

Operating instructions

JETcam 
40 PRO



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Preface:

Please read through these instructions for use carefully.
It contains valuable instructions on correct use of the JetCam, but also tips for effective operation.

We wish you all the best when using it.

Team OPTRONIC

Warnings:



- For cleaning, do not use any high-pressure cleaners
- Do not place any heavy objects on the device
- Do not perform repair work by yourself, consult an authorised customer service otherwise the manufacturer guaranteed shall be invalidated!
- Do not use if the hydraulic hose is damaged.

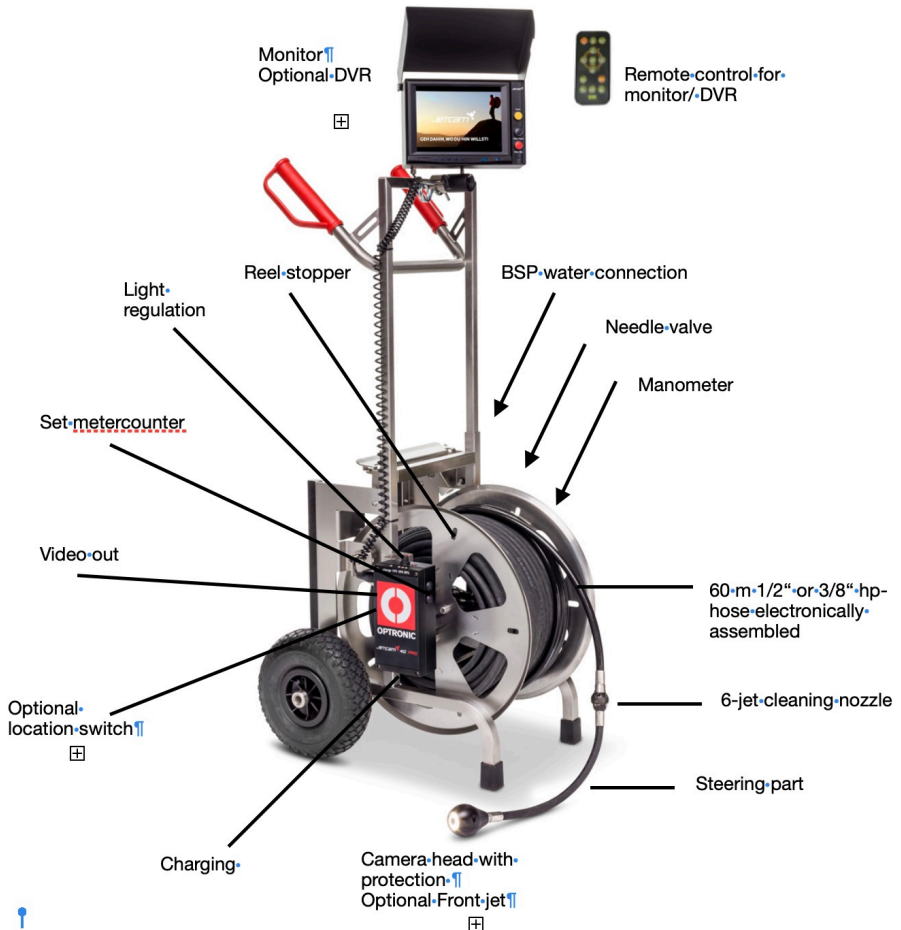


- This system must be disposed of in a professional manner and must not be disposed of with domestic waste.

Quality characteristic:

Components of the JetCam such as camera head, impact guard, steering part, high-pressure hose may have minimal scratch marks when delivering the JetCam, this can be noticed in particular with stainless steel parts such as the nozzle. These marks are the result of our end test.

Component description:



Data sheet



Reel with:	1/2" connection with BSP female thread
	Needle valve for water regulation
	Reel brake with guide holes
	Hand crank for winding the hose
	Pneumatic tyres for easy transport
	Slide rails for easy loading and unloading
Control unit with:	Protection class IP64
	Light control
	Battery display
	Standart meter counter
Accessory bag with:	2 m power supply cable (230 V AC—15 V DC)
	BNC cable 20 50 Ohm RG58C/U
	2x socket key set
Weight	approx. 45 kg
Dimensions, out	L/W/H 59x59x114cm
Dimensions, in	L/W/H 59x59x62cm

Rechargeable
battery

Voltage: 11.1 V DC

Charging voltage: 15 V DC

Output: 5200 mAh (for approx. 4-5 operating hours)

Charging time: min. 5 hours

Possible hazards

Lithium-Ion batteries are sealed gas tight and are harmless as long as they are used and handled in line with the manufacturer regulations.

Warning

Never use battery chargers that are not intended for the battery type!

Do not short-circuit. Do not damage mechanically (puncture, deform, dismantle, etc.) Do not heat above the permissible temperature or burn. Keep batteries away from smaller children. Always store batteries dry and cool.

Observe the safety information!

JetCam colour CCD camera

For nominal widths:	DN 40 - 300
Elbow sizes from:	DN 50
Enclosure:	Stainless steel d=32 mm, l=50 mm
Image sensor:	1/4" colour C-Mos
Resolution:	400 TV lines
Optic:	Wide angle 145°
Light sensitivity:	0.1 Lux at F1.2
Lighting:	9 high-performance LEDs
Focus:	From approx. 25 mm to ∞
Ambient temperature:	Approx. -10 to + 45°C
Storage temperature:	Approx. -30 to + 60°C
TV system:	PAL

Steering part

(all) comprising:	Lateral steering nozzle 1.2 mm M4
	Length approx. 35 mm
	Throughput approx. 40-60 l/min at 100-150 bar
	Completely pre-assembled
	Plug-in system on the camera head side
	Without camera head
6-jet cleaning nozzle	6 jets (6 x 1,1 mm for 3/8" or 6 x 1.2 mm for 1/2" hose)

High-pressure hose

Surface hardened highly abrasion-resistant high-pressure hose, pre-assembled electrical equipment
NW 10 (3/8") 60 m
NW 12 (1/2") 60 m

Screen and recording

High resolution:	800 x 600 pix
Colour system:	PAL
Viewing angle, min.:	130° / 110° (H/V)

Digital video recorder, integrated

Menu navigation via remote control
integrated in the monitor housing
The recorder generates it own folder on the SD card inserted
Films / photos are saved in a separate sub-folder according to date and time

Recording of videos:	800 x 600 pix as ideal presetting, possible: 1280 x 720 pix
Recording of individual images:	800 x 600 pix
Images per second:	25 images
Video bit rate:	4 MB
Storage media:	Up to 32 GB SD card (2 GB standard)

Data writing, PAL

Lines / screen:	12
Characters / line:	23
Storage option:	5 fixed characters (e.g. Formula)
	64 fixed words
Status line, movable:	Date
	Time

Instructions for use:

Instructions for use

The JetCam has been optimally designed for your tasks in diameters from: 50 to max. 300 mm.

Preparation:

Preparation

Please make sure that the following are available at the operating location:

- high-pressure pump:
 - for JetCam with 3/8" hose app.
40 - 60 litre / 100 - 150 bar at the unit
 - for JetCam with 1/2" hose app.
60 - 80 litre / 100 - 150 bar at the unit
- 2 open-ended spanners, 27mm for connecting the JetCam
- Charged battery
 - Please note that the battery of a brand-new system is not fully charged when delivered.

Preparatory measures before starting work:

On the camera

Make sure that the Camera head is cleaned. To ensure for a clear view as long as possible, the sapphire glass and the macrolon must be cleaned before or after being used each time.

Changing the camera head

When fastening the camera head, make sure that the

- fit on the camera head and hose piece match each other precisely !!!
- spring washer (13 x 1.5 mm) selected is inserted !!!
- sealing ring is present and is not damaged !!!



Operate the camera head with impact guard for longer live !

The impact guard serves to protect against excessive wear and acceleration forces of the integrated mechanical components.

Water side

- Connect the **water hose of the high-pressure washer** with 1/2" BSP external thread to the JetCam (two 27 mm open-ended spanners are required for this purpose)



- Make sure that the **needle valve is completely opened**.
In the top view of the controller: Close (clockwise direction of rotation)
Open (counter-clockwise direction of rotation)



- **Clean steering nozzle** and nozzle inserts of the nozzle. These may not be clogged! The cleaning and feed behaviour is influenced significantly by this.



Commissioning:

- Pull out the reel trolley completely
- Switch on the system with the light control (if the video recorder is fitted, you can hear a brief “beep” tone)
- Set the **monitor** to the viewing position and also switch on (right blue button “Power“)

Channel selection: Live view (“Video 2“) or view via the video channel (“Video 1“). Can be switched using the left button.

When switching on the monitor, by default the monitor changes to the channel last set.

With the channel set, the functions of the video recorder (see chapter below) are faded in the screen.

- Take the camera head out of the holder
- Unlock the stopper on the reel
- Position the camera at the start of the pipe

Set the meter counter:



- Press the top button -> move forwards
- Press the bottom button -> move backwards
- Press both buttons at the same time -> set to “0“

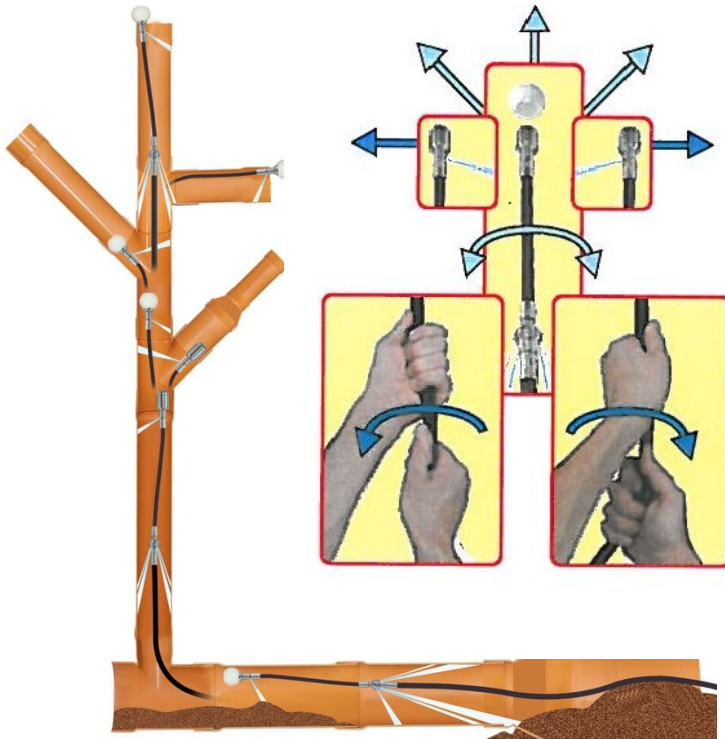
Working with the JetCam:

To avoid water damage or water leaking in an uncontrolled manner, the camera head along with steering part must be completely inserted into the pipe to be inspected.

Before the system is supplied with pressurised water, hold the hose tight in order not to lose control over the high-pressure system!

- Become a feeling for the pulling behaviour of the hose
 - Become a feeling for the drifting behaviour of the camera head (by the steering nozzle).
- The steering nozzle steers the camera head, e.g. in branches.

Schematic:



- You can control the drifting behaviour by twisting the hose (with or without strap) in the desired direction.

-
- The steering nozzle is always aligned downwards from the camera so that the top side of the camera image is decisive for the direction that should be travelled.

If a branch can be seen in the camera image that should be travelled along, the camera head must be aligned by twisting on the hydraulic hose so that the branch is in the upper area (12 o'clock) of the camera image in the live video.

Elbows

If this should be a problem, the steering nozzle may be aligned in an unfavourable angle to the pipe and thus may even prevent it from being travelled over.

Solution: Pull back the hose, twist and as a result, move the elbow at a different angle. Or increase pressure.

Branches, T-pieces

Move to the branch or T-piece in the position (by twisting on the hose) in which you see the branch or T-piece in the "12 o'clock" position. This guarantees that the steering nozzle acts precisely against the branch or T-piece. Slowly thread-in and run in.

Moving over soiling / obstacles

Similar as described in "Branches, T-pieces" above, twist the hose until the soiling can be seen in the 6 o'clock position. This allows the soiling to be run over and if necessary, removed.

Pipe cleaning

The best cleaning result (depending on the local circumstances) can be achieved using a

- 1/2 inch high-pressure hose
- High-pressure washer output: 150 Bar, 60 - 80 litres
- Rotation nozzle or rotation impact nozzle

Maintenance, cleaning the nozzle inserts:

Cleaning the nozzle (e.g. puncture)

Steering nozzle:

for cleaning the steering nozzle, the nozzle always has to be disassembled otherwise the reason for the blockage is guided back into the inside and creates another blockage.

Nozzle:

disassembly of the nozzles is also a requirement for cleaning the nozzle inserts.

Working with accessories / optional

Forward jet:

Assembly

Remove the M6x5 threaded pin and there, screw on the front jet nozzle.



Caution: The forward jet may only be tightened using an 8 mm open-ended spanner (do not tighten hand-tight). Keep the grub screw removed in a safe place. You will need it again if you want to work without the front jet nozzle.

Now mount the impact protection for the front jet nozzle over the unit now present (camera with front jet nozzle).

It is essential to ensure that the jets of the nozzles are always free.

Operation

The pressure details used here are non-binding. The pressures depend on the performance of your washer. We recommend that you make attempts as to which pressures the front spray nozzle opens and closes.

The front jet serves the removal of blockages in a pipe, and works with a pressure-controlled valve.

If a blockage is detected in the pipe, reduce the inlet pressure (see pressure gauge) of the JetCam using the needle valve until the valve of the front jet opens. Increase the pressure until shortly before the cut-off pressure and work on the blockage with the front jet visible in the camera image by twisting the hose until this is released so that you can manoeuvre through it with the JetCam.

Increase the pressure again until the front jet switches off and now run against the blockage previously released.

This is essential that this is the case before you continue to run in the pipe in order to avoid backwater of the rinsing water.

Working with accessories / options: electronics

Locating transmitter

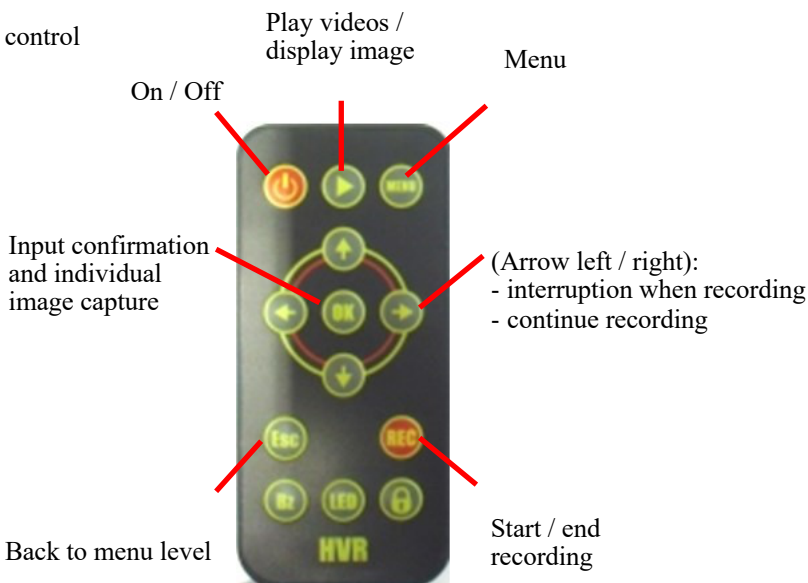
The locating transmitter 512 Hz is switchable. The location switch is located on the control box. If the locating transmitter is switched on, the image switches off. As soon as the locating switch is switched off again, the image appears again.

WIFI

If a JetCam is equipped with WIFI, this transmits permanently when the system is switched on. WIFI AV is an free available App that can be used to show the live video. Password is 12345678

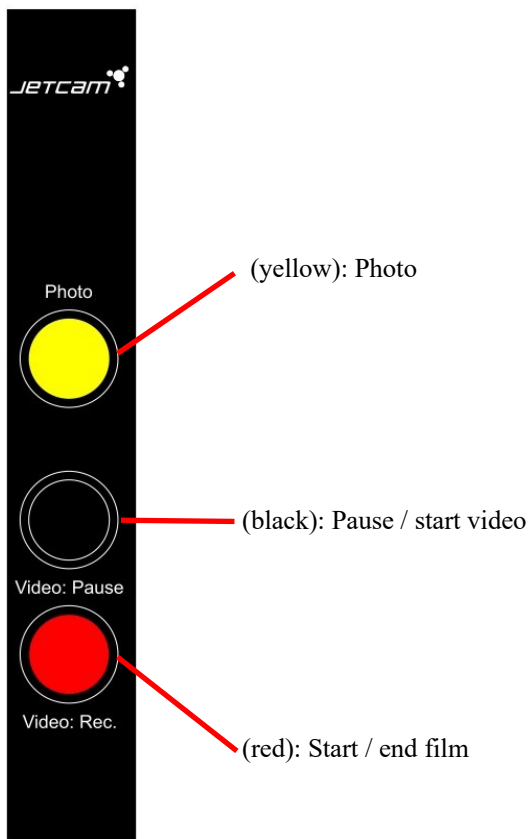
Monitor with digital recorder

:Remote control



Recording button

These buttons do not replace the remote control.



Main menu

To display the menu, “Video 1” must be selected on the monitor. Now press the “Menu” button on the remote control.



The following settings can be made here:

1. Video image resolution
2. Image frequency (images / second)
3. Bit rate
4. Microphone (optional function)
5. Memory
6. Recording period
7. System settings (time, date, language, etc.)

EU Declaration of Conformity (DoC)

We

Company Name:	Optronic GmbH.
Post Address:	Industriestraße 53
Postcode and City:	DE-87448 Waltenhofen
Telephone number:	049 831 28885
E-Mail address	contact@optronic.de

Declare that the DoC is issued under our sole responsibility and belongs to the following product:

Apparatus Model/Product	Optronic JetCam®
Type:	<u>JetCam40Pro</u>

Object of the declaration:

The JetCam is a battery-powered camera system that has a monitor, a hydraulic hose and a camera head. The camera head flushes itself into the channels to be inspected with water pressure. The main area of application is pre-inspection, cleaning and quality control in the sewer and pipe cleaning industry.



The object of the declaration described above is in conformity with the relevant Union harmonization legislation:


2014/35/EU	The Low Voltage Directive and its amending Directives
2014/30/EU	The Electromagnetic Compatibility Directive and its amending Directives

The following harmonized standards are applied

The following national and international technical standards and specifications are applied

EN 61000-6-2:2019	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial areas
EN 61000-6-3:2017 + A1:2011 + AC:2012	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Interference emissions for residential, business and commercial areas and small businesses
EN IEC 61000-3-2:2019	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limit values - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply networks for devices with a rated current ≤ 16 A per phase, which are not subject to any special connection conditions

Signed for and on behalf of:

Signature:	
Name:	Caroline Riezler
Function:	CEO
Place issued:	Opstronic GmbH. Industriestraße 53 DE-87448 Waltenhofen
Date issued:	23.05.2022