

WÖHLER

Operating manual
Service Camera **EN**
www.intertest.com



Wöhler VIS 2xx
Wöhler VIS 3xx

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Technical Manual

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1 General Information

1.1 Operation Manual Information

This operation manual allows you to safely work with the Wöhler VIS 2xx / 3xx service camera. Please keep this manual for your information.

The Wöhler VIS 2xx / 3xx service camera should be used by trained professionals for its intended use only.

Liability is void for any damages caused by not following this manual.

1.2 Notes



WARNING!

Not following this warning can cause injury or death.



ATTENTION!

Not following this note can cause permanent damage to the analyzer.



NOTE!

Usefull information

1.3 Intended Use

Do not use the Wöhler VIS 3xx / 2xx for any other use than set out in this manual.

Use the Wöhler VIS 3xx / VIS 2xx Service Camera for the inspection of pipeworks, drains and sinks, such as exhaust systems, ductworks etc. and for the documentation of damages.

1.4 Components

Model	Components
VIS 2xx / 3xx	Heavy duty carrying case
	Push rod
	Monitor
	2 Replacement batteries NiMH
	1 Anti slide mat
	Power supply
	2 GB CF-Card (VIS 240 / VIS 340)
	Mini USB-cable (VIS 240 / VIS 340)
VIS 2xx	Color camera head
VIS 3xx	Pan & tilt color camera head
	5 Replacement glass domes, extra

1.5 Transport



ATTENTION!

The camera should be transported in the original carrying case only!

1.6 Information on disposal



Electronic equipment does not belong into domestic waste, but must be disposed in accordance with the applicable statutory provisions.

You may hand in any defective batteries taken out of the unit to our company as well as to recycling places of public disposal systems or to selling points of new batteries or storage batteries.

1.7 Manufacturer

Wöhler Messgeräte Kehrgeräte GmbH

Schützenstr. 41

33181 Bad Wünnenberg

Tel.: +49 2953 73-100

Fax: +49 2953 73-250

E-Mail: mgkg@woehler.de

Service-Hotline:

+49 2953 73-200

2 Specifications

2.1 Monitor



Fig. 1: Monitor

Description	Date
TFT - Display	7" / 16:9 and 4:3
Weight	400 g
Casing size	176 x 114 x 32 mm
Video out	FBAS
Power Supply	1 x rechargeable battery NiMH
Power	Power supply unit
Voltage	12 V
Operation temperature	0 – 40 °C
Storage temperature	-20°C – 50°C

2.2 Color Camera Head



Fig. 2: Miniature camera head color

Description	Date
Type	1/3" Color CCD
Sensitivity	0.5 Lux
Lens system	f = 2.31 mm, F = 2.4
Field of view	120°
Light source	12 white LEDs
Protection	Waterproof acc. to IP 68
Size	26 mm x 38 mm

2.3 Camera head, pan and tiltable



Fig. 3: Camera head, pan- and tiltable

Description	Date
Typ	1/3" Color CCD
Sensitivity	0.5 Lux
Lens system	f = 2.31 mm, F = 2.4
Field of view	120°
Light source	12 white LEDs
Protection	Waterproof acc. to IP 67
Size	40 mm x 60 mm

2.4 Rod

Description	Date
Length	20 m (Optional 30 m)
Diameter	6.5 mm (VIS 3xx) 6 mm (VIS 2xx)

2.5

**Digital distance
measurement
(VIS
230/240/330/340)**

Description	Date
Resolution	0.04 m
Max. discrepancy	10% of reading

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2.6

**Storage
(VIS 240 / VIS 340)**

Description	Date
Memory card	max. 32 GB (You must format the card on the PC, FAT 32.)
Capacity	App. 1h / GB
Resolution	640 x 480 (VGA)/ max. 30 fps
Format	ASF (MPEG4)

3 Component explanation

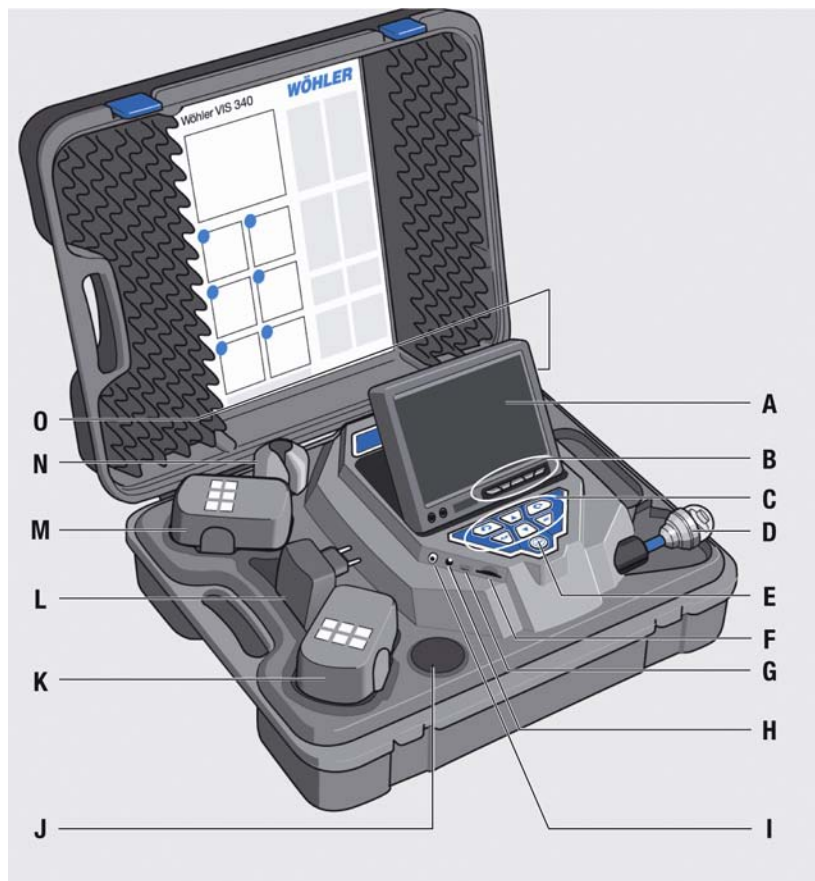


Fig. 4: VIS 3xx

Component explanation:

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- A** Monitor
- B** Monitor controls
 - Brightness / contrast
 - Color
- C** Camera control (only VIS 3xx)
with record and play-function (VIS 240 / VIS 340)
- D** Camera head, waterproof:
 - VIS 3xx: pan- and tiltable
Color camera head 40 mm Ø
 - VIS 2xx: Miniature color camera head 26 mm Ø
- E** Main power switch with the following functions:
 - ON / OFF (System)
 - Battery and system status
 - Reset distance measurement (press shortly)
 - Escape
- F** Cardslot for memory card (VIS 240 / VIS 340)
- G** Mini-USB-port (VIS 240 / VIS 340)
- H** Power supply socket (18V/1,6A)
- I** Video out
- J** Accessory compartment 1
- K** Rechargeable battery, extra
- L** Power supply
- M** Rechargeable battery, in use
- N** Accessory compartment 2
- O** Accessory compartment 3

3.1 Versions

The differences between the versions are as follows:

3.1.1 VIS 2xx

Equipment	<ul style="list-style-type: none">- Miniature Camera head: 26 mm Ø- VIS 220: Metric marked push rod cable- VIS 230: digital meter counter (optional also with Locator Wöhler LT 24- VIS 240: Video file memory
Application area	<ul style="list-style-type: none">- Flue gas lines- Air conditioning and heating lines- Analysis of defects in waste water pipes (40 mm Ø and bigger)- With the Lokator: 50 mm Ø and bigger

3.1.2 VIS 3xx

Equipment	<ul style="list-style-type: none">- Camera head, pan- and tiltable (360° panable and 180° tiltable camera eye) 40 mm Ø- VIS 330: digital meter counter (optional also with Locator Wöhler LT 24)- VIS 340: Video file memory
Application area	<ul style="list-style-type: none">- Flue gas lines with a diameter greater than 60 mm Ø and bows of 87° and more.- Chinmeys- Exhaust systems- Detection of problems in waste pipes with 70 mm Ø or bigger

3.2 Camera Control

VIS 220 / 230



Fig. 5:
Camera control VIS 220 / 230

The control panel includes the ON-/OFF-Key of the camera system. When the camera is switched on and the battery is completely charged, there will shine a green ring around the ON-Off-Key.

While charging the battery, the ring will blink red and after charging is completed, the lower part will shine green.

Pressing the ON-/Off-key will turn on both the camera system and the monitor (all versions).

VIS 330



Fig. 6:
Camera control VIS 330

The control panel includes the ON-OFF key of the camera system and the control keys for the pan- and tiltable camera head.

(The camera eye is 360° panable and 180° tiltable).

The center arrow keys control the 180° tilting. With the two outer keys the lens can be turned round 360°.

VIS 240 / 340



Fig. 7:
Camera control VIS 240 / 340

The camera eye is 360° panable and 180° tiltable. (only VIS 340)

The center arrow keys control the 180° tilting. The two outer keys turn the lens 360° (only VIS 240).

In the Play-mode, the two **outer arrow keys** are also used for the menu navigation (VIS 240 and VIS 340).

The **Rec-key** starts and finishes the Video recording.

Press the **Play-Key** to play the stored video file.

Press **ON/OFF** to stop the play back.

Press the **Rec-key two seconds** to delete a selected video file. On screen the note "Video deleted" will appear.

Arrow keys: Selection of the video

Functions of the ON-/OFF-key

Press	Functions
2 seconds	System ON/OFF
shortly	Escape (play mode)
shortly	Reset digital meter counter

3.3 Monitor

3.3.1 Adjusting the Color

Monitor
VIS 2xx / VIS 3xx



Fig. 8: Monitor

With the keys ▼☀▲ the brightness can be adjusted.
▼: darker ▲: brighter

With the keys ▼🎨▲ the color intensity can be adjusted
▼: decreasing color intensity up to black and white
▲: increasing color intensity

3.3.2 Transition from 16:9 Screen to 4:3 Screen

If the monitor has the serial number 11010001, the screen format can be changed from 16:9 to 4:3 or vice versa. You will find the serial number on the back side of the monitor.



- Switch off the camera system.
- Press the left monitor key and the on/off-key of the monitor at the same time.

The screen format has now changed from 4:3 to 16:9 or vice versa.



NOTE!

When inspecting tubes the 4:3 screen is recommended, because the widescreen 16:9 may distort the image.

4 Getting started

4.1 Check battery status



WARNING!

Incorrect use of batteries can cause injury!

Do not expose batteries to fire or high temperatures, that will cause danger of explosion!

Liquids can pore out of the batteries due to mis-treatment. Never touch the liquid. If you got in contact to the liquid remove it with water and see your doctor as soon as possible.



WARNING!

Risk of electrical shock!

Never touch the recharger with wet hands!

Protect the recharger against water and moisture!

Do not unplug the recharger by pulling the cable!

Do not use the recharger when the voltage requirements of the recharger and the supply do not match!

When the monitor indicates a low battery status,

Battery Level Indicator



Fig. 15: Border of the ON/OFF key flashes red

While the camera is turned on, a battery level indicator will be displayed in the upper right-hand corner of the display. It flashes to indicate low power. When the power gets lower, the border of the ON/OFF-key will flash red and the camera will turn off automatically.

The camera can only be turned on again, after the battery has been changed or the power supply unit has been connected for charging..

Charging the batteries

Charge the batteries as follows:

Before you plug the power supply unit into the outlet, connect it with the camera system.

During the charging process the lower part of the border around the ON-/Off-key will blink red. After the charging process has finished it is highlighted red.

5 Working with the camera

5.1 Turning the camera and the monitor on

VIS 2xx / 3xx

- Install the memory card (max. 32 GB)



Note!

It is necessary to format the card on the PC first (FAT 32).

- Turn on the camera system by pressing the ON/OFF-key.

5.2 Important notes

Strong electric or magnetic fields



WARNING!

Do not expose the camera to strong electric or magnetic fields as caused by television towers, mobile radio units etc., because they may cause image interferences.

Exterior influences



WARNING!

Exterior influences as statical discharges may cause dysfunctions. In this case switch the camera off and on.

Push rod

- Push and pull smoothly
- Do not exceed rod end limit
- Do not bend or drag across sharp edges

EN**WARNING!**

Dry and clean the rod with a cloth, before pulling it back, so that no dirt and soot can enter!

Carrying case

- Avoid any liquids getting inside the case.
- Do not drop the case.

Camera head

- Protect the lens of the camera head against scratches.

**NOTE!**

*Originally the **camera head VIS 3xx** is protected by a plastic dome, which can be substituted by a glass dome if necessary. Alternatively a glass dome can be purchased that must be screwed onto the camera head!*

6 Changing the camera head and the dome

6.1 Changing the dome of the colour camera head VIS 3xx

Before installing the new dome, grease the screw thread slightly with silicone grease. Take care that the dome is screwed firmly up to the last thread. Otherwise the camera head will not be tight, and water and dust can get inside.



Fig. 9: Installing the dome

6.2 Exchanging the camera head VIS 230 / 330 (with locator)

The rod end has a screw thread, so that the miniature camera head and the pan- and tiltable camera head can be fixed and removed by screwing. Take care to screw the rod and the camera head firmly together, otherwise the assembly will not be waterproof.



Fig. 10: Camera head with locator

! ATTENTION!

Only use your hands to screw the camera head, but never a tong!

7 Setting Date and Time (VIS 240 /340)

VIS 240 / 340



Fig. 11: Control panel VIS 240 / 340:
Press marked buttons simultaneously

- With the camera switched off, press the ▲ button and the ON/OFF-button simultaneously for two seconds.



The camera switches on and the display will show a menu where the following setups can be done.

- Date
- Time
- Distance in Meter or Feet
- DD.MM.YY or DD/MM/YY
- 12 h or 24 h clock



- Move from one parameter to the other with the arrow keys and change the values with the ▲/▼-keys.
- Press the ON-OFF-button to escape the menu.

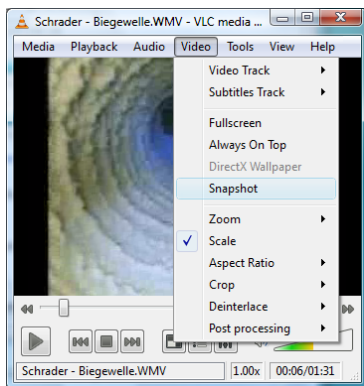
Fig. 12: Setup Menu

8 Play videos at PC

8.1 Installation VLC-Viewer

- Insert CD. (The VLC Viewer is available as freeware in the internet.)
- Click on Index.html. The menu will open.
- Click on the button “Install”.
- After the installation, the video files can be re-played in the AFS/MPEG4 format.

8.2 Create frames



8.3 Snapshotlist



- Click on Tools > Preferences for storing.
- The window shown on the left will open.
- Select the Icon Video.
- Click on “Browse” and select the path where you want to store your snapshot. You can select the file format (png or jpg) and add your own prefix to the filename.
- Click on “Save”.

As the program is a freeware (“Open Source”) Wöhler cannot provide any technical support. You will find more information as well as the current version on the Website of the softwaremanufactor www.videolan.org

9 Guide conducts VIS 2xx / VIS 3xx

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This chapter contains some recommendations based on our experience about the selection of guide conducts for the inspection in tubes and ducts.

As all tubes and chimney systems are different, the user has to decide about the guide conducts in every single case. For the selection of the correct tool it is important to consider that the guide conduct has to facilitate the introduction and the extraction of the camera head, as well as an adequate guidance. The danger of jamming or getting stuck in the tube has to be avoided.




NOTE!

The information given in this chapter only refers to the accessories. Chapter 3.1 explains which camera system can be used in which tube.

Ø 40 - 50 mm	Use the service camera without accessories.
Ø 50 – 70 mm	You can use the service camera without accessories. The lens can be protected by the guidance sleeve. If there is water and mud in the horizontal part, we recommend to use the roller guide.
Ø 70 – 100 mm	The inspection is possible with the roller guide and without it. Use the guidance weight for the vertical inspection or for the inspection of downpipes.
Ø 100 – 154 mm	A centering brush can be used with the roller guide or without it and with the lens protection.

10 Troubleshooting

Problem	Possible reason	Solution
The battery level indicator shown in the display indicates a low battery status.	Rechargeable batteries are empty.	Replace or recharge batteries.
The monitor is off, but the LEDs of the camera head are shining.	The monitor is not connected correctly.	Plug in the monitor plug.
Monitor displays black and white.	Minimal color intensity is set.	Adjust the color intensity of the monitor (see chapter 3.3) 
VIS 3xx: Bad image	Plastic dome is scratched.	Change the plastic dome (Option: Glass dome).
Camera or monitor do not react.	Disposable or rechargeable batteries are empty.	Replace or recharge batteries.
	The camera system is damaged.	Send the device in for repair.
The monitor display is blue and the message NO SIGNAL appears.	The rod is broken.	Send the device in for repair.
	The monitor is not connected correctly.	Connect the monitor correctly. The connection cable is broken. Send the device in for repair.
	VIS 230 / 330: The color camera head is not connected correctly to the locator.	Attach the changeable color camera head again.

11 Maintenance

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Regular maintenance

Proper operation of the VIS 2xx / 3xx requires regular maintenance. The following maintenance works can be done by the user himself.

Camera head

Only use soft, damp cloth to clean the lens. Never use any cleanser.

Push rod

Regularly pull the rod out of the case and clean it with a soft, damp cloth.

Monitor

Use soft, dry cloth to clean the monitor.

12 Warranty and service

12.1 Warranty

Each Wöhler VIS 2xx / 3xx will be tested in all functions and will leave our factory only after extensive quality control testing.

If used properly, the warranty period for the VIS 2xx / 3xx will be 12 month from the date of sale. Not covered by the warranty are the batteries and the plastic dome VIS 3xx.

This guarantee does not include the costs for transport and packing material in case of repair.

Service by non authorized personnel or making modifications on the service camera voids any warranty.

12.2 Service

Wöhler has built our reputation on excellence in customer service. Therefore, of course, we are readily available to assist you after the guarantee period ends.

- Send us the device, and we will repair it and return it to you with our package service.
- Immediate help is provided by our technical staff over the telephone.

13 Accessories

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Wöhler VIS Guidance Set 110 for VIS 3xx	Order No. 3884 J
Wöhler VIS Guidance Set 70 for VIS 2xx	Order No. 3883 J
Wöhler VIS Centering Brush Extension	Order No. 3853 J
Wöhler VIS Centering Brush	Order No. 3854 J
Camera Roller Guide VIS 3xx	Order No. 3681 J
Wöhler VIS Stabilisation Tube	Order No. 21736 J
Guidance Weight, stainless steel	Order No. 3857 J
Guidance Ball	Order No. 3634 J
Wöhler Quick Charger 2,5 A / 230 V / 50 HZ	Order No. 56102 J
Spare Battery NiMh tested	Order No. 3715 J
Protection Sleeve for Wöhler VIS 3xx	Order No. 3682 J
Glass Dome	Order No. 3674 J
Replacement Plastic Domes (10 pcs.)	Order No. 3675 J
Anti Slide Mat	Order No. 56037 L
Wöhler Supplementary Light Ring with white LEDs	Order No. 9377 P
Wöhler Side View Mirror for the VIS 2xx	Order No. 7923 J
Pocket Multimediarecorder with AV- IN	Order No. 3726 L
Wöhler VIS Centering System (24 pcs.)	Order No. 3858 J
Guidance Sleeve for VIS 2xx	Order No. 3827 J
Guidance Sleeve with Protection Cage for VIS 2xx	Order No. 3847 J

14 Declaration of conformity EC

WÖHLER Messgeräte Kehrgeräte GmbH
Schützenstr. 41, D-33181 Bad Wünnenberg

Declares that the following product:

Name: Wöhler Service Camera

Model: Wöhler VIS 2xx / 3xx

Complies with the safety requirements set out in the directives of the European parliament and council on the approximation of laws of the Member States relating to electromagnetic compatibility (204/108/EC) and low voltage (2006/95/EC).

The following standards were used to access the products in terms of electromagnetic compatibility.

EN 55024

EN 55022 Class B

InterTest, Inc
303 State Route 94
Columbia, NJ 07832

908-496-8008
sales@intertest.com
www.intertest.com