INSTALLATION AND OPERATING INSTRUCTIONS
DÜRR VISTASCAN

GB

(CE

9000- 618- 24/ 30

2004/12

CONTENT

Important Information

Assembly

Use

Disposal

Troubleshooting

Appendix

GB

1. NOTES

1.1 Conformity

This product has been tested in accordance with the European Union directive 93/42/EWG and satisfies all criteria contained in these guidelines.

1.2 General Notes

- These Installation and Operating Instructions form an integral part of the unit. They must be kept close to the unit and in readiness whenever required. Precise observance of these instructions is a pre-condition for use of the unit for the intended purpose and for its correct operation.
  These Installation and Operating Instructions should be passed on to any future purchaser or operator.

- Safety for the operator as well as trouble-free operation of the unit are only ensured if use is made of original equipment parts. Moreover, use may only be made of those accessories that are specified in the technical documentation or that have been expressly approved and released by Dürr Dental for the intended purpose.

  Dürr Dental cannot guarantee for the safety or proper functioning of this unit in the case where parts or accessories are used which are not supplied by Dürr Dental.

- Dürr Dental only regard themselves as being responsible for the equipment with regard to safety, reliability and proper functioning if assembly, resettings, changes or modifications, extensions and repairs have been carried out by Dürr Dental or an agency authorized by Dürr Dental and if the equipment is used in conformity with the Installation and Operating Instructions.

- The installation and operating instructions correspond with the model of appliance and conform to the current state of technology at time of first use. All switches, processes, trade marks, software programs and appliances named in this document are registered names.

- Any reprinting of the technical documentation, in whole or in part, is subject to prior approval of Dürr Dental being given in writing.

- As condensation can collect if the scanner is brought into a warm room from a cold environment, please wait a few minutes after unpacking before connecting to any power supply so that it can reach room temperature and until it is thoroughly dry.

1.3 General Safety Notes

This appliance has been so designed and constructed by Dürr Dental that any danger arising from the use of this product is virtually excluded provided it is fitted according to the instructions. However, in order to avoid any possible damage or injury we are obliged to point out the following safety measures.

- When operating this appliance observe all local rules and regulations!

- Conversion or alteration of the appliance is prohibited and any warranty becomes invalid. Operation of such appliances can have legal consequences for the operator.

- In the interests of ensuring problem-free running the owner and operator are responsible for observing all rules and regulations.

- Retain all packing material in case the device must be returned to the manufacturers. Take care that it does not fall into the hands of children. Only the original packing guarantees optimal safety of the appliance during transport. Should it be necessary to return the product to the manufacturer during the guarantee period, Dürr Dental will not accept claims for damage arising from using incorrect packing materials!

GB

- This product is a technical medical device and may only be operated by trained personnel or someone who can handle the device safely.

- Before every use the operator must check the functional safety and the condition of the appliance.

- The operator must be knowledgeable in the operation of the appliance.

- The product is not designed to be used in medical treatment areas where there exists the danger of explosion. Areas where explosions could occur are those where flammable anesthetic material, skin cleansers, oxygen and skin disinfectants are used. This appliance is not to be used in areas where the atmosphere could cause fire.

1.4 Notes concerning Medical Appliances

- This product is a technical medical appliance and, as such, may only be operated by trained personnel, or persons who, as a result of specialist knowledge, are familiar with this type of appliance.

- Do not lie multi-socket units on the floor.

- Other systems should not be plugged into the same multi-socket unit.

1.5 Software

Only software authorized by Dürr Dental may be used with this appliance. We recommend the use of Dürr Dental's DBSWIN from V 3.1. The use of any other software must be cleared with Dürr Dental first.

1.6 Peripheral Appliances

- All peripherals (PC, monitor, printer) connected to the system must conform to standard IEC 60950 (EN 60950).

- Any peripherals must not be positioned in the vicinity of the patient (i.e. minimum 1.5 m from patient).

1.7 Image Plates

- The VistaScan may only be used in combination with Dürr Dental image plates.

  See also section 14. Using Image Plates

GB

1.8 Electrical Safety Notes

- VistaScan may only be used with a correctly installed plug and socket.

- Before switching on the appliance, check that the voltage and frequency of the appliance correspond with the local supply.

- Before switching on the appliance, check that the connections are in order. Damaged cables and plugs etc. must be replaced before using the appliance.

Switch off all power before opening the appliance

1.9 Warnings and Symbols

These installation and operating instructions use the following terms and symbols for important information:

Instructions or restrictions designed for the protection of personnel and safety of the device

High voltage

Remove power

Disposable: use once only

Instructions concerning economical use of the appliance

CE-labeling

Observe installation and operating instructions

When placing the image plate in the patient's mouth protective gloves must be worn

Attention: Laser

Safety class 1

Safety class 2

Date of manufacture

Observe accompanying documentation

REF   Order number

SN   Serial number

2. PRODUCT INFORMATION

2.1 Correct Usage

- VistaScan is only to be used in conjunction with optical examination and processing of images using image plates.

- The appliance is not suitable for longer periods of patient observation.

- Correct usage involves observation of the installation and operating instructions as well as complying with set-up, maintenance and operating instructions.

- Any actions deviating from what is deemed to be correct usage will lead to the guarantee becoming null and void.

- The operator is liable for all damage occurring as a result of incorrect usage of the appliance.

- Correct usage also involves the observation of all local rules and regulations concerning safety at work and safety from radiation.

2.2 Incorrect Usage

Any other use or use beyond what is specified is deemed to be not for the intended purpose. The manufacturer accepts no liability for damage resulting therefrom. All risk is borne solely by the user.

2.3 Product Description

VistaScan is a scanner using image plates of various sizes. The image plate is an exposure medium for x-rays whereby the conventional x-ray film is replaced. This storage film is available in all standard dental formats and stores the image information similarly to x-ray films. VistaScan changes the image information, by scanning using a laser, into a digital image signal. By this means digital image archiving and processing on a PC as well as fast image availablity are achieved. The image information on the storage medium is erased by exposure to light and, on careful use of the medium, it may be used several hundreds of times.

GB

3. CONTENTS

Dürr VistaScan Combi 2130-50

VistaScan 2130-000-50
Mains cable 9000-118-71
Power supply unit 2130-470-00
Wall mounting 2130-001-00
Data cable (EPP 3m) 9000-119-016
Data cable (USB 5m) 9000-119-027
Software VistaScan 2130-520-00
2 Dürr image plates
-Size 0- 2x3 (22x35 mm) 2130-040-00
4 Dürr image plates
-Size 2- 3x4 (31x41 mm) 2130-042-00
2 Foil cassettes
-Size 0- 2x3 2130-010-00
4 Foil cassettes
-Size 2- 3x4 2130-012-00
2 Foil cassette Boxes
-Size 0-4- 2130-030-00
Light light protection covers
-Size 0- 2x3 (100 St.) 2130-070-00
Light light protection covers
-Size 2- 3x4 (300 St.) 2130-072-00
Installation and
Operating Instructions 9000-618-24/30
ReSetter 2130-510-00

Dürr VistaScan Ceph 2130-51

VistaScan 2130-000-50
Mains cable 9000-118-71
Power supply unit 2130-470-00
Wall mounting 2130-001-00
Data cable (EPP 3m) 9000-119-016
Data cable (USB 5m) 9000-119-027
Software VistaScan 2130-520-00
1 Dürr Image plate *
-Ceph- 18x24 (178x227 mm) 2130-052-00
Installation and
Operating Instructions 9000-618-24/30
ReSetter 2130-510-00

Dürr VistaScan Omni 2130-52

VistaScan 2130-000-52
Mains cable 9000-118-71
Power supply unit 2130-470-00
Wall mounting 2130-001-00
Data cable (EPP 3m) 9000-119-016
Data cable (USB 5m) 9000-119-027
Software VistaScan 2130-520-00
Installation and
Operating Instructions 9000-618-24/30
ReSetter 2130-510-00

Dürr VistaScan Intra 2130-61

VistaScan 2130-000-61
Mains cable 9000-118-71
Power supply unit 2130-470-00
Wall mounting 2130-001-00
Data cable (EPP 3m) 9000-119-016
Data cable (USB 5m) 9000-119-027
Software VistaScan 2130-520-00
2 Dürr image plates
-Size 0- 2x3 (22x35 mm) 2130-040-00
4 Dürr image plates
-Size 2- 3x4 (31x41 mm) 2130-042-00
2 Foil cassettes
-Size 0- 2x3 2130-010-00
4 Foil cassettes
-Size 2- 3x4 2130-012-00
2 Foil cassette Boxes
-Size 0-4- 2130-030-00
Light protection covers
-Size 0- 2x3 (100 St.) 2130-070-00
Light protection covers
-Size 2- 3x4 (300 St.) 2130-072-00
Installation and
Operating Instructions 9000-618-24/30
ReSetter 2130-510-00

GB

3.1 Accessories

The following optional accessories are **not** included with the appliance.
Please order separately as required!

DBSWIN X-ray- Module 2100-725-04FC

Test mask 2121-060-51

Test-Set DIN 6868 Part 5
(copper filter and test mask) 2130-991-00

Copper filter Cu08 for OPG and
CEPH-testing according to
DIN 6868- Part 5 2130-991-01

Supplementary filter Cu006/Al05
for OPG and CEPH (increases
filter efficiency) 2130-991-02

Cleaningset for Image Plates and
Foil cassettes 2130-008-50

2 Dürr Image plates
-Size 0- 2x3 (22x35 mm) 2130-040-00

2 Dürr Image plates
-Size 1- 2x4 (24x40mm) 2130-041-00

4 Dürr Image plates
-Size 2- 3x4 (31x41 mm) 2130-042-00

2 Dürr Image plates
-Size 3- 2.7x5.4 mm) 2130-043-00

1 Dürr Image plate
-Size 4- 5,7x7,6 mm) 2130-044-00

1 Dürr Image plate *
-OPG- 12.7x29 (125x286 mm) 2130-050-00

1 Dürr Image plate*
-OPG- 15x30 (148x298 mm) 2130-051-00

1 Dürr Image plate *
-Ceph- 18x24 (178x227 mm) 2130-052-00

1 Dürr Image plate *
-Ceph- 24x30 (238x298 mm) 2130-053-00

1 Dürr Image plate *
-Ceph- 20x24
8x10 Inch (202x241 mm) 2130-054-00

1 Dürr Image plate *
-Ceph- 13x18 (127x177 mm) 2130-055-00

2 Foil cassette Boxes
-Size 0-4- 2130-030-00

1 Foil cassette
-Size 0- 2x3 2130-010-00

1 Foil cassette

-Size 1- 2x4 2130-011-00

1 Foil cassette
-Size 2- 3x4 2130-012-00

1 Foil cassette
-Size 3- 2.7x5.4 2130-013-00

1 Foil cassette
-Size 4- 5.7x7.6 2130-014-00

1 Foil cassette
-OPG- 12.7x29 (125x286 mm) 2130-021-00

1 Foil cassette
-OPG- 15x30 (148x298 mm) 2130-022-00

1 Foil cassette
-Ceph- 18x24 (178x227 mm) 2130-023-00

1 Foil cassette
-Ceph- 24x30 2130-024-00

1 Foil cassette
-Ceph- 20x24 2130-025-00

1 Foil cassette
-Ceph- 13x18 2130-026-00

Light protection cover set 2130-004-00

Film cassette w/o strengthening foil, straight
-OPG- 15x30 2130-993-02
-Ceph- 18x24 2130-993-03

Data cable (EPP 5m) 9000-119-028

* incl. one Foil cassette

3.2 Disposable materials

Disinfectant wipes FD 350 .... CDF350C0140

Disinfectant spray FD 333 .... CDF333C6150

Disinfectant spray FD 322 .... CDF322C6150

Light protection covers
-Size 0- 2x3 (100 pcs) 2130-070-00

Light protection covers
-Size 1- 2x4 (100 pcs) 2130-071-00

Light protection covers
-Size 2- 3x4 (300 pcs) 2130-072-00

Light protection covers
-Size 3- 2.7x5.4 (100 pcs) 2130-073-00

Light protection covers
-Size 4- 5.7x7.6 (100 pcs) 2130-074-00

4. SYSTEM REQUIREMENTS

When operating the VistaScan the following components are required which are not included with the appliance. A list of currently recommended parts can be found on the internet under www.duerr.de

4.1 X-ray Film Foil cassettes

For extraoral images Foil cassettes without intensifying screen are necessary. These are available as accessories. The foil can be removed from cassettes already available.

4.2 Monitor

Only monitors designed for digital X-rays having a higher light intensity and greater contrast as recommended by Dürr Dental should be used. Strong room lighting, direct sunlight and reflected light reduce the diagnostic quality of the x-ray images.

4.3 PC-configuration

The minimum system requirements depends to a great extent on the software employed and can vary from the configuration described below.

CPU-speed .... 1,4 GHz, Pentium III
Recommended ....Pentium IV, Athlon or faster> 1.4 GHz
Operating system ....Windows 2000,XP
RAM .... 512 MB
Recommended .... 1 GB
Hard disk (freely available) .... 40 GB
Recommended .... 80 GB
CD-ROM .... 24x+
Monitor .... According to X-ray guidelines SVGA 17" with 1024x768 Pixel, 24/32 bit color
Graphics Not on board .... 16MB RAM
Recommended .... 32 MB RAM
Keyboard, mouse .... Standard
Back-up medium .... Tape drive with daily back-up is strongly recommended
Voltage regulator and overload protection... Recommended
UPS (uninterrupted power supply) .... Recommended
Parallel port .... EPP-according to IEEE 1284
USB 1.1 .... from 2004
Long term archive .... MOD-drive

5. TECHNICAL DATA

5.1 VistaScan

Electrical ratings & connections
Power supply

Voltage(V)	100 - 240
Frequency (Hz)	50 - 60
Current consumption (A)	max. 2
Power output (W)	<70
Fusing	IP20
Safety class	II

Electrical ratings & connections
VistaScan

Voltage (V)	24 +/- 10%
Frequency	DC
Current consumption (A)	max. 2.5
Power output (W)	<60

Dimensions

VistaScan Combi
D = 38cm, L = 38cm, H = 61cm
VistaScan Ceph
D = 38cm, L = 38cm, H = 61cm
VistaScan Omni
D = 38cm, L = 38cm, H = 72cm
VistaScan Intra
D = 38cm, L = 38cm, H = 54cm

Feed slot width
for storage plates (cm) .... max. 30

Temperature range

Operational (C°)	+10 bis +35
Storage and transport (C°)	-20 bis +60

Relative humidity

Operational (%)	20 - 90
Storage and transport (%)	10 - 95

Air pressure

Operational (hPa)	700 - 1060
Sea level (m)	<2000
Storage and transport (hPa)	700 - 1060
Sea level (m)	16000

Weight

VistaScan Combi	aprox. 21
VistaScan Ceph	aprox. 21
VistaScan Omni	aprox. 22
VistaScan Intra	aprox. 22,5

General values

Medical appliance class	1
Laser safety class	1 (EN60825-1)

Laser Klasse1   wavelength 635 nm
10 mW[1] or 15 mW[1]
EN 60825-1:1994-03 +
A1:2002-07+A2:2001-03

[1] According to the performance of the laser actually installed

Max. loudness (db(A))	<60
Heat output (W)	<70

Pixel size

Can be set .... 12.5µm to 130µm

Resolution depends on image plate size,
max. ca. 40 Line pairs/mm (Lp/ mm).

5.2 Image Plates

Storage and transport

Temperature (C°)	<33
Rel. humidity (%)	<80

Operational

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

6. FUNCTIONAL OVERVIEW

1

8

2

9

3

4

5

6

10

11

17

12

16

13

14

7

15
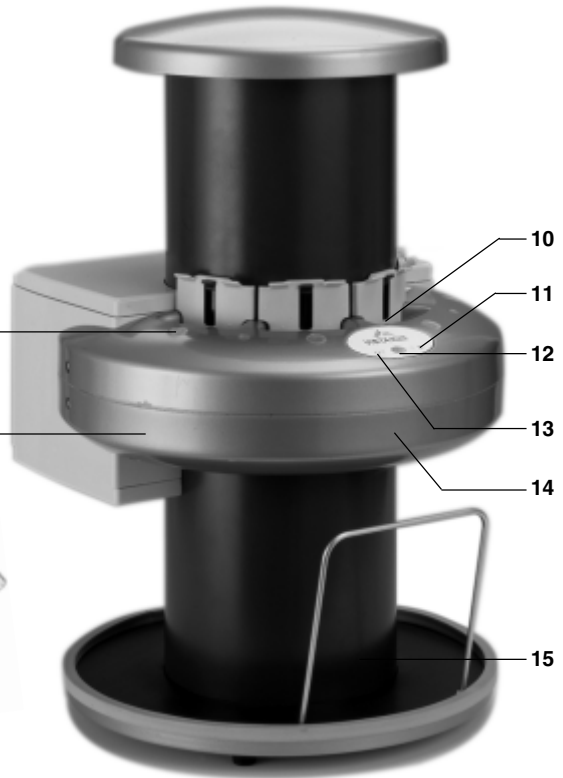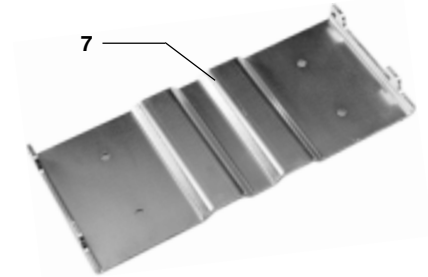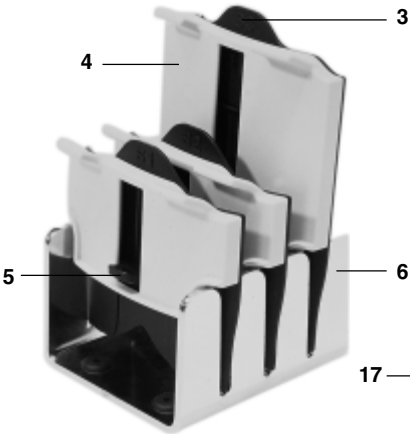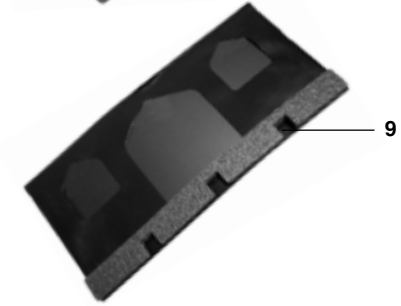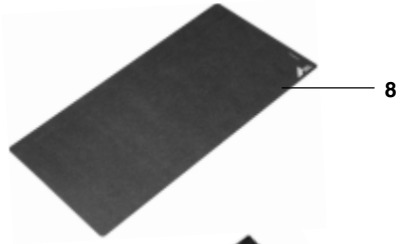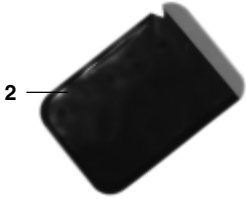
7. FUNCTIONAL DESCRIPTION

7.1 Function of individual elements

1. **Intraoral Image Plate:**
   The image plate serves the same function as an x-ray film for x-ray exposures.

2. **Intraoral Light protection cover:**
   The image plate is placed inside this protective light protection cover for intraoral x-rays. This prevents any mechanical damage when placing the image plate into the patient's mouth, and avoids any direct contact with the patient.
   This cover is also protection against room lighting which would erase the exposure.

3. **Foil cassette Sizes:**
   "S2" represents the size of the image plate which must be used with this particular size of foil cassette.

4. **Foil cassette Sizes - Intraoral:**
   The intraoral image plate is put in to the foil cassette and then placed in the inlet slot of the plate transfer box.
   This prevents erasure of the exposure when working in room lighting.

5. **Lever:**
   The intraoral image plate is lifted out of the foil cassette by operating the small lever.

6. **Foil cassette Box**
   Foil cassettes not being used can be stored in the cassette box.

7. **Wall mounting:**
   The VistaScan can be stored by hanging on the wall mounting.

8. **Extraoral Image Plate:**
   not for VistaScan Intra 2130-61
   (as 1 above)

9. **Extraoral Foil cassette:**
   not for VistaScan Intra 2130-61
   (as 4 above)

10. **Input slot:**
    When an image plate from the foil cassette is placed in the input slot of the plate transfer box, a transport mechanism automatically pulls the image plate in.

11. **Yellow LED:**
    If the yellow LED lights up, then the VistaScan is switched on but not yet activated.

    If the yellow LED blinks then there is no connection to the PC, or the data storage is full.

12. **On/Off switch:**
    The VistaScan is switched on (or off) by pressing for 2 seconds.

13. **Green LED:**
    The green LED shows whether the VistaScan is ready for operation.

14. **Optical Scanner:**
    An optical scanner inside the unit reads the x-ray image using a laser device and converts this into a digitalised signal. The image plate is then expelled through the output slot of the transfer box.

15. **Collecting tray:**
    The image plate falls from the output slot onto the tray below the plate transfer box.

16. **Plate transfer box:**
    Inside the plate transfer box there is a transport mechanism.

17. **Status LED:**
    For each of the slots for foil cassettes there is a status LED. This LED shows whether one of the image plates can be inserted for scanning.

Green LED	image plate can be inserted.
Yellow LED	image plate cannot be inserted.

GB

7.2 Description

VistaScan is a modern, high-resolution scanner for image plates. It transforms the x-ray image information stored on the image plate into a digital image signal.

The image plate is exposed to x-rays exactly as a normal x-ray film. This is carried out for panorama formats* in the appropriate foil cassette and for intraoral formats in the (light) light protection cover.
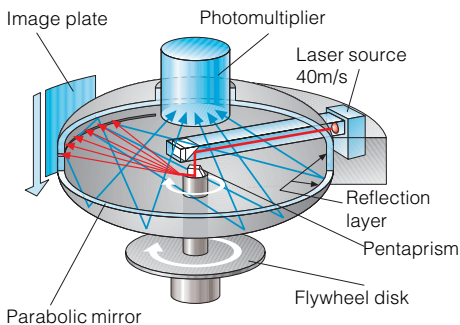
After exposure the intraoral image plate is ejected from the light protection cover and into the appropriate sized foil cassette.

The appropriate VistaScan scanning mode is now selected using the image processing and archival software, e.g. DBSWIN V 3.1 or higher.
Then the foil cassette containing the panorama image plate or, alternatively, the intraoral image plate is placed in the input slot of the plate transfer box and clicked into correct position.

If the green LED on the plate transfer box displays then the image plate can manually be pushed into the input slot. When using panorama formats this is carried out by pushing the thumb through an access slot in the foil cassette; for intraoral formats by pushing down on the lever.

As soon as the image plate has been pushed into correct position it will be fed into the plate transfer box. Inside the plate transfer box scanning of the image plate takes place, whereby a laser scans the image information and transmits this to the PC. Scanning progress is displayed in a small window on the monitor. If a number of intraoral image plates are being scanned simultaneously, this will be at the same resolution and sensitivity settings. During the scanning of the image plate, the image details will be stored in the memory of the PC. After scanning the image plate itself falls into the collecting tray. It can now be removed.

Image plate Photomultiplier Laser source 40m/s Reflection layer Pentaprism Flywheel disk Parabolic mirror

Careful handling of this image storage medium means that this image plate can be used several hundreds of times. However, any remaining image information present must be erased by using a light source of a higher density.
Complete erasure is carried out using the Dürr ReSetter.

After complete erasure the image plate can now be prepared for use in another exposure. Firstly, check that the image plate is neither dirty nor damaged. Damaged plates must never be reused. If the plate is in good condition it is either put into the special foil cassette for use in panorama format or, for intraoral format, placed in a new light protection cover and sealed. The image plate can now be used in a panorama film unit, or alternatively placed in the patient, and a new exposure carried out.

* not for VistaScan Intra 2130-61

GB

1

2

3

ASSEMBLY

⚠ **Set-up, installation and commisiioning may only be carried out by suitably qualified personnel.**

8. TRANSPORTING THE VISTASCAN

Empty the carton completely and store in a cool dry place. Check that all components are present.
Before transporting the VistaScan please note the following:

- Do not expose the VistaScan to any knocks or jolts, as these can damage the appliance.
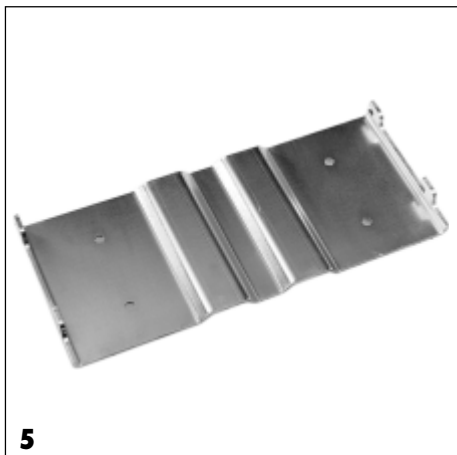
- Only use the original packaging during any transport.

9. CARRYING THE VISTASCAN

⚠ <u>**Always**</u> **hold the VistaScan by its housing from the rear (see fig. 1).**

<u>**Never**</u> **take hold of the VistaScan by the plate transfer box or by the lid, otherwise sensitive parts of the VistaScan may become damaged. (Figs 2 and 3)**

4

5
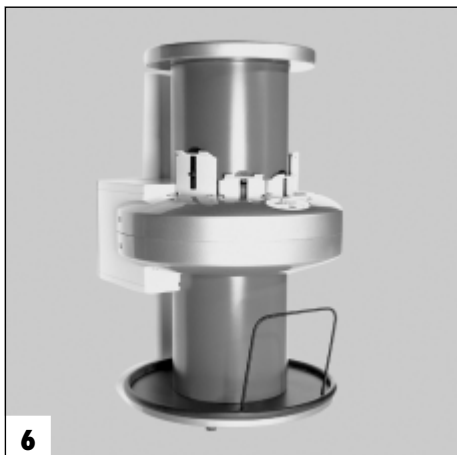
6

10. SET UP

10.1 Operating Room

- The VistaScan may only be set up in closed, dry and well-ventilated rooms.

- Room temperature in the winter may not fall below + 10°C and in summer must not exceed + 35°C.

- As condensation can collect if the scanner is brought into a warm room from a cold environment, please wait a few minutes after unpacking before connecting to any power supply so that it can reach room temperature and until it is thoroughly dry.

- Installation in purpose-built rooms, such as wet rooms or heating rooms, is not permitted.

- Do not set up the VistaScan in direct sunlight. If possible, room lighting should be controlled by means of a dimmer.

  i The VistaScan is sensitive to stray light during the scanning phase of image processing. Therefore, the VistaScan should be set up in a dark room, and free from direct sunlight (maximum light intensity 1000 Lux). If this value is exceeded the software will detect it (see section 22. Troubleshooting).

- The set up room should not be affected by any interference (e.g. strong magnetic fields), this can lead to problems with the VistaScan.

- Peripheral appliances must be kept out of patient's reach (1.5 m from patient treatment area). (See section 1.6)

10.2 Set-up Alternatives

- VistaScan can be used wall-mounted or set up on a table. In order to avoid errors in the scanning of image detail, the VistaScan must be protected from knocking or shaking.

- The wall mounting is supplied with neither screws nor plugs. Correct installation should be carried out by qualified personnel. The fixtures must be able to support a weight four times that of the VistaScan.

  i The 4 drill holes for mounting in the wall mounting are Ø 7 mm .

7
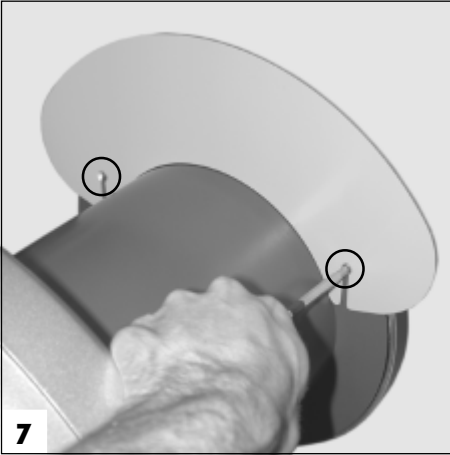
10.3 Installing the light protection cover

> **i** The light barrier plate reduces the amount of ambient and stray light that is allowed to fall at thefilm feed slots of the VistaScan fällt.
> (See 3.1 Special Accessories)

- Remove the two screws at the upper cover plate.
- Place the light cover in place and screw tightly..

GB

11. ELECTRICAL CONNECTIONS

Connect power cable to both power unit and socket. Connect power unit to VistaScan.

⚠️ **The VistaScancan be used with voltages from 100 V to 240 V and 50 -60 Hz.**
Before connecting the unit to the power supply, the voltage must be checked, otherwise the appliance could be damaged. Use Dürr power cable supplied, order no. 9000-118-71.

12. BEFORE COMMISSIONING

12.1 Installation of VistaScan Configuration Software

• Install the PC and monitor according to manufacturer's instructions.

• Place the installation CD in the CD/DVD-drive. If the installation program does not start automatically open the file "setup.exe" on the Installation CD.

ℹ️ The system supports the following operating systems:
Windows 2000 and XP

• Follow the installation instructions, end Windows and switch off the PC.

12.2 Connecting VistaScan to the PC

Connection LPT-Port

• Use the interface cable supplied to connect the parallel port of the PC with the parallel port of the VistaScan.

ℹ️ The paralell interface must be set to EPP-Mode according to IEEE 1284 (BIOS-Setup)

• If a printer with parallel interface is being used, this should be connected to the free parallel port of the VistaScan.

ℹ️ Printing tasks will be interrupted when the VistaScan is operating.

8
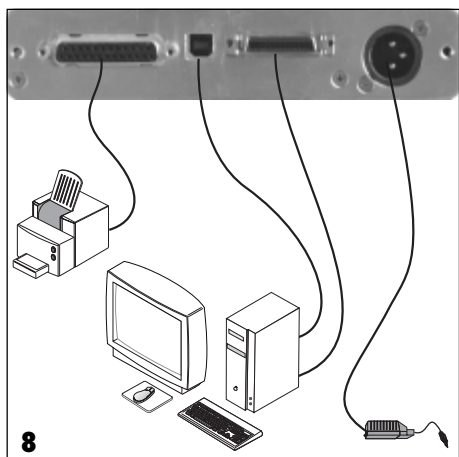
Connection USB-Port

- Use the USB cable provided to connect the PC and the Vistascan using two USB slots.

> **i** Informationen concerning the installation of the necessary USB-drivers can be found in the operating instructions under configuration and system test - 9000-618-27/01. See also www.duerr.de/td

13. COMMISSIONING

13.1 Configuration and Test

- Turn VistaScan on at ON/OFF switch

- Switch on PC

- Start software VScanConfig

- Carry out configuration and system test according to instructions described in leaflet, order no. 9000-618-27/01

13.2 Define X-ray Settings

- Erase the image plate supplied, as described in section 15. before use.

- Standard X-ray settings for intraoral radiography are listed in the Appendix. These should be checked carefully to ensure they comply with local and national regulations.

- Extraoral X-ray appliances can usually use the same settings as are employed for analog films.

> **i** Before using the VistaScan a test procedure of the X-ray equipment must be carried out according to national regulations. The test mask 2121-060-51 is necessary for this testing. The results should be entered in the equipment log book.

> **i** Information concering recommended X-ray appliances and their settings can be found on the Internet under www.duerr.de.

19

passive side

active side

9

passive side

active side

10
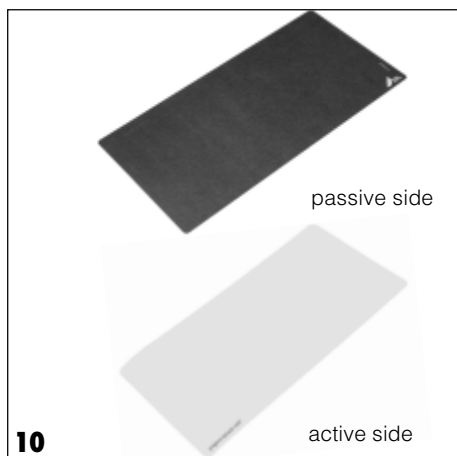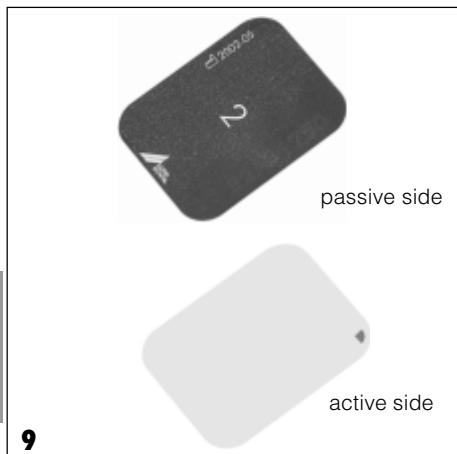
 USE

---

14. USING IMAGE PLATES

- The VistaScan may only be used in combination with image plates as supplied by Dürr Dental.

- The active side (blue or white) of the intraoral image plate has been labeled with a ◢ as an aid to positioning.
  The active side (blue or white) of the extraoral image plate has been labeled with "Dürr Dental Imaging" as an aid to positioning.

  The passive side of each image plate bears the size and manufacturer's information.

- The image plates are flexible like X-ray film. However, take care when handling them. Do not bend, apply pressure, scratch or allow them to get dirty. Do not store the image plates in a warm or wet environment.

- Protect the plates from direct sunlight and ultraviolet radiation.

- If storing the plates in the X-ray room be careful not to allow the plates to be exposed to any light from the equipment before use.

- Do not put image plates in the autoclave.

- Damaged image plates (e.g. if the protective surface is damaged or there are visible scratches which are likely to affect imaging) must be replaced.

- See also section 18. Cleaning and Disinfecting

⚠ **The image plates are toxic.**
Always put the image plate in a light protection cover before placing in the mouth of a patient.

15. ERASING IMAGES

Any information on the image plate must be erased before x-raying using the Dürr ReSetter supplied. See also Operating Instructions Dürr ReSetter order no. 9000-618-56/30

- Check the image plate for any signs of damage. Damaged image plates (e.g. if the protective surface is damaged or visible scratches are likely to affect imaging) must be replaced.
- Store image plates in a dark place. Intraoral image plates should be stored in a light protection cover of the correct size. Extraoral image plates are stored in their foil cassettes.
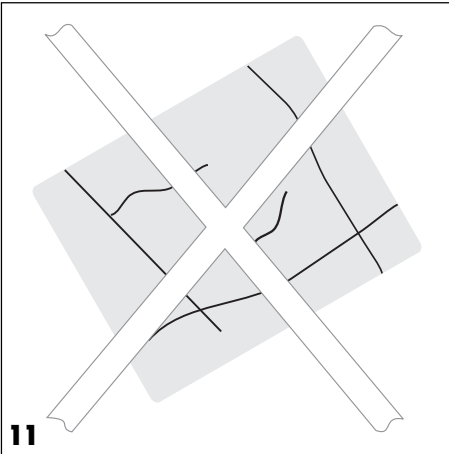
| i | The image plates may also be stored in the Dürr ReSetter after erasure. |

| ! | **If storing the plates in the X-ray room be careful not to allow the plates to be exposed to any light from the equipment before use.** |

| i | Use the image plates within 24 hours. If the image plates are to be stored longer than 24 hours, they should be erased again prior to use. |

| ! | **The image plates are flexible like X-ray film. However, take care when handling them. Do not bend, apply pressure, scratch or allow them to get dirty.** |

11

12

16. INTRAORAL X-RAYS

16.1 Health Protection

⚠️ **The image plates are toxic.
Always put the image plate in a light protection cover before placing in the mouth of a patient.
If a patient swallows an image plate or part of a plate then a specialist doctor should be consulted immediately. The image plate must be removed. If a patient damages the light protection cover, e.g. through biting, the mouth should be rinsed thoroughly with large amounts of water.**

16.2 Light protection covers

ℹ️ The light protection covers have the following functions:
- to protect the patient from any contamination from an image plate.
- to protect the image plate from any contamination or dirt.
- to protect the image plate from any light.

- The light protection covers, like the image plates, are available in different sizes. Always choose the appropriate size.

- Slide the image plate completely into the light protection cover. The passive (printed) side of the image plate must be visible through the transparent side of the light protection cover.

- Remove the white protective strip from the adhesive band and close the opening of the light protection cover by pressing tightly.

🚫 **The light protection cover is a disposable material and may not be reused.**

15
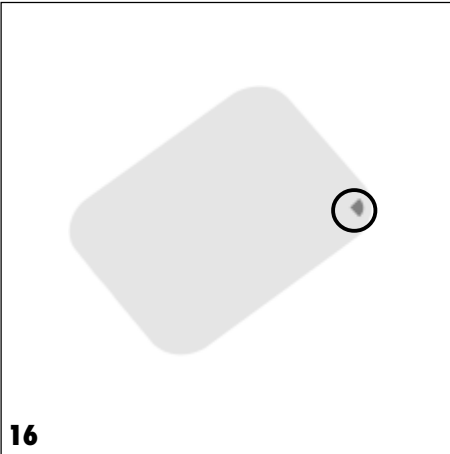
16

17

16.3 X-rays

• Before placing the light protection cover into the patient's mouth it must be cleaned using a disinfectant wipe (e.g. Dürr FD 350). Alternatively, spray disinfection agent (e.g. Dürr FD 322, FD 333) can be sprayed onto a soft, lint-free cotton gauze.

ℹ️ The image plate is marked with a ◢.
This symbol is visible in the x-ray and aids orientation and diagnosis.
The image plate must be put into the patient's mouth so that the symbol does not affect the usefulness of the finished radiograph.

• Place the image plate in its light protection cover in the patient's mouth as normal.

⚠️ **Only use film holders which will not damage the light protection cover containg the image plate.**

⚠️ **The active side of the image plate must be facing the radiograph tube.**

✋ Wear protective gloves when placing the image plate into the patient's mouth.

• Set exposure time and necessary settings on the x-ray equipment.

• Produce an x-ray as usual.

⚠️ **The image data on the image plate must be scanned into the VistaScan within half an hour.**

18

19
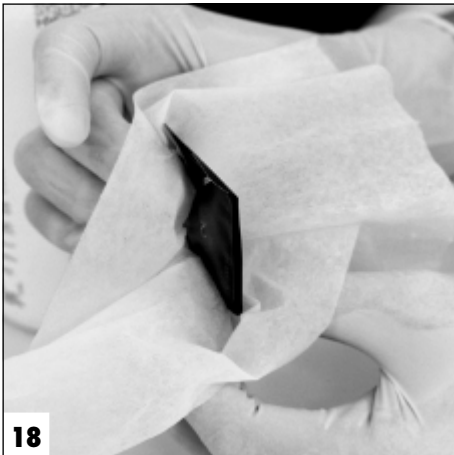
16.4 Preparing to Scan Image Data

Wear protective gloves when removing the image plate from the patient's mouth.

• The light protection cover should now be cleaned using a disinfectant wipe (e.g. Dürr FD 350). Alternatively, spray disinfection agent (e.g. Dürr FD 322, FD 333) can be sprayed onto a soft, lint-free cotton gauze.

ℹ️ If more severe dirt, e.g. blood, ispresent on the light protection covers and/or the gloves then before disinfecting preliminary cleaning with a dry cloth is necessary, e.g. wipe with a clean cellulose cloth.

• Place the light protection cover onto the wipe.

• Remove gloves and disinfect hands (e.g. with Dürr HD 410) and clean (e.g. with Dürr HD 430 or HD 435).

⚠️ **The powder present on protective gloves can damage the optical scanning equipment of the VistaScan during scanning of the image plate. Therefore, the hands must be entirely free of powder before handling the image plate.**

⚠️ **The storage foil must be absolutely clean and hygienic before attempting to read the data. Otherwise, data loss with resulting loss of x-ray imaging resolution and even bacterial spread to the VistaScan can result.**
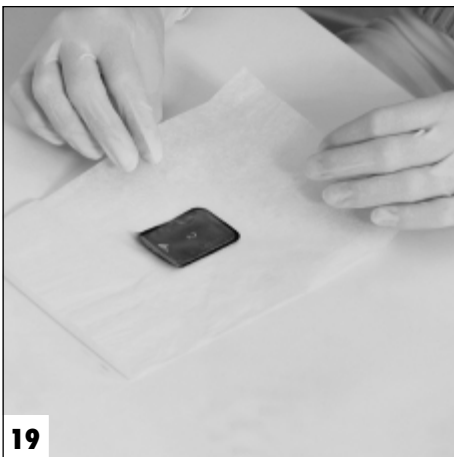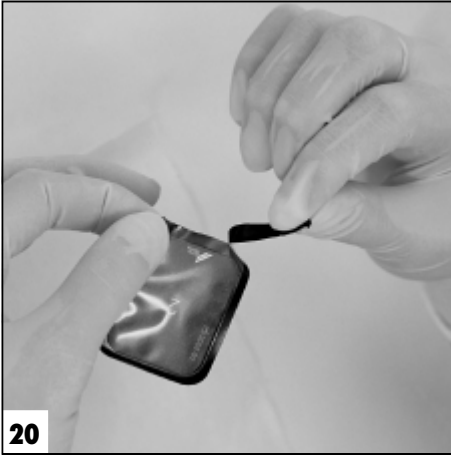
20

- Tear the light protection cover apart at the adhesive edge (begin at V-notch).
- Have a Foil cassette of the correct size to hand.
- The image plate **is removed from the light protection cover** and put into the film guide until it catches. The active side must be to the rear, and the passive side towards the front (visible).

⚠️ **The exposure data on the image plate will be erased by light. After x-raying never handle the image plate without either a light protection cover or a foil cassette.**

21

22

16.5 Scanning the Image Plate

- Turn on VistaScan at On/Off switch. The operation display is out and the error lamp is yellow.
- Switch on PC and monitor.
- Start image processing software (e.g. Dürr DBSWIN V 3.1 or higher).
- Call up the patient's record from the data bank.
- Activate VistaScan via software under Dürr DBSWIN via the menu "X-ray"). The operation lamp displays green.
- Set resolution and format using the software.
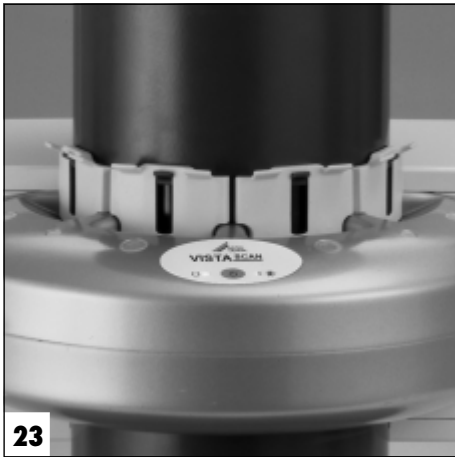
23
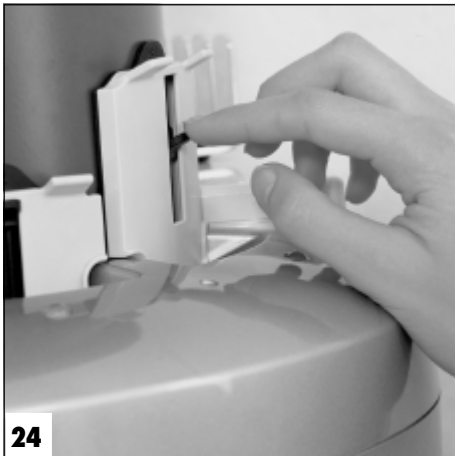
24

- Set up the software to prepare for scanning. (yellow error lamp of VistaScan no longer active)

  > **i** Further details concerning the scanning time and file size can be found in the Appendix.

- Slide the foil cassette with its image plate into a free slot on the plate transfer box until it clicks into place.

  > **i** In order to avoid exposure due to stray light ALL foil cassettes must be closed.

- When the status LED at input slot is green, then the lever can be pressed down until such time as the image plate is automatically drawn into the transport box. During scanning of the image data the status LED at the input slot is yellow.

  > **i** A foil cassette cannot be removed until all status LEDs are green.

- The scanning progress can be checked on the monitor.
- Images are automatically transmitted to the software.
- The image plate will fall into the collecting tray. The appropriate LED on the plate transfer box will now light green.
- Store the x-ray image using the software.

  > **i** With the VistaScan it is possible to read up to four intraoral storage films simultaneously and where the same exposure parameters were used. Place all image plates into correctly sized foil cassettes. Press the foil cassettes into position until they click, then use the levers to feed the image plates into the plate transfer box until the box's transport mechanism takes over.
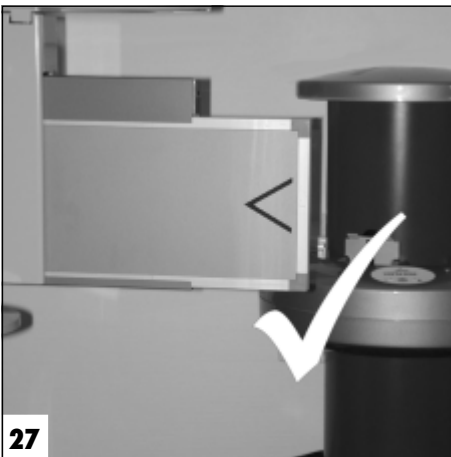
  > **i** Information concerning recording, storing and processing can be found in the instruction leaflet of the image processing software.

25

passive side

26   active side
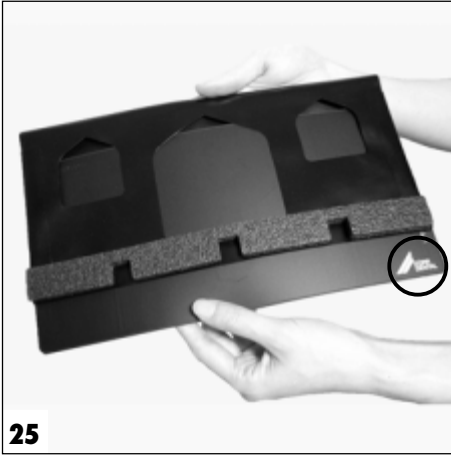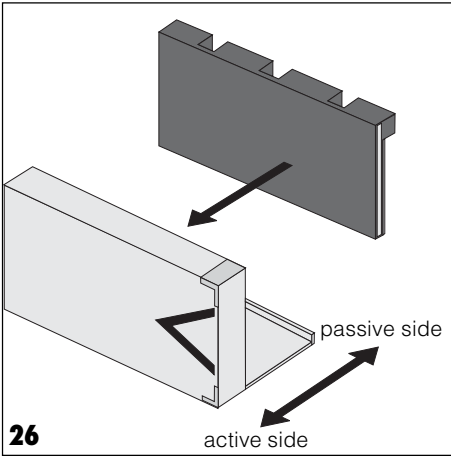
27

17. EXTRAORAL X-RAYS

i Data extrapolation for extraoral storage film is not possible with the Vista-Scan Intra 2030-000-61

17.1 X-rays

i Only use foil cassettes without intensifying screen. Where a foil cassette has extra intensifying screen, this must be completely removed. The use of a foil cassette with intensifying screen will lead to a loss of picture quality.

• Place the erased image plate into the flexible foil cassette. The active side must be to the rear. The passive side will be facing (i.e. visible).

i When sliding the image plate into the foil cassette the label "Dürr Dental" will be visible lower right in the foil cassette. (See fig. 25)

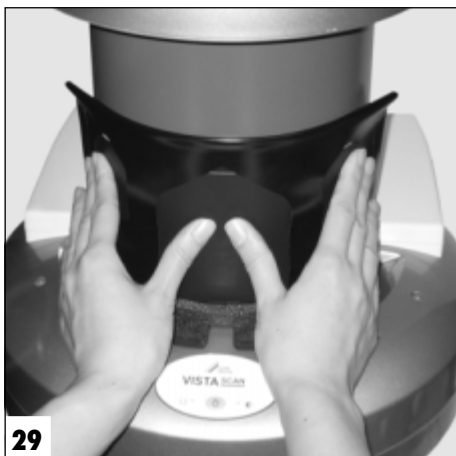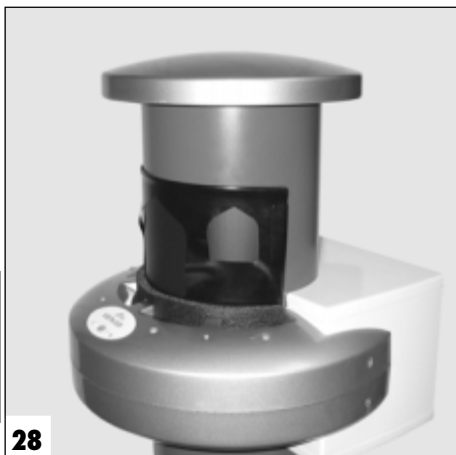• Place the foil cassette into the film cassette of the x-ray device.

i The active side of the image plate must be facing the closed side of the film cassette. (See fig. 26)

• Place the film cassette into the panorama / x-ray machine.

i The closed side of the film cassette must be facing the x-ray tube. (See fig. 27)

• Set exposure time and settings on the radiographic equipment.
• Expose the image plate.

! **The image data on the image plate must be scanned into the VistaScan within half an hour.**

28

29

17.2 Scanning the Image Plate

• Call up the patient's record using image processing software on the PC.

• Select VistaScan processing option for x-rays.

• Select scanning.

• Place the foil cassette with the image plate at the input slot on the image transfer box. The LEDs must be green.

• Select scanning mode.

• Press down on the image plate using both thumbs together until the image plate is drawn in by the VistaScan.

• Scan image data.

> **i** The VistaScan draws the image plate automatically into the scanner. Scanning takes place automatically. During scanning of the image plate all 4 status LEDs will be yellow.
> The foil cassette may only be removed from the image transfer box when all 4 status LEDs are green and the image plate has fallen into the receiving tray.

• Remove the image plate from the receiving tray.

30

31

32

18. CLEANING AND DISINFECTING

18.1 Light protection covers

• Before placing the light protection cover into the patient's mouth and after removal, the light protection cover must be cleaned using a disinfectant wipe (e.g. Dürr FD 350). Alternatively, spray disinfection agent (e.g. Dürr FD 322, FD 333) can be sprayed onto a soft, lint-free cotton gauze.

18.2 Image Plates

• Any dirt must be removed before use using a soft, lint-free cotton gauze. Remaining dirt particles can be removed using **non-diluted Ethanol or non-diluted Isopropanol** (i.e. without water) with careful circular wiping motion.
We strongly recommend that you use the special cleaning agent - 2130-008-50.
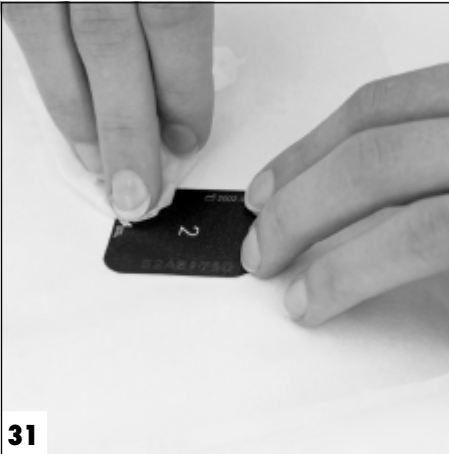
> **i** Other types of cleaning or disinfecting agents can lead to damage to the image plate.

> ⚠ **Do not put the image plate in the autoclave.**

> ⚠ **Baths of disinfectant may destroy the image plate.**

• Before using the image plate again, allow to dry thoroughly.

18.3 Intraoral Foil cassettes

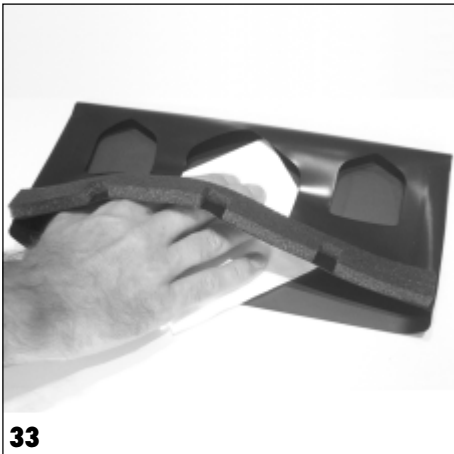> ⚠ **Any visable dirt must be removed before use.**

• Foil cassettes may be disinfected using a solution, e.g. Dürr FD 322 surface disinfectant. Alternatively, the foil cassettes may be put into a bath containing a suitable, non-aggressive disinfectant (e.g. Dürr ID 212 forte).
• Before using the foil cassette again, allow to dry thoroughly.

> ⚠ **Do not put the foil cassette in the autoclave.**

33

18.4 Cleaning flexible foil cassettes

⚠ **Any visable dirt must be removed before use.**

- A cleaning agent should be used, e.g. the Durr disinfectant agent FD 322, sprayed onto a soft, fluff-free cloth.
- Dirt particles can be removed with careful circular wiping motion.
- Before using the foil cassette again, allow to dry thoroughly.

⚠ **Do not put the foil cassette in the autoclave.**

34

18.5 VistaScan

- The housing of the VistaScan can be cleaned using a moist cloth and disinfected using a mild disinfection cloth, e.g. Dürr FD 350.
- Any dirt or grime at the input or output slots must be removed before scanning.

⚠ **Do not use a disinfectant spray on the VistaScan. No fluids should be allowed to enter the interior of the appliance. This could damage the device.**

19. MAINTENANCE

After scanning 10,000 intraoral or extraoral image plates the image transfer box should be serviced.
After 3 years' operation the complete unit should be checked and serviced.
Constant use of the unit can lead to wear and tear of the transport belt.

DISPOSAL

20. APPLIANCE DISPOSAL

Please return the unit to your supplier for disposal. Your supplier will return the appliance to the manufacturer for correct recycling.

21. IMAGE PLATE DISPOSAL

Please observe local and national regulations when disposing of the image plates.

22. TIPS FOR OPERATORS AND TECHNICIANS

Any repairs above and beyond what can be considered as normal maintenance may only be carried out by suitably qualified personnel or our service technicians.

Problem	Possible Cause	Corrective Action
1. VistaScan does not switch on	• No power	• Check power cable, plugs and sockets • Check fuses • Check power supply, whether green LED lights up
	• Main power switch defective	• Inform Service technician
2. VistaScan switches off after short period	• Power cable or plug not connected properly	• Check power cable, plugs and sockets
	• Hardware defect	• Inform Service technician
	• Voltage too low	• Check power supply voltage
3. Status Error or operation LED does not show	• LED defect	• Inform Service technician
4. Loud noises after switching on	• If noises persist longer than 30 secs then beam diverter defect	• Inform Service technician
5. Image processing software does not recognise VistaScan	• VistaScan not switched on	• Switch on VistaScan
	• Cable loose between VistaScan and PC	• Check connecting cable
	• PC cannot find connection to VistaScan	• Check LPT interface is EPP-capable according to IEEE 1284 • Bios must be set to EPP
	• Hardware defect at VistaScan	• Inform Service technician
6. Error when transmitting data between VistaScan and PC. Error message: "CRC Error" "Timeout"	• Incorrect or too long a connection cable used	• Only use original "Dürr Cable". Order no. 9000-119-016
	• A printer selector box has been used	• Do not use a selector box for printer connection

GB

Problem	Possible Cause	Corrective Action
7. Image plate does not get drawn into image transfer box	• Image guide not sufficiently inserted	• Press image guide into correct position
	• If transport mechanism operates - lever of foil cassette not sufficiently depressed	• Press the lever down until the transport mechanism catches the image plate.
	• If transport mechanism does not operate - VistaScan possibly not ready	• See section 16.5 Scanning Intraoral Image Plates
8. X-ray picture does not appear on PC screen after scanning	• Image plate was incorrectly placed with active side to the rear	• Replace as quickly as possible and rescan active side
	• Picture data on image plate erased	• Picture data on image plate must be scanned as soon as possible after removal from the light protection cover or the foil cassette
	• Hardware defect	• Inform Service technician
	• X-ray equipment faulty	• Inform Service technician
	• No data on the image plate	• Expose image plate
	• Over-exposure of X-ray film	• Adjust brightness via software
9. X-ray image too dark	• Image plate was in light conditions too long on transfer into the foil cassette	• The transfer should not take longer than 30 secs under maximum lighting conditions of ca. 20 Lux.
10. Intraoral image appears slanted on monitor	• Image plate inserted without foil cassette	• The image plate must always be inserted inside a foil cassette
	• Foil cassette of the wrong size used	• Use correct sized foil cassette
11. Image is a mirror-image	• Image plate was either inserted in patient's mouth or cassette back-to-front	• Position the image plate correctly
	• Incorrect parameters selected	• Select correct parameters

GB

Problem	Possible Cause	Corrective Action
12. X-ray image presents shadows or ghost images	• The previous image was not sufficiently erased before use	• Observe recommended erasure times • Check light intensity and erasure time • See section 15. Erasing Image Plates
13. Image in scan window is incomplete Software can not compose an image from the data	• The radiation dose on the image plate too low • Amplification set too low (HV-value) • Inappropriate scan mode selected • Threshold level set too high	• Increase radiation dose • Increase amplification (HV-value) • Select suitable scanning mode • reduce setting
14. X-ray image has stripes	• Image plate has been exposed • Exposure to light during handling • Image plate dirty or scratched	• Use the image plate within 24 hours after erasure. • Do not expose the image plate to bright light. Exposure and scanning should be carried out within half an hour of each other. • Clean the image plate with non-diluted Ethanol or Isopropanol and careful wiping. Scratched image plates must be replaced
15. Intraoral image plate does not fall into the receiving tray	• Intraoral image plate is prevented from falling from image transfer box due to static	• Remove intraoral image plate by hand
16. Warning: "Too much ambient light"	• Light intensity in vicinity of VistaScan too high	• Insert all foil cassettes • Darken the room • Turn the VistaScan so that no light falls on the insertion slots

GB

Problem	Possible Cause	Corrective Action
17. Bright stripes in scanning window	• Too much ambient light during scanning	• Insert all foil cassettes • Darken the room • Turn the VistaScan so that no light falls on the insertion slots
18. Second image appears with thin light and dark stripes	• Too much ambient light during scanning	• Insert all foil cassettes • Darken the room • Turn the VistaScan so that no light falls on the insertion slots
19. Broad white band at top edge of image	• Too much stray light entered system after scanning, recognized by software as belonging to image being processed.	• Insert all foil cassettes • Only remove foil cassettes after complete scanning process • Darken the room • Turn the VistaScan so that no light falls on the insertion slots

GB

Image Timing

Time taken from automatic feed of the image plate until complete scanning of image depends on the image plate format and the resolution.
Times stated are approximate and have been rounded up.

Theor. resolution LP/mm	40	20	10.00	6.67	5.00	4
Pixel size µm	12.5	25	50	75	100	125
Software configuration	**Max. resolution**	**High resolution**	**Standard resolution**			
Intra (2x3)	55s	27s	14s	9s	7s	6s
Intra (2x4)	61s	30s	15s	10s	8s	6s
Intra (3x4)	61s	30s	15s	10s	8s	6s
Intra (2.7x5.4)	78s	39s	20s	13s	10s	8s
Intra (5.7x7.6)	103s	51s	26s	17s	13s	10s

Software configuration*				**High resolution**	**Standard resolution**	
OPG (12.7x30.5)	-	-	41s	28s	21s	17s
OPG (15x30)	-	-	48s	32s	24s	19s

Software configuration*				**High resolution**	**Standard resolution**	
CEPH (18x24)	-	-	57s	38s	29s	23s

* not possible with the VistaScan INTRA 2030-000-61

☐ **Default setting**

The scanning time for a panorama image plate with a resolution of 5LP/mm is 24s. This corresponds to a pixel size of 100µm. Pixel sizes under 75µm for panorama views are, due to the particular projection process of OPG X-ray machines, not recommended. For intraoral image formats the pixel size should lie between 12.5µm and 50µm. If 50µm is used, depending on format the scanning takes between 14 and 26 seconds. It is important to note that during this time up to 4 image plates can be scanned simultaneously. This is especially useful for standard status images. The default resolution setting of 20 LP/mm allows structures as small as 25µm to be made visible and therefore, allow more diagnostic possibilities.

File sizes (non-compressed)

The size of the data files (in MB) depends on the image plate format and the resolution.
File sizes stated are approximate and have been rounded up. The file sizes can be appreciably decreased by using compression software without affecting the quality of the image.

Theor. resolution LP/mm	40	20	10,00	6,67	5,00	4
Pixel size µm	12.5	25	50	75	100	125
Software configuration	Max. resolution	High resolution	Standard resolution			
Intra (2x3)	9.3	2.3	0.6	0.26	0.15	0.09
Intra (2x4)	11.6	2.9	0.8	0.32	0.18	0.11
Intra (3x4)	15.4	3.8	1.0	0.42	0.24	0.15
Intra (2.7x5.4)	17.6	4.4	1.1	0.5	0.27	0.18
Intra (5.7x7.6)	51.6	12.9	3.3	1.5	0.8	0.5

Software configuration*			High resolution	Standard resolution		
OPG (12.7x30.5)	-	-	27	12	6.8	4.3
OPG (15x30)	-	-	33.3	14.8	8.3	5.3

Software configuration*			High resolution	Standard resolution		
CEPH (18x24)	-	-	30.5	13.6	7.6	4.8

* not possible with the VistaScan INTRA 2030-000-61

[ ]   **Default setting**

Exposure times for intraoral X-ray machines in seconds

DC - Beam	60kV	70kV
Lower Incisors /Canines	0.1	0.08
Lower Premolars	0.12	0.1
Lower Molars	0.12	0.1
Upper Incisors /Canines	0.12	0.1
Upper Premolars	0.16	0.12
Upper Molars	0.16	0.12

Maximum permissible X-ray dose according to RöV (BRD)
Intraoral: 200μGy
OPG: 5μGy

Reference conditions:

• X-ray machine - Heliodent MD
• Adult patient
• Anode current 7mA
• Film- Focus- Distance 250mm