

Dürr Dental X-ray Film Developer XR 24 Pro



EN

Installation and Operating Instructions



9000-600-74/30



2018/02SE

Content



Important Information

1. General	4
1.1 Note on Conformity	4
1.2 General Notes	4
1.3 Notes on medical products	4
1.4 Intended purpose	4
1.5 Notes on EMC and medical products	5
1.6 Correct Usage	5
1.7 Incorrect usage	5
1.8 Appliance disposal	5
1.9 Disposal of Chemicals	5
2. Safety	5
2.1 General Safety Notes	5
2.2 Electrical safety instructions	6
3. Warnings and Symbols	6
3.1 Model identification plate	6
4. Delivery Contents	7
4.1 Special accessories	7
4.2 Disposable materials	7
5. Technical Data	7
5.1 XR 24 Pro, 1700-08	7
5.2 Environmental conditions	7
6. XR 24 Pro functional layout	8
7. XR 24 Pro functional description	9
7.1 PCB (main board) layout	9



Mounting

8. Set-up	10
8.1 Room for set-up	10
8.2 Set-up alternatives	11
8.3 Set-up	11
9. Installation	12
9.1 Water connections	12
9.2 Waste water connections	12
9.3 Waste water hose connection from developer and fixer	13
10. Start-up and first use	14
10.1 Clean unit	14
11. Electrical connection	15
12. Circuit diagram	16
12.1 PCB (main board) operating functions	16
12.2 PCB (main board) control functions	16
12.3 PCB (main board) power functions 230 V	17
13. Start-up and first use	18
13.1 Settings / service operation for the Service Technician	19
13.2 Check temperature of the developer and carry out commissioning test	20
14. Transport	21
14.1 Remove drainage hoses	21
14.2 Protection from damage	21



Use

14.3 Program overview	22
14.4 Service / Fault message	22
15. Operation	22
15.1 In the morning or before surgery start	23
15.2 To change program:	24
15.3 In the evening or after surgery closing	24
15.4 Surgery or clinic closures	24
15.5 Film recommendation list for Dürr Dental Developer XR 24 ...	25
16. Maintenance	26
16.1 Change the chemicals	27
16.2 Every 2 months cleaning tanks and roller sets	30



Trouble-shooting

17. Tips for Service Technicians	33
17.1 Fault message on display panel with audible signal	34
18. Tips for Service Technicians	35
19. Tips for Trouble-shooting	36
19.1 Before starting	36
19.2 Remove front panel	36
19.3 Remove rear panel	36
19.4 Remove side panels	36
19.5 After completing work	36
19.6 Service mode plan	37
19.7 Changing display	39
19.8 Check unit fusing	39
19.9 Changing the process heater and PTC-sensor	40



Important Information

1. General

1.1 Note on Conformity

This product has been tested for conformity according to the appropriate directives as laid down by the European Union and has been found to conform to all the required specifications.

1.2 General Notes

- These Installation and Operating Instructions form an integral part of the unit. They must be kept close to the unit at all times. Precise observance of these instructions is a precondition for use of the unit for the intended purpose and for its correct operation. New personnel must be made aware of the contents, and they should be passed on to future operating staff.
- Safety for the operator as well as trouble-free operation of the unit are only ensured if use is made of original equipment parts. In addition, only those accessories expressly recommended in the Installation and Operating Instructions or explicitly recommended by Dürr Dental may be used with this appliance. If other accessories are used with this appliance, Dürr Dental cannot guarantee safe operation or proper functioning. 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 Dental are only responsible for the equipment with regard to safety, reliability and proper functioning where assembly, resetting, 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.
- These Installation and Operating Instructions conform to the relevant version of the equipment and the underlying safety standards valid at the time of going to press. All circuits, processes, names, software and appliances quoted are protected under industrial property rights.

- The translation of these Installation and Operating Instructions has been carried out in good faith. Dürr Dental will not accept any claims arising from incorrect translation. The enclosed German version of these Installation and Operating Instructions is the final reference - in case of doubt contact the manufacturer or their agent.
- Any reprinting of the technical documentation, in whole or in part, is subject to prior approval of Dürr Dental being given in writing.
- Retain the packaging for possible return of the product to the manufacturers. Only the original packaging provides adequate protection during transport of the unit. Should return of the product to the manufacturers be necessary during the guarantee period, Dürr Dental accepts no responsibility for damage occurring during transport where the original packaging was not used! Ensure that the packaging is kept out of the reach of children.

1.3 Notes on medical products

- This product is a technical medical appliance and, as such, may only be operated by such persons who, as a result of training or experience, can be confidently expected to operate it correctly and safely for patients and staff alike.
- Multi-socket power outlet extensions may not be placed on the floor. Where multi-socket power strips are used then the requirements under EN 60601-1-1 must be strictly observed.
- Other appliances should not be connected to the same multi-socket power outlet extensions.

1.4 Intended purpose

The unit is intended solely for the development of extraoral and intraoral X-ray film in dental applications in accordance with the Dürr Dental Film Recommendation List. The machine contains a roller transport system that transports the film after exposure with X-ray beams through the developer, fixer and water baths and then subsequently through the drying sections.

1.5 Notes on EMC and medical products

Medical products should be treated with respect when it comes to electro-magnetic compatibility and special safety measures must be taken. Notes on electro-magnetic compatibility of products for medical applications can be found in our brochure number 9000-606-67/30 or the information can be found on the internet at www.duerr.de in the Download section for Technical Documentation

1.6 Correct Usage

The unit is intended solely for the development of extraoral and intraoral X-ray film in dental applications in accordance with the Dürr Dental Film Recommendation List. The machine contains a roller transport system that transports the film after exposure with X-ray beams through the developer, fixer and water baths and then subsequently through the drying sections.

For operation of the unit, only use parts, accessories and optional accessories that have been specified or approved by Dürr Dental. For cleaning and disinfection of the device, only use disinfectants and cleaning agents that have been specified or approved by Dürr Dental. All legal requirements that apply at the site of use in relation to health and safety in the workplace and to the disposal of chemicals must be complied with.

1.7 Incorrect usage

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 unit is not suitable for monitoring patients over longer periods of time. The unit is not designed for operation within the patient environment.

Only photographic chemicals that are coordinated with the development process may be used. The waste water drainage line must have a downward gradient. The developer and fixer must be disposed of separately as special waste in suitable containers in accordance with national regulations and guidelines.

Due to the bath temperature that needs to be maintained for the process, optimum developing quality can only be ensured up to an ambient temperature = bath temperature.

The unit must not be used in operating theatres or similar rooms in which potential hazards could arise from the ignition of flammable mixtures.

1.8 Appliance disposal

- EU directive 2012/19/EU (WEEE / Waste Electric and Electronic Equipment) dated 4 July 2012 and its current application in national law clearly states that dental products are covered by the above-mentioned directive and, as such, are covered by special waste disposal requirements within the European Union.
- If you have any questions regarding the correct waste disposal procedures for this product please contact Dürr Dental or your dental supplier who will be pleased to assist.

1.9 Disposal of Chemicals

The empty concentrate bottles of developer and fixer must be disposed of according to national and local regulations. Quantities of used developer and fixer solutions, as well as any cleaning fluids, should be disposed of according to local rules and regulations concerning waste water.

2. Safety

2.1 General Safety Notes

This appliance has been designed and constructed by Dürr Dental that any danger arising from correct usage is virtually impossible. In spite of this, we feel it is our duty to mention the following safety measures in order to prevent any possible danger.

- When using this appliance all local and relevant regulations must be observed! Converting or modifying the appliance in any way is strictly prohibited. In such cases, any and all guarantees immediately become invalid. The operation of modified appliances can be punishable by law. In the interests of trouble-free operation the operator is responsible for observing these regulations.
- Installation must be carried out by a technical expert.
- 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 present. This appliance is not to be used in areas where the atmosphere could cause fire.

2.2 Electrical safety instructions

- The appliance may only be operated using a correctly installed power 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 come into contact with patients and open plug-in connections on the appliance at the same time.
- When using the appliance observe all the relevant electrical safety procedures.
- Only use the supplied mains cable to connect the device.

3. Warnings and Symbols

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



Information and/or mandatory regulations or prohibitions for the prevention of personal injury or substantial property damage



Information and/or instructions or prohibitions regarding personal safety or extensive material damage.



Warning - dangerous electrical voltage.

Power switch ON / OFF

/ Select parameters

Confirm selection

Switch on power

Switch off power

Each morning - open the water tap

Each evening - turn water tap off

28 x 24 h

replace chemicals every 4 weeks



Drain off the chemicals

Clean unit

3.1 Model identification plate



Order no. / model no.



Serial-No.



Observe the operating instructions



CE-Labeling without Notified Body Number



Manufacturer



Fuses in accordance with IEC 60127-2



Health Industry Bar Code (HIBC)



To be disposed of properly in accordance with EU directive 2012/19/EU (WEEE)

4. Delivery Contents

X-ray film developer XR 24 Pro, model 1700-08 (230 V AC, 50/60 Hz)

accessories, complete 1700-001-00

4.1 Special accessories



The parts listed as special accessories are not part of the standard scope of delivery but can be ordered separately.

DÜRR Cleaning film, clear x 100 .. 1410-007-00
Water hose with Aqua-Stop 1330-001-51
Regeneration unit (230 V AC) 1700-820-00
Large collector, 20 liter
for developer. 1416-021-00
Large collector, 20 liter
for developer. 1416-011-00
Preparation container E with lid .. 1330-015-00
Preparation container F with lid .. 1330-016-00
Collecting system for developer. . . 1700-062-00
Collecting system for fixer 1700-061-00
Daylight cover DL 24
with filter disc 1700-910-00
suitable for film sizes
2 x 3 cm to max. 15 x 30 cm
Daylight cover DL 26. 1700-920-00
suitable for conventional film sizes
to max. 24 x 30 cm
Darkroom adapter DA 24 1700-930-00
suitable for film sizes:
2 x 3 cm to max. 24 x 30 cm
Electrical fuse,
230 V AC, T 6.3 AH 9000-115-25

4.2 Disposable materials

DÜRR-AUTOMAT XR/C (with vitamin C)
developer and fixer concentrated liq-
uids
for 2 applications CXB160C9940
Spray cleaner WR 2000, for
transport roller sets, 6 x Pack . . CCB800C5540
Cleaning film Dürr Clear 100,
100 pieces 1410-007-00
XR Clean Set 1700-007-00

5. Technical Data

5.1 XR 24 Pro, 1700-08

Model 1700		-08
Voltage	V	230
Current	A	4,0
Electrical frequency	Hz	50-60
Power output	W	950
Heat output		
Bath heating		400
Drying	W	450
G-fuse link IEC60127-2/V	A	T6.3 AH
Warm-up time	min	~20 (0.5 °C/min.)
Film processing time	min	3,25 - 20
Bath circulation process		
Developer		~1,8
Fixer	(l/min)	~2
Water circulation rate	(l/min)	~2
Water pressure	bar	
min. water pressure		2
max. water pressure		6
Tank volume	(l)	5 each
developer, fixer		
Fuse type		IP 20
Protection class		I
Surge voltage category		II
Medical device		Class I
Duty cycle ED	%	100
Weight	kg	25
Dimensions (DxWxH)	cm	44 x 42 x 51

5.2 Environmental conditions

Storage and transport conditions

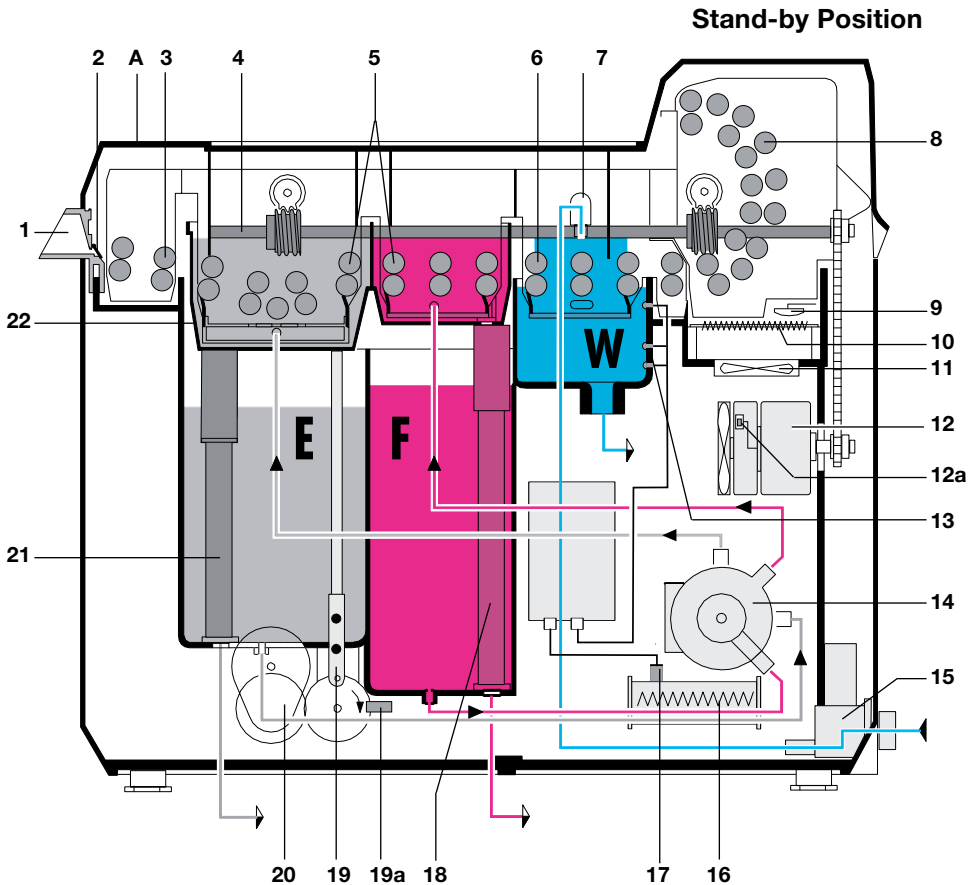
Temperature (°C) -10 to +60
Rel. humidity (%) max. 95


Operating conditions

Temperature (°C) +10 to +25
Rel. humidity (%) max. 70

6. XR 24 Pro functional layout

EN



- | | | | |
|-----|--------------------------------------|-----|--|
| 1 | Film feed | 14 | Rotary pump (for D and F) |
| 2 | Start flap | 15 | Water intake valve |
| 3 | Roller set - film feed | 16 | Circulation heater |
| 4 | Drive shaft | | |
| 5 | Roller sets developer/fixer (D/F) | 18 | Overflow pipe F with drainage plug |
| 6 | Roller set - water | 19 | Lifter |
| 7 | Water inflow | 19a | Light barrier for lifting bath |
| 8 | Roller set - dryer | 20 | Lift motor |
| 9 | Safety switch "dryer" | 21 | Overflow pipe D with drainage plug |
| 10 | Dryer heating | 22 | Lifting bath |
| 11 | Fan | D | Developer bath |
| 12 | Drive motor | F | Fixer bath |
| 12a | Speed sensor | W | Water bath |
| 13 | Fluid level indicator sensor "Water" | A | Power switch  on main display |

7. XR 24 Pro functional description

Press the power switch ① (min. 2 secs) and the display lights up. The warming-up phase for the developer and fixer baths begins. The necessary waiting time required before the required temperature has been reached is shown: "WAITING . . MIN" (display panel blinks). The unit will not start during this warm-up stage.

The bath circulation process starts parallel to the bath heating. During the circulation step the rotatory pump (14) feeds the chemicals from the developer and fixer baths (tank volume of each is 5 liters) to the lifting bath (22).

Once the set temperature has been reached the display will show "MACHINE EMPTY", i.e. the unit is now ready for use. As soon as the set temperature falls by more than 0.5 °C the process heater and rotary pump (14) will start up again.

When a film is inserted, the film feed flap (2) opens and the display will show a blinking message: "MACHINE LOADED".

At the same time a signal is triggered to lower the lifting bath (22), the water intake valve (15) is opened, and the dryer heater (10), drive motor (12) and the rotatory pump (14) (for developer and fixer bath circulation) all start up.

The processing time can be checked using the speed sensor (12a). The raising and lowering of the lifting bath is controlled by the rotation of the disc (driven by the lift motor (20)) and is monitored by the infrared light sensor (19a).

When the lifting bath (22) is lowered the film is transported between the rollers and through the developer and fixer baths, and then through the rinsing and drying zones (8) in the preset processing time.

During the film processing, water is released via the water inflow (7) **into the rinsing zone**. The water is drained off via the waste water system. There is a continuous flow of water of ca. 2 l/min, at 2 bar. If the waste water drainage gets blocked, then the level indicator sensor (13) sends an audible signal, the water intake valve (15) is closed and the water inflow is halted.

Once the film has been taken up the film feed flap (2) closes. As soon as the blinking message "MACHINE LOADED" on the display panel is extinguished, then a further film or 6 intraoral films side-by-side can be fed in.

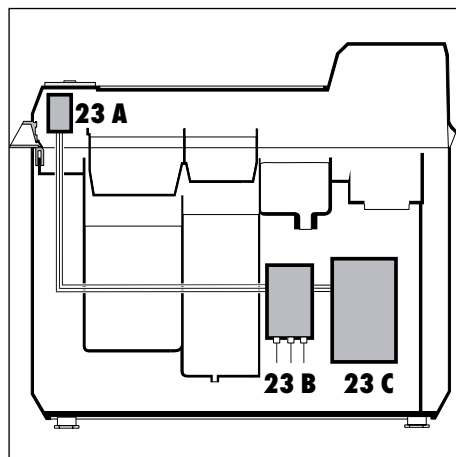
If, after the film processing stage (message is audible signal), no further film is inserted, then the lifting bath (22) is raised (stand-by position "MACHINE EMPTY"). The drive motor (12), water intake valve (15) and dryer heater (10) will then be switched off. In the stand-by position the developer and fixer roller set (5) is completely submerged in the chemicals. This serves to prevent the majority of any deposits attaching themselves to the rollers.

7.1 PCB (main board) layout

23 A Operating parts

23 B Control functions

23 C Power functions





Mounting

8. Set-up

8.1 Room for set-up

- The XR 24 Pro developer may only be operated in a clean, dry and well-ventilated room.
- Room temperature must not fall below +10 °C in winter and must not exceed +28 °C in summer.
- The room chosen for set-up must have access to a water connection (water tap) (27) R3/4" with pipe anti-vacuum device, waste water drainage (28) with aeration (anti-odour) via plastic siphon and an electrical safety socket (26). We strongly recommend that a wash basin be available in the vicinity of the developer.



The water tap (27) and electrical safety socket (26) must be easily accessible to the operating personnel.

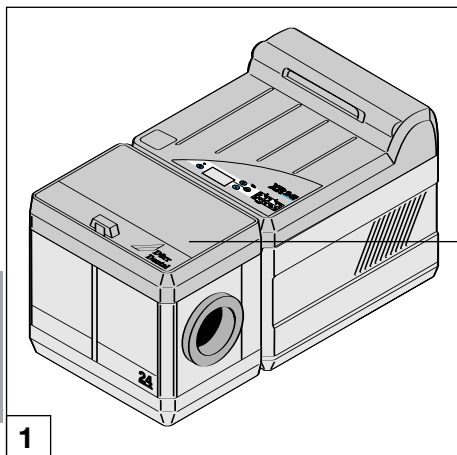
- We strongly recommend that set-up of the XR 24 Pro is effected in a darkroom. If the appliance cannot be set up in a darkroom, then a daylight cover (24) (DL 24 or DL 26) must be fitted.
- When operating an appliance **with daylight cover** (24) please note:



Never expose the machine to direct sunlight! Danger of the chemicals overheating or pre-exposure of film materials. Never store film material in the vicinity of the X-ray room!

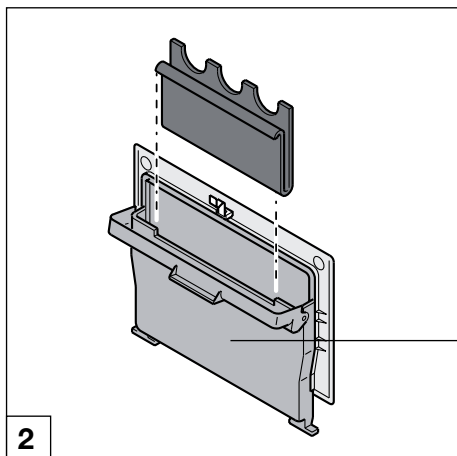
Once film material is inserted into the film depot (25) of the daylight cover there is the danger that pre-exposure can occur due to stray ambient radiation from the X-ray appliance.

- If necessary, it is possible to set up a separating wall or barrier using lead protection.



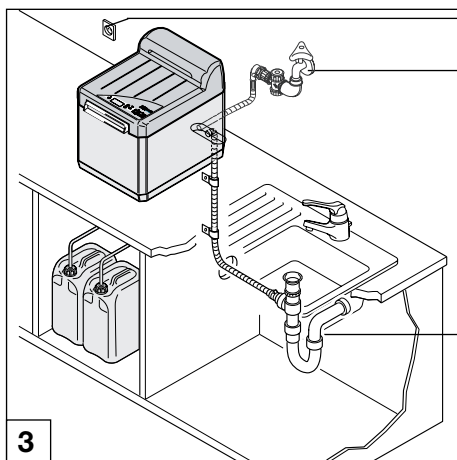
24

1



25

2

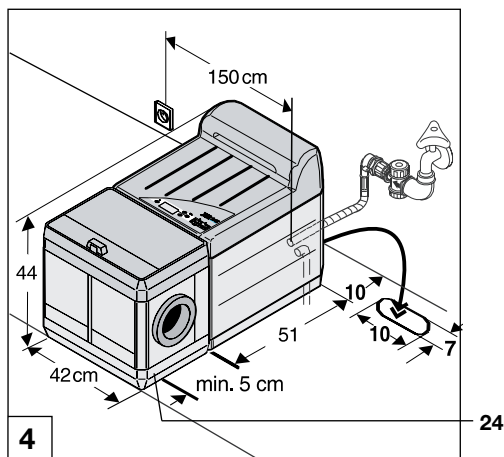


26

27

28

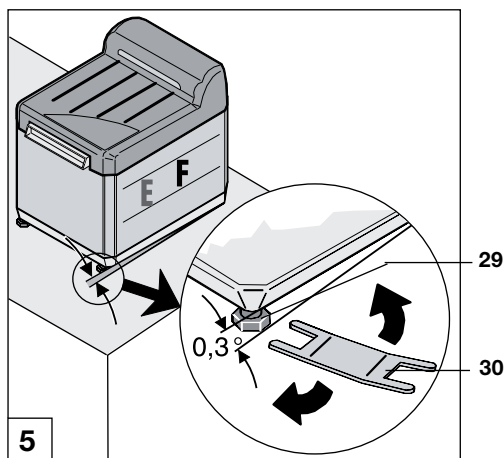
3



8.2 Set-up alternatives

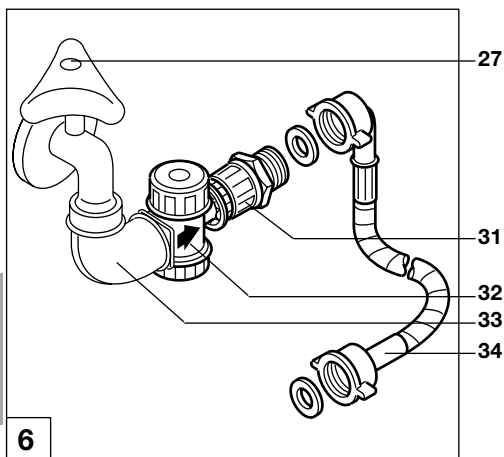
- Place the developer unit onto a horizontal, stable, flat, and single-piece working surface at a comfortable working height.
- In order to have access to the hoses the working surface should have at least one opening of ca. 7 x 10 cm.
- Take into account that additional space may be required for service and maintenance and that sufficient ventilation is available for the unit: to the rear leave at least 10 cm, left and right allow ca. 50 cm free space
- Leave enough space at the front in case a daylight cover (24) is to be used. If necessary, unscrew the adjustable feet from the front and apply to the rear.

EN



8.3 Set-up

- First remove the plastic tapes to the packaging and carefully lift the box upwards.
- Remove all small parts.
- Take the unit from the sides and place as required.
- Set up the unit in the vicinity of water supply, waste water system and electrical safety socket (max. distance 1.5 m)
- Set up the appliance so that it has a slight tilt, ca. 0.3 ° to the fixer bath (fig. 6). Adjust the feet of the appliance (29) using the spanner provided (30) as required.



9. Installation

9.1 Water connections

- Check that clean, clear water flows from the water tap (27).

When installing for the first time make sure the connection is allowed to flow and rinse first!

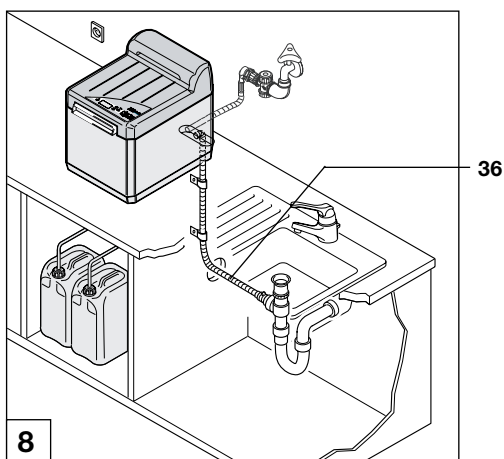
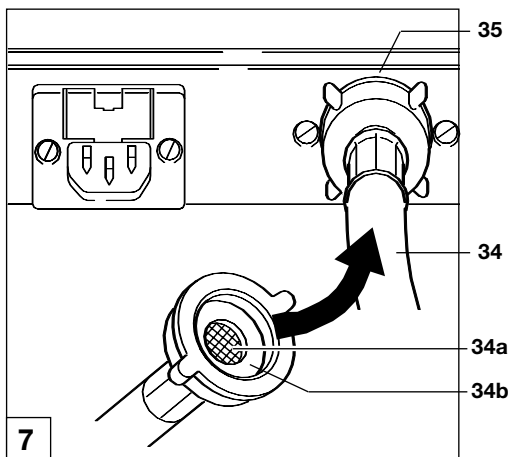
- Because of great regional differences in the water quality a fine filter (32) must be fitted between the water tap (27) and water hose (34).

i The fine filter (32) protects the flow regulator in the water intake valve of the appliance from becoming dirty.

- Turn off the water tap (27).
- Connect the 90° elbow piece (33) to the water tap (27), mounting the fine filter (32) (arrow in direction of flow) and the double nipple piece (31) at the same time.

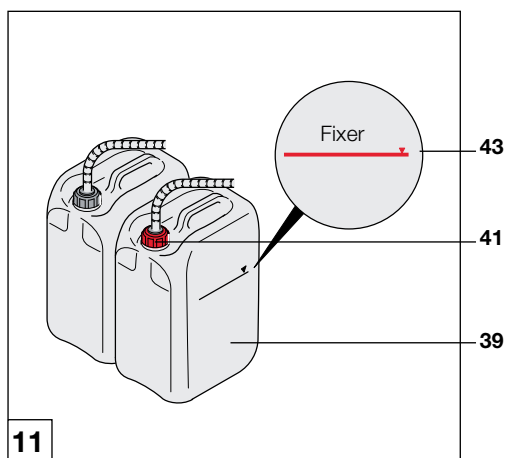
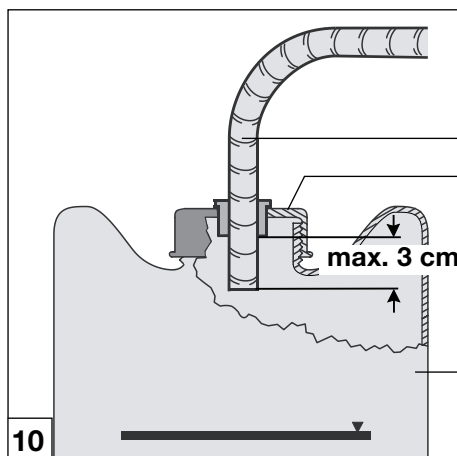
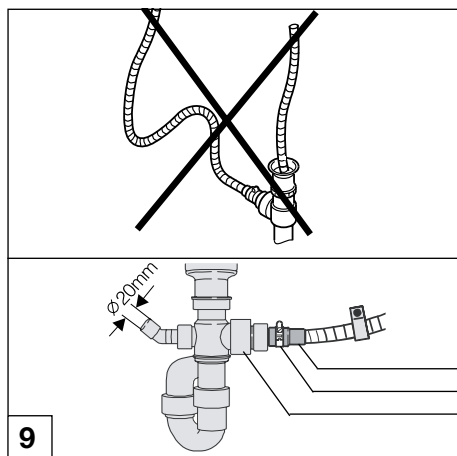
i Check that the coarse filter (34a) and both seals (34b) are present in the threaded fitting of the water hose (34).

- Connect the water hose (34) to the water inflow (35) of the appliance (threaded pipe fitting with coarse filter) and connect to double nipple piece (31).



9.2 Waste water connections

- The waste water connection must include a siphon trap.
- Lay the waste water hose (36) with a steady incline to the siphon trap:
Shorten the hose to an appropriate length



When laying out the waste water hoses the following must be carefully observed:

- avoid sagging hoses!
Avoid squeezing or reducing the pressure on hose!

- The external ends of the hoses should be coated with UHU-Plast.
- Screw the screw socket (37) onto the hose and fit to siphon trap muff (25) using a hose clamp (38).
- Secure the waste water hose using hose clamp, screws and rawplugs.

9.3 Waste water hose connection from developer and fixer

- Place the 10l-collector tanks (39) for developer (black level indicator marker) and fixer (red level indicator marker) below the appliance in a clearly visible position and free from the possibility of tilting.
- **Lay hoses (40) with constant incline**
- Shorten the hoses to the correct length.
- Feed the hose for developer (black markings) into the black cover (41).
- Screw the cover (41) of the developer collector (39) on tightly.
- Fix the hose for fixer (red markings) in the same way to the fixer collector.

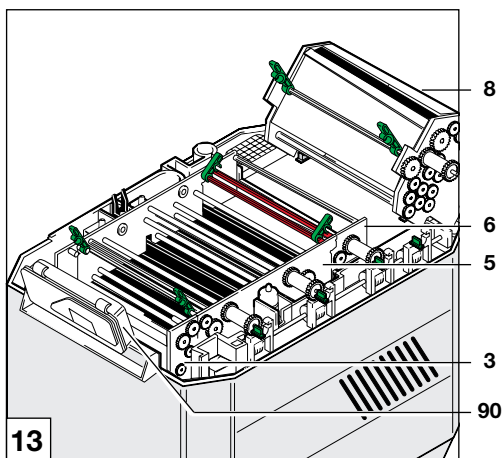
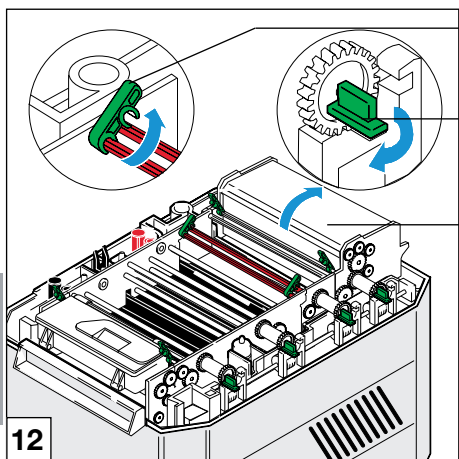


Empty the collector vessel when the level indicator marker (43) shows full - danger of overspill! Disposal of the developer and fixer requires observance of all regional rules and regulations! In Germany and many other countries, x-ray chemicals must be disposed of separately as special waste: check local regulations.

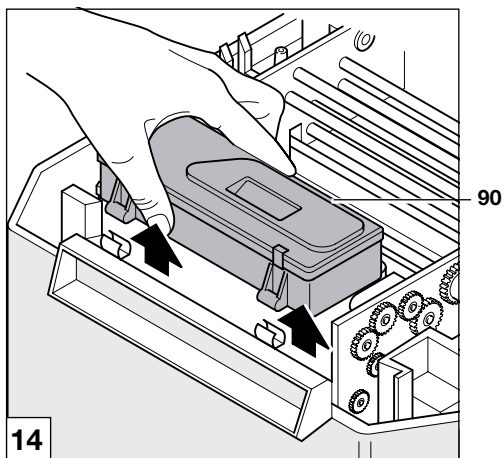
44 10. Start-up and first use

10.1 Clean unit

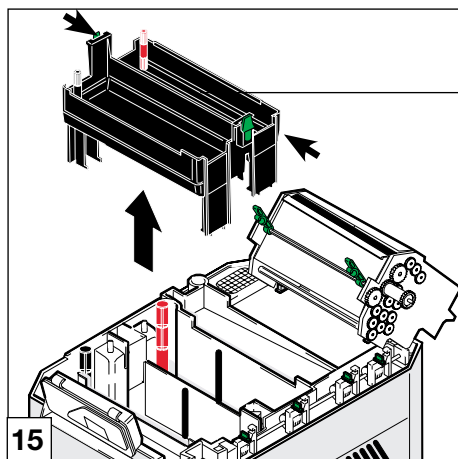
- Remove the cover.
- Remove the floating covers to developer and fixer baths.
- Open the green catch (44) and locking devices (45).



- Swing the dryer roller set (8) towards the back.
- Extract the roller sets for water (6) and developer / fixer (5).



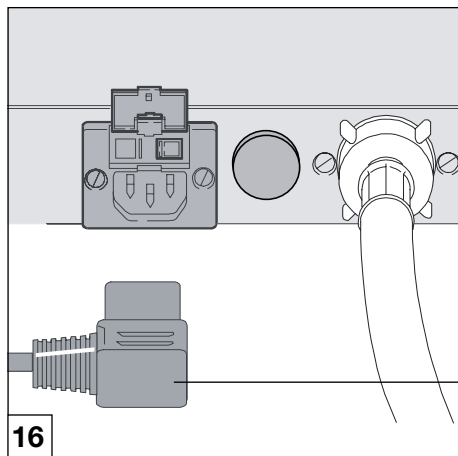
- Swing the display (90) upwards.
- The display can also be lifted upwards and then laid to the side on the left.
- Extract the roller set film insertion (3).



- Press the lever to the side and remove the lifting bath (22).
- Clean the roller sets, lifting bath and tanks using a damp sponge.

"Preparation of chemicals "
and
"Insertion of roller sets"
 see sections 16.1.3 and 16.1.4

EN



11. Electrical connection



The unit is set up for a supply voltage of 230 V (see model identification plate). Before connection of the main power cable it is important to check whether the required voltage is available, otherwise the appliance can be damaged. Use the Dürr mains cable supplied. The unit must only be used in completely closed state - with all side panels and cover fitted and closed - before connecting to the mains power supply.

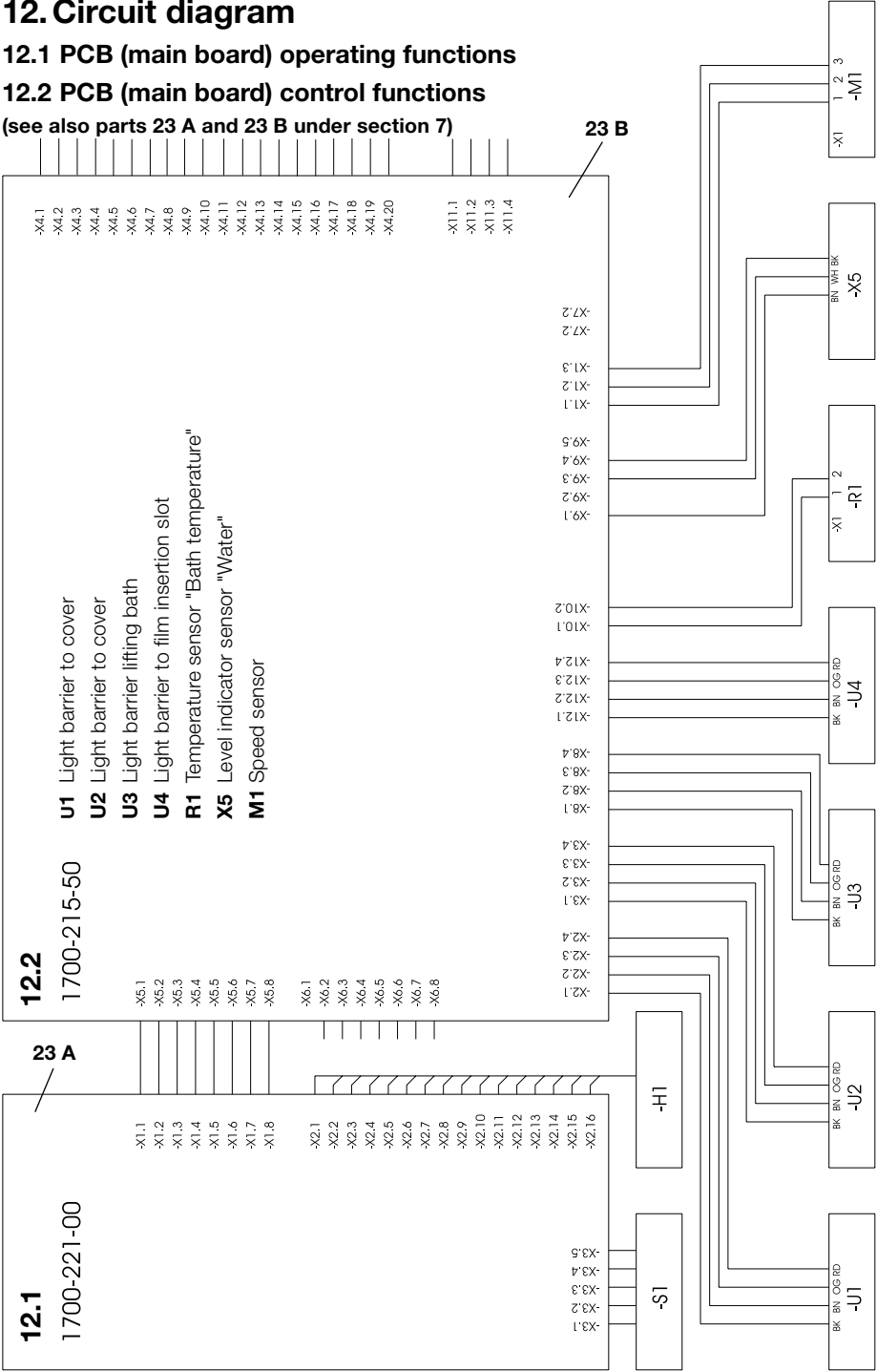
- Connect the power plug (61) into the appliance and into the main power socket.

12. Circuit diagram

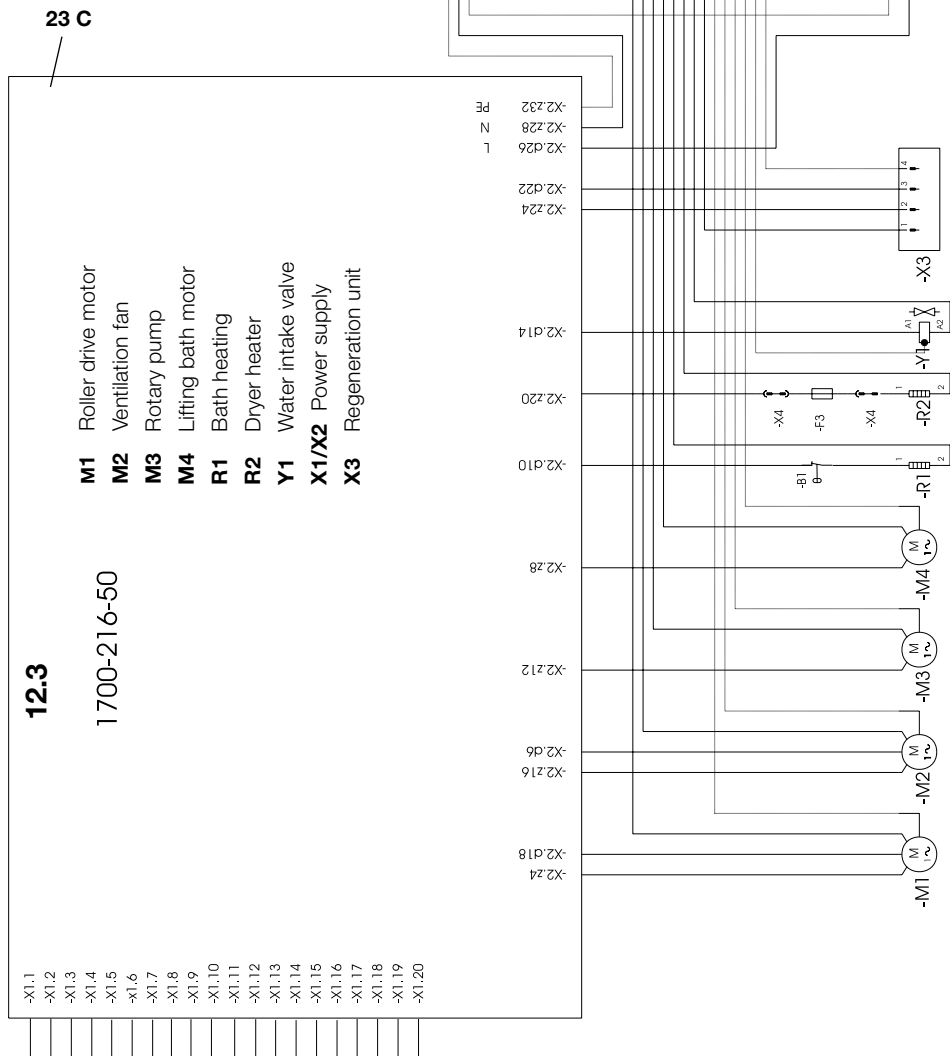
12.1 PCB (main board) operating functions

12.2 PCB (main board) control functions

(see also parts 23 A and 23 B under section 7)



12.3 PCB (main board) **power functions 230 V** (see also part 23 C under section 7)



13. Start-up and first use

The developer unit XR 24 Pro has 3 different settings for the **processing time**, and is factory set at the following values.

Intraoral films **6 min** (program INTRA)

Extraoral films **4 min** (program EXTRA)

Endodontal films **3:15 min** (program ENDO)

Please note: X-ray films with such short processing times are not suitable for archiving.

-Developer / fixer bath temperatures 28°C

-Dryer performance 30%

When using other film types requiring different processing times and dryer performance the values will need to be changed as appropriate. Refer to the film list, section 15.7.

For a program overview refer to the section "Usage"



The unit must only be used in completely closed state - with all side panels and cover fitted and closed - before connecting to the mains power supply.



Every time the unit is switched on at the power switch then program "INTRA" is started, i.e. after the unit is switched off there is an automatic reset to "INTRA".



Guidance on using the unit and the display for the operator can be found in section "Usage", section 15.

A complete description of the service operation can be found on the section covering Maintenance 19.6.



The developer unit must never be operated when the roller set is not present!

Where the roller sets are not inserted then there is pressure being exerted vertically upwards on the developer and fixer fluids and could splash out.

Chemicals irritate eyes and skin and there is the danger of serious eye damage.

Without developer and fixer roller sets there can be no return of chemicals to the appropriate containers.

There is also the danger of the chemicals mixing.

The developer unit must never be operated without fluids (chemicals, water) as this can lead to the heating breaking down.

13.1 Settings / service operation for the Service Technician

- Open the water tap.
- Check unit and all connections for signs of leakages

• Start service operation

- press + simultaneously (min. 4 secs) unit is now in Service mode

• Select service function

Use key and Service Function to select

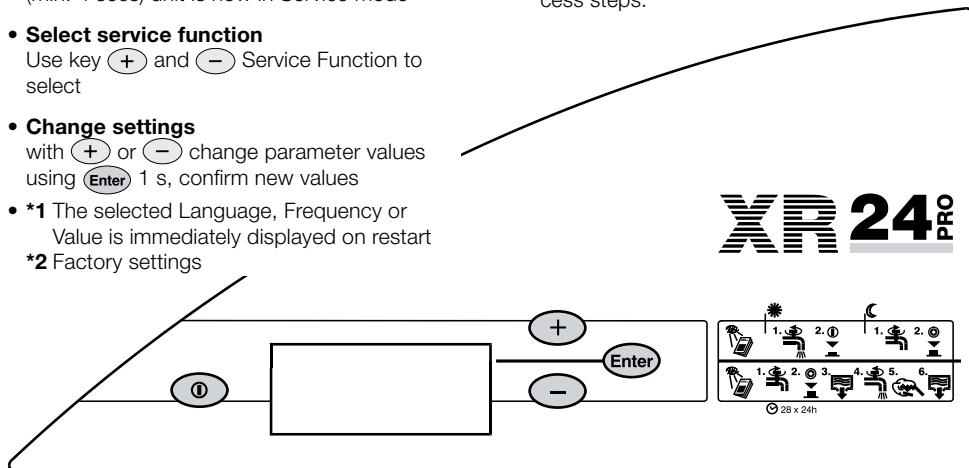
• Change settings

with or change parameter values using 1 s, confirm new values

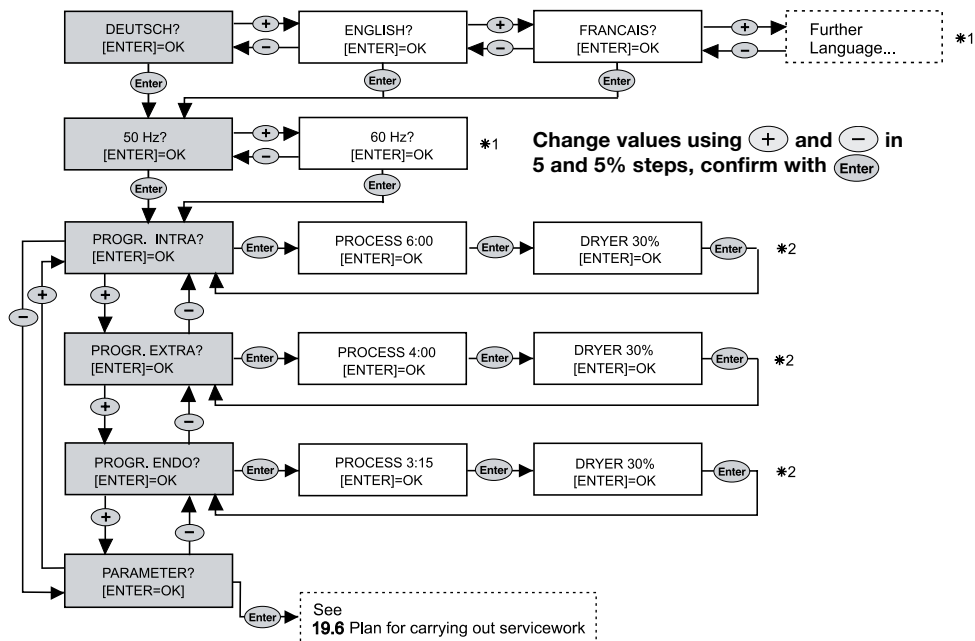
- *1 The selected Language, Frequency or Value is immediately displayed on restart
- *2 Factory settings

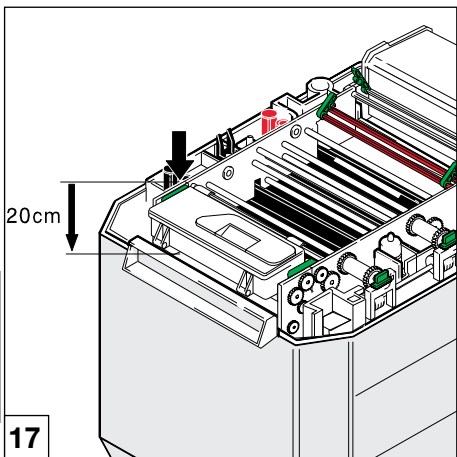
• End Service operation

- Switch off unit at power switch (press min. 2 secs)
- Set parameters e. g. Language, Electrical frequency, etc. at the display using process steps:



V18





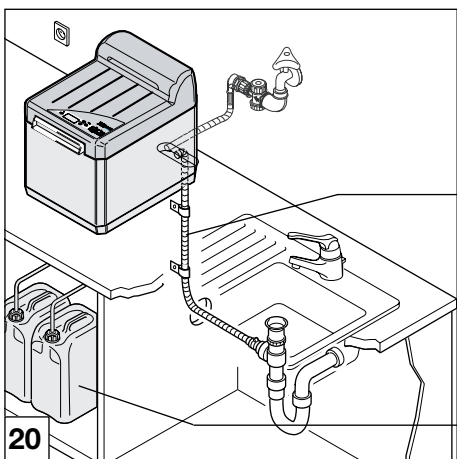
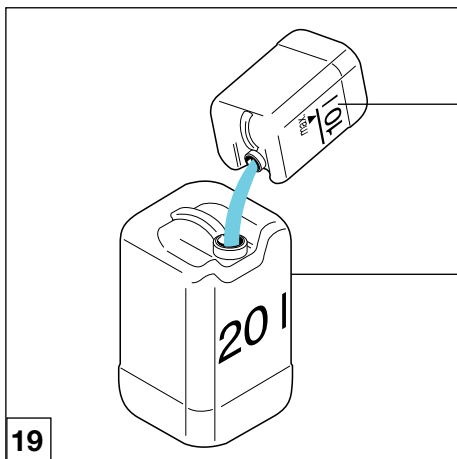
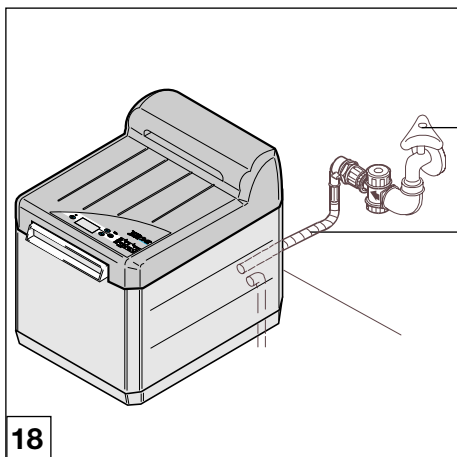


13.2 Check temperature of the developer and carry out commissioning test



The following procedure is shown as an example for use in Germany. When altering for other countries take local situations (e.g. regulations) into account!

- Switch on  the unit and wait for the warming-up phase of the developer bath to finish, see also "15.1 In the morning or before surgery start"
- To check the temperature of the developer, switch off the unit.
- Unplug at the mains and remove all power.
- Close the water tap.
- Remove the cover.
- Measure the temperature of the developer (front left to a depth of ca. 20 cm).
The temperature of the developer must agree with temperatures given in the film list, e.g. +28 °C +/- 0.5 °C.
- Record temperature in Acceptance Log and Constancy Test Records.
- Replace cover, plug in at the mains, open water tap, use  to switch on unit.
- Insert test film and carry out Acceptance Test according to x-ray regulations. Record test results in test report. - Archive the test film.
Inform operating staff that regular constancy checks must be carried out.



14. Transport

Before transport of the developer please note the following points:



The developer unit may only be transported with completely empty tanks.

- Switch off unit at main switch.
- Turn off the water tap (27).
- Remove power connection between mains cable and from the electrical safety socket.
- Unscrew the water hose (31) from the unit and from the water tap (27).
- Empty the chemicals from the collector vessel (39) into the appropriate canister (63).
- Let the chemicals flow from the tanks into collector vessels (39), see section 16.1
- Clean the developer unit, see section 10.1

14.1 Remove drainage hoses

- Remove the drainage hose (35).
- Loosen the hose from the collector vessel (39) for developer and fixer, being careful to avoid any drops of chemicals leaking out.

14.2 Protection from damage

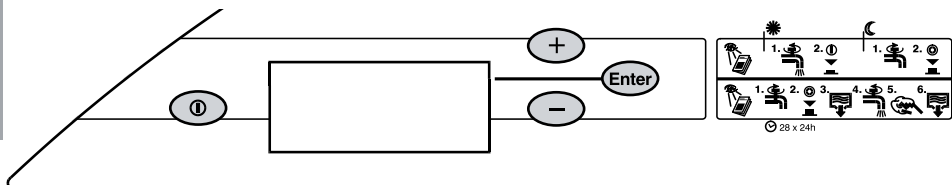
- Protect the developer from any mechanical pressure and damage.
- Ensure that the appliance during transport cannot move within the packaging.
- Inform transport personnel.



Use

- ① Power - switch
- Enter Confirmation - key
- + , - "Browse menu"

XR 24 PRO



14.3 Program overview

The programs **Intra**, **Extra** and **Endo** are factory set (see below); however, they can be individually altered by the Service Technician according to the film list.

INTRA - Process time: $t=6\text{min}$
 - bath-temperature: $T=28\text{ }^{\circ}\text{C}$
 - dryer performance: 30%

EXTRA - Process time: $t=4\text{min}$
 - bath-temperature: $T=28\text{ }^{\circ}\text{C}$
 - dryer performance: 30%

ENDO - Process time: $t=3\text{min } 15\text{ sec}$
 - bath-temperature: $T=28\text{ }^{\circ}\text{C}$
 - dryer performance: 30%



Every time the unit is switched on at the power switch then program "INTRA" is started, i.e. after the unit is switched off there is an automatic reset to "INTRA".

14.4 Service / Fault message

See section 17.1 Fault messages on display with audible signal

SERVICE INTERVAL
REACHED!

Only when activated
by the Service
Technician!

BEFORE OPENING
SWITCH OFF AT MAINS

ERROR WATER TOO
LOW!

ERROR WATER TOO
HIGH!

ERROR
ROLLER DRIVE

15. Operation

Before operating the appliance please note the following points:



The developer unit must never be operated when the roller set is not present!

Where the roller sets are not inserted then there is pressure being exerted vertically upwards on the developer and fixer fluids and could splash out. **Chemicals irritate eyes and skin and there is the danger of serious eye damage.**

Without developer and fixer roller sets there can be no return of chemicals to the appropriate containers.

There is also the danger of the chemicals mixing.

The developer unit must never be operated without fluids (chemicals, water) as this can lead to the heating breaking down. Set heating controls.





In order to ensure constant image quality the unit should be switched on daily.

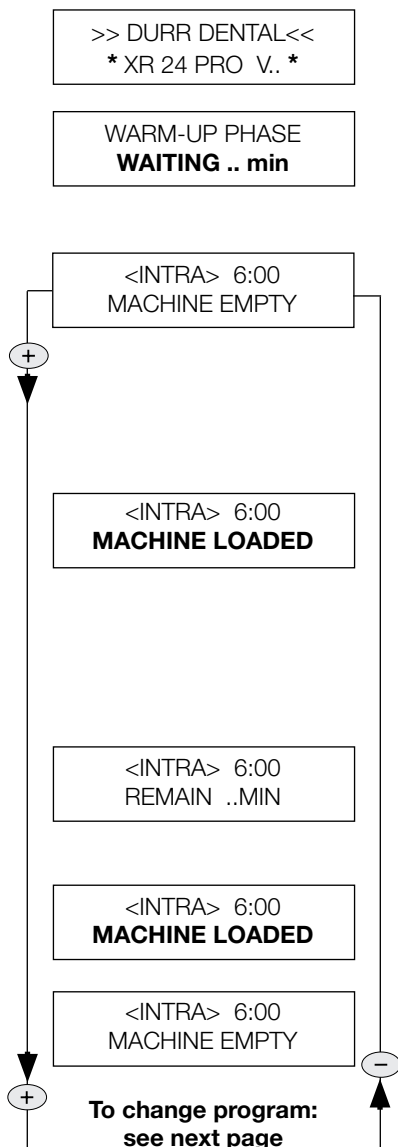
Also note that the ambient outside temperature should not be higher than the temperature of the developer bath, see section 5.2 Environmental conditions.

Stand-by Mode

Once the film has left the unit it switches to Stand-by Mode. In Stand-by Mode the unit is ready for use and is waiting for insertion of the next film material. Before inserting the film, check the program selection!

15.1 In the morning or before surgery start

-  **Open the water tap.**
- Switch on unit:
-  **Press power switch ca. 2 s until audible signal is heard**




➔ **1** Display LEDs light up. Lifting bath moves automatically into the correct position, ca. 30 seconds.

➔ **2** The unit is in the warming-up phase until the correct temperature in the developer bath is reached. Warm-up time: 0.5 °C/min. During the warm-up stage the display **blinks** with message "**WAITING .. MIN**"

➔ **3** As soon as the set temperature has been reached the display is lit.

**The unit is ready for use.
Film material can be inserted.**

INTRA is selected as default program; to change, press key  and select EXTRA or ENDO.

➔ **4** Once a film has been inserted, **the display blinks: "MACHINE LOADED"**, as soon as the message stops and stops blinking, the next film can be inserted.



Up to six intraoral films side-by-side within the markings can be inserted simultaneously, see next page.

➔ **5** The remaining time before the film is ejected is displayed (automatic reset).

An audible signal is heard when film is ejected.

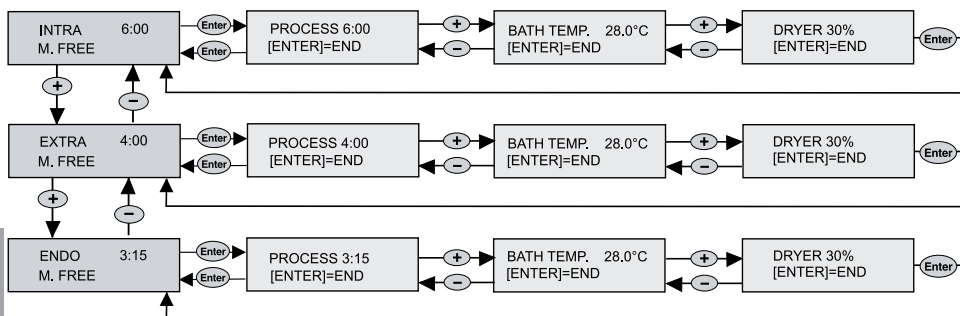
➔ **6** If no further film is inserted the lifting bath returns to "Stand-by position"

➔ **7** When the unit is in "Stand-by" mode the displayed message is: "MACHINE EMPTY"

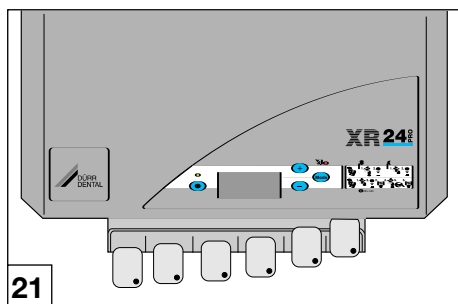


Non-exposed or developed film must not be left on or near the unit, as the LCD-display panel could lead to additional exposure.

15.2 To change program:



For error messages, see section 17.1 "Fault messages on display"





- 6 Up to six intraoral films can be laid next to each other between the markings and inserted. When inserting 2x3 films take care that they lie correctly and the marking is completely fed into the developer unit all the way.
- For rapid test pictures (e.g. when carrying out root canal-treatment) change to program "ENDO" (shorter process time: 3:15 min).
- Please also refer to the list of recommended films in section 15.4!

When creating test pictures (e.g. for root canal-treatment) under program "ENDO", please note the following:



X-ray films developed at this shorter processing time (3:15 min) cannot be archived. If the film is to be stored in the surgery archive, immediately following diagnosis ensure that the film is fixed again for a minimum of 30 seconds and then washed.

15.3 In the evening or after surgery closing

-  **Switch off unit**
-  **Close the water tap**

15.4 Surgery or clinic closures

of more than two weeks:

- Drain of chemicals, see section 16.1.1
- Clean tanks and roller sets thoroughly and leave to dry, see section 16.3,

15.5 Film recommendation list for Dürr Dental Developer XR 24 ...

Intraoral Films

Bath temperature	28 °C
Process time	6 min.
Dryer performance	30%
Film types	
Kodak Ultra Speed	2.2x 3.5 cm 3.1x 4.1 cm 2.7x 5.4 cm 5.7x 7.6 cm
Kodak Insight	2.2x 3.5 cm 3.1x 4.1 cm 2.4x 4.0 cm 2.7x 5.4 cm 5.7x 7.6 cm
Agfa Dentus M2 <small>Comfort</small>	2 x 3 cm 3 x 4 cm 5 x 7 cm

Extraoral Films

Bath temperature	28 °C	
Film formats	to max. 24 x 30 cm	
Film types	Process time	Dryer capacity
Kodak		
T-Mat L/RA	4min	20 %
T-Mat G/RA	4min	20 %
Ektavision L	6min	30 %
Ektavision G	6min	30 %
Agfa		
Dentus Ortholux	4 min	20 %



For other film types check the "Dental Sensitivity Index" and "Dental Contrast Index" for given process times and alter parameters as necessary.

16. Maintenance

Every week

Use a cleaning film

- Once a week before beginning work use a cleaning film, e.g. "Dürr Clear 100".
- Carry out a Constancy Check according to X-ray regulations:

Every month

Change the chemicals, where no regeneration unit (91) is fitted, see section 16.1



This interval is recommended for a daily film usage of 10 intraoral and 3 extraoral films

Every 2 months

Clean tanka and roller sets, see section 16.3
See also the leaflet enclosed with the x-ray film chemicals, Order no. 9000-600-91/01

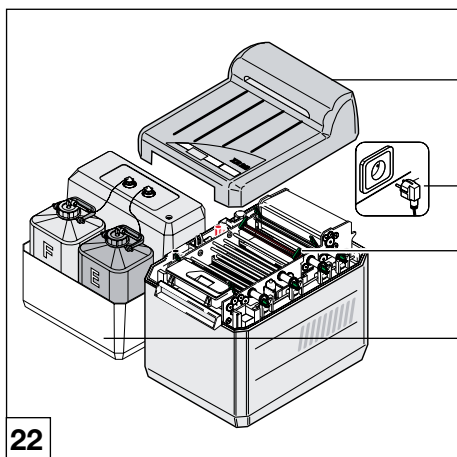
Every 3 months

Change the chemicals, where regeneration unit (91) is fitted, see section 16.1

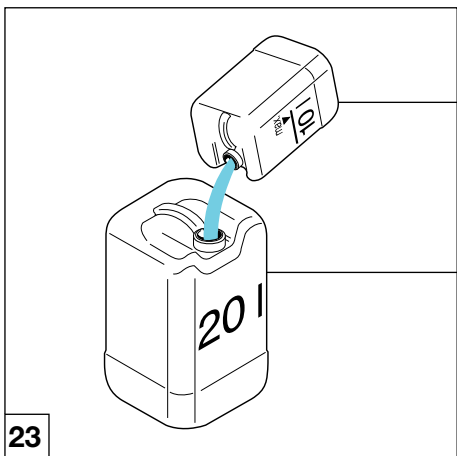
Annually

Check the darkroom for its light sealing quality.

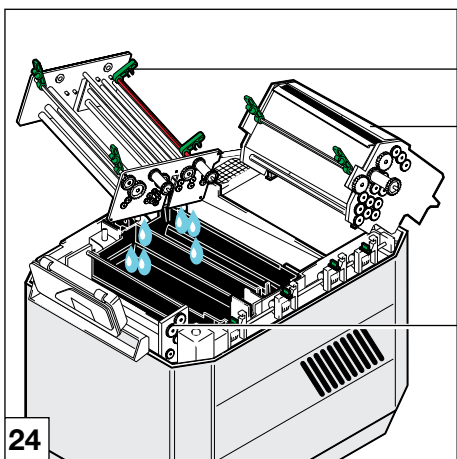
Maintenance intervals	Every week	Every month	Every 2 months	Every 3 months	Annually
Use a cleaning film e.g. Dürr Clear 100	X				
Constancy Check according to x-ray regulations	X				
Change chemicals <ul style="list-style-type: none">• without regeneration unit• with regeneration unit		X		X	
Cleaning <ul style="list-style-type: none">• Developer tank and roller sets			X		
<ul style="list-style-type: none">• Check darkroom• light conditions					X



22



23



24

16.1 Change the chemicals

16.1.1 Drain off the chemicals

- Switch off unit at main switch.
- Unplug (61a) from mains.
- Remove the cover (60).
- Check whether collector vessel (39) is empty, if necessary empty into the large collector canister (63).



It is extremely important that the collector vessels are empty, otherwise there is the danger of fluids overflowing when the chemicals are now drained from the tanks.

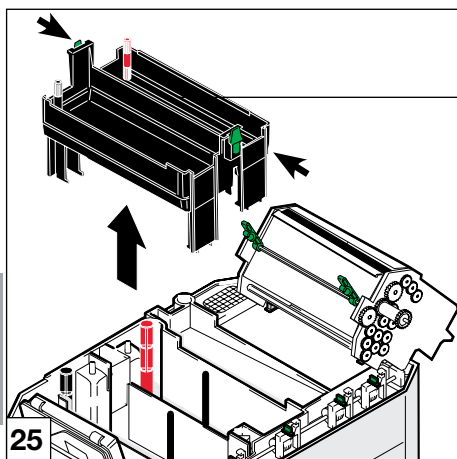
- Remove the two floating covers from the developer and fixer baths, place to one side and allow to dry.
- First unscrew the smaller plug from the lifting bath, then the larger plugs from the tanks.
- Empty collector vessel.
- Undo the cover to collector vessels, let the ends of the hoses hang in a neutral container.



This serves to prevent water from getting into the collector vessel or canister during the cleaning stage.

- Open all green flaps and catches.
- Swing the dryer roller set (8) towards the back.
- Swing the display panel upwards. When using a daylight cover lift the display panel upwards and then lay to one side.
- Extract the roller sets for water (6) and film insertion (3).
- Lift the roller sets developer/fixer (5), tilt to the side and allow the chemicals to drain off.
- Thoroughly rinse the roller sets with the corresponding sponges under running hot water.

EN

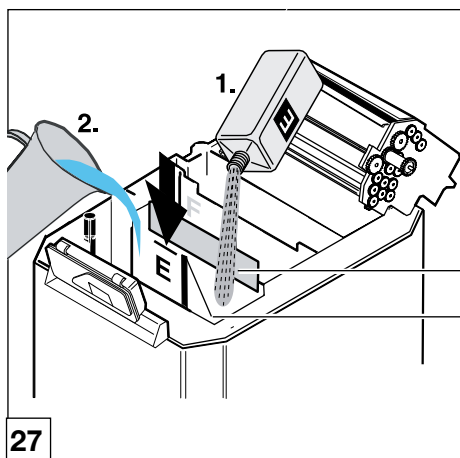
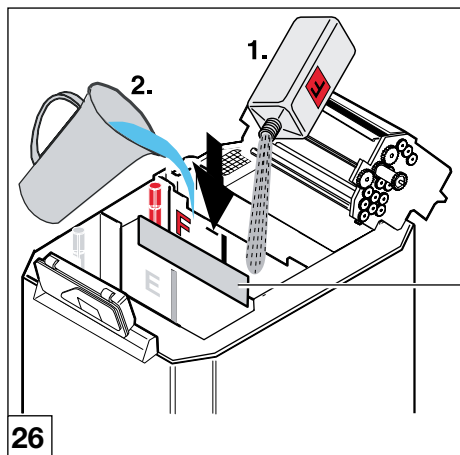


22



For cleaning, use the black sponge for developer areas and the red sponge for fixer areas.

- Clean the lifting bath (22) thoroughly with the corresponding sponges under running hot water (at least 40°C).
- Rinse the tanks with hot water and clean thoroughly with the corresponding sponges.
- Thoroughly rinse the roller sets with the corresponding sponges under running hot water.



16.1.2 " Preparation of chemicals "



The preparation of chemicals described is based on the application of "DÜRR-AUTOMAT XR/C" chemicals, as supplied.

- Screw the large plugs for developer (21) and fixer (18) into the respective tanks (see page 28).
- Connect the developer and fixer hoses again to collector vessel.
- Place the separating panel (52) between developer and fixer tanks in position. This separating barrier prevents mixing of chemicals when refilling.



When replenishing chemicals wear protective gloves and protective glasses.



If any fluid comes into contact with the eyes, rinse thoroughly with water and visit a doctor as soon as possible.



After completion rinse hands thoroughly under running water.

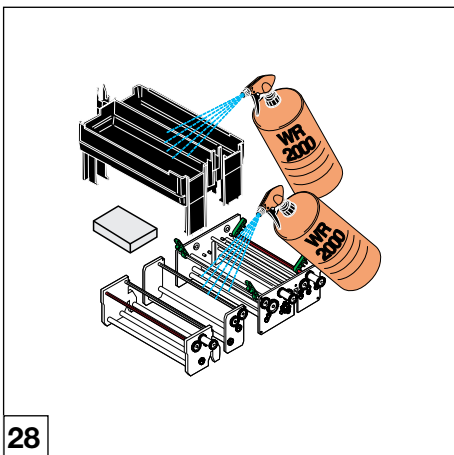
Please also refer to our safety notes which are available on-line: <http://www.duerr.de> or order directly from Dürr Dental.

1. Chemicals for fixer bath (F)

- Cover the developer tank with a cloth or paper towel in order that no splashes lead to mixing of chemicals.
- Pour the fixer concentrate carefully into the fixer tank.
- **Info: 1 bottle of concentrated liquid provides 5 l usable solution**
- Fill the concentrate bottle with water and pour this too into the fixer tank.
- Fill the tank with water (max. 20 °C) up to the upper marking (54).

2. Chemicals for developer bath (D)

- Be sure to remove any splashes that might have occurred from fixer refilling from the empty developer bath!
- Pour the developer concentrate carefully into the developer tank.
- Fill the concentrate bottle with water and pour this too into the fixer tank.
- Fill the tank with water (max. 20 °C) up to the upper marking (54).
- Replace lifting bath and roller set and screw in the plug.

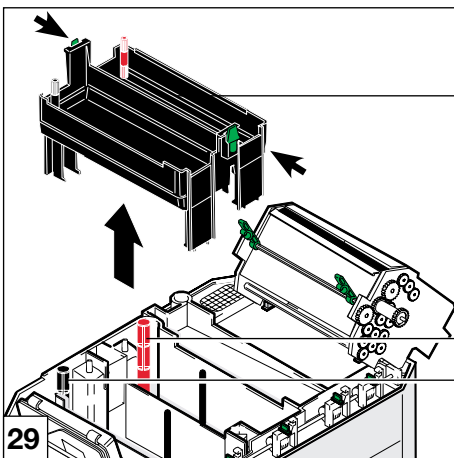


28

16.2 Every 2 months cleaning tanks and roller sets

i The cleaning of tanks and roller sets described is based on the application of "DÜRR-AUTOMAT XR/C" chemicals, as supplied.

- First drain off the chemicals, see section 16.1.1
- Lay the roller set in a wash basin and spray, e.g. with "spray cleaner WR 2000", and leave to work for ca. 10 min.



29

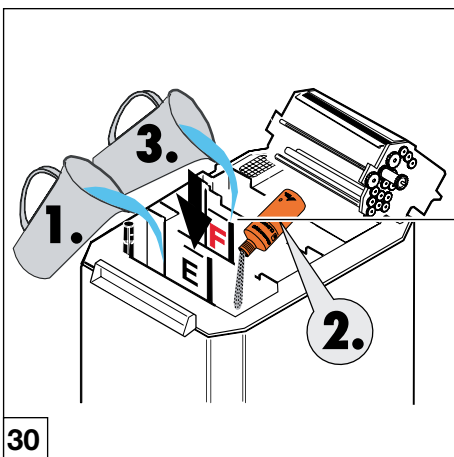
22

i Use the black sponge for developer, the red sponge for fixer areas when cleaning.

18

21

- Press the lever to the side and remove the lifting bath (22).
- Clean the lifting bath (22) thoroughly with the correct sponge under running warm water (min. 40 °C).
- Rinse the tanks with warm water (max. °C) and clean thoroughly with the appropriate sponges.
- Rinse the roller set thoroughly with the correct sponge under running warm water .
- Screw the large plugs (18), (21) back into the tanks.



30

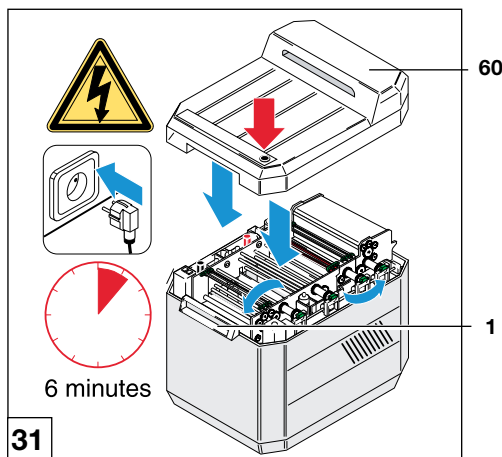
54

i Only the developer tank is cleaned. Chemical cleaning of the fixer tank is not necessary.

1. Fill the developer tank (D) with water (max. 20 °C) up to the upper marking (54).
2. Pour cleaner into the developer tank (D)
3. Fill the fixer tank (F) with water (max. 20 °C) up to the upper marking (54).



Never use Dürr Universal Cleaner when working with "DÜRR-AUTOMAT XR/C" chemicals. If even the smallest amount of Universal Cleaner is left in the developer bath then the chemicals must be prepared again.



- Place lifting bath in position.
- Insert developer and fixer roller sets.



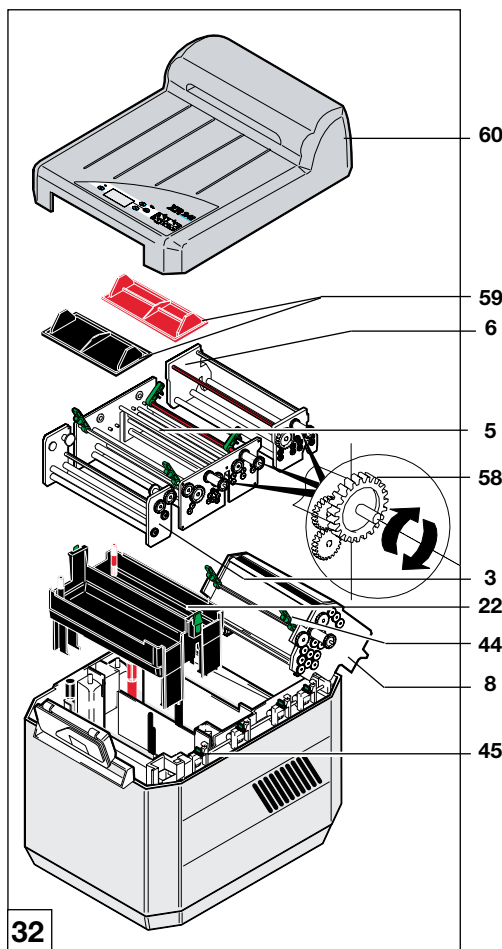
The developer must never be operated without roller sets!

If roller sets are missing then the developer and fixer fluids can come under pressure and be splashed vertically upwards and out of the developer.

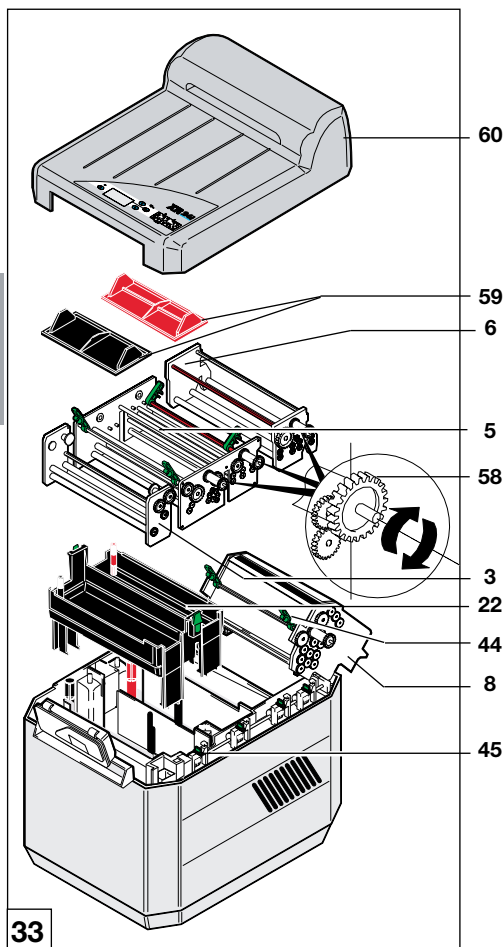
Chemicals irritate eyes and skin and there is the danger of serious eye damage.

Without developer and fixer roller sets there can be no return of chemicals to the appropriate containers.

Danger of chemicals getting into the eyes or of mixing of chemicals.



- Screw in small plugs into the lifting bath.
- Close all green flaps and catches.
- Return the display to its position.
- Replace cover (60).
- Plug in at the mains, press main switch and switch on unit.
- Start unit, e.g. by placing 3x4 film material into the film insertion slot (1) until the film feed flap is activated: leave the film for ca. 4 min in this position.
- Allow the unit to run for ca. 6 minutes (this causes the hoses and the rotatory pump to be cleaned automatically).
- After ca. 6 min switch off by pressing the main switch; unplug at the mains and remove all power.
- Remove the cover (60).
- Swing the display panel upwards.
- Open all green flaps and catches.
- Unscrew the small plugs from the lifting bath.
- Lift, shake loose fluid off and then extract the developer and fixer roller sets.
- Lift out the lifting bath.
- Rinse off the roller sets and lifting bath with water.
- Unscrew the large plugs for developer (21) and fixer (18) tanks and drain off the water.
- Rinse out the developer bath with water.



16.2.1 Replace the roller sets

- Place the lifting bath (22) in position.
- Insert the roller set for the dryer (8) and swing to the rear.
- Place the roller sets for water (6), developer/fixer (5) and then film insertion (3) in place in that order. Note carefully that the guide wheels mesh together correctly. It might be necessary to turn the cogged drive wheel (58) until it falls correctly into the worm screw of the drive shaft.
- Swing the dryer roller set (8) towards the front.
- Close the green catch (44) and locking devices (45).
- Place the floating covers (59) for developer and fixer baths in position.
- Display can now be swung forwards and placed in position.
- Replace cover (60). Note carefully that the lower edge of the cover must be completely engaged into the guide on the housing panels.
- Plug in unit.



Trouble-shooting

17. Tips for Service Technicians


Any repairs above and beyond routine maintenance must be carried out by suitably qualified personnel or one of our service technicians.



Before any trouble shooting, switch off all power.

Problem	Probable cause	Solution
1. Appliance not functioning	<ul style="list-style-type: none">• Power cable not plugged in correctly.• Cover not (correctly) in place.• Power switch released too soon.	<ul style="list-style-type: none">• Plug the power cable into the rear of the machine and into a suitable earthed socket.• Correctly place cover in position.• Press main switch for minimum 2 seconds.
2. Film is too light	<ul style="list-style-type: none">• Developer is empty.• Film exposure time too short on image device.• Temperature of the developer too low.	<ul style="list-style-type: none">• Change chemicals (section 16.1).• Set correct exposure times on the image device (where required).• Call Service Technician to check and adjust if necessary.
3. Film is too dark	<ul style="list-style-type: none">• Film exposure time too long on image device.• Temperature of the developer too high.	<ul style="list-style-type: none">• Set correct exposure times on the image device (where required).• Call Service Technician to check and adjust if necessary.
4. Yellow/green fog on the film	<ul style="list-style-type: none">• Film not fixed sufficiently.• Film developed under program ENDO (with process time 3:15).• Coarse filter blocked.• Suction connection not waterproof.	<ul style="list-style-type: none">• Check whether fixer is still fresh: agitate an intraoral film for ca. 40 s in fixer. If the film becomes transparent then the fixer is in order. If the fog effect remains, change the chemicals (see section 16.1 ff).• Select program with longer process time. Observe the film processing times (see list of recommended films section 15.7).• Coarse filter at intake nozzle needs cleaning.• Check the suction lines and connections for leaks and correct as necessary.
5. Dark foggy streaks on film	<ul style="list-style-type: none">• Cover of daylight operating hood open.• Light falling into the darkroom, e.g. through keyhole.• Darkroom lighting incorrectly installed or angled.	<ul style="list-style-type: none">• When working with orthochromatic (green sensitive) films, ensure that the cover is closed, otherwise the film will be pre-exposed.• Check that the dark room is completely light proof, blackout if necessary.• Lamps must be directed away from work area (indirect light only).
6. Brownish fog on film	<ul style="list-style-type: none">• Chemicals exhausted	<ul style="list-style-type: none">• Mix new chemicals

EN

Problem	Probable cause	Solution
7. Severe fogging of film	<ul style="list-style-type: none"> Films overlap Films incorrectly stored Temperature of the developer too high caused by excessive room temperature 	<ul style="list-style-type: none"> Check the use-by date Observe all instructions concerning storage conditions, use-by-dates, or other manufacturer's instructions on the film packaging. <div>  <p>Do not store film material in the vicinity of the imaging device. Stray light or radiation can cause pre-exposure of the film. If necessary, it is possible to set up a separating wall or barrier using lead protection.</p> </div> <ul style="list-style-type: none"> Reduce room temperature

17.1 Fault message on display panel with audible signal

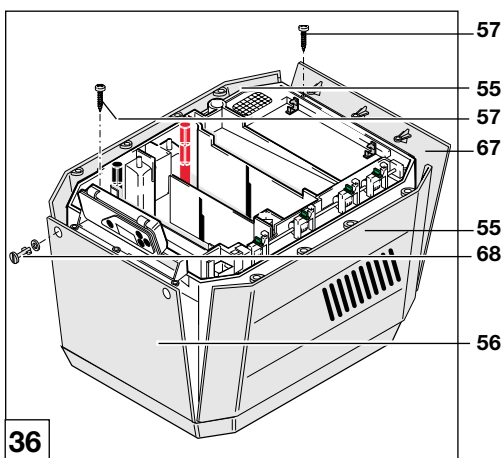
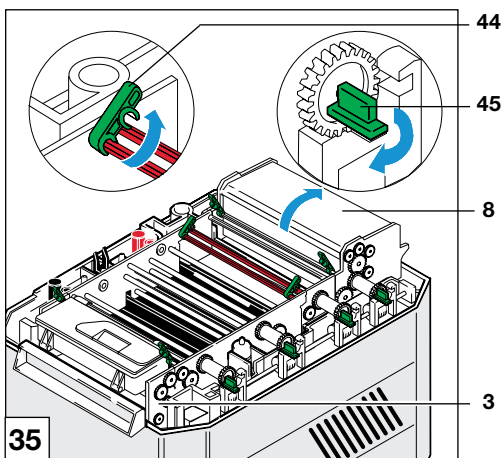
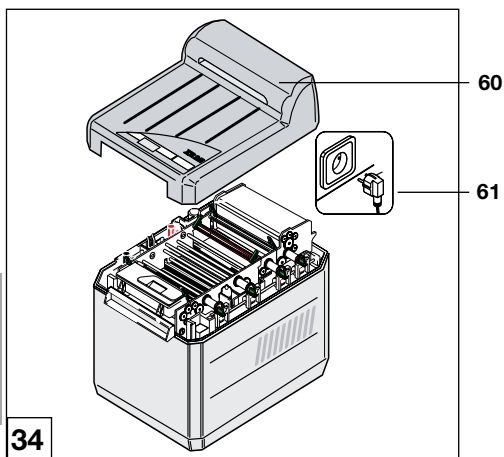
Display reading	further message follows ...	Possible cause	Solution
BEFORE OPENING SWITCH OFF AT MAINS	At beginning and/or during the developer process	Safety relay on PCB (main board) is defect	Call service technician for maintenance. Machine can still be operated. Before opening unplug at the mains and remove all power!
SERVICE INTERVAL REACHED!	After switching on the unit	Service interval has been reached.	Call service technician for maintenance. Machine can still be operated.
ERROR WATER TOO LOW!	After insertion of film and with a delay of approx.35s	The water inflow to water bath has been interrupted	Check that water tap is open and/or inflow hose is connected.
ERROR WATER TOO HIGH!	At beginning and/or during the developer process	<ul style="list-style-type: none"> Waste water drainage blocked, badly laid down or not vented Electrical short circuit caused by lime scale on level indicator sensors. 	Remove blockage or check whether waste water drainage hose is correctly laid (water pockets build up). Work can only continue when fault has been rectified.
ERROR ROLLER DRIVE	At beginning and/or during the developer process	RPM-signal from motor interrupted, or cable or connector is defect	Call service technician for maintenance. Problem during film development: film is transported for only the shortest of process times (3:15min). ! Not enough fixer !

18. Tips for Service Technicians

see also 18. Tips for Trouble-shooting

Problem	Probable cause	Solution
1. Appliance not functioning	<ul style="list-style-type: none"> • Mains fuse is defect • Appliance fuse is defect 	<ul style="list-style-type: none"> • Check fusing, change if necessary • Check fusing, change if necessary (see section 19.8)
2. No supply of fresh water	<ul style="list-style-type: none"> • Water tap is blocked or defect • Water intake blocked • Lime scale on fill level sensors (electr. bridging) 	<ul style="list-style-type: none"> • Check water valves, change if necessary (see section 19.10) • Clean the fine filter or coarse filter in water hose • Clean the fill level sensors (see section 19.12)
3. Temperature of the developer not correct	<ul style="list-style-type: none"> • Process heater is defect • Air in the system, rotary pump not vented. (Where unit filled with water or chemicals at ca. 20 °C the unit starts up without pre-heating.) 	<ul style="list-style-type: none"> • Replace process heater and PTC-sensor (see section 19.9) • Vent the rotary pump by repeatedly starting the unit. Press main switch ON / OFF...
4. Film too light	<ul style="list-style-type: none"> • Developer temperature set too low 	<ul style="list-style-type: none"> • Check the process heater and PTC-sensor, if necessary replace (see section 19.9) • Measure the temperature enter in Service Menu "CALIBRATION?"
5. Film too dark	<ul style="list-style-type: none"> • Developer temperature too high or process heater is defect 	<ul style="list-style-type: none"> • Check the process heater and PTC-sensor, if necessary replace (see section 19.9) • Measure the temperature enter in Service Menu "CALIBRATION?"
6. Yellow/green fog on the film	<ul style="list-style-type: none"> • No chemicals in developer/fixer roller set (level of bath is too low) • No agitation of chemicals 	<ul style="list-style-type: none"> • Check the seal on lip and roller set and change if necessary • Check the circulation pump, there may be air in the hose
7. Green-brown fog on film	<ul style="list-style-type: none"> • Film not wet 	<ul style="list-style-type: none"> • Level-sensor in water bath has switched off water valve – check the water drainage and clean and lay correctly if necessary (see 9.2) • Further alternatives, see Solutions under section 18, 2. "No fresh water supply"
8. Film not completely dry	<ul style="list-style-type: none"> • Dryer setting incorrect • Ventilation fan defective • Heating defective 	<ul style="list-style-type: none"> • Set dryer performance according to list of recommended films (see section 15.7) • Change ventilation fan • Change temperature control fuse

Fault message on display panel with audible signal, see 17.1



19. Tips for Troubleshooting

19.1 Before starting

- **ⓘ Switch off unit at mains switch**
- Unplug (61a).
- Remove the cover (60).
- Remove the housing-panels as required for working.

19.2 Remove front panel

- Swing the display panel upwards.
- Open the green catch (44) and locking devices (3).
- Lift the film insert roller set (3) out.
- Undo the two grey rapid release catches (68) from the front panel (56).
- Undo the 3 cross-headed screws (57) and remove the front panel (56).

19.3 Remove rear panel

- Open the green catches (44) and locking devices (45) of the dryer roller (8) set.
- Extract the roller set for the dryer (8) and swing to the rear.
- Undo the 3 cross-headed screws (57) and remove the rear panel (67).

19.4 Remove side panels

- Remove front (56) and rear panels (67), lift the side panels (55) upwards to remove.

19.5 After completing work

- Replace the housing panels correctly.

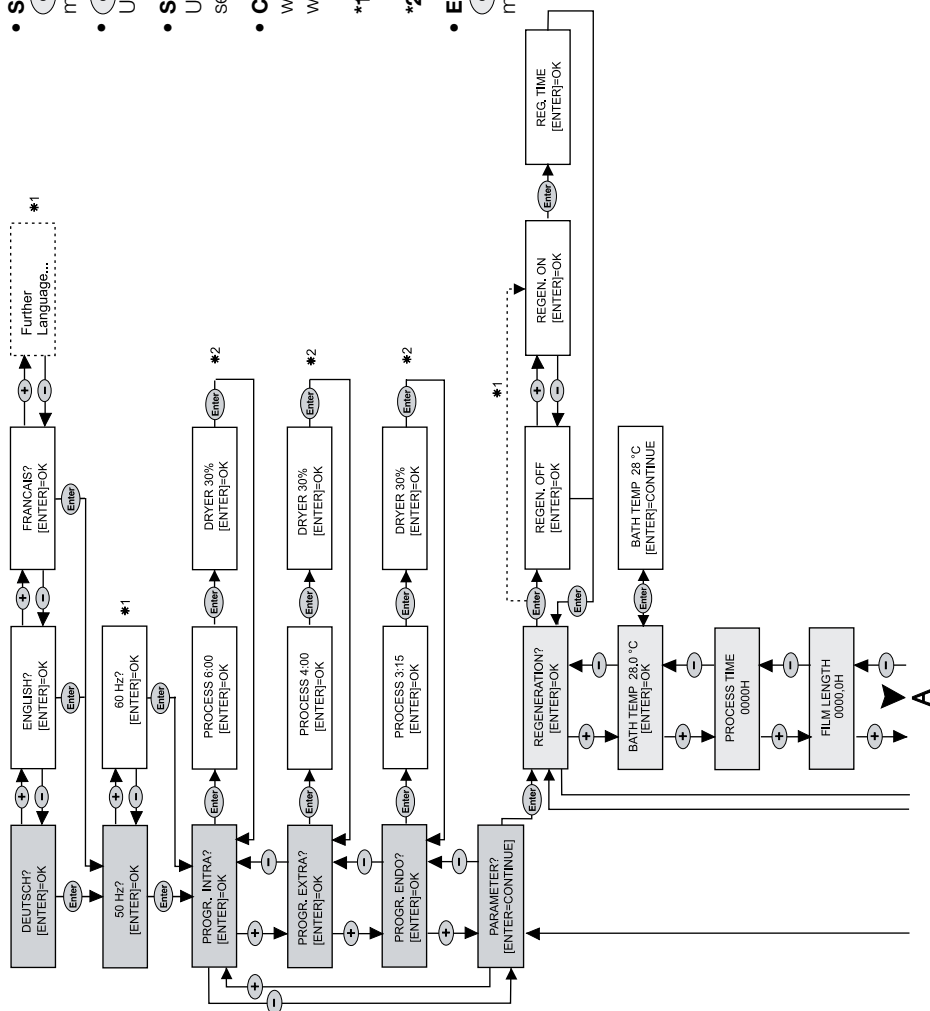


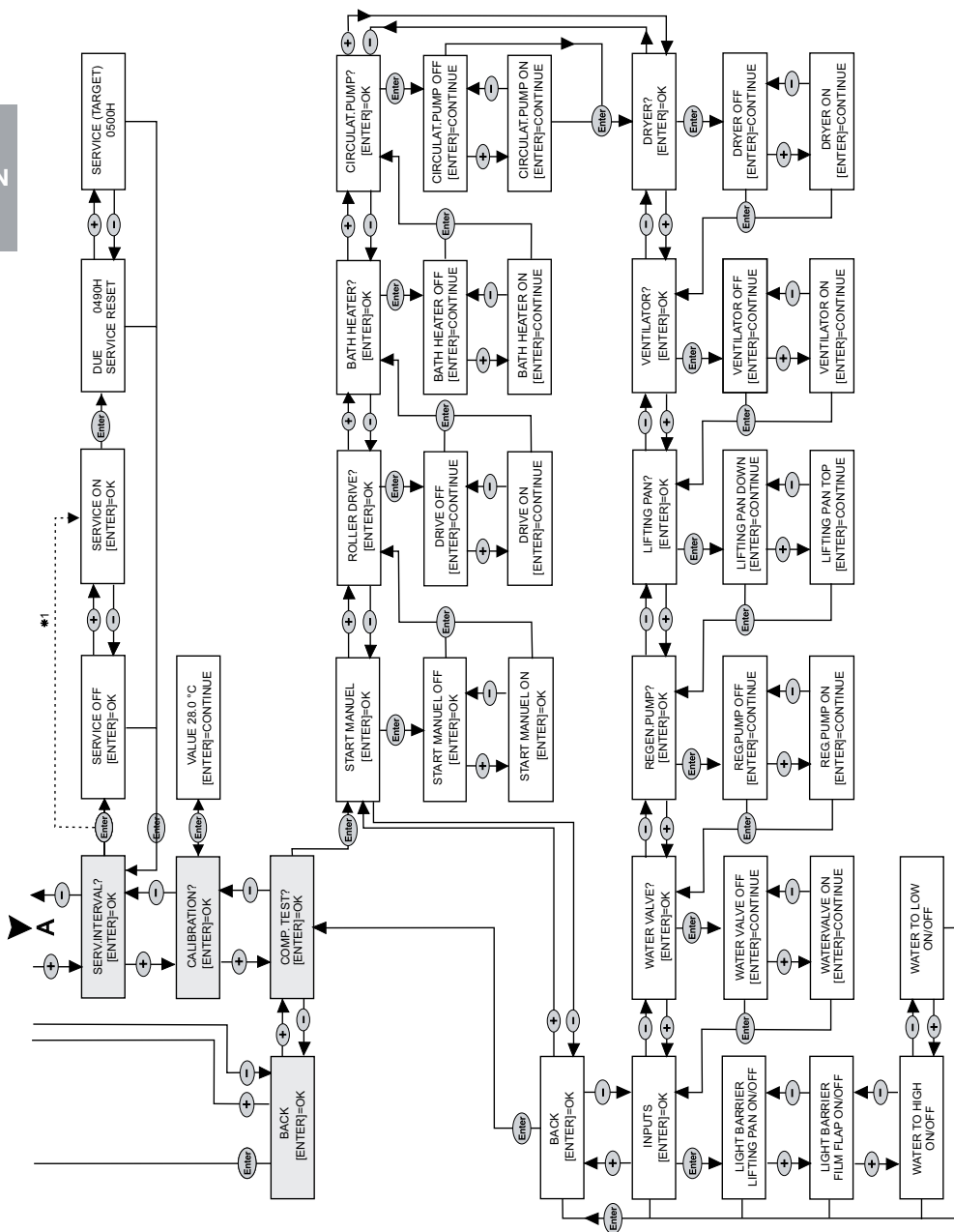
Never operate the unit without correctly inserted and secured housing including panels! The unit is connected to voltage supply - danger of electrical shock.

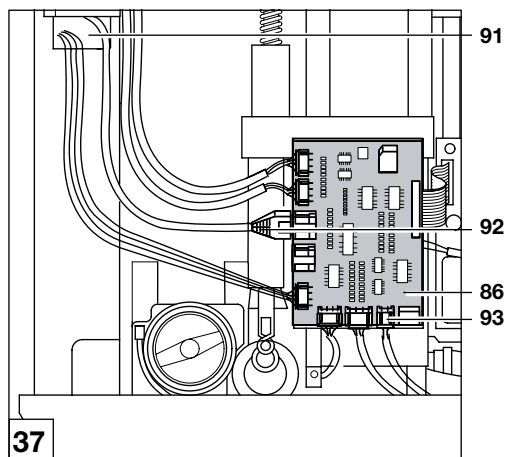
- Replace the cover (60), plug in unit.

19.6 Service mode plan

- **Start Service mode**
 ① Switch off unit at power switch (press min. 2 secs)
- ① + **Enter** **simultaneously press** (min. 4 s)
 Unit now in Service mode
- **Select service function**
 Use key **+** and **-** Service Function to select
- **Change settings**
 with **+** or **-** changes parameter values
 with **Enter** 1s, confirm new values
- *1 Set language, frequency or value first appears on restart
- *2 Factory settings
- **End Service mode**
 ① Switch off unit at power switch (press min. 2 secs)

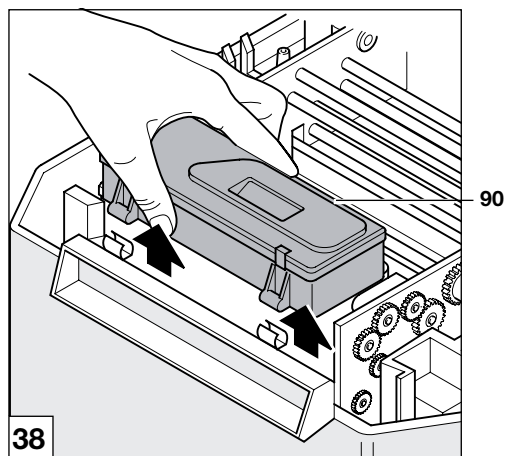




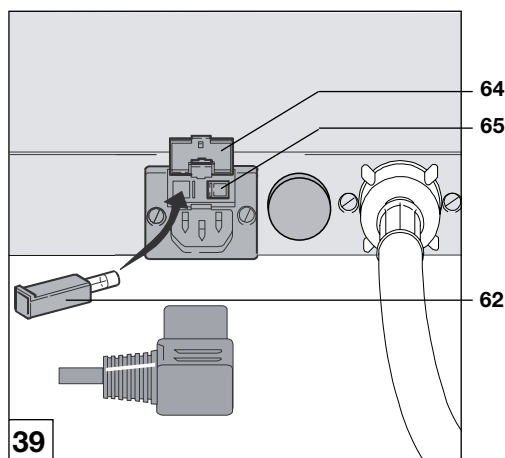


19.7 Changing display

- Pull the connector of the display cable (92) from the PCB (main board) (86) and draw through opening (91).

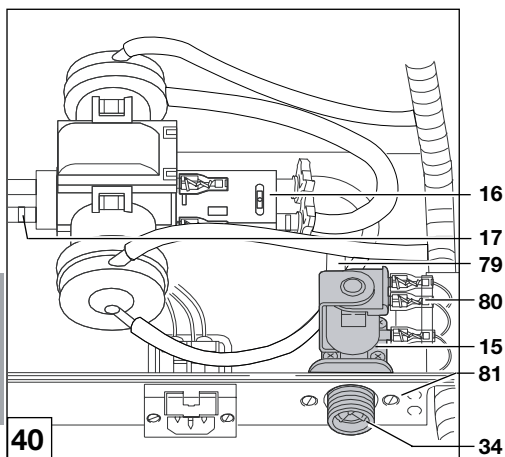


- Swing the display (90) upwards and remove.
- Install the new display in reverse order.



19.8 Check unit fusing

- Open the flap (64) to the rear of the appliance by applying light pressure with a screwdriver.
- Press the spring retainer together and extract the fuse cartridge (65).
- Check fuse, change if necessary. Order no. see section 4.1 Special accessories.



19.9 Changing the process heater and PTC-sensor

- Remove all covers and panels.
- Drain off chemicals, see section 16.1.1
- Pull the connector (93, fig. 43) from PCB (main board) (86).
- Unscrew the screw on rotatory pump mounting and lift pump.
- Remove both connectors from the rotatory pump and the connector to process heater (16).
- Remove process heater from its mounting and uncouple hoses.
- Install the new process heater correctly.
- Attach all connectors to rotatory pump and process heater.
- Attach the connector (93, fig. 43) onto PCB (main board) (86).
- Replace the housing panels correctly.

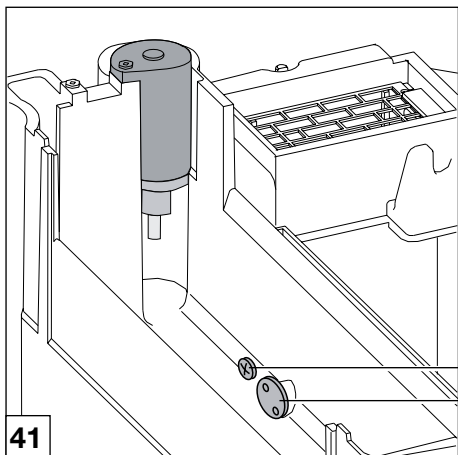
19.10 Check water intake valve

- When the water intake valve is not switched on:
- Start the Service mode (see section 19.6), select menu point "Individual Test" and then "Water Intake Valve".
- If the valve does not switch on despite electrical voltage being present then the complete valve (15) should be replaced, see section 19.11 "Replacing water intake valve".

19.11 Replacing water intake valve

First check the water intake valve, see section 19.10 above, replace if defective.

- Close the water tap.
- Carefully remove the water hose from the water inflow connection (34) of the unit.
- Pull the connecting cable (80) from the valve.
- Pull the inner water hose (79) carefully from the valve from behind.
- Undo the screws (81) next to the water inflow and replace the complete valve unit.



19.12 Cleaning fluid level indicator sensor "Water"

- Close the water tap.
 - Remove the cover.
 - Open the green flaps and catches.
 - Swing the dryer roller set towards the back.
 - Remove roller set for water.
 - Clean the fluid level indicator sensors (82)+(83), to prevent lime scale build up forming a bridge.
 - To check function, the unit must be started up without the water roller set in place.
 - Simulate the insertion of a film, the display should have message "WATER TOO LOW".
 - Now build a bridge between both level indicator sensors (82)+(83); the message "WATER TOO HIGH" appears, the sensors are now free. Cleaning is completed.
- In the event of any deviation, see Troubleshooting, section 17.1

19.13 Changing light barrier sensors

**Use the light barrier spare parts kit
Order no. 1700-993-00.**

A description is provided with the spare parts kit.

DÜRR DENTAL SE
Höfigheimer Str. 17
74321 Bietigheim-Bissingen
Germany
Fon: +49 7142 705-0
www.duerrdental.com
info@duerrdental.com

