

EN

OPERATING MANUAL
VSP INSPECTION SYSTEM



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Notes regarding the operating manual

Symbols



Warning of electrical voltage

This symbol indicates dangers to the life and health of persons due to electrical voltage.



Warning

This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.



Caution

This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Note

This signal word indicates important information (e.g. material damage), but does not indicate hazards.



Info

Information marked with this symbol helps you to carry out your tasks quickly and safely.



Follow the manual

Information marked with this symbol indicates that the operating manual must be observed.

You can download the current version of the operating manual and the EU declaration of conformity via the following link:



VSP3041



<https://hub.trotec.com/?id=43120>

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use!



Warning

Read all safety warnings and all instructions.

Failure to follow the warnings and instructions may result in electric shock, fire and / or serious injury.

Save all warnings and instructions for future reference.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

- Do not use the device in potentially explosive rooms.
- Do not use the device in aggressive atmosphere.
- Do not use the device in atmospheres containing oil, sulphur, chlorine or salt.
- Protect the device from permanent direct sunlight.
- Only use the device in de-energized facilities and objects. For reasons of safety, de-energize all plant components and objects prior to every inspection.
- Before using the measuring probes and camera heads, de-energize any circuits located in walls.
- Before using the measuring probes and camera heads in metal pipes inside a wall, have an authorised specialist company carry out a check to ensure that the metal pipes are not electrically charged.
- For reasons of safety, do not use the measuring probes and camera heads for inspections in moving parts.

- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Do not open the device with a tool.
- Observe the storage and operating conditions as given in the Technical data chapter.

Intended use

Only use the device for the visualization of objects.

To use the device for its intended use, only use accessories and spare parts which have been approved by Trotec.

Improper use

Do not use the device in potentially explosive areas. Do not use the control unit with display underwater. Never use the device on persons or animals. Trotec accepts no liability for damages resulting from improper use. In such a case, any warranty claims will be voided. Any unauthorised modifications, alterations or structural changes to the device are forbidden.

Personnel qualifications

People who use this device must:

- take measures to protect themselves from direct contact with live parts.
- have read and understood the operating manual, especially the Safety chapter.

Residual risks



Warning of electrical voltage

Risk of death due to electric shock!

An electric shock can result in severe personal injury or death! The device may only be used in accordance with all safety instructions listed here.



Danger

Electric shock from contact with live parts. Do not touch any live parts. Secure neighbouring live parts by insulating them or switching them off.



Warning of electrical voltage

There is a risk of a short-circuit due to liquids penetrating the housing!

Do not immerse the device and the accessories in water. Make sure that no water or other liquids can enter the housing.



Warning of electrical voltage

Work on the electrical components must only be carried out by an authorised specialist company!



Warning of electrical voltage

Before any work on the device, remove the mains plug from the mains socket and the battery from the device! Hold onto the mains plug while pulling the power cable out of the mains socket.



Warning of explosive substances

Do not expose the battery to temperatures above 45 °C! Do not let the battery come into contact with water or fire! Avoid direct sunlight and moisture. There is a risk of explosion!



Warning

Risk of suffocation!

Do not leave the packaging lying around. Children may use it as a dangerous toy.



Warning

The device is not a toy and does not belong in the hands of children.



Warning

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way! Observe the personnel qualifications!



Caution

Keep a sufficient distance from heat sources.

Note

To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Note

Do not use abrasive cleaners or solvents to clean the device.

Information about the device

Device description

The device VSP3041 serves for inspecting concealed machine components and poorly accessible or inaccessible hollows.

A high-resolution camera and a moveable camera head with an adjustable, bright LED illumination are available for the display and capturing/recording of images and videos. The supplied camera head VSP-H41M is connected to the push-cable drum VSP-R30 and modularly also to the mobile control unit VSP Control. The supplied camera head can be exchanged for other optional Trotec camera heads.

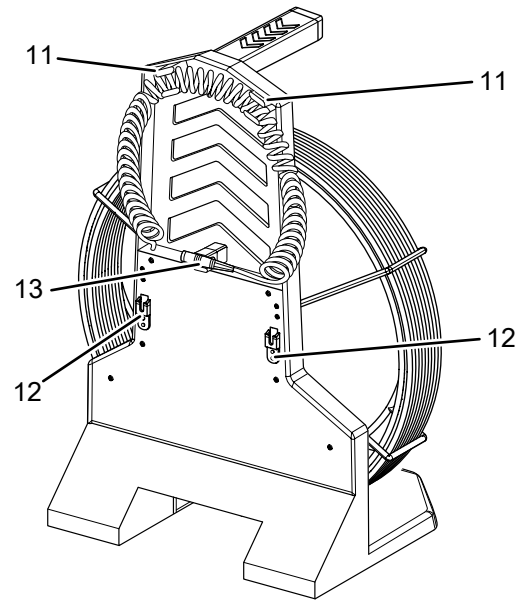
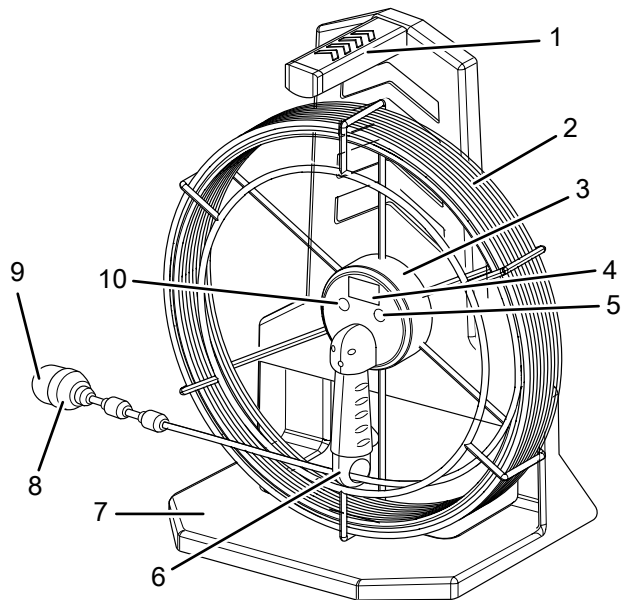
The camera's functions can be controlled via the mobile control unit VSP Control. Using the provided snap-in system, the mobile control unit can be affixed to the rear of the supplied push-cable drum.

A digital metre counter with partial distance measurement function is integrated in the push-cable drum.

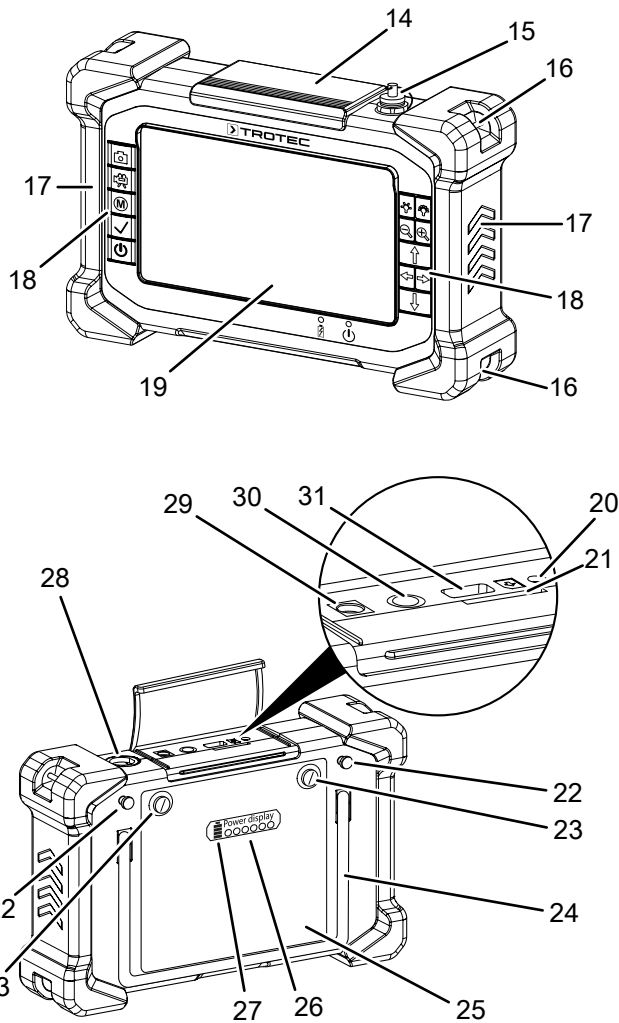
The functions of the device VSP3041 can be controlled via the integrated operator software of the VSP Control.

The recordings and measurements can be stored on an SD card and transmitted via a USB interface.

Device depiction



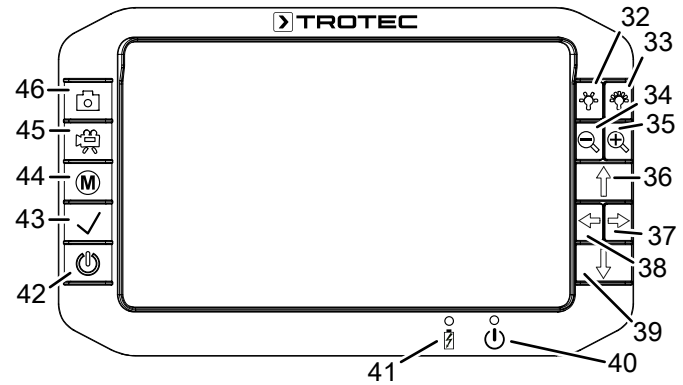
No.	Designation
1	Carrying handle push-cable drum
2	Push cable
3	Un-/reeling aid
4	Digital metre counter
5	Section button
6	Coiled cord brake
7	Foot
8	Exchangeable camera head
9	Plastic protective cap
10	Clear button
11	Coiled cord holder
12	Snap-in system for attaching the VSP Control
13	Multi-connector for the VSP Control



No.	Designation
14	Protective flap
15	Sealing cap multi-connector socket
16	Wrist strap holder
17	Rubber protectors
18	Control panel
19	Display
20	Audio connection
21	SD card slot
22	Standoff for snap-in attachment to the push-cable drum
23	Battery attachment screw
24	Fold-out stand
25	Battery
26	Battery level indication
27	Check button
28	Multi-connector socket with protective cap
29	Battery charging socket

No.	Designation
30	AV OUT connection
31	USB connection (type A-A, to connect a compatible external monitor)

Operating elements



No.	Designation	Meaning
32	Minus brightness button	For reducing the illumination intensity at the camera head
33	Plus brightness button	For increasing the illumination intensity at the camera head
34	Focus button close (minus)	For focussing on close objects
35	Focus button distant (plus)	For focussing on distant objects
36	Arrow button up	For moving the camera head up
37	Arrow button right	For moving the camera head to the right
38	Arrow button left	For moving the camera head to the left
39	Arrow button down	For moving the camera head down
40	Operation indicator	Is illuminated in red when the device is switched on.
41	Charging indicator	Is illuminated in red when the device is charging.
42	Power button	For switching the device on and off
43	Confirm button	For confirming the selection / opening the browser for recordings
44	Menu button	For opening / closing the menu
45	Video button	For starting / stopping a video recording
46	Photo button	For taking a photo

Technical data

Parameter	Value
Model	Control unit VSP Control
Article number	3.110.007.110
Display brightness control	manually adjustable
LCD display	3.5-inch TFT LCD (800 x 480 Wide VGA)
Protection type	IP64
Memory	slot for removable SD card (max. 32 GB)
File formats	image format JPEG (1024 x 768), video format AVI (640 x 480 [4:3] or 800 x 480 [16:9])
Power supply	11.1 V lithium polymer battery pack (7,000 mAh, charging time 8 h), power adapter
Interfaces	USB, SD card slot, multi-connector socket for push-cable camera, borescope and videoscope, (analogue video NTSC/PAL optional)
Dimensions	257 x 171 x 64 mm
Weight	1.74 kg
Physical characteristics	rubberized operator keypad, lateral rubber protectors, wrist straps, fold-out stand, integrated battery capacity indication
Control software	
Operator guidance	simple interactive menu control
Available menu languages	German, English, French, Italian, Dutch, Danish, Portuguese, Russian, Spanish, Simplified Chinese, Chinese, Korean
Software functions	system settings, video settings, memory functions

Parameter	Value
Model	Push-cable drum VSP-R30
Article number	3.110.007.115
Type	fibreglass-reinforced
Push cable	
Dimensions	length 30 m, \varnothing 5.4 mm
90° bend flexibility	lines \geq 135 mm
Protection type of the camera head connection	IP67
Drum	
Dimensions	515 x 405 x 200 mm
Weight	6.5 kg

Parameter	Value
Model	Camera head VSP-H41M
Article number	3.110.007.130
Diameter	ø 41 mm
Length	60 mm
Resolution	300,000 pixels
Focus	manual
Illumination	12 LEDs
DOF	15 mm to ∞
Field of vision	> 75°
Pivoting radius	180°
Rotation	360°
Watertightness	up to 1 m
Protection type	IP67
Material	stainless steel probe with plastic dome

Scope of delivery

- 1 x VSP Control with Li-ion battery
- 1 x Push-cable drum VSP-R30
- 1 x Camera head VSP-H41M
- 1 x Transport case
- 1 x SD card
- 1 x USB cable (type A-A, for the connection of a compatible external monitor)
- 5 x Spare protective cap for camera head VSP-H41M
- 1 x LCD cleaning cloth
- 1 x Plug-on anti-glare shield
- 1 x Tool for disconnecting the camera heads
- 1 x Charger
- 1 x Manual

Transport and storage

Note

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Transport

For transporting the device, use the transport case included in the scope of delivery in order to protect the device from external influences.

The supplied Li-ion batteries are subjects to the requirements of dangerous goods legislation.

Observe the following when transporting or shipping Li-ion batteries:

- The user may transport the batteries by road without any additional requirements.
- If transport is carried out by third parties (e.g. air transport or forwarding company), special requirements as to packaging and labelling must be observed. This includes consulting a dangerous goods specialist when preparing the package.
 - Only ship batteries if their housing is undamaged.
 - Mask open terminals with tape and pack the battery in a way that it cannot move inside the packaging.
 - Please also observe any other national regulations.

Storage

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- protected from dust and direct sunlight
- For storing the device, use the transport case included in the scope of delivery in order to protect the device from external influences.
- The storage temperature is the same as the range given in the Technical data chapter.
- When storing the device for an extended period of time, remove the battery/batteries.

Operation

Inserting the battery into the control unit VSP Control / exchanging the battery

Note

Make sure that the surface of the device is dry and the device is switched off.

1. Loosen the two attachment screws (23) at the rear of the rechargeable battery (25) without removing them.
⇒ The battery can now be removed.
2. When inserting the battery, first place the locating tabs at the bottom of the battery into the designated openings at the rear of the device.
3. Now slightly press the top of the battery down and tighten the two attachment screws (23) at the rear of the battery.
⇒ The battery is inserted in the device

Inserting the SD card

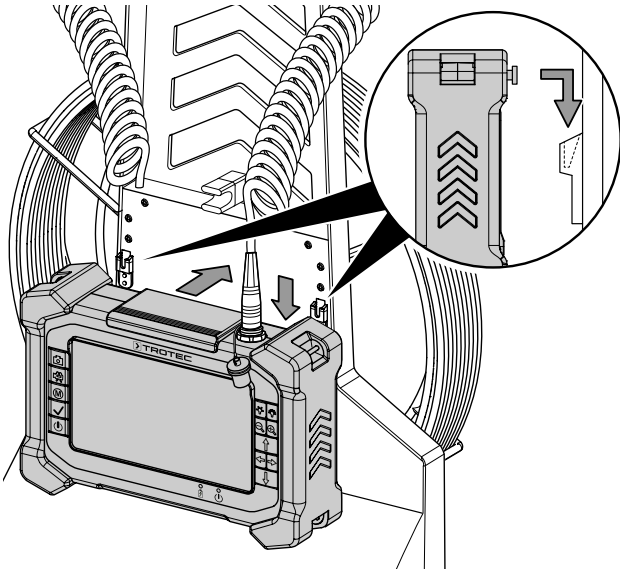
1. Lift off the protective flap (14) at the top of the VSP Control.
2. Insert the SD card in the SD card slot (21).
3. Slightly press down the SD card until it engages.
4. Close the protective flap (14) again.

Connecting the control unit VSP Control to the push-cable drum VSP-R30 and attaching / removing it

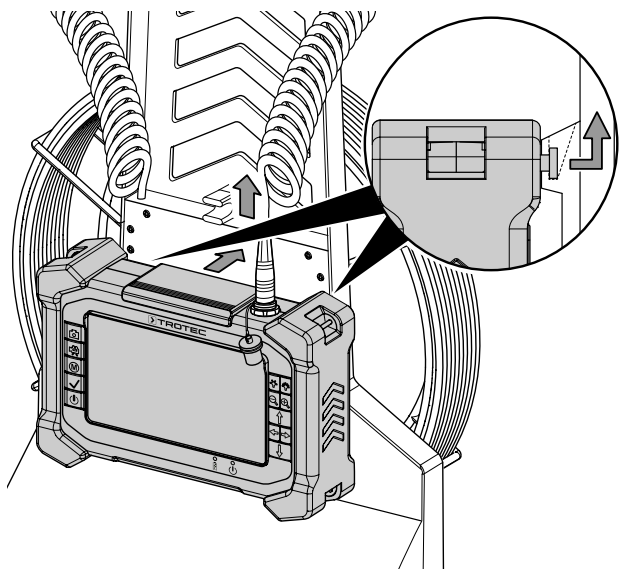
Please proceed as follows if you want to connect the control unit VSP Control to the supplied push-cable drum VSP-R30 and attach or remove it:

1. Remove the sealing cap for the multi-connector socket (15) on top of the VSP Control. Make sure that the plug is located on the display side and does not dangle at the rear of the VSP Control.
2. Plug the multi-connector (13) at the rear of the push-cable drum into the multi-connector socket (28) on top of the VSP Control so that it fits exactly.
⇒ Make sure that the multi-connector firmly snaps into place.

3. Lift the control unit VSP Control onto the snap-in system (12) at the rear of the push-cable drum VSP-R30. First press the control unit against the push-cable drum's rear panel, then downwards. The two standoffs for snap-in attachment (22) at the rear of the control unit VSP Control must engage with the two guide rails of the snap-in system (12) as illustrated below:



4. In order to detach the VSP Control, first press it against the push-cable drum, then upwards as shown in the following illustration:



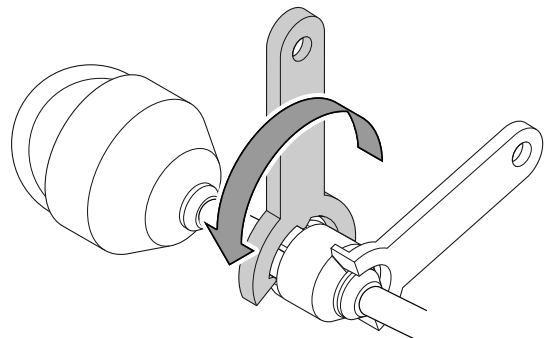
Connecting the camera head to the push-cable drum

You can connect the supplied camera head (or one of the optional Trotec camera heads) to the end of the push-cable drum VSP-R30. Please proceed as follows to connect the supplied camera head VSP-H41M to the push-cable drum:

Note

Only use the tool included in the scope of delivery to connect a camera head to the push-cable drum.

1. Unless already carried out upon delivery, first guide the push cable without camera head through the hole in the coiled cord brake (6).
2. Unreel the push cable (2) a little for better access to the end of the push-cable drum.
3. Lock the push cable with the brake as described in the operation subchapter to prevent further unreeling.
4. Manually screw the camera head's threaded connector clockwise onto the threaded connection at the end of the push cable.
5. To fasten the connection, apply the supplied wrench just beneath the threaded connection of the push cable as depicted. Make sure that the wrench engages with the existing grooves so it cannot slip.



6. Apply the other supplied wrench to the threaded connection beneath the camera head and make sure that its teeth engage with the grooves under the threaded connection.
⇒ Turn the wrench until the camera head is fixed in place.
7. Also use the supplied wrenches as described to disconnect and possibly replace the camera head from the push-cable drum.

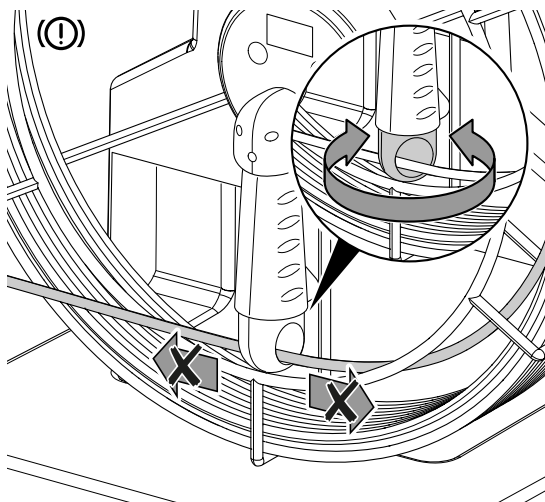
Switch-on / switch-off

1. Press the power button (42) on the control unit VSP Control.
 - ⇒ The operating elements at the device light up, the operation indicator (40) will be permanently illuminated in red and the Trotec logo appears on the display.
2. Wait for a few seconds until the Trotec logo on the display disappears.
 - ⇒ The control unit VSP Control is now ready for operation.
3. Press the power button (42) again to switch the device off.
 - ⇒ A countdown will be indicated, then the device switches off after a few seconds.

Preventing the push cable from unreeling using the brake

You can use the integrated brake (6) to prevent the push cable from inadvertently unreeling off the push-cable drum VSP-R30. To do so, please proceed as follows:

1. Turn the coiled cord brake (6) inwards as indicated in the illustrations below, so that the coiled cord can no longer be rolled off.



2. To release the coiled cord brake (6) turn it back into its initial position.

Using plastic protective caps

Note

In order to prevent damaging of the device, never use the camera head VSP-H41M without one of the impact-proof and break-resistant plastic protective caps from the scope of delivery.

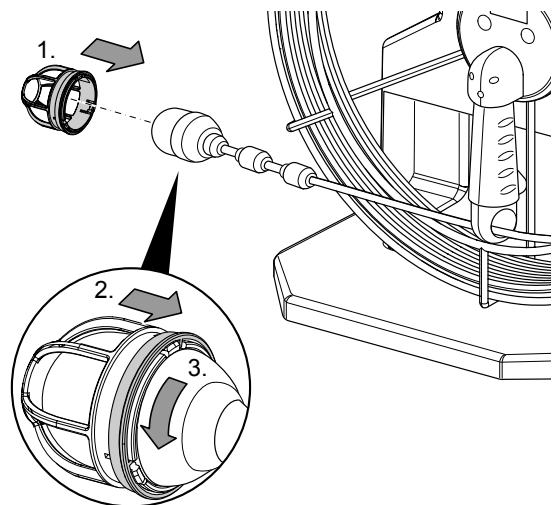
Unless already preassembled you should protect the camera head by mounting one of the supplied plastic protective caps as follows before every application:

1. Check the threading of the camera head for dirt and clean it if necessary.
2. Attach the plastic protective cap (9) to the camera head (8) and make sure that the threading does not get wedged. Screw the plastic protective cap down by hand.
 - ⇒ Make sure that neither dirt nor moisture can enter the movable camera unit.
3. If the mounted plastic protective cap was affected too much by using the device resulting in too many scratches, replace it with a new one.

Mounting the domed protective cage to the camera head VSP-H41M

For additional protection of the camera head VSP-H41M and its plastic protective cap you should assemble the supplied domed protective cage as follows prior to application:

1. Carefully slide the domed protective cage onto the camera head until the cage's teeth engage with the groove of the camera head.
2. Push the outer ring of the domed protective cage downwards in order to fasten it.
3. Now turn the outer ring slightly counter-clockwise to protect the plastic dome from unintentional shifting.



Aligning / moving / holding the camera

Please proceed as follows when using the VSP inspection system in combination with push-cable drum VSP-R30 and camera head VSP-H41M:

1. First connect the control unit VSP Control and the push-cable drum VSP-R30 by means of the multi-connector.
2. Switch the VSP Control on.
 - ⇒ The LEDs of the camera head VSP-H41M light up.
3. The camera head's current image transmission will be indicated on the display (19) of the control unit.
4. Gently move the camera head towards the object to be examined.
5. Unreel the required length of push cable from the push-cable drum.
 - ⇒ Read the currently unreeled length of push cable from the display (19) of the control unit VSP Control or from the digital metre counter (4) at the rear of the push-cable drum.
6. If necessary, prevent the coiled cord from unreeling any further during device operation by use of the brake (6) of the push-cable drum.
7. Use the arrow buttons (36–39) on the VSP Control to control the camera head VSP-H41M.
8. Via the brightness buttons (32, 33) you can regulate the brightness of the LEDs at the camera head VSP-H41M.
 - ⇒ By pressing the minus brightness button (32) repeatedly you can switch the camera head's LEDs off completely.
 - ⇒ By pressing the plus brightness button (33) repeatedly you can switch the camera head's LEDs back on.
9. Using the focus buttons you can zero in on the object to be examined at the respective distance.
 - ⇒ For focussing on close objects press the focus button close (34).
 - ⇒ For focussing on distant objects press the focus button distant (35).

Using the metre counter

The metre counter of the VSP inspection system VSP3041 can display the number of metres the push cable has been unreeled based on the position 0.0. This means the unreeled length is displayed immediately upon switch-on of the connected control unit VSP Control. In case of the standard zero point it is irrelevant whether the push cable has already been unreeled a few metres. After switch-on the metre counter always starts counting at 0.0. Moreover, if the device is switched on already, the VSP inspection system VSP3041 can also start measuring the currently unreeled length of push cable from a freely selectable local zero point. Please proceed as follows to use the metre counter:

1. Unreel the push cable (2) and switch on the connected control unit VSP Control as soon as the metre counter shall start measuring from the standard zero point.
 - ⇒ The metre counter measures the length of push cable unreeled and indicates the meterage both on the control unit's display (19) and on the digital metre counter (4) of the push-cable drum VSP-R30.
2. In order to additionally measure the number of metres of only a section starting from a freely selectable local zero point first press the section button (5) on the push-cable drum VSP-R30.
 - ⇒ The length of the measured section will only be displayed on the digital metre counter (4) of the push-cable drum VSP-R30.
3. To delete a partial distance measurement actuate the section button (5) twice.
 - ⇒ Despite having deleted the measurement of the section, you can resume measuring the total distance.
4. To delete all the values measured by the metre counter press the clear button (10) on the push-cable drum VSP-R30.



Info

Pressing the clear button (10) deletes the metre counter's total and partial distance measurements.

Taking a picture

1. Press the photo button (46) on the control unit VSP Control.
 - ⇒ The picture is taken and saved on the SD card.

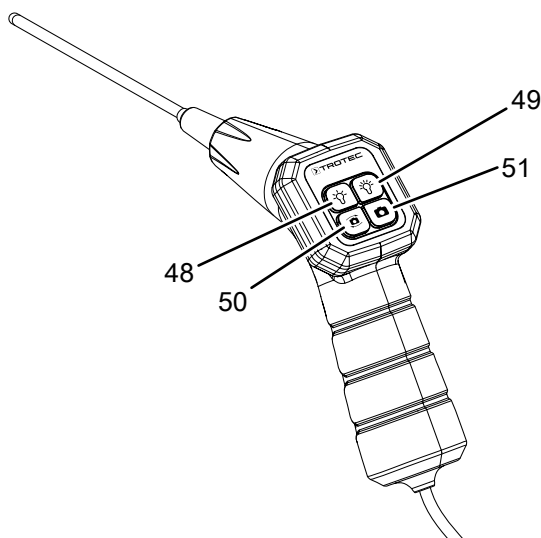
Recording a video

1. Press the video button (45).
 - ⇒ The video recording is started.
 - ⇒ A video camera symbol appears in the top left of the display.
 - ⇒ The duration of the running recording is displayed in the middle of the display.
2. Press the video button (45) again.
 - ⇒ The video recording is stopped and saved on the SD card.

Viewing a photo or video recording

1. Press and hold the confirm button (43) for approx. 5 s in the live image mode.
 - ⇒ The browser for recordings opens.
 - ⇒ By moving the cursor up / down or to the right / left you can navigate through the browser.
2. By moving the cursor to the right / left you can move from one image/video file to the next.
 - ⇒ Open the desired file by lightly pressing the confirm button (43).
 - ⇒ Start to play a video file by again pressing the confirm button (43) lightly.
 - ⇒ Stop the playback of the video file by pressing the focus button close (34).
3. Press the menu button (44) once to return to the browser for recordings.
4. Press the menu button (44) again to switch over into the live image mode.

Using the video borescope VSP-BS (optional)



No.	Designation	Meaning
48	Minus brightness button	For reducing the illumination intensity at the camera head
49	Plus brightness button	For increasing the illumination intensity at the camera head
50	Camera button	For using the side-view or dual camera (only if the probe supports this function)
51	Photo button	For taking a photo

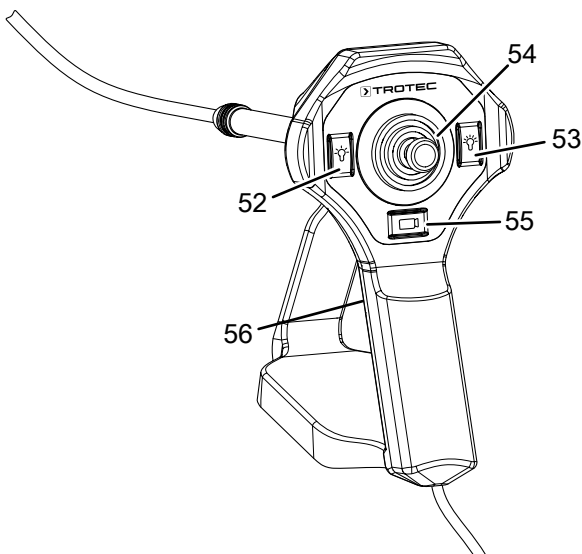
Note

In order to prevent damaging of the device, never use the borescope probe to free an object from surrounding material or to pierce through material.

You can use the control unit VSP Control with various borescope probes optionally available from Trotec. These probes vary in diameter and are fitted with different cameras such as front-, side-view or dual camera. To use an optional borescope, please proceed as follows:

1. Plug the multi-connector at the connection cable of the borescope into the multi-connector socket (28) on top of the VSP Control.
2. Switch the VSP Control on.
3. Carefully direct the borescope at the object to be examined.
4. The borescope can be controlled via the VSP Control and the buttons at the borescope.
5. Adjust the brightness of the LEDs at the borescope's camera head using the brightness buttons at the borescope (48, 49) or at the control unit VSP Control (30, 31).
 - ⇒ By pressing the minus brightness button (48) repeatedly you can switch the camera head's LEDs off completely.
 - ⇒ By pressing the plus brightness button (49) repeatedly you can switch the camera head's LEDs back on.
6. To take a picture, press the photo button at the borescope (51) or at the control unit (46).
 - ⇒ The picture is taken and saved on the SD card.
7. To record a video with the borescope, press the video button (45) on the VSP Control.
 - ⇒ The video recording is started.
 - ⇒ A video camera symbol appears in the top left of the display.
 - ⇒ The duration of the running recording is displayed in the middle of the display.
8. Press the video button (45) again.
 - ⇒ The video recording is stopped and saved on the SD card.
9. Press the camera button (50) to switch between front- and side-view or dual camera (optional, depends on the probe).

Using the video endoscope VSP-VS (optional)



No.	Designation	Meaning
52	Minus brightness button	For reducing the illumination intensity at the camera head
53	Plus brightness button	For increasing the illumination intensity at the camera head
54	Control stick	Moves the camera head of the video endoscope.
55	Video button	For starting / stopping a video recording
56	Photo button	For taking a photo

Note

In order to prevent damaging of the device, never use the video endoscope probe to free an object from surrounding material or to pierce through material.

You can use the control unit VSP Control with various video endoscope probes optionally available from Trotec. To use an optional video endoscope, please proceed as follows:

1. Plug the multi-connector at the connection cable of the video endoscope into the multi-connector socket (28) on top of the VSP Control.
2. Switch the VSP Control on.
3. Carefully direct the video endoscope at the object to be examined.
4. The video endoscope's camera head can be controlled with the control stick (54).

5. Adjust the brightness of the LEDs at the video endoscope's camera head using the brightness buttons at the video endoscope (52, 53) or at the control unit VSP Control (32, 33).
 - ⇒ By pressing the minus brightness button (52) repeatedly you can switch the camera head's LEDs off completely.
 - ⇒ By pressing the plus brightness button (53) repeatedly you can switch the camera head's LEDs back on.
6. To take a picture, press the photo button at the video endoscope (56) or at the control unit (46).
 - ⇒ The picture is taken and saved on the SD card.
7. Press the video button (55) to record a video with the endoscope.
 - ⇒ The video recording is started.
 - ⇒ A video camera symbol appears in the top left of the display.
 - ⇒ The duration of the running recording is displayed in the middle of the display.
8. Press the video button (55) again.
 - ⇒ The video recording is stopped and saved on the SD card.

Software

The device has various setting options which can be accessed via an operator software.

The main menu consists of two submenus allowing the adjustment of the basic device settings and of the photo/video settings.

1. Press the Menu button (44).
⇒ The photo/video settings submenu is displayed.
2. To switch between the two submenus, use the arrow buttons to navigate the cursor up onto the menu icons and then left or right as needed.
3. To select a menu, press the confirm button (43).
4. To leave a menu, press the menu button (44).

Photo and video settings submenu

The submenu offers the following options:



Setting	Function
Screen Brightness	For setting the display brightness
Screen Contrast	For setting the display contrast
Image Proportion	For setting the display format
Auto Save	For switching automatic saving on or off

Setting the display brightness

1. Use the arrow buttons to select the *Screen Brightness* option.
2. Press the confirm button (43) to open the *Screen Brightness* menu.



3. Select the desired value using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Setting the display contrast

1. Use the arrow buttons to select the *Screen Contrast* option.
2. Press the confirm button (43) to open the *Screen Contrast* menu.



3. Select the desired value using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Setting the display format

1. Use the arrow buttons to select the *Image Proportion* option.
2. Press the confirm button (43) to open the *Image Proportion* menu.



3. Select the desired value using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Setting Auto Save

1. Use the arrow buttons to select the *Auto Save* option.
2. Press the confirm button (43) to open the *Auto Save* menu.



3. Select the desired option using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

System settings submenu

The submenu offers the following options:

Setting	Function
Date and time	For setting the date and time
Language	For setting the menu language
Format	For formatting the SD card
Power frequency	For selecting the power frequency 50 Hz or 60 Hz
Sounds	For setting the sounds
TV System	For selecting NTSC or PAL
Automatic shutdown	For selecting automatic shutdown to save energy
Firmware Update	For updating the system software



Setting date and time

1. Use the arrow buttons to select the *Date & Time* option.
2. Press the confirm button (43) to open the *Date & Time* menu.



3. Use the arrow buttons to move the cursor to the left or right so as to select the year, date or time.
⇒ The current selection is highlighted by a square.
4. Use the arrow buttons to move the cursor up or down so as to set the value for the current selection.
5. Repeat steps 3 and 4 until the date and time are set as desired.
6. Press the confirm button (43) to confirm the settings.

Setting the menu language

1. Use the arrow buttons to select the *Language* option.
2. Press the confirm button (43) to open the *Language* menu.



3. Select the desired menu language using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Formatting the SD card

Note

If you format the SD card, all image data (photos and videos) will be deleted!

1. Use the arrow buttons to select the *Format* option.
2. Press the confirm button (43) to open the *Format* menu.



3. Select the desired setting using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Setting the power frequency

1. Use the arrow buttons to select the *Power frequency* option.
2. Press the confirm button (43) to open the *Power frequency* menu.



3. Select the desired setting using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Setting the signal sounds



Info

Connect a suitable output device, e.g. headphones, to the audio connection (20) of the control unit VSP Control so you can hear the signal sounds.

1. Use the arrow buttons to select the *Sounds* option.
2. Press the confirm button (43) to open the *Sounds* menu.



3. Select the desired setting using the arrow buttons.
 - ⇒ Press *Shutter* to switch the shutter sound for image recordings on or off.
 - ⇒ Press *Start_up sound* to select or switch off the melody for system start.
 - ⇒ Press *Beep* to switch the button sounds on or off.
 - ⇒ Press *Volume* to adjust the volume.
4. Press the confirm button (43) to confirm your selection.

Setting the TV system

This setting must be made before transferring an image from the device to a monitor. Please note that the monitor must support the PAL or NTSC format.

1. Use the arrow buttons to select the *TV System* option.
2. Press the confirm button (43) to open the *TV System* menu.



3. Select the compatible setting for your monitor using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.
5. If necessary, make the required settings at the monitor.
6. Connect the device to the monitor via the supplied AV cable and the AV OUT connection (30).

Selecting automatic shutdown

In this mode, the device will switch off automatically after a specified period of time if no menu navigations or device activities were carried out during this period.

1. Use the arrow buttons to select the *Automatic shutdown* option.
2. Press the confirm button (43) to open the *Automatic shutdown* menu.



3. Select the desired setting using the arrow buttons:
 - ⇒ Press *OFF* to deactivate automatic shutdown.
 - ⇒ Press *5 min* to set an automatic switch-off after 5 minutes.
 - ⇒ Press *10 min* to set an automatic switch-off after 10 minutes.
 - ⇒ Press *15 min* to set an automatic switch-off after 15 minutes.
 - ⇒ Press *30 min* to set an automatic switch-off after 30 minutes.
4. Press the confirm button (43) to confirm your selection.

Update firmware



Info

The firmware should only be updated after consultation with the dealer or manufacturer.

The firmware update must have been loaded onto the inserted SD card beforehand. The firmware update must **not** be located in a subfolder.

1. Use the arrow buttons to select the *Firmware Update* option.
2. Press the confirm button (43) to open the *Firmware Update* menu.



3. Select the desired setting using the arrow buttons.
4. Press the confirm button (43) to confirm your selection.

Available accessories



Warning

Only use accessories and additional equipment specified in the operating manual.

Using insertion tools or accessories other than those specified in the operating manual may cause a risk of injury.

Accessories	Article number
camera head VSP-H25F	3.110.007.135
video endoscope VSP-VS 4.5-1500	3.110.007.153
video endoscope VSP-VS 6.2-1500	3.110.007.162
video endoscope VSP-VS 6.2-3000	3.110.007.163
video borescope VSP-BS 4.5S	3.110.007.183
video borescope VSP-BS 5.0F	3.110.007.186
video borescope VSP-BS 6.2F	3.110.007.192
video borescope VSP-BS 6.4FS	3.110.007.193

Errors and faults

The device has been checked for proper functioning several times during production. If malfunctions occur nonetheless, check the device according to the following list.

Spots in the image section:

- Check the plastic cap of the camera head for scratches or dirt (on the inside, too).
- Check the camera lens for dirt and carefully blow it clean with dry air if required. If necessary, clean the camera lens with a slightly damp, lint-free cloth. Never use aggressive cleaning agents or abrasive cleaners!

No image displayed by the monitor:

- Check the battery capacity and recharge if necessary.
- Check the plug connection of the multi-connector between VSP Control and VSP-R30 for proper fit.
- Check the connection between camera head and push-cable drum for proper fit.

Maintenance and repair

Charging the battery

The battery should be charged prior to initial start-up and when the battery is low. The current battery status can be checked in the top right corner of the display. If the device is switched off, you can check the battery capacity by pressing the check button (27) for a few seconds. Only use the supplied power adapter or one with identical specifications for charging the battery!



Info

The power adapter may become hot during charging of the battery pack, particularly if the videoscope is operated while the power adapter is connected. This is normal and does not affect its functioning.



Info

You can supply the device with electricity via the power adapter. To do so, connect the cable of the supplied power adapter to the battery charging socket (29).

Please proceed as follows to charge the battery using the supplied power adapter:

1. Plug the charger into a sufficiently fused power socket. Only use the original power adapter or one with identical specifications, for otherwise both battery and device could be damaged!
2. Plug the barrel-type connector of the supplied power adapter into the battery charging socket (29) of the VSP Control.
 - ⇒ The device's charging indicator (41) is illuminated in red.
 - ⇒ The LED of the power adapter is illuminated in red.
 - ⇒ The LEDs of the battery level indication (26) at the rear are flashing.
3. Alternatively, you can remove the battery from the control unit VSP Control and charge it using the separate charging socket and power adapter.
 - ⇒ Once the battery is completely charged, the LEDs of the battery level indication (26) will be permanently illuminated.

Cleaning

Clean the device with a soft, damp and lint-free cloth. Make sure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Disposal



The icon with the crossed-out waste bin on waste electrical or electronic equipment stipulates that this equipment must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. For further return options provided by us please refer to our website www.trotec24.com.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.



In the European Union, batteries and accumulators must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators. Please dispose of batteries and accumulators according to the relevant legal requirements.

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