Tyscor VS 2

EN

Installation and operating instructions

CE 0297

7186100001L02

DÜRR DENTAL

1805V005

Contents

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1 About this document

These installation and operating instructions represent part of the unit.

If the instructions and information in these installation and 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.

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


Biohazard warning

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.


Comply with the Operating Instructions.


Wear protective gloves.


Switch off and de-energise the unit (e.g. unplug from mains).


Refer to the accompanying electronic documents.


Monitor ambient conditions


CE labelling with the number of the notified body


Order number


Serial number


Manufacturer

1.2 Copyright information

2 Safety

Dürr Dental has designed and constructed this unit so that when used properly and for the intended purpose it does not pose any danger to people or property. Nevertheless, residual risks can remain. You should therefore observe the following notes.

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2.1 Intended purpose

The suction unit provides the dental treatment unit with vacuum and volume flow.

2.2 Intended use

Working in combination with the suction unit with treatment unit, suction handpiece and cannula, the media used in dental treatment (e.g. water, saliva, dentine and amalgam) are removed by suction for disposal.

This unit is technically suitable for the aspiration of nitrous oxide (laughing gas). However, when assembling a system for aspiration of nitrous oxide, it is important to ensure that the other components in the system are also suitable for this purpose. Those responsible for setting up the system must assess this and approve and release the system for the aspiration of nitrous oxide.

Operation with nitrous oxide is only permitted if the exhaust air is transported from the unit to the outside of the building.

2.3 Improper usage

Any other usage or usage beyond this scope is deemed to be improper. The manufacturer accepts no liability for damages resulting from improper use. In these cases the user/operator will bear the sole risk.

- Do not use this device to aspirate flammable or explosive mixtures.
- The unit must not be used as a vacuum cleaner.
- Do not use chemicals containing chlorine or foaming chemicals.
- Operation in operating theatres of explosive areas is not permissible.
- The suction unit must not be set up in the patient environment (with a radius of 1.5 m).

2.4 Systems, connection with other devices

Additional devices connected with medical electrical devices must be proven to conform with their corresponding IEC or ISO standards. All configurations must continue to comply with the standard requirements for medical systems (see IEC 60601-1).

Whoever connects additional devices to medical electrical devices automatically becomes the system configurator and is responsible for ensuring that the system corresponds with the standard requirements for systems. Local laws take priority over the requirements outlined above.

2.5 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.

2.6 Specialist personnel

Operation

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

- Instruct or have every user instructed in handling the unit.

Installation and repairs

- Installation, readjustments, alterations, upgrades and repairs must be carried out by Dürr Dental or by qualified personnel specifically approved and authorized by Dürr Dental.

2.7 Protection from electric shock

› Comply with all the relevant electrical safety regulations when working on the unit.
› Never touch the patient and unshielded plug connections on the device at the same time.
› Replace any damaged cables or plugs immediately.

Observe the EMC rules concerning medical devices

› The appliance is designed for the use in health care establishments (in accordance with IEC 60601-1-2). If the appliance is operated in another environment, potential effects on electromagnetic compatibility must be taken into account.
› Do not operate the unit in the vicinity of HF surgical instruments or MRT equipment.
› Maintain a minimum distance of at least 30 cm between the unit and other electronic devices.
› Keep a minimum distance of 30 cm between the unit and mobile radio devices.
› Note that cable lengths and cable extensions have effects on electromagnetic compatibility.

NOTICE
Negative effects on the EMC due to non-authorised accessories
› Use only Dürr Dental parts or accessories specifically approved by Dürr Dental.
› If other accessories are used, note any negative consequences to the function of the unit.

NOTICE
Erroneous operation mode due to use immediately adjacent to other devices or with other stacked devices
› Do not stack the unit together with other devices.
› If this is unavoidable, note any potential impacts on the operation mode.

2.8 Only use original parts

› Only use Dürr Dental parts or accessories and special accessories specifically approved by Dürr Dental.
› Only use only original wear parts and replacement parts.

DÜRR MEDICAL accepts no liability for damages or injury resulting from the use of non-approved accessories or 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 cable) 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 transport.

If required, original packaging for the unit can be ordered from Dürr Dental.

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

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

2.10 Disposal

The unit may be contaminated. Instruct the company disposing of the waste to take the relevant safety precautions.

› Decontaminate potentially contaminated parts before disposing of them.
› Uncontaminated parts (e.g. electronics, plastic and metal parts etc.) should be disposed of in accordance with the local waste disposal regulations.
› If you have any questions about the correct disposal of parts, please contact your dental trade supplier.

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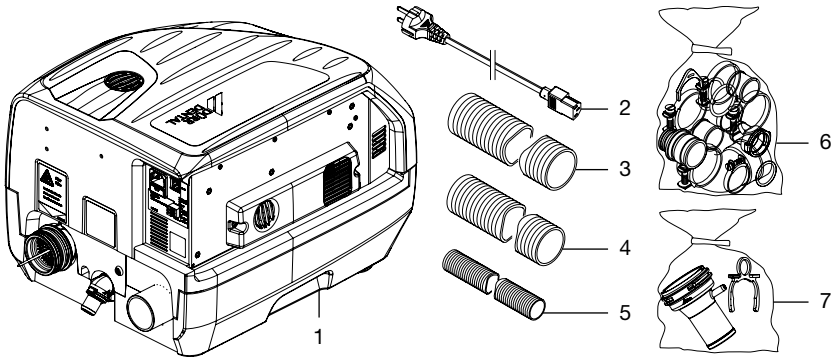
3 Overview



1 Tyscor VS 2 Combination Suction Unit
2 Mains cable with country-specific mains plug
3 Hose LW 50
4 Hose LW 40
5 Waste hose LW 20
6 Set of connection fittings
7 Hose connection kit

3.1 Scope of delivery

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

Tyscor VS 2 . . . . . 7186-01/. . .

– Set of connection fittings
– Hose connection kit
– Waste hose LW 20
– Hose LW 50 (1.5 m)
– Hose LW 40 (1.5 m)
– Tyscor Pulse software (CD)
– Quick start instructions

3.2 Optional accessories

The following optional items can be used with the device:

Surge tank 7130-991-51
Wall bracket 7130-190-00
Bacteria filter. 0705-991-50
Noise reduction for exhaust air . . . 0730-991-00
Rinsing unit. 7186100400
Flow accelerator 7560-992-00
Screed frame for flow accelerator . 7560-993-00
Console for floor-mounted installation. 7130-191-00

3.3 Consumables

The following materials are consumed during operation of the device and must be ordered separately:

Orotol plus (2.5 litre bottle) CDS110P6150
MD 555 cleaner (2.5 litre bottle). CCS555C6150

3.4 Wear parts and replacement parts

Information about replacement parts is available from the portal for authorised specialist dealers at: www.duerrdental.net.

4 Technical data

Electrical data		7186-01
Rated voltage	V	230, 1~
Mains frequency	Hz	50 / 60
Nominal current	A	3.3 *
Rated power	kW	0.7 *
Fuses	A	2x T 4.0 AH / 250 V~ (IEC 60127-2)
Type of protection		IP 21
Protection class		I

* Maximum values that can be achieved in the "Boost" operating mode.

Control connection electrical data		
Output:		
Voltage	V	24
Max. current	mA	160
Input impedance	kΩ	6.9
Hi level	V	10 - 30
Lo level	V	0 - 2.5

Connections		
Suction connection (outside)	mm	∅ 40
Exhaust air connection (external)	mm	∅ 50
Drain connection, DürrConnect	mm	∅ 20

Media		
Max. number of operators		2
Max. unimpeded flow rate	l/min	1200
Max. suction system pressure	mbar/hPa	-160
Max. rate of flow of fluids	l/min	8
Max. suction height	cm	80

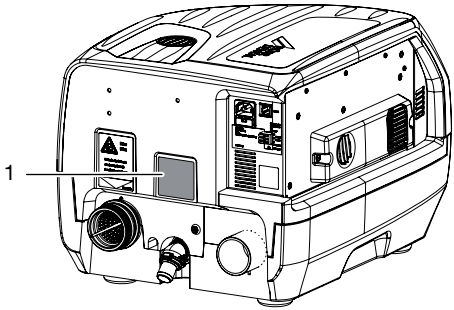
General data		
Radial blower speed (n_v) max.	rpm	24000
Separation stage speed (n_s)	rpm	2850 / 3250
Duty cycle	%	100
Dimensions (H x W x D)	cm	32 x 35.5 x 45.5
Weight	kg	11
Noise level* approx.	dB(A)	58

* Noise levels in acc. with EN ISO 1680 "airborne noise emissions"; measured in a sound-proofed room. The levels are average values with a tolerance of ±1.5 dB(A). Higher values may be obtained in rooms with reverberating sound characteristics.

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
Ambient conditions during storage and transport		
Temperature	°C	-10 to +60
Relative humidity	%	< 95
Ambient conditions during operation		
Temperature	°C	+10 to +40
Relative humidity	%	< 70
Altitude above mean sea level	m	< 2000
Classification		
Medical Devices Directive (93/42/EEC)		Class IIa
Electromagnetic compatibility (EMC) **Interference emission measurements**		
High-frequency emissions in accordance with CISPR 11		Group 1 Class B
The unit complies with the relevant requirements according to IEC 60601-1-2:2014.		

4.1 Type plate

The model identification plate can be found on the upper part of the housing.

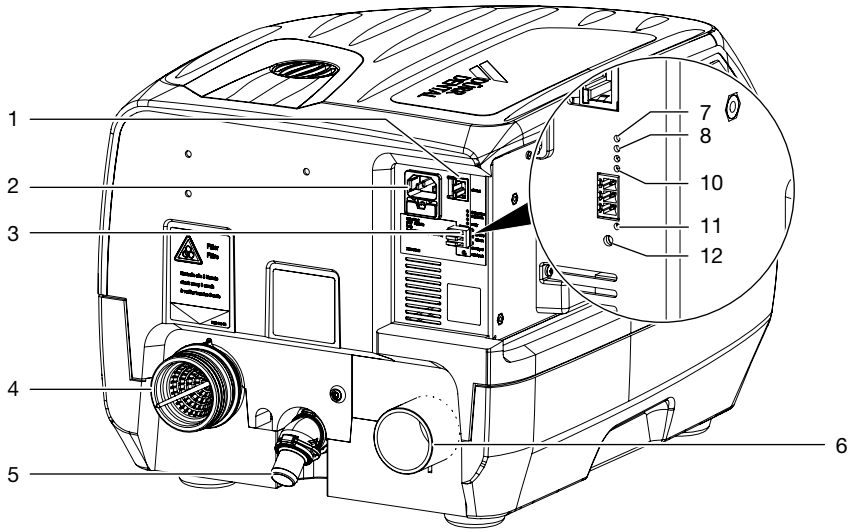


1 Model identification plate

4.2 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 Operation



1 Network connection
2 Mains connection with mains fuses
3 Control connection
4 Vacuum connection with coarse filter
5 Waste water connection
6 Exhaust air connection
7 Red LED - radial blower fault
8 Red LED - fault in the separation system
10 Green LED - ready for operation
11 Blue LED - "start" signal
12 Start button

The VS-suction unit is used in "wet" suction systems. The unit comprises a radial blower and a separation system. The radial blower and the separation system are each driven by their own motor.

5.1 Separation system

In the separation system the aspirated fluids and the solid particles are separated from the suction air. The separation system has two stages. It consists of a cyclonic separator and a separation turbine. The suction process runs continuously.

Stage 1:

The mixture drawn in, consisting of fluids, solid particles and air, passes through the inlet connection into the unit. The coarse filter holds back the solid particles. The rest of the mixture passes to the cyclonic separator, where it is set into a spiral motion. In the first stage the resulting centrifugal forces force the liquid constituents and any remaining solid particles against the outside wall of the separation chamber of the cyclonic separator. This initially creates a coarse separation of the fluid waste.

Stage 2:

The subsequent second stage comprises a separation turbine. Fine separation takes place in the separation turbine, where the remaining fluid is separated out.

The waste water pump in the separation system feeds the fluid together with the finer solid particles through the waste water system connection into the central waste water network.

5.2 Radial blower

The air that has been separated from the fluids is sucked into the radial blower. The motor in the radial blower is regulated on a demand-driven basis by the unit electronics. Afterwards, the aspirated air is passed through the exhaust air connections and out of the unit.

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5.3 LEDs and settings

LEDs:

– The green LED lights up continuously when the unit is ready for operation.
– The red LED lights up when there is a fault.
– The blue LED lights up when a "start" signal is present from the treatment unit.

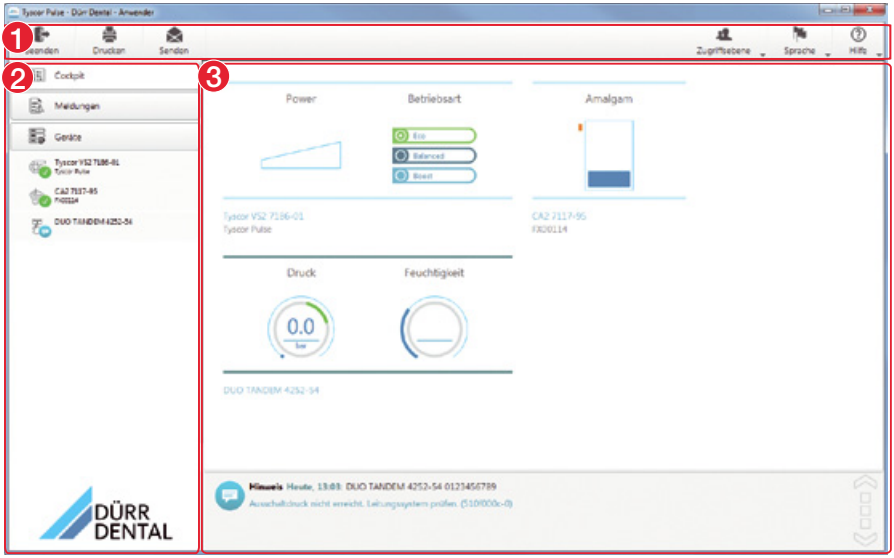
5.4 Tyscor Pulse (optional)

The software is connected via the network to the devices from Dürr Dental and displays the current status as well as messages and errors.

All messages are logged and can be printed or sent.

The *cockpit* shows the devices with the current characteristic data and provides a quick overview of the functional status of the devices.

The software interface consists of the menu bar, the side bar and the contents area.



1 Menu bar
2 Side bar
3 Contents area

The contents area depends on the tab selected on the side bar. The current messages are always displayed in the lower part of the contents area.

If there are several current messages, then the mouse wheel or the  or  buttons can be used to scroll through the messages.

The views and rights depend on the selected access level (Operator, Administrator or Service Technician).

While the software is running (even if the software window is closed), the access level is visible in the task bar (or Mac OS menu bar). The symbol shows the current status of the devices (see "11.2 Querying messages"). If a new message appears, a speech bubble tip also appears.

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6 Requirements

The unit can be installed on the same level as the surgery room or in a floor below.

Further information can be found in our suction planning information leaflet. Order number 9000-617-03/..

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)

Ambient and environmental conditions must be taken into account. Do not operate the unit in damp or wet conditions.

– When installing in a cabinet the inlet and outlet ventilation slots must be present; minimum free cross-section at least 120 cm^2.
– Forced ventilation (fan) must be provided if there is a risk that the recommended room air temperature could be exceeded. The air flow performance must be at least 2 m^3/min.
– Do not cover cooling slots or openings with housing installations; ensure sufficient clearance to the openings to permit sufficient cooling.
– Mains cable plug connections must be freely accessible so they can be quickly disconnected if there is any danger.

6.2 Setup options

The following options for setting up the unit are available:

– Wall installation using a Dürr Dental wall mounting
– In a ventilated cabinet
– In a Dürr Dental noise reducing housing

6.3 Pipe materials

Only use vacuum-sealed HT-waste pipes manufactured from the following materials:

– Polypropylene (PP),
– Chlorinated polyvinyl chloride (PVC-C),
– Unplasticized polyvinyl chloride (PVC-U),
– Polyethylene (PE).

The following materials must not be used:

– Acrylonitrile-butadiene-styrene (ABS),
– Styrene copolymer blends (e.g. SAN + PVC).

6.4 Hose materials

For waste connections and suction lines only use the following hose types:

– Flexible spiral hoses made of PVC with integrated spiral or equivalent hoses
– Hoses that are resistant to dental disinfectants and chemicals

Plastic hoses will display signs of ageing over time. Therefore, they should be inspected regularly and replaced as necessary.

The following types of hoses must not be used:

– Rubber hoses
– Completely PVC hoses
– Hoses that are not sufficiently flexible

6.5 Information about electrical connections

› Ensure that electrical connections to the mains power supply are carried out 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.

6.6 Information about connecting cables

Mains supply cable

Only use the supplied mains cable to connect the device.

Control cable

Installation type	Line layout (minimum requirements)
Fixed installation	– Shielded sheathed cable (e.g. (N)YM (St)-J)
Flexible	– PVC data cable with shielded cable sheathing, as used for telecommunications and IT processing systems (e.g. type LiYCY) or – Lightweight PVC control cable with shielded cable sheathing

7 System components

The system components listed below are required or recommended for various procedures or for installation.

7.1 Rinsing unit

It is recommended that the suction system is equipped with a rinsing unit, e.g. in the treatment unit. The rinsing unit provides a small amount of water during aspiration. This dilutes the aspirated fluids (blood, saliva, rinsing water, etc.), which can then be transported more effectively.

For further information, refer to the rinsing unit installation and operating instructions

7.2 Exhaust air filter

For hygienic reasons, we recommend the installation of a bacteria filter in the exhaust air line.

If the unit is installed in the surgery and the exhaust air cannot be discharged to the outdoors, it is essential to install a bacteria filter.

Depending on the type and condition of the bacteria filter, it will need to be replaced every 1-2 years at the latest.

The separation integrated in the system does not retain bacteria; this is why we recommend installing a suitable filter in the exhaust air system.

7.3 Noise reduction

If the noise level from the exhaust air vent or the flow noise generated is too high, noise reduction can be installed in the exhaust air line.

7.4 Surge tank

If the suction unit is combined with an amalgam separator, this requires the installation of a surge tank. The surge tank reduces pressure peaks caused by the waste water pump of the suction unit and acts as a buffer against temporary rises in the volume of water.

The surge tank can also be used if the waste water is fed directly into the building waste water system. this case the waste water from the suction unit is diverted to the building drainage system under zero pressure.

7.5 Flow accelerator

In order to keep the suction system free of deposits, a flow accelerator can be fitted in conjunction with a spittoon valve. When using a bowl rinse system, water will collect before the flow accelerator. The next time suction takes place using the large cannula, the collected fluid is transported in surges and at high speed to the suction system. This ensures automatic cleaning of the suction pipes.

8 Installation

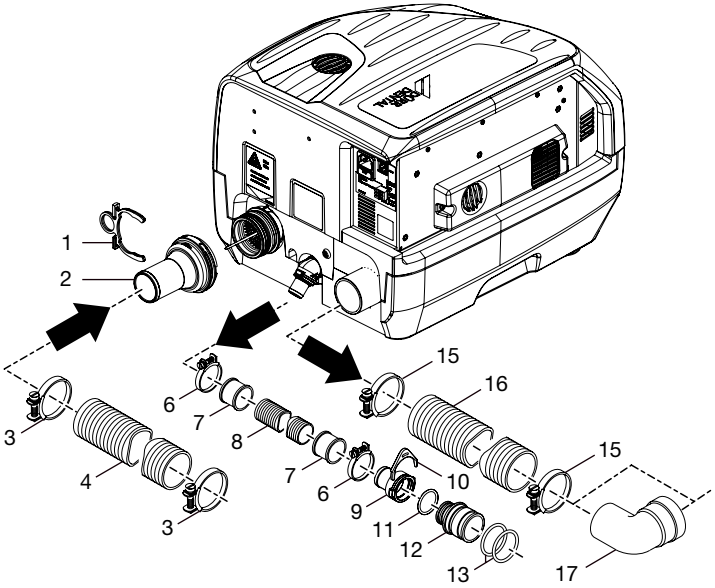
The actual connection can vary depending on the chosen installation option. The connection shown is only an example.

8.1 Installation and routeing of hoses and pipes

› Establish connections between the pipe system and the unit using the flexible hoses supplied. This will prevent vibrations from being transmitted to the pipe system.

› The connection between the pipe line and unit suction connection should be kept as short as possible and straight, without bends.

› Waste water connections must be implemented in accordance with applicable local and national regulations.



1 Ring clamp
2 Straight adaptor bush
3 Hose clamp
4 Suction hose ∅ 40 mm (internal)
6 Hose clip ∅ 28 mm
7 Hose sleeve
8 Waste water hose ∅ 20 mm (internal)
9 Hose sleeve ∅ 20 mm
10 Ring clamp
11 O-ring 20 x 2.0
12 Connector ∅ 36 mm (external)
13 O-ring 30 x 2
15 Hose clip ∅ 55 mm
16 Exhaust air hose ∅ 50 mm (internal)
17 Elbow DN 50

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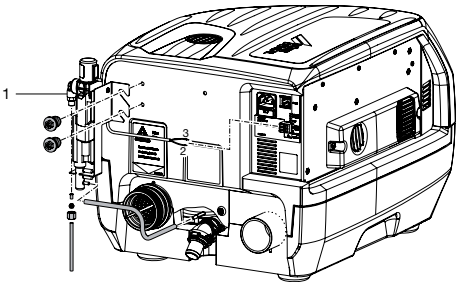
8.2 Fitting the rinsing unit

› Screw the rinsing unit with holder firmly onto the upper part of the housing.
› Pull off the sealing plugs from the rinse connection of the separation unit.
› Push the rinse hose onto the rinse connection of the separation unit.
› Connect the rinse hose to the rinsing unit.
› Connect the hose for the water supply of the rinsing unit.
› Connect the voltage supply of the rinsing unit on the control connection of the device to pins 2 and 3.



1 Rinsing unit

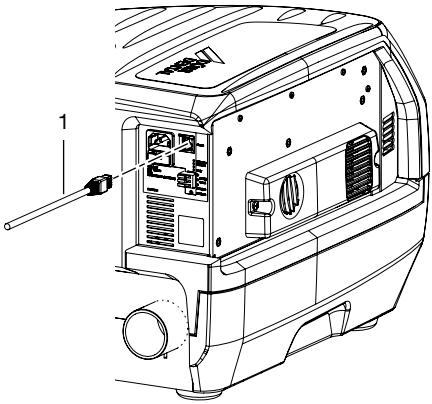
8.3 Network connection

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

› Plug the network cable for the Tyscor Pulse into the network connection (optional when using Tyscor Pulse).

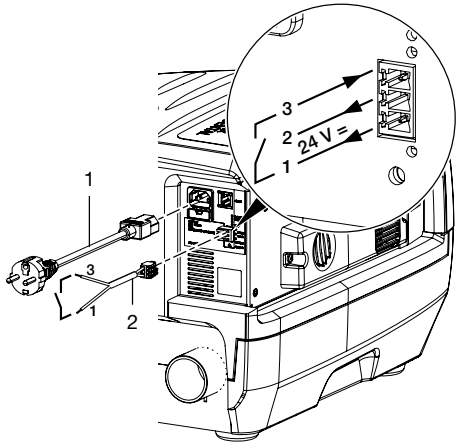


1 Network cable

8.4 Electrical connections

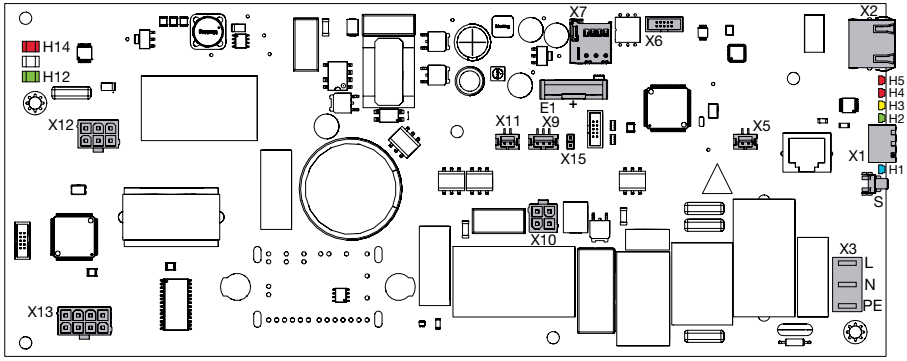
WARNING
Electric shock
› The device may only be connected to a supply system with a earthed power outlet.

› Fasten the plug socket to the control line and connect to the device.
› Connect the mains cable to the unit and to the power outlet.



1 Mains cable with socket and country-specific mains plug
2 Control line

8.5 PCB (main board) electrical connections



X1 Control voltage output, 24 V DC, 400 mA, control signal input
X2 Network connection
X3 Supply voltage 230 V
X5 Motor control fan connection 2
X6 Service interface
X7 SD card holder (for Micro SD), optional
X9 Separation motor RPM monitor (VS only)
X10 Separation motor supply voltage (VS only)
X11 Motor control fan connection 1
X12 Suction motor supply voltage
X13 Suction motor RPM monitor
X15 Jumper (V=closed, VS=open)
H1 Blue LED - "start" signal
H2 Green LED - ready for operation
H3 Yellow LED - reserve
H4 Red LED - fault in the separation system
H5 Red LED - radial blower fault
H12 Green LED - radial blower temperature indicator, temperature OK
H14 Red LED - radial blower temperature indicator, temperature too high
S Start button
E1 Battery (CR2032 button cell), optional

9 Commissioning

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NOTICE
Interference caused by larger particles such as pieces of tooth or fillings
› Do not operate the unit without a coarse filter

› Check that the coarse filters are installed in the suction system (e.g. in the spittoon).
› Turn on the unit power switch or the main surgery switch.
› Carry out a function check of the device.
› Check all connections for leak tightness.
› Carry out an electrical safety check in accordance with applicable regulations (e.g. regulations concerning set up, operation and application of medical devices) and record the results as appropriate, e.g. in the technical log book.

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

9.1 Monitoring the device with Tyscor Pulse

Combining devices safely

› Safety and essential performance features are independent of the network. The device is designed for operation independent of a network.
› Incorrect manual configuration can lead to significant network problems. The expert knowledge of a network administrator is required for configuration.
› The data connection utilizes part of the bandwidth of the network. Interactions with other medical devices cannot be completely excluded. Apply the IEC 80001-1 standard for risk assessment.
› The device is not suitable for direct connection to the public internet.
› When connecting the unit to other devices,such as a PC system,comply with the requirements set out in section 16 of IEC 60601-1 (EN 60601-1).
› When setting up the PC system in the vicinity of the patients:
Only connect components (e.g. computer, monitor, printer) that comply with the standard IEC 60601-1 (EN 60601-1).
› When setting up the PC system outside of the vicinity of the patients:
Connect components (e.g. computer, monitor, printer) that comply at least with the standard IEC 60950-1 (EN 60950-1) at least.

A copy of the system manufacturer's declaration in accordance with Article 12 of Directive 93/42/EEC can be found in our download section at www.duerrdental.com (document no. 9000-461-264).

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

Further information on Tyscor Pulse can be found in the software help and in the Tyscor Pulse manual, order number 0949100001.

Network protocols and ports

Port	Purpose	Service
45123 UDP, 45124 UDP	Unit recognition and configuration	
1900 UDP	Service indicator	SSDP / UPnP
502 TCP	Unit data	
514[1)] UDP	Event protocol data	Syslog
22 TCP, 23 TCP	Diagnosis	Telnet, SSH
123 UDP	Time	NTP

[1)] The port can vary depending on the configuration.

The following requirements must be met in order to monitor the unit with the software on the computer:

– Unit connected to the network
– Latest Tyscor Pulse software installed on computer

Add device

Requirements:

– Unit switched on and connected to the network
– Administrator or service technician access level selected in the software

› Working in the menu bar, click on *Device Manager*.

The list of units appears. A symbol displays the connection status to the software:

The device is present in the network and connected to the software.

The device is present in the network but not connected to the software.

The network connection between the software and the device is interrupted, e.g. the device is switched off.

The new unit that is not yet connected, is displayed with the connection status .

› Select the unit and click on .

The unit appears in the side bar.

Adding the device in the cockpit

All devices that are connected to the software can be added to the cockpit. When the unit is first connected to the software, the unit is automatically added to the cockpit.

Requirements:

– Administrator or Service Technician access level selected.

› Click on the device in the device list with the left mouse button and keep the mouse button pressed.
› With the mouse key pressed, drag the unit onto the cockpit.
› Release the mouse key.

The block with the current characteristic data and the name of the device appear in the cockpit.

› To change the position of the device block, click on the block and, with the mouse key pressed, drag it to the required location.

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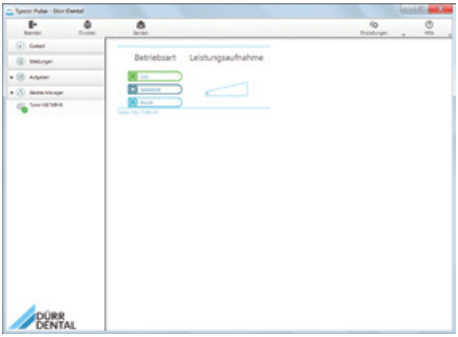
Selecting the operating mode



Various operating modes can be set on the device. Depending on the installation situation and power requirements, one of the following operating modes can be selected: Eco, Balanced or Boost. On delivery, the device is set to Balanced.

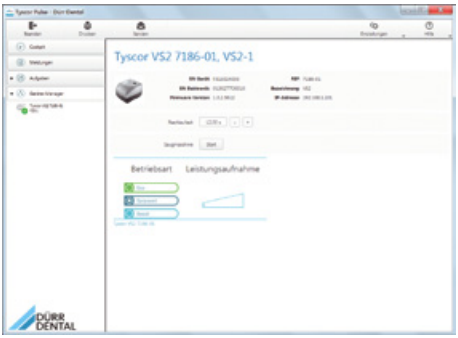
Requirements:

– Administrator or Service Technician access level selected.

› Select the device in the side bar.

› Click on the desired operating mode with the left mouse key.

Manually starting the device



Manually starting the device for testing.

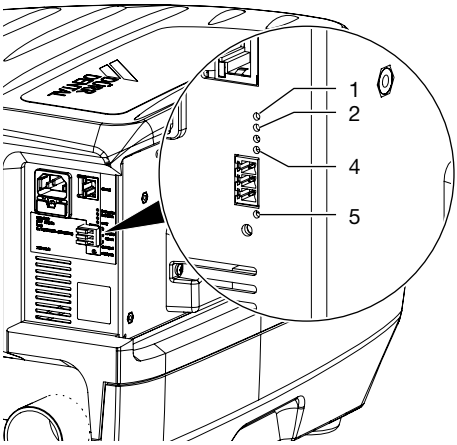
Requirements:

– Service technician access level selected.

› Select the device in the device list.

› Click on the Start button with the left mouse key; on some devices you will need to keep it pressed.

10 LEDs



1 Red LED - radial blower fault
2 Red LED - fault in the separation system (VS only)
4 Green LED - ready for operation
5 Blue LED - "start" signal

10.1 Ready for operation

Green LED is on

10.2 Hose manifold start signal

BLUE LED is on
Manifold signal active and machine running.

10.3 Fault

RED LED is on

The corresponding red LED is on depending on where the fault lies.

11 Monitoring the device with Tyscor Pulse

Further information on Tyscor Pulse can be found in the software help and in the Tyscor Pulse manual, order number 0949100001.

11.1 Monitoring operation

The device must have been added to the cockpit for the graphical device block to be shown in the cockpit.

Shown in the unit block:
– Operating mode
– Power consumption of the suction stage

11.2 Querying messages

Trouble-free operation

Fault
Operation of the device interrupted

Warning
Operation of the device restricted

Note
Important information about the device

Information

Establishing a connection to the device

Connection to the device interrupted

If a message occurs for an device, the symbol next to the device in the side bar changes. The message appears in the cockpit and in the device details.

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If several messages occur, the symbol of the highest message level in each case is displayed.

As soon as a message concerning a device occurs, the symbol in the task bar (or Mac OS menu bar) also changes to the relevant message symbol. If required by the message an acoustic signal also sounds.

› To query the message details, switch to the cockpit or to the device.

11.3 Creating a report

You can print out a current report or sent it via e-mail.
The report contains all messages and a screenshot of the view that is displayed when the report is created.

12 Disinfection and cleaning

NOTICE
Device malfunctions or damage due to use of incorrect media
Guarantee claims may become invalid as a result.
› Do not use any foaming agents, e.g. household cleaning agents or instrument disinfection agents.
› Do not use abrasive cleaners.
› Do not use agents containing chlorine.
› Do not use any solvents like acetone.

12.1 After every treatment

› Aspirate a glass of cold water through the large and the small suction hoses. Do this even if only the small suction hose was actually used during treatment.

Suction through the large suction hose causes a large amount of air to be drawn up, thereby considerably increasing the cleaning effect.

12.2 Daily after the end of treatment

After higher workloads before the midday break and in the evening

The following are required for disinfection/cleaning:
– Material-compatible, non-foaming disinfection/cleaning agents with Dürr Dental approval, e. g. Orotol plus.
– Unit care system, e.g. OroCup
› To pre-clean, suck up 2 litres of water with the care system.
› Aspirate the disinfection/cleaning agent with the care system.

12.3 Once or twice a week before the midday break

Under harsher conditions (e.g. hard water or frequent use of prophylaxis powders) 1x daily before the midday break

The following are required for cleaning:

– Material-compatible, non-foaming special cleaning agents that have been approved by Dürr Dental, e.g. MD 555 Cleaner
– Unit care system, e.g. OroCup

› To pre-clean, suck up 2 litres of water with the care system.
› Aspirate the cleaning agent with the care system.
› Rinse with ca. 2 l water after the application time.

13 Maintenance

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

Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

WARNING
Infection due to contaminated unit
- Clean and disinfect the suction before working on the unit.
- Wear protective equipment when working (e. g. impermeable gloves, protective goggles and mouth and nose protection).

Maintenance interval	Maintenance work
Every three months	Check the filter at the device suction connection and clean if necessary.
Annually	Have waste valve function checked by a service technician and replaced if necessary.
Every 1-2 years	Replace the exhaust air filter (where fitted).

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.

WARNING
Infection due to contaminated unit
› Clean and disinfect the suction before working on the unit.
› Wear protective equipment when working (e. g. impermeable gloves, protective goggles and mouth and nose protection).

Prior to working on the device or in case of danger, disconnect it from the mains (e. g. pull the mains plug).

CAUTION
Electric shock due to capacitor discharge
› Wait for the discharge time.
› Watch for the LEDs going out.

14.1 General faults

Fault	Probable cause	Solution
Device does not start	No mains voltage	› Check the mains supply voltage. * › Check the fuses and replace if necessary. *
	Undervoltage	› Measure the supply voltage; call an electrician if necessary. *
	Control electronics defective	› Replace the electronics. *
Water leaking from the exhaust air connection	Membrane valve defective	› Check the membrane valve at the waste water connection and if necessary clean or replace.
	Foam in turbine due to use of incorrect cleaning and disinfectant agents	› Use non-foaming cleaning and disinfectant agents.
	Build-up of condensate in the exhaust air line	› Check the pipe system; avoid over-cooling. *
Suction performance too low	Coarse filter blocked	› Clean the coarse filter at the intake connection.
	Leak in the suction pipe	› Check and if necessary establish leak-tightness of suction pipe and connections. *
	Poor pipe routeing	› Use higher operating mode level.
No suction power	Radial blower defective	› Replace radial blower. *

Fault	Probable cause	Solution
Water not being pumped away	Separation system defective	› Replace separation system. *

* Only by customer services service technicians.

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14.2 Error messages in Tyscor Pulse

The error messages are displayed in Tyscor Pulse. If the device is not connected to the network, the messages can be read via a terminal client (e. g. PuTTY).

Fault	Probable cause	Solution
Speed of Sepa is low	Motor defective	› Replace the separation stage. *
	Hall sensor PCB (main board) defective	› Replace the Hall sensor PCB (main board), check the magnets in the Sepa fan. *
	Centrifuge soiled or damaged	› Check the centrifuge and clean or replace if necessary. *
Vacuum motor overheated	Motor suction stage defective	› Replace the suction stage. *
CPU overheated	Insufficient ventilation or poor set-up conditions	› Check the setup conditions, ensure adequate ventilation.
	Fan in the foam housing soiled	› Clean the fan and ventilation slots for supply and exhaust air. *
	Fan in foam housing defective	› Replace the fan. *
	Control electronics defective	› Replace electronics. *
Power Pack overheated	Insufficient ventilation or poor set-up conditions	› Check the setup conditions, ensure adequate ventilation.
	Fan on the electronics housing soiled	› Remove the cover on the electronics housing, clean the fan and heat sink. *
	Fan on electronics housing defective	› Replace the fan. *
	Control electronics defective	› Replace electronics. *

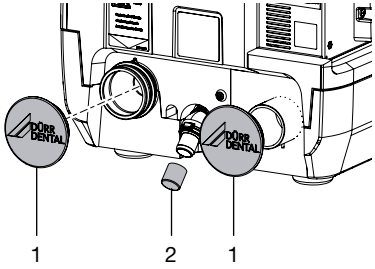
* Only by customer services service technicians.

15 Transporting the unit

WARNING
Infection due to contaminated unit
› Disinfect the unit before transport.
› Close all media connections.

Wear protective equipment to avoid any risk of infection (e.g. liquid-tight protective gloves, protective goggles, face mask).

› Before disassembly, clean and disinfect the suction unit and the unit using a suitable disinfectant approved by Dürr Dental.
› Disinfect a defective unit using a suitable surface disinfection agent.
› Seal all connections with sealing caps.
› Pack the unit securely in preparation for transport.



1 Sealing cap (order number 7186100070)
2 Waste water connection sealing cap (order number 9000-412-98)
x Sealing cap set (order no. 7186100071)

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