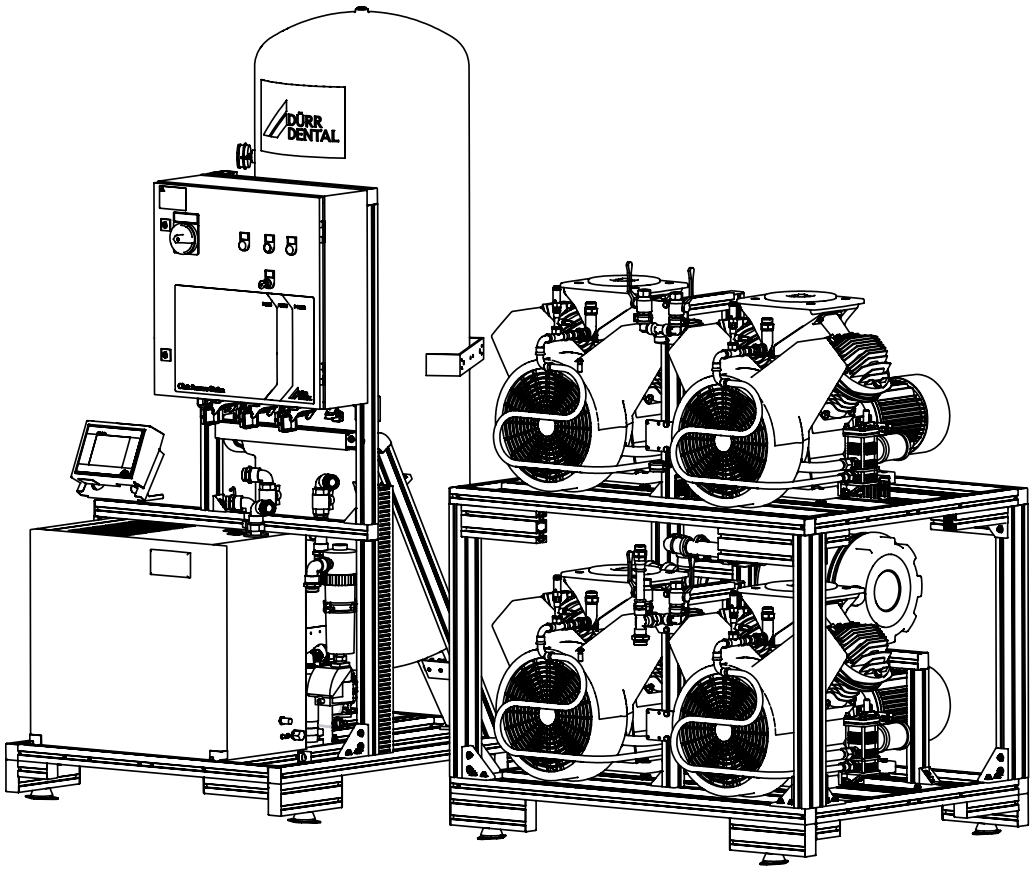
Pressure Station for Clinics
P 6000, P 9000, P 12000

EN



Installation and operating instructions

CE 0297

5922100011L01

DÜRR DENTAL

2021/07

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Important information

1 About this document

These installation and operating instructions form part of the unit.

If the instructions and information in these operating instructions are not followed, Dürr Dental will not be able to offer any warranty or assume any liability for the safe operation and the safe functioning of the unit.

EN

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:

P 6000
Order number:
5922-52; 5922200050
5922-62; 5922200060
5922200052; 5922200053
5922200062; 5922200063
5922400052; 5922400053

P 9000
Order number: 5932-52; 5932200050
5932-62; 5932200060
5932400052; 5932400053

P 12000
Order number: 5942-52; 5942200050
5942-62; 5942200060
5942400052; 5942400053

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 – risk of dangerous electric voltages

Warning - automatic start-up of the unit

Warning – hot surfaces

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.

Please read all of the accompanying documents.

Wear ear protectors

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

CE xxxx CE labelling with the number of the notified body

Off

On

Protective ground connection

Air

Fuse

REF Order number

SN Serial number

MD 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 may not be copied or reprinted, either in full or in part, without written authorisation from Dürr Dental.

1.3 Further documentation

The additional instructions must also be read for the following components:
› Refrigerant type dryer
› Cyclone separator

2 Safety

Dürr Dental has developed and designed the unit in such a way that dangers are effectively ruled out if the unit is 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 electric shock
– Personal injury due to radiation
– Personal injury due to fire
– Personal injury due to thermal effects to skin
– Personal injury due to lack of hygiene, e.g. infection

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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.
If these conditions are met, the air provided by the compressor is also suitable for blow-drying tooth preparations.

2.3 Improper Use

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damage resulting from improper usage. In such cases, the user/operator will bear the sole risk.
› 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 notes

› 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.
› Wear ear protectors when performing any work involving start-up (e.g. commissioning, maintenance work).

2.5 Specialist personnel

Handling

Unit operating personnel must ensure safe and correct handling based on their training and knowledge.

› Every operator must be trained in the precise operation and handling of 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

› All installation, resetting, alteration, extension and repair work must be carried out either by Dürr Dental personnel or by a suitably qualified person approved by Dürr Dental.
› Ensure that all electrical connections are made by a suitably qualified electrical engineer.

2.6 Duty to report 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.

2.7 Protection from electric shock

› Comply with all the relevant electrical safety regulations when working on the unit.
› Replace any damaged cables or plugs immediately.

2.8 Only use original parts

› Use only those accessories and optional accessories specified or approved by Dürr Dental.
› Only use only original wear parts and replacement parts.

Dürr Dental accepts no liability for damage resulting from the use of non-approved accessories, optional accessories, or the use of non-original wear parts or replacement parts.

2.9 Transport

The original packaging provides optimum protection for the unit during transport.

Dürr Dental will not accept any responsibility or liability for damage occurring during transport due to the use of the incorrect packaging, even where the unit is still under guarantee.

› Only transport the unit secured to the pallet from the original packaging.
› Transport the unit using a forklift truck or pallet truck.
› Keep the packing materials out of the reach of children.

2.10 Disposal

Unit

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).

› Before disposing of the unit, release the compressed air from the pressure tank.
› If you have any questions about correct disposal, please contact Dürr Dental or your dental trade supplier.

An overview of the waste keys for Dürr Dental products can be found in the download area at www.duerrdental.com (document no. P007100155).

Product description

3 Overview

The pressure station consists of two separate modules:

- Tank module, comprising pressure tank, dryer and controller
- Compressor module, comprising 2, 3 or 4 compressor units

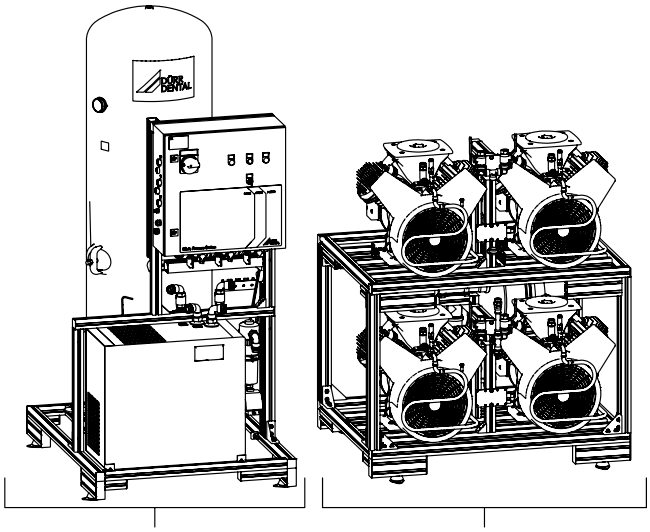

Bild 1: P 12000

1 Tank module
2 Compressor module

3.1 Model overview / scope of delivery

Units with noise reduction hood

P 6000, 400 V, 50 Hz. 5922-52
P 6000, 400 V, 50 Hz
(can be extended up to P 12000) 5922200052
P 6000, 400 V, 50 Hz
(pressure tank with special authorization) 5922400052
P 6000, 400 V, 60 Hz. 5922-62
P 6000, 400 V, 60 Hz
(can be extended up to P 12000) 5922200062

- Compressor module with 2 compressor units
- Tank module
- Connecting cables and hoses
- Noise reduction hood (for P 6000)
- Installation and Operating Instructions

With a planned extension to P 9000 or P 12000, comply with the specifications of the corresponding technical data.

P 9000, 400 V, 50 Hz. 5932-52
P 9000, 400 V, 50 Hz
(pressure tank with special authorization) 5932400052
P 9000, 400 V, 60 Hz. 5932-62

- Compressor module with 3 compressor units
- Tank module
- Connecting cables and hoses
- Noise reduction hood (for P 9000/P 12000)
- Installation and Operating Instructions

P 12000, 400 V, 50 Hz. 5942-52
P 12000, 400 V, 50 Hz
(pressure tank with special authorization) 5942400052
P 12000, 400 V, 60 Hz. 5942-62

- Compressor module with 4 compressor units
- Tank module
- Connecting cables and hoses
- Noise reduction hood (for P 9000/P 12000)
- Installation and Operating Instructions

Units without noise reduction hood

*P 6000, 400 V, 50 Hz. *5922200050
P 6000, 400 V, 50 Hz
(extendable to P 12000) 5922200053
P 6000, 400 V, 50 Hz
(pressure tank with special authorization) 5922400053
P 6000, 400 V, 60 Hz. 5922200060
P 6000, 400 V, 60 Hz
(extendable to P 12000) 5922200063

- Compressor module with 2 compressor units
- Tank module
- Connecting cables and hoses
- Installation and Operating Instructions

P 9000, 400 V, 50 Hz. 5932200050
P 9000, 400 V, 50 Hz
(pressure tank with special authorization) 5932400053
P 9000, 400 V, 60 Hz. 5932200060

- Compressor module with 3 compressor units
- Tank module
- Connecting cables and hoses
- Installation and Operating Instructions

P 12000, 400 V, 50 Hz. 5942200050
P 12000, 400 V, 50 Hz
(pressure tank with special authorization) 5942400053
P 12000, 400 V, 60 Hz. 5942200060

- Compressor module with 4 compressor units
- Tank module
- Connecting cables and hoses
- Installation and Operating Instructions

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3.2 Optional items

The following optional items can be used with the unit:

Display panel for clinic systems 5922-520-51
Power unit for the display panel 9000-150-54
Switch (8-way) with integrated power supply unit 5922-521-51
Clinic visualisation gateway 5922-610-50

The following compressor unit is used only optionally as a replacement and extension unit for

Compressor unit 5942-110-53E

P 6000
Order number:
5922-52
5922-62
5922200052
5922200062
5922400052

P 9000
Order number:
5932-52
5932-62
5932400052

P 12000
Order number:
5942-52
5942-62
5942400052

The following compressor unit is used only optionally as a replacement and extension unit for

Compressor unit 5942110054

P 6000
Order number:
5922200050
5922200060
5922200053
5922200063
5922400053

P 9000
Order number:
5932200050
5932200060
5932400053

P 12000
Order number:
5942200050
5942200060
5942400053

3.3 Wear parts and replacement parts

The following wear parts need to be changed at regular intervals (refer to the "Maintenance" section):

Maintenance kit for P 9000-P 12000 5932980050
Maintenance kit for P 6000 5922980050
Filter cartridge for intake bacteria filter 0705-991-05

Information about replacement parts can be found in the Spare Parts Catalogue at www.duerrdental.net

4 Technical data

4.1 P 6000 with noise reduction hood

Type		5922-52 5922200052 5922400052	5922-62 5922200062
Number of compressor units		2	
Workplaces GF 100% GF 60%		 35 60	 40 70
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	24	27
Motor protection switch settings	A	2 x 11	2 x 12
Mains fuses [1]	A	25	35
Minimum cross-section of electrical supply cable	mm²	6	10
Type of protection		IP 20	
Protection class		I	
Max. permitted mains impedance [2]	Ω	0.10	
[1] Characteristic C to EN 60898, [2] to EN 61000-3-11			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	7 / 7.5	
Switch-off pressure (factory setting)	bar	7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Delivery output (at 5 bar)	l/min	1560	1800
Delivery output (at 5 bar, 20°C, 1013 mbar)	l/min	1500	1740
Noise level [1] with noise reduction hood	dB(A)	80	83
Weight Tank module, approx. Compressor module, approx. Compressor module (5922200052, 5922200062), approx.	 kg kg kg	 278 271 306	
[1] in accordance with ISO 3746, at 7 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	100 x 130 x 100 115 x 138 x 109	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

4.2 P 9000 with noise reduction hood

Type		5932-52 5932400052	5932-62
Number of compressor units		3	
Workplaces GF 100% GF 60%		 55 85	 60 100
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	34	39
Motor protection switch settings	A	3 x 11	3 x 12
Mains fuses [1]	A	50	50
Minimum cross-section of electrical supply cable	mm^2	16	16
Type of protection		IP 20	
Protection class		I	
Max. permitted mains impedance [2]	Ω	0.10	
[1] Characteristic C to EN 60898, [2] to EN 61000-3-11			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	6.5 / 7 / 7.5	
Switch-off pressure (factory setting)	bar	7 / 7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Delivery output (at 5 bar)	l/min	2340	2700
Delivery output (at 5 bar, 20°C, 1013 mbar)	l/min	2250	2610
Noise level [1] with noise reduction hood	dB(A) dB(A)	93 81	94 83
Weight Tank module, approx. Compressor module, approx.	 kg kg	 278 419	
[1] in accordance with ISO 3746, at 6.5 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	180 x 130 x 100 195 x 138 x 109	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

4.3 P 12000 with noise reduction hood

Type		5942-52 5942400052	5942-62
Number of compressor units		4	
Workplaces GF 100% GF 60%		 70 115	 80 130
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	43	49
Motor protection switch settings	A	4 x 11	4 x 12
Mains fuses [1]	A	50	50
Minimum cross-section of electrical supply cable	mm²	16	16
Type of protection		IP 20	
Protection class		I	
Max. permitted mains impedance [2]	Ω	0.10	
[1] Characteristic C to EN 60898, [2] to EN 61000-3-11			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	6 / 6.5 / 7 / 7.5	
Switch-off pressure (factory setting)	bar	6.5 / 7 / 7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Delivery output (at 5 bar)	l/min	3120	3600
Delivery output (at 5 bar, 20°C, 1013 mbar)	l/min	3000	3480
Noise level [1] with noise reduction hood	dB(A)	82	84
Weight Tank module, approx. Compressor module, approx.	 kg kg	 278 532	
[1] in accordance with ISO 3746, at 6 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	180 x 130 x 100 195 x 138 x 109	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

EN

4.4 Ambient conditions

For storage and transport		
Temperature	°C	0 to +60
Relative humidity	%	< 95

Running		
Temperature	°C	+10 to +40
Relative humidity	%	< 70

The ideal ambient temperature to ensure the longest service life of the pressure station and minimise the amount of condensation that is formed is 25°C.

4.5 P 6000 without noise reduction hood

Type		5922200050 5922200053 5922400053	5922200060 5922200063
Number of compressor units		2	
Workplaces GF 100% GF 60%		 35 60	 40 70
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	20	24
Motor protection switch settings	A	2 x 11	2 x 12
Mains fuses [1]	A	25	35
Minimum cross-section of electrical supply cable	mm²	6	10
Type of protection		IP 20	
Protection class		I	
Max. permitted mains impedance [2]	Ω	0.10	
[1] Characteristic C to EN 60898, [2] to EN 61000-3-11			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	7 / 7.5	
Switch-off pressure (factory setting)	bar	7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Output [1]	l/min	1411	1685
Noise level [2]	dB(A)	91	93
Weight Tank module, approx. Compressor module, approx. Compressor module (5922200052, 5922200062), approx.	 kg kg kg	 278 271 308	
[1] at 5 bar compressor pressure 20 °C, 1013 mbar [2] in accordance with ISO 3746, at 6 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	100x130x103 115x140x110	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

4.6 P 9000 without noise reduction hood

Type		5932200050 5932400053	5932200060
Number of compressor units		3	
Workplaces GF 100% GF 60%		 55 85	 60 100
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	30	35
Motor protection switch settings	A	3 x 11	3 x 12
Mains fuses [1]	A	50	50
Minimum cross-section of electrical supply cable	mm²	16	16
Type of protection		IP 20	
Protection class		I	
Interference emissions, compliant with		EN 55014-1	
Immunity to interference, compliant with		EN 55014-2	
[1] Characteristic C in accordance with EN 60898			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	6.5 / 7 / 7.5	
Switch-off pressure (factory setting)	bar	7 / 7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Output [1]	l/min	2175	2479
Noise level [2]	dB(A)	93	94
Weight Tank module, approx. Compressor module, approx.	 kg kg	 278 474	
[1] at 5 bar compressor pressure 20 °C, 1013 mbar [2] in accordance with ISO 3746, at 6 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	180 x 130 x 103 195 x 140 x 110	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

4.7 P 12000 without noise reduction hood

Type		5942200050 5942400053	5942200060
Number of compressor units		4	
Workplaces GF 100% GF 60%		 70 115	 80 130
Electrical data			
Voltage	V AC	400 (3/N/PE)	
Mains frequency	Hz	50	60
Current consumption	A	39	47
Motor protection switch settings	A	4 x 11	4 x 12
Mains fuses [1]	A	50	50
Minimum cross-section of electrical supply cable	mm^2	16	16
Type of protection		IP 20	
Protection class		I	
Max. permitted mains impedance [2]	Ω	0.10	
[1] Characteristic C to EN 60898, [2] to EN 61000-3-11			
Connections			
Compressed-air outlet		M36x2	
Condensate		DN 20	
General data			
Duty cycle	%	100	
Start-up pressure (factory setting)	bar	6 / 6.5 / 7 / 7.5	
Switch-off pressure (factory setting)	bar	6.5 / 7 / 7.5 / 8	
Safety valve	bar	10	
Tank volume	l	500	
Output [1]	l/min	2807	3305
Noise level [2]	dB(A)	94	96
Weight Tank module, approx. Compressor module, approx.	 kg kg	 278 605	
[1] at 5 bar compressor pressure 20 °C, 1013 mbar [2] in accordance with ISO 3746, at 6 bar			
Dimensions (H x W x D)			
Compressor module Compressor module with pallet	cm cm	180x130x103 195x140x110	
Tank module Pressure tank with pallet	cm cm	220 x 100 x 130 235 x 109 x 138	
Total space requirements	cm	240 x 350 x 280	
Classification			
Medical Device Class		IIa	

4.8 Ambient conditions

For storage and transport		
Temperature	°C	0 to +60
Relative humidity	%	< 95

Running		
Temperature	°C	+10 to +40
Relative humidity	%	< 70

EN

The ideal ambient temperature to ensure the longest service life of the pressure station and minimise the amount of condensation that is formed is 25°C.

4.9 Type plate

Each module is fitted with a type plate.

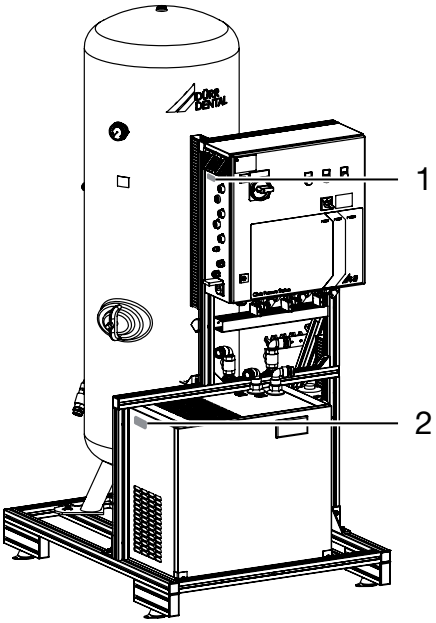


Bild 2: Tank module

1 Tank module type plate
2 Refrigerant type dryer type plate

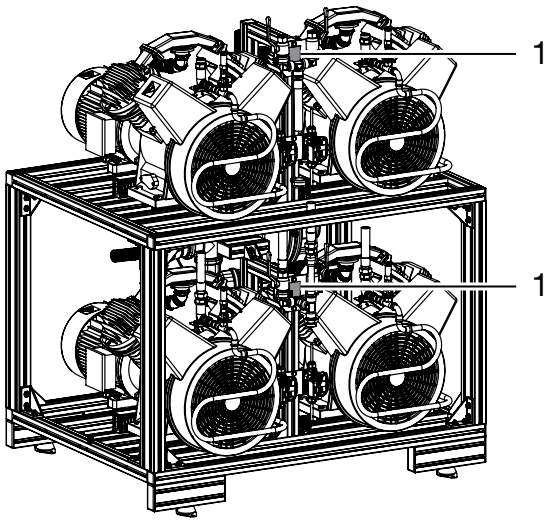


Bild 3: Compressor module

1 Compressor module type plate

4.10 Evaluation of conformity

This unit has been subjected to a conformity assessment procedure in accordance with the current relevant European Union guidelines. This unit conforms to all relevant requirements.

5 Function

The pressure station produces oil-free, dry and filtered compressed air, which is used to operate dental units and similar applications.
The display panel is required for configuration and queries of the device status (e.g. fault reports).

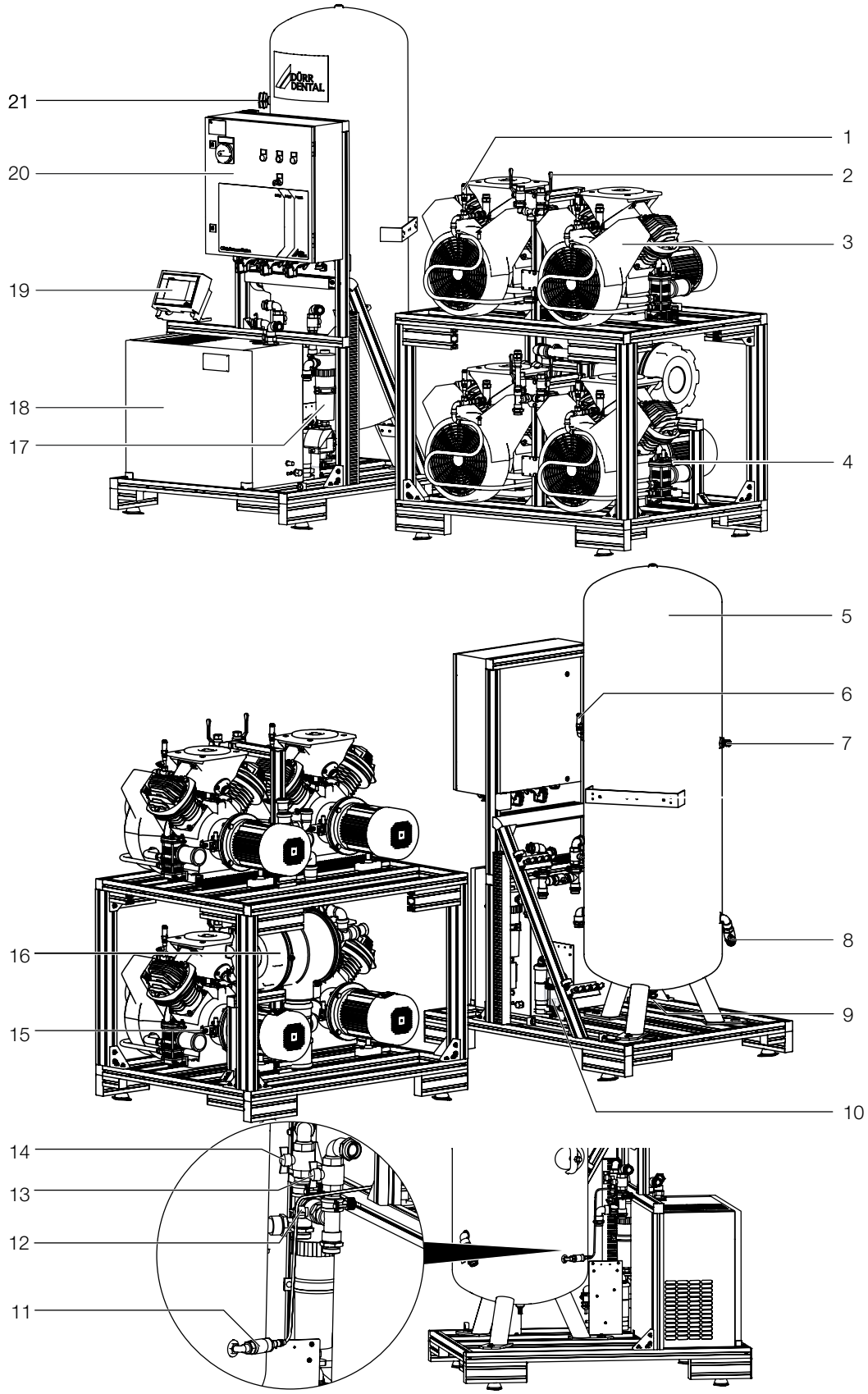


Bild 4: Overview – pressure station

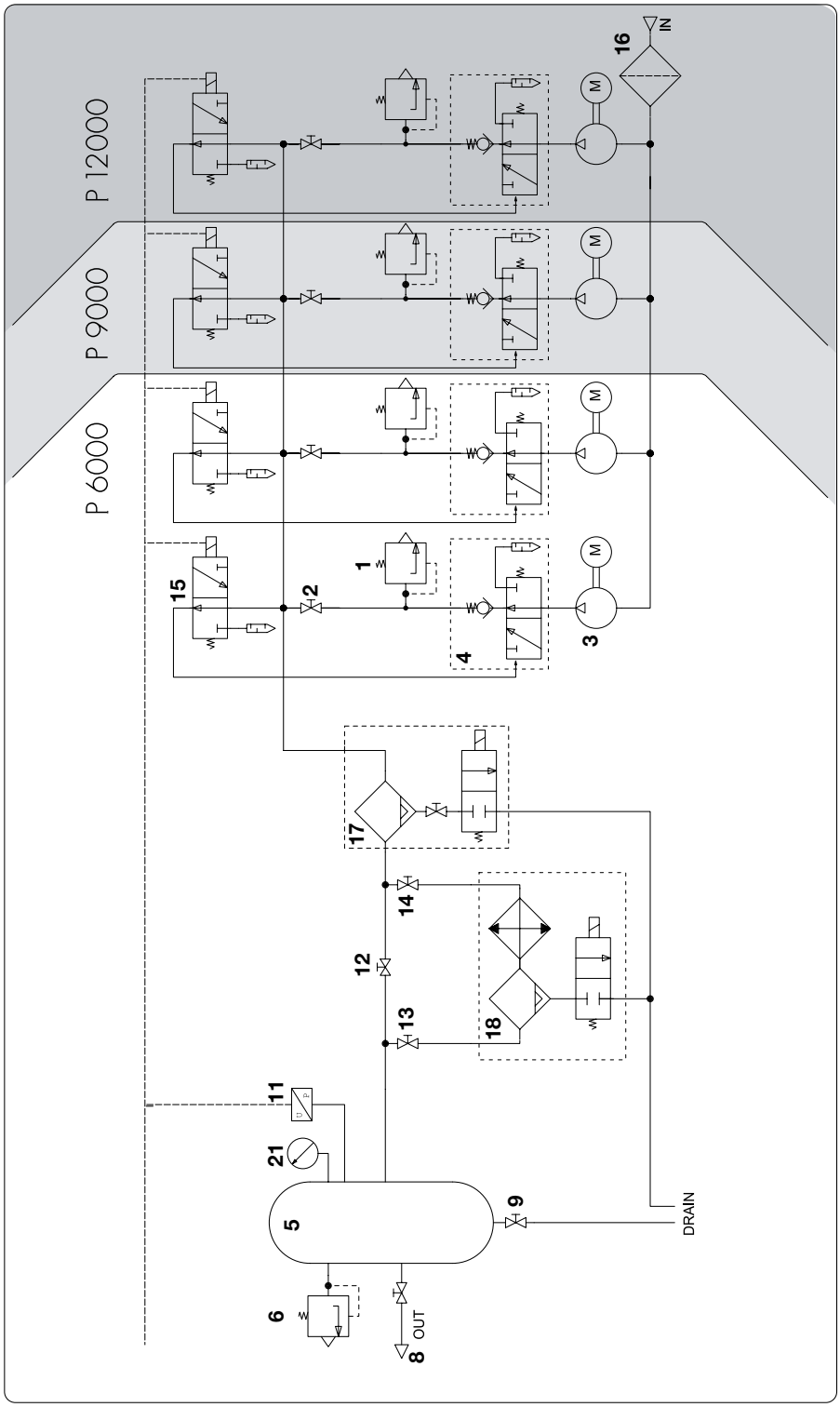


Bild 5: Pneumatics plan

1 Compressor unit safety valve
2 Compressor unit stop valve
3 Compressor unit
4 Non-return relief valve
5 Pressure tank
6 Pressure tank safety valve
7 Measurement connection
8 Compressed air connection to compressed air network
9 Drainage valve
10 Collective condensate separator
11 Pressure sensor
12 Refrigerant type dryer bypass stop valve
13 Refrigerant type dryer stop valve outlet
14 Refrigerant type dryer stop valve inlet
15 Solenoid valve
16 Intake bacteria filter
17 Cyclone separator
18 Refrigerant type dryer
19 Display panel (optional)
20 Control box
21 Pressure gauge

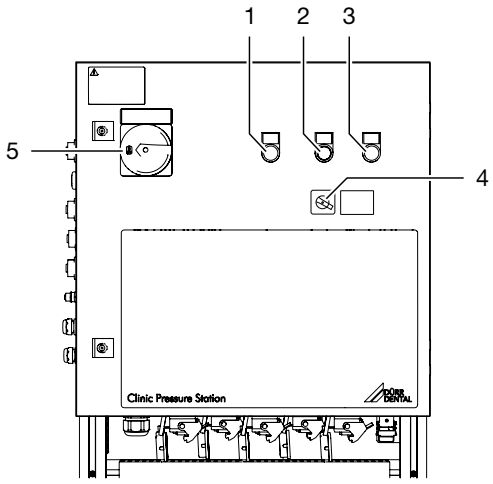


Bild 6: Control box

1 Green LED – "Ready"
2 Yellow "Reset" button
3 Red LED – "Fault"
4 Rotary switch for emergency mode
5 Main power switch

5.1 Startup operation

After switching on at the main power switch on the control box, the refrigerant type dryer is switched on and cools the heat exchanger to its normal operating temperature. Depending on the actual ambient temperature, this cooling-down process can take up to 3 minutes (see the temperature display on the refrigerant type dryer). The controller switches on the first compressor unit after approx. 60 seconds. The other compressor units in the system are switched on at intervals of approx. 3 seconds. A pressure sensor monitors the pressure in the tank. If the cut-off pressure set in the controller is reached (see Technical Data) the compressor units will be switched off one after the other.

5.2 Normal operation

A pressure sensor monitors the pressure in the pressure tank.
When compressed air is taken from the pressure tank, the pressure within the tank falls. The first compressor unit activates at 7.5 bar. If the pressure within the tank continues to fall, then a further compressor unit is switched on whenever the start-up pressure is reached (see 4 Technical data).
The compressor units are de-pressurised when they start up. The solenoid valve opens the pressure line after approx. 3 seconds and the compressor unit begins to supply the pressure tank.
If the pressure within the tank rises, the compressor units are switched off one after the other as soon as the relevant cut off pressure has been reached (see 4 Technical data).

If more compressed air is extracted than the compressor unit can provide, the pressure within the tank will continue to fall. If the tank pressure falls below 1 bar, the pressure station will switch to emergency mode (one compressor unit remains in continuous operation).

Whilst the compressor units are running, any accumulating moisture is separated via the electronic cyclone separator and, in a second stage, via the refrigerant type dryer and fed to the waste water system. This process takes place automatically via the solenoid valve of the cyclone separator and the refrigerant type dryer controller, dependent on the filling level.

An alternating basic load controller switches compressor operation on a rolling basis. Switching is implemented based on the number of operating hours that each individual compressor unit has performed.

The pressure in the tank can be read off from both the pressure gauge and the display panel.

Auxiliary operation

Depending on the amount of compressed air required and the particular set up of the compressed air network, it may be necessary for two (or more) pressure stations to be connected together to one network. In this particular set-up, one pressure station operates in main operation, the others in auxiliary operation.
The settings for auxiliary operation are made during the initial set-up and configuration of the system via the display panel. In auxiliary operation the control range for the start-up pressure and for the cut off pressure for the pressure station is reduced by 0.1 bar. In this way, the pressure station compressor units switch on and off alternately in main and auxiliary operation.

5.3 Emergency mode

Emergency mode can only be used for short periods in order to maintain an emergency supply of compressed air in the event of a defect in the system.

Turning the emergency mode rotary switch to "1" switches on the first compressor unit, which then starts up from an unpressurised state. The switch can be rotated on to position "2" after approx. 3 seconds. As a result, the solenoid valve opens the pressure line and the compressor unit begins to supply the pressure tank. The compressor unit then runs in continuous operation. There is no switching of basic loads.
If no air is extracted, the pressure in the tank climbs to 10 bar; opening the safety valve keeps the pressure at max. 10 bar. The safety valve produces a loud venting noise when it is opened.

6 Requirements

The unit must not be set up or operated within the patient environment (minimum distance: 1.5 m).

The unit can be installed either at the same level as the surgery room or on a floor below (e.g.cellar).
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 pressure station is connected must be designed for the maximum pressure of the compressed air station (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 installation must satisfy the following requirements:

› Closed, dry, well-ventilated room
› Not 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 ISO-TS 22595 must be complied with.
› Put a sign up outside the room to warn staff that they must not enter without ear protectors.

NOTICE
Risk of overheating due to insufficient ventilation
The units generates heat. Possibility of heat damage and/or reduced service life of the unit. Always depressurise the pressure station before transporting it.
› Do not cover the unit.
› Install a fan for auxiliary ventilation in rooms where ambient temperatures can reach or exceed 40°C during operation of the unit.

For technical reasons, around 70% of the electrical energy consumed by the pressure station is converted into heat and given off to the surroundings.

6.2 Installation in medical supply equipment

› When the unit is installed in medical supply systems, the requirements of the corresponding directives, standards and guidelines must be met.
› Prior to installation, make sure that the compressed air supply is suitable for the requirements of the relevant application.
› Classification and evaluation of conformity must be performed during installation by the manufacturer of the end product.

6.3 Installation

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 ensure that the air that is sucked in is free of harmful substances (e.g.do not suck in exhaust gases or contaminated exhaust air).

- The subsurface must be clean, level and sufficiently stable (note the weight of the unit).
- The type plate must be easy to read.
- The unit must be easy to access for operation and maintenance.
- The power outlet to which the unit is connected must be easy to access.
- The compressed air pipe should be routed as closely as possible to the place of installation (note the length of the hose supplied).

6.4 Module layout

WARNING
Parts can come loose during transport if the pressure station is still pressurised
› Always depressurise the pressure station before transporting it.
› Bleed the compressed air from the pressure tank and the pressure hoses before transport.

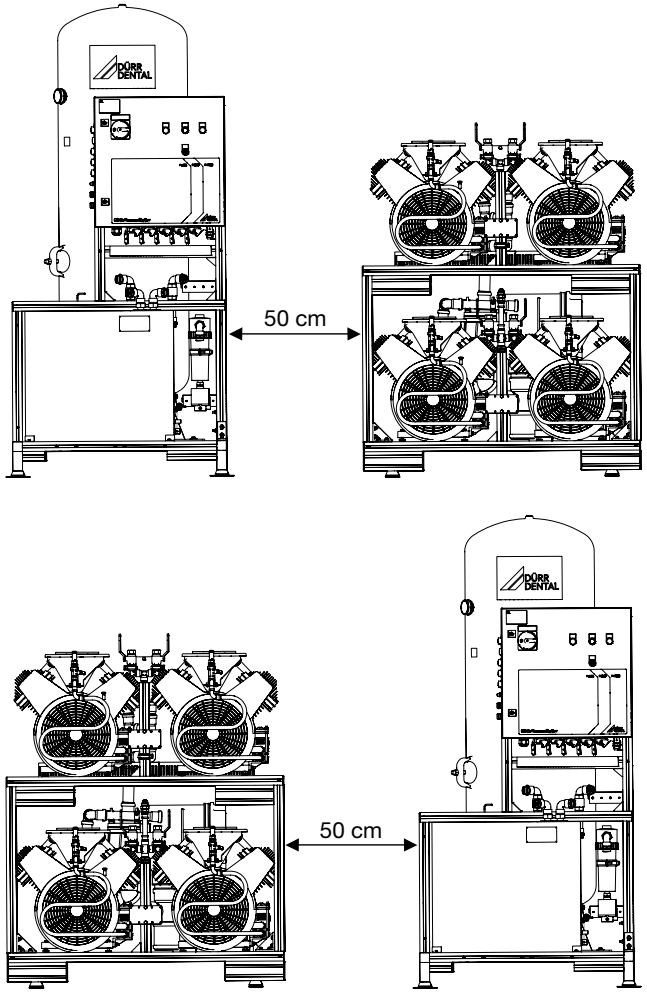


Bild 7: Distance between pressure tank and compressor module

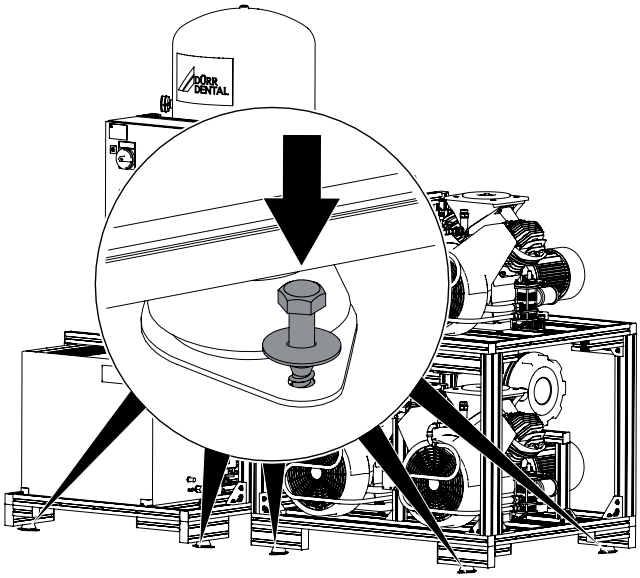
› The compressor module can be set up either left or right of the tank module.
› Maintain c. 50 cm clearance between the modules to allow sufficient space for maintenance work.

To prevent any mechanical straining of the connecting lines between the modules, avoid making the distance between the modules too great.

6.5 Setting up and securing the modules

The fixtures and fittings are supplied in the scope of delivery.

› Detach the modules from the pallets (transport locks).
› Use a forklift truck or pallet truck to move both modules to the location chosen for installation.
› Drill the required holes into the floor for the fixtures.
› Insert the mounting anchors.
› Securely bolt the modules to the floor.



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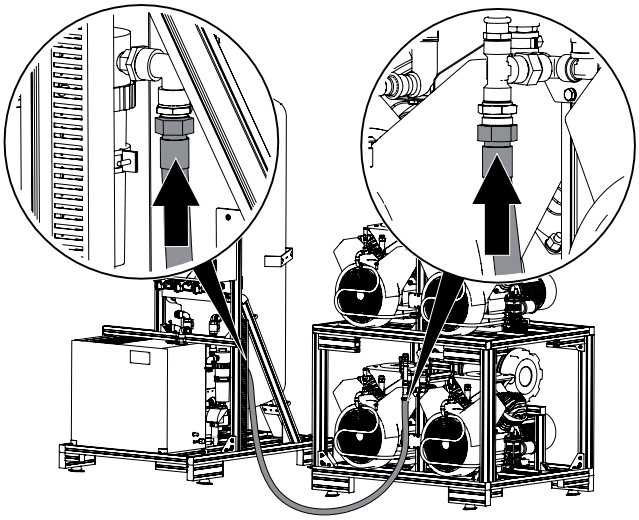
7 installation

The following tools will be required:
- Two flat wrenches NW 41

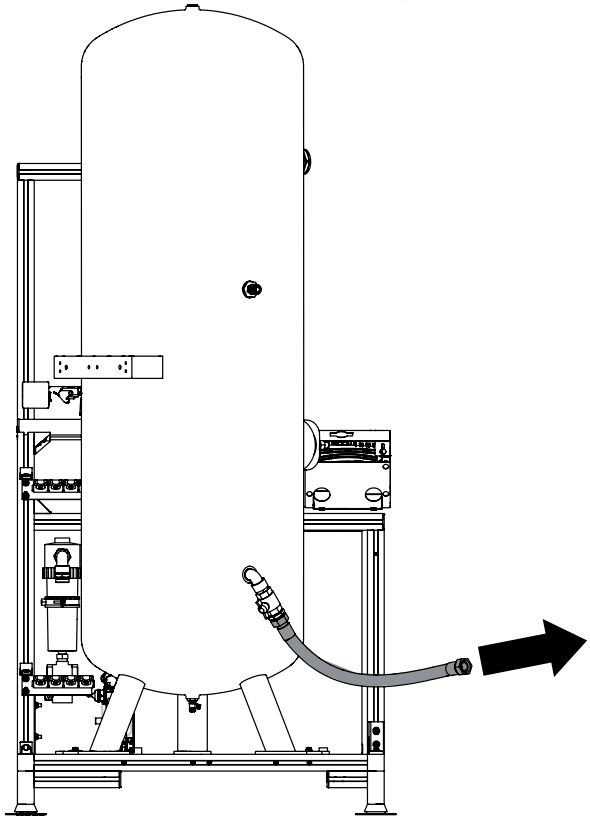
The pneumatics plan can be found on the control box.

7.1 Connecting the compressed air connection to the cyclone separator



7.2 Connecting the pressure tank to the compressed air network

› Connect the pressure tank to the compressed air network using a flexible compressed air hose (on-site connection: M36x2 external thread).

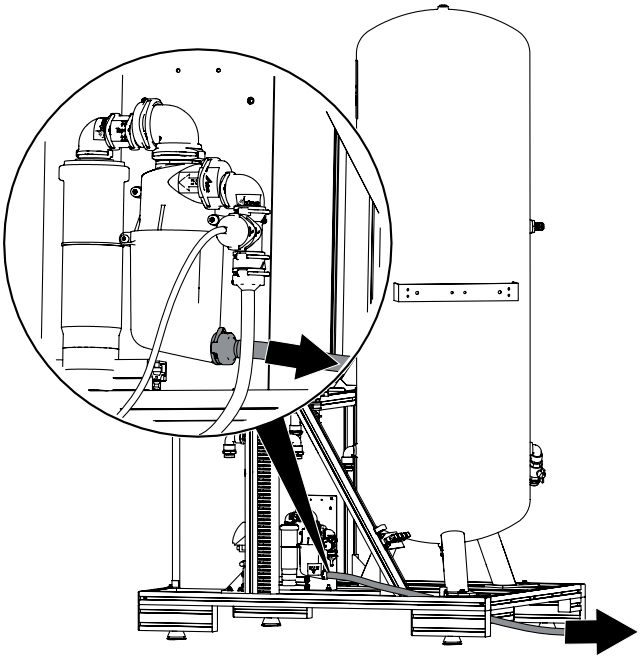


7.3 Connecting the condensate drain outlet to the waste water system

The condensate is fed to the waste water system unpressurised via the collective condensate separator.

Comply with the specifications of the national regulations applicable on-site (siphon trap.) when carrying out connections to the waste water system.

› Connect the condensate drain outlet to the waste water system.
Ensure that the waste water hose is installed with a gradient and with no loops. Shorten the hose if necessary.



8 Electrical connections

The circuit diagrams can be found in the control box.

8.1 Safety when making electrical connections

› Electrical connections should only be made by a qualified electrician.

Electrical installations must be carried out in accordance with the requirements set out in EN 60364, EN 60601, UVV-BGV 1,4,5,103, and in other countries in accordance with applicable national regulations, e.g. CEE.

When connecting to the mains electricity supply, ensure that the circuit is fitted with an all-pole disconnect switch (all-pole switch) with contact opening width >3 mm.

› Comply with all technical rules and regulations concerning the set up of low voltage equipment in rooms used for medical purposes.

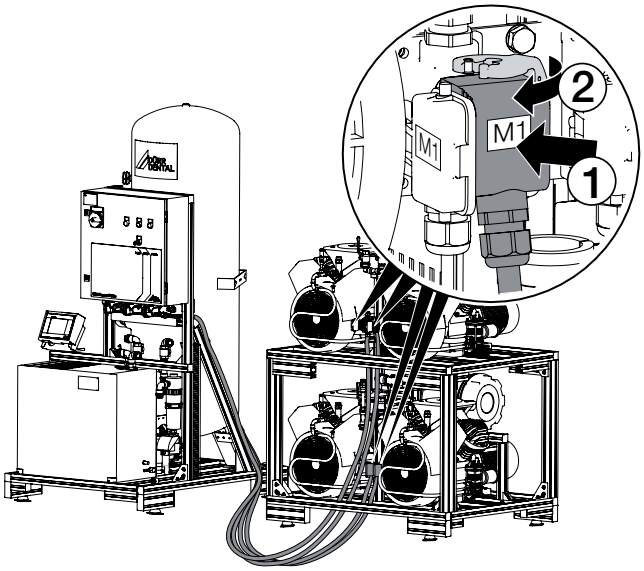
› Before commissioning compare the voltage and electrical frequency of the supply network with the voltage specifications on the type plate.

› Always use a fixed unit connection box with terminal strip for proper connection of the system to the electricity supply.

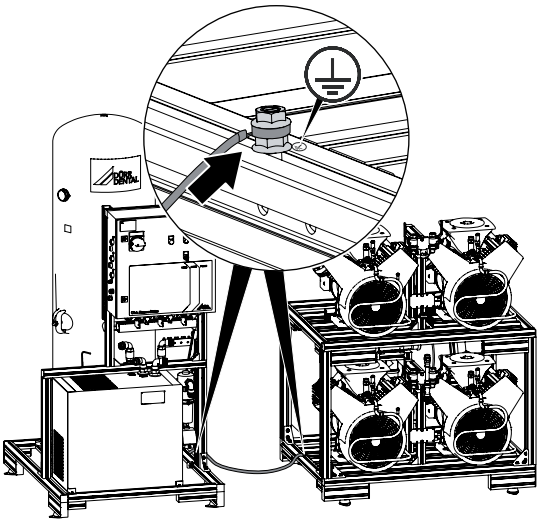
› Route all cables so that they are protected from any risk of mechanical damage (e.g. sharp edges, pinching, hot surfaces etc.).

8.2 Connecting the modules

› Route the connecting cables from the control box to the individual compressor units and secure with strain reliefs. Note the codes (e.g. M1) carefully.



› Connect the earth cable to the marked points on both modules.



8.3 Connecting cable dimensions

The following information about connecting cables is based on applicable German and European standards. In addition, the relevant national standards and regulations must also be complied with.

Conductor cross-sections

The diameter of the connections depends on the current consumption, length of line and the ambient temperature of the unit. Information concerning the current consumption can be found in the Technical Data supplied with the particular unit to be connected.

Cable configuration

Cable type	Cable configuration (minimum requirement)
400V mains power supply, fixed	- NYM-J
400V mains power supply, flexible	- PVC-hose line H05 VV-F or - Rubber line H05 RN-F, H05 RR-F

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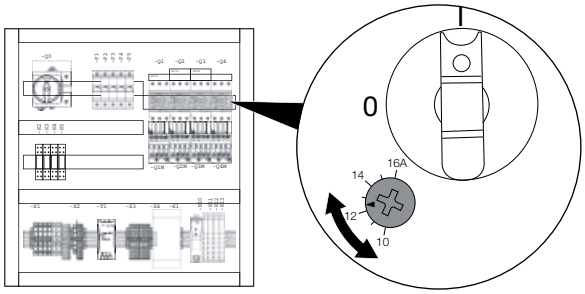
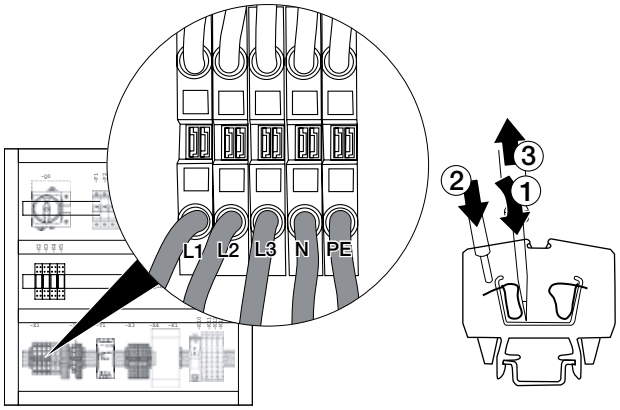
8.4 Adjusting the motor protection switch to the mains frequency

The motor protection switch settings depend on the mains frequency:
- at 50 Hz: 11 A (preset)
- at 60 Hz: 12 A (preset)



8.5 Connecting the control box to the mains power supply

› Ensure the circuit is fitted with an all-pole circuit breaker (all-pole switch or all-pole breaker for line protection) with a contact opening width of > 3 mm.
› Pull the five strand cable through the strain relief at the control box.
› Connect the cables to terminals L1, L2, L3, N and PE.



› Tighten the strain relief on the control box.

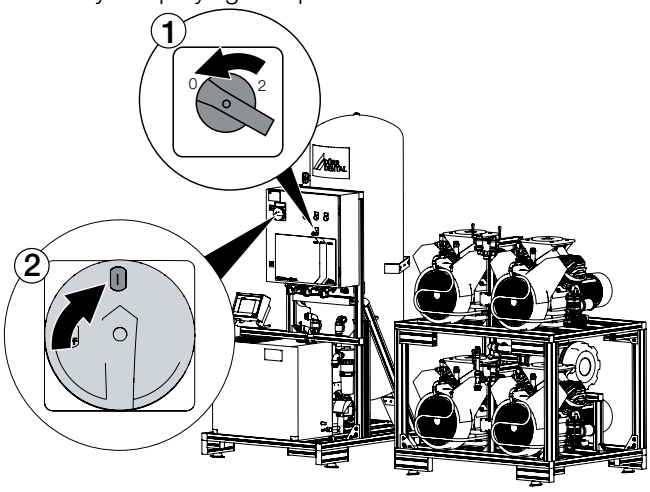
9 Commissioning

Wear ear protectors.

Prior to commissioning, an acceptance check of the compressed air tank must be performed in accordance with the applicable national regulations.

9.1 Switching on the pressure station

› Check that the stop valve to the compressed air network is closed.
› Set the rotary switch for emergency mode to "0".
› Switch on the main power switch.
Once the controller has started up and is ready the "Ready" display lights up.

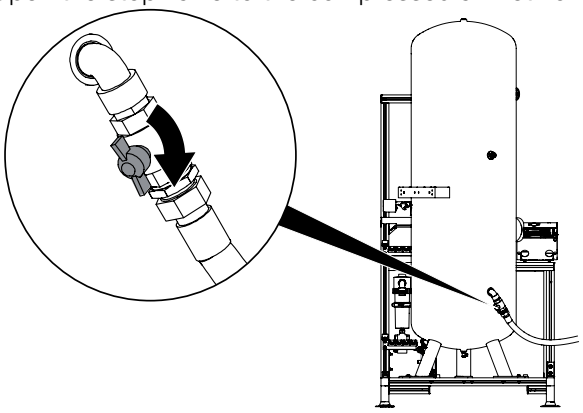


› If the refrigerant type dryer does not automatically switch on, use the operating panel and switch it on from there (refer to the operating instructions of the refrigerant type dryer).

Once the refrigerant type dryer is switched on it will display the dew point temperature.

The compressor units start up one after the other after approx. 60 seconds.
After two to three minutes the refrigerant type dryer displays a temperature between 0°C and +4°C.
Once the cut off pressure has been reached the compressor units will switch off one after the other.

› Check all compressed air connections and lines for leak-tightness.
› Open the stop valve to the compressed air network.



9.2 Operating mode selection

If two or more pressure stations are connected to one compressed air network then one compressed air station must run in main operating mode, while all others must be set to run in auxiliary operating mode. The factory default setting is main operating mode.

In order to use more than one pressure station connected to a single display panel, a special switch
(order number 5922-521-51) is required.

› Select the required operating mode of the pressure station at the display panel. Further information can be found in the display panel instructions sheet (order number 9000-606-109/..).

9.3 Documenting the acceptance test

› Check the pressure station in accordance with the acceptance test/handover record and document the results (refer to the form in the Attachment).

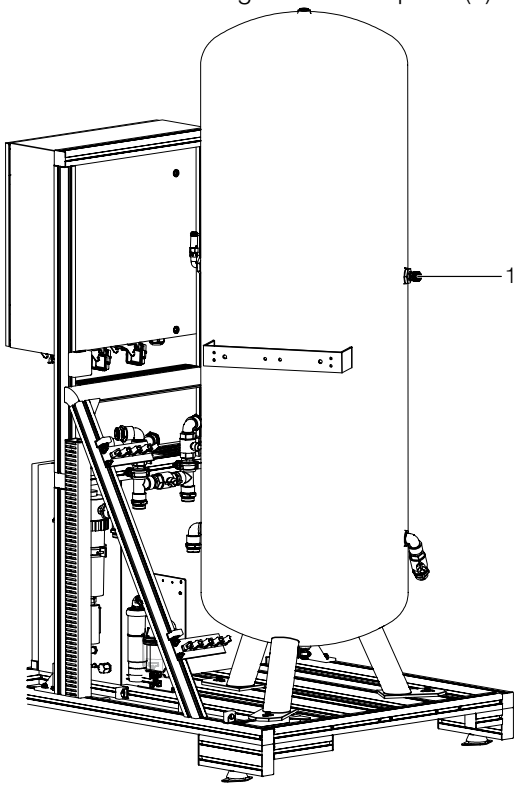
9.4 Checking the dew point

The dew point is shown on the display of the refrigerant type dryer. The display can be configured (refer to the instructions of the refrigerant type dryer).

Measuring the dew point (optional)

Do not perform a dew point measurement until approx. four complete fillings of the pressure tank (approx. 16 m^3) have been used.

› Take the compressed air for the dew point measurement from the measuring connection point (1).



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Usage

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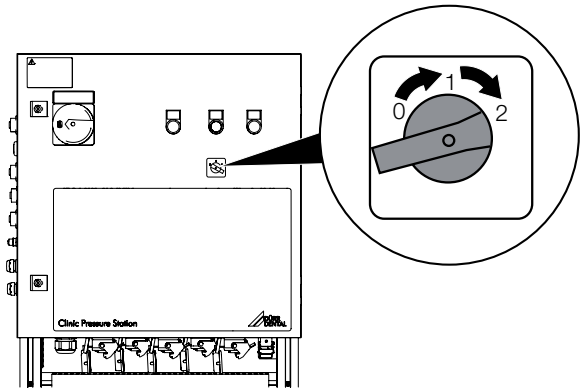
10 Activating emergency mode

If the controller fails then the units can be operated in emergency mode for a short period of time in order to maintain an emergency supply.
One compressor unit then runs in continuous operation, and any excess pressure (10 bar) is vented via the safety valve.

Wear ear protectors.
Venting the excess pressure via the safety valve causes a loud noise of escaping air.

Only operate the system for short periods in emergency mode. It shortens the service life of the compressor unit.

› Set the emergency mode rotary switch to "1" and wait approx. 3 seconds.
The compressor unit begins to run under zero pressure.
› Set the rotary switch for emergency mode to "2".
The compressor unit then runs in continuous operation.
The red "Fault" LED lights up.



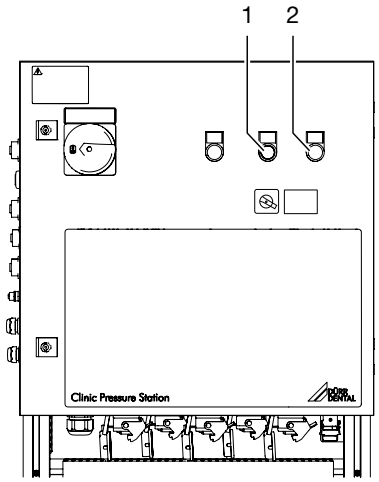
11 Shutting down an individual compressor unit

The unit will still be able to continue operating temporarily if a single compressor unit stops working. To do this, the defective compressor unit must be shut down.
› Close the stop valve of the compressed air connection at the compressor unit.
› Manually trigger the motor protection switch.
› Inform a Service Technician.

12 Rectifying faults

If a fault occurs the red "Fault" LED will light up. Depending on the type of fault, the unit will either continue to run or stop (see also Troubleshooting).

Further information about the fault can be called up via the display panel; refer to the display panel instruction sheet (order number 9000-606-109/..).



1 Yellow "Reset" button
2 Red LED – "Fault"

› Call up the fault at the display panel and rectify it.
› Press the "Reset" button to reset the fault display.

13 Maintenance

13.1 Maintenance schedule

All maintenance work must be performed by a qualified expert or by one of our Service Technicians.

To prevent the risk of hearing damage, always wear ear defenders when working on noisy units.

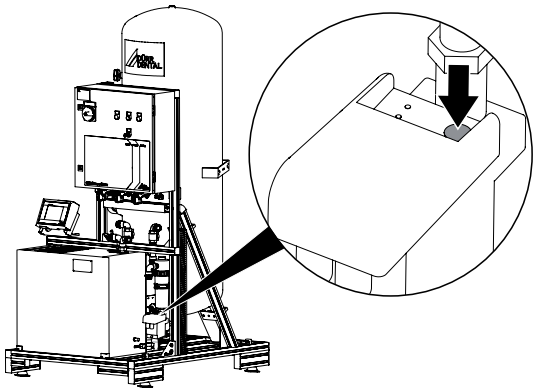
Maintenance interval	Maintenance work
Monthly	› Check the condensate line from the cyclone separator.
	› Check function and connections of the collective condensate separator.
	› Check the air grilles on the refrigerant type dryer. They must not be covered or be dirty. If necessary, remove dirt or objects from the grilles.
Annually	› General visual and sound check of the pressure station, tighten screws if necessary.
	› Check the leak-tightness of the compressed air connections and reseal if necessary
	› Check the number of operating hours of the compressor units. If there are large differences in the number of operating hours between the individual compressor units, contact Customer Service.
	› Check switching the individual compressor units on and off (see 5.2 Normal operation). For pressure stations in main and auxiliary operation: check switching the individual compressor units on and off at all stations.
	› Check the nonreturn relief valves and replace them if necessary.
	› Check the pressure tank for condensate, if necessary check the functions of the refrigerant type dryer and the cyclone separator.
Every 3500 operating hours	› Change the filter cartridge of the intake bacteria filter (order number 0705-991-05).
In accordance with national laws	› Carry out recurring safety inspections (e.g. pressure tank inspections, electrical safety inspections) in accordance with applicable national laws.

Carry out maintenance of the refrigerant type dryer in accordance with the separate instructions.

13.2 Maintenance work

Checking the condensate drain line from the cyclone separator

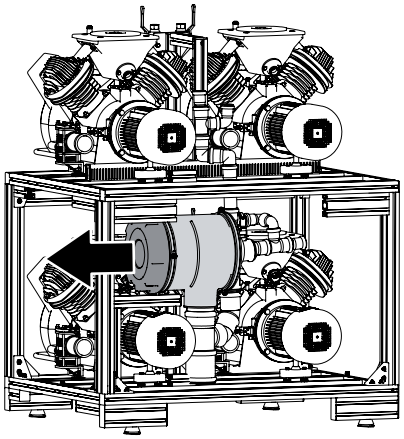
› Press the "Test" button.



The solenoid valve of the cyclone separator opens briefly and discharges condensate (if present).

Changing the filter cartridge of the intake bacteria filter

› Switch off the pressure station.
› Remove the cover of the intake bacteria filter.



› Replace the filter cartridge.
› Close the cover.

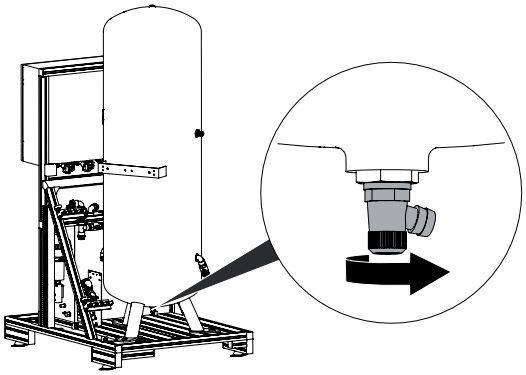
Checking the non-return relief valve

› Switch the controller to manual mode at the display panel.
› Manually switch on the individual compressor units at the display panel.

The non-return relief valve switches over after approx. 5 seconds and the compressor unit pumps against the pressure.

Checking the pressure tank for condensation water

› Open the drain valve.



› If water is present in the pressure tank, drain the water and check the functions of the refrigerant type dryer and the cyclone separator.

Troubleshooting

14 Tips for operators and service technicians

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

To prevent the risk of hearing damage, always wear ear defenders when working on noisy units.

Error	Possible cause	Solution
System not working, "Ready" and "Fault" LEDS not on	› Controller not functioning due to voltage outage	› Check fuse F1.
	› Power supply unit defective	› Check the power supply unit; if necessary replace the control box.
Dew point too high, condensation water in pressure tank	› Refrigerant type dryer switched off or defective	› Check whether the refrigerant type dryer is switched on. › For further troubleshooting refer to the refrigerant type dryer instruction sheet.

14.1 Faults that are shown on the display panel

To call up faults via the display panel, refer to the display panel instruction sheet (order number 9000-606-109/..).

Error	Possible cause	Solution
Display: "Temperature alarm" System not working, red "Fault" LED on	› Ambient temperature too high (> 50°C or > 45°C for more than 15 minutes)	› Check ventilation and allow room to cool. › Press "Reset" button. › Switch on the system.
Display: "Low pressure" System in emergency mode, red "Fault" LED on	› System or compressed air network leaking	› Check the system and compressed air network for leak-tightness, re-seal if necessary.
Display: "Pressure sensor 1 defective" System in emergency mode, red "Fault" LED on	› Connection between pressure sensor and controller interrupted	› Check the connection between the pressure sensor and the controller.
	› Pressure sensor 1 defective	› Replace the pressure sensor.
Display: "Motor protection" System running, red "Fault" LED on	› Compressor unit blocked	› Check the setting value of the motor protection switch (50 Hz: 12.5 A, 60 Hz: 15.5 A). › Allow the motor protection switch to cool off. › Press "Reset" button. › Switch on the system. › If the fault occurs again, call the Customer Service.
Display: "Refrigerant type dryer fault" System running, red "Fault" LED on	› Connection between controller and refrigerant type dryer interrupted	› Check the connection, if necessary reconnect.
	› Refrigerant type dryer defective	› Refer to the instructions sheet of the refrigerant type dryer

Error	Possible cause	Solution
Display: "Cyclone separator fault" System running, red "Fault" LED on	› Connection between controller and cyclone separator interrupted	› Check the connection, if necessary reconnect.
	› Cyclone separator defective	› Refer to the instructions sheet of the cyclone separator .
Display: "Temperature too high" System in emergency mode, red "Fault" LED on	› Ambient temperature too high (> 45°C for more than 5 minutes)	› Check ventilation.
Display: "Temperature sensor defective" System running, red "Fault" LED on	› Connection between controller and temperature sensor interrupted	› Check the connection, if necessary reconnect.
	› Temperature sensor defective	› Replace the temperature sensor.
Display: "Module monitoring fault" System running, red "Fault" LED on	› Controller module defective or loss of contact	› Check module contacts, if necessary replace module.

14.2 Further messages on the display panel

The following messages provide information, but do not lead to a fault or cause the system to shut down.

Message	Possible cause	Solution
"Bacteria filter needs changing"	› Maintenance interval reached	› Change the filter cartridge of the intake bacteria filter (order number 0705-991-05).
"Temperature too high"	› Ambient temperature too high (> 45°C for more than 1 minute)	› Check ventilation.
"Temperature not yet low enough."	› Ambient temperature still too high (not yet below 40°C)	› Check ventilation.
"No connection to system"	› Network connection between system and display panel interrupted	› Restore the connection.

Acceptance testing/handover record for pressure stations for clinics

Type _____ Order number: _____

Attachment: ____ of ____

Address of set-up location (clinic):

_____

_____

_____

Name and address of customer:

_____

_____

_____

Name and address of installation company/Service Technician:

_____

_____

_____

Inspection of delivery for:

☐ Possible damage to packaging

☐ Possible damage to the system/units

☐ Completeness of the delivery

This document confirms the qualified handover and provision of instructions for the following unit(s):

Tank module	Type:	_____	Serial number:	_____
Compressor module	Type:	_____	Serial number:	_____
Compressor units	Type:	_____	Serial numbers:	_____
				_____
				_____
				_____
Display panel	Type:	_____	Serial number:	_____
Noise reduction hoods (optional)	Type:	_____	Serial number:	_____

Refrigerant type dryer Atlas Copco	Type:	**FD 50**	Product number:	**8102223537**
			Serial number:	_____
			Year of manufacture:	_____
			Voltage:	_____
			Frequency:	_____

☐ Installation layout of the system (photographic documentation) is enclosed as an attachment.

Ambient temperature: °C _____ Set-up location: _____

Date of installation: _____ _____

Notes:

_____

Final acceptance

☐ A check has been performed to verify that the protective earth conductor is not interrupted.

☐ The electrical safety of the system has been checked and confirmed in accordance with current national regulations.

☐ Supply and exhaust air provided for the dryer ☐ Yes ☐ No

During operation of the dryer

☐ Direction of rotation of fan motor ☐ Fault _____

☐ Read off dew point ☐ Fault _____

☐ Function of refrigerant type dryer ☐ Error _____

☐ Function of automatic condensate drain ☐ Error _____

☐ The delivery rate was checked indirectly using measurements of time taken to build up pressure between 4 bar and 6 bar: P 6000 < 50 seconds, P 9000 < 38 seconds, P 12000 < 25 seconds.

☐ The system was checked for leak-tightness.

☐ All connections have been properly routed, made secure and checked in accordance with the requirements.

☐ The system was handed over in accordance with the components listed.

☐ Instruction in the operation and handling of the unit(s) has been provided.

☐ Acceptance was successful without any restrictions or remarks.

☐ Acceptance was not successful or only partially successful due to the following reasons:

_____

_____

I hereby confirm handover and acceptance in accordance with the information above:

_____ _____

Date / signature of Service Technician Date / signature of customer

DÜRR DENTAL

Hersteller/Manufacturer:
DÜRR DENTAL SE
Höpfigheimer Str. 17
74321 Bietigheim-Bissingen
Germany
Tel.: +49 7142 705-0
www.duerrdental.com
info@duerrdental.com

DÜRR DENTAL