

**Flex Integral
Technical service
unit, chair and lamp**

YA-940, vers. 3.00

List of versions

List of versions for YA-940				
Reason	Pages to be replaced	New version	Date	Initials
New edition		3.00	1996-07-25	

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1. General

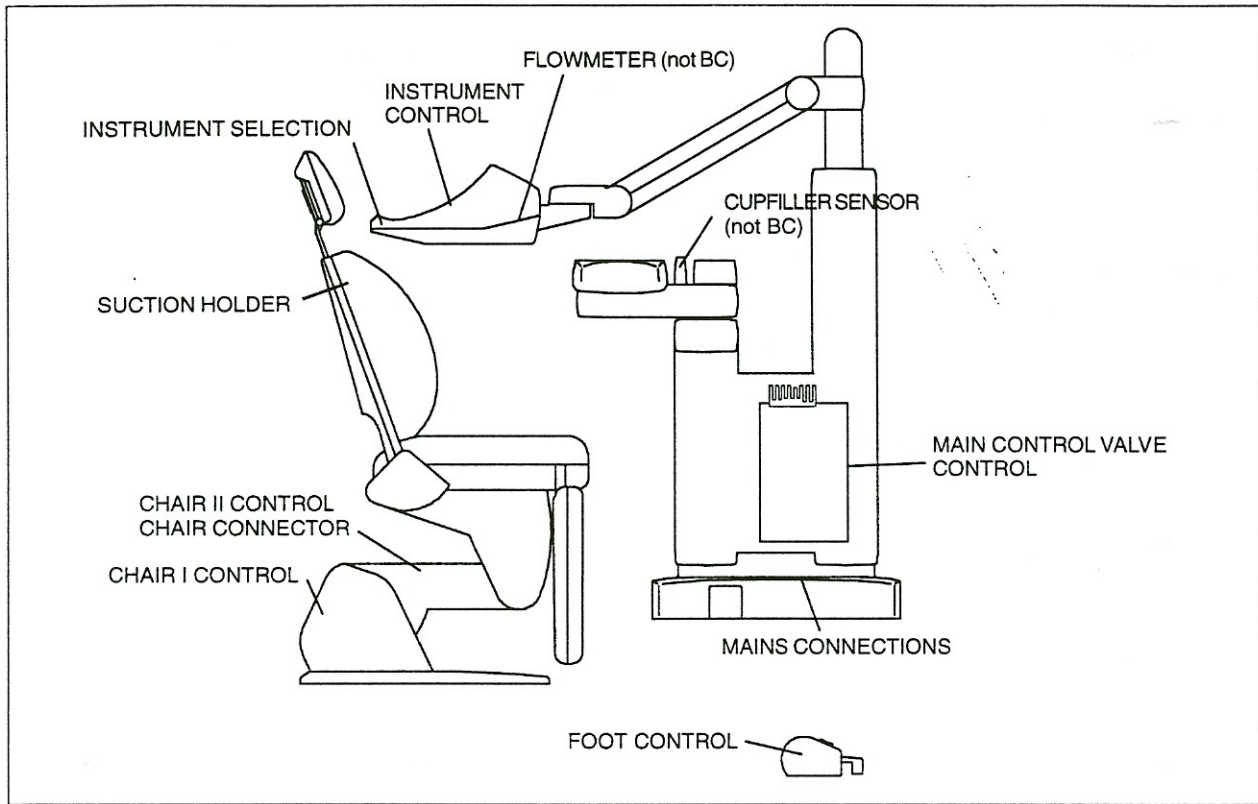


Figure 1. PCB positioning, electrical side.

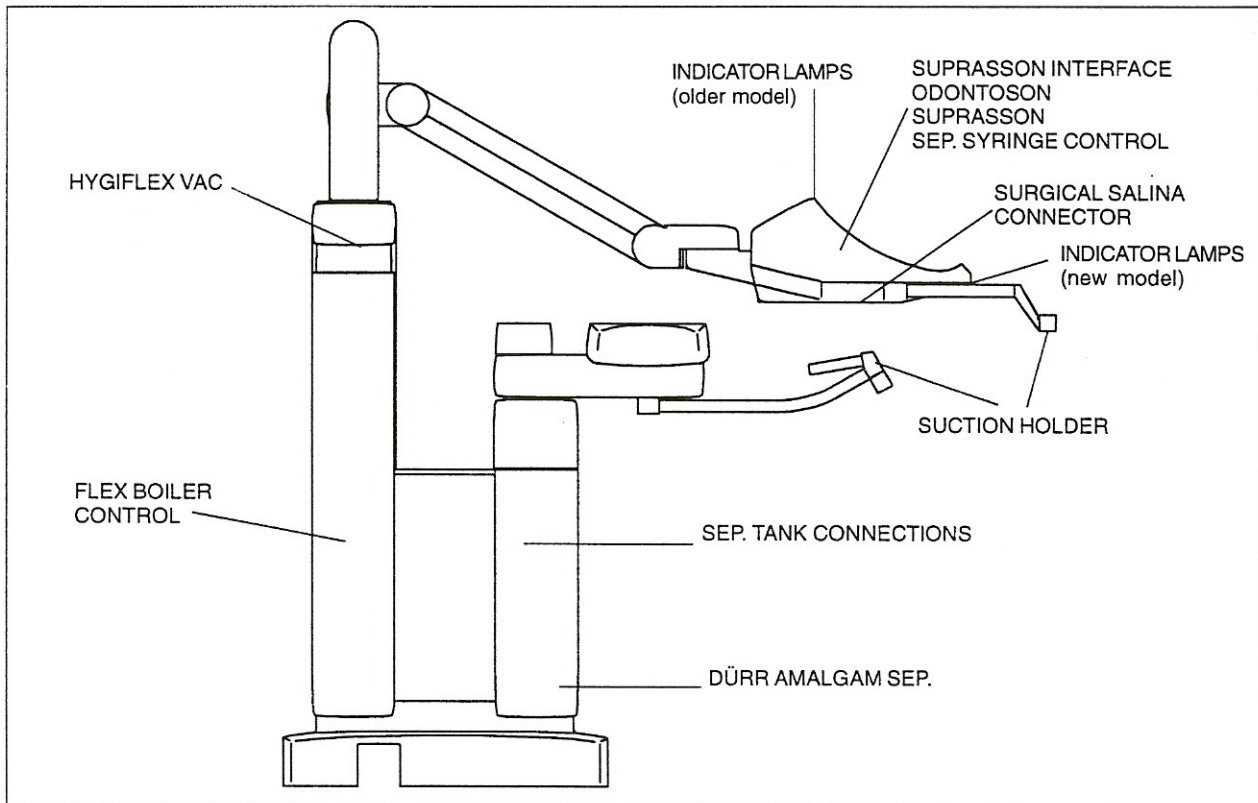


Figure 2. PCB positioning, mechanical side.

Simple adjustments and repairs that can be carried out by the user are described in the respective user's manuals. Adjustments that are to be made when the equipment is installed are described in the Installation manual, includes e.g. dismantling of unit covers.

Make sure always to bring spare parts, relevant tools and your Tech Manager for service visits!

Static electricity

Avoid electrostatic discharge!

The equipment must be switched off, and you must be electrically connected with the equipment frame when touching any electronics.

Printed circuit boards etc. are only to be placed on a surface that is electrically connected to the frame. We recommend using our antistatic service kit (Order No. AC-188).

In an emergency case, it is possible to hold on to the steel frame while working.



This symbol indicates use of the antistatic service kit.

Positioning of printed circuit boards

Figures 1 and 2 show all printed circuit boards (PCB) in the Flex Integral.

Reading of serial number

A serial number consists of year, a Flex number and month, e.g. 9500109: year 1995, Flex number 001, month 09.

Service position

Units equipped with HygiFlex Thermo and some older units have fittings that allow the instrument suspensions to be locked in the vertical position. This makes it easier to remove the bridge cover and carry out service on the bridge.

Bring the suspensions forward, pull button (10) out, turn it 180° and pull towards the edge to lock the position.

On all other units, remove the instrument hoses.

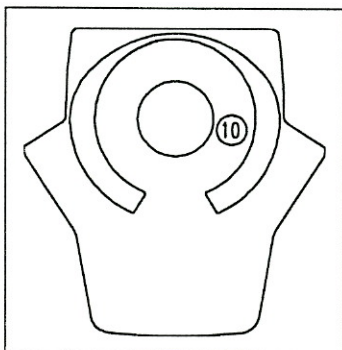


Figure 3. Service position.

2. Maintenance and repairs

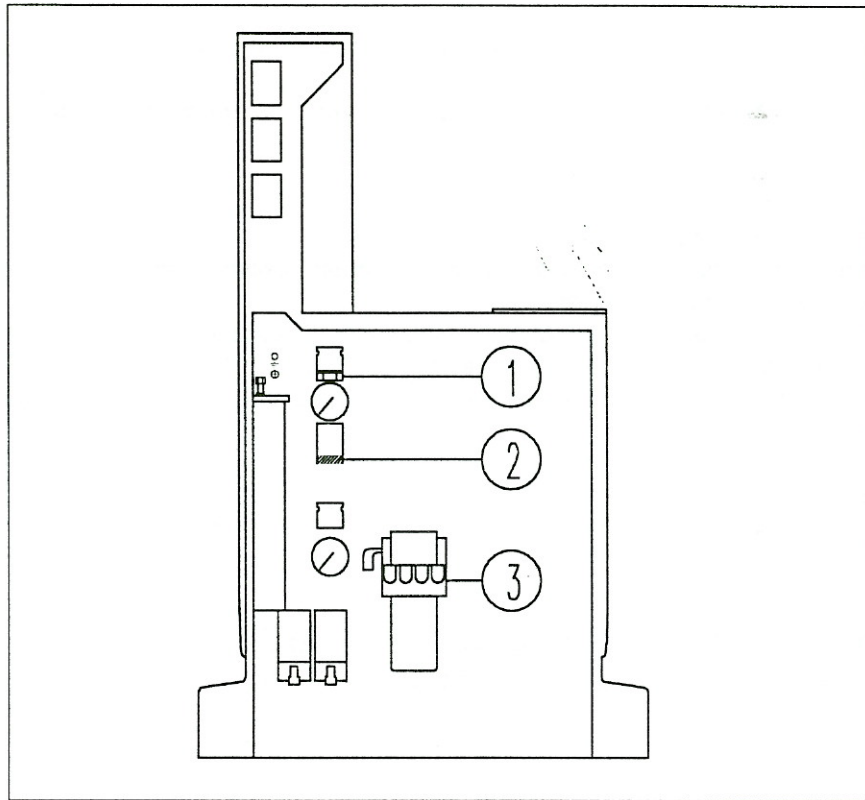


Figure 4. Unit, seen from mechanical side.

2. Maintenance and repairs

Replacement of air filter and reduction valve

- 1) Switch the unit off. If a BC unit, switch off air at the unit inlet.
- 2) Remove the tubes from the air element and loosen the nut at the top, see Fig. 4 (1).
- 3) Remove the air element from the fittings and unscrew the filter glass. (Use tools SD-391 and SD-393).
- 4) Unscrew the filter holder.
- 5) Lift the deflector ring and filter from the filter holder.
- 6) Insert the new filter (SD-237) and deflector ring (with the „teeth“ facing the filter).
- 7) Check that the filter house valve and the spring in the filter house are positioned correctly. (Both include membrane set SD-233).
- 8) Screw the filter holder in place.
- 9) Check that the O-ring in the filter glass is positioned correctly and that the surface receiving the gasket is clean.
- 10) Screw on the filter glass using tool SD-391. Check that the condensate separator (in the bottom of the filter glass) is turned all the way to the left.
Note! BC units have no condensate separator.
- 11) Pull out regulator screw on reduction valve.
- 12) Unscrew the top of the reduction valve using tool SD-393.
- 13) Change membrane and plastic washer.
- 14) Assemble reduction valve and place the air element.
- 15) Reopen the air supply, if turned off. Switch the unit on and check that the air element is tight.
- 16) Adjust the air pressure to 5.5 bar. Also check that the manometer functions.

Replacement of main water filter

- 1) Switch the unit off. If a BC unit, switch off air at the unit inlet. Release the water pressure using the syringe.
- 2) Loosen the union (Fig. 3 (3)) and remove the filter glass (it is full of water!)
- 3) Loosen the filter holder by twisting it (it is suspended in an O-ring).
- 4) Dismantle the filter holder by hand and remove the dirty filter element.
- 5) Insert the new filter element (SD-232) and assemble the filter holder by hand.
- 6) Press the filter holder in place in the filter house.
- 7) Check that the O-ring is positioned correctly in the groove at the top of the filter glass (grease with Paralig grease (YR-032)).
- 8) If a transparent filter glass is mounted, check the glass for any cracks. If needed, change the glass.
- 9) Mount the filter glass by tightening the union by hand.
- 10) Reopen the water supply, switch the unit on and check that the filter is tight.
- 11) Adjust the water pressure to 2 bar. Also check that the manometer functions.

2. Maintenance and repairs

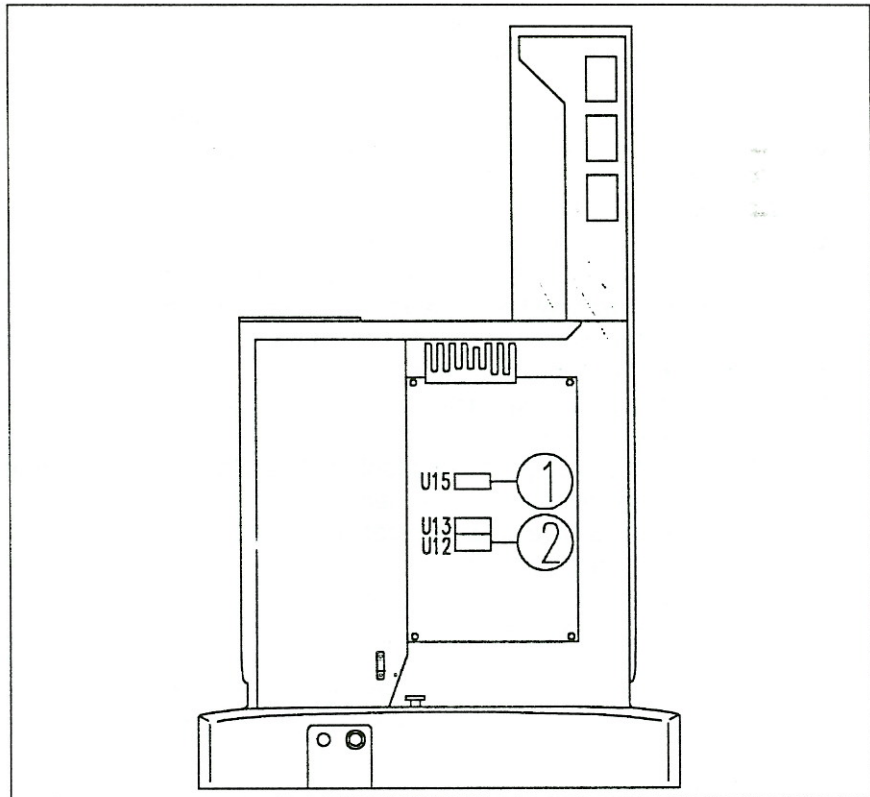


Figure 5. Unit, seen from PCB side.

2. Maintenance and repairs

Replacement of water reduction valve

- 1) Switch the unit off. If a BC unit, switch off air at the unit inlet. Release the water pressure using the syringe.
- 2) Remove the tubes from the reduction valve and loosen the nut at the top.
- 3) Remove the valve from the fitting.
- 4) Unscrew the bottom screw in the reduction valve using tool SD-392.
- 5) Replace valve, spring and bottom screw (delivered with membrane set SD-249). Remember to grease valve with Paralig grease (YR-032).
- 6) Screw in the new bottom screw.
- 7) Remove the governor screw on the reduction valve.
- 8) Unscrew the reduction valve top using tool SD-393.
- 9) Replace membrane and plastic washer.
- 10) Assemble reduction valve and mount it in the unit.
- 11) Reopen the air supply, if turned off. Switch the unit on and check that the reduction valve is tight.
- 12) Adjust water pressure to 2 bar. Also check that manometer functions.

EPROM

Note! When upgrading, all technician and dentist data in the NVRAM may be deleted. Remember to note the data to be able to reconfigure the unit (see user's manual for programming). Be aware of any changes in programming of the dipswitches.

- 1) Switch the unit off.



- 2) Remove the cover on the unit PCB side.
- 3) Remove the old EPROM from socket U15 on MAIN CONTROL (Fig. 5 (1)) and wrap it in the packaging of the new EPROM.
- 4) Insert the new EPROM with the notch turning to the left.
- 5) Put the cover back on and switch the unit on.
- 6) In case of incompatible data structure the unit will emit a low pitch audio signal until you press the P-button. Reprogram all technician and dentist data.

NVRAM

Note! When upgrading, all technician and dentist data in the NVRAM will be deleted. Remember to note the data to be able to reconfigure the unit (see user's manual for programming). Be aware of any changes in programming of the dipswitches.

- 1) Switch the unit off.



- 2) Remove the cover on the unit PCB side.
- 3) Remove the old NVRAM from the socket U12 on MAIN CONTROL (Fig. 5. (2)) and wrap it in the packaging of the new NVRAM.
- 4) If there are more holes than grips, place the NVRAM to the far right (with the dot in the lower left edge)
- 5) Put the cover back on.
- 6) Test run the unit and reprogram all technician and dentist data.

2. Maintenance and repairs

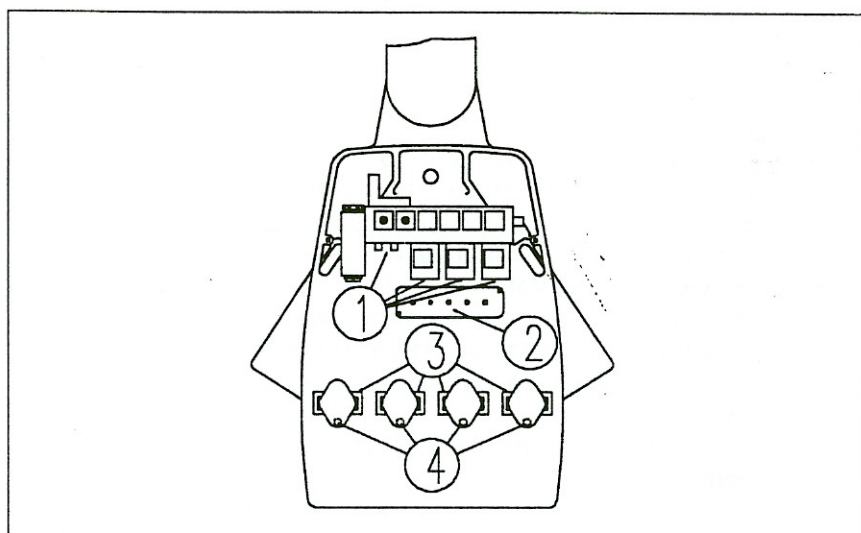


Figure 6. Bridge without cover.

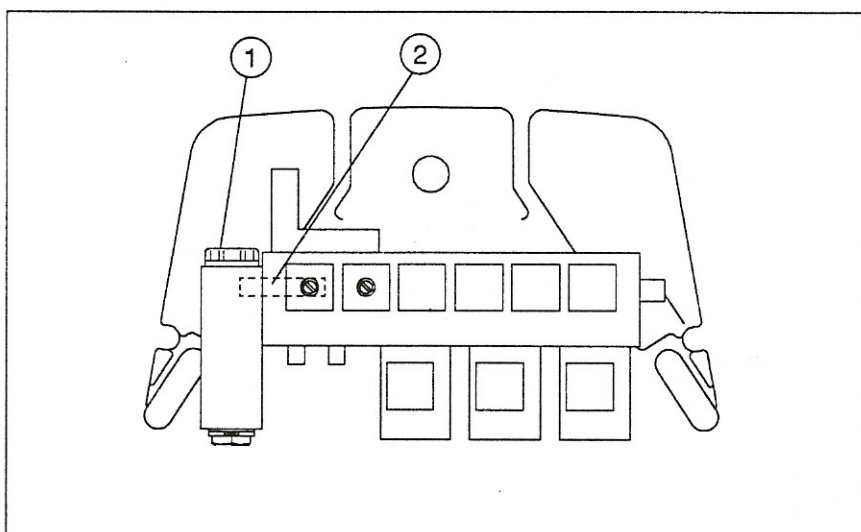



Figure 7. Replacement of water filter.

2. Maintenance and repairs

Instrument suspension


See Figure 6.

- 1) Switch the unit off. If a BC unit, switch off water at the unit inlet. Release the water pressure using the syringe.
 - 2) Lift the instrument suspensions up and remove the cover of the bridge.
- 
- 3) Unscrew the 2 screws on the left side of the INSTRUMENT CONTROL printed circuit board and tip the board up.
 - 4) Pull the return air hose in the oil chamber off (2).
 - 5) Loosen the locking plate that holds the hose nipples in place on the valve block (1) and pull the nipples forward.
 - 6) Remove the suspension wires from the INSTRUMENT CONTROL printed circuit board.
 - 7) Grip hold of the rocker block using both hands and press it against one side of the fitting (3) so the axle is freed.
 - 8) When you mount the new suspension, fasten the spring at (4)

Make sure the programming is correct when you change a suspension on a BC unit to a suspension of another type. (See „Adjustments“ in your Installation manual).


Oil chamber

See Figure 6 (2).

- 1) Switch the unit off.
 - 2) Lift the instrument suspensions and remove the bridge cover.
- 
- 3) Unscrew the 2 screws on the left side of the INSTRUMENT CONTROL printed circuit board and tip the board up.
 - 4) Remove the oil chamber cover and change the sponge (MC-459).

Replacement of the water filter in the filter block (on instrument bridge)

(only FC/NTC)

- 1) Switch the unit off. Release the water pressure using the syringe.
 - 2) Lift the instrument suspensions and remove the bridge cover.
- 
- 3) Unscrew the 2 screws on the left side of the INSTRUMENT CONTROL printed circuit board and tip the board up.
 - 4) Unscrew the water filter (Fig. 7 (1)) by hand and mount a new water filter in the block.
Note! UC-034 Standard filter
AC-632 Filter for units with built-in HygiFlex Thermo.
 - 5) Remove the nozzle (Fig. 7 (2)) between filter block and valve block to clean it.
 - 6) Assemble the two blocks again.
 - 7) Switch the unit on and check that the water system in the bridge is tight.

Proportional valve (only FC/NTC)

Replace anchor sealing ring (MR-150).

Do not replace any other parts as they need calibrating. Replace entire proportional valve.

2. Maintenance and repairs

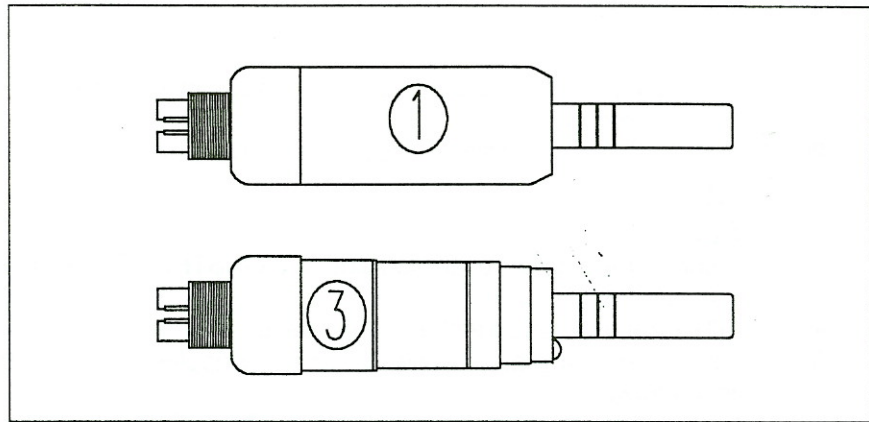


Figure 8. Motor.

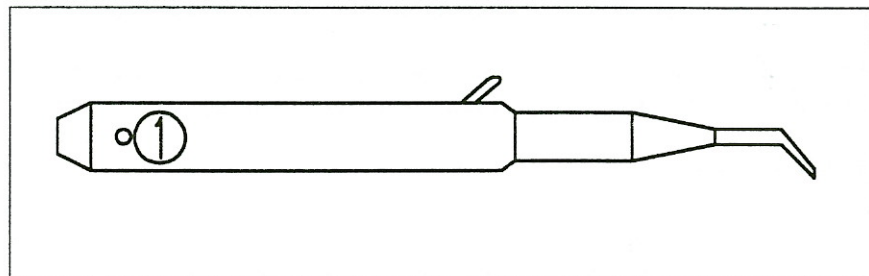


Figure 9. Syringe.

2. Maintenance and repairs

Motor

See Figure 8.

If the motor rotates irregularly, the carbon may need changing.

- 1) Remove the motor cover (1).
- 2) Remove the internal cover (3).
- 3) Remove the carbon using the tool (SA-042).
- 4) Rinse the carbon holders using a small brush dipped in alcohol.
- 5) Blow the motor clean using air from the syringe.
- 6) Insert the new carbon (SD-005).

The irregularity may also be a result of the motor being saturated with carbon dust. In this case, the motor needs servicing in an authorized Flex workshop.

Syringe

See Figure 9.

If the syringe drips or leaks, change the O-ring (UC-726) on the water piston or the valve block (SD-215).

- 1) Switch the unit off. If a BC unit, switch off water at the unit inlet. Release the water pressure using the syringe.
- 2) Press the lock button (1) home to remove the syringe cover.
- 3) Bend the 2 plastic flaps to a side and pull the whole cover off.

To replace O-ring remove the water piston (with pincers). Grease the O-ring with Paraliq grease (YR-032).

To replace valve block, remove the 2 screws at the bottom of the block.

3. Adjustment of unit

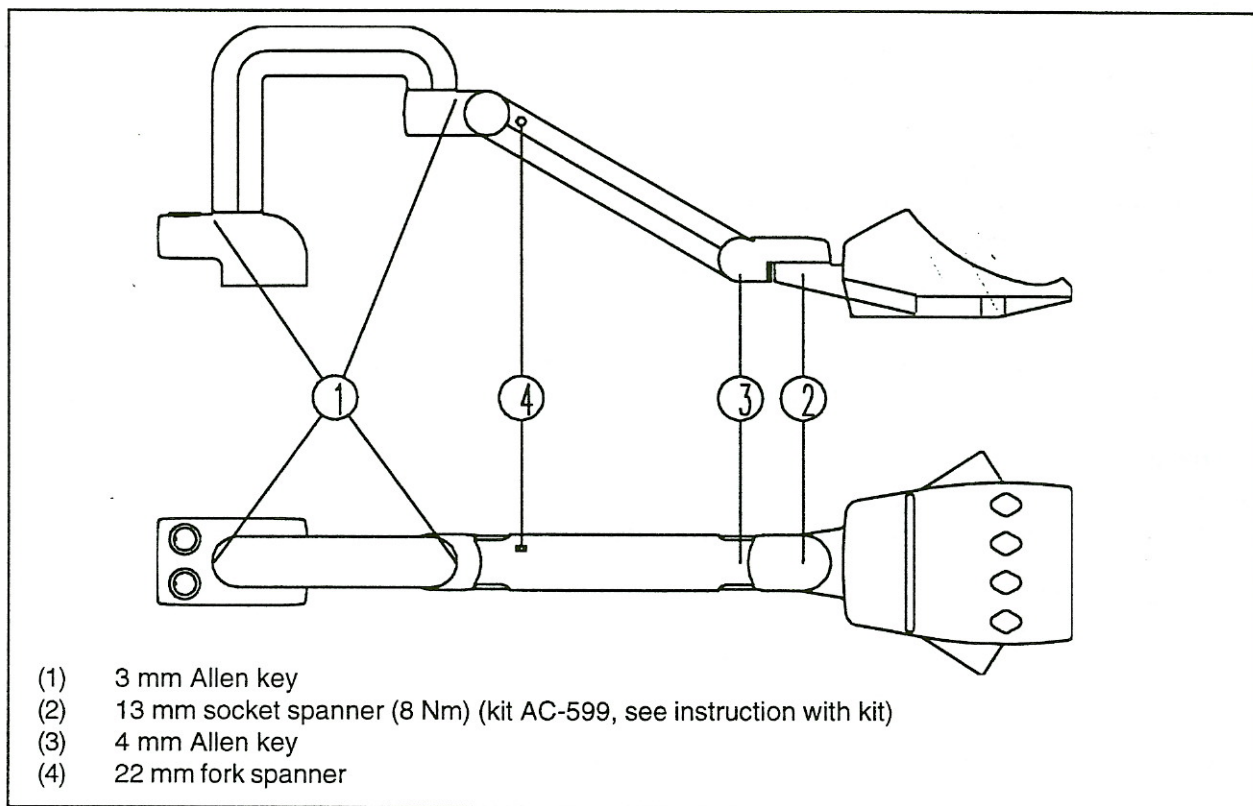


Figure 10. Remove the under covers.

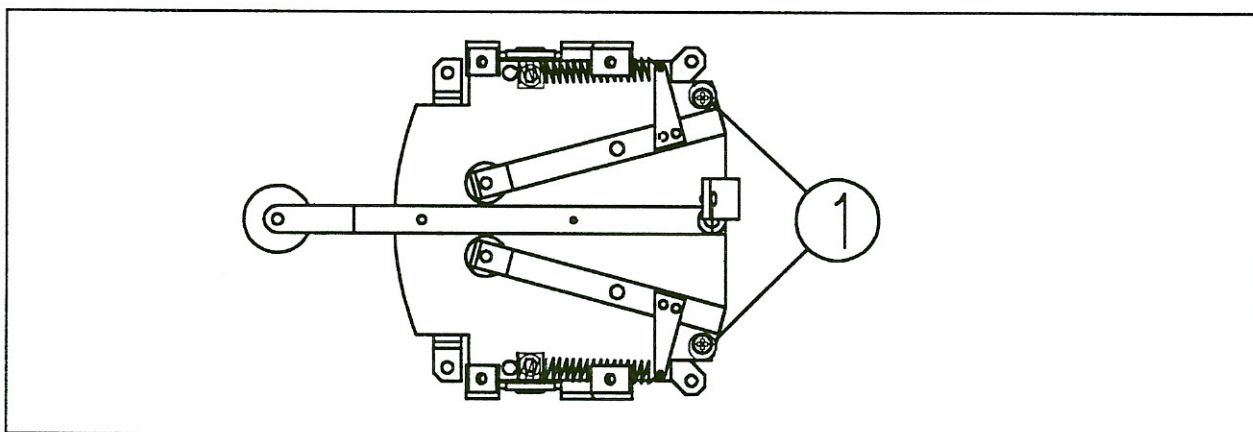


Figure 11. Foot control.

3. Adjustment of unit

All Flex Integral unit types

Additionally, consult the paragraphs on adjustment of the respective types.

Instrument bridge arm

See Figure 10.

If the bridge swings to a side by itself, the stand is not level. Use a spirit level and adjust the stand level at the nuts on the stand attachment bolts (see your Installation manual).

- 1) Adjust the friction of the horizontal movement at (1).
- 2) Only adjust (2) when absolutely necessary.
- 3) At each adjustment mount a new mounting kit (AC-599) as the coverplate does not endure bendings. If the mounting kit was never mounted, mount it now to avoid the bridge coming loose later.
- 4) Dismantle the cover at (2).
- 5) Adjust the nut with a 13 mm socket spanner or, if you have a torque wrench, this is the ideal tool to use (set at 8 Newtonmeter).
- 6) After mounting, bend the new coverplate downwards around the nut on two sides, which must make up a corner.
- 7) Remount the cover.

Foot control

See Figure 11.

The vertical movement of the pedal and the disk movements cannot be adjusted.

- 1) Activate the foot control pedal to the left.
- 2) Measure on MAIN CONTROL JP15 pins 3 and 9 and set the potentiometer at $2.50 +0.010/-0.030$ VDC.
- 3) Let go of the pedal arm and adjust the 2 excentrics (1) so the voltage in the standby position is 1.25 ± 0.025 VDC.

There must be no play in the arm.

3. Adjustment of unit

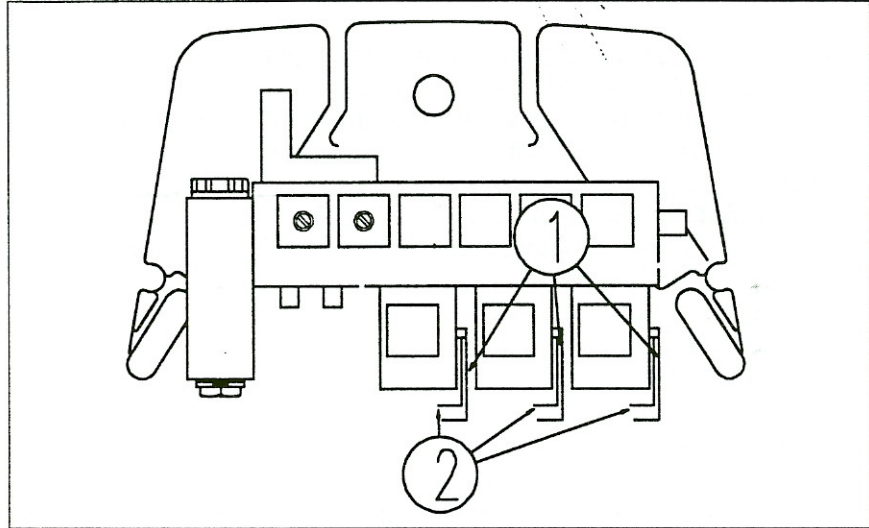


Figure 12. Adjustment of air on motor (BC unit).

3. Adjustment of unit

BC unit

Additionally, consult the paragraphs on adjustment of all Flex Integral types.

Instrument air

See Figure 12.

- 1) Lift the instrument suspensions and remove the bridge cover.



- 2) Unscrew the 2 screws on the left side of the INSTRUMENT CONTROL printed circuit board and tip the board up.
- 3) Adjust the air flows:

Motor

The spray air flow is adjusted according to the dentist's wishes using the top lever (1) on the connected valve.

The cooling air flow is set at 8 l/min using the bottom lever (2) on the connected valve.

Connect the flowmeter (FA-400) to the motor. Pull the suspension forward and activate the motor in order to measure. Keep the flowmeter vertical.

Turbine

The spray air flow is adjusted according to the dentist's wishes using the top lever (1) (blue) on the connected valve.

The driving air flow is set by using the bottom lever (2) on the connected valve:

turbine type B: 2.3 - 2.5 bar

turbine type P: 2.9 - 3.0 bar

turbine type P with new rotor (marked „S32“): 3.1 - 3.2 bar

Connect the manometer (SD-240) to the suspension. Pull the suspension forward and activate in order to measure. Run the turbine at maximum speed for at least a minute. If the pressure increases or falls by more than 0.2 bar, check the pressure switch of the compressor.

Composite curing lamp

As the composite curing lamp is secured against overheating, the cooling air can be adjusted according to the dentist's wishes using the top lever (1) (blue) on the connected valve. However, to ensure product longevity we advise you not to go below the pre-set level.

Scaler power level

- 1) Bring the scaler forward and choose the level to be adjusted by vertical activation of the foot control.
- 2) Activate the scaler by pressing the P-button once and adjust using the pedal. While pressing the pedal to the right the power will increase, to the left it falls.
- 3) Store by putting the scaler back in place. The unit emits a beep.

Reset

- 1) Switch the unit off on the main switch.
- 2) Press the P-button at the same time as switching the unit on again.
- 3) Reprogram all technician and dentist data.

3. Adjustment of unit

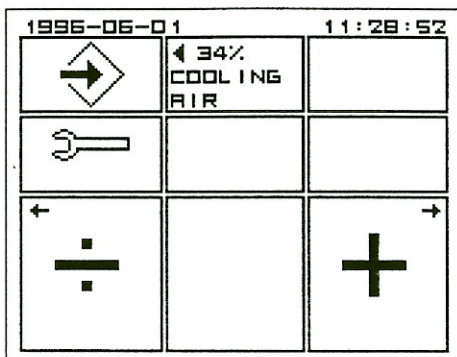


Figure 13. FC/V: Adjustment of motor.

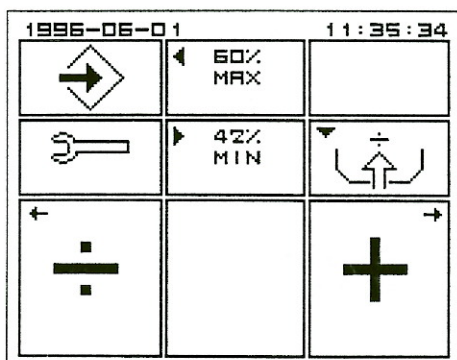


Figure 14. FC/V: Adjustment of turbine.

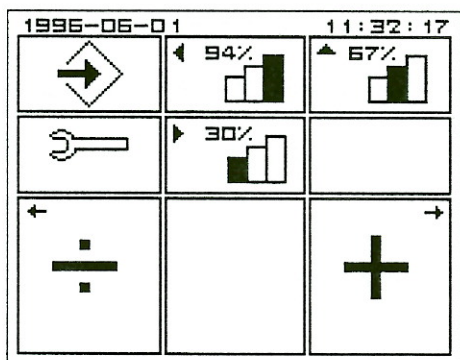


Figure 15. FC/V: Adjustment of scaler.


3. Adjustment of unit


FC and FC/V unit

Additionally, consult the paragraphs on adjustment of all Flex Integral types.

Motor cooling air

- 1) Connect the flowmeter (FA-400) to the motor and hold it horizontal. Disconnect spray, if mounted. Activate the motor to check that the cooling air is 8 l/min **on each suspension**.
- 2) If the cooling air is not properly adjusted, press the P-button twice.

Move the disc to the left  to enter the programming condition.

Adjust in steps using the foot control pedal 

- 3) Store by returning the motor to the suspension. The unit emits 2 beeps.


Turbine driving air


The driving air must be adjusted on **each suspension**:

turbine type B: 1.5 bar (min to max), turbine type P: 1.5 bar (min) and 2.9 bar (max)

turbine type P with new rotor (marked „S32“): 1.5 bar (min) and 3.1 bar (max).

- 1) Connect the manometer (SD-240) to the suspension. Pull the suspension forward and activate to measure if the driving air is properly adjusted according to the above-mentioned values.
- 2) If the driving air is not adjusted, press the P-button twice.

Choose max. or min. value using the foot control disc 


Adjust in steps using the foot control pedal 


Run the turbine at maximum speed for at least a minute. If the pressure increases or falls by more than 0.2 bar, check the pressure switch of the compressor.

- 3) Store by putting the turbine back in place. The unit emits 2 beeps.

If the dentist wishes only to use one speed, regulate the min. and max. driving air pressure to the same level.

Adjust turbine afterrotation to prevent saliva from being pulled in. Only adjust one suspension.

- 1) Take the turbine off the suspension and press the P-button twice.
- 2) Press the foot control disc down . Adjust driving air using the foot control pedal till the turbine only just stops rotating.


 1 step down


 1 step up

Scaler power level


Power level 0 must be lowest and power level 2 highest. You need only adjust one suspension.

- 1) Take the scaler off the suspension. Press the P-button twice and move the disc

 to regulate power level 2,

 to regulate power level 1,

 to regulate power level 0.

- 2) Adjust in steps using the foot control pedal 

- 3) Store by putting the scaler back in place. The unit emits 2 beeps.

Reset

- 1) Switch the unit off on main switch.
- 2) Press the P-button at the same time as switching the unit on again.
- 3) Reprogram all technician and dentist data.

3. Adjustment of unit

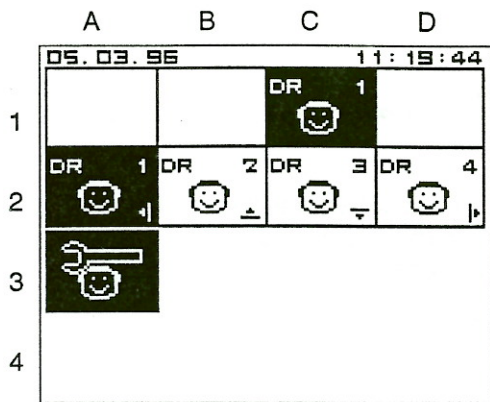


Figure 16. User and technician choice.

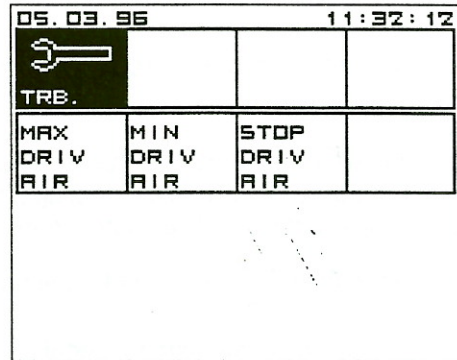


Figure 20. Turbine driving air 1.

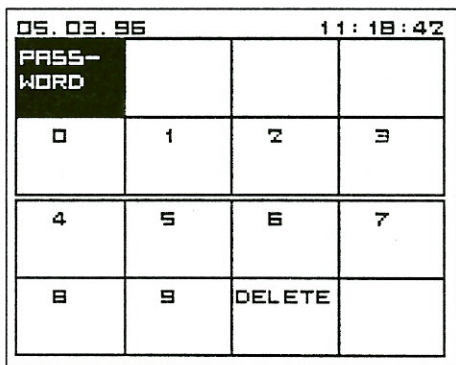


Figure 17. Password.

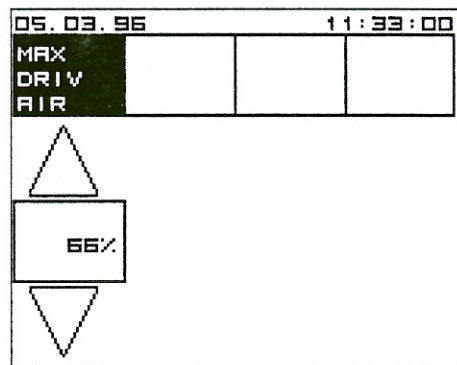


Figure 21. Turbine driving air 2.

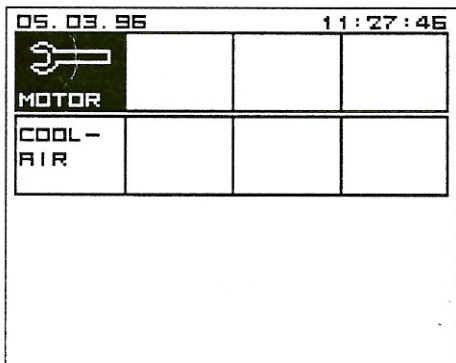


Figure 18. Motor cooling air 1.

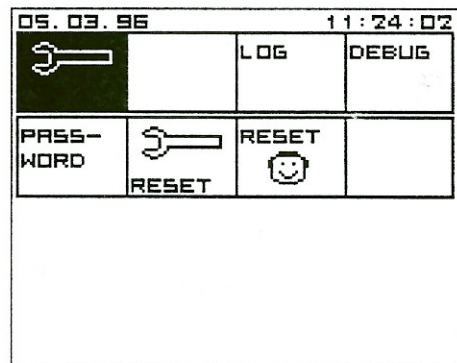


Figure 22. Basic technician program.

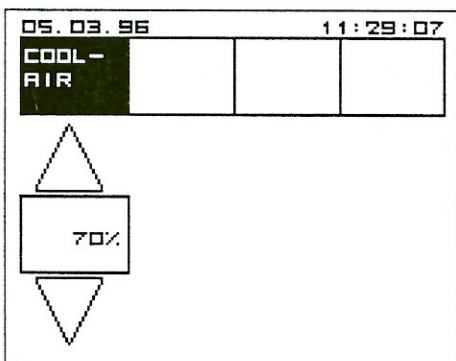


Figure 19. Motor cooling air 2.

3. Adjustment of unit

NTC and NTC/II unit

Additionally, consult the paragraphs on adjustment of all Flex Integral types.

To gain access to the technician program, switch the unit on and choose „Technician“ by pointing to A3 on the NTC screen (Fig. 16).

Key password 999 (Fig. 17).

Motor cooling air

The air inlet is controlled in the same way on all suspensions. The air supply, however, varies depending on the suspension's dimension. Therefore, it matters which suspension you adjust. Set the air flow at approximately 8 l/min. (minimum) on the suspension where you measure the lowest air flow.

- 1) Connect the flow meter (FA-400) to the motor and hold it horizontal. Disconnect spray, if mounted. Pull the suspension forward.
- 2) Press the P-button twice and choose A2 (Fig. 18).
- 3) Adjust using A2 and A4 (Fig. 19).
- 4) Store by putting the motor back in place. The unit emits 2 beeps.

Turbine driving air

The air inlet is controlled in the same way on all suspensions. The air supply however varies depending on the suspension's dimension. Therefore, it matters which suspension you adjust. Set the air pressure at approx. 1.5 bar (minimum) for the suspension with the lowest air pressure. Adjust the max. air pressure on the suspension where you measure the highest air pressure:

turbine type B: to max.

turbine type P: 2.9 bar (max.)

turbine type P with new rotor (marked „S32“): 3.1 bar (max.).

- 1) Connect the manometer (SD-240) to the suspension and pull the suspension forward.
- 2) Press the P-button twice and choose (Fig. 20): A2 for maximum or B2 for minimum.
- 3) Adjust using A2 and A4 (Fig. 21) and run the turbine at maximum speed for at least a minute. If the pressure increases or falls by more than 0.2 bar, check the pressure switch of the compressor.
- 4) Store by putting the turbine back in place. The unit emits 2 beeps.

Reset

When pressing the P-button twice while all the instruments are in place, you can (Fig .22):

- * see all the user passwords by pointing at A2.
- * delete all technician programming by first pointing at B2, then at A4.
- * delete all user programming by first pointing at C2, then at A4.

Return to normal function by pressing the P-button twice.

4. Unit fault finding

Sound type	Number	Signal cause
Beep	3	The unit is ready after starting up
	3	HygiFlex finished
	2	Technician programming start
	2	Technician programming finished
	1	Motor starting, left rotation
	1	Composite curing lamp: start, half-way, stop
	1	Assistant call start
	1	User programming start
	1	User programming finished
Low pitch note	Constant 1	NVRAM error or new data structure on EPROM Operation error
High/low notes	2 (alternating high/low))	Danger warning position: Cooling plate too hot, fuses F8, F6 and F9 defective, SRAM (Static Random Access Memory) error, when HygiFlex Thermo is mounted: Incorrect NVRAM, HygiFlex Thermo too warm or defective sensor.
Scala	5 (going up)	Preset alarm

Table 1. Audio signals.

Fuse	Position	Comments	
F1 10 A	MAINS CONNECTIONS	Main fuse, can be re-connected	
F1 6,3 AF	INSTRUMENT CONTROL	Syringe heating element	
F2 1,6 AT		Ultrasonic scaler (type O, type L, Suprasson)	
F1 315 mAT	MAIN CONTROL	Operating lamp transformer	
F2 800 mAT		Drain pump	
F3 6,3 AT		Boiler (HygiFlex Thermo)	
F4 4 AT		Curing lamp & fibre optic light voltage	
F5 5 AT		Motor control	
F6 5 AT		24 VDC	If these fuses have blown, nothing works on the unit
F7 2,5 AT		5 VDC	
F8 200 mAT		-5, -15 and -20 VDC	
F9 5 AT		24 VAC	
6,3 AT	PATIENT CHAIR I and II	Main fuse on patient chair front panel	
F1 500 mAT	CHAIR CONTROL I and II	24 VDC	
F2 500 mAT		5 VDC	
F3 6,3 AT		Chair motors	

Table 2. Fuses.

4. Unit fault finding

The fault finding chapter covers the most common faults found on a Flex Integral unit. An index with measurement values is found in chapter 5.

General

Start with checking that all fuses are in order. Use the light-emitting diodes and the NTC screen to test the functions.

If the faults are periodical, find out when they occur. Such faults can be caused by cable breakdown, bad dipswitches or other forms of bad contact.

Audio signals

The unit emits different types of audio signals. See Table 1.

Fuses

See Table 2.

There is a light-emitting diode next to most of the fuses to indicate if the fuse is in order. (There is no diode by the two INSTRUMENT CONTROL fuses or by the chair main fuse).



Remember to switch the electricity off before changing a fuse.

4. Unit fault finding

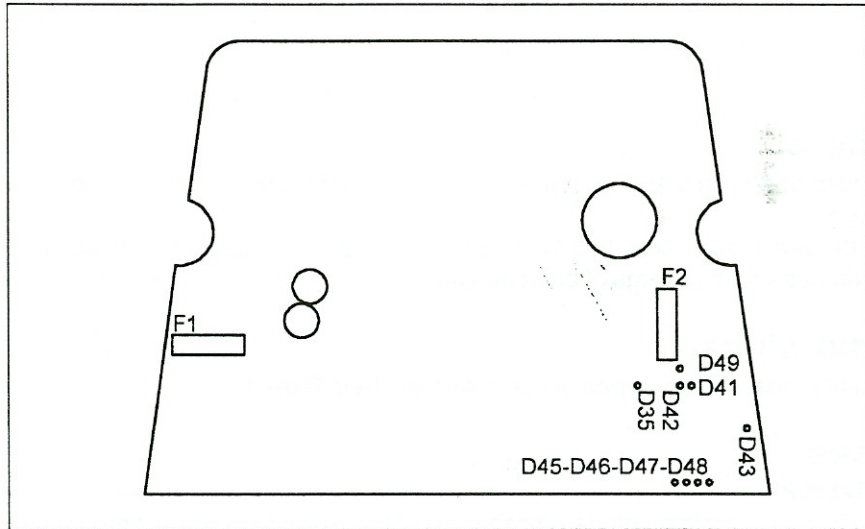


Figure 23. INSTRUMENT CONTROL.

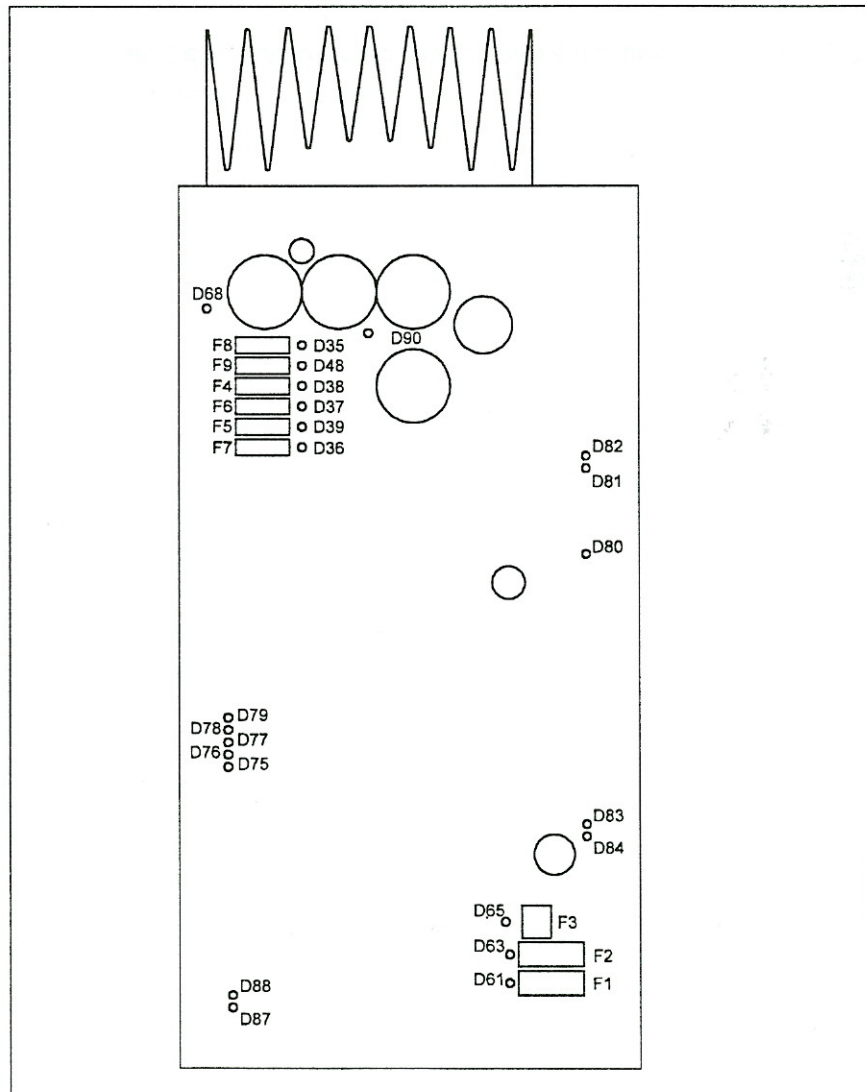


Figure 24. MAIN CONTROL.

4. Unit fault finding

Light-emitting diodes on INSTRUMENT CONTROL AD-444

Diode	Function	Lights...
D35	+ 24 VDC	constant
D41	Suction tube holder 2	on bridge when activated
D42	Suction tube holder 1	on cuspidor or chair constant
D43	P-button	on bridge when activated
D45	Suspension 1	on cuspidor or chair constant
D46	Suspension 2	when activated
D47	Suspension 3	when taken off holder
D48	Suspension 4	when taken off holder
D49	Heating element syringe	when taken off holder
		when activating warm water in syringe

Light-emitting diodes on MAIN CONTROL AD-440

Diode	Function	Lights...
D28	Power indicator, boiler	when activating heating element
D35	20 VAC supply (-15 VDC / -5 VDC / -20 V)	constant
D36	5 VAC supply (+5 VDC)	constant
D37	24 VAC supply (+ 24 VDC)	constant
D38	Fibre optic light AC supply	constant
D39	Motor AC supply	constant
D48	24 VAC supply (24 VAC)	constant
D61	Fuse, operating lamp	constant
D63	Fuse, drain pump	constant
D65	Fuse, boiler	constant
D68	+ 24 VDC	constant
D75	Foot control disc, up	when activated; on BC constant
D76	Foot control disc, left	when activated; on BC constant
D77	Foot control disc, down	when activated; on BC constant
D78	Foot control disc, right	when activated; on BC constant
D79	Foot control pedal, down	when activated
D80	Water detection drain	when activated
D81	Hygivac holder 1	when activated
D82	Hygivac holder 2	when activated
D83	Suction tube holder 1	on cuspidor or chair: when activated
D84	Suction tube holder 2	on bridge: constant
		on cuspidor or chair: when activated
		on bridge: constant
D87	Operating lamp, light intensity switch	when activated
D88	Operating lamp, on/off switch	when activated
D90	Motor control, fault detector	when motor is OK

4. Unit fault finding

Routine test Flex Integral

Question	Answer
1. Does the LED on MAINS CONNECTIONS light?	Yes: Continue. No: 1. No mains power. 2. Main fuse on MAINS CONNECTIONS off.
2. Does the main power switch light?	Yes: Continue. No: 1. Main power switch defective. 2. Bulb in main switch defective. 3. Main switch not connected to MAINS CONNECTIONS or bad connection.
3. Are 3 beep sounds heard approx. 15 sec. after start-up?	Yes: Go to 12. No: Continue.
4. Is a deep acoustic signal heard?	Yes: Continue. No: Go to 6.
5. Press the P-button. Are 3 beep sounds heard now?	Yes: Go to 12. No: 1. NVRAM faulty/incorrectly mounted. 2. MAIN CONTROL faulty. 3. Fuse F4 faulty. 4. Fuse F5 faulty. 5. If unit keeps resetting: Check if EPROM is correctly mounted.
6. Are alternating beep sounds heard? (warning signal)	Yes: 1. HygiFlex Thermo Boiler too warm. 2. HygiFlex Thermo sequence interrupted (warm flush). 3. On replaced MAIN CONTROL is incorrect NVRAM. 4. NTC-temperature feeler in HygiFlex Thermo heating element faulty. 5. NVRAM faulty. 6. Fuses F6, F8, or F9 faulty. 7. MAIN CONTROL too warm (fan OK?) No: Continue.
7. Are fuses F4, F5, F6, F7, F8, and F9 OK?	Yes: MAIN CONTROL faulty. No: Continue.
8. Switch off the unit, unplug all connectors from MAIN CONTROL except JP12 og JP27, change fuse and switch on the unit. Do the fuses function and are 3 beeps heard?	Ja: Continue. Nej: Go to 11.
9. Switch off the unit, mount connectors one by one and switch on unit inbetween each connection. Are 3 beeps heard each time?	Ja: Go to 12. Nej: Continue.

4. Unit fault finding

10. Switch off unit, replace faulty component and switch on unit. Are 3 beeps heard when connecting plug?
Yes: Go to 12.
No: Defective MAIN CONTROL.
11. Switch off unit, disconnect JP27 from MAIN CONTROL and measure resistance on JP27 between pins:
1 and 3
2 and 5
5 and 7
7 and 9
9 and 11.
Does the resistance equal ∞ ?
Yes: Defective MAIN CONTROL.
No: Main voltage transformer faulty.
12. Check that all connectors are correctly connected on MAIN CONTROL and activate assistant call. Does the signal indication emit a beep?
Yes: Go to 14.
No: Continue.
13. Does the voltage alternate from 5 to 0 VDC on JP15 between pins 1 and 4 when activating assistant call?
Yes: Defective MAIN CONTROL.
No: 1. Faulty FOOT CONTROL
2. Faulty foot control cable.
14. Can air and water pressure be set at 5.5 bar and 2.0 bar respectively?
Yes: End of routine test.
No: 1. External pressure too low.
2. Faulty membrane set in reduction valve.
3. Faulty manometer.

Faulty single parts

24 VAC AUX MAIN CONTROL

Does the other 24 VAC function?

- Yes: Replace MAIN CONTROL.
No: Check transformer JP27 pins 5 and 6. Disconnect transformer plug. If there is more than 24 VAC when not charged, the transformer is OK.

24 VAC AUX INSTRUMENT CONTROL

Does the other 24 VAC in the instrument bridge work?

- Yes: Replace INSTRUMENT CONTROL.
No: Check transformer JP27 pins 5 and 6. Disconnect transformer plug. If there is more than 24 VAC when not charged, the transformer is OK.

Amalgam Separator

See the fault finding of the manufacturer. Can be purchased through Flex.

Arm System

1. Does the bridge arm turn to the side by itself?
Yes: Unit not level (incorrect adjustment of nuts on stand mounting bolts, see "Installation".)
No: Continue.
2. Does the arm follow the suspension when pulled forward?
Yes: The friction brakes in the swivel joints are incorrectly adjusted.
No: Continue.
3. Does the bridge lift or lower itself?
Yes: 1. The balance is incorrectly adjusted.
2. At varying loads (surgery plant) the brake is incorrectly adjusted.
No: Continue.

4. Unit fault finding

4. Is the front bridge arm still in motion when the rotational movement otherwise is over?
- Yes: 1. The friction brake adjusted incorrectly.
2. Update kit AC-599 for fixing instrument bridge is not mounted.
- No: Continue.

Assistant Call

1. Constantly activated. Switch unit off/on. After the 3 beeps is an extra beep heard?
- Yes: Faulty foot control. See chapter „5. Plugs and connectors for unit - FOOT CONTROL“.
- No: 1. NTC: Timer not selected (on/off using pedal).
2. Replace MAIN CONTROL.
2. Does not work. Shortcircuit pins 1 and 2 on JP14. Does it work now?
- Yes: Replace MAIN CONTROL.
- No: External fault.

Boiler HygiFlex Thermo - see also under "HygiFlex Thermo" in this chapter

1. Does heating element function?
- Yes: Continue.
- No: Replace heating element.
2. Is the NTC-temperature feeler OK? (See chapter 5. under Boiler).
- Yes: Replace MAIN CONTROL.
- No: Replace temperature feeler.

Chair Communication FC/NTC

1. The chair does not function. Unplug communication cable from MAIN CONTROL. Can you control the chair with the chair switches?
- Yes: Replace MAIN CONTROL.
- No: Replace CHAIR CONTROL.
2. Only control with chair switches - cuspidor and lamp do not respond. Is the communication cable OK?
- Yes: Replace CHAIR CONTROL and/or MAIN CONTROL.
- No: Replace cable.

Cupfiller and Cuspidor

1. Activate cuspidor flush. Does it flush correctly?
- Yes: Continue.
- No: 1. Not correctly adjusted.
2. Faulty solenoid valve on water manifold.
3. Incorrectly adjusted foot control.
4. Faulty MAIN CONTROL.
2. Turn the cuspidor flushing pipe to a side and activate the flush. Is the shut-off valve OK?
- Yes: Continue.
- No: 1. O-rings in the flushing pipe leak.
2. Allen screw on the shut-off mechanism is badly adjusted.
3. Place the measuring cup in the cup filler. Is the cup filled to the mark?
- Yes: Continue.
- No: 1. Pedal controlled cup filler.
2. Incorrect adjustment of needle valve for cup filler.
4. Does cup filler constantly switch on/off?
- Yes: Cable breakdown.
- No: Continue.

4. Unit fault finding

5. Does the cup filler work when the auto-matics are switched off? (choose pedal control)
- Yes: Continue.
No: Go to 7.
6. Is it possible to measure approx. 5 VDC on JP16 pins 1 and 4 when the connector is unplugged?
- Yes: 1. CUP FILLER SENSOR is defective.
2. Powerful light exposure of sensor.
No: Replace MAIN CONTROL.
7. Is the solenoid valve OK? (See "Connectors - Solenoid valve")
- Yes: Replace MAIN CONTROL.
No: Replace solenoid valve.
8. Does the water flow regularly and without pressure from the cuspidor and cup filler taps?
- Yes: OK.
No: The tap nozzles are calcified or blocked.

Drain Pump

Does the drain pump start when the cuspidor is activated? Does it continue approx. 10 sec. longer than the cuspidor flush is activated. Does the pump work efficiently?

- Yes: OK.
No: 1. Fuse F2 on MAIN CONTROL is defective.
2. Drain pump is blocked with dirt.
3. A vacuum has accumulated in the drain junction. (Mount kit AC-769).
4. Pump defective (Measure 220 V on JP3 on MAIN CONTROL without the pump being active)
5. MAIN CONTROL defective.

Fan

1. The fan does not rotate. Does the fan work with direct 24 VDC between pins 1 (o-reference) and 2? (Important to connect the voltage correctly. If you swop the 2 wires, a built-in diode in the fan ensures that the fan does not rotate).
2. Fan constantly rotates fast. Is the cooling cover on MAIN CONTROL very warm?

- Yes: Replace MAIN CONTROL.
No: Replace fan.
- Yes: Check to see if the correct voltage is selected (only MAINS CONNECTIONS AD-418/424).
No: Replace MAIN CONTROL.

Foot Control

If the faults are periodical, check the cable first.

1. Can the operating lamp or the cupfiller be operated using the foot control pedal?
- Yes: FC and NTC continue, BC OK.
No: 1. FOOT CONTROL is adjusted incorrectly (JP 15 pins 3 and 9 with the pedal in the resting position 1.25 VDC, in the right extreme approx. 0 VDC, and in the left extreme position 2.5 VDC.)
2. Bad connection in potentiometer on the FOOT CONTROL.
3. Foot control cable defective.
4. MAIN CONTROL defective.
2. Can the Flex patient chair be controlled using the foot control disc?
- Yes: OK.
No: Continue.

4. Unit fault finding

Do you measure approx. 5 VDC on JP15 pins 1 and 5 when the plug is disconnected?

- Yes: 1. FOOT CONTROL defective.
2. Foot control cable defective.
3. Foot control mechanics are defective (loose magnet)
- No: MAIN CONTROL defective.

HygiFlex Thermo - also see "Boiler HygiFlex Thermo"

Test HygiFlex Thermo. Is the water being heated?

- Yes: OK.
- No: 1. 35 hours have not lapsed since the last warm rinse.
2. Temperature sensor is defective (see chapter 5. "Boiler").
3. Fuse F3 on MAIN CONTROL is defective.
4. The heating element in the boiler is defective.
5. MAIN CONTROL defective.

HygiFlex Vac Suction

1. If HygiFlex Vac cannot start, short-circuit pins 3, 4, and 5 on JP23 for more than 10 sec. Does the unit switch to standby?

- Yes: Fault in HygiFlex Vac fittings or cable.
No: Replace MAIN CONTROL.

2. Is the mixing tank overflow and filling function OK?

- Yes: Continue.
- No: 1. The overflow is blocked.
2. The inlet fitting is blocked.
3. The magnet around the HygiFlex Vac valve piece is loose. (glue it)
4. HYGIFLEX VAC INPUT defective.
5. Solenoid valve for mixing tank inlet on water manifold is calcified or defective.

3. Start another HygiFlex Vac flushing sequence. Is the mixing tank emptied within 4 min. and filled 2/3 again?

- Yes: Continue.
- No: 1. The vacuum is too low.
2. The magnet on HygiFlex Vac valve connecting piece is loose (glue it).
3. The water pressure on the reduction valve is too low.
4. The inlet fitting on the mixing tank is blocked.
5. The HYGIFLEX VAC INPUT is defective.
6. The solenoid valve for mixing tank inlet on the manifold is calcified or defective.
7. INSTRUMENT CONTROL defective.
8. MAIN CONTROL defective.

4. Does the VacClean pump work?

- Yes: Continue.
- No: 1. O-rings in the pump leak.
2. Piston and cylinder in the pump are dirty.
3. Non-return valve defective.

5. Does the unit switch to standby by itself? Disconnect JP23. Does the unit function now?

- Yes: Fault in the HygiFlex fitting or cable.
No: Replace MAIN CONTROL.

4. Unit fault finding

HygiFlex Vac Ultra suction

1. If HygiFlex Vac Ultra does not start, shortcircuit pins 3, 4, and 5 on JP23 for more than 10 sec. Does the unit switch to standby?
Yes: Faulty HygiFlex Vac fitting (AC-521) or cable.
No: Replace MAIN CONTROL.
2. Is the filling function OK?
Yes: Continue.
No:
 1. Water pressure too low.
 2. Faulty solenoid valve.
 3. Inlet fitting blocked.
 4. Nozzle blocked.
 5. Faulty level switch
 6. SW1-3 mounted incorrectly.
3. Is the container sucked empty?
Yes: Continue.
No:
 1. Vacuum too low.
 2. Blocked delivery pipe/tube.
 3. Faulty fitting AC-521 (false air)
4. The unit switches to standby. Disconnect JP23. Does the unit function now?
Yes: Faulty HygiFlex Vac fitting or cable.
No: Replace MAIN CONTROL.

Indicator Lamps (spray indication)

- Is approx. 5 VDC measured between pins 1+3 and 1+4?
- Yes: Replace INDICATOR LAMPS PCB.
No: Replace INSTRUMENT CONTROL.

NTC Screen

1. Is the screen text difficult to read? (only screen with backlight)
Yes: Adjust contrast and/or backlight from the bottom back of the screen.
No: OK.
2. The screen is dead. Can the equipment be operated without using the screen, without display showing?
Yes: Replace.
No: See "Routine test" earlier in this chapter.

Programming Switch

1. Does the unit beep when the P-button is activated?
Yes: OK.
No: Continue.
2. Pull the plug from JP9. Is 0 Ohm measured between pins 1 and 2 when the P-button is pressed home?
Yes: Replace INSTRUMENT CONTROL.
No: Faulty wire or switch.

Separation Tank

Check that the separation tank and especially the 3 sensors are reasonably clean. If you have trouble with water in the dry side when using water with low calcium content, mount kit BA-129.

1. Does the tank stop during use?
Yes: Continue.
No: Go to 3.

4. Unit fault finding

2. Does the tank work with high frequency (approx. 1 stroke per second?)
Yes: Bad drainage.
No: Go to 4.
3. Is the suction weak?
Yes: - Clean filter at separation tank inlet.
No: Go to 5.
4. Shortcircuit pins 1 and 3 on JP5. Do you register alternating measurements, 1 VDC and 24 VDC every second on JP5 pins 3 and 5?
Yes: Continue.
No: MAIN CONTROL defective.
5. Can you hear drainage sounds from the cuspidor?
Yes: Replace separation tank.
No: Check the drain air inlet.

Solenoid valve

1. Does the solenoid valve itself work?
Yes: Continue.
No: Replace.
2. Is the cable OK?
Yes: Fault in electronics.
No: Repair.

Suction

1. Does the suction work constantly?
Yes: Fault in cable or in SUCTION HOLDERS.
No: Continue.
2. Disconnect 4JP7 from MAIN CONTROL. Does the suction work now?
Yes: Replace SUCTION HOLDERS.
No: Replace MAIN CONTROL.
3. Can both suction be activated?
Yes: Continue.
No:
 1. External fault (the relay can be heard when the suction is taken off its holder).
 2. SUCTION HOLDERS defective or the Hall elements are badly adjusted (The voltage changes from 5 to 0 VDC at JP7 on INSTRUMENT CONTROL between pins 1 and 3 or pins 1 and 4 when the suction is taken off its holder).
 3. INSTRUMENT CONTROL defect
 4. Cable breakdown in power cable connecting MAIN CONTROL and INSTRUMENT CONTROL.
 5. Magnet in suction tube nipple is defective.
 6. MAIN CONTROL defective.
4. Visually check the flushing function through the transparent HygiFlex Vac flush function tubes. Is the flushing function OK?
Yes: Continue.
No:
 1. The nozzles in the Select Vac unit are blocked.
 2. The tubes connecting the flushing unit and Select Vac are blocked.
 3. The flushing unit is dirty.
 4. The flushing unit solenoid valve is defective.
 5. The tube connecting the water manifold and the flushing unit is blocked
 6. MAIN CONTROL defective.

4. Unit fault finding

5. Is the suction powerful enough?
- Yes: OK.
No:
1. The suction plant strainer is blocked.
 2. The coarse filter in front of the separation tank is blocked.
 3. Select Vac unit is dirty.
 4. Select Vac solenoid valve is defective.
 5. The vacuum tube connecting the solenoid valves and the suction tube is blocked.
 6. Old bellows, replace with AE-124.
 7. MAIN CONTROL defective.

Surgical Plant

1. Can the surgical mode be programmed?
- Yes: Continue.
No: Go to 3.
2. Is there a mechanical blocking of the valve?
- Yes: Clean/repair.
No: OK.
3. Does the magnetic lock mechanism work?
- Yes: Continue.
No: Replace solenoid valve.
4. Are cable and plug OK?
- Yes: Replace INSTRUMENT CONTROL.
No: Repair.

Syringe

1. Does the syringe deliver 0.75-0.85 l/min of water and 5.5 - 6.5 l/min of air?
- Yes: If the syringe has a heating element, then continue, otherwise OK.
No:
1. Water filter in instrument bridge blocked.
 2. Needle valve defective.
 3. Syringe nozzle blocked.
 4. Syringe blocked.
 5. Water or air tube in stand or instrument bridge blocked.
2. Does the heating function work?
- Yes: OK.
No:
1. Valve block switches are dirty.
 2. Valve block defective.
 3. Heating element disconnected (there must be 3.6 Ohm between green and red wire and 36 Ohm between red and black wire when the syringe is activated).
 4. INSTRUMENT CONTROL defective.
 5. Power cable breakdown between MAIN CONTROL and INSTRUMENT CONTROL.
 6. Fuse F1 on INSTRUMENT CONTROL defective.

4. Unit fault finding

Transformer Unit

Switch the unit off and unplug JP27 from MAIN CONTROL.

1. Measure the resistance between pins:
1 and 3
2 and 5
5 and 7
7 and 9
9 and 11.
Does the resistance equal ∞ ?
Yes: MAIN CONTROL defective.
No: Mains voltage transformer defective.
2. On JP27 do you measure the following values between the pins:
1 and 2 approx. 12 volt
3 and 4 approx. 30 volt
5 and 6 approx. 27 volt
7 and 8 approx. 24 volt
9 and 10 approx. 27 volt
11 and 12 approx. 20.5 volt AC?
Yes: OK.
No: Replace transformer.

Valve System Instrument Bridge

Disconnect JP10 or VALVE CONTROL AD-448 from MAIN CONTROL. Activate the syringe until the water pressure has disappeared. Turn off unit inlet, if any.

1. The fault is related to one specific suspension. Open the respective solenoid valve on the select block. Can it be activated?
Yes: Replace select block.
No: Continue.
2. Is the solenoid valve OK?
Yes: Replace INSTRUMENT CONTROL.
No: Replace solenoid valve.
3. The fault is related to a specific function. Open the respective solenoid valve. Can it be activated?
Yes: Fault in water/air system.
No: Continue.
4. Is the solenoid valve OK?
Yes: Replace INSTRUMENT CONTROL.
No: Replace solenoid valve.

4. Unit fault finding

Instruments

General

1. If possible test the instruments on several suspensions. If the fault is related to a specific suspension, replace the defective suspension with the one next to it. Does it work now?

Yes: Replace INSTRUMENT CONTROL.
No: Replace suspension.

Note! On a BC unit, this procedure always requires a new configuration and adjustment.

2. Check the INSTRUMENT SELECTION diode indication while taking the suspensions forward and returning them. Also check for visible corrosion. Is the INSTRUMENT SELECTION OK?

Yes: Continue.
No: 1. INSTRUMENT SELECTION defective (Only use enamel protected printed circuit boards with plastic cover).
2. The cable connecting INSTRUMENT SELECTION and INSTRUMENT CONTROL is defective or badly connected.

3. Test the suspensions for dripping by disconnecting all instruments and QF couplings and turning the water to maximum. Do one or two suspensions drip?

Yes: 1. Select valve block leaks.
2. Non-return valve mounted between select block and select valve.
No: FC/NTC: Continue. BC: Go to 5.

4. Do all the suspensions drip?

Yes: 1. Proportional valve for water leaks.
2. FLOWMETER does not work correctly.
3. INSTRUMENT CONTROL defective.
4. Incorrect gasket in proportional valve for water (the black one is correct).
5. Remove non-return valves mounted between select block and select valve.
No: Continue.

5. Can the spray water be regulated?

Yes: Continue.
No: 1. The water pressure is set too low (2.2 bar).
2. Nozzle is blocked (between filter block and valve block).
3. FC/NTC: FLOWMETER defective (water flows when JP4 is disconnected from INSTRUMENT CONTROL).
4. Proportional valve, select valve or needle valve (only syringe) defective.
5. INSTRUMENT CONTROL defective.
6. FOOT CONTROL defective.
7. Cable for foot control defective.

Note!

Often the flowmeter is replaced when the proportional valve is the real cause of the fault.

As a **temporary emergency solution** you may remove JP4 from INSTRUMENT CONTROL. In this way, the dentist obtains maximum water flow for all instruments.

4. Unit fault finding

6. Can the spray air flow be regulated?
- Yes: Continue.
No: 1. Proportional/needle valve defective.
2. INSTRUMENT CONTROL defective.
3. FOOT CONTROL defective.
4. Foot control cable defective.
5. Power cable between MAIN CONTROL and INSTRUMENT CONTROL defective.
6. MAIN CONTROL defective.
7. Can the turbine driving air flow and the motor cooling air flow be regulated according to specifications? (see earlier)
- Yes: Continue.
No: 1. Proportional valve defective.
2. Compressor too weak.
3. INSTRUMENT CONTROL defective.
4. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
5. FOOT CONTROL defective.
6. Foot control cable defective.
7. MAIN CONTROL defective.
8. Does the fibre optic light work on all suspensions?
- Yes: OK.
No: 1. Bulb defective.
2. Centre switch in turbine broken.
Note! In all cases check the QF coupling for any deposits due to contact!
3. INSTRUMENT CONTROL defective.
4. MAIN CONTROL defective.

Composite curing lamp

1. Does the composite curing lamp work and is it recognized on all suspensions that it can be mounted on?
- Yes: Continue.
No: 1. Bulb defective.
2. Lamp defective (probably centre switch).
3. INSTRUMENT CONTROL defective.
4. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
5. MAIN CONTROL defective.
6. QF coupling defective.
2. Test the cooling air regulation of the composite curing lamp on all suspensions. Is the regulation OK?
- Yes: Continue.
No: 1. Air tube in the lamp is blocked.
2. Proportional valve defective.
3. INSTRUMENT CONTROL defective.
4. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
5. MAIN CONTROL defective.

4. Unit fault finding

3. Test the curing ability of the composite curing lamp (use tester UC-665). Is the curing ability OK?
- Yes: OK.
No:
1. Bulb defective.
 2. Power too low (between pins 3 and 4 on suspension, minimum 9.4 V)
 3. Light probe defective.
 4. Lamp filter mounted incorrectly.
 5. INSTRUMENT CONTROL defective.
 6. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
 7. MAIN CONTROL defective.

Motor

1. Is the motor recognized on all suspensions that it can be mounted on?
- Yes: Continue.
No:
1. Internal resistance incorrect (carbon, winding, rotor). Try another motor.
 2. Cable breakdown in suspension.
 3. Bad contact in coupling (measure approx. 4.7 Ohm on the 2 extreme pins)?
 4. INSTRUMENT CONTROL defective.
 5. MAIN CONTROL defective.
2. Test the left and right motor rotation and voltage. Is the voltage between pins 1 and 2 in the suspension min 1.9 - 2.2 VDC (the motor starts) and max 22.2 VDC?
- Yes: OK.
No:
1. Internal resistance incorrect (carbon, winding, rotor).
 2. Potentiometer on FOOT CONTROL is dirty and has a bad connection.
 3. Cable breakdown in power cable connecting MAIN CONTROL and INSTRUMENT CONTROL.
 4. Cable breakdown in foot control cable.
 5. Cable breakdown in suspension.
 6. MAIN CONTROL defective.
 7. INSTRUMENT CONTROL defective.

Ultrasonic scaler - type L

1. Does the scaler work and is it recognized on all suspensions that it can be mounted on?
- Yes: Continue.
No:
1. Scaler handpiece defective.
 2. QF coupling defective (Measure approx. 24 VDC on the 2 middle connector pins).
 3. INSTRUMENT CONTROL defective.
 4. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
 5. FOOT CONTROL defective.
 6. Foot control cable defective.
 7. MAIN CONTROL defective.
 8. Faulty fuse. Check F2 on INSTRUMENT CONTROL.

4. Unit fault finding

2. Check if the cooling water hits the scaler tip and if the front 1/3 of the tip is vibrating. Are water function and vibration OK?
- Yes: OK.
No:
1. The tip is blocked.
 2. The water tube is blocked.
 3. Water pressure is set too low at the reduction valve.
 4. The cooling water is set too low when using the foot control.
 5. The tip is too short (use the tip gauge).
 6. Fault in scaler electronics.

Ultrasonic scaler - type O

1. Is there any cooling water and is it sprayed correctly?
- Yes: Continue.
No:
1. Defective water inlet.
 2. Continue.
2. Does the scaler work on all suspensions?
- Yes: Continue.
No:
1. Incorrect code chip on INSTRUMENT CONTROL.
 2. No recognition (If not NTC, check the LEDs on the bridge while keeping the pedal pressed down: there must be 3 steps).
 3. Check that the inner of the handpiece is dry and clean and that the ferrite rod is tightened.
 4. Apply an instrument you know that works and test with max. water pressure and medium power for 1-2 min. If working now, replace existing instrument.
 5. Apply a handpiece, known to function, with the existing instrument. Test with max. water pressure and medium power for 1-2 min. If working now, change existing handpiece.
 6. Check the QF coupling and the connection cable to the electronics.
 7. Defective fuse. Check F2 on INSTRUMENT CONTROL.
 8. Defective INSTRUMENT CONTROL. Measure min. 24.5 VDC on JP21 between pins 1 and 2 at max. power.
 9. Defective type O scaler board.

Turbine

1. Does the turbine work irregularly or is it noisy at high speed?
- Yes:
1. Bad maintenance, bearing defective.
 2. Compressor too weak (after approx. 1 min. the speed is reduced and then increased again).
 3. FC/NTC: Proportional valve defective.
 4. INSTRUMENT CONTROL defective.
 5. Power cable connecting MAIN CONTROL and INSTRUMENT CONTROL defective.
 6. MAIN CONTROL defective.
- No: OK.

5. Plugs and connectors for unit

Boiler

MAIN CONTROL AD-400/AD-440 JP4 BOILER SENSE	Temp. (°C)	10	15	20	25	30	35	40	50	60	70	80	90	100	110	120
	Resist. (kOhm)	207.9	161.7	126.7	100.0	79.4	63.5	51.0	33.6	22.6	15.5	10.8	7.7	5.57	4.08	3.03

Chair

MAIN CONTROL JP25 CHAIR COM- MUNICATION	Pin	Function
	1	Transmission of serial signals (no relevant measurements)
	2	Receipt of serial signals (no relevant measurements)
	3	0-reference
	4	Not in use
	5	Not in use
	6	When JP 25 is disconnected. Boiler off: approx. 5 VDC, boiler on: 0 VDC.

Cupfiller

MAIN CONTROL JP16 CUPFILLER SENSE	Pin	Function
	1	0-reference
	2	Control of infrared transmitter (no relevant measurements)
	3	Not in use
	4	5 VDC
	5	Signal from infrared receiver. Varies between 0 and approx. 4 VDC (with reference to pin 1). At direct light in the sensor the voltage must increase.

Flowmeter

INSTRUMENT CONTROL JP4	Pin	Function
	1	+ 15 VDC
	2	- 15 VDC
	3	Flow (ml/min.) Voltage (mV)
		0 +/- 10
		10 No relevant measurements
		20 130
		35 345
		50 660
		100 2300
	4	0 VDC when instrument with water cooling is taken forward, otherwise 5 VDC.
	5	5 VDC
	6	0-reference
	7	Not in use

5. Plugs and connectors for unit

Foot Control

MAIN CONTROL JP15 FOOT CONTROL	Pin	Function
	1	Digital 0-reference, voltage on all pins measured with reference to pin 1.
	2	5 VDC
	3	Pedal horizontal, 0 (to the right), 1,25 (standby), 2,5 VDC (to the left)
	4	Pedal vertical, 5 VDC when standby and 0 VDC when activated
	5	Disc to the right, 5 VDC when standby and 0 VDC when activated (BC unit always 0 VDC)
	6	Disc downwards, 5 VDC when standby and 0 VDC when activated (BC-unit always 0 VDC)
	7	Disc to the left, 5 VDC when standby and 0 VDC when activated (BC-unit always 0 VDC)
	8	Disc upwards, 5 VDC when standby and 0 VDC when activated (BC-unit always 0 VDC)
	9	Analog 0-reference, for signals from potentiometer arm)
	10	Not in use

HygiFlex Vac

MAIN CONTROL JP23 HYGIFLEX VAC IN	Pin	Function
	1	0-reference
	2	Not in use
	3	Left suction, 3 - 4 VDC when standby, otherwise 0 VDC
	4	Right suction, 3 - 4 VDC when standby, otherwise 0 VDC
	5	5 VDC

Indicator Lamps

INSTRUMENT CONTROL JP10 INDICATOR LAMPS	Pin	Function
	1	5 VDC
	2	Not in use
	3	Green: On approx 4.75 VDC, off approx. 0.15 VDC (measured with reference to pin 1 (+))
	4	Yellow: On approx 4.75 VDC, off approx. 0.15 VDC (measured with reference to pin 1 (+))

Instruments

INSTRUMENT CONTROL JP18	Pin	Function
	1	Suspension 1 (left hand unit 4). Approx. 0 VDC when activated, otherwise 5 VDC
	2	Suspension 2 (left hand unit 1). Approx. 0 VDC when activated, otherwise 5 VDC
	3	Suspension 3 (left hand unit 2). Approx. 0 VDC when activated, otherwise 5 VDC
	4	Suspension 4 (left hand unit 3). Approx. 0 VDC when activated, otherwise 5 VDC
	5	5 VDC
	6	Not in use
	7	0-reference
	8-14	Not in use

5. Plugs and connectors for unit

Main Valves

MAIN CONTROL JP10	Pin	Function
	1	24 VDC for VALVE CONTROL AD-448
	2	VALVE CONTROL AD-448. Approx. 1 VDC when activated, otherwise approx. 24 VDC
	3	24 VDC for VALVE CONTROL AD-448
	4	VALVE CONTROL AD-448. Approx. 1 VDC when activated, otherwise approx. 24 VDC

VALVE CONTROL JP10	Pin	Function
	1	24 VDC for main water valve
	2	Main water valve. Approx. 12 VDC when activated, otherwise approx. 24 VDC
	3	24 VDC for main air valve
	4	Main air valve. Approx. 12 VDC when activated, otherwise approx. 24 VDC

Separation Tank

MAIN CONTROL JP5 SEPARATION TANK	Pin	Function
	1	Operation sensor
	2	Overflow sensor
	3	Reference sensor (0-reference). Voltage is measured with reference to pin 3
	4	24 VDC
	5	Operat. solenoid valve. Approx. 1 VDC when activated, otherwise approx. 24 VDC
	6	24 VDC
	7	Shut-off solenoid valve. Approx. 1 VDC when activated, otherwise approx. 24 VDC
	8	24 VDC
	9	Water solenoid valve. Approx. 1 VDC when activated, otherwise approx. 24 VDC

Solenoid valve

Note! Measure with reference to 0-reference (e.g. on JP21, pin 1)

MAIN CONTROL JP7 VALVE BLOCK	Pin	Function
	1	24 VDC
	2	Solenoid valve for cuspidor. Approx. 1 VDC when activated, otherwise 24 VDC
	3	Solenoid valve for cup filler. Approx. 1 VDC when activated, otherwise 24 VDC
	4	Solenoid valve for HygiFlex Vac. Approx. 1 VDC when activated, otherwise 24 VDC
	5	Solenoid valve for ejector. Approx. 1 VDC when activated, otherwise 24 VDC

5. Plugs and connectors for unit

Suction

INSTRUMENT CONTROL	Pin	Function
JP7	1	0-reference
	2	5 VDC
	3	Approx. 5 VDC when right suction off holder, otherwise approx. 0 VDC
	4	Approx. 5 VDC when left suction off holder, otherwise approx. 0 VDC
	5	Not in use

Valve System Instrument Bridge

INSTRUMENT CONTROL	Pin	Function
JP11	1	Proportional valve water. Open between 10 and 14 VDC (with reference to pin 2)
	2	0-reference proportional valve water
	3	Proportional valve driving/cooling air. 7.5 to 22 VDC (with reference to pin 4)
	4	0-reference proportional valve air
	5	Proportional valve spray air. 7.5 to 22 VDC (with reference to pin 6)
	6	0-reference proportional valve spray air
	7	Select valve 1. Approx. 1 VDC when activated, otherwise approx. 24 VDC
	8	24 VDC for select valve 1.
	9	Select valve 2. Approx. 1 VDC when activated, otherwise approx. 24 VDC
	10	24 VDC for select valve 2.
	11	Select valve 3. Ca. 1 VDC when activated, otherwise approx. 24 VDC
	12	24 VDC for select valve 3.
	13	Relief valve 3. Ca. 1 VDC when activated, otherwise approx. 24 VDC
	14	24 VDC for relief valve.

6. Operating lamp

Adjustment of lamp arm

If a lamp (fitted on a unit) swings to a side by itself, the arm swivel joint on the stand has not been adjusted horizontally. Adjust at the nuts on the stand attachment bolts. (See Installation manual).

The vertical movement is regulated by a gas spring and does not normally need to be adjusted.

For lamp adjustments, see Figure 25.

Brake

It may be necessary to adjust the brake (1) on the lamp because of wear of the gas spring.

- 1) Dismantle the bottom lamp cover. The brake is at the intermediate link behind the cable.
- 2) Adjust the brake using a screwdriver.

Intermediate link

Adjust the friction brake in the intermediate link (2):

- 1) Unscrew the bottom cover of the intermediate link.
- 2) Adjust the brake using a 3 mm Allen key.

Front link

Adjust the friction brake in the front link (3):

- 1) Unscrew the bottom lamp cover.
- 2) Unscrew the cover from the forked link (5).
- 3) Loosen the friction brake in the front link using a 3 mm Allen key.
- 4) Press front link and bushing in forked link hard together. Carefully tighten the friction brake.

Lamp head

Adjust the friction in the vertical movement of the lamp head (4):

- 1) Dismantle the two plugs on each side of the lamp head.
- 2) Hold taper pincers around the two nuts to adjust the friction.

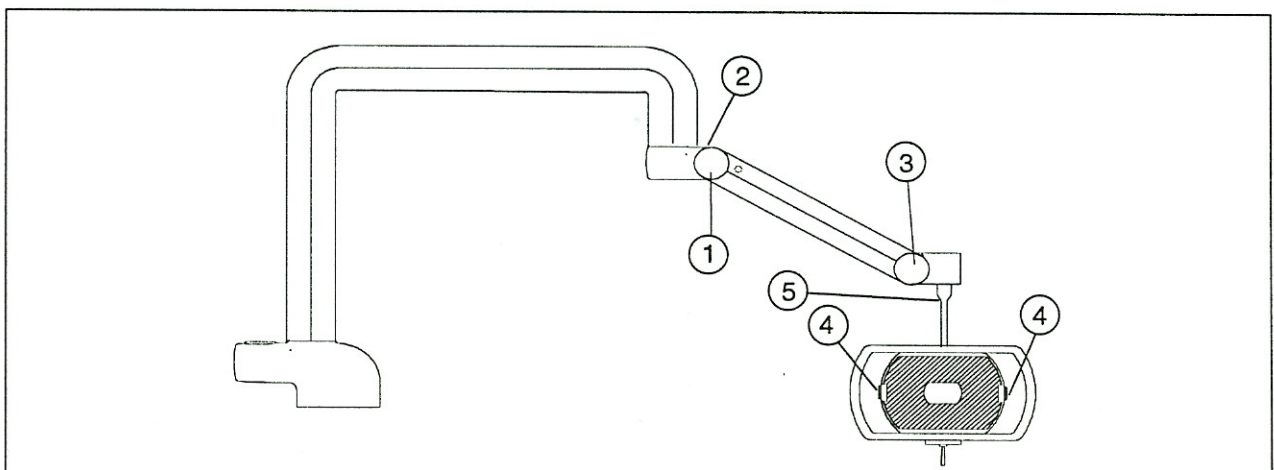


Figure 25. Lamp arm.

6. Operating lamp

Fault finding

Operating lamp

Can the lamp be switched on and the light intensity varied correctly using the lamp switch?

Yes: OK.

- No:
1. Defective bulb (measure approx. 0.6 Ohm on JP20 pins 4 and 5 ?)
 2. Defective transformer
 3. Defective switch
 4. Cable breakdown
 5. MAIN CONTROL defective.

Does the operating lamp stay in all positions?

Yes: End of functional test.

- No:
1. Incorrect adjustment of lamp arm brake.
 2. Friction in link, see "Adjustment of lamp arm".
 3. Defective gas spring.

Transformer Operating Lamp

Do you measure approx. 9, 11, or 12 volt on JP19 pins 6 and 12 depending on chosen light intensity?

Yes: OK.

No: Replace transformer.

Connectors

MAIN CONTROL JP19 TRANSFORMER-OPERATING	Pin	Function
	1	0-conductor for primary wiring
	3	Primary terminal medium, 220 V between pin 1+3 gives medium intensity
	6	Secondary terminal. Bulb voltage is measured between pin 6+12
	8	Primary terminal minimum, 220 V between pin 1+8 gives min. intensity
	9	Primary terminal maximum, 220 V between pin 1+9 gives max. intensity
	12	Secondary terminal. Bulb voltage is measured between pin 6+12

MAIN CONTROL JP20 OPERATING LAMP	Pin	Function
	1	Not in use
	2	0-reference for 5 VDC
	3	0 VDC if switch is activated to the right, otherwise 5 VDC
	4	Second. winding from transformer. Measure bulb VAC between pin 4+5
	5	Second. winding from transformer. Measure bulb VAC between pin 4+5
	6	0 VDC if the switch is activated to the left, otherwise 5 VDC

7. Patient chair II

Adjustment of head rest

If the head rest handle can be turned more than 90° degrees, it must be tightened.

- 1) Loosen the head rest completely by turning the handle 180° degrees anti-clockwise.
- 2) Turn the head rest so the swivel joint with the adjustment disk becomes visible.
- 3) Unscrew the screw.
- 4) Turn the adjustment disk anti-clockwise to tighten the swivel joint. (Use key SD-388).

Fuses

Fuse	Position	Comments
6,3 AT	Patient chair	Main fuse
F1 500 mAT	CHAIR CONTROL	24 VDC
F2 500 mAT	CHAIR CONTROL	5 VDC
F3 6,3 AT	CHAIR CONTROL	Chair motors

7. Patient chair II

Light-emitting diodes on CHAIR CONTROL

LED	Function	Lights...
D3	Right chair switch to the left	when switch is activated
D4	Right chair switch to the right	when switch is activated
D5	Right chair switch down	when switch is activated
D6	Right chair switch up	when switch is activated
D7	Middle chair switch to the right	when switch is activated
D8	Middle chair switch to the left	when switch is activated
D9	Middle chair switch down	when switch is activated
D10	Middle chair switch up	when switch is activated
D11	P-button chair	when switch is activated
D12	End stop backrest backwards	when back is all down
D13	Emergency stop	when emergency activat.
D14	Backrest reference position	in middle position
D15	End stop backrest forward	when back is upright
D16	End stop seat down	when seat is all down
D17	Seat position	in lower position
D18	End stop seat up	when seat is all up
D23	Fuse, 36 VAC	constant
D24	Fuse, 14 VAC	constant
D25	+ 5 VDC	constant
D26	+ 24 VDC	constant
D28	Fuse, 220 VAC	constant

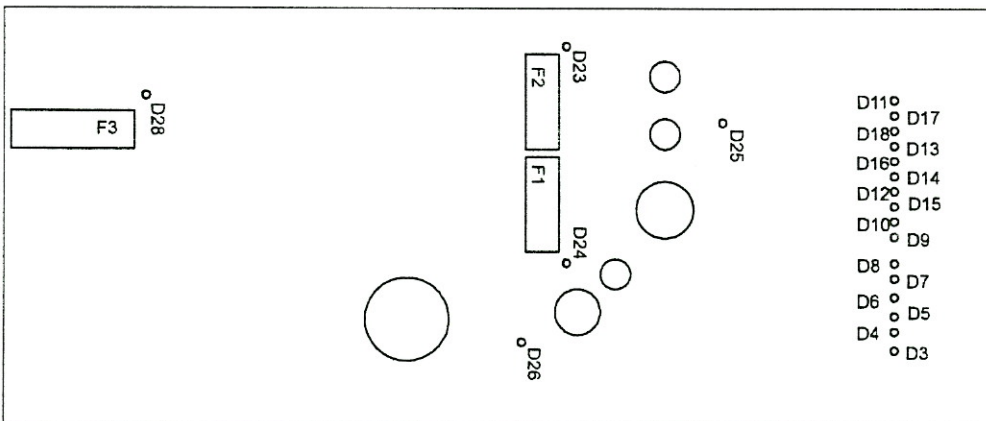


Figure 26. CHAIR CONTROL.

Fault finding

Disconnect the communication cable from JP1. (If the fault has to do with communication, see "4. Fault finding - Chair communication FC/NTC").

Routine test

- | | | | |
|----|---|------|---|
| 1. | Do the LEDs D23, D24, and D28 light constantly | Yes: | Continue. |
| | | No: | 1. Check main fuse on front panel.
2. Check fuses F1 - F3. |
| 2. | Do the LEDs D25 and D26 light constantly? | Yes: | Continue. |
| | | No: | Replace CHAIR CONTROL. |
| 3. | Do the LEDs D3 - D11 and D13 light when switches or emergency stop are not activated? | Yes: | Check relevant switch or emergency stop. |
| | | No: | Continue. |
| 4. | Do the LEDs D12, D15, D16, and D18 light when chair is in middle position? | Yes: | 1. Check relevant end stop.
2. Incorrectly positioned cam disks. |
| | | No: | Continue. |
| 5. | Does the LED D14 light in middle position? | Yes: | Continue. |
| | | No: | 1. Check switch.
2. Reset chair. |

Single faults

- | | | | |
|----|--|------|--|
| 1. | Does the chair forget its working positions? | Yes: | 1. Reset chair.
2. Replace CHAIR CONTROL. |
| | | No: | Continue. |
| 2. | Does the chair stop unmotivated? | Yes: | Incorrectly positioned cam disks. |
| | | No: | Continue. |
| 3. | Does the chair block totally? | Yes: | 1. Reset chair.
2. Replace CHAIR CONTROL.
3. Cable breakdown at emergency switch.
Replace cable set SD-450. |
| 4. | Can the chair be programmed? | Yes: | Continue. |
| | | No: | 1. Incorrectly positioned cam disks.
2. Check switches.
3. Reset chair. |
| 5. | The fault has to do with one of the motors. Does the motor work with direct mains voltage? | Yes: | Continue. |
| | | No: | Replace motor. |
| 6. | Does the fault only occur when operating via chair switch? (manual operation) | Yes: | Replace chair switch. |
| | | No: | Replace CHAIR CONTROL. |
| 7. | Do dipswitches function correctly? | Yes: | Continue. |
| | | No: | Replace defective dipswitch. |
| 8. | Are cables OK? | Yes: | Replace CHAIR CONTROL. |
| | | No: | Replace defective cables. |
| 9. | Does reference dipswitch function correctly? | Yes: | Replace CHAIR CONTROL. |
| | | No: | Replace reference switch. |

7. Patient chair II

10. Do resonance sounds occur in connection with chair movements?
- Yes: 1. Place a fibre washer (UC-437, instructions enclosed), if not already mounted, in both ends of the motor transmission axle and grease with universal grease.
2. If grating mark on innerside of cover, place 1 mm metal washer between metal pins on sides and cover.
3. Replace seat upholstery.
No: OK.
11. The fault has to do with creaking and groaning in the upholstery.
Does it creak where seat and back upholstery meet?
- Yes: Lift off backrest, remove staples on back ends and file off foam where it creaks.
Remount backrest.
No: Continue.
- Does the seat upholstery rub against the cover behind it when in movement (no air between)? (MC-847 and MC-848)?
- Yes: 1. If grating mark on innerside of cover, place 1 mm metal washer between metal pins in sides and cover.
2. Replace seat upholstery.
No: OK.

Connectors

CHAIR CONNECTOR JP1	Pin	Function
	1	Receipt of serial signals (no relevant measurements)
	2	Transmission of serial signals (no relevant measurements)
	3	0-reference
	4	Screen
	5	Not in use

CHAIR CONNECTOR JP3	Pin	Function
	1	5 VDC when end stop seat down activated, otherwise 0 VDC
	2	5 VDC when end stop seat up activated, otherwise 0 VDC
	3	5 VDC when seat is in lower position

CHAIR CONNECTOR JP4	Pin	Function
	1	0 when p-button chair activated, otherwise 5 VDC
	2	5 VDC when emergency stop activated, otherwise 0 VDC
	3	5 VDC when backrest reference position switch activated, otherwise 0 VDC
	4	5 VDC when end stop backrest backwards activated, otherwise 0 VDC
	5	5 VDC when end stop backrest forward activated, otherwise 0 VDC
	6	Not in use
	7	Not in use
	8	0-reference

7. Patient chair II

CHAIR CONNECTOR JP5	Pin	Function
	1	0 VDC when last position activated via foot control, otherwise 5 VDC
	2	0 VDC when zero position activated, otherwise 5 VDC
	3	0 VDC when position 2 activated, otherwise 5 VDC
	4	0 VDC when position 1 activated, otherwise 5 VDC
	7	0-reference

CHAIR CONNECTOR JP6 JP7	Pin	Function
	1	0 VDC when foot control chair up, otherwise 5 VDC
	2	0 VDC when foot control chair down, otherwise 5 VDC
	3	0 VDC when foot control backrest forward, otherwise 5 VDC
	4	0 VDC when foot control backrest backwards, otherwise 5 VDC
	5	0-reference

CHAIR CONTROL JP3	Pin	Function
	1	220 VAC inlet - phase
	5	220 VAC inlet - zero

CHAIR CONTROL JP1	Pin	Function
	1	Phase 1 lifting motor (chair goes up when 220 VAC between pins 1 and 3)
	2	Phase 2 lifting motor (chair goes down when 220 VAC between pins 2 and 3)
	3	Zero - lifting motor
	4	Not in use

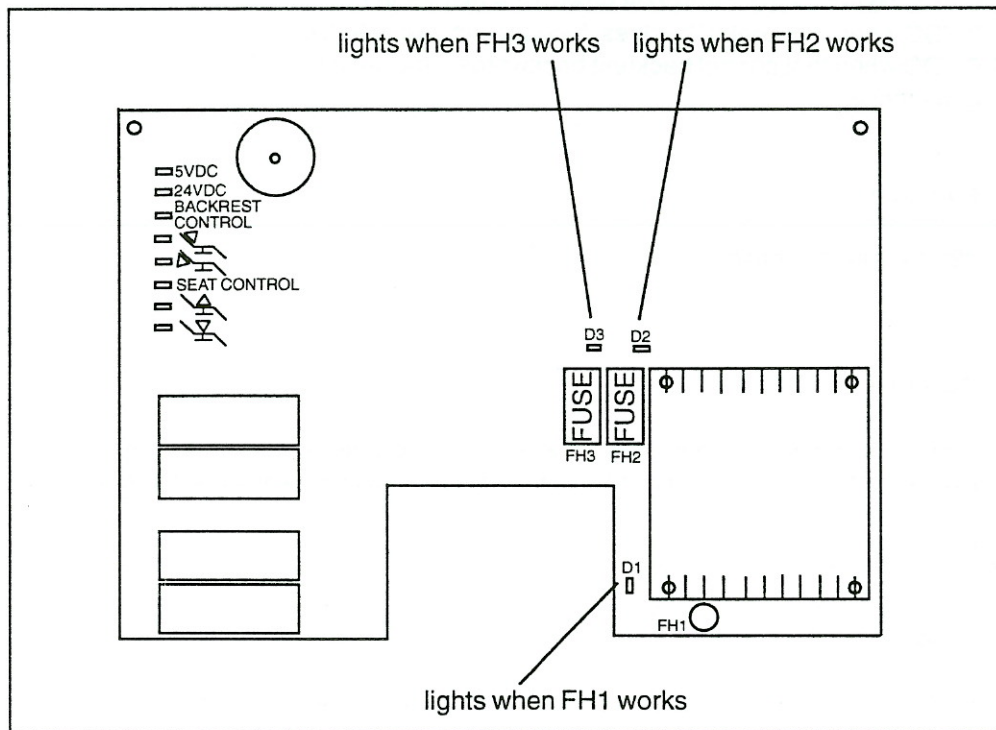
CHAIR CONTROL JP2	Pin	Function
	1	Phase 1 backrest motor (forward when 220 VAC between pins 1 and 3)
	2	Phase 2 backrest motor (backwards when 220 VAC between pins 2 and 3)
	3	Zero backrest motor

8. Patient chair I

Fuses

Fuse	Position	Comments
6,3 AT	Patient chair	Main fuse
FH1 6,3 AT	CHAIR CONTROL	Chair motors
FH2 500 mA	CHAIR CONTROL	5 VDC
FH3 500 mA	CHAIR CONTROL	24 VDC

Light-emitting diodes on CHAIR CONTROL



Fault finding

Disconnect communication cable and unit. (If the fault has to do with communication, see "4. Fault finding - Chair communication FC/NTC").

If it is not immediately evident where the fault is, follow this procedure:

1. Remove the foot switch cover. It is screwed on with 2 screws. Switch on the patient chair main switch.
Do the LEDs light at all 3 fuses?
Yes: Go to 13.
No: Continue.
2. Are all LEDs off on CHAIR CONTROL?
Yes: Continue.
No: Go to 9.
3. Is the main fuse blown?
(placed next to main switch)
Yes: Continue.
No: Remove switch panel. Measure 220 VAC through the circuit and establish why 220 VAC does not reach CHAIR CONTROL.
4. Replace main fuse. Activate chair foot switches in different directions.
Does main fuse blow again?
Yes: Go to 5.
No: OK.
5. Disconnect JP8, JP9, and JP10 from CHAIR CONTROL. Does main fuse still blow?
Yes: Remove switch panel. Measure 220 VAC through the circuit and find the shortcircuit.
No: Continue.
6. Connect JP8 again. Activate chair foot switches in different directions. Does main fuse or F1 blow?
Yes: Replace CHAIR CONTROL.
No: Continue.
7. Connect JP9. Activate chair foot switches in different directions. Does main fuse or F1 blow?
Yes: Fault in lifting motor - replace.
No: Continue.
8. Connect JP10. Activate chair foot switches in different directions. Does main fuse blow?
Yes: Fault in backrest motor - replace.
No: OK? Otherwise continue.
9. Is F2 or F3 blown?
Yes: Replace fuse(s) and continue.
No: Go to 11.
10. Does F2 or F3 still blow?
Yes: Replace CHAIR CONTROL.
No: OK? Otherwise continue.
11. Is F1 blown?
Yes: Replace fuse and continue.
No: Go to 13.
12. Does F1 still blow?
Yes: Disconnect JP9 and JP10 from CHAIR CONTROL and go to 7.
No: OK? Otherwise continue.
13. Are both chair motors out of order? (The unit does not carry out HygiFlex Thermo)
Yes: Continue.
No: Go to 16.

8. Patient chair I

14. Switch off both unit and chair on main switches. Disconnect JP1 from CHAIR CONTROL. Switch on. Does the chair work? Yes: Fault in communication with unit, see "Chair communication FC/NTC" under 4. Fault finding. No: Continue.
15. Does left/right foot switch function (chair switch), middle foot switch (working position selector) and programming switch work? Left/right foot switch is connected to JP6/JP7, middle foot switch to JP8 and the programming switch to JP4 on CHAIR CONTROL. Do the connectors transmit the right signals? (See "Connectors") Yes: Replace CHAIR CONTROL. No: Repair or replace foot switch/programming switch or cable.
16. Is it impossible to activate one of the two motors? Yes: Continue. No: Go to 20.
17. Has the motor locked chair/back in an end position? Yes: Continue. No: Go to 19.
18. Do the end stops for the respective movement function correctly? (See "Connectors", JP3 and JP4) Yes: Continue. No: Repair
19. Does the motor function correctly?
a. Test with another CHAIR CONTROL or
b. Disconnect the 220 VAC plug (between motor and CHAIR CONTROL) and connect 220 VAC directly to the motor, see "Connectors"
Warning! 220 VAC.
End stop does not work. Yes: Replace CHAIR CONTROL. No: Replace motor.
20. When using the foot control, is the chair activated in the right direction? Yes: Go to 15 (except P-switch). No: Continue.
21. Does the chair move to correct outer position? Yes: Continue. No: Go to 23.
22. Is end stop adjusted correctly and are the signals from end stop switches correct? (See "Connectors", JP3 and JP4) Yes: Replace CHAIR CONTROL. No: Adjust or repair.
23. The chair moves approx. 5 cm up if you press chair or backrest to go downwards or the emergency stop of the back does not work? Yes: Continue. No: Go to 25.
24. Is signal from switch for backrest emergency stop correct? Yes: Replace CHAIR CONTROL. No: Reparér, justér eller udskift kontakt.
25. Is it impossible to program a working position? Yes: Continue. No: Go to 28.
26. Is a beep heard when you press the programming switch? Yes: Replace CHAIR CONTROL. No: Continue.
27. Is the signal from the programming switch OK? (See "Connectors", JP4) Yes: Replace CHAIR CONTROL. No: Repair or replace programming switch or supply lines.

8. Patient chair I

CHAIR CONTROL	Pin	Function
JP6 JP7	1	0 when chair goes forward, otherwise 5 VDC
	2	0 when chair goes backwards, otherwise 5 VDC
	3	0 when backrest goes forward, otherwise 5 VDC
	4	0 when backrest goes backwards, otherwise 5 VDC
	5	0-reference

CHAIR CONTROL	Pin	Function
JP8	1	220 VAC inlet - phase
	5	220 VAC inlet - zero

CHAIR CONTROL	Pin	Function
JP9	1	Phase 1 lifting motor (chair goes forward when 220 VAC between pins 1 and 3)
	2	Phase 2 lifting motor (chair goes backwards when 220 VAC between pins 2 and 3)
	3	Zero - lifting motor
	4	Not in use

CHAIR CONTROL	Pin	Function
JP10	1	Phase 1 backrest motor (forward when 220 VAC between pins 1 and 3)
	2	Phase 2 backrest motor (backwards when 220 VAC between pins 2 and 3)
	3	Zero backrest motor

Survey

Check list for annual service BC/FC/NTC

List of all Flex Integral printed circuit boards (incl. numbers)

Diagrams

- Flex Integral, Electrical structure (MC-470)
- Flex Integral unit - Water, air, vacuum and media diagram (MC-462)
- Flex Integral unit - Water and air diagram (MC-400)
- Flex Integral Chair, Electrical structure (MC-471)
- Patient Chair # 2, wiring diagram (YA-953)
- Flex Integral, wiring diagram (YA-956)

Component identity, Main Control AD-440

Compatibility table of hardware and software versions



Faultfinding scaler type O

1. Does the scaler oscillate on all the suspensions, it can be mounted on?

Yes: Continue.

- No:
1. Wrong code chip at INSTRUMENT CONTROL.
 2. Scaler not recognised (If not an NTC, check the light emitting diodes at the bridge, while pressing the pedal down: there should be 3 steps)
 3. Ferrite/tip defect.
 4. Hand piece defect.
 5. Type O control defect.
 6. INSTRUMENT CONTROL defect. If OK, you should be able to measure at least 24.5 VDC at JP21 between pin 1 and 2 at maximum power.

2. Does the scaler continue with working under load?

Yes: Continue.

- No:
1. The tip is worn.
 2. Ferrite defect.
 3. Hand piece defect.
 4. Type O control defect.
 5. INSTRUMENT CONTROL defect. If OK, you should be able to measure at least 24.5 VDC at JP21 between pin 1 and 2 at maximum power.

3. Is the cooling water supply and the spray itself OK?

Yes: OK

- No:
1. Water flow not adjusted correctly.
 2. Tip maybe blocked.
 3. Water pressure adjusted too low.
 4. Water supply not correct.
 5. Defect flowmeter.
 6. Hand piece blocked.



Faultfinding HygiFlex Vac Ultra

- | | |
|--|---|
| 1. If HygiFlex Vac Ultra can not be started, short-circuit pin 3, 4, and 5 at JP23 for more than 10 sec. Does the unit turn to stand-by? | Yes: Fault in HygiFlex Vac fitting or cable.
No: Replace MAIN CONTROL. |
| 2. Is the filling function OK? | Yes: Continue.
No: 1. Water pressure too low.
2. Solenoid valve defect.
3. Inlet fitting blocked.
4. Nozzle in container blocked.
5. Level switch defect.
6. SW1-3 set wrong. |
| 3. Is the container emptied? | Yes: Continue.
No: 1. The vacuum is too low.
2. Ascending pipe/tube blocked.
3. AC-521 defect (false air). |
| 4. Does the unit switch to stand-by by itself? Unplug JP23. Does the unit function now? | Yes: Fault in the HygiFlex Vac fitting or cables.
No: Replace MAIN CONTROL. |

