

**Flex Integral
FC and FCV
User's manual**
YA-878, vers. 4.00

List of versions

List of versions for YA-878				
Reason	Pages to be replaced	New version	Date	Initials
FC/V	all	3.00	1996-07-13	
Correction	page 20	3.01	1997-02-18	
Correction	page 22 and 23	3.02	1997-04-10	
Correction	page 3	3.03	1997-12-01	
Integral /5 new software	all	4.00	1999-01-01	

1. Guide

Dear Flex user!

This manual relates to both the Flex Integral /QF and the Flex Integral /5 Units.

The manual describes the working of the units.

If you have installed instruments other than those which are described in this manual please refer to the manuals supplied with those instruments regarding use, maintenance, repairs and technical data.

Please read chapter 2 "General" in this manual before commencing your work. Thereafter use the manual as your reference book.

The manual focuses on how the equipment works.

See our Ergonomics Report for optimum methods of working.

Our "Clinical Design Guide" will tell you more about optimum surgery design.

We hope you enjoy working with your new equipment.

Yours faithfully
Flex Dental A/S



The following equipment is CE-marked in compliance with the „COUNCIL DIRECTIVE 93/42/ECC of Fourteen June 1993 CONCERNING MEDICAL DEVICES“:

Flex Integral FC and FCV unit
Flex operating lamp
Flex Integral patient chair II

The equipment complies with the requirements in the following standards:

DS/EN 9001
DS/EN 46001
EN 60601-1-2
DS/En 1640

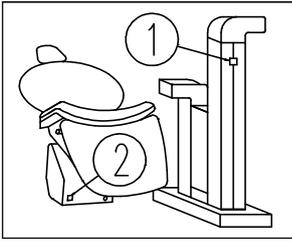
Contents

List of versions for YA-878	2
1. Guide	3
Contents	4
2. General	6
2.1 Audio signals	6
2.2 Terminology	6
3. Use	7
Foot control	7
FCV unit with screen	7
3.1 Basic functions	8
Suction	8
Cuspidor flush	8
Assistant call	8
Operating lamp	8
Stop watch	8
..... Alarm	8
..... Patient chair II	8
Cup filler	9
VarioFlex operator's stool	9
Amalgam separator	9
3.2 Instruments	10
Flex Integral /QF	10
..... Flex Integral /5	10
Function	10
Syringe	10
Motor	10
Surgery plant	11
Turbine	12
Ultrasonic scaler type Odontoson	13
Composite Curing lamp	14
Fibre optic probe	14
4. Hygiene and care	15
Hygiene routines and cleansing	15
Suction - HygiFlex Vac - HygiFlex Vac Ultra	15
Cuspidor and cup filler	16
Syringe	16
QuickFlex coupling	17
Motor MC3	17
Flex Integral Turbine type B and P	17
Turbines of other makes	17
Ultrasonic scaler type Odontoson	17
Ultrasonic scaler of other makes	17
Flex Integral Composite Curing lamp	18
Composite Curing lamp of other makes	18
Fibre optic probe	18
Instrument pad	18
Operating lamp	18
Surfaces	18
HygiFlex Thermo - Spray ducts	18
Amalgam separator	19

Contents

5. FC programming/adjustment	20
Patient chair II	20
Motor	20
Turbine	20
Composite Curing lamp	20
Time and date (FCV)	21
Alarm	21
Delete function	21
Extra	21
6. Maintenance and repairs	22
Operating lamp	22
Patient chair II	22
QuickFlex coupling	22
Motor MC3	22
Flex Integral Turbine typ B and P	22
Ultrasonic scaler type Odontoson	23
Flex Integral Composite Curing lamp	23
7. Technical data	24
8. Spare parts, etc.	25
9. Guarantee conditions	28
10. Your feedback	29

2. General



Switch on the equipment pressing (1).

The chair can be switched off separately pressing (2).

When the mains are switched on, a green button in the switch lights.

The unit gives 3 beeps when it is operational and the chair gives 2 beeps.

When the unit is in use, water and air must always be connected. This is essential for the unit's function, especially in connection with the Combi-Separator.

2.1 Audio signals

The unit gives different types of audio signals:

- 1) Operational signal: 1-3 high-pitched notes (beep), meaning ready or understood.
- 2) Operational error signal: Low note given in the case of operational or technical error.
- 3) Warning signal: Alternation between high and low notes. May mean overheating. If the signal does not stop when the equipment has cooled, call your service technician.

2.2 Terminology

Automatic double chip blow:

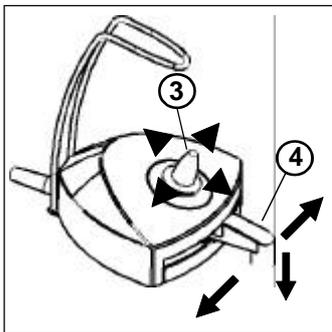
Chip blow: An air spray with max. air pressure, controlled with your foot.

Spray chip: Activation of spray water (the instrument is not active) followed by a chip blow.

The following section gives a description of how the equipment functions when leaving the factory. See chapter 5 (FC programming/adjustment) for the numerous possibilities of changing functions.

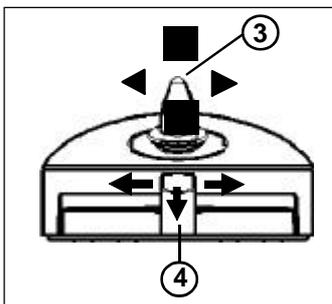
The equipment is operated with the foot control and, if mounted, with guidance from a screen.

3. Use



Foot control

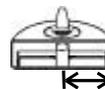
The foot pedal (4) controls many functions including the instruments on the unit. The pedal can be moved in three directions



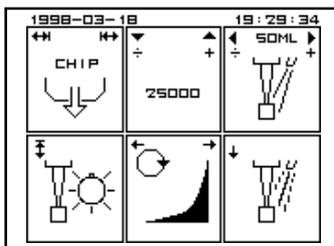
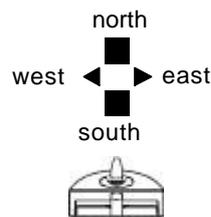
The control distinguishes between normal activation for example



and a brief activation of the pedal



Using the joystick you can regulate, for example, the amount of water spray to the motor. The joystick can be moved in four directions

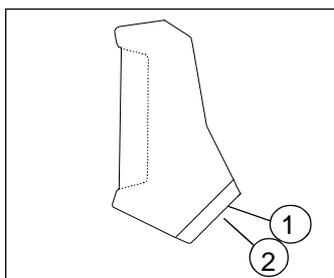


FVC unit with screen

The screen gives you easy directions,

- * when all the instruments are in situ and you wish to start an alarm
- * when one instrument is in use and for example, you wish to adjust the maximum speed

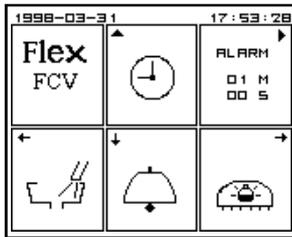
The small arrows in the top corner of the screen squares tell you in which direction to move the foot control pedal and disk.



Adjust light (1) and contrast (2) at the bottom rear of the screen with the trimming pins or a 2 mm Allen key by sticking it into the holes and turn.

To avoid early wear the screen enters a standby position automatically (the display disappears) when there has been no activity for a certain time.

3. Use



3.1 Basic functions

When all instruments are in position, you can control the basic functions in two different ways:

- * Direct operation stated under 1)
- * Foot contact stated under 2)

Suction

Activate the suction by taking a tube out of its holder.

Note! Pull out the suction hose holder when working without an assistant.

Cuspidor

Start/stop the cuspidor flush for 30 seconds by

- 1) awaiting automatic activation when the chair reaches its zero position or when the cup is lifted from the cup filler.

or 2)  (all instruments in position).

The amount of water can be altered by your service technician.

Assistant call

Call your assistant by  (all instruments in position).

Connect door opener, bell or the like.

Operating lamp

Switch the operating lamp on/off by

 or  (all instruments in position).

Note! The lamp switches on automatically when the chair is moved into a programme position. When the chair moves into zero position, the lamp switches off.

Alternate between the 3 light intensities by 

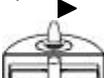
When switching on the lamp, it lights with the intensity last used.

Stopwatch (only FCV units with screen)

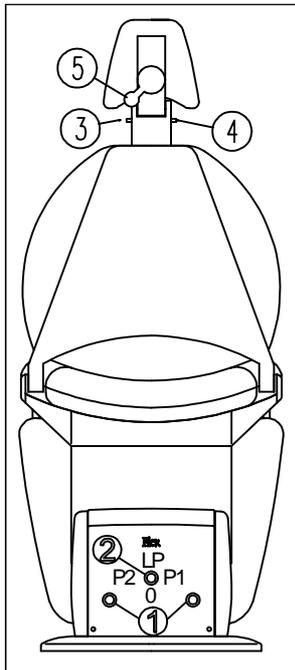
The stopwatch activates this way 

At the second activation the watch stops and at the third activation the main menu returns.

Alarm (only FCV units with screen)

The alarm is activated this way 

See chapter 5 for alarm installation.



Patient chair II

Select a programme position by

- 1) activating pedal (2) on the chair
 - upwards = last position
 - right = working position I
 - left = working position II
 - downwards = zero position

If armrests are mounted, one armrest can be lifted and turned 90 degrees to ease entering and leaving of the chair.

Emergency! Stop a programme movement by touching one of the chair switches or the foot control disk. If the chair-back collides with e.g. your leg, it automatically stops any movement and lifts itself approx. 5 cm.

Adjust height and chair inclination by activating pedal (1) on the chair in the four directions. (The pedal placement depends on the chair being right or left-handed).

It is not possible to operate the chair while HygiFlex Thermo is connected.

The headrest can easily be pulled out. To push it back, press lock button (3) or (4) home.

To adjust the headrest inclination, loosen the lock (5).

Cup Filler

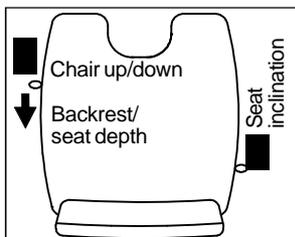
The cup filler functions automatically.

If a hot water tank is connected to the unit, the cup filler water will be temperate.

First place the cup in the holder after the unit has been turned on.

Use only cups of semitransparent plastic or glass.

Exposure to electrical light from an angle or sunlight can cause interference in the automatics. Remove the light or choose to control the cup filler by pedal.



VarioFlex operator's stool

Operate the chair by pulling the two handles up and down.

Amalgam separator

As an accessory the unit can be fitted with a Dürr Amalgam separator.

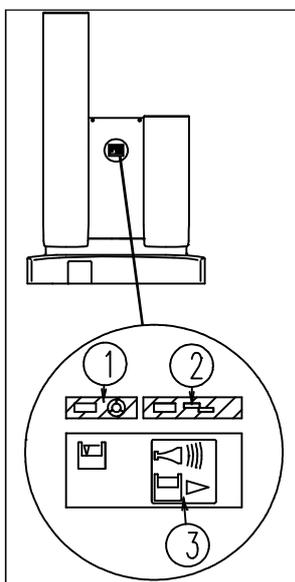
The present level of waste content in the amalgam receptacle is only measured when the unit is switched on, i.e. switch on the unit every morning even if it has not been switched off the previous evening.

During normal operation the green section lights (1).

When the receptacle is 95% full, the orange section lights (2), the yellow section lights (3) and an alarm signal is heard.

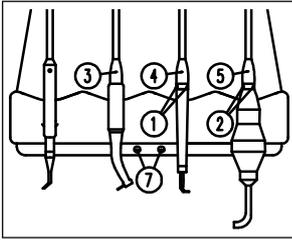
Switch off the alarm using (3) if you do not want to change the receptacle now. The yellow section will continue to remind you that the receptacle needs changing soon.

When the receptacle is 100% full, the alarm can no longer be suspended. The receptacle must be changed.



3. Use

3.2 Instruments



Flex Integral /QF

Instruments with Quick-Flex coupling are disconnected by pressing the two lock buttons (1) and (2). Connect an instrument by pressing it straight over the pointed end of the coupling.

The QuickFlex coupling must be dry when an instrument is connected.

You can either connect a QuickFlex coupling or a motor with Flex 4+4 coupling or instruments of other make on the instrument suspensions (3), (4) and (5) (unless the unit has fixed motors).

Flex Integral /5

The instruments on the Flex Integral /5 are fixed. Fixed instruments can be change by a service engineer.

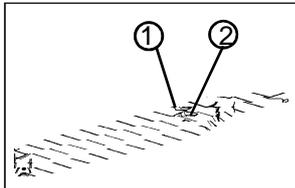
Function

The foot control activates the first instrument taken off the suspension (not the syringe).

All adjustments are memorized until you re-adjust.

The adjustments of motors and turbines are memorized individually for each suspension.

Do not activate the foot control pedal while changing an instrument unless the foot control is presently controlling another instrument.

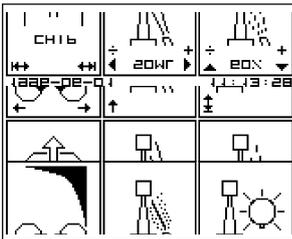


Syringe

The left button supplies air (1) and the right button water (2).

As an optional extra the syringe can be supplied with a heating element. A green light glows when the element is on.

It is possible to alternate between cold and warm water and air by rotating a switch on the connector.



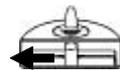
Motor

Take the motor off the suspension.

- 2) Activate the motor with the pedal of the foot control



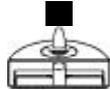
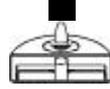
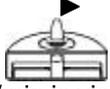
(motor rotates **clockwise**)



(motor rotates **anticlockwise**, indicated by a beep).

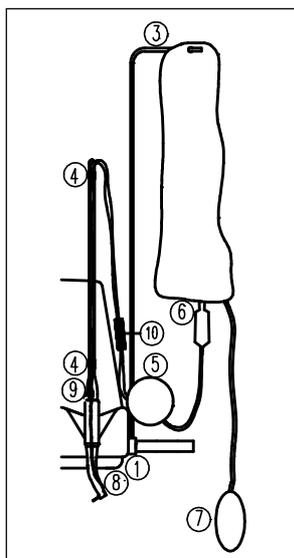
Select one of the spray combinations by keeping the pedal pressed down until the desired combination is shown on the light emitting diodes on the instrument bridge, see (7) on figure. (Green = water, yellow = air). Four combinations are possible (spray, air, water, nothing).

An automatic double chip blow follows after use with water.

- Activate one chip blow  (briefly)
- Increase the maximum rotation speed this way  (FCV: the speed is visible on the screen)
- Reduce the maximum rotation speed this way  (FCV: the speed is visible on the screen)
- Increase the amount of water spray this way  (FCV: the actual amount of water spray in ml/min is visible on the screen)
- Reduce the amount of water spray this way 

Refer to chapter 5 for programming the air jet volume.

The unit can be programmed so that brief downward activation of the pedal turns the fibre light on/off, and a brief pedal activation on the left produces a chip spray commencing with water spray and finishing with air.



Surgery plant

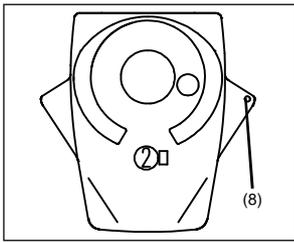
As an accessory the unit can be fitted with a surgery plant making it possible to spray with sterilized salt water when the motor rotates. The normal spray cooling and chip blow functions are automatically disconnected.

Mounting and activating

- A) Mount the frame on the right (or left) side handle on the bridge (1).
- B) Connect the cable to the socket under the bridge (2).
- C) Place the salt water bag in the rubber sleeve and hang it on the frame (3).
- D) Put a clip on both ends of the motor tube (where it feels hard) and mount the thick tube onto the clips (4).
- E) Draw the piston back while placing the soft part of the tube in the groove (5).
- F) Connect the tube to the bag (6) and pump the rubber sleeve up (7).
- G) Take the surgery motor.
- H) Press the P-button under the instrument bridge (8)
- I) 
- J) Put the motor back.

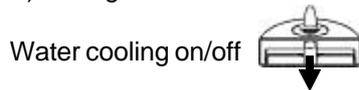
The yellow light-emitting diode on the instrument bridge (7) flashes to indicate the surgery position.

3. Use



Arranging for sterile operation

- K) Fit sterilized motor cover, instrument pad, and hand- and angle piece.
- L) Connect the thin tube to the external duct of the angle piece (8).
- M) Connect the thin and the thick tube (9).
- N) Regulate the water flow at (10).



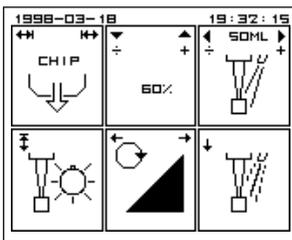
The green light-emitting diode on the instrument bridge indicates when salt water is connected.

Change to normal motor function by repeating items G-J.

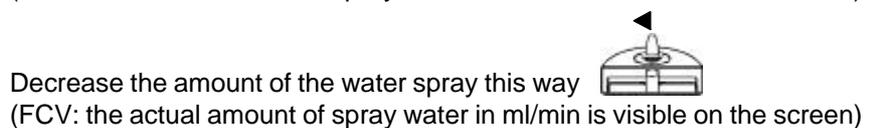
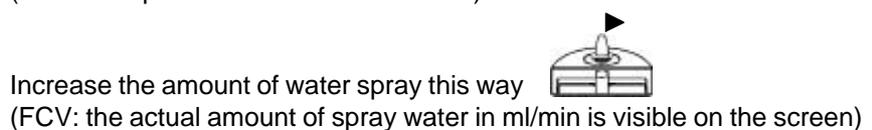
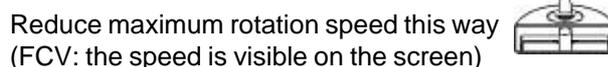
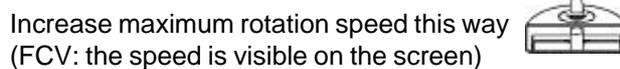
Turbine

Take the turbine and activate the foot control pedal

Choose a spray combination by keeping the foot control pedal pressed down until the desired combination is shown on the light-emitting diodes of the instrument bridge. Green = water, yellow = air. Two combinations are possible (spray, nothing).



Use of water is automatically followed by a double chip blow.

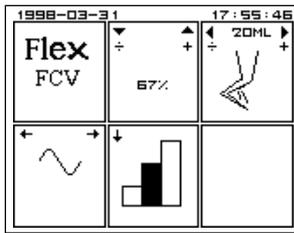


Refer to chapter 5 for programming the volume of air.

The unit can be programmed so that brief downward activation of the pedal turns the fiber light on/off and a brief pedal activation to the left produce a chip spray.

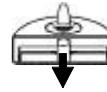
Note!

- The turbine must not rotate without a burr.
- Use only burrs and diamonds with a diameter of 1.59 - 1.6 mm and a maximum length of 26 mm.
- The burr must not be mounted on the turbine when out of use for a longer period of time.



Ultrasonic scaler type Odontoson

Take the scaler. Choose power level



Keep the pedal pressed down till the desired power level is shown on the light-emitting diodes of the instrument bridge (FCV: refer to the screen for power levels).

- No diode on = minimum
- One diode on = medium
- Both diodes on = maximum

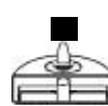
Activate the scaler this way



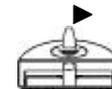
Increase the power level this way



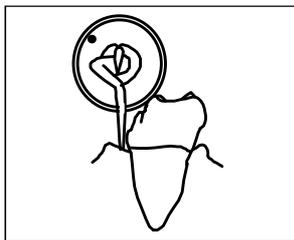
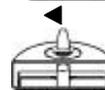
Reduce the power level this way



Increase the amount of water coolant this way



Reduce the amount of water coolant this way



Use:

Trace the instrument tip parallel to the tooth and use only the side of the tip. Work using as low a power level and contact pressure as possible.

Only use the tip on teeth. Avoid contact with ceramics and gold.

Always use small brushing movements.

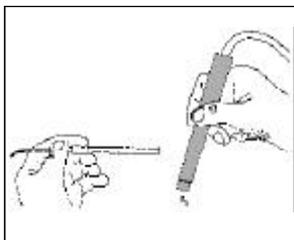
When using Thin line instruments with especially thin tips, Flex Dental recommend working with max. 50% of the maximum power level.

Always use as large a water flow as practically possible to avoid unnecessary wear of the instrument.

Always empty the hand piece for any water before applying a new instrument.

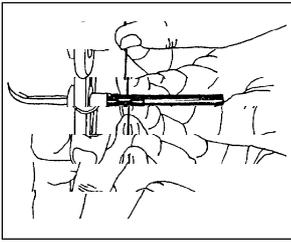
Wipe off any drops of water before applying an instrument.

Be careful not to expose the instrument to any bumps.



Be careful that the tip of the scaler does not come into contact with the patient's soft parts (lips, tongue, etc.) as the tip may be warm. If necessary use a mirror to hold the lips aside or apply a lip protector (see chapter 8).

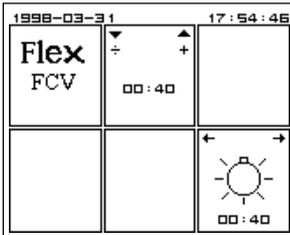
3. Use



Always make sure that the following parts are tightly secured:

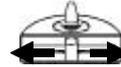
- 1) The black ferrite rod on instruments. (Use special tongue and pin - see figure).
- 2) Files in ENDO-instrument. (Carefully use special key).
- 3) Plastic hut on CEM-instrument. (Use your fingers and tighten hard).

See list of type Odontoson scalers in chapter 8.



Composite Curing lamp

Take the composite curing lamp and activate this way



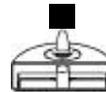
It is then on for 40 seconds.

A beep is heard from the unit at start, mid way and at the end.

Prolong the exposure by 20 seconds by activating the pedal



Prolong the exposure by 5 seconds this way



Shorten the exposure by 5 seconds this way



Never look directly or indirectly into the intense halogen light!

Fibre optic probe

The fibre optic probe switches on when lifted off the instrument bridge.
Avoid activating the foot control to the side.

4. Hygiene and care

In the morning	After each patient	Evenings after the last patient
1 Rinse the spray ducts.	Rinse the suction with clean water.	Rinse the suction with Flex Vac Clean/Orotol Ultra.
2 Insert gold trap and suction filters.	Clean the equipment when necessary.	Remove the suction filters and gold trap.
3 Disinfect the equipment.	Disinfect the equipment.	Cleanse the equipment and treat with Flex Make Up.
4 Mount sterile accessories and prepare sterile instruments.	Mount sterile accessories and prepare sterile instruments.	Mount HygiFlex Thermo accessories.
5 Place a new plastic cup.	Place a new plastic cup.	Cleanse, disinfect and sterilize loose parts.

Hygiene routines and cleansing

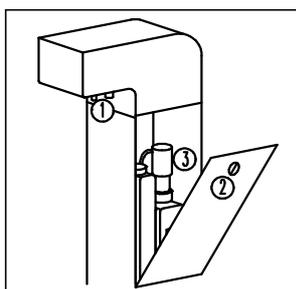
Before closing for holidays or longer periods where the equipment is not used, the motors and QuickFlex couplings must be removed by unscrewing from the suspensions and then cleansed and dried.

When referring to a thermo disinfectant in the text, it is a thermo disinfectant for surgical use, operating at a temperature of 90° C. Only thermo disinfect the parts that have been specifically approved for thermo disinfection, as mentioned in the manual.

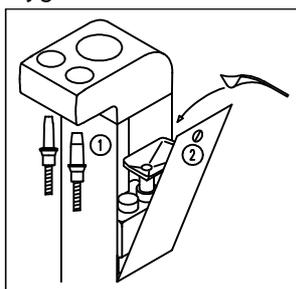
When referring to disinfection in the text, use isopropyl alcohol solution or surgical spirits denaturalized with isopropyl alcohol, or disinfectant Dürr FD-320.

Disinfectants containing acid, phenols, halogens or sulpho compounds may cause damage to the equipment surfaces.

When referring to autoclaving, it is an autoclave which operates using steam at max. 135° C and 2.2 bar. Only autoclave parts that have been specifically approved for such treatment, as mentioned in the manual. Frequent autoclaving may reduce the instrument life time.



HygiFlex Vac



HygiFlex Vac Ultra

Suction - HygiFlex Vac - HygiFlex Vac Ultra

The HygiFlex Vac system rinses the suction using either clean water or a dilution of Flex Vac Clean/Orotol Ultra and water. (Cannot be used at the same time as HygiFlex Thermo.)

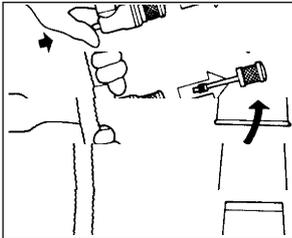
If the unit is not fitted with HygiFlex Vac or HygiFlex Vac Ultra, the tubes are rinsed using a separate tank.

- 1) Remove the covers on the 2 suction hose nipples.
- 2) Connect the tubes to the 2 connectors (1) and pull slightly downwards to activate the HygiFlex-mode.
- 3) Open door (2).
- 4) **HygiFlex Vac:** Pump 2 portions of Flex Vac Clean into the mixing tank at (3). (When the bottle with Flex Vac Clean is empty, unscrew the pump and use it on the new bottle).
HygiFlex Vac Ultra: Load one spoonful of Orotol Ultra into the funnel behind the door. If necessary, tap lightly on the funnel to ensure that all the powder reaches the container.

4. Hygiene and care

- 5) Start the process by pressing the P-button under the instrument bridge.

The processes last approx. 5 and 5 3/4 min. respectively (the screen clock counts down). The unit will beep when beginning (once) and again when ready for use (3 times). If you want to flush with clean water in between two patients, omit adding disinfectant. **Never interrupt the HygiFlex process!**



Afterwards

- 1) Disconnect the tubes from the unit and press the filters out.
- 2) Wash the filters, filter holders, covers and nipples in a thermo disinfectant. Autoclave covers and nipples.
- 3) Lubricate the O-rings on the filter holders using Flex silicone grease before inserting clean filters.

Replace the suction tubes at least every 3 months.

For HygiFlex Vac never use other disinfectants than Flex Vac Clean. For

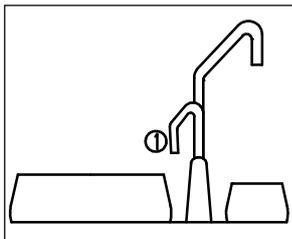
Filters and tubes contain mercury that must be handled in a responsible manner.

HygiFlex Vac Ultra never use other disinfectants than Dürr Orotol Ultra or Dürr Orotol.

Flex Vac Clean and Orotol Ultra are aggressive.

Any waste must be removed immediately. Remove Flex Vac Clean with a cloth. Remove Orotol Ultra e.g. using the suction.

Wear gloves and goggles! Read the warning on the container!



Cuspidor and cup filler

- 1) Remove the gold trap and rinse it.
- 2) Turn the flushing pipe (1) to a side and remove the bowls for cleaning (not in a thermo disinfectant).
- 3) Lubricate the O-rings using Flex silicone grease before placing the bowls again.

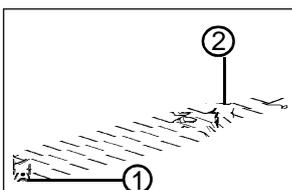
Note!

- Avoid using abrasive cleaners for the bowls!
- The contained material may contain mercury that must be handled in a responsible manner.

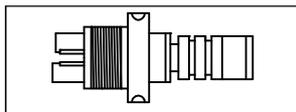
Syringe

The syringe jacket can be autoclaved at max 121°C . Press the lock button (1) and slide off the jacket.

Remove the tip of the cover by loosening the union (2).



4. Hygiene and care

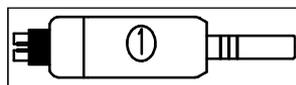


QuickFlex coupling

The QuickFlex couplings **must not be autoclaved** but only surface disinfected.

Lubricate the couplings when required using Lubrimed grease (also used for the turbine).

Do not lubricate the O-rings with Silicone grease!



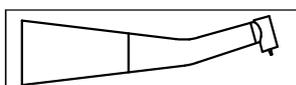
Motor MC3

The motor jacket (1) can easily be removed for autoclaving.

Do not pull the tube!

The motor itself must only be surface disinfected.

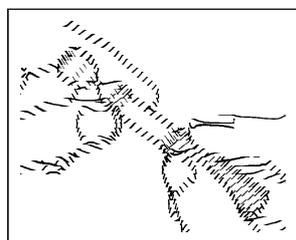
Lubricate the O-rings with Lubrimed grease.



Flex Integral turbine type B and P

The turbine is supplied with a nozzle cleaner and grease gun.

- 1) Cleanse the exterior of the tube using a toothbrush dipped in disinfectant.
- 2) Cleanse the spray ducts using the nozzle cleaner and then blow-dry them with the syringe.
- 3) Wrench the grease gun until the grease is visible at the tip.
- 4) Insert the tip in the burr aperture and wrench the grease gun a half-turn.
- 5) Insert the burr in the turbine and activate the turbine without spray for approx. 10 sec.
- 6) Remove the burr and remove excess grease.

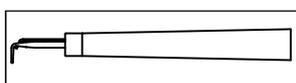


The completely dry turbine and grease gun can be autoclaved. After the autoclaving remove the turbine from the autoclave immediately.

Lubricate the turbine at least twice a day and **before and after each autoclaving**.

Turbines of other makes

See separate handbook.



Ultrasonic scaler type Odontoson

Cleanse the scaler exteriorly using a toothbrush dipped in disinfectant.

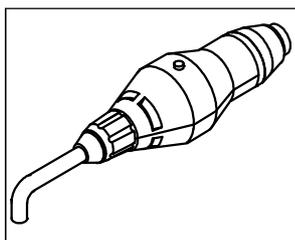
The completely dry scaler can be autoclaved. Take the instrument off the handle and protect it with the sterilization cap before autoclaving.

Sterilize the handle at a temperature of up to 134° C and the instrument at up to 134° C.

Ultrasonic scalers of other makes

See separate handbook.

4. Hygiene and care



Flex Integral Composite Curing lamp

The composite curing lamp is exteriorly cleansed using a cloth dampened with disinfectant. Remaining composite material is removed immediately using surgical spirits.

Autoclave the completely dry light probe. After autoclaving remove the light probe from the autoclave immediately.

Composite Curing lamps of other makes

See separate handbook.

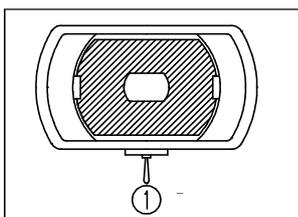
Fibre optic probe

Cleanse the fibre optic probe exteriorly using a cloth dampened with disinfectant.

Autoclave the completely dry fibre optic probe. After autoclaving remove the fibre optic probe from the autoclave immediately.

Instrument pad

Cleanse the instrument pad of the instrument bridge in a thermo disinfectant and then autoclave it. Remove grease residue, etc. using benzene.



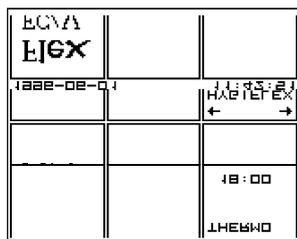
Operating lamp

Cleanse the operating lamp parabola using alcohol. Cleanse the transparent cover using an antistatic detergent.

Surfaces

Cleanse the surfaces of the equipment using soap suds of either soft soap or soap flakes.

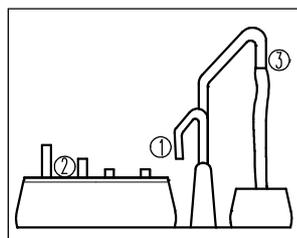
Treat lacquered surfaces with Flex Make Up. Cleanse rubber parts using benzene. Disinfect surfaces using a cloth.



HygiFlex Thermo - Spray ducts

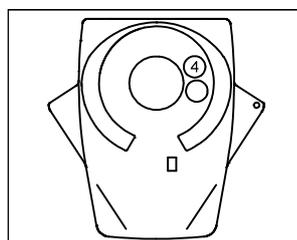
The HygiFlex Thermo system secures that the bacteria content in the unit water system is kept at an acceptable level. (Cannot be used together with the HygiFlex Vac.)

Note! If the unit has not been fitted with HygiFlex Thermo, rinse the spray ducts in the morning by activating the spray.



Night rinse

- 1) Turn the cuspidor flushing pipe (1) to the side and place the instrument holder with the intermediate couplings (2) in the bowl.
- 2) Connect the extension tube to the cup filler tap (3).
- 3) Remove instruments, contra-angles, and motor, and syringe jackets.
- 4) Position all suspensions vertically for the screen to enter the HygiFlex-mode. Lock the suspensions using the lock button (4) under the instrument bridge.
- 5) Connect the suspensions to the instrument holder.



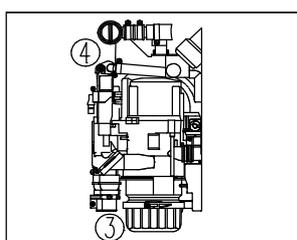
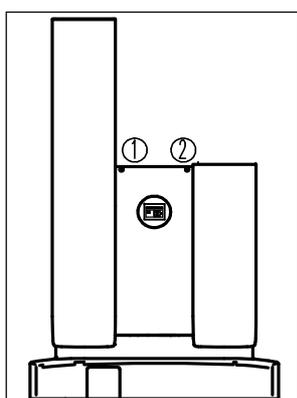
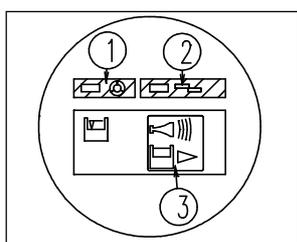
The unit rinses using cold water for approx. 5 min. with 3 hours interval. (The unit must be switched on. The air compressor and water supply must be connected). Return to normal position by repeating the procedure in reverse.

Flex Integral FC and FCV, user's manual, 1999-01-01

4. Hygiene and care

day	rinse
Monday	warm
Tuesday	cold
Wednesday	cold
Thursday	warm
Friday	cold

Example



Morning rinse

On such units it is possible to provide a 18 minute flush through the system

(FCV: the count down is visible on the screen)



During the process the two light-emitting diodes on the instrument bridge flash. When starting one beep is heard. When ending 3 beeps are heard.

To spare the equipment the water is only 90° C every third time, or if more than 35 hours have passed since last rinse.

Amalgam separator

Cleansing the cuspidor drain

- 1) Activate section 3 on the separator display while the suction is on.
- 2) Activate the cuspidor flush.
- 3) Release the button when all the water has passed through.

Replacement of the receptacle

The amalgam receptacle must be changed every 6 - 9 months.

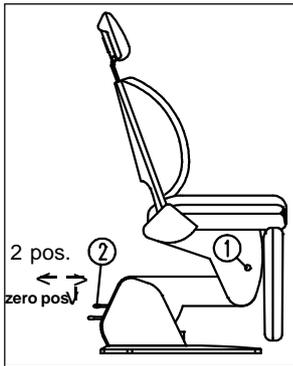
- 1) Switch the unit off, loosen the 2 lock screws (1) and (2) with a coin, widen the cover a little at the top, and remove it.
- 2) Unscrew the lid on the new receptacle.
- 3) Put protective gloves on and change the receptacle (3).
- 4) Change the coarse filter (4) and put the old filter in the filled receptacle.
- 5) Pour the disinfectant supplied with the new receptacle into the filled receptacle and close it so the markings on the lid and on the receptacle meet.

If the receptacle is fitted incorrectly, an alarm may occur with the orange section flashing and the audio alarm signal active.

Remember to order a new receptacle.

NB! Amalgam waste is environmental waste and must be properly discarded in accordance with the demands of the authorities.

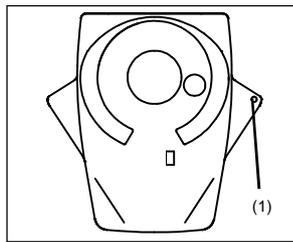
5. FC programming/adjustment



Patient chair II

You can programme 2 positions and the zero position.

- 1) Set the chair to the position wanted for programming.
- 2) Press the programming button (P-button) on the chair continuously while moving the position selector (2). Await a beep for correct programming. Release the P-button and position selector.



Motor

1. Take the motor and press the P-button (1) once.
- 2a. Choose speed principle by moving the joystick on the foot control



- 2b. Turn all chip functions on/off by moving the joystick on the foot control

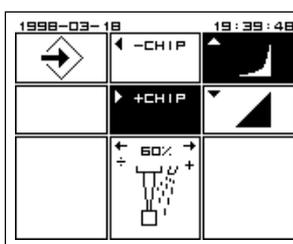


The choice of speed principle and chip functions for motors are individually made for each suspension.

- 2c. Increase or decrease the air pressure by moving the pedal



3. Replace the motor.



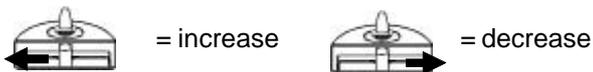
Turbine

1. Take the turbine and press the P-button once.
- 2a. Turn all chip functions on/off by moving the joystick on the foot control



- 2b. The choice of chip functions is individually made for each turbine suspension.

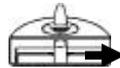
Increase or decrease the air pressure by moving the pedal

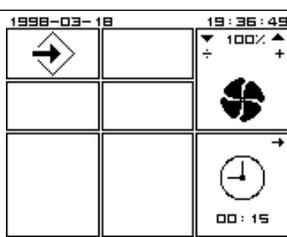
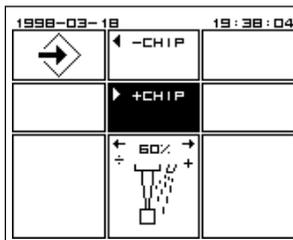


3. Replace the turbine.

Composite Curing lamp

1. Take the composite lamp and press the P-button (1) once.

- 2a. Adjust the duration of exposure 



5. FC programming/adjustment

- 2b. Adjust the cooling air flow by moving the joystick on the foot control



3. Replace the composite curing lamp.

The air stream is set at maximum at the factory.

The choice of duration of the curing lamp exposure and of the flow of cooling air is identical on all suspensions.

1998 03 18	ALARM 10 M 00 S	19 41

Time and date (FCV)

1. When all instruments are in position, press the P-button (1) once.

- 2a. Choose year, month or day Adjust

- 2b. Choose time or minutes Adjust

3. Push the P-button once.

Alarm

1. Push the P-button once when all instruments are in situ

2. Choose minutes or seconds Adjust

3. Push the P-button once.

Delete function

When pressing the P-button (1) while switching the unit on, you replace all your personal programming with the original values.

Extra

The following functions can be programmed/adjusted by a service technician:

Extra functions

- * Spray chip by moving the foot control pedal shortly to the left.
- * Pedal controlled cup filler. (Only FCV: with the joystick facing west. Only FC: short push to the right).
- * A short activation of the pedal downwards switches the fibre optic light on/off.

Removable functions

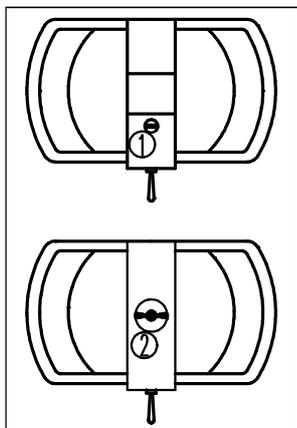
- * Auto chip blow
- * Pedal controlled chip blow, time delay between the activation of the foot control and the activation of the instrument.
- * FC: Pedal foot control of operating lamp
- * Patient chair control of operating lamp and cuspidor flush
- * Automatic cup filler (see above)
- * Water heating

Changeable/Adjustable functions

- * Cup filler and cuspidor bowl water flow
- * Syringe air and water flow

6. Maintenance and repairs

Here we describe minor repairs that you may want to do yourself.

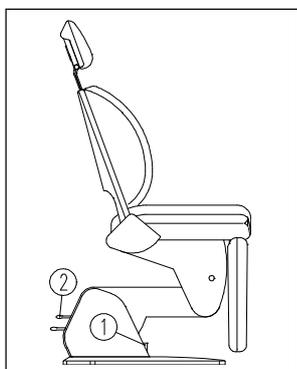


Operating lamp

Bulb

Do not touch the bulb or the reflector with unprotected fingers. Use gloves or a cloth.

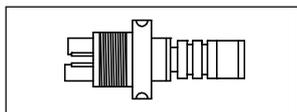
- 1) Switch the lamp off.
- 2) Loosen the cover screw (1) and remove the cover.
- 3) Press the spring (2), turn anti-clockwise and remove it.
- 4) Pull the bulb incl. wire out and replace it.



Patient chair II

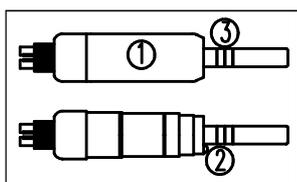
If the chair gives a constant beeping sound, it has to be synchronized.

- 1) Switch the chair mains off (1).
- 2) Switch the chair mains on while pressing the position selector (2). When you let go of the buttons, the chair will first be set in zero position and then move to semi-reclined position. Finally, the chair confirms the synchronization with 3 beeps.



QuickFlex coupling

In case of leaks between the QuickFlex coupling and the instrument, change the three O-rings.



Motor MC3

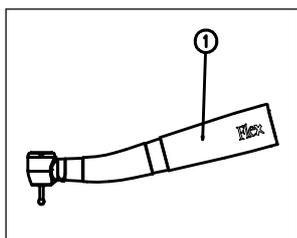
Fibre optic bulb

Motors with INTRA-coupling have built-in halogen bulbs. Do not touch the bulb with unprotected fingers. Use gloves or a cloth.

- 1) Pull the motor jacket (1) off.
- 2) Change the bulb (2)

O-rings

In case of leaks between the motor and the angle piece, change the 3 O-rings (3) on the connection tube.



Flex Integral turbine type B and P

Fibre optic bulb

Do not touch the bulb with unprotected fingers. Use gloves or a cloth.

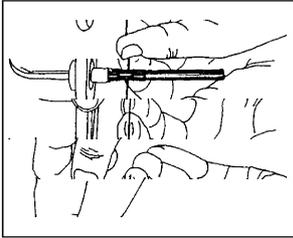
- 1) Unscrew the rear part (1) from the turbine.
- 2) Change the bulb

6. Maintenance and repairs

Ultrasonic scaler type Odontoson

Hand piece

The black ferrite rod may break in the hand piece if it is exposed to impacts. In such cases it is important to remove the broken ferrite pieces.



Replacement of ferrite rod

If the oscillations are not transmitted properly to the instrument, it may be caused by a worn or broken ferrite rod.

- 1) Hold the instrument with the tongs.
- 2) Stick the pin through the small hole close to the ferrite rod.
- 3) Unscrew the ferrite rod and replace it with a new one.
Tighten properly.

Empty the hand piece for water before applying an instrument.
Check that there are no broken ferrite pieces in the hand piece.

Note! Regular control of the ferrite rod is recommended - it must be tightened carefully.

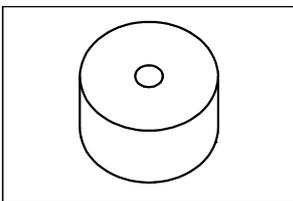
Life span expectancy of the instrument

As the instrument tip wears the effectiveness drops. Change the tip when this happens.

Several factors determine the life span (number of patients per day, type of deposit, amount of coolant used etc.)

The average life of an instrument tip is estimated at 3-4 months in normal working circumstances.

Note! The form and shape of the instrument tips are vital for their function and longevity. Therefore one must not bend, polish or in any other way change the shape of the tips.



Flex Integral Composite Curing lamp

Curing test

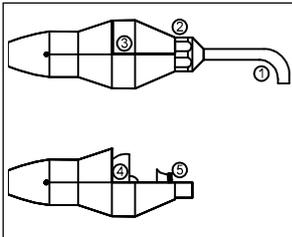
With the supplied tester you can measure the curing ability of the lamp using different plastics.

- 1) Put the tester on a white piece of paper with the small opening downwards, fill it with plastic and cover the plastic with a matrix.
- 2) Place the tip of the light probe in close contact with the matrix and expose the sample for 40 seconds.
- 3) After 5 minutes the plastic is pushed out of the mould. Remove the soft material. Measure the Polymerization depth using a slide gauge.

6. Maintenance and repairs

Test the curing ability of the composite lamp regularly to avoid slow deterioration.

If the curing ability is reduced, it may be due to the bulb losing its power, the light filter being dirty, or the light-emitting diode being damaged.



Bulb

Do not touch the bulb or reflector with unprotected fingers. Use gloves or a cloth.

- 1) Remove the composite curing lamp from the unit and pull the light-emitting diode (1) from the handpiece.
- 2) Unscrew the bolt (2) and remove the cover (3).
- 3) Release the reflector and bulb (4) by pressing down and outward.
- 4) Hold the printed circuit board and pull the reflector off. Insert the new reflector.
- 5) Fasten the reflector behind the cams. Assemble the lamp and mount it on a suspension.
- 6) Hold the tip of the light-emitting diode against a thick layer of paper and activate the composite curing lamp.
- 7) If the powerful light is not concentrated in the middle of the field, adjust the position of the bulb.

Light filter

Open the lamp as described above and remove the filter (5). Cleanse the lamp with a dry cloth. When you assemble the lamp again, make sure that the reflecting surface of the filter faces the bulb.

7. Technical data

Flex Integral /QF or /5

Rated voltage: 220-230 VAC +/- 10%, 50 Hz.
Rated power: 2,200 VA
Size of group fuse: 10 A
Water pressure: Min. 2.5 bar, max. 5 bar
Air pressure: Min. 5.5 bar, max. 6 bar
Compressed air consumption: 40 l/min (5 bar)
Indoor temperature: 15°C - 35°C
Weight: Max. 90 kg (incl. operating lamp)
Max. load on instrument bridge: 5 kg

Flex Integral chair II

Max. outer measures: Height 152 cm, length 182 cm, width 62 cm
Max. movement: vertical 40 cm, horizontal 90 cm
Weight: 105 kg
Max. lifting capacity: 135 kg

Flex operating lamp

Light intensity: 22,000, 15,000 and 8,000 Lux

Flex Integral motor MC3

Speed: 100 - 40,000 r.p.m.
Speed control principle: non-linear or linear
Torque: max. 1.5 N cm (contra-angle 1:1)
Max. absorbed power: 55 W

Flex Integral turbine, type B and P

Speed:
turbine type B 240,000 - 295,000 r.p.m. (unloaded)
turbine type P 270,000 - 420,000 r.p.m. (unloaded)
Speed control principle: linear or one step

Flex Integral scaler type Odontoson

Frequency: 42 kHz
Power control principle: three steps
Max. absorbed power: 10 W

Flex Integral Composite Curing lamp

Wavelength: 400 - 500 nm
Max. absorbed power: 25 W
Polymerization time: 15-60 sec.

Dürr amalgam separator

Total capacity: max. 5 l/min

8. Spare parts, etc.

This chapter contains a list of tools, lubrication and service agents, spare parts and accessories that can be purchased. Parts that are supplied with the equipment are marked with an asterisk (*)

Tools	Order No.
Fork spanner 13/22 mm	MC-453
Fork spanner 13 mm	MC-500
Allen key 3 mm	YA-050
Allen key 4 mm	YA-004
Fork wrench for headrest	SD-388
Turbine nozzle cleaner *	SC-973
Trimming pin set for screen with backlight, 2 pce.*	AE-308
Lubrication	
Tube Flex silicone grease	YR-002
Grease gun turbine *	SA-051
Lubrimed grease for grease gun turbine, 6 cartridges	SD-318
O-rings	
QuickFlex coupling *	SC-740
Coupling piece on motor *	SA-024
Bulbs	
Flex Integral turbine	HE-005
Flex Integral motor with INTRA-coupling	HE-005
Flex Integral composite curing lamp	WH-004
Flex Integral operating lamp	WH-001
Consumer goods	
Large suction tube without nipple or filter cartridge	AC-279
Small suction tube without nipple and filter cartridge	AC-280
6 filters for suction	SD-400
12 bottles of Flex Vac Clean (12 months supply)	YR-035
Gold trap	SD-401
Flex Make up for treatment of lacquered surfaces	YR-001
50 tube sets for surgery plants	BA-061
8 x 1/1 litre sterile salt water	BA-062
Amalgam separator Dürr	UC-664
Accessories/ spare parts	
4 handles for instrument bridge/ surgical lamp	SD-399
Instrument pad	AC-543
Outer sleeve (complete) for Flex 3- and 6-function spray.....	SD-510
Flex syringe tip	SD-214
Flex Integral motor jacket (ISO)	SD-216
Flex Integral motor jacket (INTRA)	SD-276
Scaler tip	SD-217
Composite curing lamp tester	UC-665
Standard fibre optic diode, 8 mm, 70°, for Flex Integral composite curing lamp	SD-220
Alternative fibre optic diode, 8 mm, 90°, for Flex Integral composite curing lamp	SD-221
Alternative fibre optic diode, 13 mm, 70°, for Flex Integral composite curing lamp	SD-222
Protective looking glasses used with the composite curing lamp	SD-223
Protective shield for composite curing lamp	SD-205
Jacket for large suction	MC-188
Jacket for small suction	MC-190
Adaptor pieces (Ø 11-7 mm)	MC-263

8. Spare parts, etc.

Tips and tools for Ultrasonic scaler type Odontoson:



Standard, straight For removal of supra and subgingival tartar labially and lingually on incisors. Also used for removal of discoloured plaque.



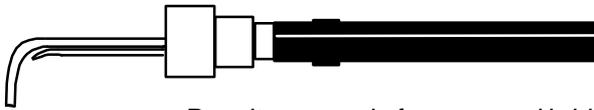
Standard, right For removal of supra and subgingival tartar especially in 1st and 3rd quadrant.



Standard, left For removal of supra and subgingival tartar especially in 2nd and 4th quadrant.



Perio Removes subgingival tartar in deep pockets of max. 14 mm. Only one version exists today, which is considered universal.



Crown remover Permits removal of crowns and bridges without ruining these. "Dissolves" silicate-based cement whereupon the restoration can be removed. The cement must be a non-plastic type.



Endo-instrument Used for endodontic treatments. Gives smooth canals and easy injection of gutta percha. Used with Odontoson files in sizes 15, 25 and 40.



Tool for Endo-instrument

8. Spare parts, etc.

Tips and tools for Ultrasonic scaler type Odontoson:

Instrument, standard, straight	FH-106
Instrument, standard, right	FH-107
Instrument, standard, left	FH-105
Instrument, Perio, standard	FH-119
Instrument, crown remover	SA-048
Instrument, Endodontal	FH-113
Files for ENDO-instrument (10 x 3 pce.)	FH-115
Instrument kit, ENDO incl. files	FH-116
Tool, ENDO-instrument	SC-811
Instrument, universal	FH-099
Instrument, thin line, straight	FH-123
Instrument, thin line, right	FH-124
Instrument, thin line, left	FH-125
Instrument, CEM	FH-126
Plastic hut CEM-instrument, 10 pce.	UC-759
Lip protector	FH-127



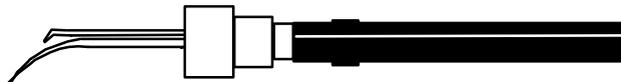
Universal



Used for removal of supra and subgingival tartar in all areas and surfaces.



Thin line, straight



Used for smoothing after rough deperuration. Also gives access to the furcation area and is used for root smoothing.



Thin line, right



Gives good access to the branches in 1st and 3rd quadrant. Same tactile feeling as an explorer. Used after rough deperuration with another Odontoson instrument.



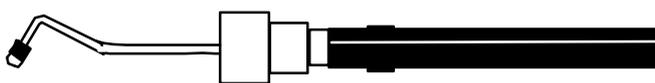
Thin line, left



Especially used in 2nd and 4th quadrant. Identical use to thin line, right.



CEM-instrument



Used for cementation of porcelain filling. Activates the cement and ensures a uniform division of the cement around the filling.

9. Guarantee conditions

The Flex dealer assumes towards the buyer the responsibility for correct functioning, faultless material and faultless workmanship for a period of 12 months from the day of delivery.

For ball bearings and rotors for turbines as well as fibre optic light diodes the guarantee period is 6 months from the day of delivery.

The Flex dealer guarantees that nondurable articles, such as electrical bulbs, rubber parts, tips for scalers etc., have no defects on delivery. Nondurable articles are not covered by guarantee hereafter.

The Flex dealer holds no responsibility for defects due to ordinary wear or in case of Flex' instructions concerning use, cleansing, disinfection, maintenance and installation not being observed.

The Flex dealer is not responsible for defects should the product be installed or repaired by persons who are not trained by Flex, if the parts which are not delivered or approved by Flex for this purpose are mounted in the product, or should modifications in construction be made by a third party.

The Flex dealer is not responsible for loss of profit, delays, lost earnings or any other indirect loss.

The Flex dealer's liability for defects is limited to the price agreed on for the defective part of the consignment

Any claim for guarantee must be made to the Flex dealer.

10. Your feedback

Do you have questions related to a faulty Flex product, or if you have suggestions for improvements, we kindly ask you to fill in the following form and send it to us.

Please state:

Name:

Profession:

Address:

Which product is concerned?

Flex product type:

Serial No:

Date of installation:

Dealer (subsidiary, if any):

Service report No. (if any):

Software version (see start-up display):

And now your question/problem/suggestion for improvement:

Function:

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Cleaning:

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Teknical service:

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10. Your feedback

Possible adjustments

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Finish/make:

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Anything else:

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.....
.....

Suggested solution:

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.....
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Date and signature: