 port with 32 GB USB thumb drive
Video format	MPEG2
Still image format	JPEG
Text overlay	during recording or during export in the office
Duration text overlay	freely selectable
Duration auto pause	freely selectable
Power supply	AC 100-240 V; 47-63 Hz; max. 1000 W
Storage temperature	0° to +40° C
Operating temperature	0° to +40° C

### 3.2 Specifications Battery Pack

The integrated battery pack is supplied with the Profi 3.

Lithium-ion battery pack	16.5 V; 7.5 Ah
Charging temperature	0° to +40° C
Operating time	approx. 3 hours (depending on the connected camera)
Charging time	approx. 2-3 hours

Please refer to the instruction manual on the Kummert push cameras for specifications on reels. Cable drum specifications can be found in the *Instruction Manual Crawler, Cable Drum, Pulley*.

## 4. OVERVIEW AND BRIEF DESCRIPTION

### 4.1 Overview Profi 3

#### View of front left side



fig. 1

- 1 Carrying handle
- 2 Monitor cover/sun shield
- 3 Monitor
- 4 Control panel
- 5 USB port with protective cap
- 6 Handbrake
- 7 Chair with storage space
- 8 GPS receiver

#### View of front right side with mounted chair, without reel



fig. 2

- 1 Chair carrying handle/push aid
- 2 Chair lid
- 3 Chair fastening hook
- 4 Power cord
- 5 Cable run

#### View of rear



fig. 1a

- 1 BNC port with protective cap
- 2 Network port with protective cap
- 3 USB port with protective cap
- 4 Connection socket for reel



fig. 1b

### 4.2 Overview Control Panel



fig. 3

- 1 Pen
- 2 Monitor
- 3 3-axis-joystick for camera control
- 4 ON/OFF button
- 5 Power light
- 6 LED brightness/aperture control; Aligning camera;
- 7 1-axis-joystick for crawler control
- 8 Crawler control left/right

### 4.3 Brief Description Profi 3

The Profi 3 for the inspection of branched pipes and complex sewer systems stands for innovative CCTV inspection at the highest level. Its modular structure makes the base unit versatile.

All common German damage code catalogs as well as selected foreign damage code catalogs are supplied. In a quick and convenient manner, the user enters the data at the base unit via a pen tablet and a magnetic pen with assistance from user-friendly software.

During the inspection, negotiated pipes display parallel to the live image on the screen: in real time and as a 3D pipe plan. Thus, the user is ensured the best orientation at all times. In the end, the recorded data is exported onto a USB thumb drive. Subsequent editing in the office is no longer necessary.

All reels and camera heads from Kummert's range of products can be used with the Profi 3. Furthermore, the Kummert crawler can be operated when connected to the base unit and a cable drum. Hence, the system is always optimally adjusted to the conditions on site.

The standard internal battery pack facilitates a battery-powered use of the base unit for about three hours. After only two hours of charging time, the battery pack can be used again.

## 5. TRANSPORT, PACKAGING AND STORAGE

### 5.1 Safety Instructions for Transport



#### WARNING!

##### **Risk of injury!**

Falling objects during transport and loading/unloading constitute a risk of injury. Therefore, strictly observe the following safety instructions:

- Never lift loads over people.
- Always move the device with utmost care and caution.
- Carry the device only by its carrying handle.



#### NOTE

##### **Property damage due to improper transport!**

Improper transport may damage the base unit, reel and push rod. Therefore:

- When transporting the device in a vehicle, secure it against falling over.

### 5.2 Inspection upon Receipt

We recommend inspecting the entire delivery for completeness and possible transport damage immediately upon receipt. If damage is externally visible, take the following steps:

- Do not accept delivery or accept it under reserve only.
- Indicate the suspected damage in the carrier's documents of transport or delivery slip.
- Institute a claim.



#### TIP

##### **Legal times for claims**

Report every fault as soon as it has been discovered. Claims for damages can only be asserted within the legal time for claims. The manufacturer is not liable for transport damage.

### 5.3 Packaging

The devices are being delivered in different packaging. Packaging materials primarily consist of cardboard and plastics (foil, foam). Packaging may also comprise materials added to the packages for the protection against moisture or frost (e.g. silica gel bags, antifreezing agents).

Unless recovery of packaging has been agreed upon, the packaging materials remain with the customer.



#### NOTE

##### **Danger to the environment due to incorrect disposal!**

Packaging materials are precious resources and, in many cases, can be reused or recycled. Incorrect disposal of packaging materials may cause damage to the environment.

- Dispose of packaging materials in an environmentally safe manner.
- Dispose of packaging materials according to applicable legal regulations and local directives. If necessary, a specialist firm must be commissioned to dispose of the materials.

### 5.4 Storage

Always store the Profi 3 under the following conditions:

- Do not store outdoors.
- Store in a dry and dust-free place.
- Do not expose to aggressive media.
- Do not expose to direct sunlight.
- Do not expose to direct heat (heaters, heater blowers).
- Storage temperature: 0° to +40° C
- Relative humidity: max. 60 %
- Store the device over a longer period of time only with a fully charged battery pack. Recharge the battery completely at least once a month.
- When storing the device for more than 3 months, periodically check the general condition of all parts.

## 6. MOUNTING AND USING THE REEL/CABLE DRUM



### NOTE

#### **Property damage due to faulty mounting and dismantling!**

Faulty mounting and dismantling of the reel may cause property damage or breakdown. Therefore:

- Prior to mounting, ensure that the connectors are completely dry.
- Prior to connecting, check the connectors for dirt and damage.
  - If the connectors are dirty, clean them.
  - If the connectors are damaged, refrain from mounting and using the device and arrange for repairs.
- Check the O-rings for damage like tears and porosity to ensure that the plug-and-socket connection will seal correctly.

### 6.1 Mounting/Dismounting the Reel

#### Mounting



Unless already done, connect the desired camera head to the push rod before mounting the reel onto the base unit (see chapter "6.2 Mounting/Dismounting the Camera" in the manual for the respective camera).

- 1. Applying the base unit's handbrake:**  
To do so, pull the handle of the handbrake (fig. 4) forward.

- 2. Hooking in the reel:**  
Place the reel hooks (fig. 5) onto the reel beam.

- 3. Removing the protective caps:**  
If applicable, remove the protective caps from the reel's plug and the base unit's socket.

- 4. Connecting the reel:**  
Connect the reel's plug (fig. 6) with the socket on the Profi 3. Make sure the plug is positioned correctly. This is the case when the red dot on the plug is aligned with the red dot on the socket.

#### Dismounting

To dismantle the reel, proceed in the reverse order.



### TIP

#### Reel placement

Due to their size, the reel types H-75/9 and H-100/9 can only be hooked onto the left side (when looking at the monitor) of the Profi 3. All other reels can be mounted to the base unit in pairs. However, the mounting depends on the side the tubular is attached to.

### 6.2 Using the Reel

#### 6.2.1 Applying the Freewheel Brake

The reels possess a freewheel brake to regulate the push rod's free movement. Thus, unwanted coasting of the push rod and unreeling impediments can be avoided.



#### Releasing:

Turn the wing nut (fig. 7) counterclockwise to reduce the braking force of the freewheel brake.

#### Applying:

Turn the wing nut (fig. 7) clockwise to increase the braking force of the freewheel brake.

#### 6.2.2 Applying/Releasing the Reel Lock Pin

The reels can be locked via the reel lock pin to prevent accidental unreeling of the push rod.



#### Releasing:

Turn the knob for the reel lock (fig. 8) while holding the push rod or reel. The lock pin releases the reel.

#### Applying:

Turn the knob for the reel lock (fig. 8) in the opposite direction. The lock pin now pushes into the reel basket.

#### 6.2.3 Reeling in/Unreeling the Push Rod

##### Unreeling

#### 1. Applying the base unit's handbrake:

Pull the handle of the handbrake (page 14, fig. 4) forward. The handbrake is now applied at the base unit's rear wheels.

fig. 4

fig. 5

fig. 6

fig. 7

fig. 8

fig. 9



**2. Releasing the reel lock pin:**

See chapter "6.2.2 Applying/Releasing the Reel Lock Pin".

**3. Unreeling the push rod:**

Carefully pull on the camera head to unreel the push rod (fig. 9).

**4. Adjusting the freewheel brake:**

If the push rod moves in a manner too hard or too easy, adjust the braking force of the

freewheel brake (see chapter "6.2.1 Applying the Freewheel Brake").

*Reeling In*

fig. 10



**1. Reeling in the push rod:**

Turn the reel carefully to reel in the push rod. As soon as the reeling in starts, clean the rod with a moist, clean cloth (fig. 10).

**2. Applying the reel lock pin:**

See chapter "6.2.2 Applying/Releasing the Reel Lock Pin".

**6.3 Mounting/Dismounting the Cable Drum**

*Mounting*

fig. 11



**1. Hooking up the connecting cable to the cable drum:**

The cable drum features a 3-meter-long connecting cable. This cable has a socket and a connecting plug. Usually, the cable's socket is already connected to the cable drum's connecting plug (fig. 11).

**2. Applying the base unit's handbrake:**

Pull the handle of the handbrake (page 14, fig. 4) forward.

**3. Hooking up the connecting cable to the base unit:**

Unwind the connecting cable from the cable drum and connect the plug to the socket on the Profi 3.

Make sure the plug is positioned correctly. This is the case when the red dot on the plug is aligned with the red dot on the socket. (fig. 12). Also, the cable drum cannot be mounted on the Profi 3.

fig. 12



**Dismounting**

To dismount the cable drum, proceed in the reverse order.

fig. 13



**1. Winding up the connecting cable:**

The connecting cable may remain connected to the cable drum. To transport the cable drum, it should be wound up onto the cable run (fig. 13). Be sure to first run the cable to the right, so the cable will not kink behind the plug.

**7. INITIAL OPERATION**

Protective equipment: protective gloves

**7.1 Transporting the Profi 3**



**TIP**

**Battery operation**

If the Profi 3 is just being moved from one pipe opening to the next, the power cord can simply be unplugged. The device automatically switches to battery operation and does not have to be shut down. However, beforehand make sure the battery pack is adequately charged!

The Profi 3 can be transported in an easy manner:

fig. 14



• **Winding up power cord:** For transporting the device, wind up the power cord on the cable run (page 11, fig. 2).

• **Pushing:** Release the handbrake if necessary (page 14, fig. 4). To do so, push the brake's handle backwards. Place the chair (page 11, fig. 2) onto the device and push the device by the chair's carrying handle.

• **Carrying:** Lift the chair off the device by its carrying handle (page 11, fig. 2). Now carry the device by its carrying handle (page 10, fig.1).

• **Car transport:** Thanks to its compact design, the device can also be transported in smaller-sized passenger cars (fig. 14).



**TIP**

**Transporting the device**

To reduce the space needed for a car transport or to reduce the weight of the device when carrying it, the chair and reels/cable drum can be transported separately from the Profi 3.

## 7.2 Preparation



fig. 15

### 1. Applying the handbrake, unless already done:

Pull the handle of the handbrake (page 14, fig. 4) forward. The handbrake is now applied at the base unit's rear wheels.

### 2. Using the chair:

Lift the chair off the device by its carrying handle (page 11, fig. 2). The chair is suited not only as a push aid, it also provides storage space for accessories (fig. 16) and facilitates your work with the Profi 3 (fig. 15).



fig. 16

### 3. Mounting the reel or cable drum:

Mount the reel already connected to the desired camera head (see chapter "6.1 Mounting/Dismounting the Reel").

**Or:** Connect the cable drum with the crawler already mounted (see chapter „6.3 Mounting/Dismounting the Cable Drum“).

### 4. Connecting power cord for mains operation:

Connect the power cord (page 11, fig. 2) to the power supply system. For battery operation, skip this step.

### 5. Opening the monitor cover:

Flip the monitor cover upwards (fig. 17).

### 6. Switching on the device:

Push the ON/OFF button (page 11, fig. 3) on the device's control panel. The system boots up like a computer. The monitor displays respective Windows messages. In the end, the software can3D® starts automatically. The device is operational once the camera picture is visible on the monitor. For using

the software, please refer to the *Quick User Guide Software* for Profi 3.

## 7.3 Control Panel

### 7.3.1 Using the Magnetic Pen

Data entry takes place via the supplied pen and the input area (pen tablet). The pen enables the user to control the mouse pointer, select commands, open lists, etc.



fig. 18

• **Selecting a command:** Move the pen over the input area (fig. 18/1) to select a command. Each pixel in the input area corresponds to one pixel on the screen. For instance, if a spot is being selected in the left upper corner of the input area, then the mouse pointer is being positioned on the respective spot in the left upper corner of the screen.

• **Invoking a command:** Tap the tip of the pen on the input area to start the command or to open a list with several entries to choose from.

### 7.3.2 Adjusting LED Brightness

Kummert camera heads feature LEDs for illuminating the area to be inspected. With the camera heads K-50, K-50D, K-70, K-70L and CamFlex®, as well as the crawler camera, it is possible to adjust the LED brightness via a control knob (fig. 18/2):

**Darker image:** Turn the control knob counterclockwise. At first, the camera overexposes the image and, after that, the LEDs are being dimmed. The image becomes darker.

**Brighter image:** Turn the control knob clockwise. The image becomes brighter.

**Automatic mode:** In order to use the automatic mode (automatic aperture control) turn the control knob clockwise. The image is shortly overexposed before the automatic mode is reached.

### 7.3.3 Aligning and Controlling the Cameras

The control panel features a 3-axis-joystick on its left side (fig. 19/1). Depending on the mounted camera, the joystick's functions differ slightly:



fig. 19

- Use the joystick to virtually pan the camera K-50D in tele mode.
- The camera heads K-70, K-70L and the crawler camera can be manually panned and tilted with the joystick.
- The CamFlex® warps according to the direction the joystick is being moved in.
- Furthermore, the cameras K-70, K-70L, CamFlex® and the crawler camera can be manually focused via the joystick.

**Panning the K-70/K-70L/crawler camera:** Move the joystick to the left or right to pan the camera to the left or right around its longitudinal axis.

**Tilting the K-70/K-70L/crawler camera:** Move the joystick up or down to tilt the camera around its lateral axis. The tilting range is endless.



### TIP

#### Tilting the K-70/K-70L

The camera head can only be tilted once it has been panned and, therefore, is no longer in zero position.



fig. 20

**Digitally zooming the K-50D:** Alternation between tele mode and full image mode is executed by pushing the brightness control knob (fig. 20/2). The full image mode shows the entire pipe area that the camera can capture as the live image.

When in tele mode, the camera captures an image detail, which can be zoomed in and tilted via the joystick (fig. 20/1).

**Warping the CamFlex®:** Move the joystick (fig. 20/1) to the right or the left, upwards or downwards to warp the CamFlex® into the respective direction. The camera can be warped in normal operation mode or halt position operation mode.

The software can3D® automatically switches between the camera's normal and halt position operation mode. If needed, the switch can also be performed manually. To do so, briefly push the brightness control knob below the joystick (fig. 20/2). The respective camera operation is also displayed on screen.

**Focusing:** Turn the joystick clock- or counterclockwise to focus the cameras K-70, K-70L, CamFlex® or the crawler camera.

Turn it counterclockwise in order to focus on an area close-by, turn it clockwise to focus on an area further away.

**Aligning:** Push the brightness control knob (fig. 20/2) to restore the zero position for the cameras K-70, K-70L and the crawler camera.



### TIP

#### Aligning the K-70/K-70L

After each observation, the camera should be aligned so the camera nose lies at the bottom. This provides added protection for the lens and the camera head glides more smoothly through the pipe.



fig. 21

#### 7.3.4 Controlling the Crawler

The control panel features a 1-axis-joystick (fig. 21/1) on the right-hand side.

When the joystick is moved up, the crawler drives forwards. When the joystick is moved down, the crawler drives backwards.

There are two level of driving speed.

**Speed control:** When recording, the speed at the first level is 7 cm/s, at the second level 15 cm/s.

When the camera does not record, the first level lets the crawler drive 15 cm/s, the second level 30 cm/s.

**Steering the crawler:** Push the buttons right/left (fig. 21/2) in order to steer the crawler into the respective direction.

If both buttons are pushed simultaneously while the crawler is driving, the joystick can be released and the crawler maintains the current speed on its own. Move the joystick (fig. 21/1) again to disengage the cruise control.

#### 7.4 USB, BNC and Network ports

The Profi 3 facilitates two USB ports – a 3.0 port is right below the monitor, a 2.0 port can be found on the rear of the device. These ports can be used for data export onto USB thumb drives and external hard drives.

Using the network port on the device's rear, the Profi 3 can be directly connected to a network for data export.

Via the BNC port (analog video out) on the device's rear, image devices like monitor or recorder can be connected. If an external installation facilitates a video input, it may also be connected as long as it is designed conforming to standards.

#### 7.5 Battery Operation

**Operating time:** The Profi 3 features a battery pack, which offers an operating time of approx. 3 hours, depending on the ambient temperature. At low temperatures, however, the capacity drops and, consequently, the operating time is shorter. The battery's selfdischarge increases at the same time.

**Charging process:** As soon as the Profi 3 is connected to the mains supply, the battery is being charged. If the device is turned off, the power light flashes indicating the charging process is under way. If the base unit is turned on, the power light is continuously lit. The charging process takes about 2-3 hours.



### TIP

#### Charging temperature of the battery

For safety reasons, the battery pack may only be charged at temperatures between 0° C and 40° C. Charging is deliberately prevented beyond this temperature range.

**Switch between mains and battery operation:** To switch from mains to battery operation during an inspection, simply unplug the power cord.

To switch back to mains operation, reconnect the power cord to the power supply system.



### TIP

#### Battery operation

Before switching the device to battery operation, make sure that the battery is sufficiently charged.

**Battery charging level:** The Software can3D® has a display indicating whether the device is mains or battery powered. During battery operation, the charging level is displayed as well. The display turns red when the battery's capacity is low.



## NOTE

### Data loss!

Always recharge the battery in time! If the battery's capacity drops to zero, the Profi 3 turns itself off. Unsaved data will be lost.

## 7.6 Work Conclusion

1. Ensure that the handbrake is applied in order to avoid unwanted rolling of the device.
2. Shut down the device.
3. Reel in the push rod. Clean the push rod with a clean cloth as soon as the reeling in starts to avoid soiling of the reel.
4. Set the reel lock pin.
5. If necessary, apply the freewheel brake.
6. If connected to a power supply system, unplug the power cord.
7. Wind up the power cord on the cable run.
8. Clean the device with a moist, clean cloth.
  - Do not use harsh detergents.
  - Do not clean the device with a high-pressure washer.

## 8. CLEANING AND MAINTENANCE



## NOTE

### Property damage due to incorrect cleaning!

Incorrect cleaning may cause property damage or breakdown. Therefore:

- Clean the base unit and reel only in a de-energized state.
- Never use a high-pressure washer or similar means for cleaning.
- Do not use abrasive, corrosive or other aggressive detergents.
- Clean the base unit and push rod after each use.
- Make sure that neither dirt nor moisture penetrates the connectors.



fig. 22

In order to keep moisture away from the reel connection socket, cover it with the supplied protective cap (fig. 22) before cleaning the base unit.

Clean the base unit with a moist, clean cloth (if need be, using a mild detergent).

## 9. TROUBLESHOOTING

Device does not operate

Monitor displays no camera picture

Monitor picture is black and white

Faulty meter count

Other faults

**Mains operation:** check plug for correct fit  
**Battery operation:** recharge battery

Connect camera head  
Check connections of push rod and plug

Shut down and boot up the device

Reel in rod completely, then shut down and boot up the device

Please contact our Technical Support:  
Phone: +49 (0) 9382 - 9727-710

## 10. DISPOSAL

When the device has reached the end of its useful life, it has to be disassembled and disposed of in an environmentally safe manner.

Unless both parties agreed otherwise on recycling or disposal, all components must be properly dismantled and recycled as follows:

- Scrap any metal parts.
- Recycle any plastic parts in the appropriate manner.
- Dispose of all other components separately depending on the nature of material.



## NOTE

### Danger to environment due to incorrect disposal!

Incorrect disposal may cause dangers to the environment. Therefore:

- Electrical waste, electronic components, lubricants and other substances may only be disposed of by certified specialist companies.
- When in doubt, ask for information on environmentally safe disposal at your local authorities or specific waste management companies.

## 11. ACCESSORIES



Protective cap for the 7-pin socket of the base unit

**Art.-No. 7297**

Manufacturer:

# KUMMERT

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