Installation and Operation Manual

Video Web Inspection System

DRELLOSCOP

V5000 digital

This installation and operation manual
Part-No.: 5.5000.2B004e

is valid for the system

DRELLOSCOP V5000 digital
in manual and motorised version

Read and adhere to this manual **before** you install, operate, store or handle the system.

DRELLO

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Introduction

The manual for the installation of the DRELLOSCOP Video 5000 has been prepared for persons (electrical engineers and service engineers), who are responsible for the installation and maintenance of the system. These persons have to be familiar with all regulations concerning electrical engineering and have to adhere to these in any case.

The operation manual for the installed system has been prepared for those persons who use the system for inspection purposes and who have to make settings on this.

Read this manual carefully in order to become familiar with the correct operation of the system.

Correct use

The video system DRELLOSCOP Video 5000 is exceptionally destined for the professional use in the visual quality control. Any other use is regarded as incorrect use and all risks are solely on the part of the user.

Correct use for example is the application in quality control in the printing industry during label printing.

The installation and maintenance of this system must only be made by electro-technical specialists.

Any questions concerning the operation of the system or special applications, which are not answered in this manual, should be directed to:

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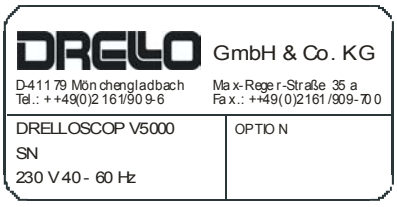
Nameplate

For identification of the system you will find its serial number on the rear side of the DRELLOSCOP V5000.
Please note down the serial number behind SN in this illustration, in order to have it available in case of questions or spare part orders.



Electromagnetic compatibility

The DRELLOSCOP Video 5000 meets the protection requirements of the European Directive version 2004/108/EG.

Warnings

Safety relevant parts of the system components are marked with warnings. Please take the position of the relevant warning from the following chapters.

Safety measures

Danger through electric current

- Operate the video system DRELLOSCOP V5000 and the peripherals only with the mains voltage intended for it.
- Make sure that only qualified personnel (electrical engineers) are instructed with the installation and maintenance of the system.
- Separate the video system from the mains and all other peripherals in case there is an indication for a defect by smoke or sharp smell.
- There are residual voltages at the capacitors in the interior of the flash units of the camera lamp housing! The housing is only to be opened by qualified personnel (electrical engineers) for exchanging the illumination unit. There are no further parts which you can exchange or repair.
- Take care that no liquids enter into the units of the video system (e.g. by cleaning or by bottles placed on it). Never continue operating the system when liquids have entered.
- If you do not use the video system for a longer period, separate it from the mains. Only store the video system in dry rooms which are protected from the weather.
- Make sure that the connected cables will not be bent, squeezed or damaged elsewhere. Replace a damaged cable immediately.
- In case a safe operation of the video system cannot be assured anymore, separate the system from the mains and secure it against unintended switching on.
- A safe operation is no more possible in the following cases for example:
  – when a system component or a connection cable shows visible damages
  – when the protective glass cover of the lamp is defective or even missing
  – when the video system does not work correctly
  – when the video system or one component was exposed to moisture or rain
  – in case of formation of condensing water
  – when objects entered into the video system
  – when the permissible storage / operation temperature was exceeded or fell below a permissible value

Installation

Installation measurements described in this manual must only be made by electro-technical specialists. In any case the relevant regulations of electrical engineering have to be observed and maintained.

Operation

Allow for sufficient ventilation all around the video system. In case of insufficient ventilation the system will be overheated, which may lead to severe damages to the system and to subsequent damages.

Repair

Do not repair the video system yourself. Always refer to the service department of company DRELLO GmbH & Co. KG. Incorrectly executed work may lead to personnel injury, material damage or damages on the system itself.

Maintenance

Maintenance work as described in this manual must only be made by qualified personnel. In any case the relevant regulations for electrical engineering have to be observed and maintained.

Carry out only the maintenance work described in this manual. All further works may lead to personnel injury, material damage and damages on the system itself.

Disposal

Packaging

The single system coponents are secured by a packaging against damages during transport. After unpacking take care for environmental disposal of the packaging.

System components

European Community:
In accordance with EC regulation (2002/96/EG) ("WEEE" resp. [EAG]) regarding the disposal of electronic and electronical devices, the system components have to be disposed at the end of their lifetime at a recycling collecting point for electronic and electronical devices of the public waste disposal organisation. Small quantities of industrial used devices of the classification"b2b" (business to business) are normally accepted at no charge by arrangement with the public waste disposal authority. Ask your administrative authority for the responsible disposal point.

Other nations:
Ask the responsible authorities for an environmental disposal of old electrical devices.

Symbols used

The security advice of this manual are classified in two stages:

Danger!
Security advice which non-observance may lead to danger to persons are marked with this symbol. This symbol is used in cases of imminent danger. The possible consequences of non-observance can be death or serious injuries.

Attention!
This symbol is used in front of warnings concerning damages on the video system or on other components.

In some chapters you find the following advice symbol:

Advice
This symbol refers to special advice for the use of the video system.

Product description

Function

The DRELLOSCOP V5000 is a video web inspection system for the visual quality control on running printing and material webs.

By means of a camera the system scans a selected part of the web and transfers this on the monitor of the system. This part is displayed as a standing "frozen" image until another scan is made. In case the scans - which are controlled through a sensor – and the repeats of the printing web are synchronous, the observer can make controls during running production. The system functions are set by means of the remote control or alternatively through the touch-screen monitor (option).

Available functions are as follows:

- Switching between coarse and fine adjustment
- Test mode for adjustments and scanning at standing machine
- Adjustment of image brightness
- Adjustment of image sharpness
- Adjustment of image zoom
- Quick zooming in or zooming out of image
- Reference image storing
- Split screen for comparing active and reference image
- Interruption of image scan for display of frozen image
- Manual image shifting across to web direction (only manual version)
- Motorised image shifting across to web direction (only motorised version)
- Automatic image shifting in web direction (vertical scan)
- Automatic continuous image shifting across to web direction “Horizontal Scan” (only motorised version).
- Automatic stepwise image shifting across to web direction „Stepscan“ (only motorised version)
- Automatic image shifting diagonal to web direction "Diagonalscan" (only motorised version)
- Image shifting by 180°
- Image display in full screen mode
- Image observation in transmitted light for mark to mark face to reverse printing (option).

Scope of delivery

1 DRELLOSCOP V5000 control stage
1 camera lamp module
1 remote control
1 monitor / touchscreen monitor (option)
1 sensor for the electromagnetic scanning of gears
1 motor drive (only motorised version)
1 cable set for the electric connections of system components
1 traverse including mounting set
1 installation and operation manual
1 short manual

Standard accessory

DRELLOSCOP 1300
Illuminating unit for replacement
Part No. 5.1300.50001

Optional accessory

- Touch screen monitor
  For operating the system through the graphic desktop

- Master sensor
  For scanning the zero pulse

- Mounting brackets
  For fixing the traverse on one or on two sides

- Mounting angles
  For fixing the mounting brackets onto the machine frame

- Image storing (on demand)
  For storing of images on data carriers for the purpose of documentation or quality assurance

Total view

(1) Mounting bracket (Option)
for fastening the traverse onto the machine frame

(2) Cable drag chain (motorised version only)
for guiding the connection cable of the camera lamp module along the traverse

(3) Camera lamp module
for scanning the print web

(4) Monitor
for displaying the scanned images

(5) Touch screen (Option)
for operating the DRELLOSCOP V5000 through the graphic desktop

(6) Motor control unit (motorised version only)
for motorised positioning of the camera lamp module across to the print web

(7) Traverse
for positioning of the camera lamp module above the print web

(8) Illumination unit
for illuminating the area to be scanned

(9) Master sensor (Option)
for scanning the zero point of the repeat (variable design)

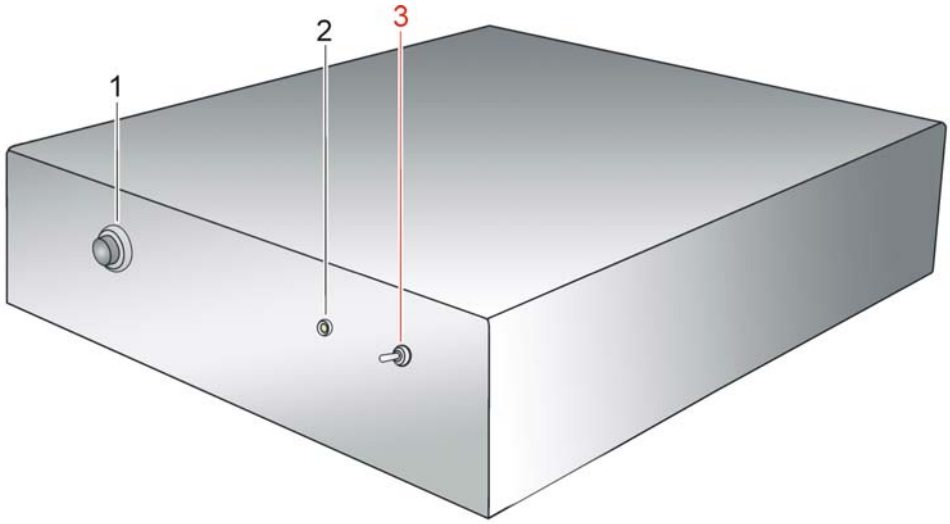
(10) Gear sensor
for synchronisation with the print web through gear scanning (variable design)

(11) Remote control
for operation of the DRELLOSCOP V5000

(12) Control stage
for controlling the DRELLOSCOP V5000

Operating elements and connections

Control stage - front view

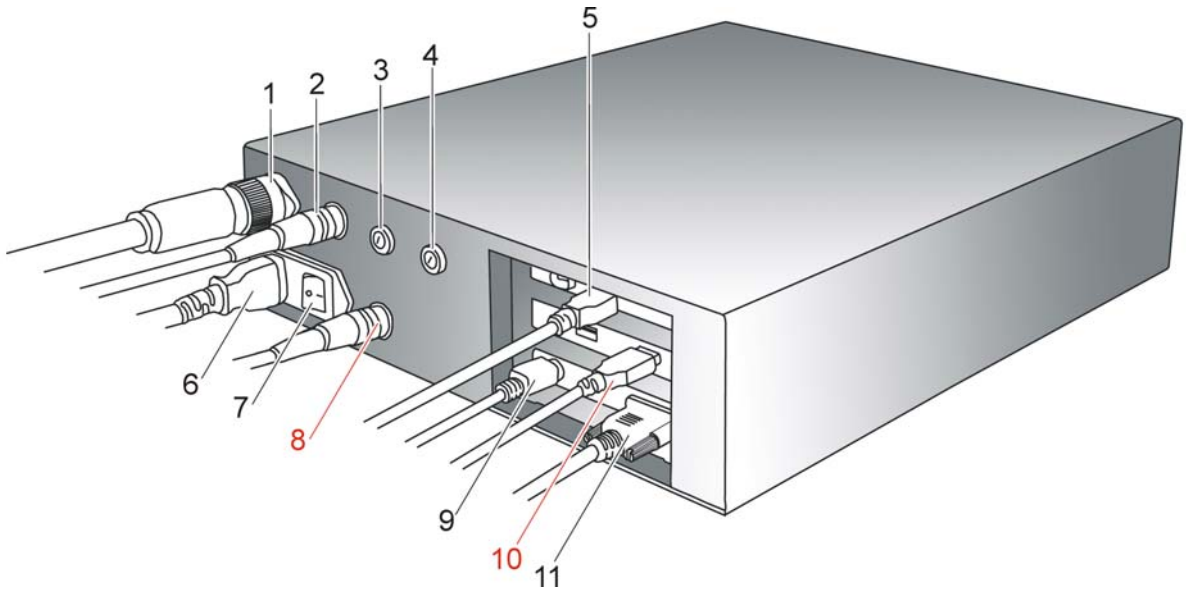


(1) Shut down the system

(2) Operation control LED

(3) Transmitted light operation ON/OFF (Option)

Control stage - rear view



(1) Connection sensor at manual system version
Connection motor drive at motorised system version

(2) Connection camera lamp module

(3) Fuse sensor at manual version
Fuse motor control at motorised version

(4) Fuse illumination unit

(5) Connection video signal camera

(6) Connection mains cable

(7) Power switch with integrated main fuse

(8) Connection illumination unit for transmitted light observation (option)

(9) Connection remote control

(10) Connection touch screen (option)

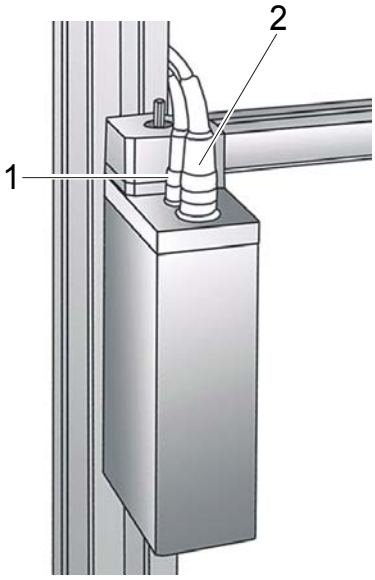
(11) Connection for video signal monitor

Camera lamp module

(1) Connection control stage

(2) Video cable for connection to the control stage (not removable)

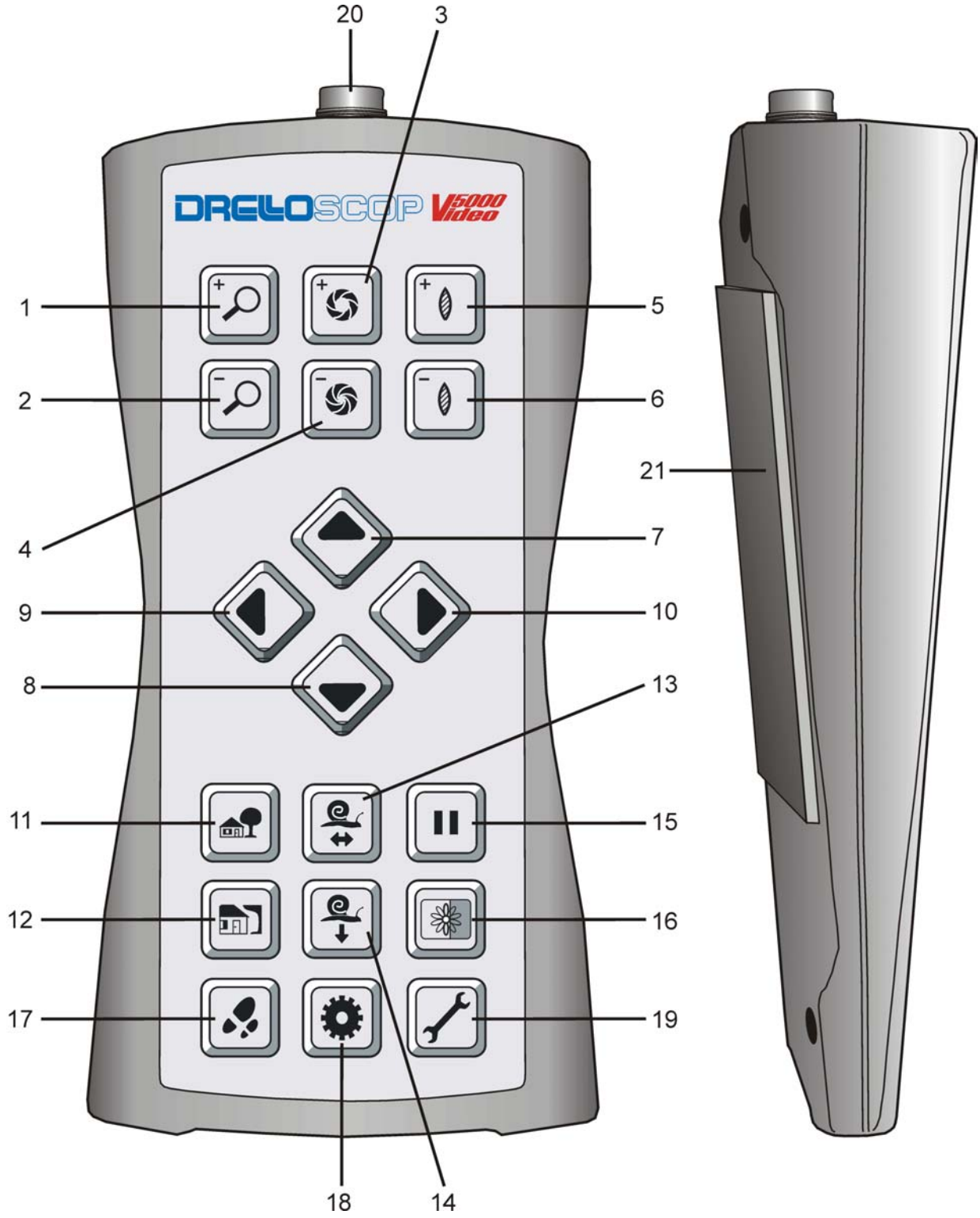
Motor control (only motorised version)



(1) Connection sensor (connection of sensor to control stage not applicable)

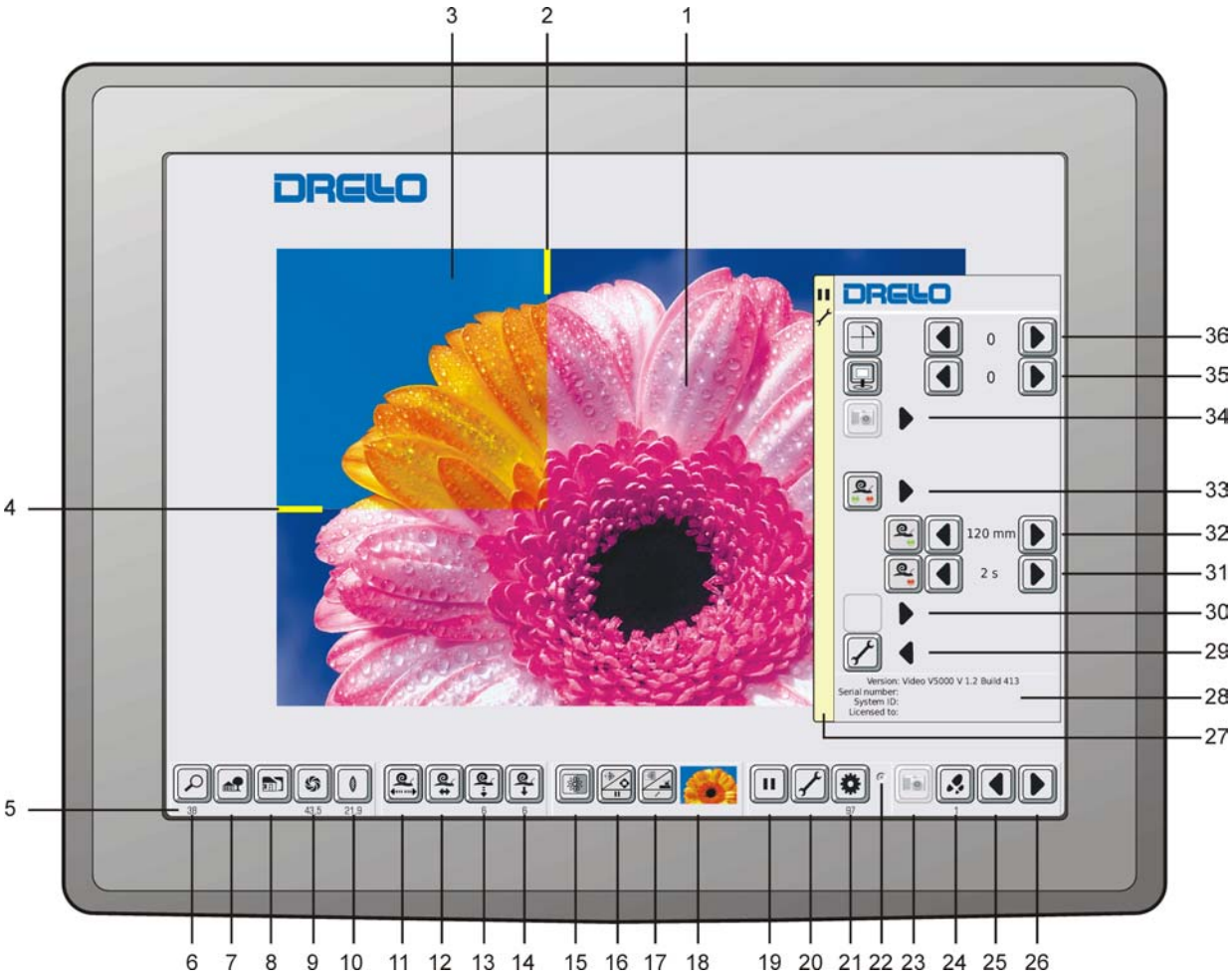
(2) Connection control stage

Remote control



1		**Zoom +** Zooming in of image detail	Page 28	**2**		**Zoom -** Zooming out of image detail	Page 29
3		**Iris +** Increasing of image brightness	Page 28	**4**		**Iris -** Reducing of image brightness	Page 28
5		**Focus** Setting of image sharpness	Page 28	**6**		**Focus** Setting of image sharpness	Page 28
7		**Shifting forward** Shifting of the image in web direction **Navigating within the system menu** **Setting of split screen** at activated ***Split-Screen (16)***	Page 30 26 33	**8**		**Shifting backward** Shifting of the image in web direction **Navigating within the system menu** **Setting of split screen** at activated ***Split-Screen (16)***	Page 30 26 33
9		**Shifting to the left** (only motorised version) Shifting of the image across to the web direction **Reducing of set values** **Setting of split screen** at activated ***Split-Screen (16)***	Page 30 26 32	**10**		**Shifting to the right** (only motorised version) Shifting of the image across to the web direction **Increasing of set values** **Setting of split screen** at activated ***Split-Screen (16)***	Page 30 26 33
11		**Quick Wide** Quick maximum zooming out	Page 29	**12**		**Quick Zoom** Quick maximum zooming in	Page 29
13		**Horizontalscan** (only motorised version) Automatic image shifting across to web direction. **Diagonalscan** (only motorised version) Diagonal shifting in combination wih ***Verticalscan (14)***	Page 30 32	**14**		**Verticalscan** Automatic image shifting in web direction. **Diagonalscan** (only motorised version) Diagonal shifting in combination with mit ***Horizontalscan (13)***	Page 31 32
15		**Hold mode** Stops image transfer for display of „frozen image“. **Opening system menu** at subsequent activation of ***Test mode (19)*** **Image positioning / split screen** Switches over between „split screen“ and „camera positioning“ at activated ***Split-Screen (16)***	Page 33 31 34 33	**16**		**Split-Screen** Splits the screen and releases the scanning of a reference image.	Page 33
17		**Coarse / Fine** Switches between step sizes of the setting modes.	Page 26	**18**		**Teeth number** Setting of teeth number of the active print cylinder	Page 26
19		**Test mode** Automatic image scanning at standing print web **Opening system menu** After prior activation of ***Hold mode (15)*** **Reference image scan** Scans a new reference image at activated ***Split-Screen (10)***	Page 27 31 34 33	**20**		**Connection control stage** For the electrical connection of remote control and control stage	Page 22
21	**Magnet holder** For variable fixing of the remote control to all ferro-magnetic materials.						

Monitor

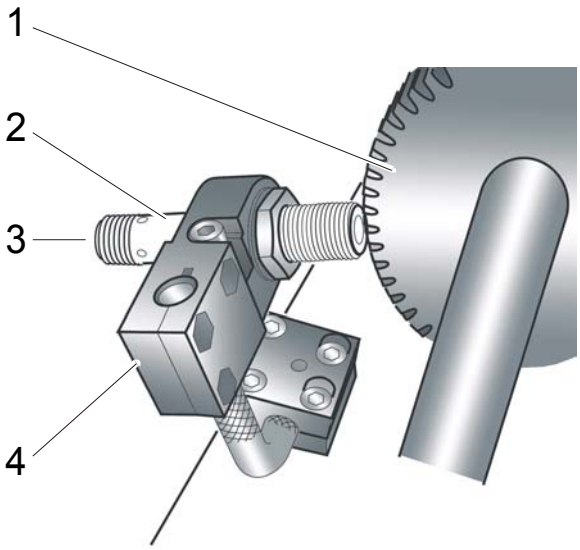


For device-specific connections and operation elements refer to separate operation manual of the monitor.

1		**Active image** display of the currently scanned image		**2**		**Vertical split mark reference image** marks the vertical border between reference image and active image.	Page 33
3		**Reference image** variable display field of the reference image, visible at activated ***Split-Screen (15)***	Page 33	**4**		**Horizontal split mark reference image** marks the horizontal border between reference image and active image.	Page 33
5		**Status bar** shows current setting values of the relative function.		**6**		**Zoom** zooming in resp. zooming out of an image - status bar displays zooming level	Page 29
7		**Quick-Wide** quick maximum zooming out.	Page 29	**8**		**Quick-Zoom** quick maximum zooming-in	Page 29
9		**Iris** setting of image brightness - Status bar displays level of brightness.	Page 28	**10**		**Focus** setting of image sharpness - status bar displays level of sharpness	Page 28
11		**Image positioning right / left** image shifting across to web direction - Status bar displays activation during the shifting. (only motorised version)	Page 30	**12**		**Horizontalscan** Automatic continuous image shifting across to the web direction. **Stepscan** Stepwise shifting in combination with the ***Stepscan mode (33)*** **Diagonalscan** diagonal shifting in combination with ***Verticalscan (14)*** (only motorised version)	Page 30 31 32
13		**Image positioning forward/backward** image shifting in web direction - Status bar displays step size	Page 30	**14**		**Vertikalscan** Automatic continuous image shifting in web direction. **Diagonalscan** Diagonal shifting in combination with the ***Horizontalscan (12)*** - Status bar displays step size	Page 31 32
15		**Split-Screen** splits the screen and releases a reference scan	Page 33	**16**		**Image positioning / Split screen** switches over between image positioning and setting of split screen at activated ***Split-Screen (15)***	Page 33
17		**Scan of reference image** scans a new reference image	Page 33	**18**		**Reference image** miniature display of the active reference image	Page 33
19		**Hold on** interrups the image scan for display of „frozen“ image	Page 33	**20**		**Test mode** automatic image scanning at standing print web	Page 27
21		**Number of gear teeth** sets the number of gear teeth at the active print cylinder- Status bar displays the adjusted teeth number	Page 26	**22**		**Display image scan** flashing display indicates incoming images of the camera.	
23		**Image storing (Option on demand)** stores images on data carriers for purpose of documentation or quality assurance.		**24**		**Coarse / Fine** switching between step sizes of the setting modes - Status bar displays step size	Page 26
25		**Shifting left / backward** image shifting at activated ***Image positioning (13)*** **Reducing of set values**	Page 30 26	**26**		**Shifting right / forward** image shifting at activated ***Image positioning (13)*** **Increasing of set values**	Page 30 26
27		**Opens the system menu** fades in the system menu	Page 31 34	**28**		**System information** informs about installed software version, system serial number, system ID number, licence owner	
29		**Shut down system menu** fades out the system menu	Page 31 34	**30**		Not available	
31		**Stepscan observation period** sets the observation period through the dwell time of the camera in the ***Stepscan mode (33)***	Page 31	**32**		**Stepscan step size** sets the step size of the camera in the ***Stepscan mode (33)***	Page 31
33		**Stepscan mode - activation/de-activation** automatic stepwise image shifting across to the web direction at activated ***Horizontalscan (12)*** (only motorised version)	Page 31	**34**		**Image storage (Option on demand)** stores images on data carriers for purposes of documentation or for quality assurance.	
35		**Full screen display** switches between full screen display and original display of the camera image on the monitor	Page 34	**36**		**Image rotation** rotates image display by 180°.	Page 34

Gear sensor

The gear sensor serves for scanning the teeth of a print machine gear, in order to synchronise the DRELLOSCOP V5000 with the printing machine.



(1) Printing machine gear

(2) Sensor
for taking off the pulses from the gear

(3) Connection of control stage

(4) Sensor bracket
for mounting, adjustment and as adaptor of the sensor

Master sensor (Option)

Other than the standard version DRELLOSCOP V5000, the system can be equipped with an additional master sensor. The master sensor serves for automatic zero point scan of the active print format. Entering the teeth number of the active print cylinder is not necessary.

A master sensor is selected depending on the particular requirement, therefore its design can vary. Further information and technical data please learn from the separate documentation for the master sensor.

Installation and Connection

Preparations

Before you start connecting the components, you must install the traverse and the sensors and prepare a suitable location for the monitor.

Attention!
The DRELLOSCOP is only to be operated at interference-free AC-voltage supply with protective grounding conductors. Do not operate it through a phase of the AC voltage supply, which is used for operating the print machine. This could lead to malfunctions.

Malfunctions generated through the mains supply, as for example over-voltage or low voltage, peaks, frequency changes or harmonics, can be avoided by using a UPS (unterinterruptible power supply). You can procure a UPS device suitable for your requirements as Drello accessory.

Attention!
Select only places for installation which ensure that the units are neither exposed to extreme temperatures nor to extreme humidity. The ambient temperature must be betweeen 0…45°C, the relative humidity must not exceed 90% non condensing.

Make sure that supply voltage will correspond to the supply voltage mentioned on the nameplate.

Do not locate the single components of the system near to radiators. Avoid an installation place with direct solar radiation.

Provide for sufficient ventilation of the units.

Avoid bright room illumination to utilise the full capacity of the DRELLOSCOP V5000.

Ensure that the system components are not exposed to vibrations or shocks.

Danger!
Before you start with installation of the system, switch off the printing machine and all peripherals, separate them from the mains and secure them against unintended switching on.

Select location for monitor and remote control

To ensure a perfect image quality, select a location for monitor and remote control which is nearly interference-free and protected against direct outside illumination. In case the system is equipped with a touchscreen monitor (option), take care when selecting a location for this monitor that the operation elements on the user interface are accessible without problems.

- Prepare the monitor for operation as described in the manual for the monitor.
- Operate the monitor for the video system DRELLOSCOP V5000 only with the appropriate mains.

Installation of traverse

The device consists of:

Traverse for shifting the camera lamp module across to the print web.

Optionally available components are:

- Mounting brackets for fastening the traverse on one or on two sides.
- Mounting angles for fastening the bracket onto the machine frame.

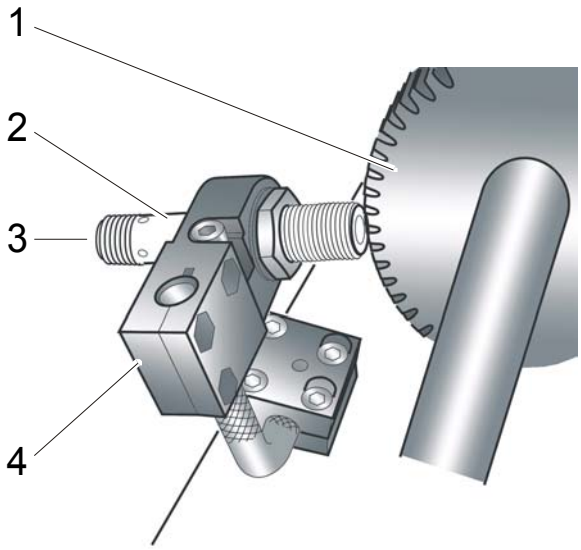
Proceed as follows:

- Select an appropriate location for installation of the mounting bracket. The traverse has to be fixed parallel to the print web to enable the DRELLOSCOP to trave and to scanl whole width of the print web.
- If necessary fix the mounting bracket (option) and mounting angles (option) to the machine frame.
- Screw the traverse to the machine frame – do not pull it tight. The hole for the light output and the camera lense must show in direction of the print web.
- Adjust the camera lamp module. The distance of the camera bottom side to the print web must be exactly 5 mm.
- Keep the camera lamp module in this position and fix the traverse at this height.

Note
Make sure that the distance between bottom side of the system and printing web is exactly 5 mm. Other distance will lead to unsharpness, focussing of the camera will become difficult or even impossible.

Installation of gear sensor

For the installation of the sensor you need a gear wheel, which rotates during operation of the printing machine proportionally to the web speed, and the pitches of which are identical with the pitches of the gear of the printing cylinder.



In case e.g. the printing cylinder is driven by a 1/4 inch gear, the pitches of the gear (1) of the sensor must also be 1/4 inch.

- Mount the mounting angle (4) for the sensor head (2) such way, that the distance between gear and sensor is exactly 0.7 mm.
  Use a gauge for this.

Attention!
There must be no contact between the sensor and one of the gear teeth, otherwise the sensor head will be damaged.

- Carefully turn the gear (1) for at least one revolution to make sure that there is no contact between sensor head (3) and one of the gear teeth and that the distance is always the same.

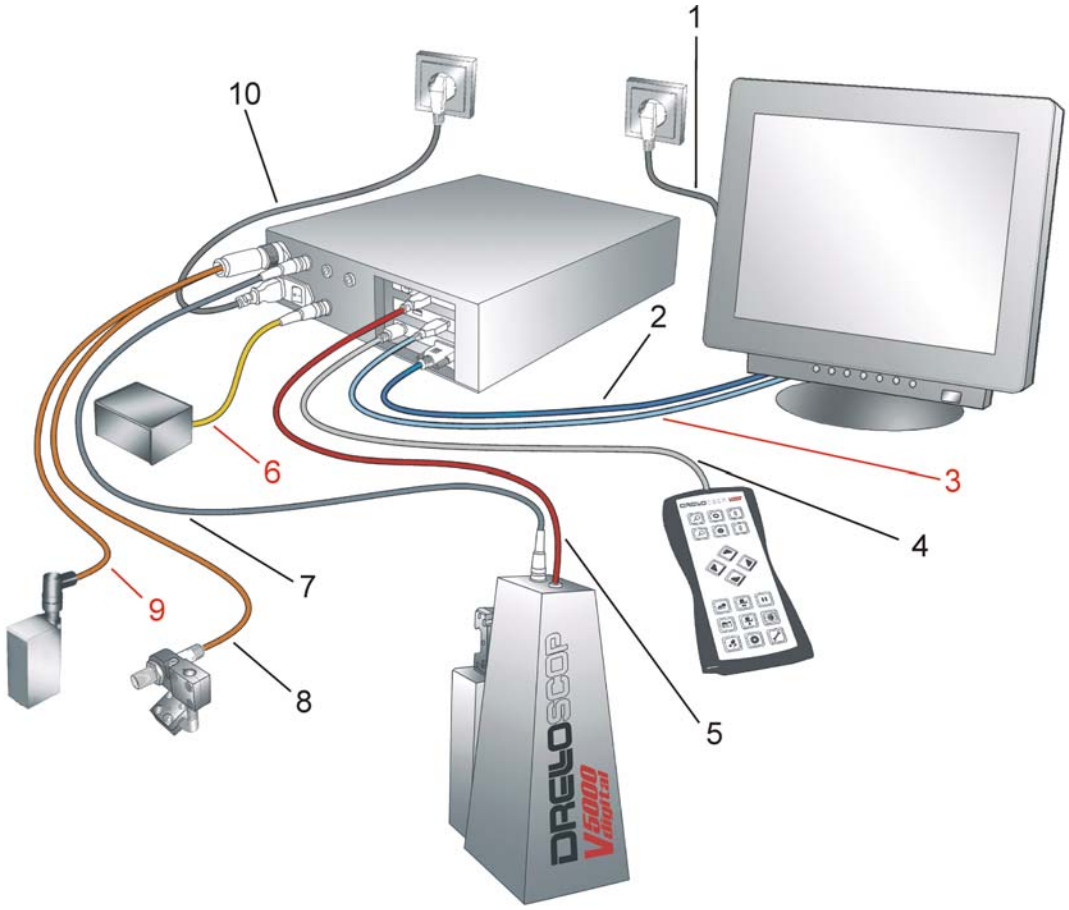
Installation of Master sensor (Option)

Depending on the requirement, the design of the master sensor can vary. For inforamation regarding installation and technical data please refer to the separate manual of the master sensor.

Connection of system components

Danger through electric current!
Separate all devices from the mains, before you connect them with each other!

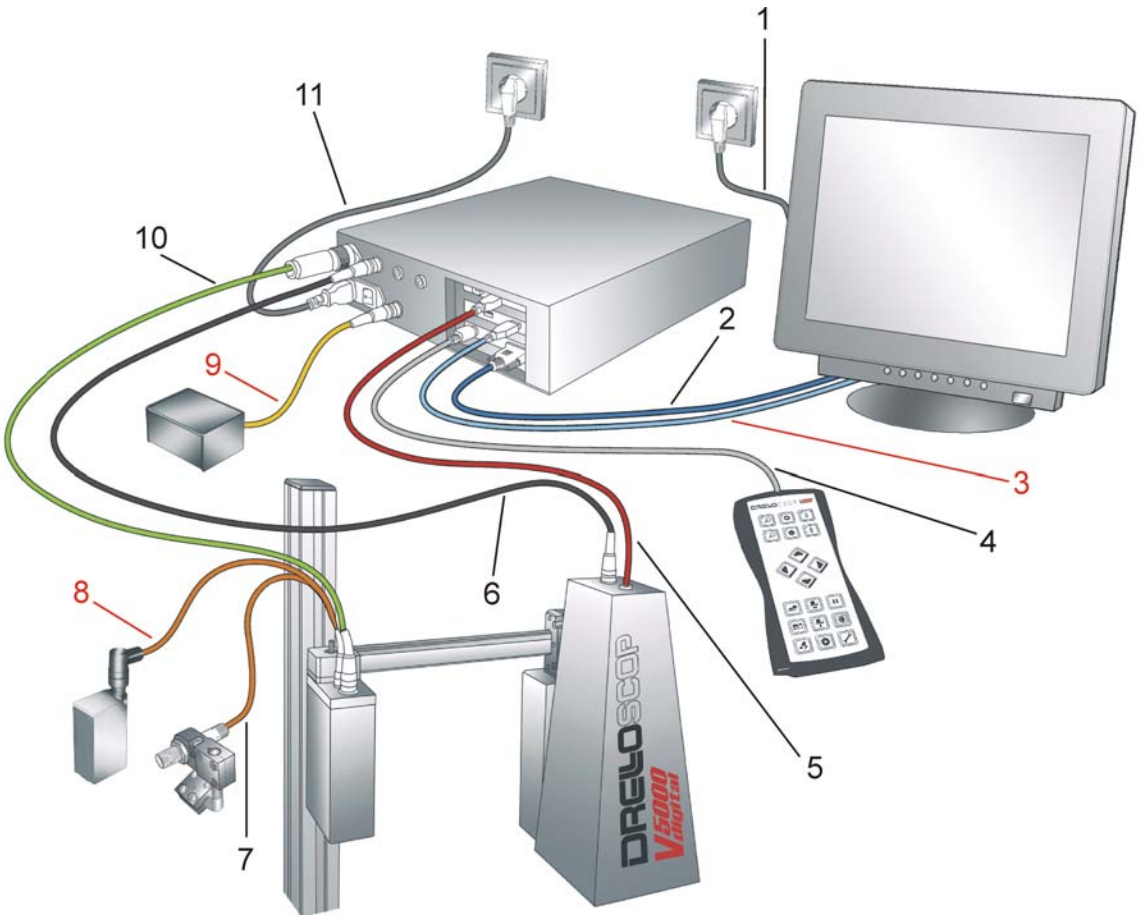
Connection manual version



- Connect the video cable of the monitor (2) to the control stage.
  Refer for monitor connections to separate monitor manual.
- Connect the control cable of the touchscreen (3) (Option) to the control stage.
  Refer for touchscreen connections to separate monitor manual.
- Connect the connection cable of remote control (4) to the control stage
- Connect the video signal cable of the camera (5) to the control stage.
- Connect the camera lamp module (7) to the control stage.
- Connect the signal cable of the gear sensor (8) and of the possible master sensor (9) (Option) to the control stage.
- Connect the connection cable of the transmitted light illumination unit (6) (Option) to the control stage.
  Schematic diagram: Refer for correct wiring to the separate manual of the transmitted light illumination unit.
- Connect the power cable of the monitor (1) to the mains.
  Refer for monitor connections to separate manual of the monitor.
- Connect the power cable of the control stage (10) to the mains.

The system DRELLOSCOP V5000 is ready for operation.

Connection motorised version



- Connect the video cable of the monitor (2) to the control stage.
- For connections of the monitor refer to separate monitor manual.
- Connect control cable of the touchscreen (3) (Option) to the control stage.
- For connection of the touchscreen monitor refer to separate monitor manual.
- Connect the connection cable of the remote control (4) to the control stage.
- Connect the video signal cable of the camera (5) to the control stage.
- Connect the connection cable of the camera lamp module (6) to the control stage.
- Connect the signal cable of the gear sensor (7) and of the possible master sensor (8) (Option) to the control stage.
- Connect the connection cable of the motor control (10) to the control stage.
- Connect the connection cable of the transmitted light illumination unit (9) (Option) to the control stage.
- Schematic diagram: For exact wiring refer to separate manual of the transmitted light illumination unit.
- Connect the power cable of the monitor (1) to the mains.
- For connection of the monitor refer to separate monitor manual.
- Connect the power cable of the control stage (11) to the mains.

The system DRELLOSCOP V5000 is ready for operation.

Operation of the system

The DRELLOSCOP V5000 in standard version is operated through the remote control.

The DRELLOSCOP V5000 can alternatively be operated by touching the graphic desktop of the monitor of the optionally available touchscreen monitor.

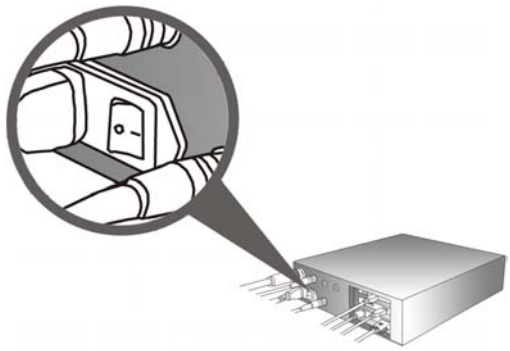
Switching on the system

Danger through electric current!
After having made all connections take care that all cables are laid that way, that they will not be bent, squeezed or damaged elsewhere.

Switch on the components only after all requested connections are made and checked for tight fit.

- Toggle the power switch on the rear side of the control stage to position **1** in order to switch on the system.

The operation LED on the front side of the control stage lights up in green.



- Switch on the monitor, for this refer to the separate monitor manual.

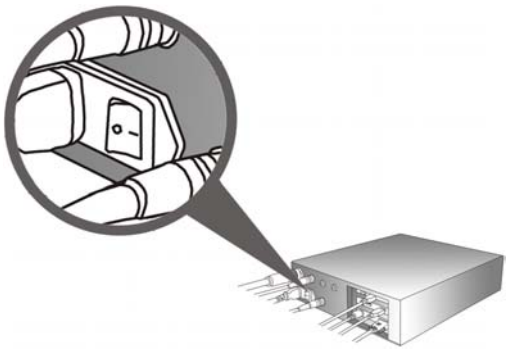
Switching off the system

To shut down and switch off the system, proceed as follows:

- Push the key on the front side of the control stage for shutting down the system.

- As soon as the system has shut down, toggle the power switch on the rear side of the control stage to position **0** to switch off the system.

The operation LED on the front side of the control stage extinguishes.



Attention!
During operation or during shutting off the system, the toggle switch may not be positioned to **0.** This would lead to malfunctions**.**

- Switch off the monitor, for this refer to the separate monitor manual

Set up and operation of system

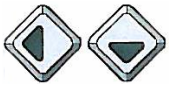
Before you start operating the video system for quality control during printing process, several pre-settings have to be made. These pre-settings can be made in the test mode, which can run independently from the printing machine. The system must be switched on – as described in the previous chapter.

Note
Initialising the system takes approx. 1 minute. After this time the graphic desktop appears on the monitor and the system is ready for operation.

Change of settings


As soon as a function has been activated, you can adapt the settings to the actual requirements.


Increase the set values




Reduce the set values


Change between coarse and fine adjustment

Adjustment of print format

In order to produce the desired frozen image, the teeth number of the active print cylinder must be entered resp. read in before starting up the system for the very first time and also after each change of the printing format. At standard use of the gear sensor the teeth number is entered by the operator. When using an additional optional master sensor for scanning the zero point of the repeat, the current teeth number is read in by the system itself.

Gear sensor: Setting the teeth number of the active print cylinder

The current teeth number is set manually by the operator through the control elements.

The following example will show you how to calculate the teeth number:

Example:

There shall be set the teeth number of a printing cylinder for a printing length of 24“ based on a partition of the driving gear of ¼“.

There is following relation:

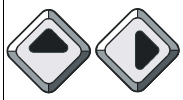
$$\frac{\text{circumference of printing cylinder}}{\text{teeth partition}} = \text{teeth number}$$

The result is as follows:

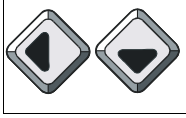
$$\frac{24“}{¼“} = 96 \text{ teeth}$$


For entering the teeth number of the present printing cylinder, proceed as follows:


Activate/de-activate input teeth number.
Status bar shows number of teeth entered.




Increase teeth number




Reduce teeth number

Master sensor and gear sensor (option): Read-in teeth number of active printing cylinder

Note
Read-in of present teeth number is only possible at running printing machine. In case teeth number detection is activated at standing machine, the value read in before will be used.


For reading in the teeth number of the present printing cylinder, proceed as follows:


Activate teeth number detection
The current teeth number is read in automatically.
Status bar shows number of teeth which have been read in

Make pre-settings


For pre-settings to be made prior to the print operation the system offers a test mode. When the test mode is activated, the system itself triggers scans.


Activate/de-activate test mode
The system triggers scans

Setting of brightness

 	**For adjustment of the brightness (Iris) of the scanned image, proceed as follows:**
no operation required	 Activate/de-activate the function „Iris“ status bar shows level of brightness
	 Increase brightness
	 Reduce brightness
	 Switch between coarse and fine adjustment

Setting of image sharpness

 	**To set image sharpness (Focus) before first operation, you must first adjust the maximum optical zoom of the camera, in order being able to adjust thereafter the image sharpness correctly.**
	 Activate/de-activate quick zoom
no operation required	 Activate/de-activate function „Focus“ Status bar shows level of sharpness
	 Set sharpness
	 Set sharpness
	 Switch between coarse and fine adjustment

Setting of zoom

For setting of the displayed image, you can zoom in resp. zoom out the image. After obtaining the maximum optical zoom, an additional digital magnification is available.

No operation required

Activate/de-activate function „Zoom“

Status bar shows level of zoom
Zoom level 100 corresponds to the maximum optical zoom
Zoom level 125 corresponds to the maximum digital zoom

Zoom-in

Zoom-out

Switch between coarse and fine adjustment

Quick Zoom-in

For quick zoom-in of the image

Activate/de-activate function „Quick Zoom“

The image is displayed with maximum optical zoom. At de-activation the displayed image returns to the zoom which has been selected manually before.

Quick Zoom-out „Quick Wide“

For quick zoom-out of the image

Activate/de-activate function „Quick Wide“

The image is displayed with minimum zoom. At de-activation the displayed image returns to the zoom which has been selected manually before.

Image shifting across the web direction (only motorised version)

 	**You can shift the image across the direction of the print web.**
no operation required 	Activate/de-activate image positioning right/left Status bar displays position during shifting
 	Shift to the right
 	Shift to the left

In case you work with the manual version of the DRELLOSCOP V5000, the positioning across the web direction has to be done by manual shifting of the camera.

Image shifting in web direction

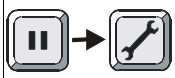
 	**You can shift the image in web direction.**
no operation required 	Activate/de-activate image positioning forward/backward Status bar displays step size
 	Shifting forward
 	Shifting backward
 	Switch between coarse and fine adjustment

Horizontal scan (only motorised version)

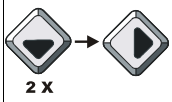
 	**You have the possibility to set a continuous run of the image across to the web direction. At this the camera travels automatically across to the print web. When arriving at the relevant end stop of the traverse, the camera changes automatically its travel direction.**
 	Activate/de-activate horizontal scan

Step scan (only motorised version)


When step scan is activated during horizontal scan, the camera travels stepwise instead of continuously across the print web. When arriving at the relevant end stop of the traverse, the camera changes automatically its travel direction.



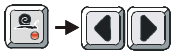

Open system menu



Activate/de-activate step scan


Set desired step size of the camera per step in mm

Note
The entered step size must be regarded as a benchmark. The actually operated step size can deviate from the entered value.

Enter desired observation period per step in seconds.


Quit system menu


Activate/de-activate step scan

Note
Before starting with the step scan, the camera performs a reference travel to the end stop of the traverse.

Vertical scan


For setting a continuous run of the image in web direction, proceed as follows:


Activate/de-activate vertical scan

Status bar displays step size
Positive values: Run in web direction
Negative values: Run against web direction

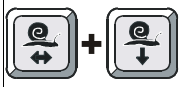
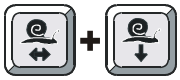

Increase step size


Reduce step size

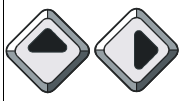

Change between coarse and fine adjustment

Diagonal scan (only motorised version)

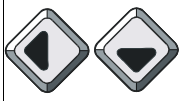

The horizontal and the vertical scan can be combined to a diagonal scan. By this the image is shifted simultaneously across and lengthwise to the web direction.

Activate/de-activate diagonal scan




Increase step size of vertical scan




Reduce step size of vertical scan


Change between coarse and fine adjustment of vertical scan

Note
When the horizontal scan is done as step scan, the horizontal shifting is done with the step size which has been selected in the set menu.

Split-Screen (Reference image)


The screen can be split to compare the current images with a reference image


Activate/de-activate split screen

Reference image is scanned and the screen is split

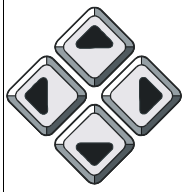
Reference image remains stored until a new reference image is scanned.

Scanning new reference image


A new reference image is scanned and stored. The miniature display of the status bar of the graphic desktop is updated.

Setting of split screen


Activate split screen positioning

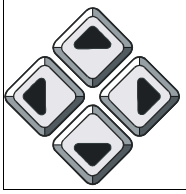
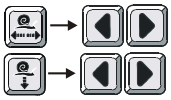



Adjustment of required part of the reference image horizonal and vertical.

By shifting of the horizontal resp. vertical splitting beyond the display of the monitor, the reference image position is changed to the current image.

Camera positioning during split screen mode


Activate camera positioning

Position camera to the required observation point

Freezing image

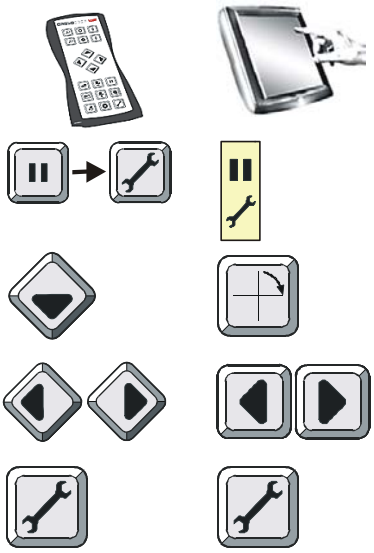

You have at any time the possibility to freeze the active image during process for closer inspection.


Activate/de-activate function „Hold“

The standing „frozen“ image appears on the monitor.

Note
During displaying the frozen image, the DRELLOSCOP V5000 continuous the scan mode which have been activated before.

Rotate image display by 180°



The display of the scanned image can be rotated by 180°.

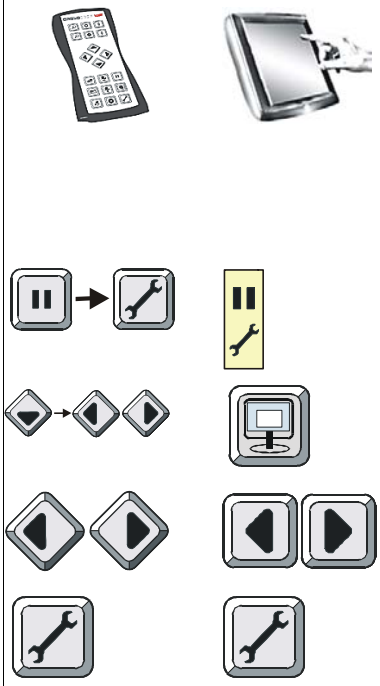
Open system menu

Activate/de-activate image rotation

Switch between 0° and 180° image rotation

Quit system menu

Full screen display



The display of the original size of the camera image does not take the total monitor surface. It is however possible to display the camera image in full screen display.

Note
During full screen display the original camera image is displayed in magnified size (interpolation). This may lead to a reduced image quality.

Open system menu

Activate/de-activate image rotation

Switch between original and full screen display

Quit system menu

Note
During full screen display the original camera image is displayed in magnified size (interpolation). This may lead to a reduced image quality.

Transmitted light observation (Option)

When the DRELLOSCOP V5000 is equipped with an additional illumination unit for transmitted light mode, this allows for print web observation in transmitted light. The standard reflected light illumination is switched off, the transmitted light illumination is switched on. A front to backside print exact to the position is possible.

Change from reflected light to transmitted light observation by pushing the toggle switch on the front side of the control stage.

Switch position: ▲ **Reflected light mode**

▼ **Transmitted light mode**

Maintenance

The DRELLOSCOP V5000 is maintenance-free except the following:

Before you start operation, check each time the cable connections for safety and tight fit. Have a damaged cable exchanged immediately.

Maintenance	Interval	Working material	
Cleaning of camera lens	on demand, minimum every 100 operation hours.	Antistatic DRELLO microfibre cloth part No.: 19.99.0001	Page 40
Cleaning of reflector	on demand, minimum every 100 operation hours.	DRELLO cleaning cloth part No: 58.VIDEO.800001	Page 40
Cleaning of the slide bar of the traverse	every 100 operation hours.	Cleaning cloth or brush	
Greasing of the slide bar of the traverse	every 100 operation hours.	Lubrication oil	

Troubleshooting – Causes and remedy

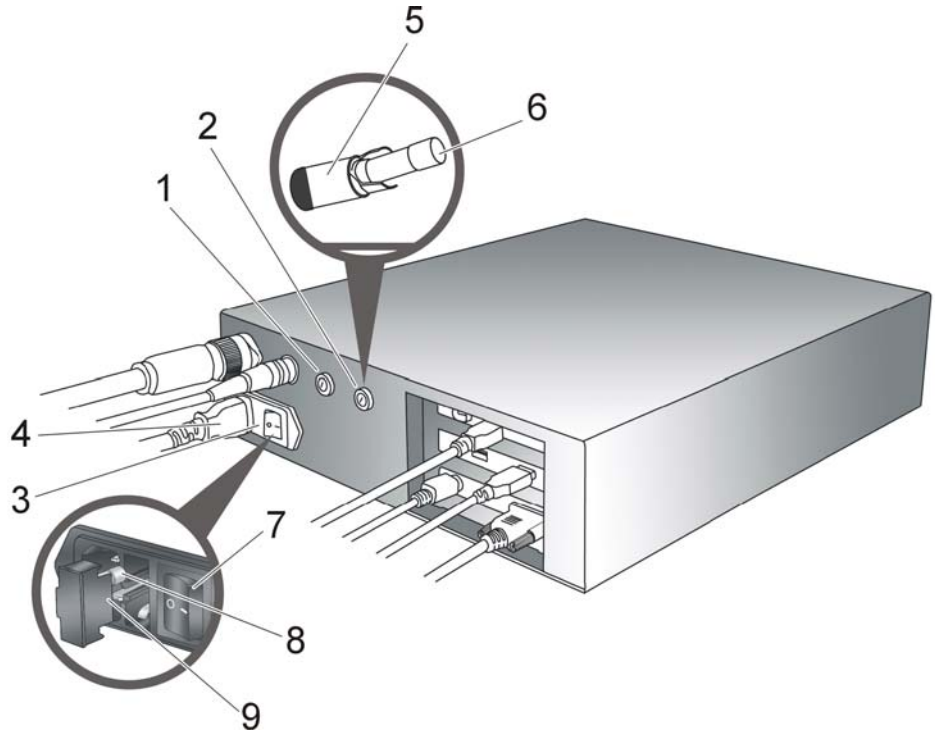
This chapter describes faults at the DRELLOSCOP V5000, possible causes and their remedy. Do not try to do any repair works by yourself, which are not described in this chapter.

Contact DRELLO GmbH & Co. KG with all faults.

Fault	Possible cause	Remedy	
The illumination unit does not flash	The flash tube is worn out or defective	Check fuse	Page 37
		Replace illumination unit	Page 39
The DRELLOSCOP does not work. The LED of the mains switch does not light up	Voltage supply is interrupted	Check cable connection	Page 22
		Check main fuse	Page 37
		If problem is not solved, have the system repaired	Page 40
The remote control does not work	Cable connection is interrupted	Check cable connection	Page 22
No image on the monitor	Image brightness of the camera is set too low.	Increase brightness by key „IRIS“	Page 28
	Image brightness of the monitor is set too low	Increase image brightness as described in separate manual for monitor	
	Illumination unit does not flash	as above	
	The cable connection is interrupted	Check cable connection	Page 22
The total monitor surface is too bright	The image brightness of the camera is set too high	Reduce brightness by key „IRIS“	Page 28
The automatic image scan is without function.	The sensor does not work	Check mounting and cable connection of the sensor	Page 21
		Check image scan function with the TEST MODE	Page 27
		If problem is not solved, hav the system repaired.	Page 40

Replacing fuses

The control stage of the DRELLOSCOP V5000 has got three fuses. In case of defective unit fuse, it can be exchanged easily.



(1) Fuse motor drive (only motorised version)
Type: 250 V, T 630 mA, 5 x 20 mm

(2) Fuse illumination unit

Type: 250 V, T 1,25 A, 5 x 20 mm

(3) Main fuse

Type: 250 V, T 2,00 A, 5 x 20 mm

Danger through electric current!
The fuse may only be replaced by qualified personnel (electrical engineer). The relevant regulations for the electrical engineering have to be observed and maintained in any case.

Danger through electric current!
Separate the unit first from the mains and from all peripherals and secure it against unintended switching on.

Attention!
Before replacing a new fuse, make sure what was the cause for the defect.

Attention!
Use only a fuse with the specified values

Fuse motor drive / Exchange illumination unit

- Switch off control stage with the ON/OFF switch (7) and separate the power cable (4) from the mains.
- Use a small coin or a big slotted screwdriver and put it into the groove of the plug-type base (3), now carefully pull out the base.
- Remove the defective fuse (6).
- Insert the new fuse, push the base into the housing and fix it again.
- Plug in mains cable (4).

Exchange main fuse

- Switch off control stage with the ON/OFF switch (7) and separate the power cable (4) from the mains (4).
- Use a slotted screwdriver and pull it into the groove on the side of the plug-tpye base (9), now carefully pull out the base (9).
- Remove the defective fuse (8).
- Insert the new fuse, push the base into the housing until it locks.
- Plug in mains cable (4).

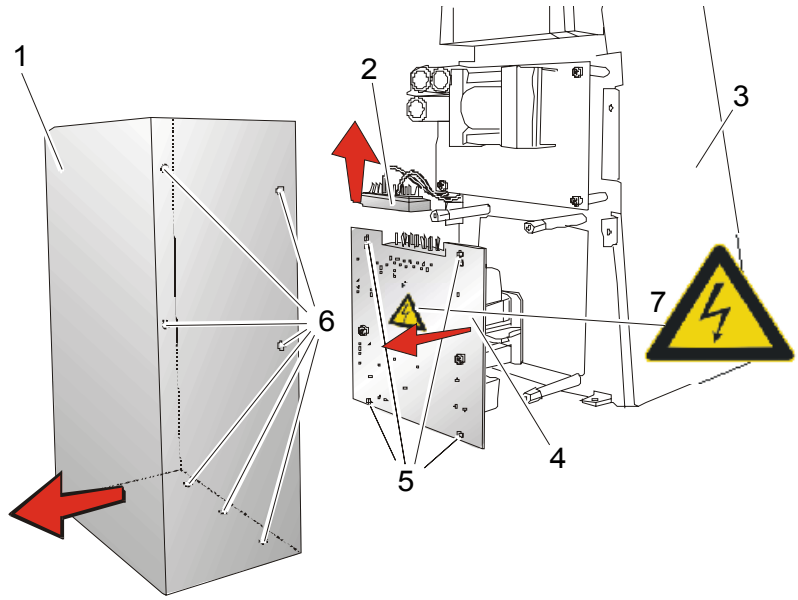
Replacing illumination unit

The illuminating unit is integrated in the camera lamp module. It is only possible to replace the entire illuminating unit, not only the flash tube. For replacement, remove the housing hood of the illuminating unit. The housing may only be opened by qualified personnel (electronic engineers) and solely for reasons of replacing the illuminating unit.

Danger through electric current!
Dangerous voltages are applied at the capacitors inside the unit. Before you open it separate the unit from the mains. **Wait minimum 15 minutes for discharging of the voltages**
The illumination unit shows a „High Voltage“ warning (7).

Danger through electric current!
The illuminating unit of the system may only be replaced by qualified personnel (electrical engineers). In any case the relevant regulations of electrical engineering are to be followed and maintained.

Danger through electric current!
Separate the DRELLOSCOP 5000 from the mains and from all other peripherals and secure it against unintended switching on.



- Switch off the DRELLOSCOP V5000 and separate it from the mains and secure it against unintended switching on.
- Disconnect the camera lamp module (3) from the control stage. Wait minimum 15 minutes to have the unit cooled down and have voltages discharged.
- Screw off the seven fixing screws (6) of the housing hood and remove them.
- Separate the housing hood (1) from the camera lamp module (3).
- Screw off the four fixing screws (5) of the illuminating unit (4)and take them off.
- Carefully pull off the socket board (2) from the illuminating unit (4).
- Remove the defective illuminating unit (4) and exchange it against the new illuminating unit.
- The re-assembling is done in reverse order.

The DRELLOSCOP is ready for operation again.

Cleaning

Cleaning the camera lens

The camera is mounted in the interior of the camera lamp module. The lens can be accessed easily through the opening of the camera lamp module. Clean the camera optics only with the antistatic DRELLO microfibre cloth, which is available as accessory.

Antistatic DRELLO microfibre cloth
Part No.: 19.99.0001

Cleaning the reflector

The interior sides of the camera lamp module are equipped with a reflector for an optimum light distribution. The reflector is also easily accessible from the outside through the opening of the camera lamp module. For cleaning of the reflector use only the DRELLO cleaning cloth, which is available as accessory.

DRELLO – cleaning cloth
Part No.: 58.VIDEO.800001

Repair

Contact for each repair of the DRELLOSCOP V5000:

DRELLO GmbH & Co. KG

Service

Andreas-Bornes-Str. 46
D-41179 Moenchengladbach

Phone: (+49) (0) 21 61/90 96

Telefax: (+49) (0) 21 61/90 97 00

e-mail: service@drello.de

Technical data

Control stage

Supply voltage	90 ... 132 V AC and 180 ... 264 V AC (+10 %, -15 %), 40 ... 60 Hz
Power consumption	max. 55 W
Fuses outside (5 × 20 mm)	1 × 250 V, T 630mA 1 × 250 V, T 1,2 A
Operation conditions	Temperature: 0 ... 45 °C rel. humidity: 90 % non-condensing.
Storage conditions	Temperature: -20 ... +70 °C dry storage
Housing	Steel plate housing
Dimensions (W × H × D)	350 × 95 × 400 mm
Weight	approx. 8,1 kg
Protection Class	Earth conductor acc. IEC 348 and VDE 0411

Remote control

Operation conditions	Temperature: 0 ... 50 °C rel. humidity: 90 % non-condensing
Storage conditions	Temperature: -20 ... +70 °C dry storage
Housing	plastic housing
Dimensions (W × H × D)	100 × 210 × 52 mm
Weight	approx. 0,25 kg

Camera lamp module

Camera	Single-Chip CCD camera
Zoom lens	10-fold optical zoom 2-fold digital zoom
Field of view	min. 8 mm × 6 mm (digital zoom) min. 16 mm × 12 mm (optical zoom) max. 128 mm × 96 mm
Operation conditions	Temperature: 0 ... 45 °C rel. humidity: 90 % non-condensing.
Storage conditions	Temperature: -20 ... +70 °C dry storage
Housing	Steel plate housing
Dimensions (W × H × D)	140 × 325 × 210 mm
Protection Class	Earth conductor acc. IEC 348 and VDE 0411

Magnetic field sensor

Operating voltage	8 ... 28 V DC
Sensing distance Sn	0,7 mm
Short circuit proof and reverse polarity proof	
Standards followed	VDE 0110b, VDE 0411, VDE 05501 IEC 348 EN 50082-2, EN 55011B, EN 55140, EN 55141, EN 61000-4-2, EN 61000-4-4

Annex

Dimensional and assembly drawing