CR 7 VET

Manual

9000-608-67/30

DÜRR
MEDICAL

MADE IN GERMANY

DÜRR
MEDICAL

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Important Information

1. General

1.1 Note on conformity

The product was subject to a conformity acceptance process under the European Union guidelines covering these types of device and conforms with the essential requirements of these regulations.

Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

1.2 Notes

- The Installation and Operating Instructions constitute a part of the appliance. They must be made available to the operator. Correct observance of the Installation and Operating Instructions is a basic requirement for using the appliance properly and safely, and new personnel must be instructed accordingly. These Installation and Operating Instructions must be handed over to any subsequent owner or operator of this appliance.

- The safety of the operator and trouble-free operation of the appliance can only be ensured where original engineering manufactured parts are used. Furthermore, only the accessories and consumables described in the installation and operating instructions or approved by DÜRR MEDICAL for use with this appliance may be used. If other accessories or consumables are used, DÜRR MEDICAL can assume no warranty for the safe operation and reliable function. No liability on the part of the manufacture will be accepted in the case that damage arises through the use of non-approved accessories.

- DÜRR MEDICAL is responsible for the appliances from the point of view of safety, reliability and function only when installation, new settings, modifications, expansions and repairs are carried out by DÜRR MEDICAL or by a service centre authorised by DÜRR MEDICAL, and when the appliance is used and operated in accordance with the installation and operating instructions.

- These Installation and Operating Instructions accord with the features of the appliance and the level of engineering at the time of first introduction of the model. All circuits, processes, names, software and appliances quoted are protected under industrial property rights.

- This translation of the Installation and Operating Instructions has been carried out in good faith. Liabilty for incorrect translation will not be accepted. The accompanying German version of these Installation and Operating Instructions are to be used as reference; if you have any doubt to the correct interpretation of the instructions please consult your dealer.

- Reprint of the Installation and Operating Instructions , or parts thereof, is only permitted with the written approval of DÜRR MEDICAL.

- Keep original packing for possible return of the appliance to the supplier. Only the original packing ensures optimum protection for the appliance during transport.
  If the appliance has to be returned to the manufacturers during the warranty period, DÜRR MEDICAL will accept no liability for damage occurring during transport resulting from poor packaging!
  Ensure that the packaging is stored away from children.

1.3 Disposal of appliance

Appliance
EU guideline 2002/96/EC - WEEE (Waste Electric and Electronic Equipment) of 27 January 2003 and its current implementation into national law determines that products are subject to the above-mentioned guideline and must be disposed of as special waste within the European Economic Area. Questions on the proper disposal of the product can be directed to DÜRR MEDICAL or the dental trade.

Image plates
Observe regional regulations concerning disposal.
- Questions on the proper disposal of the product can be directed to DÜRR MEDICAL or the dental trade.

1.4 Correct Usage

• The appliance is intended exclusively for visual scanning and processing of image data on an image plate in veterinary medicine.

• Correct Usage of the appliance also involves observing the Installation and Operating Instructions and adhering to those instructions concerning set-up, operating and maintenance.

• Every usage which is not in accordance with the Correct Usage above will lead to the guarantees and warranties provided by DÜRR MEDICAL becoming null and void.

• The operator is liable for any damage arising through incorrect usage.

• Correct usage also involves observing all local and national regulations concerning health and safety at work and radiation prevention.

1.5 Incorrect Usage

The appliance is not intended for visual scanning of image plates in human medicine.
Any use of this appliance/these appliances above and beyond that laid down in the Installation and Operating Instructions is deemed to be incorrect usage. The manufacturer cannot be held liable for any damage resulting from incorrect usage. The operator will be held liable and bears all risks.

⚠ **This appliance must not be used in operating theatres or similar types of room, where there is a risk of inflammable materials catching fire.**

1.6 Using Peripheral Devices

Only peripheral devices (computers, monitors, printers) conforming to standard IEC 60950-1 (EN 60950-1) may be connected to the appliance.

• Appliances may only be connected together or connected to other system parts where the safety of patients, operators and also the environment is ensured.
Where safe connection is not clearly evident based on the device data, then the user must ensure, e.g. through discussion with the respective manufacturers or by referring to a specialist, that the required safety for the operators and the environment will not be impaired by the intended connection.

1.7 Using image plates

• The scanner may only be operated in combination with Dürr NDT or DÜRR MEDICAL image plates PLUS.
See also the chapter on image plates

1.8 Use of software

Only software specifically approved by DÜRR MEDICAL (e.g. Vet-Exam Plus, Vet-Exam Intra) may be used. Use of any other software must be expressly approved by DÜRR MEDICAL.

The following operating systems are supported - Windows XP Professional 32-bit from Service Pack 3, Windows Vista 32-bit Home Premium or higher and Windows 7 32-bit / 64-bit.

2. Safety

2.1 General notes on safety

The appliance has been developed and designed in such a way that dangers are effectively ruled out if operated in accordance with the intended use. However, we feel it is important to describe the following safety measures in order to remove any likelihood of danger.

- When operating this appliance all local and national rules and regulations must be observed!
This appliance must not be converted or altered in any way. DÜRR MEDICAL can assume no warranty or liability for modified or adapted appliances. In the interests of safe usage of the appliance both operator and owner are responsible for seeing that all relevant appliance are observed.

- Opening an appliance which is still connected to the mains power supply is dangerous and could lead to laser radiation Class 3B.

- Installation
must be carried out by a fully qualified technician.

- The operator must carefully check the appliance for safety of function and the proper working condition before every use.

- The operator must be trained in the correct operation of the appliance.

2.2 Electrical safety instructions

- The appliance may only be connected to a correctly installed electrical socket.

- Before connecting to the electricity supply the appliance must be inspected and checked that the supply voltage and the supply frequency correspond to that of the local electrical supply.

- Before initial use and start-up the appliance and all supply lines must be checked for any signs of damage. Damaged supply lines and connections must be replaced immediately.

- Never touch persons and open connectors of the appliance simultaneously.

- When using the appliance observe all the relevant electrical safety procedures.

Before opening the device, unplug at the mains and remove all power mains plug!

3. Warnings and symbols

3.1 Installation and Operating Instructions

In the operating instructions the following warnings and symbols have been used:

Information including preventative measures to protect injury to persons or damage.

Special information regarding the economical use of the equipment and other information.

Unplug at the mains and remove all power!

On/off switch

Control LED, green
Ready for operation

Control LED, blue
Data transmission

control LED, yellow
Cleaning mode

Dispose of after use

Wear protective gloves

3.2 Adhesive label

Warning laser

Warning dangerous voltage

Warning of laser beam

Appliance closed:
Class 1 laser beam

Appliance open:
Class 3 laser beam
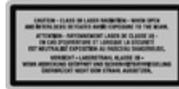
Class 3 laser beam

3.3 Model identification plate

The model identification plate is located on the rear side of the CR 7 VET.
The following designations or symbols are used or depicted on the appliance, model identification plate and power unit:

Protection class2

Date of manufacture

Manufacturer

Observe accompanying documentation!

Dispose of product correctly and in accordance with EU directive (2002/96/EG-WEEE)

IP20 Fuse type

REF Order No. / model no.

SN Serial-No.

CE-Labeling without Notified Body Number

4. Delivery contents

CR 7 VET 2137-01

CR 7 VET	2137-000-80
Power unit	9000-150-54
Data cable (USB 3m)	9000-119-067
Data cable (RJ 45 3m)	9000-119-071
Software Vet-Exam Intra (Demo Version)	2132-725-02
Protective cover	2141-003-01
IP-Cleaning Wipes (10 pcs.) . . .	CCB351A1001
Installation and Operating Instructions.	9000-608-67/..

4.1 Special accessories

The parts listed in the following are not included in the scope of delivery.
Please order as required!

Wall mounting bracket.	2141-001-00
2 DÜRR MEDICAL image plates PLUS -Size 0- 2x3 (22x35 mm).	2134-040-50
2 DÜRR MEDICAL image plates PLUS -Size 1- 2x4 (24x40 mm).	2134-041-50
4 DÜRR MEDICAL image plates PLUS -Size 2- 3x4 (31x41 mm).	2134-042-50
2 DÜRR MEDICAL image plates PLUS -Size 3- 2.7x5.4 mm	2134-043-50
1 DÜRR MEDICAL image plate PLUS -Size 4- 5.7x7.6 mm	2134-044-50
Data cable (USB 5m)	9000-119-027
Data cable (RJ 45 5m)	9000-118-036

> **i** The usage of any accessories, transformers and connections other than those specifically listed under Accessories can lead to increased emissions or to a reduction in resistance to interference of the system.

4.2 Disposable materials

Light protection covers
-Size 0- 2x3 (100 pcs.) 2134-070-00
Light protection covers
-Size 1- 2x4 (100 pcs.) 2134-071-00
Light protection covers
-Size 2- 3x4 (300 pcs.) 2134-072-00
Light protection covers
-Size 3- 2.7x5.4 (100 pcs.) 2134-073-00
Light protection covers
-Size 4- 5.7x7.6 (100 pcs.) 2134-074-00
IP-Cleaning Wipes (100 pcs.) . . CCB351A0101

> **i** Other cleaning and disinfectants can be obtained from the company Orochemie (www.orochemie.de) under the following names:
> Quick disinfectant B 30
> Disinfectant wipes B 60,

5. System requirements

In order to operate the CR 7 VET the equipment listed under points 5.1 and 5.2 are required. These are not supplied with the CR 7 VET.

5.1 Monitor

Use monitors for digital X-ray with higher light intensity and wide contrast range. Bright room light, direct sunlight and reflections decrease the diagnostic capabilities of the X-ray images. In Germany, an acceptance test in accordance with DIN V 6868-57 can be carried out. In other countries, observe the applicable legal regulations!

5.2 Computer system requirements

Refer to leaflet Minimum system requirements for computer systems, order number 9000-608-100/.. Further information can be found on the internet under www.duerr-medical.de.

6. Technical data

6.1 CR 7 VET

Electrical ratings and connection data
Power unit
Voltage (V) . . . . .100 - 240
Maximum permissible
Voltage fluctuation (%). . . . . +/- 10
Frequency (Hz) . . . . 50 - 60
Current consumption (A) . . . . max. 0.8
Output (VA) 40
Type of protection IP20
Protection class II
Surge voltage category II

Electrical ratings and connection data
CR 7 VET
Voltage (V, DC) 24
Maximum permissible
Voltage fluctuation (%). . . . . +/- 10
Current consumption (A) . . . . max. 1.25
Output (VA) 30

Duty cycle
S2 (min) 25
S6 (%) 25

Dimensions
W = 226 mm, H = 234 mm, T = 243 mm

Weight
CR 7 VET (kg) . . . . approx. 6,5

Sound pressure level
Stand-by (db(A)) . . . . .approx. 37
During readout (db(A)) . . . . .approx. 55

General values
Extern: Laser class 1 (EN60825-1)

Extern: Laser class 3 (EN60825-1)

Wavelength λ 635 nm
10 mW
EN 60825-1:2006-04 +
A1:2002-07+A2:2001-03

Heat output (W) 40

Pixel size
Select range of (μm) . . . . 12.5 to 50

Resolution
(depending on image plate)
line pair/mm (Lp/mm) . . . . max. ca. 40

Conformity Acceptance Procedure

Low voltage 06/95/EG

EMC
Conducted HF-interference level V_1
according to IEC 61000-4-6 (V_{eff}) 3
Transmitted HF-interference E_1
according to IEC 61000-4-3 (V/m) 4

6.2 Ambient conditions

CR 7 VET

Temperature ranges
Appliance in operation (°C) . . . .+10 to +35
Storage and transport (°C) . . . . -20 to +60

Air pressure
Appliance in operation (hPa) . . . . .750 - 1060
Sea level (m) . . . . <2000
Storage and transport (hPa) . . . . .750 - 1060
Sea level (m) 16000

Rel. humidity
Appliance in operation (%). . . . . 20 - 80
Storage and transport (%) . . . . 10 - 95

Image plates

Storage and transport
Temperature (°C). . . . . <33
Relative humidity (%) . . . . <80

Use
Temperature (°C). . . . . 18 - 45
Relative humidity (%) . . . . <80

7. Functional layout

9000-608-67/30   2012/02/29
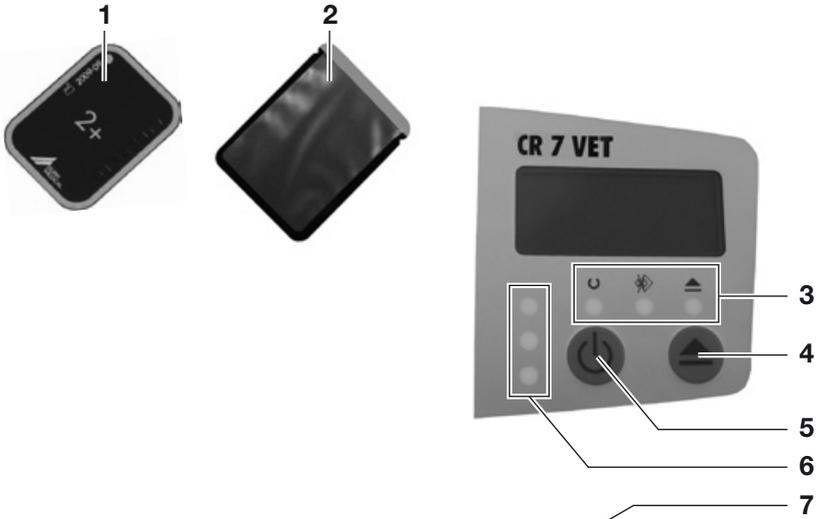
7.1 Function of individual components

1. Image plates

The image plates serve as a recording medium for X-rays and stores the image data.

2. Light protection covers

• protect the image plates from contamination and soiling.

• prevent the erasure of image data on the image plate.

3. Control LEDs

General information regarding the operating status of the appliance is displayed.

Green LED :
Ready for operation is displayed

Blue LED :
Communication staus is displayed

Yellow LED :
Status of the cleaning mode is displayed

4. Cleaning key

On pressing this key the appliance moves into the cleaning position or from the cleaning position back into the operating position.

5 On/Off button

To switch on: press on / off button.

To switch off: press on / off button for 2 seconds. The appliance shuts down normally, the green and blue LEDs blink alternately.

Forced switch off: press on / off button until all LEDs have gone off.

6. Status LEDs

Information on the image foil transport status is displayed.

Red LED :
fault

Yellow LED :
image foil transport busy

Green LED :
image plate can be inserted

7. Cover

Covers the moving parts of the input unit. Can be removed for cleaning and disinfection.

8. Display

The display, depending on the particular software being used, presents various information on the status of the appliance, e.g. when used under Vet-Exam Intra the name and the tooth number are shown.

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In the event of a fault code being displayed refer to chapter Tips for Operators and Service Technicians.

9. Unlocking catch

Releases the cover for opening.

10. Collection tray

The image plates fall onto the collection tray after scanning and erasure steps.

11. Image foil transport, internal

Within the appliance the image plates are carried by the image foil transport through the scan and erasure units.

12. Input unit

It is at the input unit that the image plates, packed in their open light protection cover, are placed, fixed in position and then inserted into the image foil transport.

8. Functional description

CR 7 VET transforms the image data stored on the intraoral image plate into a digital x-ray image. This image is then displayed on a PC system and can be edited.

X-ray
The image plate (1) is packed inside its light protection cover (2), disinfected, placed in position and exposed.
After exposure the light protection cover is again disinfected.
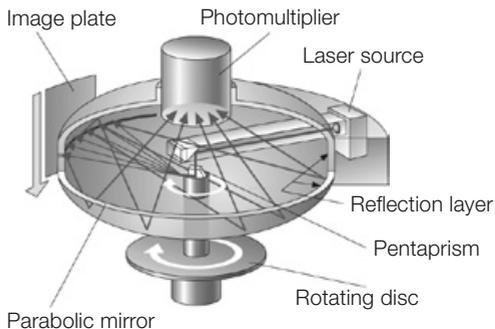
Scanning the image data
The CR 7 VET is switched on by pressing the ON/OFF button (5). Then, using the x-ray software e.g. Vet-Exam Intra, the scan mode is activated.
When the green status LED lights (6) the image plate, with opened light protection cover, is placed centrally onto the input unit (12).

Using a finger the image plate is carefully pushed out of its fixed light protection cover and into the image foil transport (11) mechanism. The light protection cover itself remains fixed at the input unit. As soon as the light protection cover is no longer fixed in place it can be removed.

Within the image foil transport itself (11) the image plate travels through the scanner unit. There the image data on the image plate is scanned by a laser and the information transmitted to a PC system. The scanning progress can be seen in a window on the monitor.

After scanning the image plate passes through the erasure unit where any residual image data is erased. Finally the image plate falls into the collection tray (10).

Image plate · Photomultiplier · Laser source · Reflection layer · Pentaprism · Rotating disc · Parabolic mirror

Further X-ray exposures
After removal of the image plates from the collection tray it is recommended that the image plate be repacked inside a light protection cover.

The image plates are reusable several hundred times if used correctly. Before next use the image plate should be checked for any signs of dirt or damage. Damaged image plates must not be reused.

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⚒ Mounting

> ⚠ **Only suitably qualified staff may set up, install or operate the appliance.**

9. Transport and packaging

- Check that the delivery contents are complete and check for any signs of transport damage.
- Completely remove all packaging.
- Do not expose the CR 7 VET to any strong vibration as this can cause damage to the unit.

> ⚠ **Damage as a result of vibration. The appliance must not be moved during operation or the switch off process (blue and green operational LEDs blink alternately) as moving parts must be allowed to come to a stop.**

10. Set-up

10.1 Installation room

- Install the CR 7 VET only in a closed, dry and well ventilated room.
- The room temperature must not fall below + 10 °C or rise above + 35 °C.

> ⚠ **Danger of short circuit due to build up of condensation. The system can only be put into operation once the appliance has warmed up to room temperature and it is dry.**

- Installation in a purpose-built room, e.g. in a boiler room or in a wet room is not permitted.
- Do not expose the CR 7 VET to direct sunlight. The ambient light must be reduced, if necessary. The maximum light intensity can rise to 1000 Lux.
- There must be no source of interference in the room for set-up (e.g. strong magnetic field). This type of interference can lead to faulty operation of the CR 7 VET.

10.2 Set-up alternatives

Table set-up

CR 7 VET can be set up as a tabletop appliance.

> ℹ️ To avoid faults on scanning of image data, the CR 7 VET should be set up vibration-free.

Wall mounting

The CR 7 VET can be set up using a wall mounting bracket (order number 2141-001-00).

> ℹ️ For instructions on mounting the wall mounting bracket refer to the ssembly instructions leaflet, order number 9000-618-162/01

11. Electrical connection

Before the first usage or start-up check the supply voltage of 24 V DC and mains voltage supply 100 V - 240 V agree with the information on the model identification plate.

The connection ports are in the recesses on the rear side of the appliance.

Remove any country specific adapter that may already be in position.

Choose a suitable country adapter and plug in.

• Remove the cover on the rear side of the CR 7 VET.
• Plug in the connector of the power unit into the socket on the CR 7 VET.
• Plug in the cable from the power unit into the mains supply socket.
• Replace cover.

> ℹ️ When operating the appliance, the rear cover must be in place.

2

3
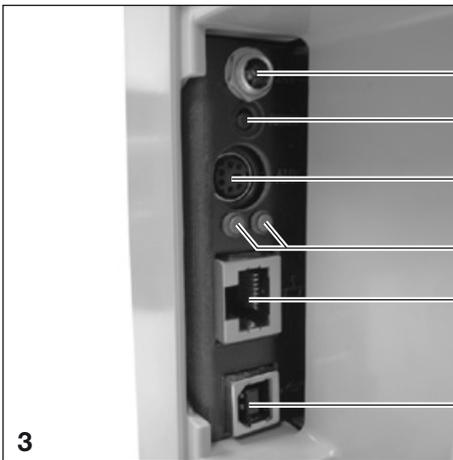
12. Commissioning and first set up

12.1 CR 7 VET

| i | Installation and configuration may only be carried out by a person trained and qualified by DÜRR MEDICAL or one of our service technicians. |

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The CR 7 VET is equipped with four connection ports situated under the rear side panel:

14. 24 V-connection
The 24 V -connection serves to supply power to the CR 7 VET.

15. Reset-button
By pressing and holding the reset button for 15 - 20 seconds while switching on, all network settings for the appliance are set back to factory settings. This CR 7 VET Plus operation is confirmed and the display shows "Factory Reset".

16. AUX-connection
The AUX-connection serves as a diagnostic contact for the service technician. The AUX-connection can be used to attach auxiliary devices for testing and for trouble-shooting.

| i | Only auxiliary devices approved by DÜRR MEDICAL may be used. |

17. Network connection status LEDs
The network connection status LEDs display whether there is a connection to a network and whether data is transmitted.

18. Network connection
The CR 7 VET can be operated via a network.

19. USB-connection
The CR 7 VET can be operated via USB.

| i | Where the CR 7 VET is connected to both a USB **and** a network, then the network takes precedence. |

12.2 Setting X-ray appliance

The following standard equipment-specific values must be checked and adjusted.

Reference conditions:

• Cat (ca. 6 kg) to medium-sized dog (ca. 20 kg)

> The exposure times listed in the table for a tube length of 20 cm were achieved using a dental X-ray unit with DC-emitter (cathode spot 0.7 mm). The exposure times for a tube length of 30 cm were calculated using the exposure times for a 20 cm tube.

Parameters	DC-emitter, 7 mA, Tube length 20 cm		DC-emitter, 7 mA, Tube length 30 cm	
	Recommended exposure times (s)		Recommended exposure times (s)	
Upper jaw	**60kV**	**70kV**	**60kV**	**70kV**
Incisor	0.1	0.08	0.2	0.16
Pre-molar	0.125	0.1	0.25	0.2
Molar	0.16	0.125	0.32	0.25
Lower jaw-bone	**60kV**	**70kV**	**60kV**	**70kV**
Incisor	0.1	0.08	0.2	0.16
Pre-molar	0.125	0.1	0.25	0.2
Molar	0.125	0.1	0.25	0.2

> Where the x-ray tube can be set to 60 kV, this setting should be preferred.
> The standard exposure values for F-Film (e.g. Kodak Insight) can be used.

inactive side:

active side:

4
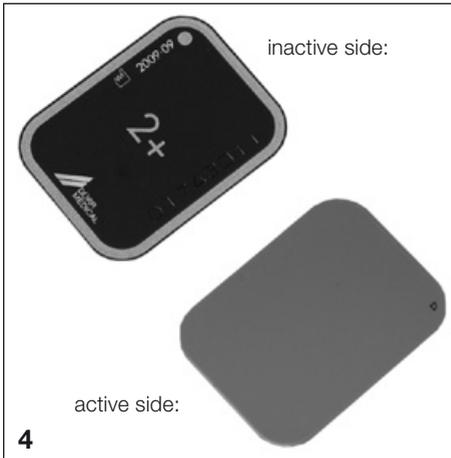
13. Image plates

⚠ **Image plates are toxic:**
therefore, always use image plates
inside a light protection cover. If an
image plate or a part of an image
plate is swallowed then this must be
removed immediately.
If the light protection cover is dama-
ged through biting, the mouth should
be thoroughly rinsed with water.

EN

13.1 General

Only use the CR 7 VET in combination with
PLUS image plates obtained from DÜRR NDT
or DÜRR MEDICAL. Use of any other image
plates must be expressly approved by DÜRR
MEDICAL.
Exposure of the image plates must take place
on the active side:

active side:
• The active side is light blue. This side is mar-
  ked clearly with a ∇ position assistance.

inactive side:
• The inactive side is black. This side has size,
  manufacturer information and "back" printed
  on it. Furthermore, the inactive side has a
  silver border round it which makes positioning
  of it in relation to the light protection cover
  simpler. In one corner there is a silver point
  which replaces the slight protrusion of a
  conventional X-ray film. When positioning this
  point Punkt should always be in the direction
  of the occlusal surface. This simplifies orienta-
  tion on the X-ray.

5

6
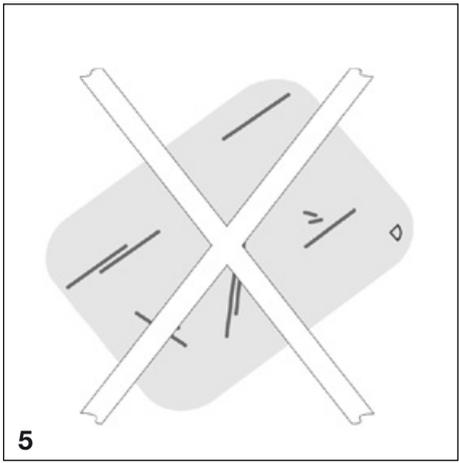
13.2 Handling image plates

Inspect image plates for visible damage. Damaged image plates (e.g. torn protective layer or visible scratches which might impair diagnostic results) must be replaced.

• Image plates are pliable like X-ray film.
• Do not bend or apply pressure.
• Do not scratch or soil.
• Do not autoclave.

13.3 Storing image plates

• Store image plates in a dark place.
• Do not store in hot or moist conditions.
• Store intraoral image plates in a light protection cover of the correct size.
• If an image plate is stored for longer than 24 hours, it must be erased again before the next X-ray exposure. See chapter 16.5
• Protect from direct sunlight and ultraviolet radiation.
• If stored in the X-ray room, the image plates must be protected against exposure to X-ray radiation.

7
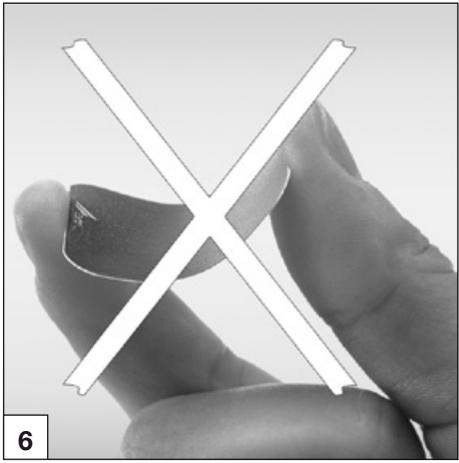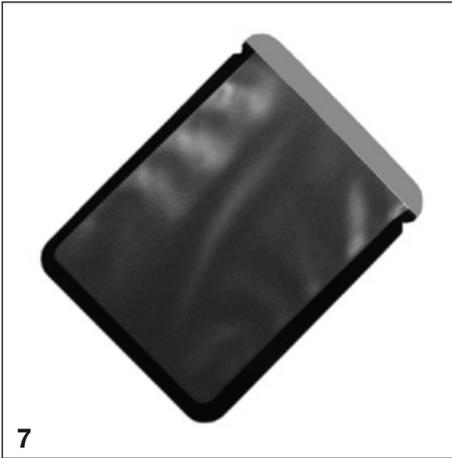
14. Light protection covers

Light protection cover
- Protect the patient from infection through possible contamination of image plates.

- Protect the image plates from contamination and soiling.

- Protect the image plate from light.

- Are available, like image plates, in various sizes. Choose the appropriate size.

⊗ **The light protection cover is a disposable item and must not be used again.**

ℹ For information on the usage of the light protection cover refer to the instructions for use, order number 9000-608-29/...

15. Protective cover

The protective cover keeps dirt and dust away from the CR 7 VET when allowed to stand for longer periods.

- Place the protective cover with the yellow marking towards the front over the unit until this is absolutely covered.

- Store the protective cover in a clean place when not in usage.

⚠ **Danger of asphyxiation**
Store the protective cover out of the reach of children.

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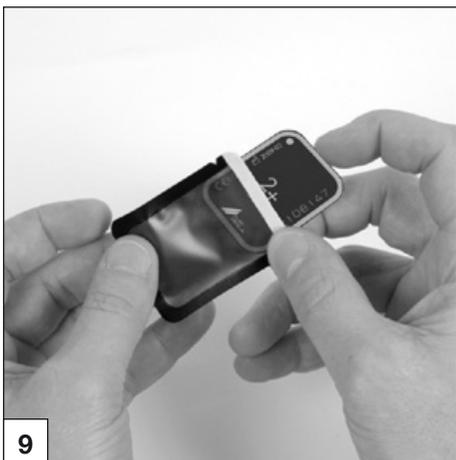
16. X-ray

> **i** Observe the hygiene regulations under chapter 17. Cleaning and Disinfection.

16.1 Preparation for X-raying

> **i** Image plates are pre-exposed by natural X-ray radiation and stray X-ray radiation.

- When using image plates for the first time or after storing for longer than 24 hours, the image plate must be erased. See also point 16.5 Erasing the image data
- Slide the erased image plate completely into the light protection cover. The black (inactive) side of the image plate must be visible.
- Unpeel the white adhesive strip and close the opening of the light protection cover by pressing firmly.

> ⊘ **The light protection cover is a disposable item and must not be used again.**

- The light protection cover must be disinfected using a disinfection wipe (e.g. Orochemie B60) before placement. Alternatively, a disinfectant spray (e.g. Orochemie B30) applied on a soft, lint-free cloth can be used instead of a disinfection wipe.

12
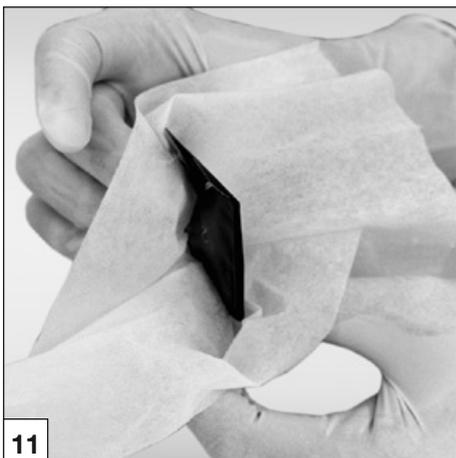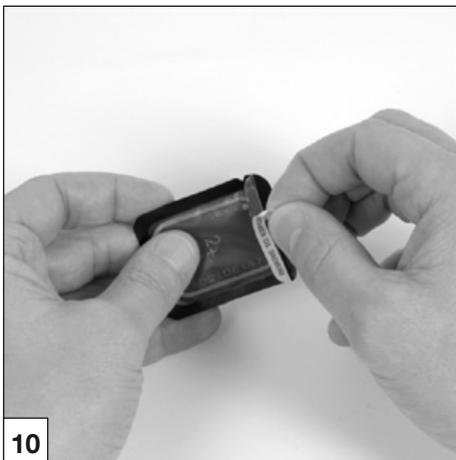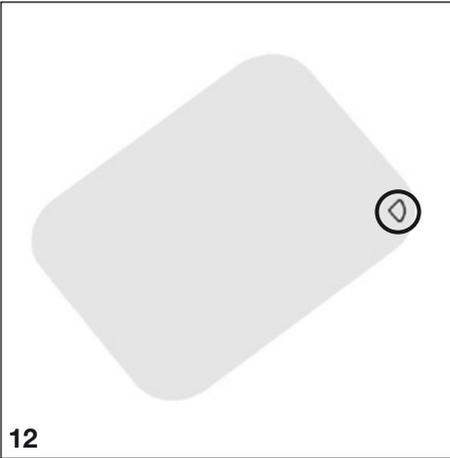
16.2 X-ray exposure

Risk of infection!
When placing the image plate in position wear protective gloves.

The image plates are marked with the symbol ▽. This symbol is visible on the radiograph, and enables rapid orientation on diagnosis.
The image plate should be so placed that the symbol does not impair the diagnostic qualities of the radiograph.

• The image plate in its light protection cover should be placed in the usual way. The silvern point on the inactive side should face in the direction of the occlusal surfaces. The active side of the image plate must face in the direction of the X-ray tube.

⚠ **Damage to image plate**
Only use such holding systems which will not damage the light protection cover or the image plates in any way. Avoid any holding system that has sharp edges.

• Set exposure times and setting values on the X-ray appliance.

• Taking the X-ray exposure.

⚠ **The data on the image plate must be read within 30 minutes after creation.**

13

14
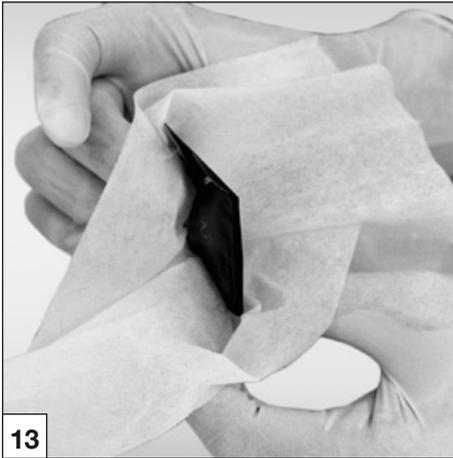
16.3 Preparation for reading out the image data

Risk of infection!
When removing the image plate wear protective gloves.

- Remove the image plate in its light protection cover.

- Where the light protection cover or the gloves are dirty, e.g. through blood etc., then coarse dry cleaning should be carried out, e.g. by wiping with a clean paper towel or similar, before disinfection is carried out.

- The light protection cover and gloves should be cleaned and disinfected using a disinfection wipe (e.g. Orochemie B60).
  Alternatively, a disinfectant spray (e.g. Orochemie B30) applied on a soft, lint-free cloth can be used instead of a disinfection wipe.

- Place the image plate in the light protection cover in the disinfection wipe.

> ⚠ **Damage to the CR 7 VET**
> **Before handling the image plate, hands should be completely cleaned of any powder from the protective gloves.**
> **The powder can damage the optical scanning mechanism of the CR 7 VET during scanning of the image plate.**

Operational LEDs

◡	🟢	Ready for operation
⬗	🔵	Communication not ready
⏏	🟡	Cleaning position
	🟡 (blinking)	Cover or input unit not correctly mounted in position
◡ ⬗	🟢 (blinking) 🔵 (blinking)	Switch off process

🟢🔵🟡 ON   ◯ OFF   ☀ Blinking

Transport slot status LEDs

🔴	Problem
🟡	Image plate being processed
🟢	Input unit at ready
🟢 (blinking)	Radiation deflector moves from standby-mode to set value

🔴🟡🟢 ON   ◯ OFF   ☀ Blinking

16.4 Reading out the image data

⚠ **CR 7 VET contamination**
The image plate must be clean and perfectly hygienic before scanning image data.
Otherwise there may be loss of image data or transfer of bacteria.

• Switch on PC and monitor .

• Switch on the CR 7 VET at the on/off switch (5).

ℹ After switching on the appliance needs to go through initialisation. On the CR 7 VET display "INIT SYSTEM" will appear. The operational status will be shown by the green control LED. Additionally the display will also read "READY".

• Start the software.

ℹ The sequence of the read-out procedure can differ, depending on the software used. See also the manual of the software used.
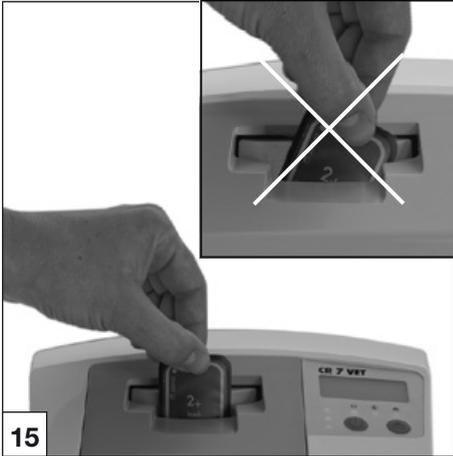
• Select name of owner of animal.

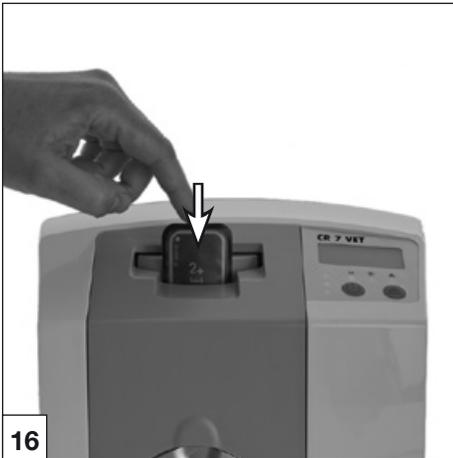• Select measure for the animal.

• Activate CR 7 VET in the software.

⚠ **Mixing up X-rays**
The X-rays are always assigned by the software to the activated patient in sequence.
In order to avoid mixing up these X-rays with those of another patient only the radiographs of this patient should be scanned.

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Control LED and status LED are green:

> ℹ️ When the CR 7 VET is started from standby-mode the green status LED blinks. Additionally the display will also show a progress bar. As soon as the unit is ready for operation the status LED will be green.

• Open the light protection cover straight along the adhesive edge (V-cut).

> ⚠️ **Loss of image data**
> **Image data on the image plate will be erased on exposure to light. Never handle exposed image plates without the light protection cover.**

• Place the light protection cover with its image plate centrally and in straight alignment onto the input unit (opened edge side of the light protection cover faces downwards, inactive side of the image plate points to operator). The fixing mechanism now moves automatically into position and takes hold of the light protection cover with image plate.

• Press the image plate out of its light protection cover downwards into the unit until the image plate is automatically taken up by the unit. The light protection cover is held in place by the fixing mechanism and is not transported into the unit.

> ℹ️ The actual progress of the scanning process is displayed in a preview window on the monitor.

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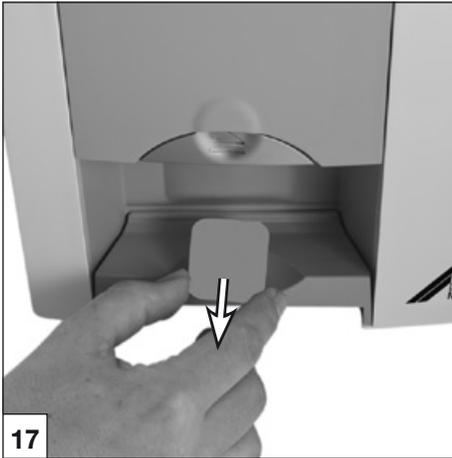
Status LED is yellow:

- Do not insert any further image plates.
- After completing the scanning process, the fixing mechanism automatically returns to initial position. Remove the empty light protection cover. The status LED changes from yellow to green.
- Save the X-ray in Vet-Exam Intra.
- Scan a new image plate or switch off the unit at the on/off switch.

> ℹ️ If the on/off switch is pressed for 3 seconds, the appliance will shut down. This can take a little time (green and blue LEDs blink alternately, additionally a progress bar will be shown on the display). As soon as the appliance shuts down it switches off completely. Do not move the unit during this procedure.

Once switched off the CR 7 VET can now be covered using the protective cover.

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16.5 Erasing the image data

After scanning, the image plate automatically runs through the erasure unit. There any residual image data on the image plate is erased. Finally the image plate falls into the collection tray.

**Special mode "Erase "**

The image plate must be erased again when:
- The image plate is stored for longer than 24 hours.
- The image data on the image plate was not erased due to a fault in the CR 7 VET. (Software displays error message.)

> **i** The special mode activates only the erasure unit within the CR 7 VET. No image data is transmitted to the software.

To erase again:
- Select special mode "Erase" in the software set up.
- Place the open light protection cover with its image plate into the input unit.
- Press the image plate out of its light protection cover downwards into the unit until the image plate is automatically taken up by the unit.
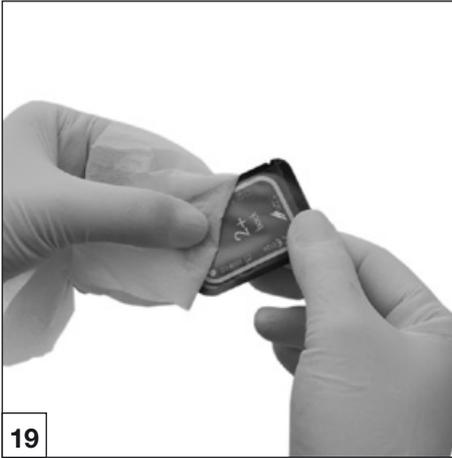
19
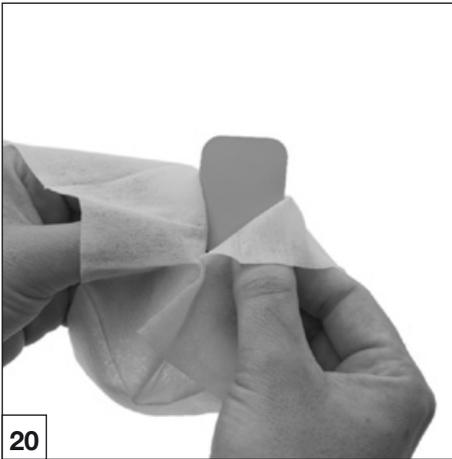
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17. Disinfection and cleaning

> ℹ️ Only cleaning and disinfection preparations approved by DÜRR MEDICAL may be used.
> Other cleaning and disinfection preparations can damage the CR 7 VET and its accessories.

17.1. Light protection covers

• The light protection cover must be disinfected using a disinfection wipe (e.g. Orochemie B60) before and after placement. Alternatively, a disinfectant spray (e.g. Orochemie B30) applied on a soft, lint-free cloth can be used instead of a disinfection wipe. Observe the recommended reaction times at all times. The fluids must be completely dry.

17.2. Image plates

> ⚠️ **Damage to image plates**
> **Do not autoclave image plates!**
> **Image plates will be destroyed if placed in a disinfectant bath!**

> ℹ️ we recommend the use of image plate cleaning cloths, order number CCB351A0101

• Dirt should be removed from both sides using a soft, lint-free cloth before further use. Any remaining dirt can be removed using the special cleaner from the cleaning set and carefully wiping in a circular motion.

• Before using again, the image plate must be completely dry.
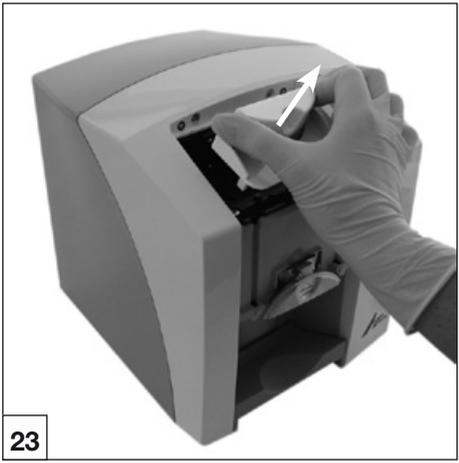
17.3. Protective cover

Clean the protective cover using a damp cloth and then disinfect using a disinfection wipe (e.g. Orochemie B60).

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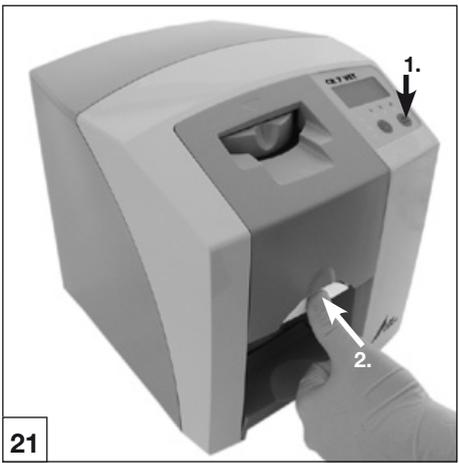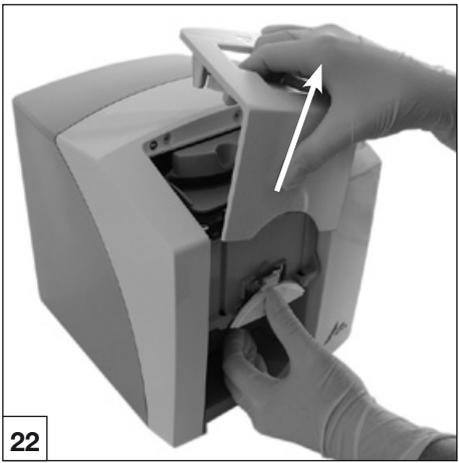
17.4 CR 7 VET

⚠ **Damage to CR 7 VET**
Fluids must not leak into the inside of the appliance, therefore do not spray disinfection or cleaning solutions onto the CR 7 VET!

Unit surfaces

The surfaces of the unit should be cleaned and disinfected if there is any sign of contamination or visible dirt.

- Clean the outer surfaces of the CR 7 VET using a damp cloth and then disinfect using a disinfection wipe (e.g. Orochemie B60).
- Remove any dirt present at the input and output units before operating the scanning process.

Input unit

The input unit should be cleaned and disinfected if there is any sign of contamination or visible dirt.

- Press Cleaning switch.
  The fixing mechanism moves to central position. The yellow control LED lights. The CR 7 VET Plus displays "CLEANING POSITION".
- Press catch release button while lifting the cover upwards at the same time.
- Lift the fixing mechanism upwards.

⚠ **Damage to CR 7 VET**
Do not use a thermal disinfector on any CR 7 VET parts and do not use an autoclave on any parts for disinfection. Heat will destroy the plastic parts!

Clean the internal workings using a damp cloth and then disinfect using a disinfection wipe (e.g. Orochemie B60).

- The cover and the fixing mechanism can be disinfected in an instrument disinfection agent (e.g. Orochemie A20).
- Remount fixing unit.
- Replace cover.
- Press Cleaning switch.
  The fixing mechanism moves back to initial position. The green control LED lights.

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18. Maintenance

Maintenance of the complete unit should be carried out by a technician trained and certified by DÜRR MEDICAL or by one of our service technicians every three years at the latest.

? Trouble-shooting

19. Tips for Operators and Technicians

Repairs must only be carried out by a suitably qualified technician or by one of our service technicians.

Before starting repairs or opening the appliance unplug at the mains and remove all power.

19.1 CR 7 VET general notes

Problem	Probable cause	Solution
1. **CR 7 VET will not switch on**	• No supply voltage	• Check the mains cable and all connections • Check the main fuse box to building • Check power unit whether green LED lights
	• On/Off switch defective	• Inform your Service Technician
2. **CR 7 VET switches off after a brief period**	• Mains cable or plug on power unit not correctly inserted into socket	• Check the mains cable and all connections
	• Hardware defective	• Inform your Service Technician
	• Mains supply voltage too low	• Check the supply voltage
3. **Status or operating LED does not light up**	• LED defective	• Inform your Service Technician
4. **Loud noises during operation after switching on**	• If the noises persist longer than 30 seconds, then the radiation deflector is defective	• Inform your Service Technician
5. **Image editing software does not recognize CR 7 VET**	• CR 7 VET not switched on	• Switch on CR 7 VET
	• Connecting cable between CR 7 VET and PC loose	• Check USB cable/network cable
	• PC does not detect connection with CR 7 VET	• USB-driver not installed or inactive • Check USB cable/network cable • Check IP address and subnet mask
	• Hardware fault	• Inform your Service Technician

Problem	Probable cause	Solution
6. Appliance does not react	• CR 7 VET has not completed start process	• The appliance takes approx. 20-30 seconds to boot after switching on. Repeat the procedure again after this time.
	• CR 7 VET is blocked by the firewall.	• Enable the ports for the appliance in the firewall.
7. X-ray image does not appear on the screen after scanning	• Image plate inserted in light protection cover wrong way round and inactive side scanned	• Rescan the image data on the image plate immediately
	• Image data on the image plate was erased, e.g. by ambient light	• Image data on the image plate must be read out as quickly as possible after removal
	• Problem with the hardware	• Inform your Service Technician
	• X-ray device is faulty	• Inform your Service Technician
	• No image information on the image plate	• Expose the image plate
8. X-ray too dark / light	• Wrong brightness/contrast setting in the software	• Set the brightness of the X-ray image with the software
	• Exposed image plate subjected to ambient light	• Place the image plate in the light protection cover in the input slot.
	• X-ray dose too low	• Check the X-ray parameters
9. Image is a mirror image	• Image plate was placed in light protection cover wrong way round	• Insert image plate correctly. The black (printed) side of the image plate must be visible through the transparent side of the light protection cover.
	• Image plate was placed in light protection cover or in mouth wrong way round	• Insert or place image plate correctly
10. Ghosts and shadows on the X-ray exposure	• Image data on the image plate was not sufficiently erased	• Check erasure settings • Inform your Service Technician • Replace erasure unit
11. Image appears shadowy on the scan window Software cannot combine data to make a complete image	• The X-ray dosis on the image plate was insufficient	• Inform your Service Technician • Replace erasure unit
	• The amplification is set too low (HV value)	• Increase amplification (HV value)
	• The selected scan mode is not suitable	• Select suitable scan mode
	• The setting for the threshold value is too high	• Reduce setting

Problem	Probable cause	Solution
12. CR 7 VET does not appear in the selection list in CRScanConfig	• Appliance is connected behind a network router.	• Configure the IP address at the CR 7 VET Net without an intermediate network router. • Reconnect router. • Enter the IP address manually in CRConfig and register the appliance.
13. CR 7 VET appears in the selection list in CRScanConfig, but connection not possible	• Subnet masks of PC and CR 7 VET do not match	• Check subnet masks and adapt if necessary
14. When starting the X-ray module via software a fault message appears	• CR 7 is conflicting with another device	• In "CRScanConfig", set the CR 7 VET to "Demo without Scanner".
15. X-ray exposure has stripes on image	• Image plate has been exposed	• Only use the image plate within 24 hours of data erasure.
	• Part of the image plate has been exposed during handling	• Do not subject exposed image plates to outside light. Exposure and scanning of the image data should take place within half an hour.
	• Image plate is dirty or scratched	• Clean the image plate by wiping carefully using a soft cloth and special cleaner from the cleaning set. Scratched image plates must be replaced
16. Warning message: "Too much ambient light"	• CR 7 VET is subjected to too much light	• Darken the room • Turn the CR 7 VET so that the light does not shine directly on the input unit
17. Pale stripes in scanning window	• Too much stray light entered during scanning	• Darken the room • Turn the CR 7 VET so that the light does not shine directly on the input unit

Problem	Probable cause	Solution
18. Blue LED blinks	• No connection between CR 7 VET and PC	• Activate CR 7 VET via the software • USB-driver not installed or inactive • Check data cable
	• CR 7 VET data memory is full	• Set up transmission using the software. Image data is automatically transmitted from CR 7 VET to the software
19. Fault message "E2490"	• Connection to the unit was interrupted while software was addressing the CR 7 VET.	• Reconnect the connection to unit and repeat procedure.

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19.2 Error message in display

Problem	Probable cause	Solution
1. **Fault message -1010 is shown on the display.**	• Temperature of unit too high	• Allow unit to cool down • Inform your Service Technician
2. **Fault message -1022 is shown on the display.**	• Subassembly not initialised	• Problem with software, update software if necessary • Inform your Service Technician
3. **Fault message -1100 is shown on the display.**	• Scanning process has exceeded allotted time allowance	• Inform your Service Technician • Check belt drive, blockage during scanning process (image plate stuck inside unit)
4. **Fault message -1104 is shown on the display.**	• Erasure unit fault	• Inform your Service Technician • Replace erasure unit
5. **Fault message -1116 is shown on the display.**	• Insertion drive system blocked	• Release blockage • Inform your Service Technician
6. **Fault message -1117 is shown on the display.**	• Position fault at insertion stage	• Inform your Service Technician • Check input unit (freedom of movement, drive belt)
7. **Fault message -1118 is shown on the display.**	• Unit housing open	• Close unit housing • Press Cleaning switch
8. **Fault message -1121 is shown on the display.**	• Insertion slide missing	• Insert slide
9. **Fault message -1153 is shown on the display.**	• Subassembly fault	• Switch unit on and off
10. **Fault message -1154 is shown on the display.**	• Internal data communication fault	• Switch unit on and off
11. **Fault message -1160 is shown on the display.**	• Final radiation deflector rotation speed not achieved	• Inform your Service Technician • Replace the deflector subassembly if problem regularly occurs
12. **Fault message -1170 is shown on the display.**	• SOL-Sensor Timeout	• Switch unit off and on, possible fault with laser or SOL-sensor • Inform your Service Technician

Appendix

Imaging times

Time from insertion of image plate until completed scanning of image data depending on image plate format and pixel size.
Times stated are approximate and have been rounded upwards.

Theoretical resolution LP/mm	40	25	20	10
Pixel size μm	12.5	20	25	50
Vet-Exam scanning mode	INTRA super max. 40LP/mm (2000dpi)	INTRA optimal max. 25LP/mm (1270dpi)	INTRA high 20LP/mm (1000dpi)	INTRA rapid 10LP/mm (500dpi)
S0 2x3	26s	16s	13s	6s
S1 2x4	32s	20s	16s	8s
S2 3x4	32s	20s	16s	8s
S3 2.7x5.4	40s	25s	20s	10s
S4 5.7x7.6	53s	33s	27s	14s

File size (uncompressed)

File size is given in MB depending on image plate format and pixel size.
Sizes stated are approximate and have been rounded upwards. Using suitable compression methods the file size can be considerably reduced with no loss of data.

Theoretical resolution LP/mm	40	25	20	10
Pixel size μm	12.5	20	25	50
Vet-Exam scanning mode	INTRA super max. 40LP/mm (2000dpi)	INTRA optimal max. 25LP/mm (1270dpi)	INTRA high 20LP/mm (1000dpi)	INTRA rapid 10LP/mm (500dpi)
S0 2x3	10.4	4.6	2.6	0.65
S1 2x4	13	5.7	3.2	0.8
S2 3x4	17	6.4	4.3	1.1
S3 2.7x5.4	20	7.1	4.9	1.2
S4 5.7x7.6	58	21.4	14.5	3.6