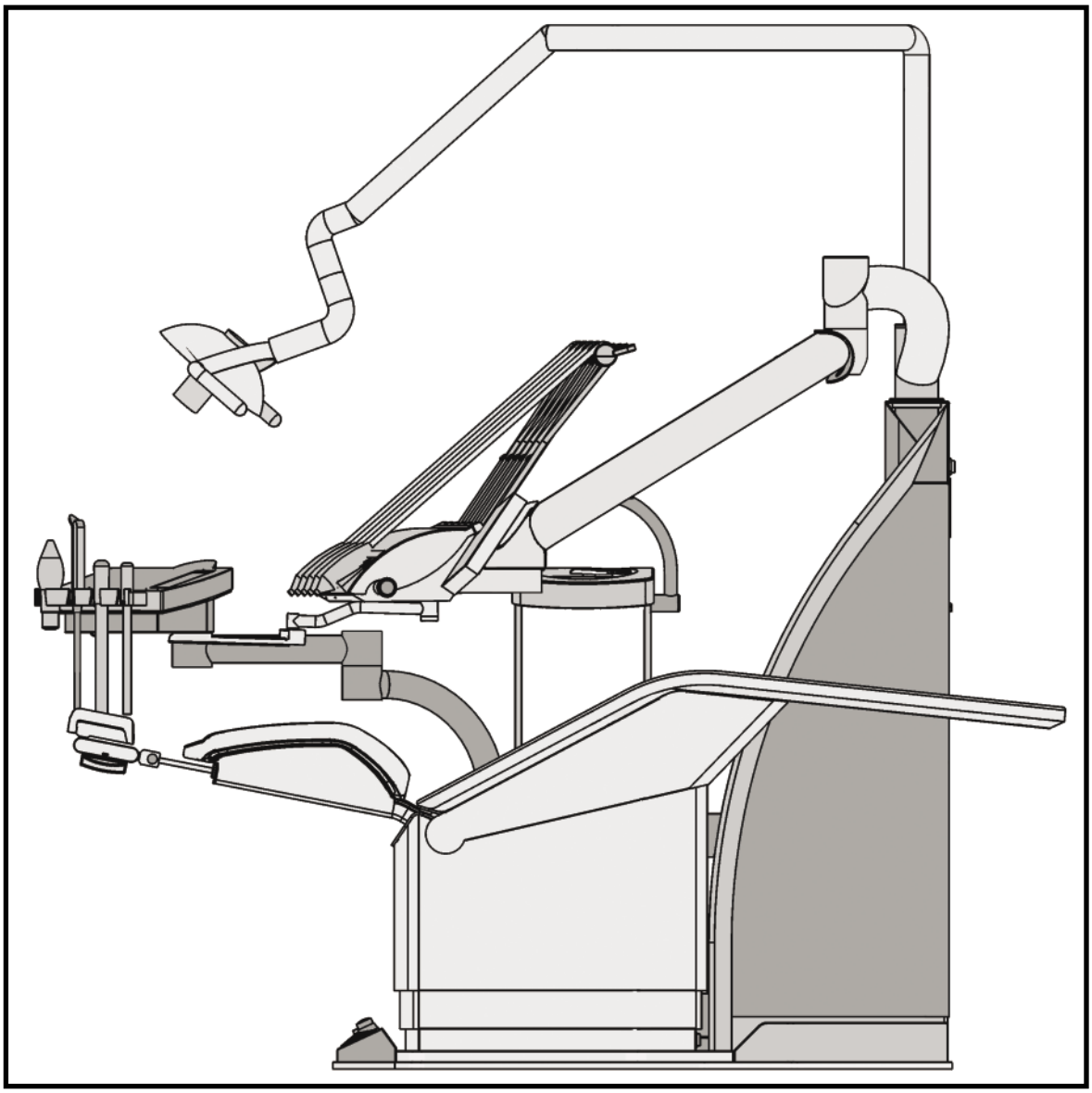
FINNDENT
The Quality Partner

QUINT 8000

FD 8000 Dental Unit and FD 5100 Dental Chair

Installation Manual



Quint 8000 Installation manual
8200693
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We reserve the right to make changes.

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1 Introduction

This manual describes how to install and set up the Quint FD 8000 Dental Unit and FD 5100 Dental Chair.

Each of them can be used separately along with other Finndent chairs and dental units.

Neither the FD 8000 Dental Unit nor the FD 5100 Dental Chair can be used with equipment from other manufacturers.

Before installing the chair and the dental unit consider the place carefully with the dentist. Make sure that the place fulfills the requirements in chapter 3, and carry out the preparations described in chapter 4. Once the exact positions have been settled, the chair and the dental unit can be installed in any order.

After completing the installation, test run both the chair and the dental unit.

The next chapter gives an overview of the components of the dental chair and the dental unit. For a complete product description, refer to the Service Manual.

Please refer to the User's Manual for information on how to operate the chair and the dental unit.

2 Overview

2.1 Quint FD 5100 Dental Chair

a:	Seat
b:	Back rest
c:	Head rest
d:	Chair base
e:	Foot control
f:	Floor plate
g:	Adapter plate

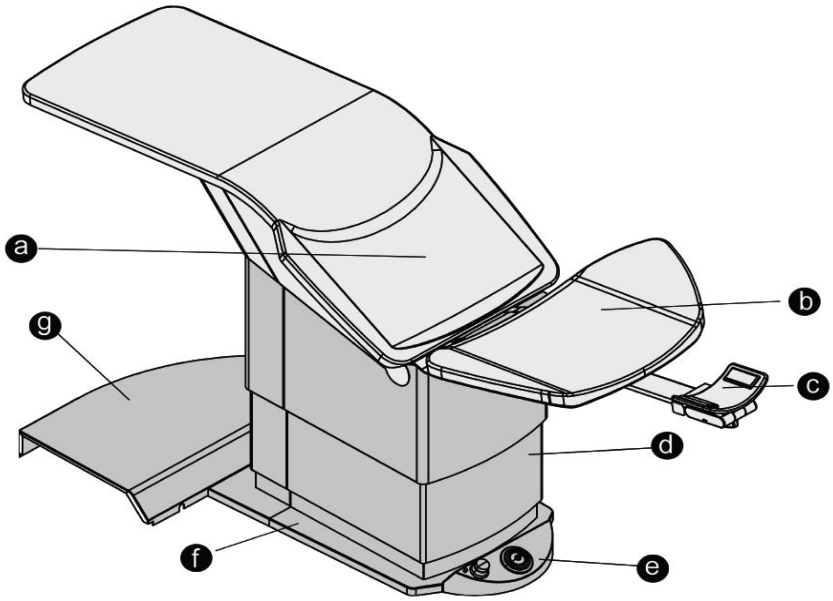


Figure 1: FD 5100 Dental Chair

2.2 Quint FD 8000 Dental Unit

a:	Dental lamp
b:	Whip arms
c:	Instrument bridge
d:	Instrument tray
e:	Instrument arm
f:	Cuspidor
g:	Suction head (assistant's bridge)
h:	Assistant's arm
i:	Sliding door
j:	Floor box
k:	Lamp post

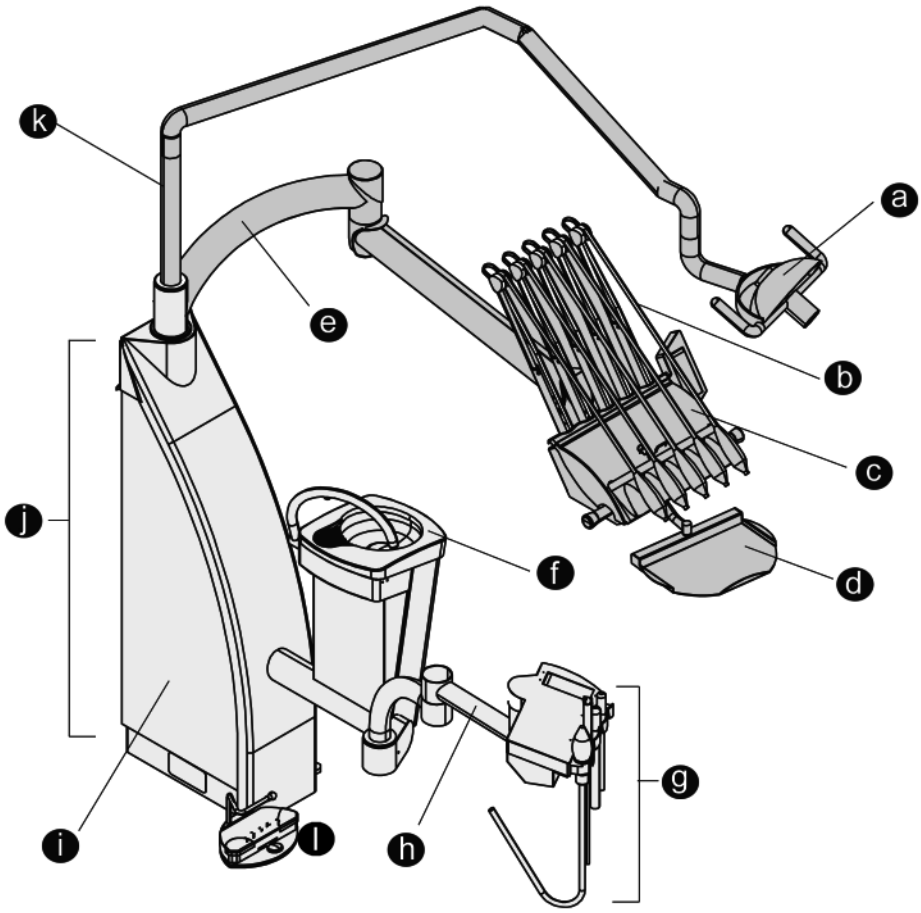


Figure 2: FD 8000 Dental Unit

3 Installation requirements

3.1 Environmental requirements

Refer to the technical specifications in chapter 8.

NOTE!
The total weight of the empty chair and the dental unit is 150 kg, and including a patient up to about 300 kg. Make sure that the floor on which the chair and unit are to be located can support this weight.

NOTE!
The dental unit and the chair are not suitable for use in an environment with a mixture of inflammable anaesthesia gas and air, or a mixture of inflammable anaesthesia gas and oxygen or laughing gas (nitrous oxide).

3.2 Space requirements

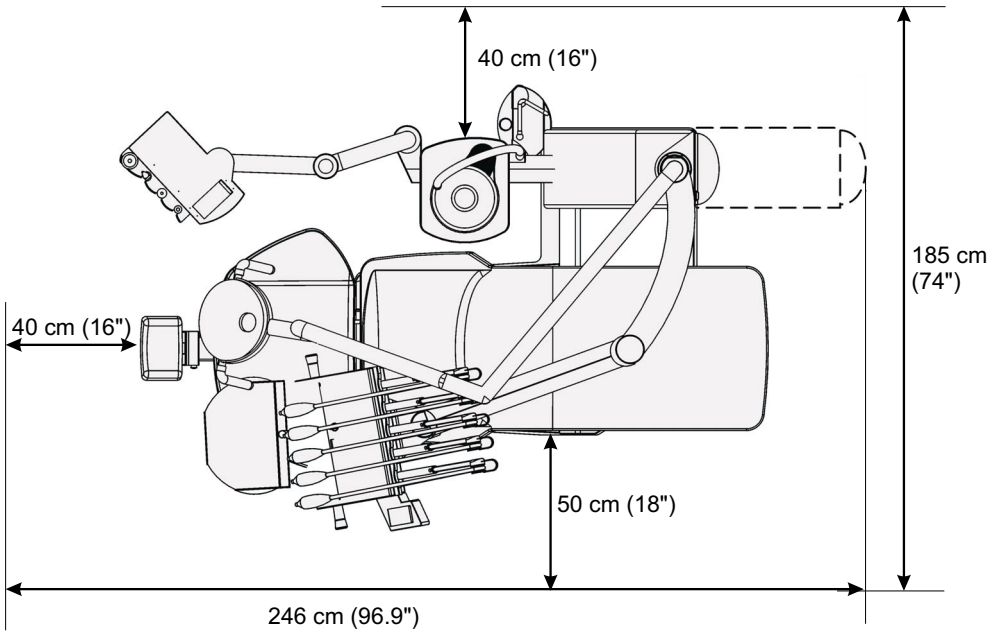


Figure 3: Minimum space requirements

3.3 Quint FD 8000 and FD 5100 dimensions

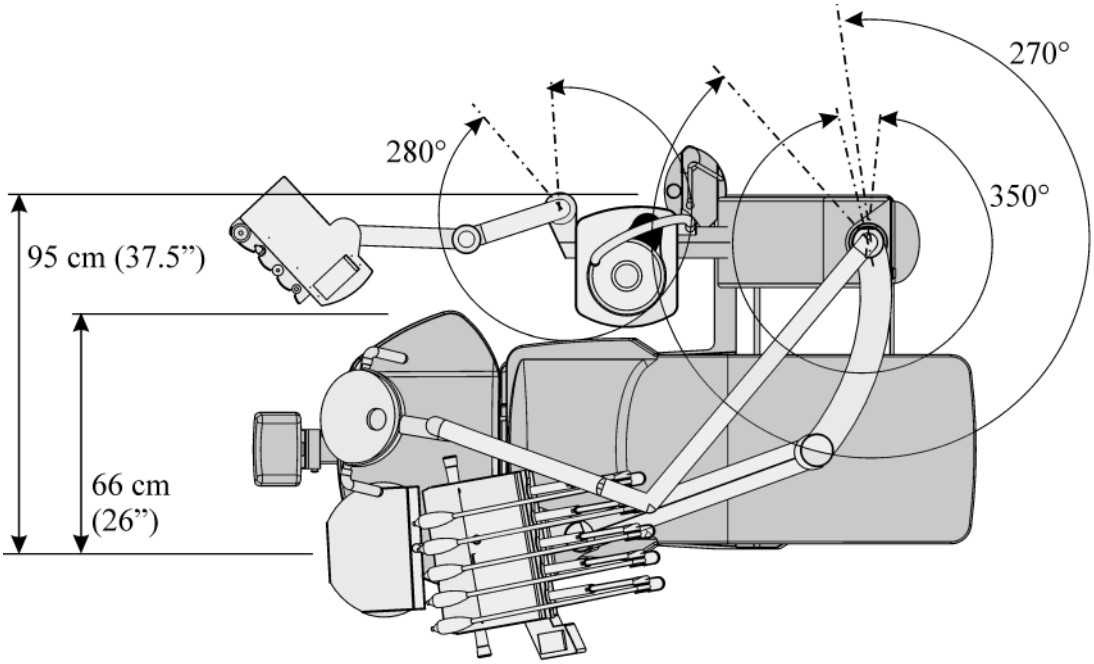


Figure 4: Horizontal dimensions

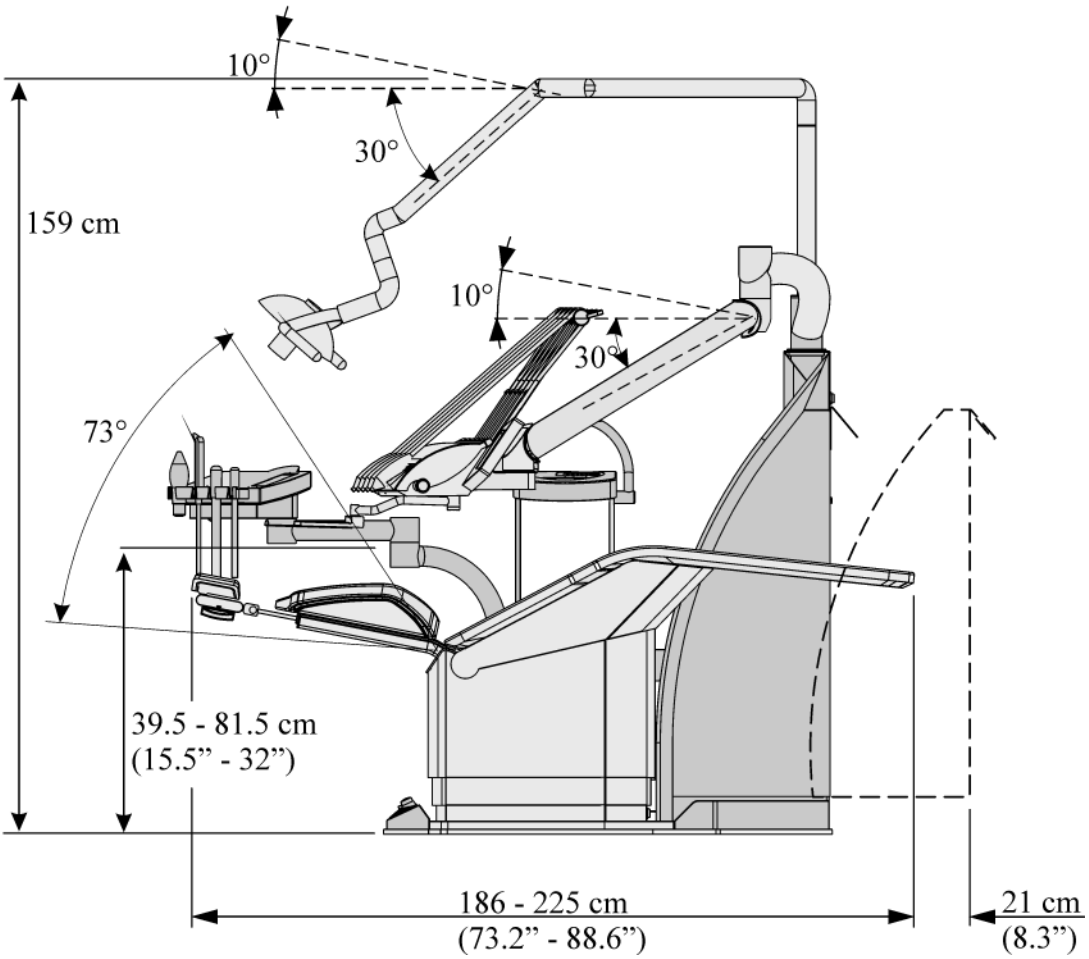


Figure 5: Vertical dimensions

4 Preparations

4.1 Installing supply and drainage systems

Drawing pipes and cables

Before drawing the pipes and cables to the dental unit, decide the position of the chair and the unit in consultation with the dentist.

The figure on the next page shows the required pipes and cables for the dental unit.

Compressed air

The compressed air used with the unit must be dry, oil free and hygienically clean. The air compressor must be fitted with an air dryer and/or a condensation valve.

Water

The water supply line must be equipped with a non-return valve and a vacuum valve in accordance with the standard EN 1717.

If the dental unit is installed in an area where the water quality is poor, the water may cause problems such as:

- Premature clogging of filters.
- Rapid clogging of the small diameter water tubes and instruments.

If the water hardness is 12º d.H (German hardness = 2.15 mmol) or above, install a water softener. Set the blending hardness to 8º d.H (1.43 mmol). If the water contains particles larger than 20 µm (0.02 mm), install a fine filter.

Power supply

For the patient's safety, the main power supply must be equipped with a quick-closing 300 µA fault leakage current protection device.

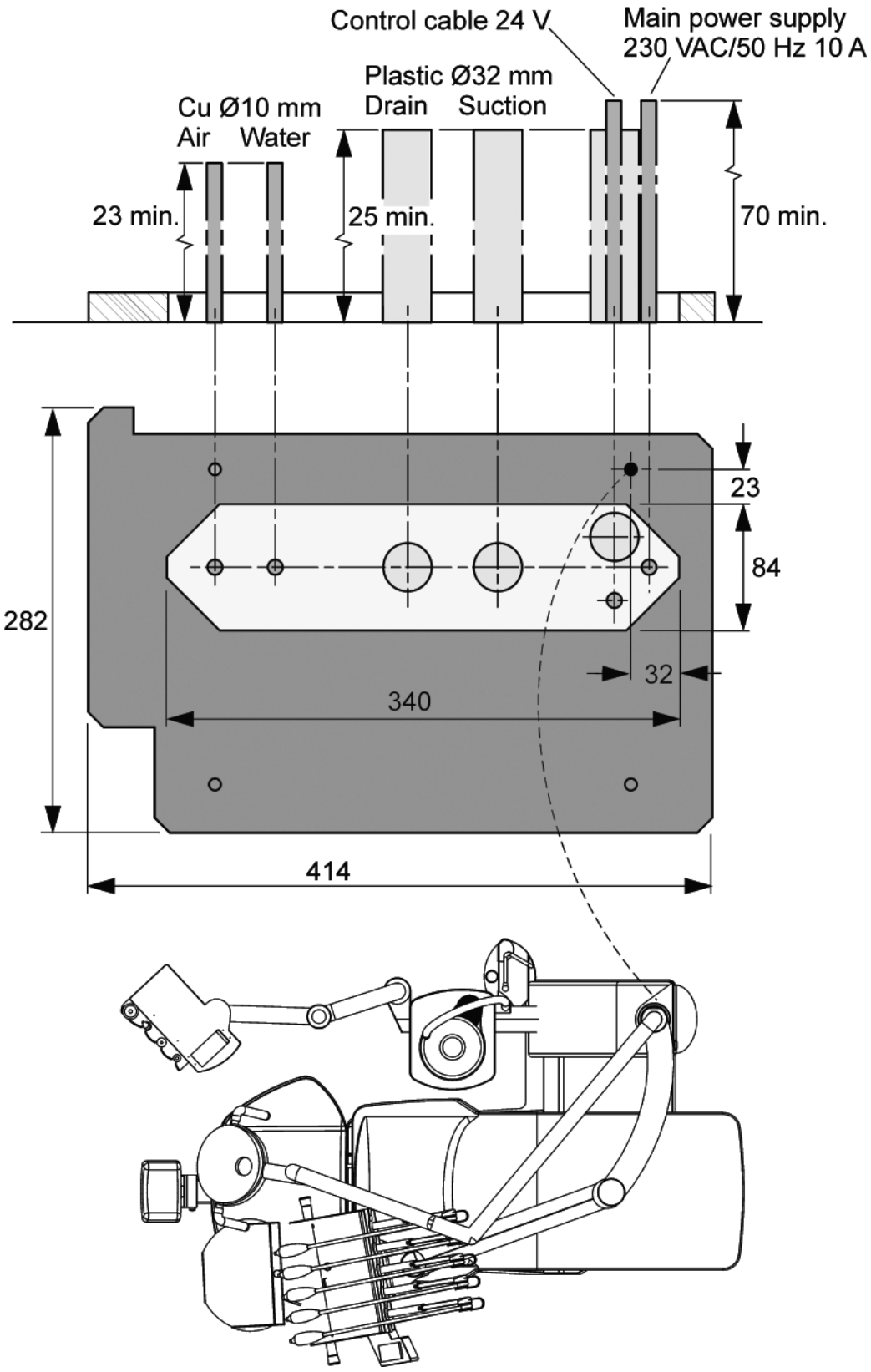


Figure 6: Pipes and cables to the dental unit

Other electrical cables

It is advisable to install a few extra conduits in the electrical conduit system under the floor from the dental unit to the main distribution board. This way it will be easy to connect required additional control functions later.

4.2 Unpacking and lifting the product

Dental chair

Remove the screws that hold the chair base on the pallet.

Remove the lid from the box in which the chair is packed. Remove all the small items and boxes and then lift off the sides of the box.

The chair base can be lifted in the transverse bars.

Dental unit

1. Remove the lid from the box in which the unit is packed. Remove all the small items and boxes and then lift off the sides of the box.

2. Remove the two nuts that hold the unit and cuspidor together. Remove the cuspidor.

3. The dental unit is clamped to the wooden pallet. Remove the screws that hold the unit in place, and lift the unit out of the pallet and place it upright on the floor.

The floor box can be lifted and moved with the slide door opened or closed. One good grip point is the opening reserved for the cuspidor arm, another one the door frame.

4.3 Using the optional floor plate

If the floor is of concrete, the chair and the dental unit can be mounted directly onto the floor, which is recommended. The chair can also be attached to a wooden floor with screws.

If you do not wish to attach the chair and the dental unit to the floor, the optional floor plate can be used. By using the floor plate, there is no need for drilling holes in the floor. The assembly, however, may become somewhat less stable.

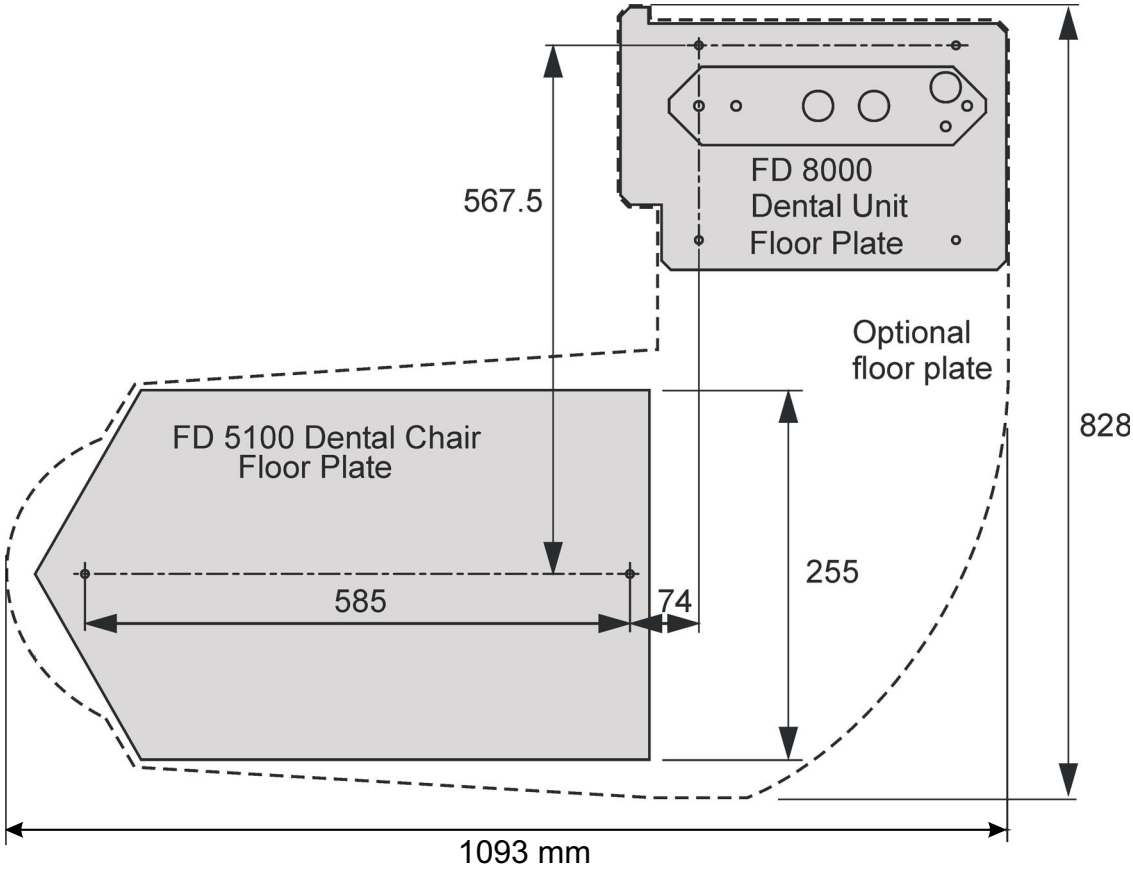


Figure 7: Optional floor plate

4.4 Drilling holes for the fixing bolts

Before drilling holes in the floor, decide the exact positions for the dental chair and the dental unit.

1. Place the chair on the floor with the back rest and head rest fastened (see chapter 5). Try out the exact position of the chair.

2. Place the adapter plate (a) in its place against the chair.

3. Place the dental unit in correct position against the adapter plate. Remove the adapter plate.

4. Drill the fixing holes, or mark the positions of the drill holes with a pen. Drill four holes for the dental chair and four holes for the dental unit 10 mm wide and 70 mm deep. See the figure below.

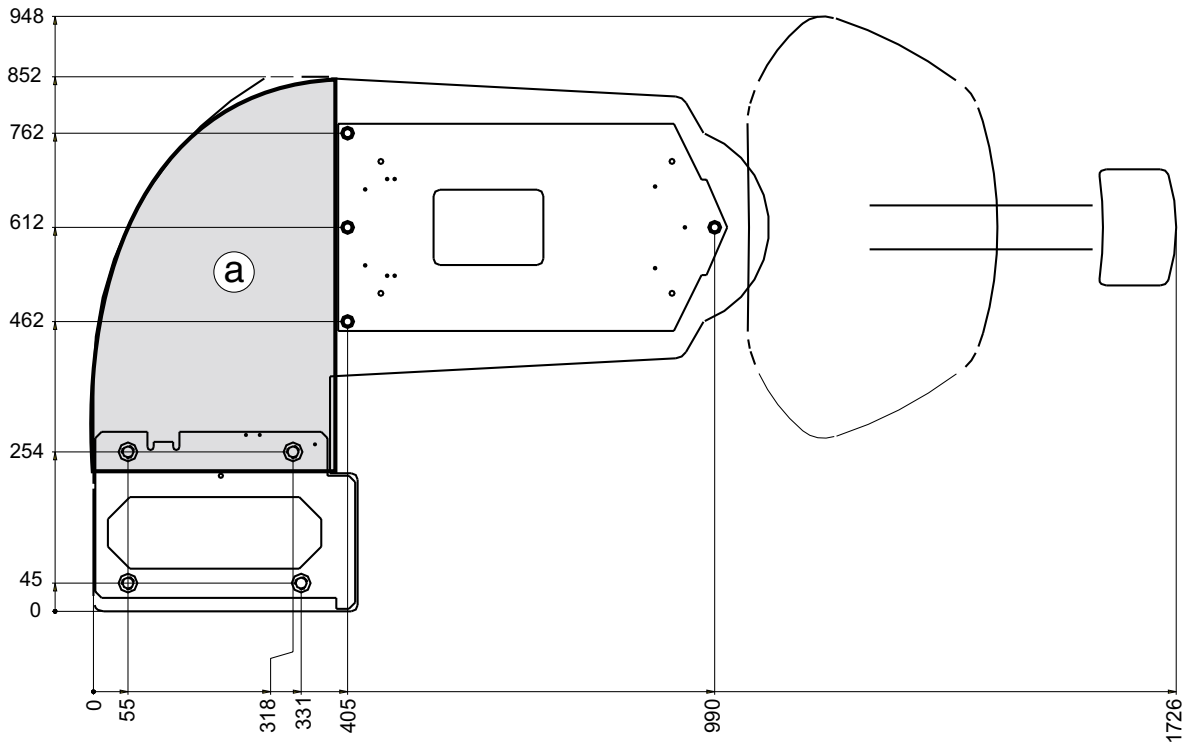


Figure 8: Fixing point positions (drill holes)

5 Installing the dental chair

5.1 Attaching the dental chair to the floor

Secure the chair to the floor or to the floor plate with the four M8 x 50 anchor bolts supplied with the chair.

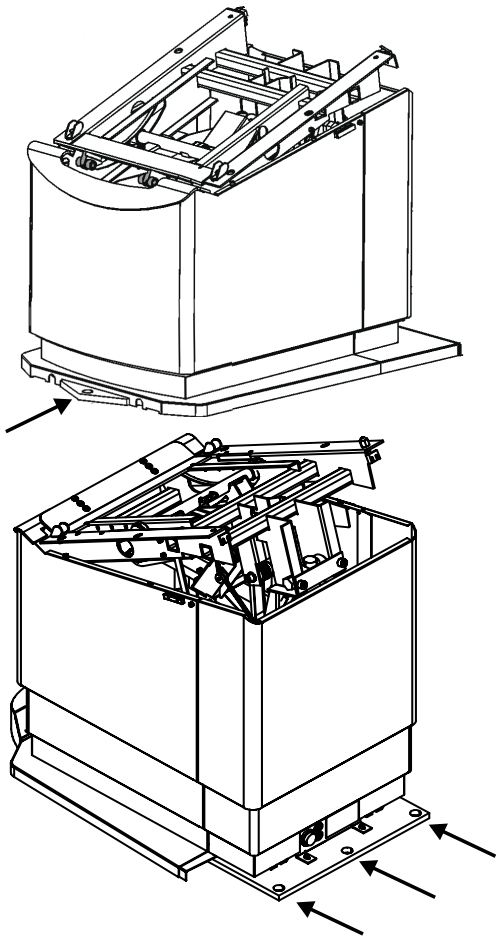


Figure 9: Attaching the chair to the floor

5.2 Attaching the backrest

1. Remove the tape (a) that holds the four slide bearings in position.

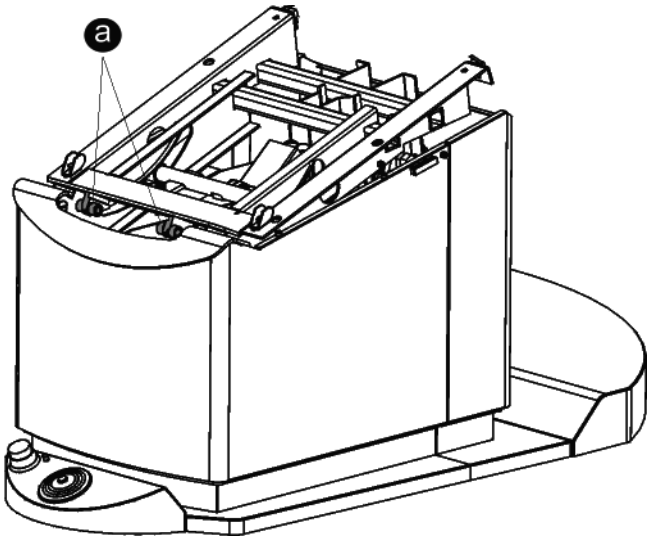


Figure 10: Removing the tape from the slide bearings

2. Fit the slide bearings (a) in the chair base into the grooves (b) in the backrest. See the figure on the next page. Slide the backrest into the chair base and against the backrest support bar (c).

3. Tighten the backrest in position with the two fixing screws (d).

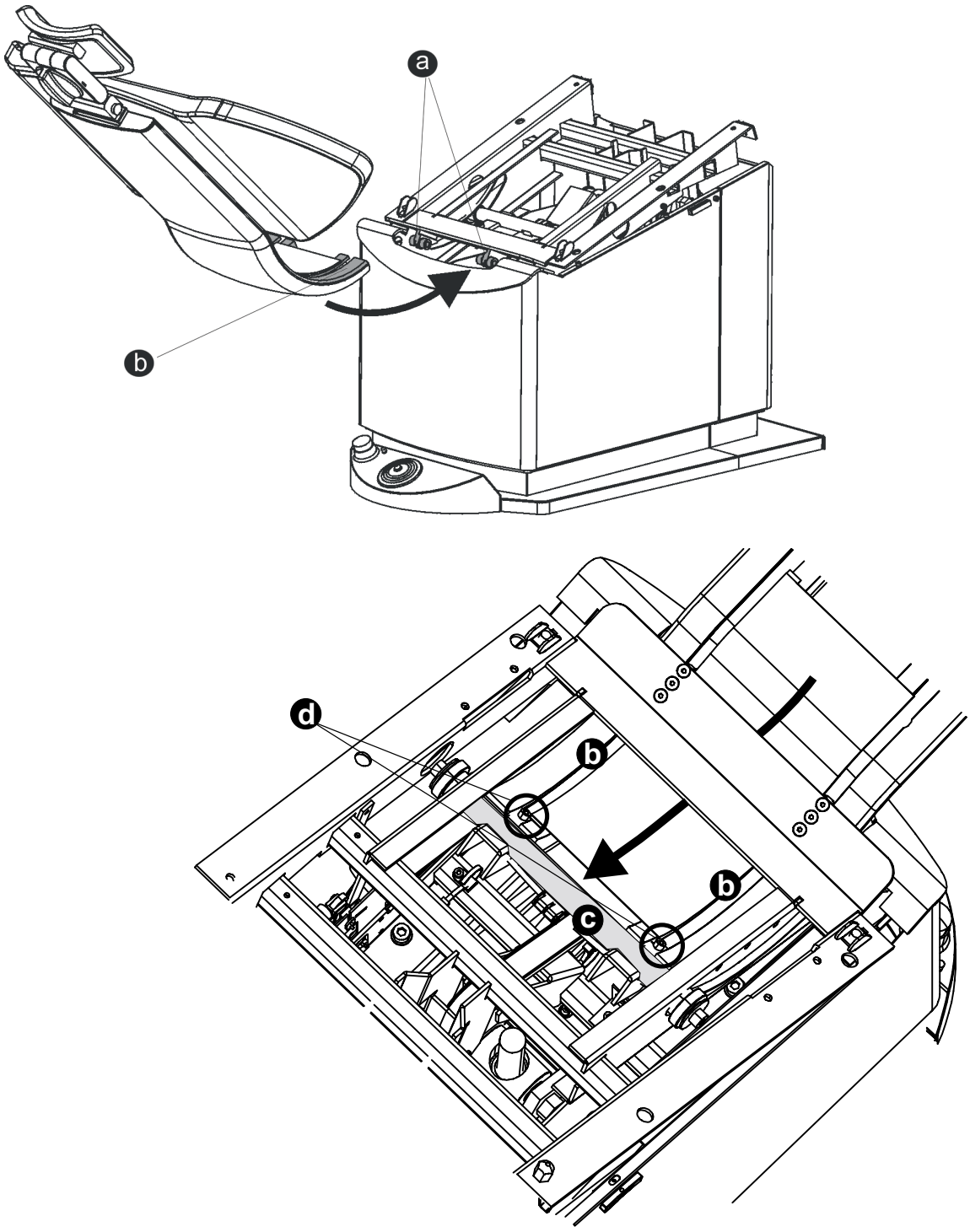


Figure 11: Fastening the back rest

5.3 Mounting the top cover

1. Slide the top cover over the chair base from the front side of the chair and push it against the back of the chair.

2. Pull the cover somewhat to the front. Tighten with the two screws (a).

NOTE!
Be careful not to damage the microswitches.

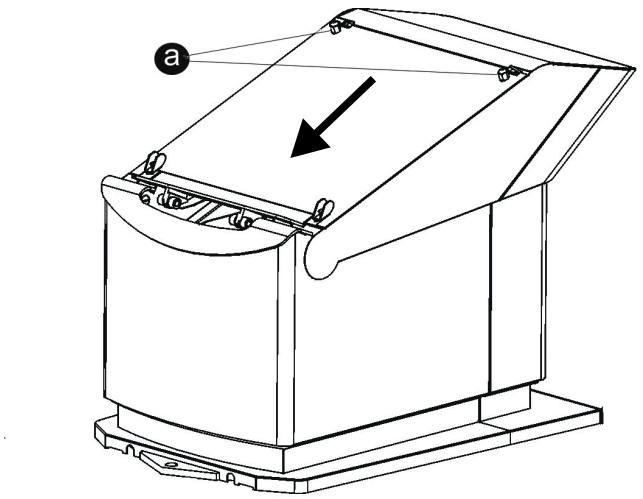


Figure 12: Mounting the top cover

5.4 Installing the foot control

Wiring the foot control

Connect the wires from the chair as the figure shows.

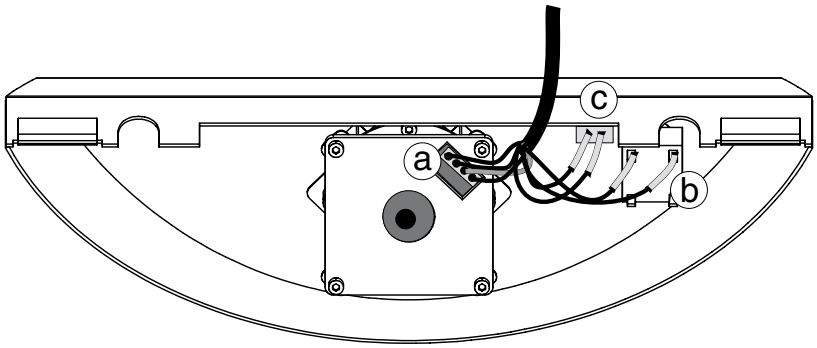


Figure 13: Wiring the foot control

a:	Black connector (to be placed with the grooved side against the white part)
b:	Black wires to the emergency stop
c:	Blue wires to the programming push button

Mounting the foot control

Mount the foot control (a) by lifting the base cover (b) and hooking the foot control underneath.

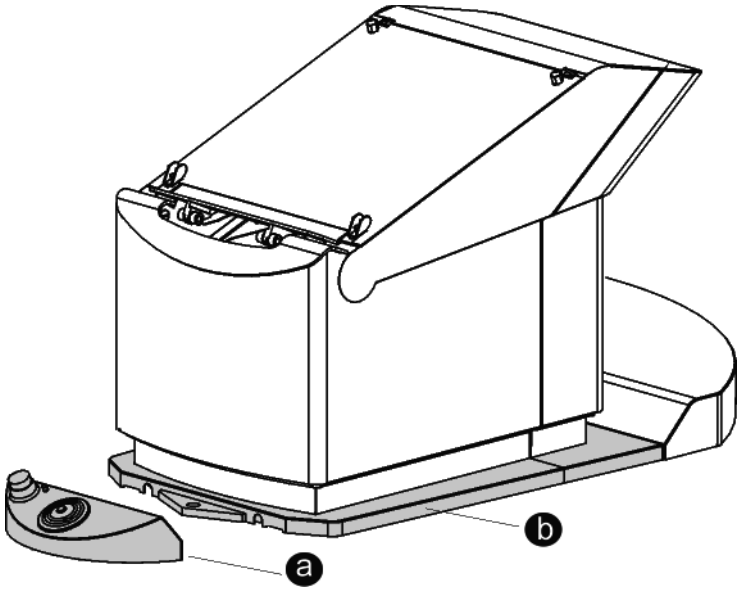


Figure 14: Mounting the foot control

5.5 Attaching the upholstery

Install the seat upholstery (a) by fitting the lugs (d) into the tubes at the upper rear corners of the upholstery. Press the upholstery in place.

The backrest upholstery (b) and the head rest upholstery (c) are fastened with tear-off bonds.

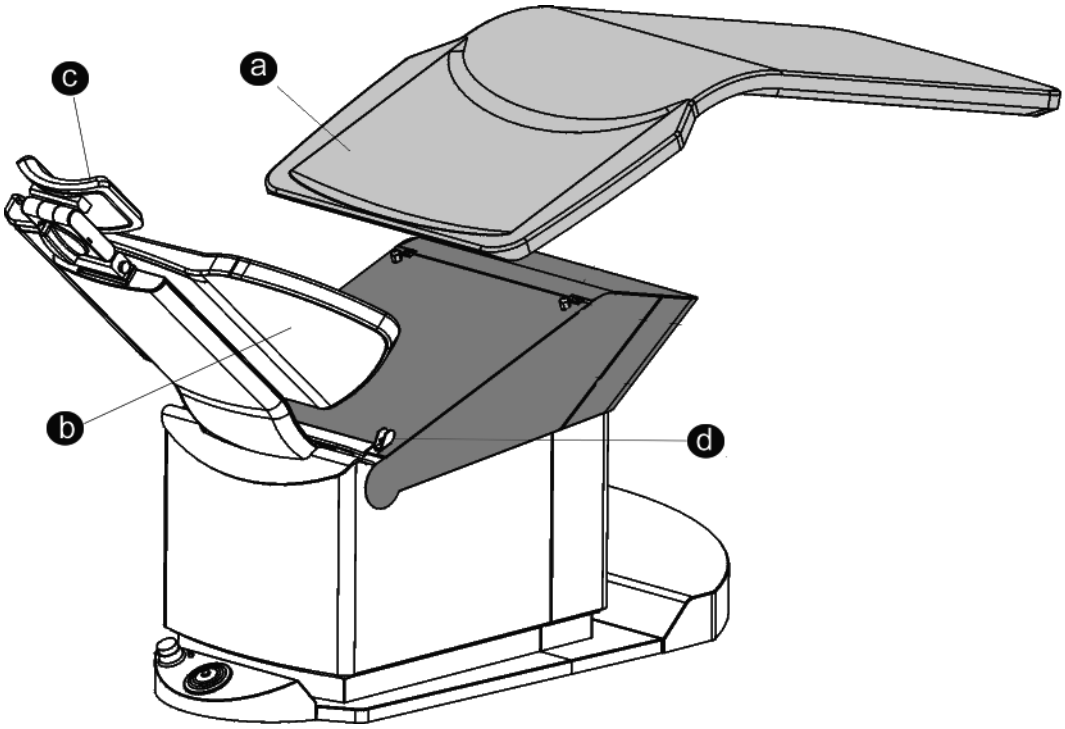


Figure 15: Upholsteries

5.6 Connecting the chair to the dental unit

Connect the serial cable (a) that comes from the dental chair to the right connector (as seen from the chair) at the bottom rear side of the dental unit.

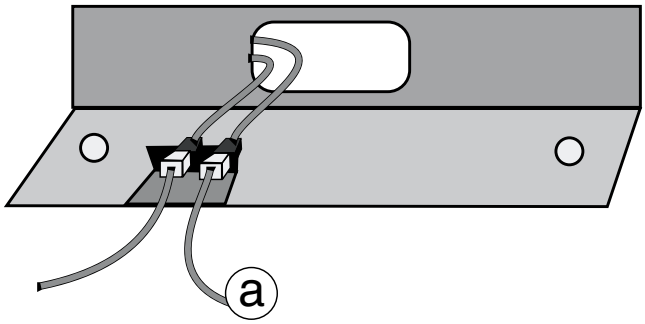


Figure 16: Connecting the data transmission cable between the chair and the dental unit

5.7 Connecting the power supply

The chair can get its power supply from the dental unit, or, alternatively it can be connected to a separate 230 VAC power supply.

To use the power supply of the dental unit:

1. Connect the power cable that comes from the FD 5100 Dental Chair to the right end of the terminal block in the electrical section of the floor box. Connect the yellow-green wire to protective earth, the blue wire to zero (N), and the brown/black wire to the phase current (L).

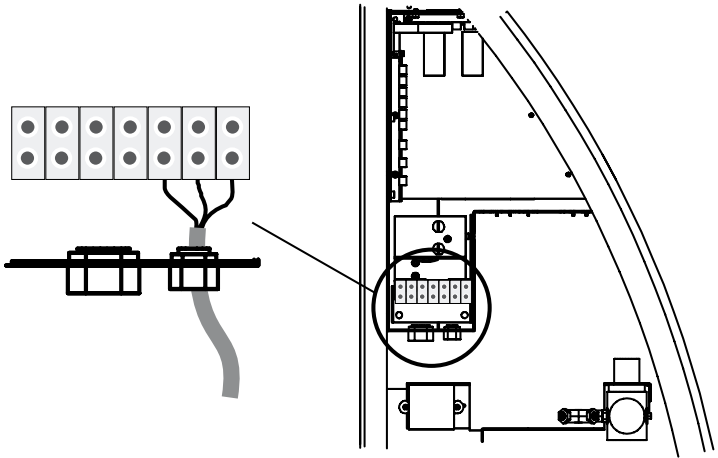


Figure 17: Connecting the chair to the power supply from the dental unit

2. Bypass the fuse F2 in the chair. The fuse is situated in the front bottom part of the chair base, behind the power switch of the chair. For instructions on how to remove the cover of the chair base, refer to the Service Manual.

6 Installing the dental unit

6.1 Fixing the dental unit to the floor

1. Remove the sliding door from the floor box by pushing the release lock at the bottom and drawing out the door.

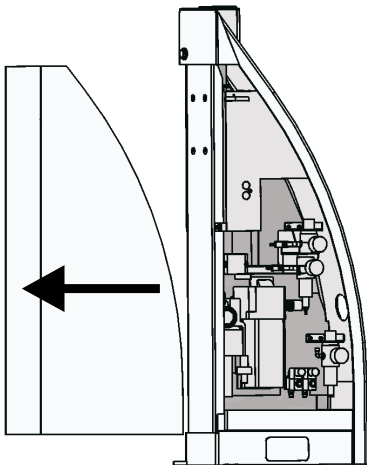


Figure 18: Opening the sliding door

2. Secure the unit to the floor/floor plate with the four M8 x 50 anchor bolts supplied with the unit (a). Do not tighten the bolts yet.

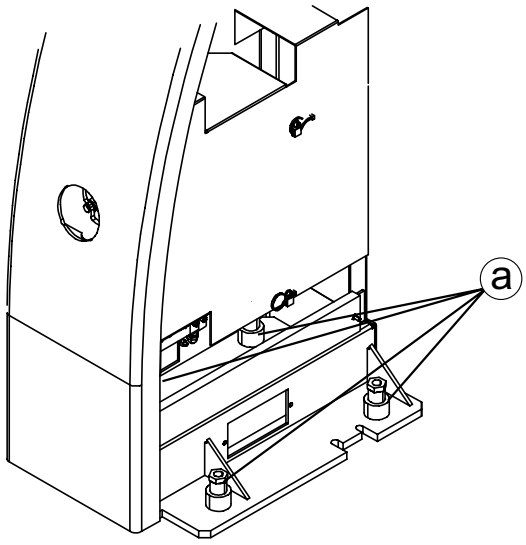


Figure 19: Fixing bolts

3. Hold a spirit level on the vertical sides of the unit, and level the unit by adjusting the four levelling screws.

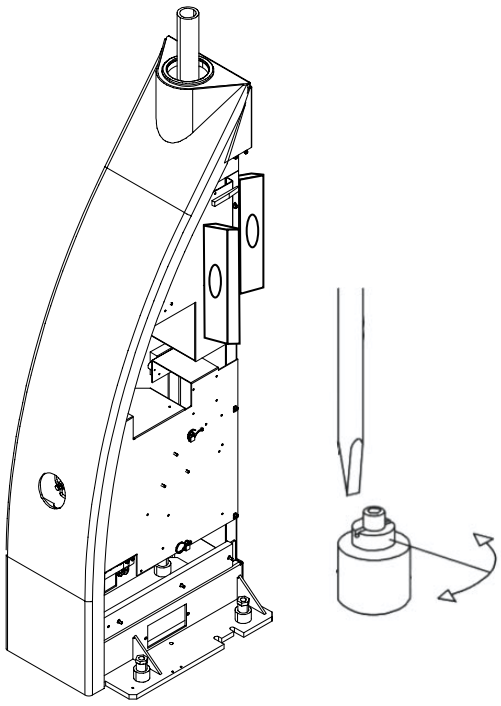


Figure 20: Levelling the unit

4. When the unit is level, tighten the four levelling screw locking nuts and then the four 8 mm anchor bolts.

6.2 Installing the cuspidor and the assistant's bridge

Mounting the cuspidor arm

1. Lift the cuspidor assembly into position on the side of the floor box and support it in this position.

2. Route the cuspidor hoses and cables into the floor box through the hole and through the counter plate (a).

3. Secure the cuspidor in place with the three cuspidor fixing screws (b).

4. Before tightening the cuspidor fixing screws, use a spirit level to level the assistant's arm.

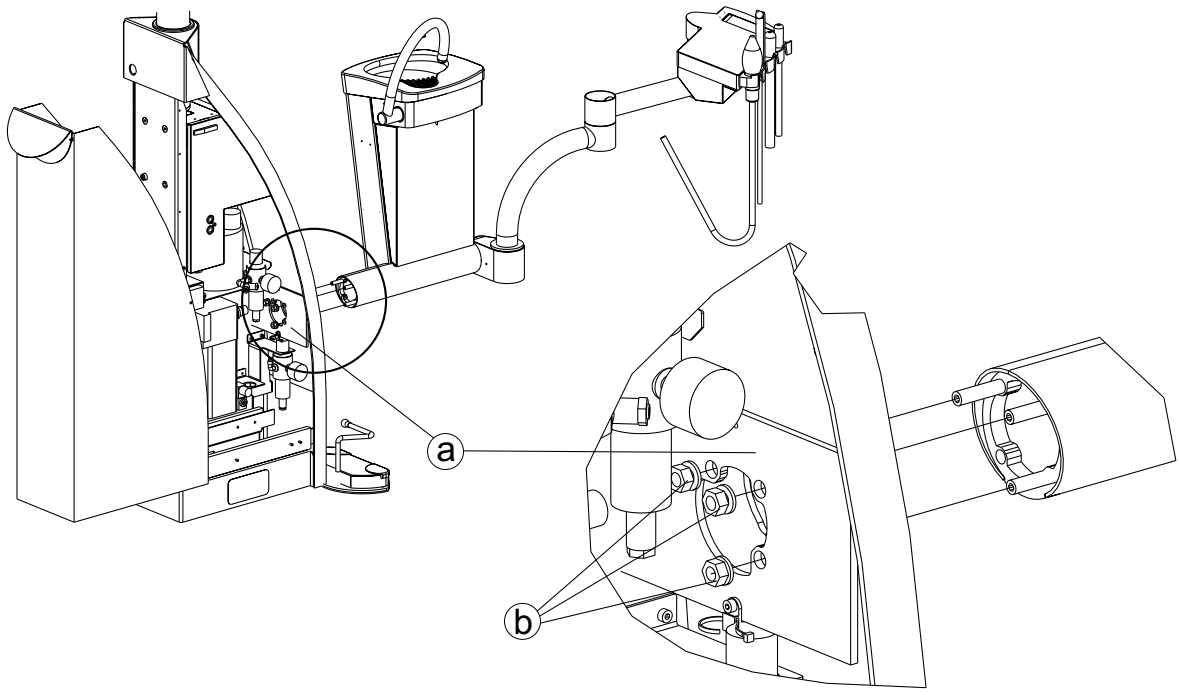


Figure 21: Mounting the cuspidor

Fastening the cuspidor bowl

Fit the rubber knobs into the holes on the underside of the cuspidor bowl and press the cuspidor bowl onto its place.

Connecting the hoses in the floor box

Connect the hoses in the floor box as the following figure shows. Fasten the thick hoses with clamps. Fasten the thin hoses by pressing them upon the nozzles.

The thin transparent hose is a reserve hose.

Cut the hoses if needed.

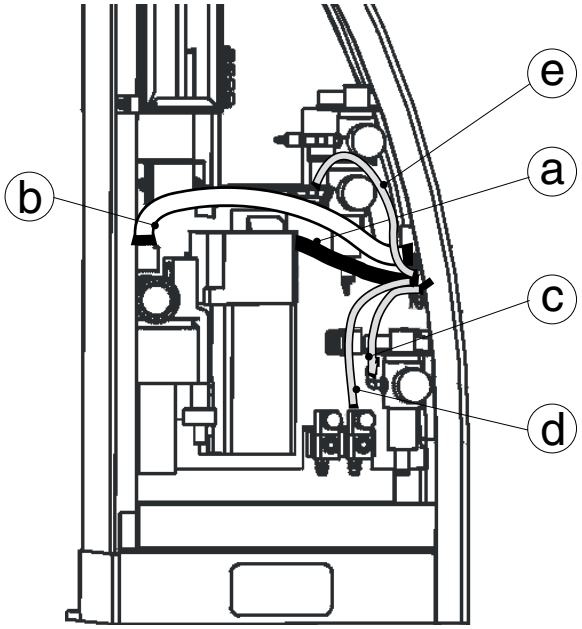


Figure 22: Connecting the hoses for the cuspidor and the assistant's board

a:	Suction hose (thick black hose). Fasten to the suction inlet of the separator.
b:	Rinse water from the cuspidor (thick white hose). Fasten to the rinse inlet of the separator.
c:	Clean water (green hose)
d:	Water for rinsing the cuspidor
e:	Compressed air (blue hose)

Connecting the cables to the main board

Connect the cables as the figure shows.

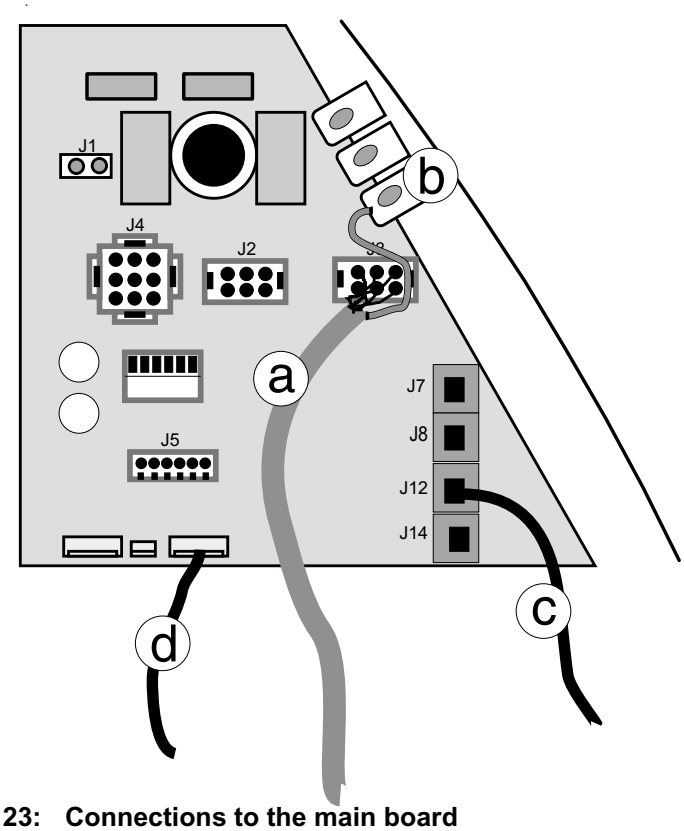


Figure 23: Connections to the main board

a:	Power supply
b:	Protective earthing
c:	RJ45 connection to the user interface of the assistant's bridge
d:	Control cable to the cuspidor

Wiring the assistant's bridge

Connect the wires as the figure shows.

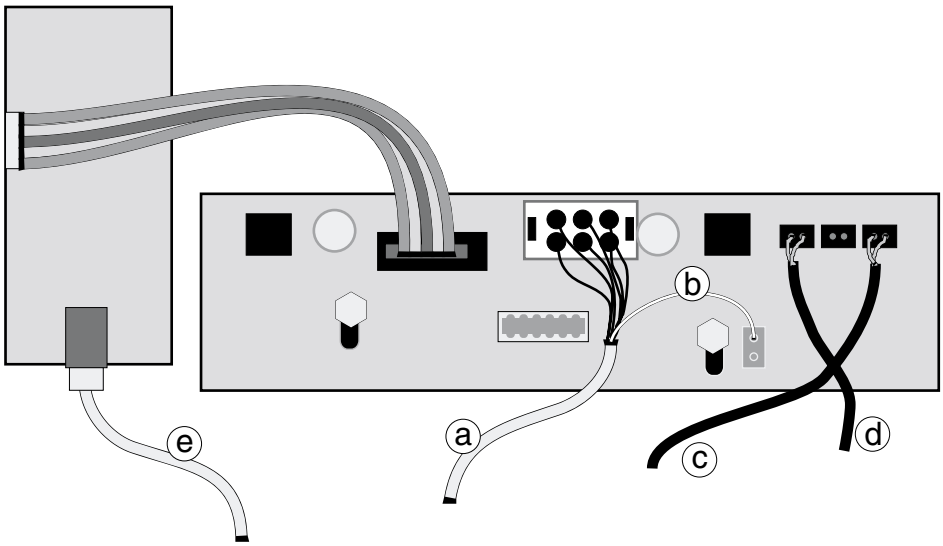


Figure 24: Connections inside the assistant's bridge

a:	Power supply
b:	Protective earthing
c:	Suction selection valve
d:	Suction selection valve
e:	Data transmission cable

Assembling the assistant's bridge

Mount the cover by fitting the lugs at the rear into the holes of the cover. Fasten on the front side with two screws.

Fasten the bracket to the front.

Connect the suction hoses to the rear side of the assistant's bridge.

6.3 Installing the instrument bridge

Mounting the instrument arm

1. Remove the set screw (a) from the instrument arm support tube (b). Slide the slotted end of the support tube into the top of the dental unit. Secure the support tube in position with the previously removed set screw.

2. Slide the bearing ring (c) onto the connection end of the instrument arm (d).

3. Lift the instrument arm over the support tube, and carefully route the instrument arm cables and tubes down the side of the support tube into the dental unit. Lower the instrument arm and attach it to the support tube.

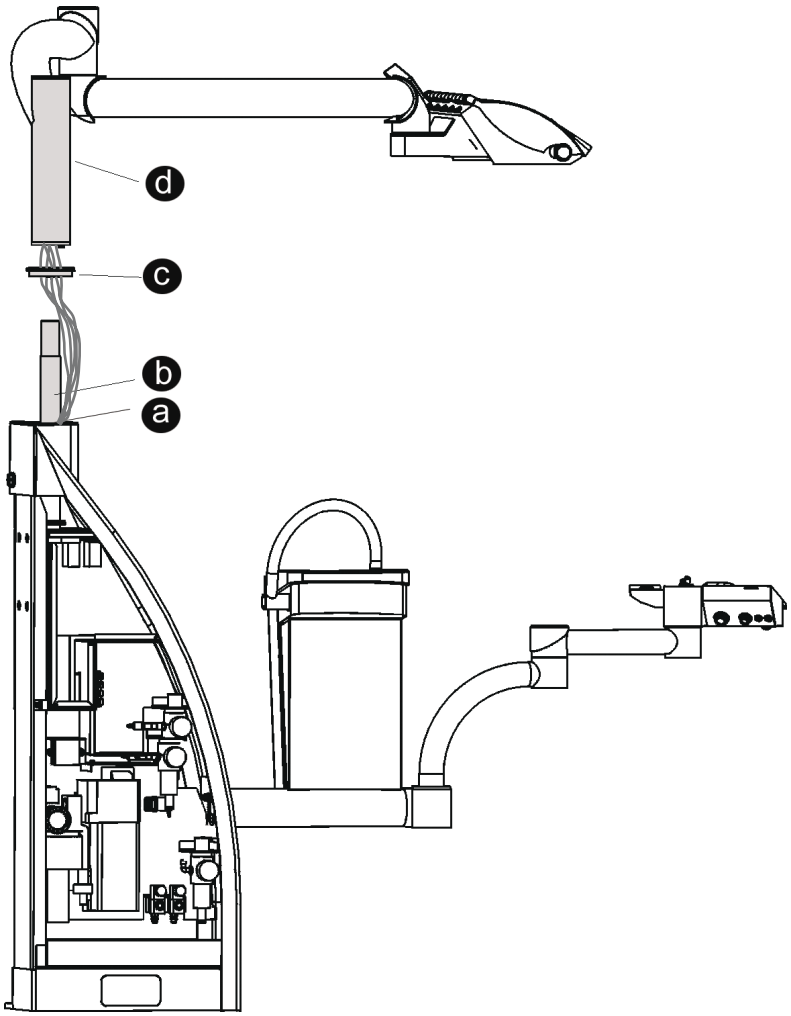


Figure 25: Mounting the instrument arm

Connecting the cables and hoses

Connect the hoses as the following figure shows. Fasten the hoses by pressing them upon the nozzles.

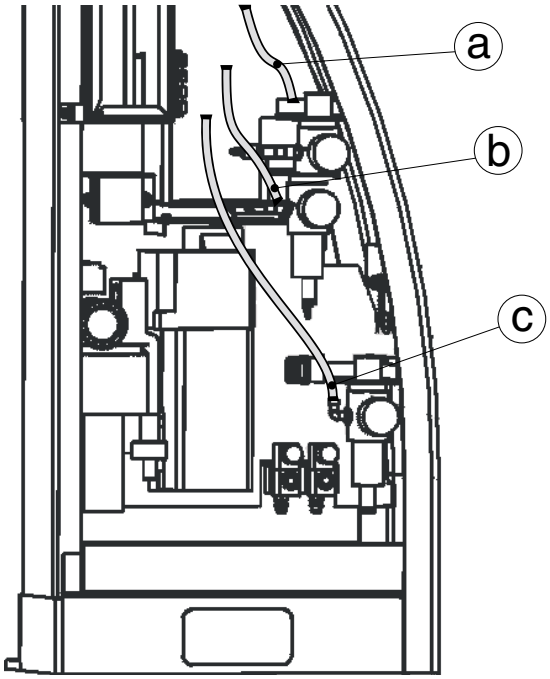


Figure 26: Connecting the hoses

a:	Return air to the return air bottle (for oil separation)
b:	Compressed air (blue hose)
c:	Clean water (green hose)

Connect the cables as the figure shows.

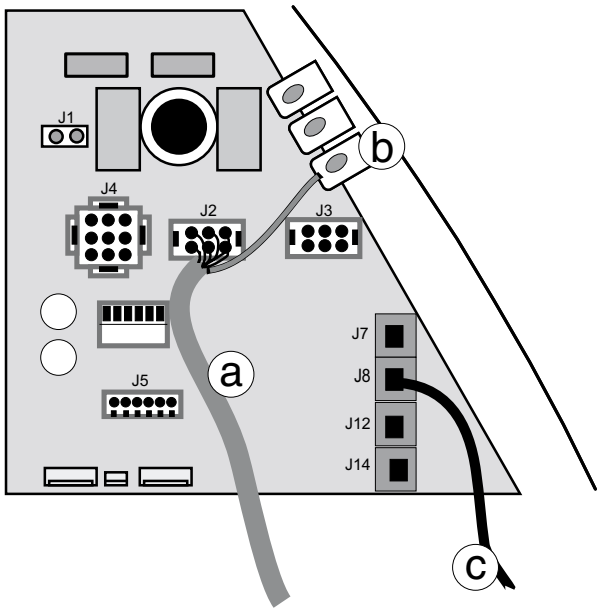


Figure 27: Connecting the cables

a:	Power supply
b:	Protective earthing
c:	RJ45 connection to the user interface of the instrument bridge

After connecting the instrument bridge cables and hoses, rotate the instrument arm in both direction as far as it will go. Secure the cables and hoses in place with enough slack to allow full rotation movement of the instrument arm.

Assembling the instrument bridge

1. Attach the protective pad (a) to the top of the instrument bridge.

2. Attach all the whip arms (b) to the instrument bridge. Press until they lock.

3. Route all the instrument hoses to the whip arm pullies. Adjust the whip arms so that they are all at the same angle (see chapter 7).

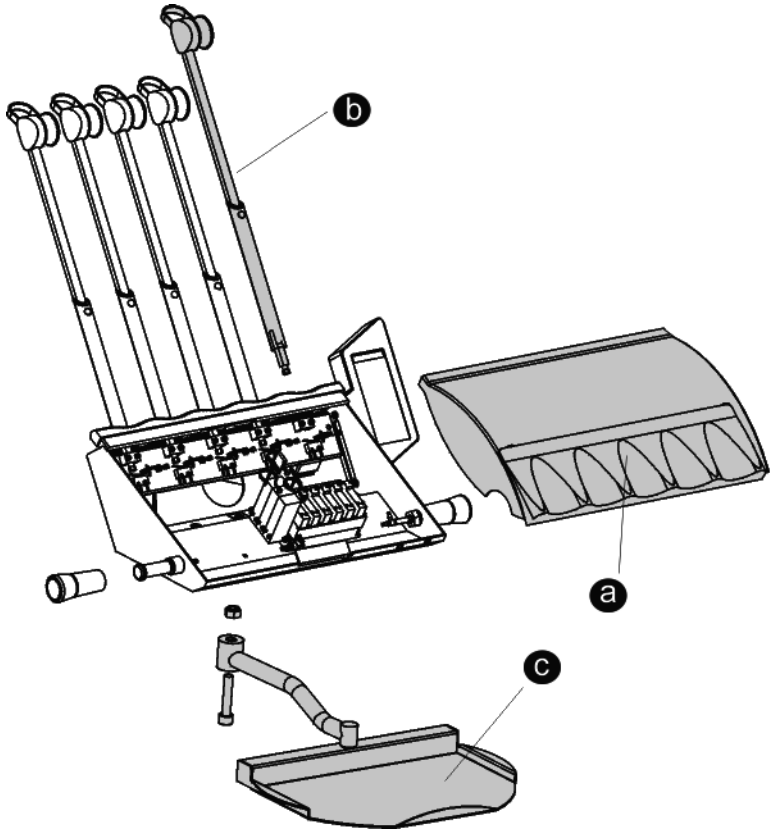


Figure 28: Assembling instrument bridge

4. Attach the instrument tray (c) to the underside of the instrument bridge.

5. Attach the suction tubes and instruments to the assistant's arm.

6.4 Installing the dental lamp

Mounting the lamp

1. Lift the lamp arm (a) up over the top of the instrument arm (b). Route the lamp cable through the lamp post (c) and into the floor box through the socket (d).

2. Mount the lamp arm into the lamp post so that the screw inside the tube fits into the groove.

3. Connect the lamp connector (e) to the cable connector at the end of the lamp arm. Secure the lamp to the lamp arm with the screw.

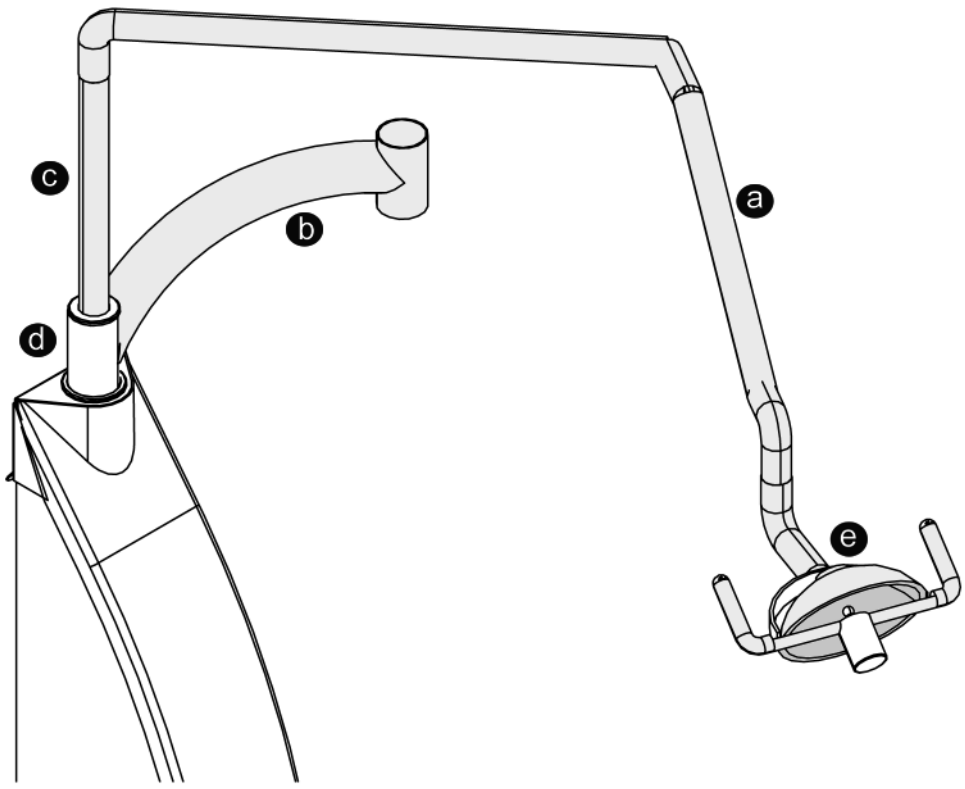


Figure 29: Dental lamp

Connecting to power supply

Connect the lamp cable to the connector J1 on the main board as the figure shows.

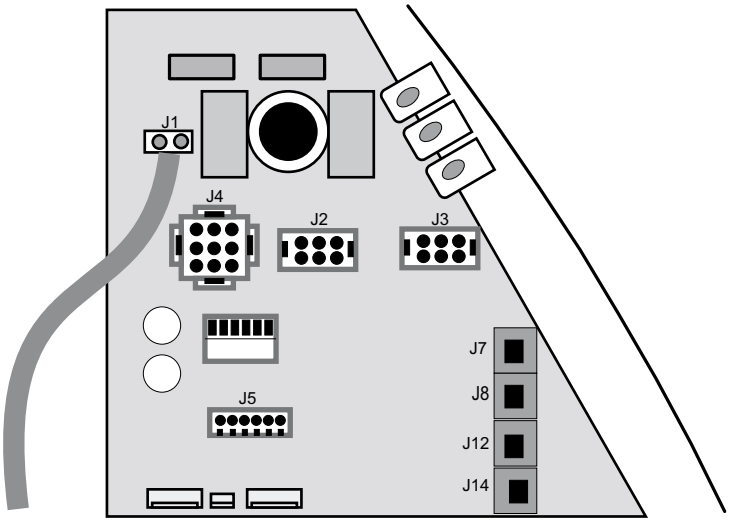


Figure 30: Connecting electrical lamp to power supply

6.5 Connecting the foot control

Connect the dental unit foot control cable (a) to the left one as seen from the chair of the two connectors at the bottom plate of the floor box.

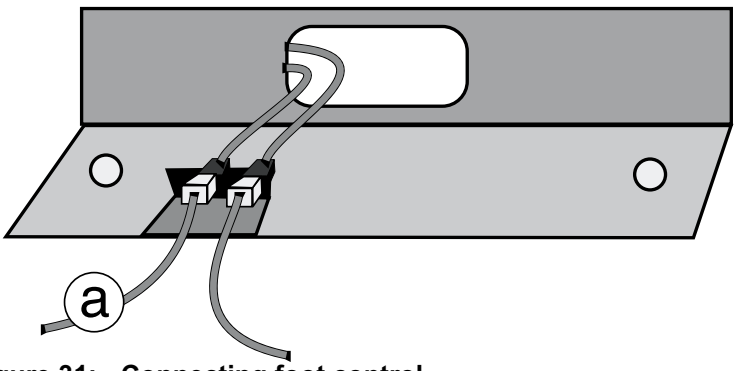


Figure 31: Connecting foot control

6.6 Connecting inlet and outlet hoses

Connect the water and air inlet hoses, the suction hose, and the drainage hose as the figure shows.

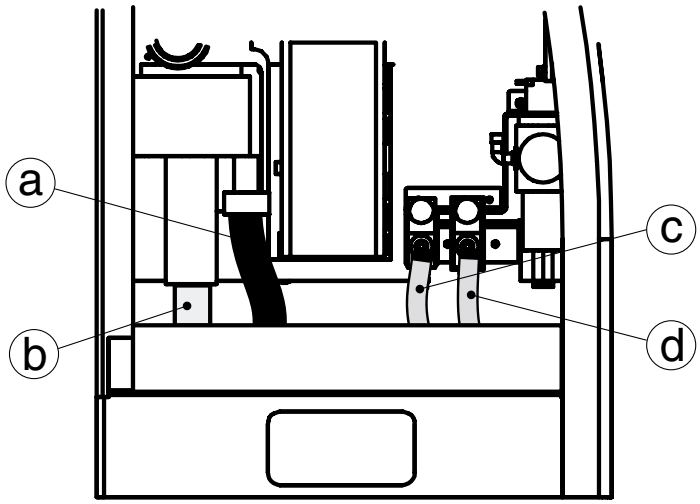


Figure 32: Connecting inlet and outlet hoses

a:	Hose to the drainage system
b:	Suction hose
c:	Air inlet (blue hose)
d:	Water inlet (green hose)

6.7 Connecting the suction motor control

There are two ways of connecting the suction motor drive to the unit.

Way 1: Using the power supply from the board

Use the 24 VAC power supply from the unit to drive an external 24 VAC relay to control the suction motor as shown in the figure below.

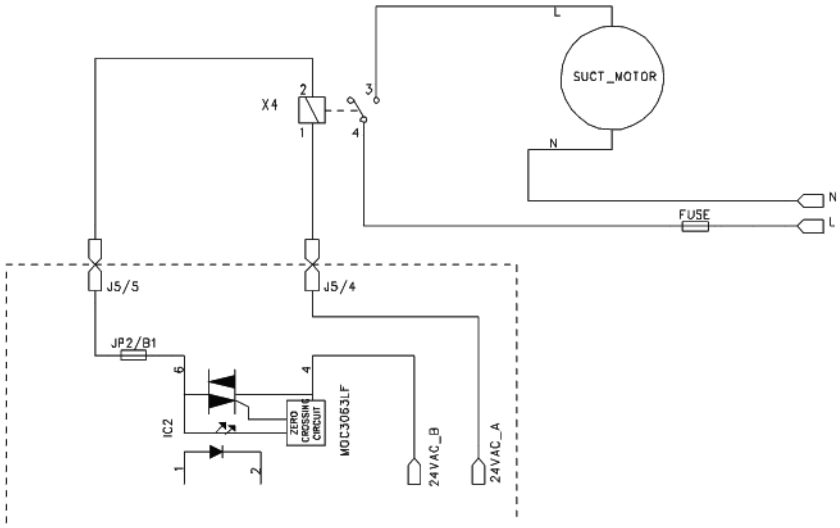


Figure 33: Scheme for connecting suction motor control (way 1)

Connect the relay drive wires to pins 4 and 5 on connector J5. The first pin to the left is pin 1. Install a 100mAT fuse in place A on JP2.

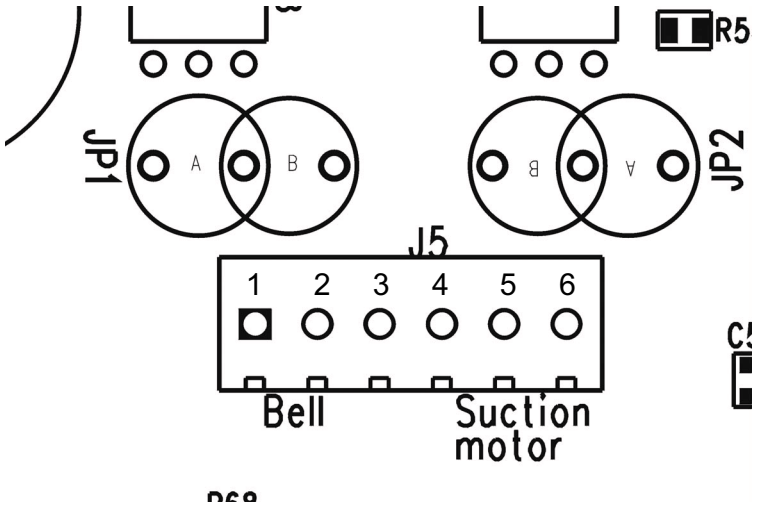


Figure 34: Connecting suction motor and bell control cables to the main board

Way 2: Using an external transformer

Use an external 24 VAC transformer to drive the suction motor relay, as shown in the figure below.

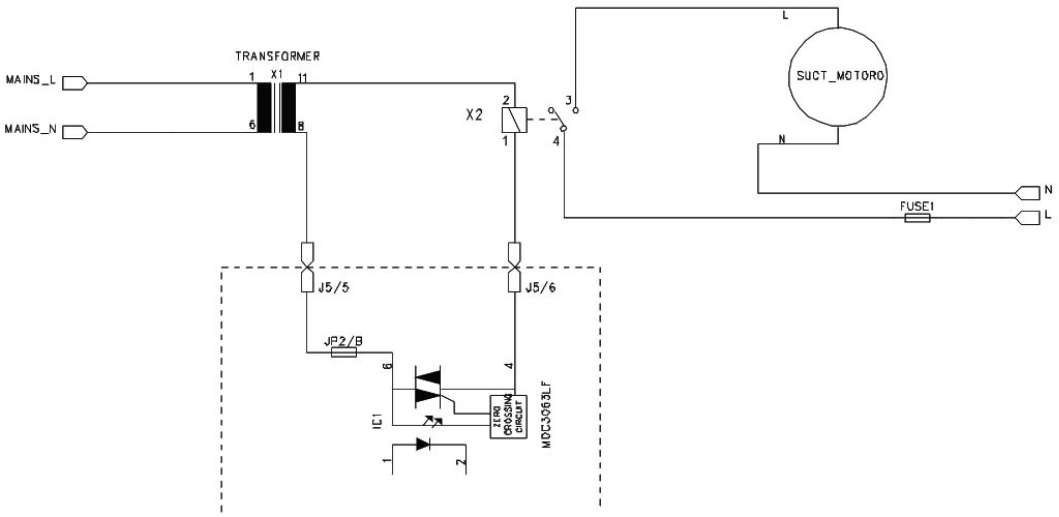


Figure 35: Scheme for connecting suction motor control (way 2)

Connect the wires to pins 5 and 6 on connector J5. Install a 100 mAT fuse to place B on JP2. See figure 34.

6.8 Connecting the nurse call control

The bell control is connected in analogy with the suction motor. See above. Like for the suction motor, there are two ways.

Way 1: Using the power supply from the board

Connect the wires to pins 1 and 3 on connector J5. Install a 100mAT fuse to position A on JP1. See figure 34.

Way 2: Using an external transformer

Connect the wires to pins 1 and 2 on connector J5. Install a 100mAT fuse to position A on JP1. See figure 34.

6.9 Connecting the power supply

Connect the incoming power cable to the left end of the terminal block in the electrical section of the floor box. Connect the yellow-green wire to protective earth, the blue wire to zero (N), and the brown/black wire to the phase current (L).

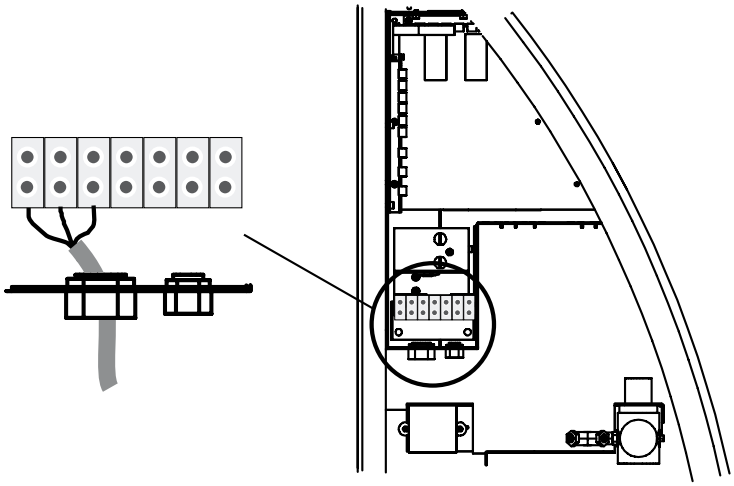


Figure 36: Connecting the power supply to the dental unit

6.10 Overview of the Q800 board connections

Dental light	J1
Instrument bridge power	J2
Assistant bridge power	J3
Power supply from transformer	J4
Suction motor control and nurse call	J5
Chair communication	J7
Instrument bridge communication	J8
Assistant bridge communication	J12
Foot control	J14

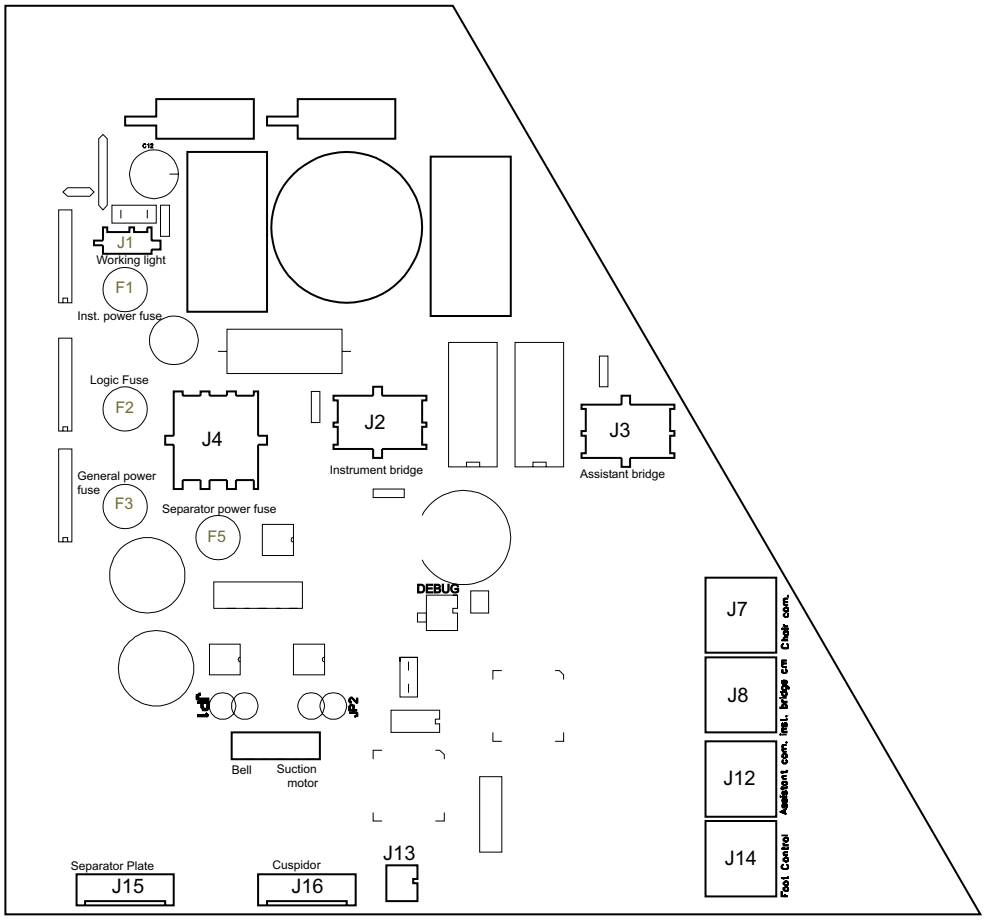


Figure 37: Board Q800

7 Finalizing the installation

7.1 Mounting covers and protective plates

1. Install all loose covers and plugs.
2. Mount the warning plate onto the power supply section of the floor box. Fasten the plate with two screws.
3. Mount the cover of the electrical section and the main board in the floor box. Fasten with screws.
4. Close the sliding door and attach the handle to it.
5. Mount the adapter plate between the chair and the dental unit. Fit the cables into the slots.

7.2 Testing the installation

Test run both the dental chair and the dental unit by performing all possible operational measures.

7.3 Adjusting the water flow to the cuspidor

Adjust the water flow to the water cups with the needle valve inside the cuspidor box so as to get a suitable filling rate. The outer needle valve is for water cup filling water cups, the inner one for rinsing water. See the next figure.

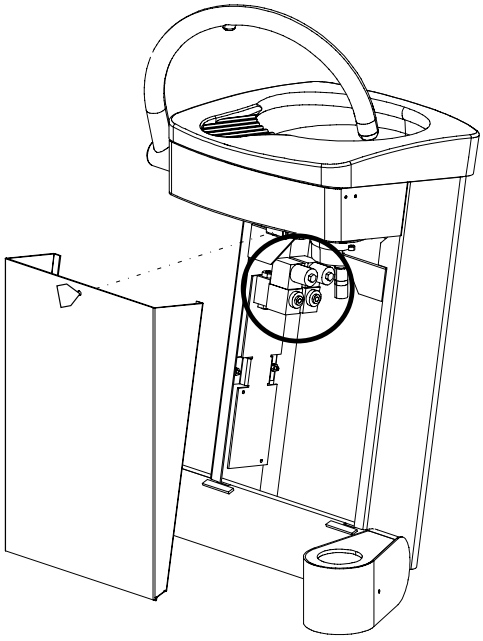


Figure 38: Needle valves for adjusting water pressure

7.4 Adjusting the instrument bridge and arm

Levelling the instrument bridge

If the instrument bridge is not exactly horizontal, it can be adjusted by first loosening the nut that holds the ball joint, and fastening the nut again after levelling the bridge.

Insert a screw driver (a) into the opening at the bottom of the instrument bridge holder and up through a hole in the flat nut that holds the ball joint. In this way the nut is fixed. Unscrew the nut by turning the instrument bridge clockwise one or more turns.

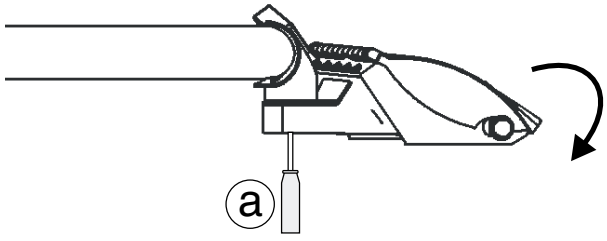


Figure 39: Loosening the ball joint

When the ball joint is free to move, the instrument bridge can be adjusted. Level the bridge and keep it in horizontal position while fastening the nut again by rotating the instrument bridge counterclockwise.

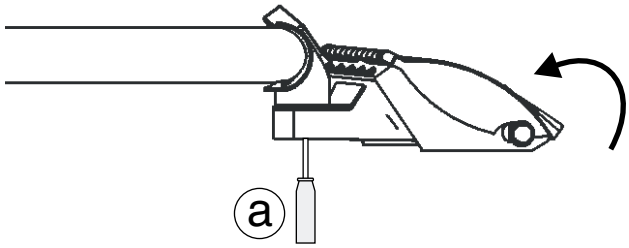


Figure 40: Tightening the ball joint

Adjusting the tilt angles of the whip arms

The inclination of the whip arms can be adjusted with nuts at the instrument bridge ends of the arms.

Take out the whip arm from the instrument bridge. Loosen the nut at the bottom end to get the arm to incline more backwards. Tighten the nut to get the arm to incline more forwards. Insert the whip arm again.

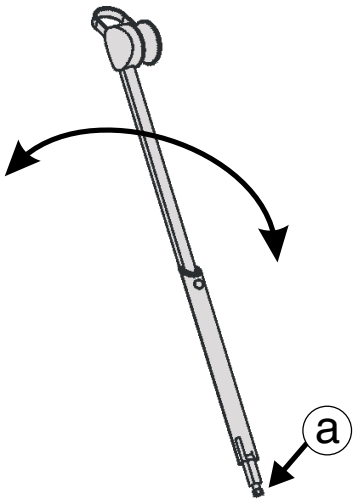


Figure 41: Adjusting the tilt angles of the whip arms

Adjusting the rotation resistance of the instrument arm

Tighten the hook nut to increase the rotation resistance. Loosen the hook nut to decrease the rotation resistance and ease the rotation of the instrument arm. The adjustment can be done with a special tool or with a screw driver.

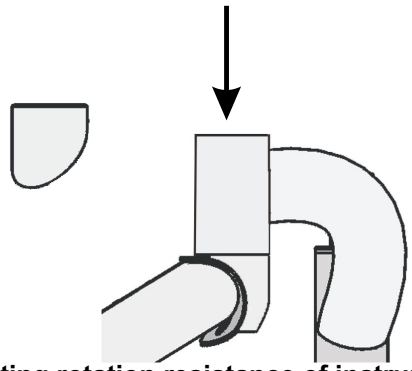


Figure 42: Adjusting rotation resistance of instrument arm

Adjusting the lifting capacity of the instrument arm

The lifting capacity of the instrument arm should be such that the arm with its normal load is kept in the set position without moving up or down.

If needed, adjust the lifting capacity of the arm by tightening or loosening the nut (a) in the arm. Tightening the nut will increase the lifting capacity, while loosening the nut will decrease the lifting capacity.

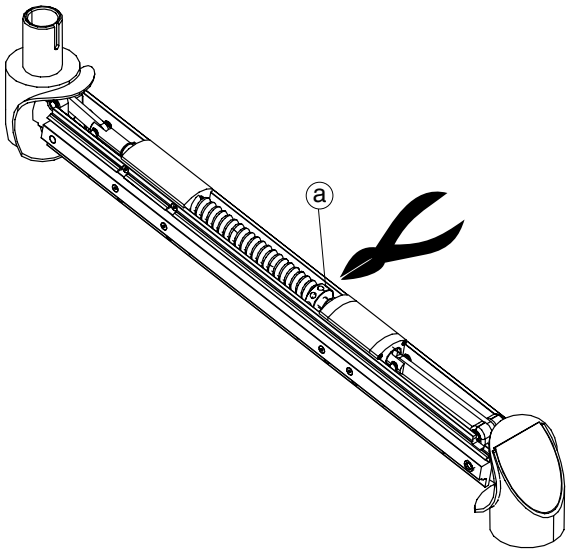


Figure 43: Adjusting the lifting capacity of the instrument arm

8 Technical specifications

Protection class:	I
Protection grade:	B
Protection against fluids:	IPX0
Operational safety grade:	Standard The unit is not suitable for use in an environment with a mixture of inflammable anaesthesia gas and air, or a mixture of inflammable anaesthesia gas and oxygen or laughing gas (nitrous oxide).
Mode of operation:	Intermittent operation. Duty cycle 5% chair 50% unit instruments.

Allowed operating conditions

Temperature:	15º C - 40º C
Relative humidity:	35% - 75%

Storage and transportation conditions

Temperature:	0º C - 50º C
Relative humidity:	35% - 75%

Electrical features

Power supply:	230 V, 50 Hz
Maximum power consumption:	1200 W (includes power consumption of possible accessories connected to the unit)
Main fuse unit F3:	6.3 AT
Primary fuse of transformer unit F4:	2 AT
Main fuse chair F1:	5 AT
(Primary fuse of transformer unit F2):	(5 AT)

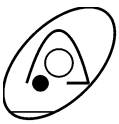
Unit only

Water connection:	3 bar - 6 bar (particle size < 10 µm)
Compressed air connection:	5.5 bar - 8 bar

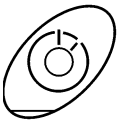
Chair only

Maximum lifting capacity	135 kg
Weight:	Chair only 85 kg Unit only 65 kg Chair and unit combined 150 kg

9 Symbols



Door open/nurse call key



Timer key

Bowl rinse key

Glass fill key

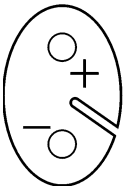
Backrest positioning key

Seat positioning key

Instrument spray key

Instrument water key

Chip blow key



Setting adjustment key

ON (Power: Connection to the mains)

OFF (Power: Disconnection from the mains)

Alternating Current

Protective Earth (Ground)

Earth (Ground: Functional)

DANGEROUS VOLTAGE

Classification symbol, for a type B applied part equipment, IEC-601-1

CE (0537) Symbol MDD 93/42/EEC

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