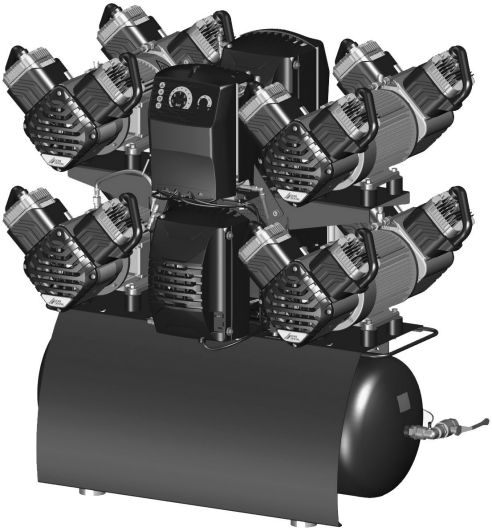
Quattro P 20



EN Installation and operating instructions

CE 0297

DÜRR DENTAL

4852100006L02 2501V010

The current version of the installation and operating instructions is available in the Download Center:

http://qr.duerrdental.com/4852100006

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Important information

1 About this document

These installation and operating instructions represent part of the unit.

The manufacturer and the distributor will not offer any guarantee or accept any liability for the safe operation and the safe functioning of the unit if the instructions and information in these installation and operating instructions are not complied with.

The German version of the installation and operating instructions is the original manual. All other languages are translations of the original manual. These installation and operating instructions apply to:
Quattro P 20
REF: 4852-54; 4852100022; 4852100023, 4852200054

1.1 Warnings and symbols

Warnings

The warnings in this document are intended to draw your attention to possible injury to persons or damage to machinery.
The following warning symbols are used:


General warning symbol


Warning – dangerous high voltage


Warning – hot surfaces


Warning - automatic start-up of the unit

The warnings are structured as follows:


SIGNAL WORD

Description of the type and source of danger

Here you will find the possible consequences of ignoring the warning

› Follow these measures to avoid the danger.

The signal word differentiates between four levels of danger:
– **DANGER**
Immediate danger of severe injury or death
– **WARNING**
Possible danger of severe injury or death
– **CAUTION**
Risk of minor injuries
– **NOTICE**
Risk of extensive material/property damage

Other symbols

These symbols are used in the document and on or in the unit:

Note, e.g. specific instructions regarding efficient and cost-effective use of the unit.


Observe the operating instructions.


Disconnect all power from the unit.


Wear ear protectors.


Refer to the accompanying electronic documents.


Air


Dispose of correctly in accordance with EU Directive 2012/19/EU (WEEE).

CE labelling with the number of the notified body

Conformity mark for the United Kingdom of Great Britain and Northern Ireland, with the number of the designated authority

Ukrainian conformity mark with registration number

Authorised representative for Switzerland

Order number

Serial number

Medical device

HIBC Health Industry Bar Code (HIBC)

Manufacturer

1.2 Copyright information

All circuits, processes, names, software programs and units mentioned in this document are protected by copyright.
The Installation and Operating Instructions must not be copied or reprinted, neither in full nor in part, without written authorisation from the copyright owner.

2 Safety

The unit has been developed and designed in such a way that dangers are effectively ruled out if used in accordance with the Intended Use. Despite this, the following residual risks can remain:
– Personal injury due to incorrect use/misuse
– Personal injury due to mechanical effects
– Personal injury due to electrical shock
– Personal injury due to radiation
– Personal injury due to fire
– Personal injury due to thermal effects on skin
– Personal injury due to lack of hygiene, e.g. infection

WARNING

The development of emphysema

Soft tissue can be damaged as a result of careless handling.

› Do not dwell in the area being treated for any longer than is necessary.

2.1 Intended purpose

The compressor is designed to supply compressed air for dental applications.

2.2 Intended use

The air supplied by the compressor is suitable for driving dental tools.
The compressed air generated by the compressor is delivered to the pipeline system of the surgery. The entire compressed air system must be designed in such a way that the quality of the compressed air generated by the compressor is not impaired.
With this prerequisite, the air provided by the compressor is also suitable for blow-drying tooth preparations.

2.3 Improper use

Any use of this appliance / these appliances above and beyond that described in the Installation and Operating Instructions is deemed to be incorrect usage. The manufacturer cannot be held liable for any damage resulting from incorrect usage. The operator will be held liable and bears all risks.

WARNING

Risk of explosion due to ignition of combustible materials

› Do not operate the unit in any rooms in which inflammable mixtures may be present, e.g. in operating theatres.

– The unit is not suitable for providing an air supply to respirators.
– This unit is not suitable for drawing up fluids or for compressing aggressive gases or potentially explosive gases.

2.4 General safety information

– Always comply with the specifications of all guidelines, laws, and other rules and regulations applicable at the site of operation for the operation of this unit.
– Check the function and condition of the unit prior to every use.
– Do not convert or modify the unit.
– Comply with the specifications of the Installation and Operating Instructions.
– The Installation and Operating Instructions must be accessible to all operators of the unit at all times.

2.5 Specialist personnel

Operation

Unit operating personnel must ensure safe and correct handling based on their training and knowledge.
– Instruct or have every operator instructed in handling the unit.

The following groups are not permitted to operate or use a commercially operated unit:
– People without the necessary experience and knowledge
– People with reduced physical, sensory or mental capabilities
– Children

Installation and repairs

– The manufacturer recommends that installation, readjustments, alterations, upgrades and repairs be carried out either by the manufacturer itself or by a qualified specialist authorised by the manufacturer.

2.6 Electrical safety

– Observe and comply with all the relevant electrical safety regulations when working on the unit.
– Replace any damaged cables or plugs immediately.

2.7 Notification requirement of serious incidents

The operator/patient is required to report any serious incident that occurs in connection with the device to the manufacturer and to the competent authority of the Member State in which the operator and/or patient is established/resident.

2.8 Only use original parts

– Only use accessories and optional articles named or authorised by the manufacturer.
– Only use only original wear parts and replacement parts.

The manufacturer and distributor accept no liability for damages or injury resulting from the use of non-approved accessories, optional accessories, or from the use of non-original wear parts or replacement parts.

The use of non-approved accessories, optional accessories or non-genuine wear parts / replacement parts (e.g. mains cables) can have a negative effect in terms of electrical safety and EMC.

2.9 Transport

The original packaging provides optimum protection for the unit during transportation.
If required, the original packaging for the unit can be ordered.

The manufacturer and the distributor do not accept liability, even during the warranty period, for damage during transportation due to improper packaging.

– Only transport the unit in its original packaging.
– Keep the packing materials out of the reach of children.

2.10 Disposal

The unit must be disposed of properly. Within the European Union, the unit must be disposed of in accordance with EU Directive 2012/19/EU (WEEE).

If you have any questions about the correct disposal of parts, please contact your dental trade supplier.

An overview of the waste keys for Dürr Dental products can be found in the download area:

http://qr.duerrdental.com/P007100155

2.11 Protection from threats from the Internet

The unit is to be connected to a computer that can be connected to the Internet. Therefore, the system needs to be protected from threats from the Internet.

- Use antivirus software and update it regularly. Look for evidence of possible virus infection and, if applicable, check with the antivirus software and remove the virus.
- Perform regular data backups.
- Restrict access to units to trustworthy users, e.g. via a user name and password.
- Make sure that only trustworthy content is downloaded. Only install software and firmware updates that have been authenticated by the manufacturer.

Product description

3 Overview

3.1 Scope of delivery

The following items are included in the scope of delivery (possible variant-specific deviations due to country-specific requirements and/or import regulations):

Quattro P 20 4852-54
Quattro P 20 4852100022
Quattro P 20 4852100023
Quattro P 20 (CAD/CAM) 4852200054

– Pressure vessel
– Compressor units
– Connection parts
– Vibration dampers
– Network cable, 3 m
– Installation and operating instructions

3.2 Optional items

The following items can optionally be used with the unit; these items do not bear the CE mark:

Pressure reducer 4852100014
Fine filter 1610-121-00

3.3 Wear parts and replacement parts

The following working parts must be replaced at regular intervals (refer also to "Maintenance"); these articles do not bear the CE mark:

Air intake filter 0832-982-00
Fine filter 1610-121-00
Virus bacteria filter 1650100172
Coalescence filter 1650200323

To configure the required filters or filter sets, you can also use our filter configurator at:
www.duerrdental.com/filterkonfigurator

Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.

Information about replacement parts can be found on the website portal for specialist dealers under:
www.duerrdental.net

If the mains cable of this unit is damaged it must only be replaced by an original mains cable from the manufacturer.

4 Technical data

4.1 Quattro P 20

Electrical data		4852-54 4852100022 4852100023	
Rated voltage	V	400	
Mains frequency	Hz	50	60
Nominal current at 8 bar (0.8 MPa)	A	17.6	19.2
Type of protection		IP 21	
Mains fuses *	A	25	
Max. permissible mains impedance in accordance with EN 61000-3-11 **	Ω	0.13	

* Circuit breaker fuse characteristics B, C or D in acc. with EN 60898-1

** Mains impedance at 6 switching cycles per hour. If the number of switching cycles per hour is higher a lower mains impedance is required.

General technical data			
Pressure tank volume	l	90	
Suction power, approx.	l/min	1685	2025
Delivery at 5 bar (0.5 MPa)*	l/min	1032	1172
Pressure build-up phase 0 - 7.5 bar (0 - 0.75 MPa) c.	s	45	40
Duty cycle	%	100	
Cut-In pressure	bar (MPa)	5.5 (0.55)	
Cut-out pressure	bar (MPa)	7.5 (0.75)	
Cut-off pressure, max. adjustable	bar (MPa)	9.5 (0.95)	
Safety valve, maximum permissible operating pressure	bar (MPa)	10 (1)	
Pressure dew point at 7 bar (0.7 MPa)**	°C	≤ +5	
Dimensions (H x W x D) ***	cm	114 x 115 x 77	
Weight	kg	300	
Noise level ****	dB(A)	75	76

* Delivery without membrane drying unit, at +20°C and 1013 mbar (0.1 MPa)

** Value determined at an ambient temperature of +30 °C

*** Values without accessories and add-on parts

**** Noise level in accordance with ISO 3744

Air purity
Air quality in accordance with ISO 22052 chap. 5.3 fulfilled

Classification	
Medical Device Class (MDR)	IIa

4.2 Quattro P20 (CAD/CAM)

Electrical data		4852200054	
Rated voltage	V	400	
Mains frequency	Hz	50	60
Nominal current at 8 bar (0.8 MPa)	A	17.6	19.2
Type of protection		IP 21	
Mains fuses *	A	25	
Max. permissible mains impedance in accordance with EN 61000-3-11 **	Ω	0.13	

* Circuit breaker fuse characteristics B, C or D in acc. with EN 60898-1

** Mains impedance at 6 switching cycles per hour. If the number of switching cycles per hour is higher a lower mains impedance is required.

General technical data			
Pressure tank volume	l	90	
Suction power, approx.	l/min	1685	2025
Delivery at 5 bar (0.5 MPa)*	l/min	1032	1172
Pressure build-up phase 0 - 9 bar (0 - 0.9 MPa) c.	s	50	45
Duty cycle	%	100	
Cut-In pressure	bar (MPa)	7 (0.7)	
Cut-out pressure	bar (MPa)	9 (0.9)	
Cut-off pressure, max. adjustable	bar (MPa)	9.5 (0.95)	
Safety valve, maximum permissible operating pressure	bar (MPa)	10 (1)	
Pressure dew point at 8 bar (0.8 MPa)**	°C	≤ +3	
Dimensions (H x W x D) ***	cm	114 x 115 x 77	
Weight	kg	300	
Noise level ****	dB(A)	75	76

* Delivery without membrane drying unit, at +20°C and 1013 mbar (0.1 MPa)

** Value determined at an ambient temperature of +20 °C

*** Values without accessories and add-on parts

**** Noise level in accordance with ISO 3744

Air purity
Air quality requirements satisfied in accordance with section 5.3 of ISO 22052 Measured in accordance with ISO 8573-1; ISO 8573-2; ISO 8573-3; ISO 8573-4 at 8 bar (0.8 MPa)

Classification	
Medical Device Class (MDR)	IIa

4.3 Network connection

Network connection		
LAN technology		Ethernet
Standard		IEEE 802.3u
Data rate	Mbit/s	100
Connector		RJ45
Type of connection		Auto MDI-X
Cable type		≥ CAT5

4.4 Filter

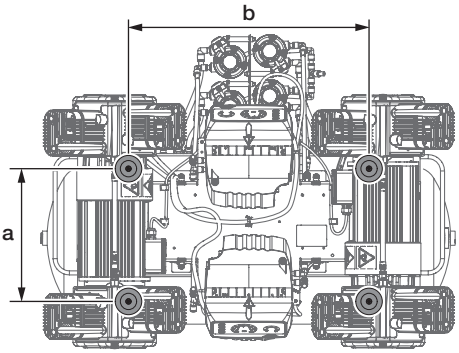
Filter mesh size		
Air intake filter	µm	3
Fine filter	µm	3
Virus bacteria filter	µm	0.01
Coalescence filter	µm	0.01

4.5 Ambient conditions

Ambient conditions during storage and transport		
Temperature	°C	-10 - +55
Relative humidity	%	< 95

Ambient conditions during operation		
Temperature	°C	+10 - +40
Ideal temperature	°C	+10 - +25
Relative humidity	%	< 95

4.6 Distance between rubber feet

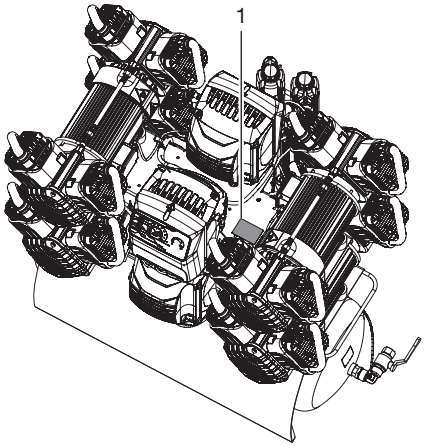


	a (cm)	b (cm)
90 l	32.5	59

4.7 Type plate

Complete system

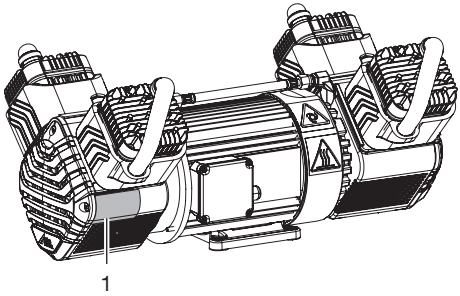
The type plate of the overall system is located on the console.



1 Type plate for the complete system

Compressor unit

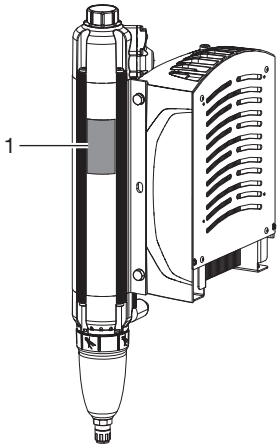
The type plate of the compressor unit is located on the crankcase below the cylinder.



1 Compressor unit type plate

Membrane drying unit

The type plate of the membrane drying unit is located on the side of the membrane drying unit.

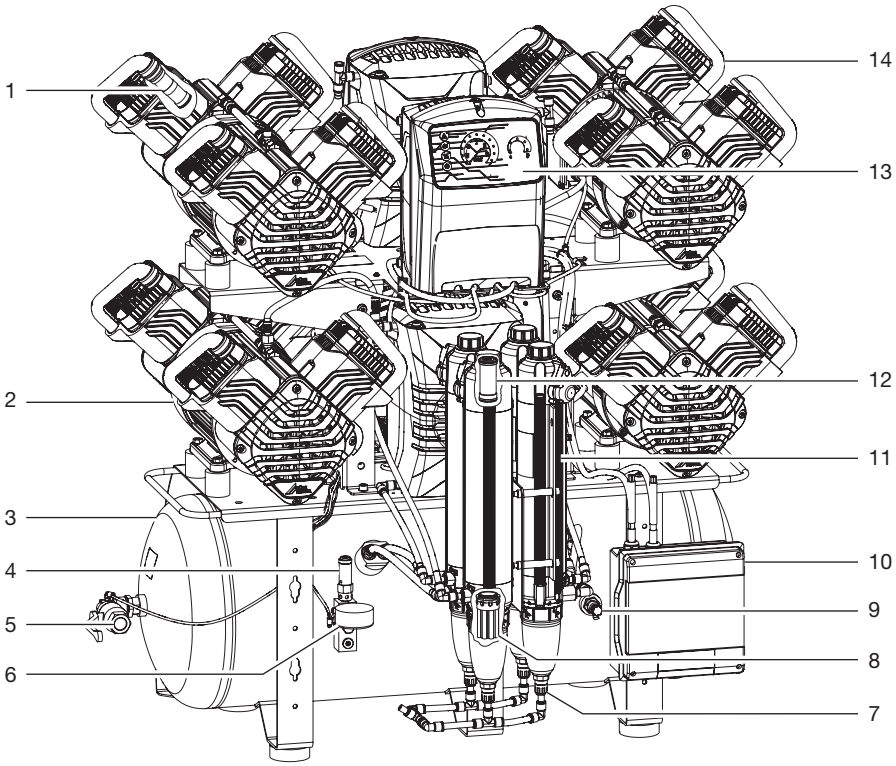


1 Membrane drying unit type plate

4.8 Evaluation of conformity

This device has been subjected to conformity acceptance testing in accordance with the current relevant European Union guidelines. This equipment conforms to all relevant requirements.

5 Function



1 Air intake filter
2 Compressor unit
3 Pressure vessel
4 Safety valve
5 Compressed air connection (3/4")
6 Pressure gauge/display
7 Automatic/manual condensate drain valve
8 Coalescence filter
9 Condensate drain valve
10 Fuse box
11 Membrane dryer
12 Fine or virus bacteria filter
13 Controller
14 Intake connector

The compressor unit draws in atmospheric air and compresses this air oil-free. It then transports the oil-free compressed air to the membrane drying unit. The cooler and the membrane dryer extract moisture from the compressed air. The oil-free, hygienic and dry air is stored in the pressure tank ready for use in connected devices.

All of the measurement data for the unit comes together in the control (e.g. pressure in the pressure tank, temperature of the motor windings), where it is then evaluated. Likewise, various settings (e.g. switch-on/cut-off pressure) can be adjusted, or the unit can be connected via the network to monitoring software.

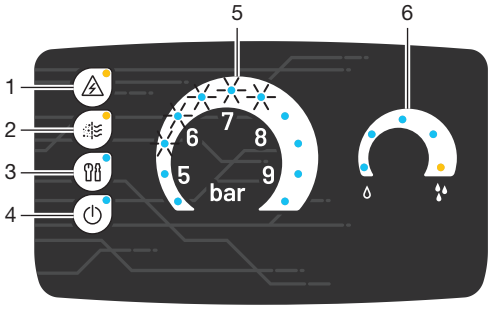
5.1 Start-up behaviour

On compressors with an electronic controller, the compressor units are switched on with a time delay. The time delay depends on the air extraction from the tank.

Alternating control:

The compressor unit with the shortest operating time since the compressor was connected to voltage is started. This distributes the operating time more or less uniformly between the compressor units. If the compressor is disconnected from the voltage and is then reconnected to the power supply, compressor unit 1 will start first again.

5.2 Operating panel

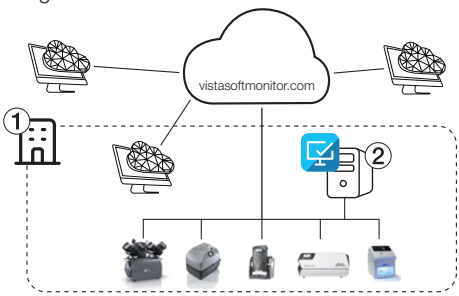


1 Fault button with LED
2 Filter replacement button with LED
3 Service key with LED
4 Standby button with LED
5 Pressure range display/adjustment
6 Pressure dew point display

Different messages and the status of the unit are displayed on the operating panel. In addition, different functions can be started via the buttons.

5.3 VistaSoft Monitor

The software is installed on a computer in the local practice network and is connected to the devices of Dürr Dental in the practice.
If there is a message for a device in the practice, the software transfers the message to the cloud (vistasoftmonitor.com). In addition, a message of the VS Monitor Notifier is shown in the task bar.
The current status of the devices as well as any pending maintenance can be viewed using a browser.
The devices can optionally be assigned to a participating service partner. The service partner automatically receives the devices and practices assigned to them in their view.



1 Local practice network
2 Computer in the local network with server installation

The current version can be downloaded from the Dürr Dental homepage in the Download Centre.

Assembly

6 Requirements

The unit must not be set up or operated within the vicinity of the patients (within a radius of 1.5 m).

The unit can be installed either at the same level as the surgery room, on a floor below (e.g. cellar) or under the roof.
Due of the amount of noise generated, we recommend that the unit is installed in an adjoining room.
The pipes provided on-site must at least meet the country-specific requirements for drinking water.
The compressed air network to which the unit is connected must be designed for the maximum pressure of the unit (10 bar).

Further information can be found in our separate planning information leaflet for compressed air.

6.1 Installation/setup room

The room chosen for set up must fulfil the following requirements:
- Closed, dry, well-ventilated room
- Should not be a room made for another purpose (e. g. boiler room or wet cell)
- If the unit is installed in a machine room, e.g. in an adjoining room or cellar, the requirements set out in DIN EN ISO 22052 must be observed.

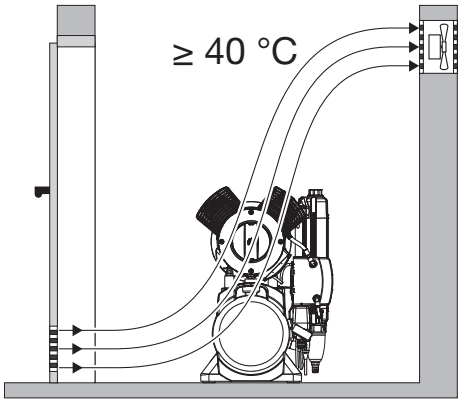
NOTICE

Risk of overheating due to insufficient ventilation

The units generates heat. Possibility of heat damage and/or reduced service life of the unit.

› Do not cover the unit.

› Install a fan for auxiliary ventilation in rooms where ambient temperatures exceed ≥40 °C while the unit is in operation.



6.2 Setup

The following conditions must be taken into account for installation:

The air is filtered when it is sucked in. This does not alter the composition of the air. For this reason it is important to keep the sucked-in air free of harmful substances (e.g. do not suck in exhaust gases or contaminated exhaust air).

- Clean, level and sufficiently stable subsurface (note the weight of the unit).
- Type plate easy to read.
- Unit easy to access for operation and maintenance.
- Easy-to-access power outlet to which the unit is connected.
- Maintain sufficient distance to the wall (at least 20 cm).
- The compressed air pipe should be routed as closely as possible to the place of installation (note the length of the hose supplied).

6.3 Information about electrical connections

- Ensure that the electrical connections to the mains power supply are established in accordance with current valid national and local regulations and standards governing the installation of low voltage units in medical facilities.
- Observe the current consumption of the devices that are to be connected.

7 Transport

WARNING

Risk of explosion of the pressure tank and pressure hoses

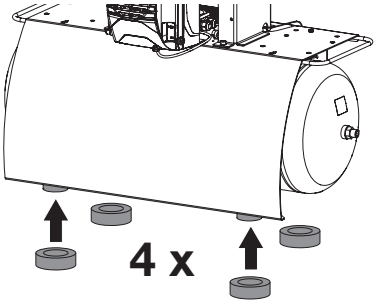
› The pressure tank and the pressure hoses must be vented before they are stored or transported.

– Protect the unit against moisture, dirt and extreme temperatures during transport.
– Always make sure that the condensate collector chamber is empty before transporting the unit.
– Always transport the unit in an upright position.
– Only transport the unit using the transport handles provided.
– Check the unit for transport damage.

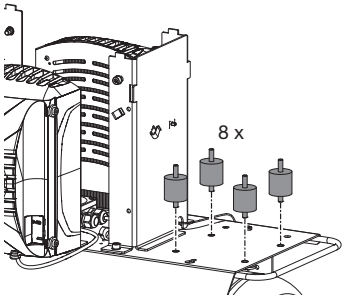
8 Installation

8.1 Installing the compressor unit

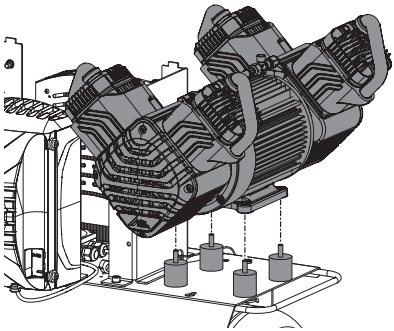
1. Place the pressure tank with the rubber feet in the rubber pads.



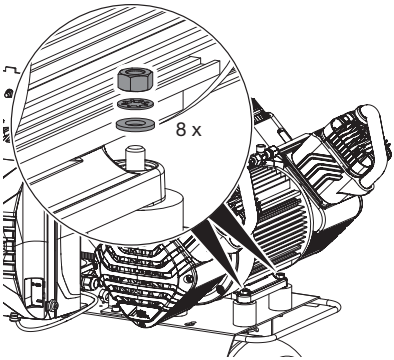
2. Screw the vibration reducers into the retaining plate.



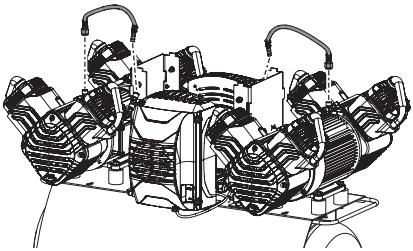
3. Place compressor units onto the vibration reducers.



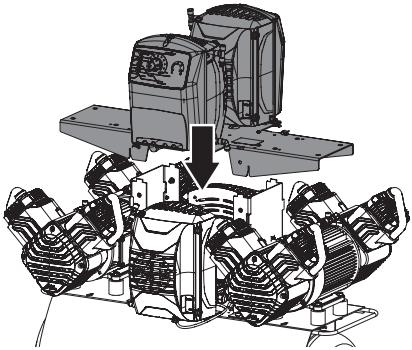
4. Fasten the compressor units with the lock washers and nuts.



5. Connect the compressor units via the pressure hose to the upper connections of the coolers.

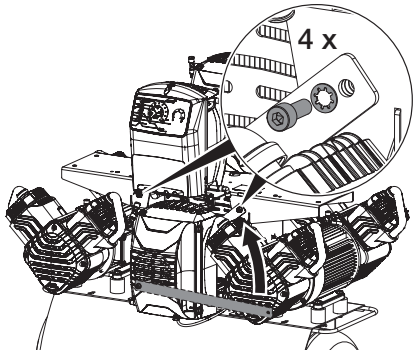


6. Place the console on the supports.

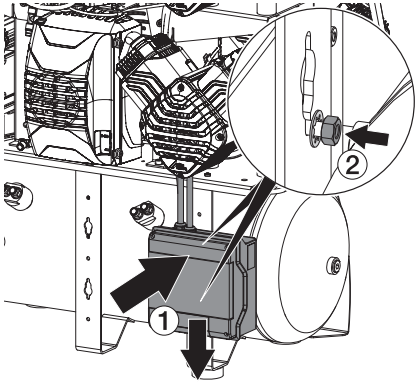


7. Rotate the crossbeam upwards towards the console.

8. Attach the crossbeam to the console with a lock washer and screw.

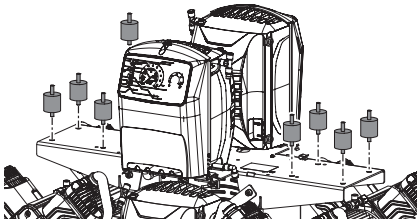


9. Hook the fuse box in the keyholes and attach it with a lock washer and nut.



10. Fix the cables of the fuse box in place on the pre-mounted eyelets using cable ties.

11. Screw the vibration reducers into the console.

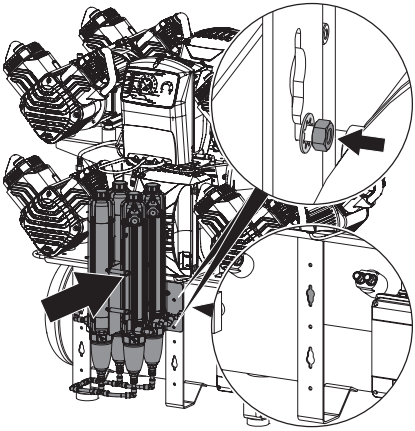


12. Place compressor units onto the vibration reducers.

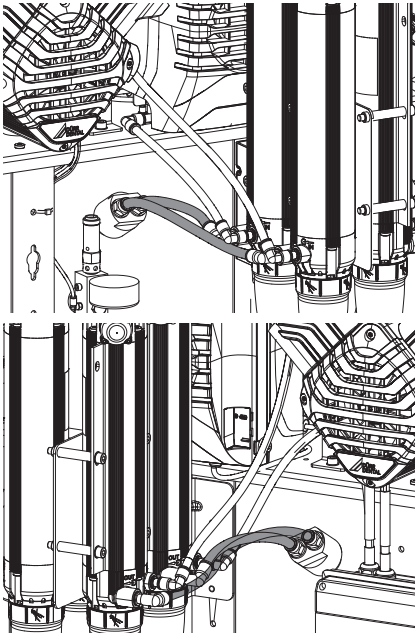
13. Fasten the compressor units with the lock washers and nuts.

14. Connect the compressor units via the pressure hose to the upper connections of the coolers.

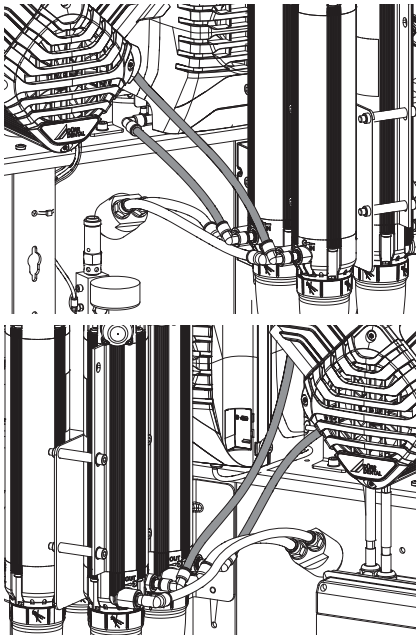
15. Attach the membrane dryer to the pressure tank with a lock washer and nut.



16. Connect the hoses of the pressure tank to the outlet of the membrane dryers (OUT).



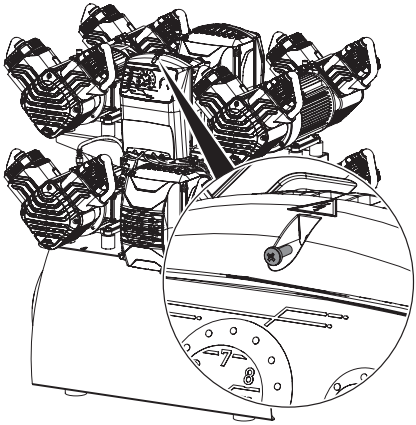
17. Connect the hoses of the lower connections of the coolers to the inlet of the membrane dryers (IN).



Warning – risk of dangerous electric voltages

18. The mains plug must not be plugged in. If it is plugged in, unplug it.

18. Loosen the fastening screws of the covers for the controllers.



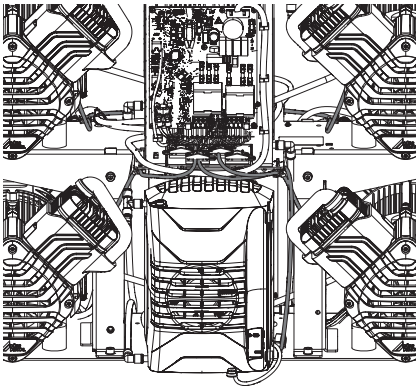
NOTICE

The operating panel cable is very short and can damage the PCB when the cover is removed.

› Carefully remove the cover of the control.

19. Unplug the operating panel cable.

20. Lay the cables of the lower compressor units and the free cable of the distribution box upwards to the main controller. Then guide it through the strain relief and secure it.
Lay the cables of the upper compressor units to the auxiliary controller. Then guide it through the strain relief and secure it.



21. Plug the temperature sensor connector and the power supply of the compressor units into the sockets provided.

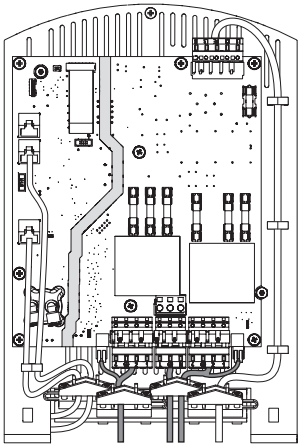


Fig. 1: Main controller

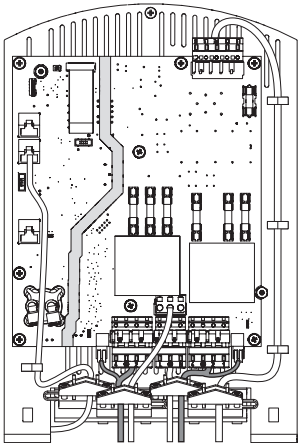
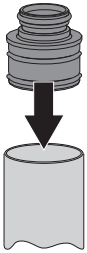


Fig. 2: Auxiliary controller

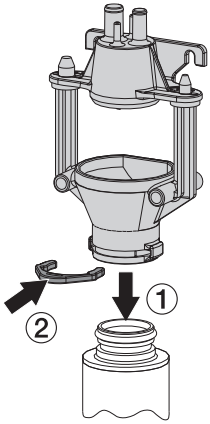
When routeing the cables, maintain the correct gaps between control cables and supply cables.

22. Insert the Dürr Connect transition piece into the drain pipe.

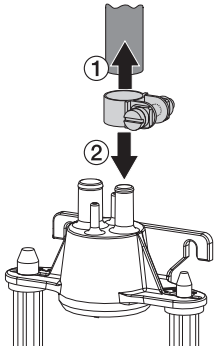


If the supplied Dürr Connect transition piece (DN 40) does not fit the existing drain pipe, additional transition pieces can be purchased from Dürr Dental.

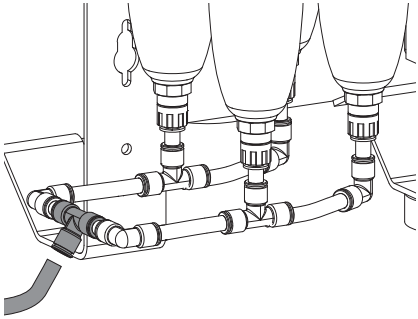
23. Place the free drop section onto the transition piece and secure with the ring clamp.



24. Secure the connection hose of the membrane dryer to the free drop section with the hose clip.



25. Connect the hose from the free drop section to the membrane dryer with the connection.



Connect the network cable for the monitoring software

A network connection is only required when using monitoring software.

1. Connect the network cable to the network socket.

Installation of the cover

1. Connect the operating panel cable again.
2. Attach the cover of the control again and fasten it with the screw.

DANGER

Risk of electric shock due to defective mains cable

› Mains cables must not be allowed to come into contact with any hot surfaces on the unit.

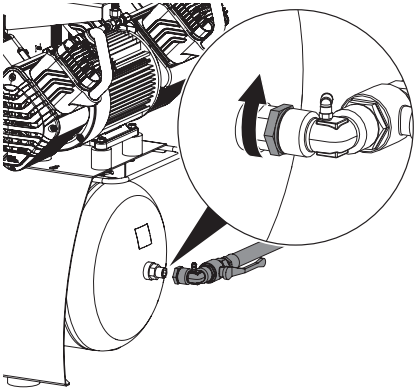
3. Attach the cables using the cable clips.

8.2 Establishing the compressed air connection

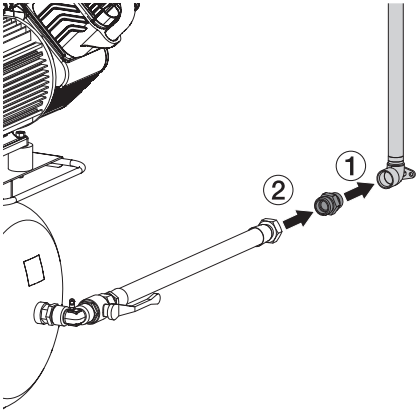
✓ Connection line to pipe system at the height of the tank connection
✓ 3/4" corner joint, pointing forwards

The supplied flexible pressure hose between the pipe system and the compressor prevents vibrations from being transmitted and thus reduces noise. This ensures safe and reliable operation.

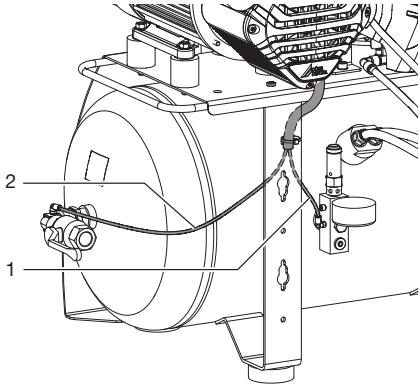
1. Connect the pre-mounted pressure hose to the connecting sleeve at the pressure tank and fasten with the union nut.



2. Connect the pressure hose with the supplied connecting sleeve to the pipe system.



3. Connect the pressure hoses from the controllers.
Additionally pull the hoses through the hose from the accessories and secure the latter to the pressure tank with a cable tie.



1 Auxiliary control pressure hose
2 Main control pressure hose

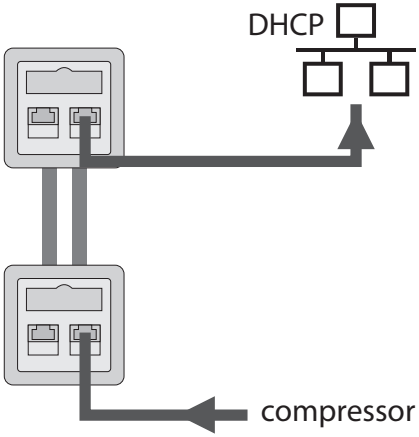
8.3 Network connection

Purpose of the network connection
The network connection is used to exchange information or control signals between the unit and a software installed on a computer, in order to, e. g.:
- Display parameters
- Select operating modes
- Indicate messages and error situations
- Change unit settings
- Activate test functions
- Transmit data for archiving
- Provide documents concerning the units

During initial installation, we recommend a router or server with DHCP so that the unit is detected in the network.

1. Plug the network cable into the control and into a network socket.

2. Connect to the computer network with the network cable.



8.4 Electrical connections

Safety when making electrical connections

The unit has no main power switch. For this reason it is important that the unit is be set up in such a way that the plug can be easily accessed and unplugged if required.

– The device must only be connected to a correctly installed power outlet.
– Make sure that none of the electrical cables leading to the unit are under any mechanical tension.
– Before taking the unit into operation for the first time, check that the power supply voltage matches the voltage specifications on the type plate.

Establishing the electrical connections

DANGER

Risk of electric shock due to defective mains cable

› Mains cables must not be allowed to come into contact with any hot surfaces on the unit.

1. Connect the mains plug to an earthed power outlet.

   The unit will start immediately when the mains plug is connected.

2. Check whether the power outlet is switched via the surgery main power switch.

   This ensures that the unit starts up automatically after the surgery main switch is routinely switched off and back on again.

9 Commissioning

In many countries technical medical products and electrical devices are subject to regular checks at set intervals. The owner must be instructed accordingly.

1. Carry out an electrical safety check in accordance with applicable local regulations (e.g. the German Ordinance on the Installation, Operation and Use of Medical Devices / Medizinprodukte-Betreiberverordnung) and record the results as appropriate, e.g. in the technical log book.
2. Carry out and document the instruction and handover for the unit.

A sample handover report is included in the attachment.

9.1 Check the compressor units

1. Switch on the unit.
2. Check that all units start up one after the other as dictated by the set operating type.

   If any units fail to start up, check the connection between the main controller/auxiliary controller and the connectors.

9.2 Checking the switch-on/cut-off pressure

The switch-on/cut-off pressure is preset at the factory. Check the adjustment during first start-up.
When the mains plug is connected the compressor will start after a short delay.

1. Read off the cut-off pressure from the pressure gauge.
2. Drain the air from the pressure tank (e.g. via the condensate drain valve) until the unit starts and then close it again.
3. Read off the pressure when the unit starts up.
   If the readings deviate from the values preset at the factory, adjust the values to the factory settings. If other pressure values are required, take care to observe the maximum pressure difference.

9.3 Draining the condensation water

Temperature changes during transport may cause condensation water to accumulate in the pressure tank. The condensation water can only be drained from the pressurised pressure tank.

1. Start up the unit and wait until the cut-off pressure is reached.
2. At maximum tank pressure, slowly open the condensate drain valve.
3. Close the condensate drain valve as soon as all of the accumulated condensation water has been blown out.

9.4 Monitoring the unit via the network

The following requirements must be met in order to monitor the unit on the computer:
– Unit connected to the network
– Current monitoring software installed on the computer

Combining devices safely

– The overall safety of the unit and its main performance features are independent of the network. The device is designed for operation independent of a network. However, some of the functions are not available in this case.
– Incorrect manual configuration can lead to significant network problems. The expert knowledge of a network administrator is required for configuration.
– The data connection utilises part of the bandwidth of the network. Interactions with other medical devices cannot be completely ruled out. Apply the IEC 80001-1 standard for risk assessment.
– The device is not suitable for direct connection to the public Internet.

Network configuration

Various options are available for network configuration:

✓ Automatic configuration via DHCP (recommended).
✓ Automatic configuration via Auto-IP for direct connection of unit and computer.
✓ Manual configuration.

1. Configure the network settings of the unit using the software or, if available, the touch screen.
2. Check the firewall and release the ports, if applicable.

Network protocols and ports

Port	Purpose	Service
45123 UDP, 45124 UDP	Unit recognition and configuration	
1900 UDP	Service detection	SSDP / UPnP
502 TCP	Unit data	
514[1)] UDP	Event protocol data	Syslog
22 TCP	Diagnosis	Telnet, SSH
123 UDP	Time	NTP

1) The port can vary depending on the configuration.

10 Adjustment options

10.1 Adjustment of the switch-on/cut off pressure

WARNING

Risk of explosion of the pressure vessel

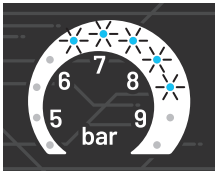
The pressure vessels used in the compressors are designed to withstand continuous pressure changes of 2 bar and can be used continuously under these pressure changes.

› For load changes > 2 bar (max. permissible: 3 bar), comply with the maximum load change cycles specified in the operating instructions of the pressure vessel.

The pressure adjustment is performed in standby mode.

1. Press the standby button for at least 2 seconds.
2. Touch the service key for at least 2 seconds.

   The blue LEDs in the operating panel flash. They are touch-sensitive and can be adjusted accordingly.



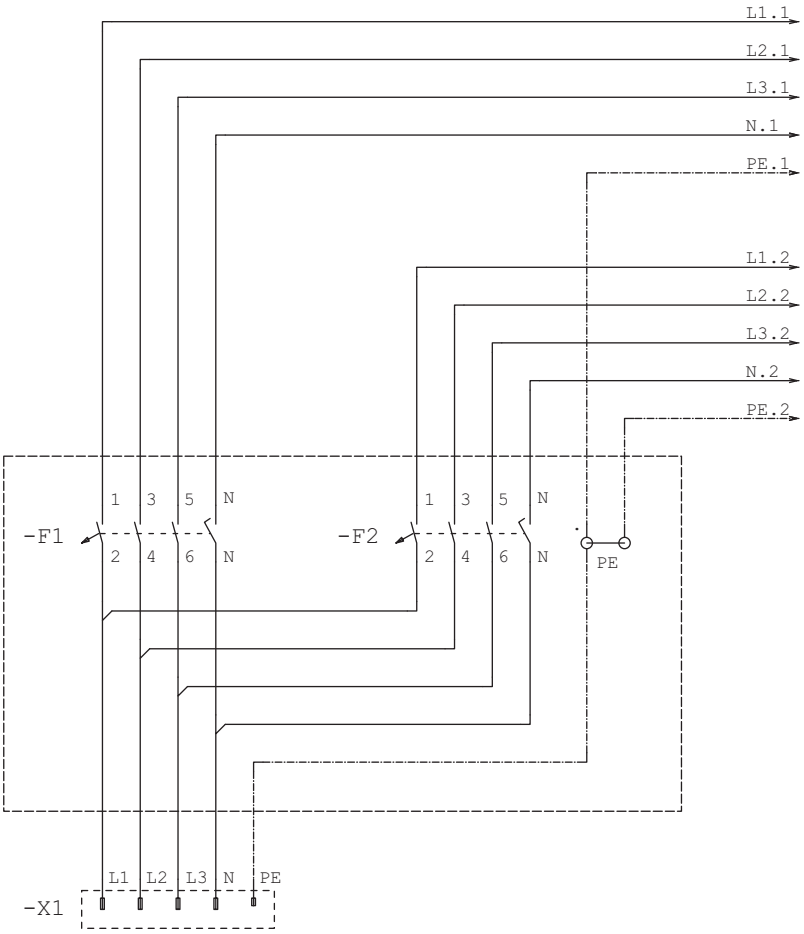
The pressure adjustment is performed in 0.5 bar increments by touching the LED.

3. Touch the first flashing LED with your finger and swipe to the required **switch on pressure**.
4. Touch the last flashing LED with your finger and swipe to the required **cut off pressure**.
5. Confirm with the service key.

If no touch pulse is received for 30 seconds, the system will automatically switch to standby operation. The settings are not saved.

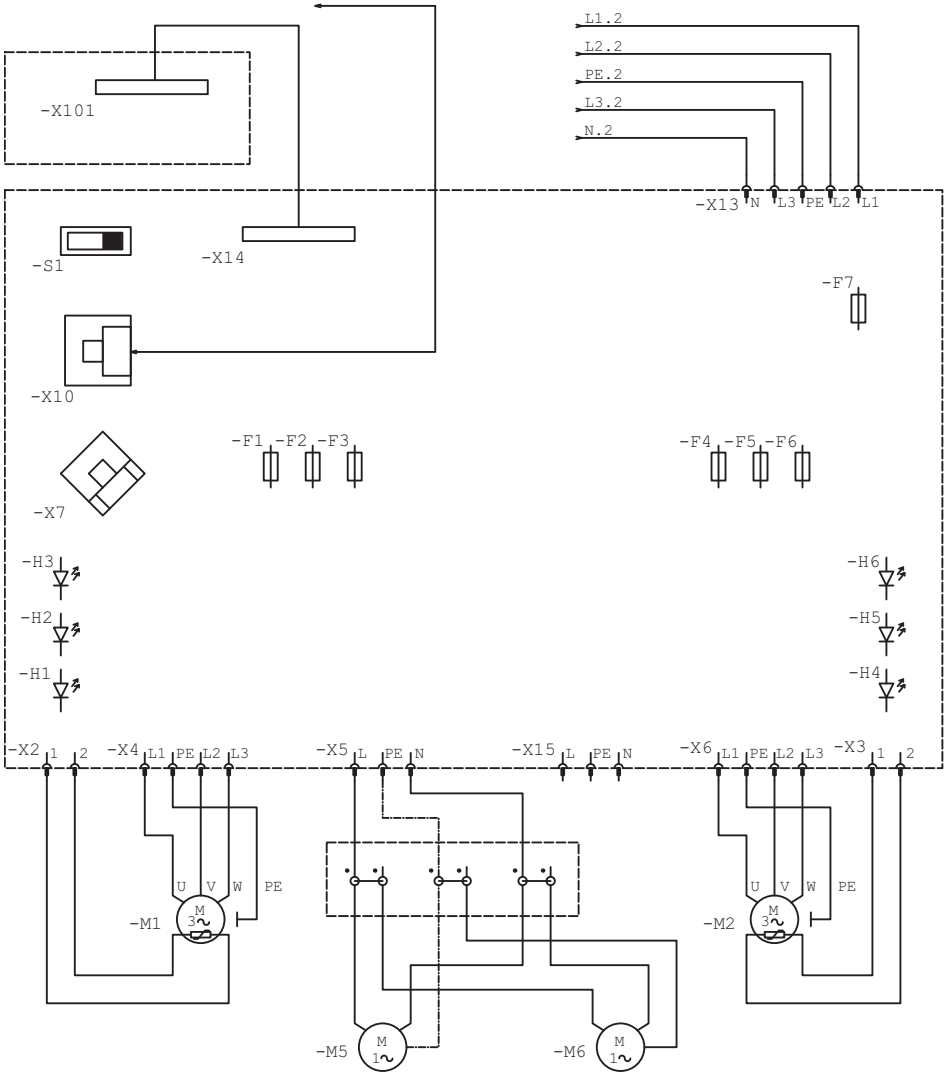
11 Controller

11.1 Mains connection



X1 Mains connection 3/N/PE AC 400 V
F1 Fuse C16A
F2 Fuse C16A

11.2 Main controller

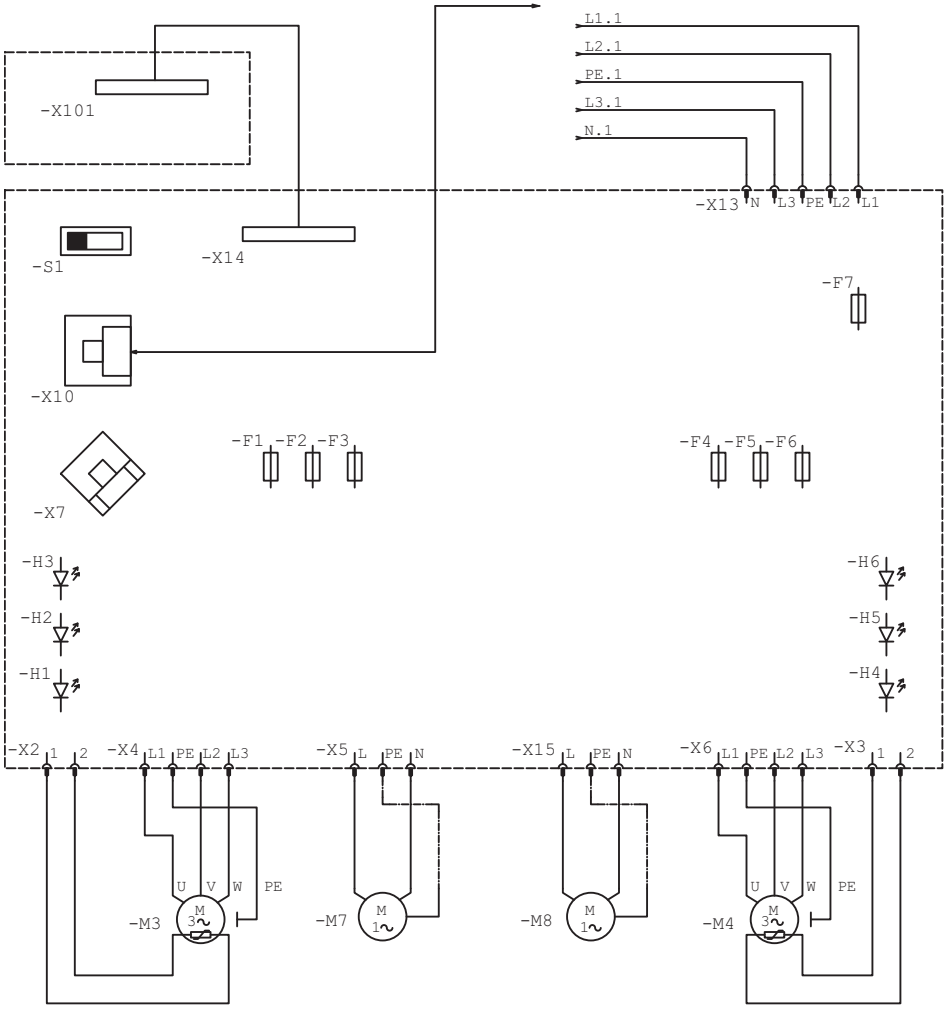


F1	Fuse T10AH/T12AH*
F2	Fuse T10AH/T12AH*
F3	Fuse T10AH/T12AH*
F4	Fuse T10AH/T12AH*
F5	Fuse T10AH/T12AH*
F6	Fuse T10AH/T12AH*
F7	Fuse T1.6AH
H1	LEDs status indicator for temperature sensor, compressor unit 1

H2	LEDs status indicator for temperature sensor, compressor unit 1
H3	LEDs status indicator for temperature sensor, compressor unit 1
H4	LEDs status indicator for temperature sensor, compressor unit 2
H5	LEDs status indicator for temperature sensor, compressor unit 2
H6	LEDs status indicator for temperature sensor, compressor unit 2
M1	Compressor unit 1
M2	Compressor unit 2
M5	Cooling fan motor, membrane drying units 1 and 2
M6	Cooling fan motor, membrane drying units 1 and 2
S1	Switch, main controller/auxiliary controller
X2	Temperature sensor, compressor unit 1
X3	Temperature sensor, compressor unit 2
X4	Connection, compressor unit 1
X5	Cooling fan motor connection, membrane drying units 1 and 2
X6	Connection, compressor unit 2
X7	Network connection
X10	Network connection for connection to main controller/auxiliary controller
X13	Mains connection
X14	Operating panel connection on the control board
X101	Connection, operating panel

* depends on the PCB version

11.3 Auxiliary controller



F1 Fuse T10AH/T12AH*

F2 Fuse T10AH/T12AH*

F3 Fuse T10AH/T12AH*

F4 Fuse T10AH/T12AH*

F5 Fuse T10AH/T12AH*

F6 Fuse T10AH/T12AH*

F7 Fuse T1.6AH

H1 LEDs status indicator for temperature sensor, compressor unit 3

H2 LEDs status indicator for temperature sensor, compressor unit 3

H3 LEDs status indicator for temperature sensor, compressor unit 3

H4 LEDs status indicator for temperature sensor, compressor unit 4
H5 LEDs status indicator for temperature sensor, compressor unit 4
H6 LEDs status indicator for temperature sensor, compressor unit 4
M3 Compressor unit 3
M4 Compressor unit 4
M7 Cooler fan motor, membrane drying unit 3
M8 Cooling fan motor, membrane drying unit 4
S1 Switch, main controller/auxiliary controller
X2 Temperature sensor, compressor unit 3
X3 Temperature sensor, compressor unit 4
X4 Connection, compressor unit 3
X5 Connection, cooling fan motor, membrane drying unit 3
X6 Connection, compressor unit 4
X7 Network connection
X10 Network connection for connection to main controller/auxiliary controller
X13 Mains connection
X14 Operating panel connection on the control board
X15 Connection, cooling fan motor, membrane drying unit 4
X101 Connection, operating panel

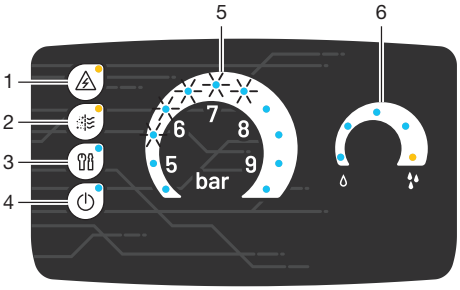
* depends on the PCB version

Usage

12 Operation

Prior to working on the unit or in case of danger, disconnect it from the mains.

12.1 Operating panel



1 Fault button with LED
2 Filter replacement button with LED
3 Service key with LED
4 Standby button with LED
5 Pressure range display/adjustment
6 Pressure dew point display

Different messages and the status of the unit are displayed on the operating panel. In addition, different functions can be started via the buttons. The device is operated via the operating panel of the main control. The auxiliary control is inactive (standby button flashing) and cannot be operated.

Buttons

Fault button	Display of alarm messages with different levels of importance. These can be fault messages or warning messages.
Filter replacement button	"Maintenance required" display for the various filters.
Service key	Check of the safety valve and adjustment of the pressure range.
Standby button:	Switching between normal operation and standby mode.

Pressure range

The pressure is displayed and can be adjusted in this area.
The pressure is displayed via:
1. LED (≤ 4.5 bar):
Lights up continuously, even with a pressure < 4,5 bar (e.g. while the pressure is building up during start-up operation)
2. - 10. LEDs (= 5–9 bar):
Indicate the pressure status in increments of 0.5 bar
11. LED (> 9 bar):
lights up if pressure > 9 bar.

Pressure dew point

The current pressure dew point temperature is displayed in this area. The compressed air can cool down to this temperature without the water condensing.
The pressure dew point is displayed via:
1.–4. LED: ≤ 5°C/5–10°C/10–15°C/15–20°C
1–2 LEDs light up when the system is running in the normal working range.
5. LED: ≥ 20°C, i.e. dry compressed air is no longer ensured.
As soon as the fifth LED lights up, the first four LEDs go out.

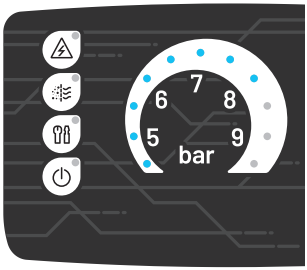
12.2 Switching the unit on/off

1. Switch the unit on and off via the surgery main switch.

   The compressor unit will start up automatically and the pressure tank will begin to fill. When the cut off pressure is reached the compressor unit will switch off automatically.

12.3 Normal operation

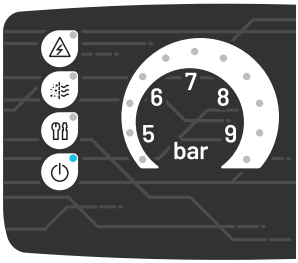
The unit is in normal operation as soon as the plug is inserted in the power outlet. The compressor runs until the cut off pressure is reached. The LEDs light up in the pressure range display.



12.4 Standby mode

The following are possible in standby mode:
– you can switch off the unit without disconnecting it from the mains.
– You can switch to set-up mode.

1. Switching from normal mode to standby mode:
   Press the standby button ⏻ for at least 2 seconds.
   The LED comes on.



2. Switch to normal mode by pressing the standby button ⏻ again.

12.5 Set-up mode

The following can be carried out in set-up mode:
– Adjust the switch-on/cut off pressure.
– Confirm the filter replacement.
– Deactivate the emergency mode.

1. In standby mode, also press the service key 🔧 to get to set-up mode.

12.6 Fault

The controller monitors the functions of the unit and signals faults according to their importance. Faults and warnings can be displayed. Faults are triggered as a result of faults in component assemblies or as a result of sensor defects. The unit is switched off and the LED of the fault button flashes or lights up.

⚠ Fault button, LED *flashes*
The fault can be acknowledged by pressing the button, as a result of which emergency mode is activated.
⚠ Fault button, LED *lights up*
As well as faults, the LED on the fault button also lights up to indicate warning messages. These cannot be acknowledged.
This informs the user about emergency mode, moisture/humidity, overheating or defective units. Warning messages are automatically deactivated after the fault has been rectified, with exception of emergency mode and defective units.

12.7 Emergency mode

If a unit fails, the compressor can be switched to emergency mode:
⚠ Fault button, orange LED flashes.
1 aggregate has failed.

1. Press the flashing ⚠ fault button.
   The compressor continues to run with one unit. The fault button lights up to indicate that emergency mode is active.
2. Have the necessary repairs to the unit carried out.

13 Maintenance

Prior to working on the unit or in case of danger, disconnect it from the mains.

WARNING

Risk of infection due to burst filters

Particles enter the compressed air network and can therefore enter the mouth of the patient.

› Replace filters in accordance with the maintenance schedule.

13.1 Maintenance schedule

NOTICE

Risk of damage to the unit due to blocked filters

Continuous running due to reduced delivery. Damage to the unit due to burst filters.

› Replace filters in accordance with the maintenance schedule.

Maintenance interval	Maintenance work
At regular intervals	› Empty the collector tray under the drying unit (the interval may vary depending on the ambient conditions and method of working; empty it daily if the humidity is high).
After approx. 1000 operating hours. LED on the filter replacement button lights up	› Replace the air intake filter. › Replace the fine or virus bacteria filter. › Replace the coalescence filter.
In accordance with national law	› Check the safety valve. › Carry out recurring safety inspections (e.g. pressure tank inspections, electrical safety inspections) in accordance with applicable national laws.

13.2 Wear parts and replacement parts

The following wear parts must be replaced at regular intervals:

Air intake filter 0832-982-00
Fine filter 1610-121-00
Virus bacteria filter 1650100172
Coalescence filter 1650200323

To configure the required filters or filter sets, you can also use our filter configurator at:
www.duerrdental.com/filterkonfigurator

Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.

Information about replacement parts can be found on the website portal for specialist dealers under:
www.duerrdental.net

13.3 Changing the filter

NOTICE

Shortened service life, bad air quality, reduced delivery

› As soon as the LED on the filter replacement button lights up, replace the filter.

Filter replacement button, LED lights up.

As soon as the LED lights up, it can be temporarily switched off by pressing the button. Every time the unit is switched back on the LED comes on again.

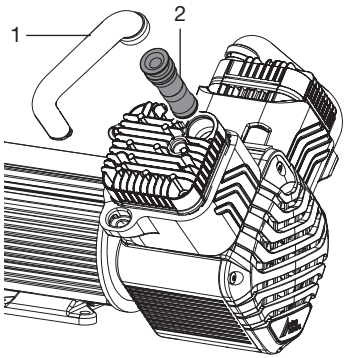
The LED only goes out permanently once replacement of the filter has been confirmed in set-up mode.

Disconnecting the unit from the mains

1. Press the standby button for at least 2 seconds.
2. Unplug the mains plug.

Replacing the air intake filter

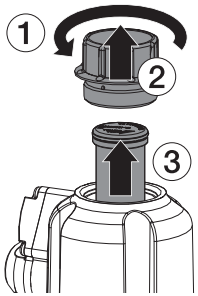
1. Pull off the noise reducer from the filter.
2. Remove the filter.
3. Insert a new filter.
4. Push on the noise reducer onto the filter.



1 Noise reducer
2 Filters

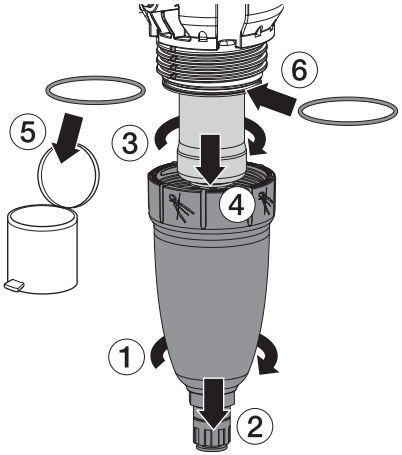
Replacing the fine or virus bacteria filter

1. Unscrew and remove the filter cover.
2. Remove the filter.
3. Insert a new filter.
4. Replace the filter cover and close.



Coalescence filter

1. Unscrew and remove the filter housing.
2. Remove the filter.
3. Replace O-ring.
4. Insert a new filter.
5. Replace the filter housing and close.



Confirming the filter replacement

1. Connect the mains plug.
2. Press for at least 2 seconds.

3. Press for at least 2 seconds. The unit is now in setup mode. LED is flashing.
4. Press to confirm filter replacement.

Resetting the unit to standby mode:

1. Touch .

Resetting the unit to normal operation:

1. Touch .

13.4 Checking the safety valve

The functioning of the safety valve must be checked at regular intervals in accordance with national regulations.

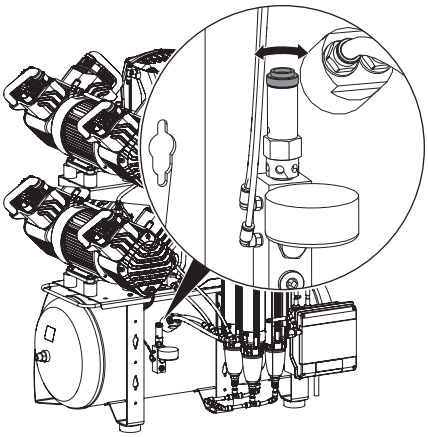
WARNING

Risk of damage to the safety valve

Risk of explosion of the pressure tank and pressure hoses due to a defective safety valve

› Do not use the safety valve to vent the pressure tank.

1. Switch on the unit at the pressure switch and fill the pressure tank to the cut-off pressure.
2. To open, rotate the screw of the safety valve anti-clockwise until the valve begins to blow off. Only allow the safety valve to blow for a short period.
3. Then turn the screw clockwise as far as it will go to close the valve. The valve must now be closed again.



14 Taking out of use

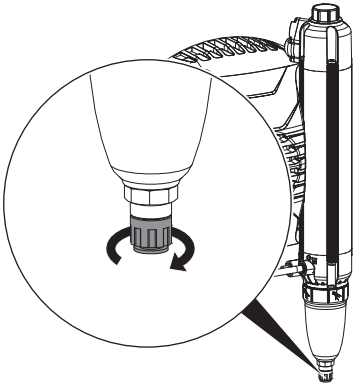
14.1 Taking the unit out of use

Wear ear protectors.

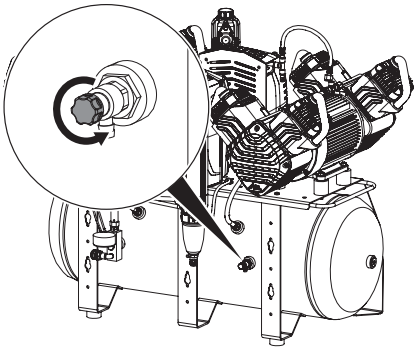
If the compressor is not to be used for a longer period of time, it is recommended that the unit be properly shut down and taken out of operation. To do so, any accumulated condensation water must be drained from the pressure tank and from the drying unit.

The associated compressor unit must be running to drain the remaining condensation water in the water separator of the drying unit.

1. Open the condensate drain valve on the drying unit (approx. 3 turns).



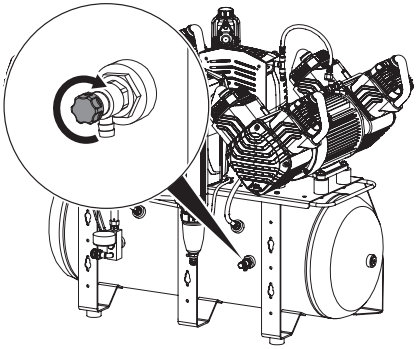
2. At maximum tank pressure, slowly open the condensate drain valve.



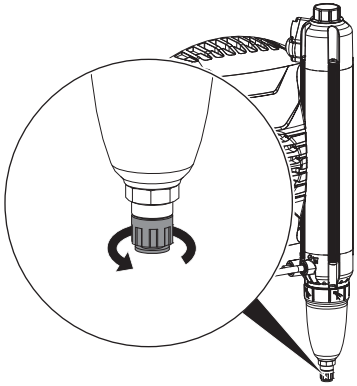
Once the start-up pressure has been reached the compressor unit will switch on.

For compressors with several drying units, all associated compressor units must switch on.

3. Wait until condensation water stops escaping from the condensate drain valve on the drying unit.
4. Switch off the unit - touch ⏻ for at least 2 seconds.
5. Wait until air stops escaping from the condensate drain valve (pressure tank empty).
6. Unplug the mains plug.
7. Close the condensate drain valve on the pressure tank.



8. Close condensate drain valves on the drying units.



9. Disconnect the compressor from the pipe system.

14.2 Storage of the unit

WARNING

Risk of explosion of the pressure tank and pressure hoses

› The pressure tank and the pressure hoses must be vented before they are stored or transported.

– Protect the unit against moisture, dirt and extreme temperatures during storage (refer to the section on "Ambient conditions").
– Only store the unit when it has been completely emptied.

Troubleshooting

15 Tips for operators

Any repairs exceeding routine maintenance may only be carried out by qualified personnel or our service.

Prior to working on the unit or in case of danger, disconnect it from the mains.

Error	Possible cause	Remedy
The operating panels of the main and auxiliary controllers are displaying information simultaneously (pressure range and pressure dew point)	Fault in communications between the main controller and auxiliary controller	› Switch the device off and back on again (disconnect the mains plug), inform a service technician if necessary.
Compressor starts up, no display on the operating panel	Operating panel defective	› Disconnect the mains plug and inform a service technician.
Compressor will not start	No display on the operating panel No mains voltage	› Check the main power switch, mains fuse and mains voltage, inform an electrician if necessary.
	Fault button flashes (if compressor is equipped with 2 units) Emergency mode possible	› Activate emergency mode: Press the fault button, (see "12.7 Emergency mode"). Compressor runs with 1 unit. › Inform a service technician
	Fault button lit up Compressor defective	› Disconnect the mains plug and inform a service technician.
LED on the filter replacement button lights up	Filter replacement required	› Change all filters
The fault button flashes	Compressor unit defective	› Activate emergency mode: press the fault button, (see "12.7 Emergency mode"). Compressor runs with 1 unit › Inform a service technician.
Fault button lit up	Unit is defective	› Unplug the mains plug. › Inform a service technician.

Error	Possible cause	Remedy
Compressor does not switch off or has difficulty reaching the cut off pressure	Excessive air extraction	› Check air requirements and dimensioning of the compressor.
	Air intake filter dirty	› Replace the air intake filter.
	Leak in the compressed air pipe network	› Check the compressed air pipe network, if necessary disconnect the mains plug and inform a service technician.
	Leak in the compressed air lines of the compressor station	› Check the pressure hoses on the compressor, membrane drying unit and distributor block; if necessary disconnect the mains plug and inform a service technician.
	Flow noise at the membrane drying unit	› Check the pressure hoses on the compressor; if necessary inform a service technician.
	Compressor unit has changed delivery rate	› Disconnect the mains plug and inform a service technician.
	Compressor blows via the safety valve, The container pressure is not displayed correctly on the operating panel	› Disconnect the mains plug and inform a service technician.
Compressor switches on without any compressed air being extracted	Leak in the compressed air pipe system	› Check the compressed air pipe system; if necessary disconnect the plug and inform a service technician.
	Leak in the compressed air lines of the compressor	› Check the pressure hoses on the compressor, membrane drying unit and distributor block; if necessary disconnect the mains plug and inform a service technician.
Knocking or loud noises on the compressor	Compressor unit defective	› Inform a service technician.

16 Tips for service technicians

16.1 Notes on repairs

If a unit has failed and needs to be replaced, this can be done while the system is running. To do so, the following steps must be observed:

✓ Emergency mode is activated
✓ Defective unit section in the fuse box is de-energised

1. Remove the cover from the controller.
2. Check that there is no current at the connection of the defective unit.
3. Replace the defective unit.
4. Attach the cover of the controller again.
5. Connect the unit section in the fuse box again.
6. Completely unplug and plug in the unit via the mains plug.

Appendix

17 Handover record

This document confirms that a qualified handover of the medical device has taken place and that appropriate instructions have been provided for it. This must be carried out by a qualified adviser for the medical device, who will instruct you in the proper handling and operation of the medical device.

Product name	Order number (REF)	Serial number (SN)

- ☐ Visual inspection of the packaging for any damage
- ☐ Unpacking the medical device and checking for damage
- ☐ Confirmation of the completeness of the delivery
- ☐ Instruction in the proper handling and operation of the medical device based on the operating instructions

Notes:

Name of person receiving instruction:	Signature:

Name and address of the qualified adviser for the medical device:

Date of handover:	Signature of the qualified adviser for the medical device:

18 Country representatives

Country		Address
GB	UK CA XXXX	**UK Responsible Person:** Duerr Dental (Products) UK Ltd. 14 Linnell Way Telford Way Industrial Estate Kettering, Northants NN 16 8PS
UA	UA.TR.099	**Уповноважений представник в Україні:** Приватне підприємство “Галіт” вул. 15 квітня, 6Є, с. Байківці, Тернопільський р-н, 47711, Україна тел.: 0800 502 998; +38 050 338 10 64 www.galit.te.ua; e-mail: office@galit.te.ua Виробник: Дюрр Дентал ЕсЕ Хьопфігхаймер Штрассе 17, Д-74321 Бітігхайм-Біссінген, Німеччина email: info@duerrdental.com
CN		**备**案人/生**产**企**业**： DÜRR DENTAL SE 德国迪珥**齿**科股份公司 住所/生**产**地址： Höpfigheimer Str. 17, 74321 Bietigheim-Bissingen, Germany **联**系方式： **电话**： + 49 7142 705-0 **邮**箱： info@duerrdental.com 网址： www.duerrdental.com 代理人/售后服**务单**位：迪珥医**疗**器械（上海）有限公司 住所：上海市**长**宁区天山路 641 号 2 号楼 (20 幢) 303 室 **联**系方式： **电话**：+ 86 21 6381 0270 **传**真：+ 86 21 6381 0290 **邮**箱：info@duerr.cn 网址：http://www.duerrdental.com

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