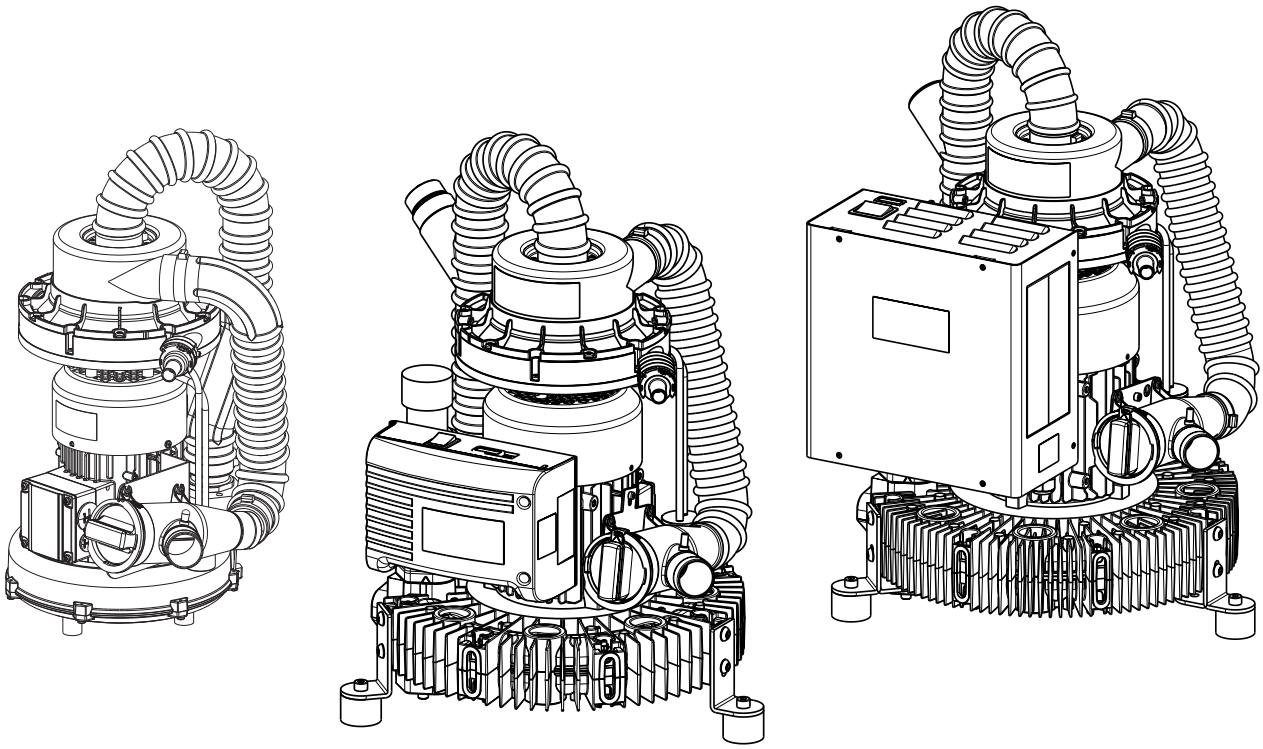
EXCOM hybrid 1s | 1 | 2 | 5

Instructions for use

EN | 200004295v01 | 2023-10



CE MD

eIFU:
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eIFU

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Translations

Translation of the original instructions for use

Tetras GmbH
Sirius Business Park, Rupert-Mayer-Str. 44, 81379 Munich, Germany

Images

The images contained in these instructions for use are for reference and may differ from the actual appearance of the product.

1. Notes

1.1. General instructions

METASYS can only guarantee the safety, reliability and performance of the dental device if the following instructions are adhered to:

> The product is only to be used in accordance with the instructions for use.
> During maintenance and service work (inspection, service, repair, replacement), only use original replacement parts.
> All manufacturer specifications for the treatment units to which the device is connected must be observed.
> After commissioning, complete the proof of installation and send this to METASYS in order to define the warranty period.
> All maintenance and service work must be entered into the device logbook.
> On request by an authorised technician, METASYS will provide all documentation that may be of use to technically qualified personnel during maintenance and service works
> METASYS accepts no responsibility for damage that may arise due to external influences (defective installation), using incorrect information, improper use of the dental device, or maintenance and service works being carried out improperly.
> The user must familiarise himself/herself with how to operate the dental device and ensure that the dental device is in good condition each time before operating it.

Important: Read the accompanying documents of the device carefully before installation, commissioning and use and keep them for the entire service life of the product!

1.2. Explanation of the symbols

CE mark	Sound	Unplug from mains
Medical device	Inclination / slope	Wash hands
Item number	Maximum installation altitude	General warning sign
Serial number	Blower / fan	Warning of electrical voltage
Manufacturer	On | Off	Warning of hot surface
Date of manufacture	Separate collection of electrical/ electronic equipment (WEEE)	Warning of automatic start-up
Follow instructions for use	Protective earthing	Warning of biological hazard
Follow instructions for use with reference to eIFU eIFU: www.metasys.com/ downloads	Protection class II	Download
	Applied part type B	Do not cut
Temperature limit	Electrostatic sensitive device / device parts	Maintenance / service
Caution / attention	Responsible for the translation	Stop operation
Beware of electric shock	Observe instructions for use	Protect from heat / Protect from sunlight
Humidity limit	Use hand protection	Protect from moisture / Store in a dry place
Air pressure limit	Use eye protection	Fragile

End device ready for operation	Use mouth and nose protection	Package orientation at the top
Ready for operation	Wear protective clothing	Stacking limit n = (quantity)
Loudspeaker	Earth before use	CH REP Name and address of the authorized representative's registered office in Switzerland
UDI Unique identifier of a medical device	HIBC UDI marking with standard compliant HIBC data content	Information

1.3. Copyright notice

2. Intended use

EXCOM hybrid devices are central suction systems used in dental practices for centralized vacuum production, as well as the separation of liquids and solid particles from the suction flow.

2.1. Indication

Not applicable.

2.2. Contraindication

Not applicable.

2.3. Intended users

The device must only be used by healthcare professionals trained in dentistry. Installation, service and maintenance work may only be carried out by METASYS trained technicians.

3. Safety-related information

3.1. General safety-related information

All serious incidents related to the device must be reported to the manufacturer and the competent authority of the Member State where the user and/or the patient is resident.

3.2. Safety instructions

Warning:

This product is an ME device with external power supply, class I, according to EN 60601-1: To avoid the risk of electric shock, this device must only be connected to a mains supply with a protective earth conductor (except EXCOM hybrid 5).

Danger:

Use in explosive or flammable locations is prohibited!

Assembly, modifications or repairs may only be carried out by authorised qualified personnel who guarantee compliance with the EN 60601-1 standard (international standard on Medical Electrical Equipment and Systems, in particular part 1: General requirements for basic safety).

The electrical installation must comply with the regulations of the IEC (International Electrotechnical Commission).

3.3. Warnings

Danger	Warning of a danger that will directly result in serious injury or death
Warning	Warning of a danger that can result in serious injury or death
Caution	Warning of a danger that can result in minor injury
Attention	Warning of a danger that can result in extensive damage to property

4. Product description

4.1. Product description

EXCOM hybrid	1s	1	2	5
central suction system	✓	✓	✓	✓
integrated separation	✓	✓	✓	✓
# treatment units (100% operation)	1	1	2	3
# treatment units * (60% operation, Y/X)	-	1 / 2	1 / 3	2 / 5

* for X treatment units if only the small suction hose is used for Y of X treatment units (e.g.: EXCOM hybrid 2: 1 of 3 treatment units)

4.2. Technical data / performance data

	EXCOM hybrid 1s
Power supply	230 V
Frequency	50 / 60 Hz
Max. current consumption	3,5 / 4,5 A
Max. power consumption	0,55 / 0,63 kW
Max. ambient temperature	35 °C
Suction volume	1100 l/min
Water flow rate	4,5 l/min
Negative pressure range, regulated	120 / 140 mbar
Operating time	100%
Weight	15 kg
Weight with cover	16,5 kg
Noise level	63 dB(A)
Noise level with cover	54 dB(A)
Dimensions (H x W x D)	530 x 350 x 320 mm
Dimensions with cover (H x W x D)	565 x 387 x 365 mm
Class	Class I according to Directive 93/42/EEC, Annex IX
Applied part type B	Separation impeller

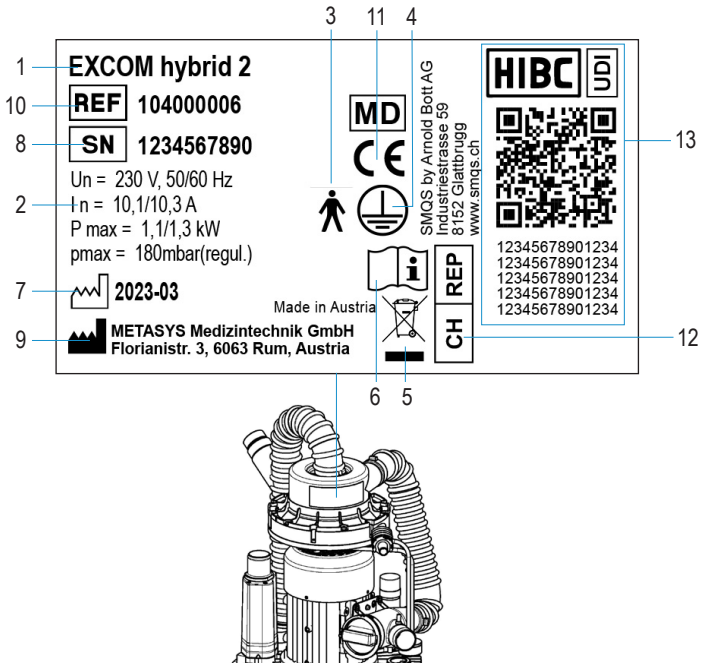
	EXCOM hybrid 1	EXCOM hybrid 2
Power supply	230 V AC	230 V AC
Frequency	50 / 60 Hz	50 / 60 Hz
Max. current consumption	9,0 / 9,0 A	10,1 / 10,3 A
Max. power consumption	0,94 / 1,1 kW	1,1 / 1,3 kW
Max. ambient temperature	35 °C	35 °C
Suction volume	1100 / 1300 l/min	1450 / 1750 l/min
Water flow rate	0,5 l/min	1,0 l/min
Negative pressure range, regulated	180 mbar	180 mbar
Operating time	100%	100%
Weight	22 kg	27 kg
Weight with cover	59 kg	64 kg
Noise level	57 / 62 dB(A)	58 / 63 dB(A)
Noise level with cover	45 / 49 dB(A)	46 / 50 dB(A)
Dimensions (H x W x D)	570 x 422 x 400 mm	580 x 450 x 400 mm
Dimensions with cover (H x W x D)	785 x 500 x 550 mm	785 x 745 x 550 mm
Class	Class I according to Directive 93/42/EEC, Annex IX	Class I according to Directive 93/42/EEC, Annex IX
Applied part type B	Separation impeller	Separation impeller

	EXCOM hybrid 5 - 230 V	EXCOM hybrid 5 - 400 V
Power supply	230 V AC	400 V AC
Frequency	50 / 60 Hz	50 / 60 Hz
Max. current consumption	9,0 / 10,0 A	4,3 / 4,4 A
Max. power consumption	1,5 / 1,75 kW	1,5 / 1,75 kW
Max. ambient temperature	35° C	35° C
Suction volume	2000 / 2400 l/min	2000 / 2400 l/min
Negative pressure range, regulated	180 mbar	180 mbar
Operating time	100%	100%
Weight	30 kg	30 kg
Noise level	64 / 68 dB(A)	64 / 68 dB(A)
Dimensions (H x W x D)	620 x 460 x 455 mm	620 x 460 x 455 mm

4.3. Type plate

The type plate is located on the outside of the suction machine.

The type plate is located on the cover on the outside of the suction machine.

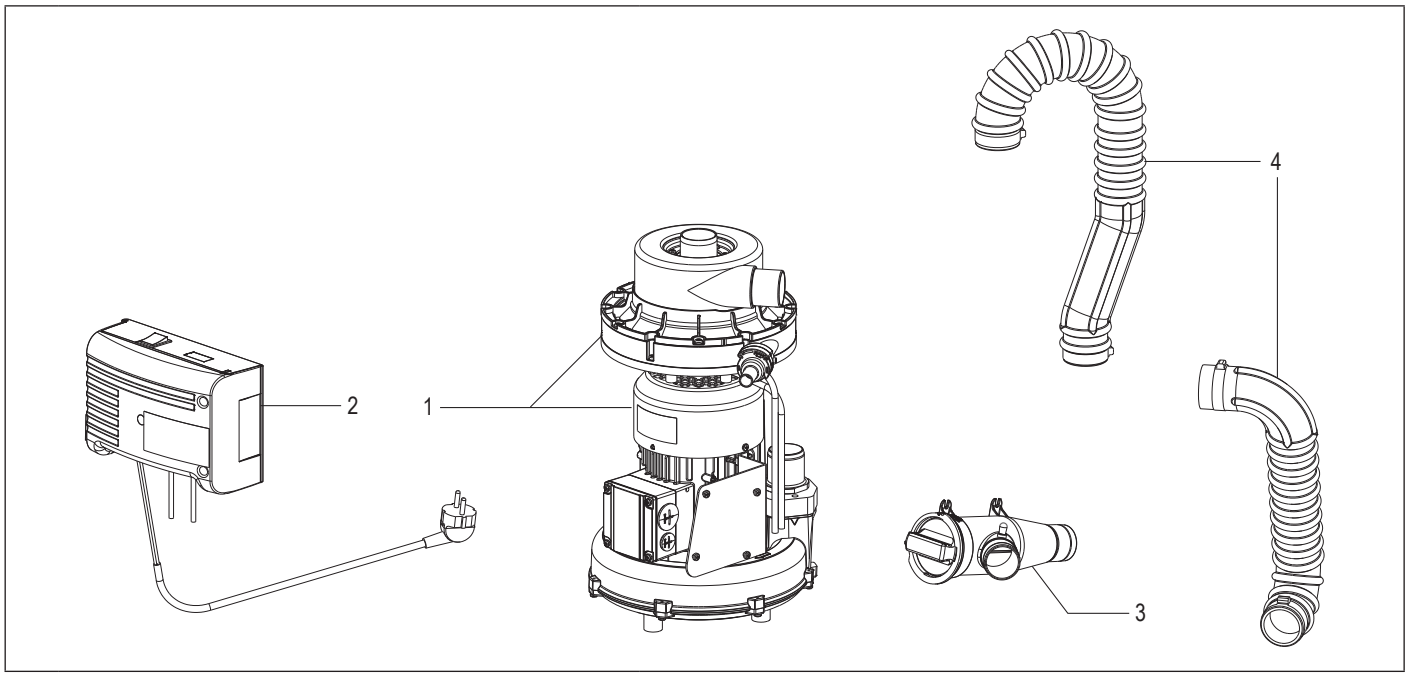


Example picture

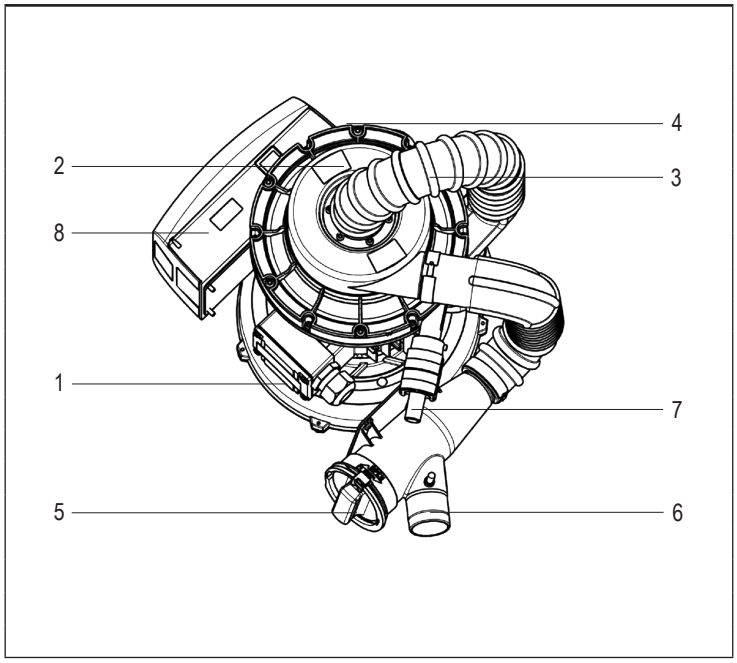
1 Device description
2 Connection data
3 Applied part type B
4 Protective earthing
5 Separate collection of electrical/electronic equipment (WEEE)
6 Follow instructions for use
7 Date of manufacture
8 Serial number
9 Manufacturer
10 Item number
11 CE mark
12 Name and address of the authorized representative's registered office in Switzerland
13 UDI marking with standard compliant HIBC data content

4.4. Construction

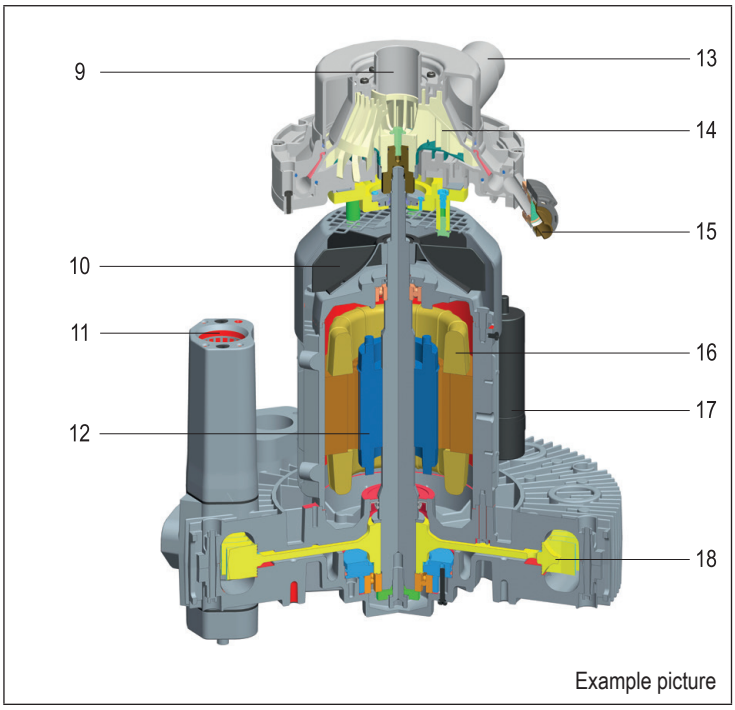
4.4.1. EXCOM hybrid 1s



1	Suction machine and separation unit	The suction machine is a dry-running vacuum generator with side channel pump. The extracted liquids and solids are dynamically separated from the air flow centrally in the separation unit, without interrupting the suction power. An additional separation unit in the dental unit is therefore not necessary.
2	Control unit	The control unit contains all electrical components for controlling and monitoring the suction machine.
3	Pre-filter	Coarse solid particles are retained in the pre-filter
4	Hose connections	

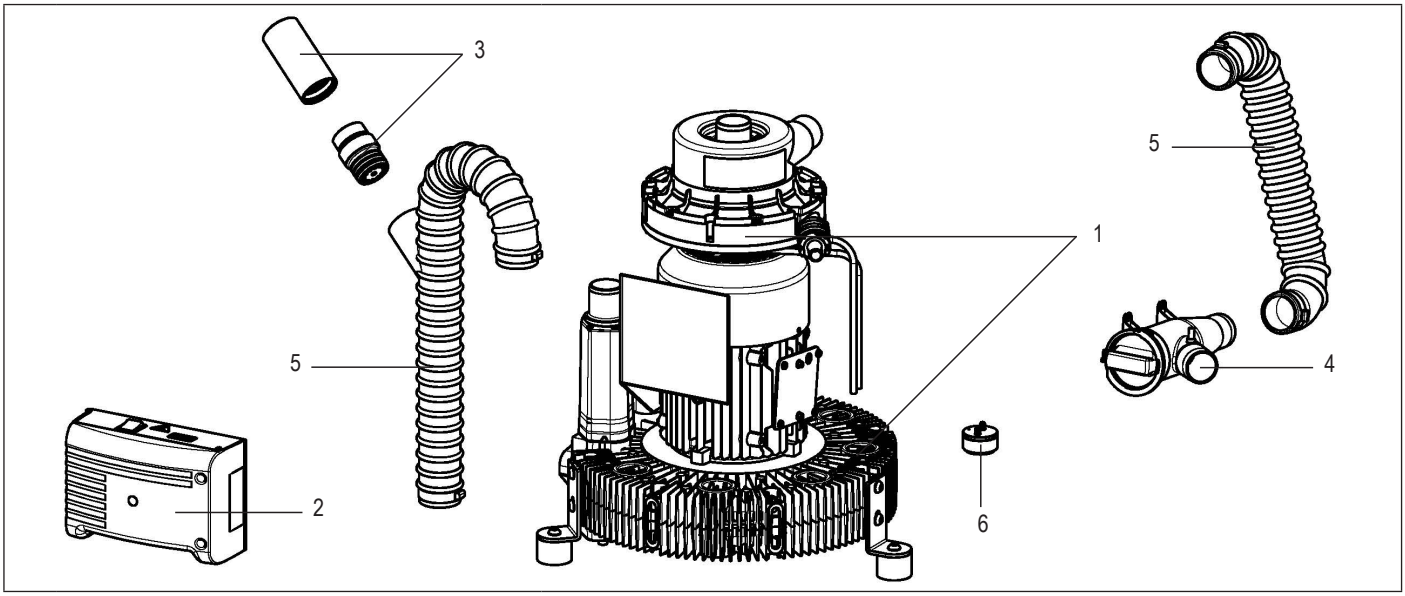


1	Suction machine
2	Separation
3	Air transition
4	Air OUT
5	Filter
6	Suction current
7	Water OUT
8	Control box
9	Outlet separated air
10	Fan wheel
11	Exhaust air
12	Rotor
13	Suction current (water-air mixture)
14	Separation impeller (separation of air & water)
15	Separated water outlet
16	Stator
17	Capacitor
18	Impeller

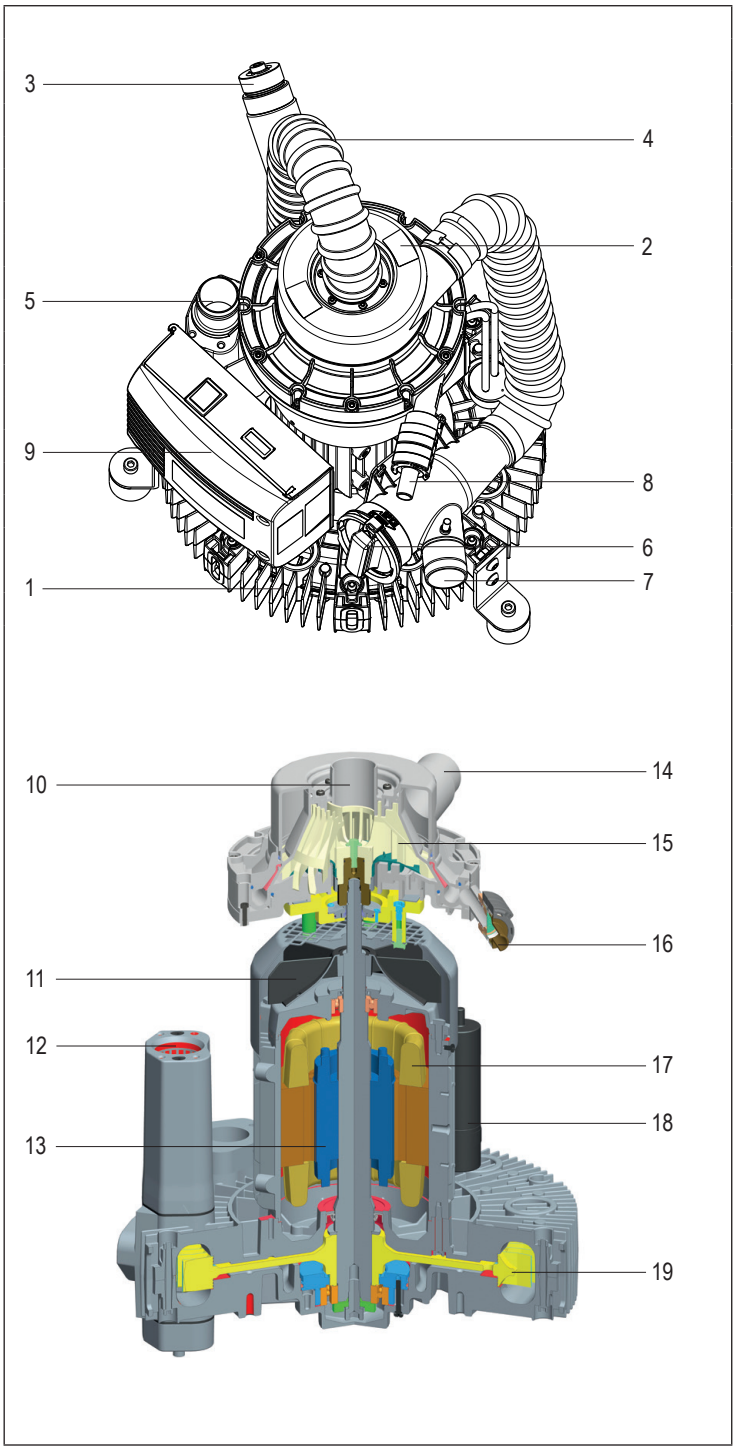


Example picture

4.4.2. EXCOM hybrid 1 / 2

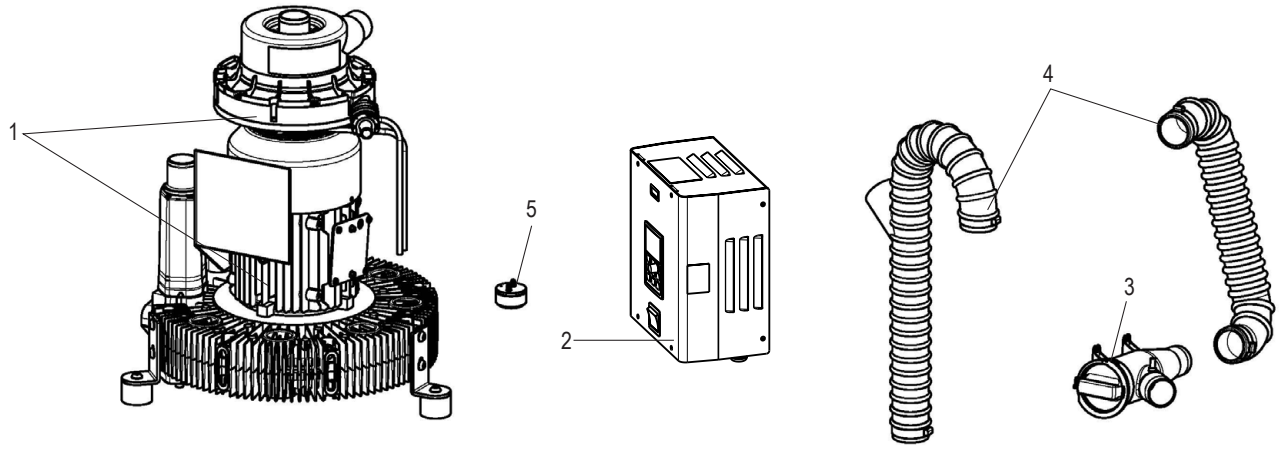


1	Suction machine and separation unit	The suction machine is a dry-running vacuum generator with side channel pump. The extracted liquids and solids are dynamically separated from the air flow centrally in the separation unit, without interrupting the suction power. An additional separation unit in the dental unit is therefore not necessary.
2	Control unit	The control unit contains all electrical components for controlling and monitoring the suction machine.
3	Air inlet valve and silencer	The air inlet valve optimises the under-pressure and protects the suction machine from overheating. The air inlet valve is preset and must not be adjusted. The silencer reduces noise at the air inlet valve.
4	Pre-filter	Coarse solid particles are retained in the pre-filter
5	Hose connections	Hose connections
6	Water collector	The water collector protects the suction machine from water backwater and directs the water to the outside.

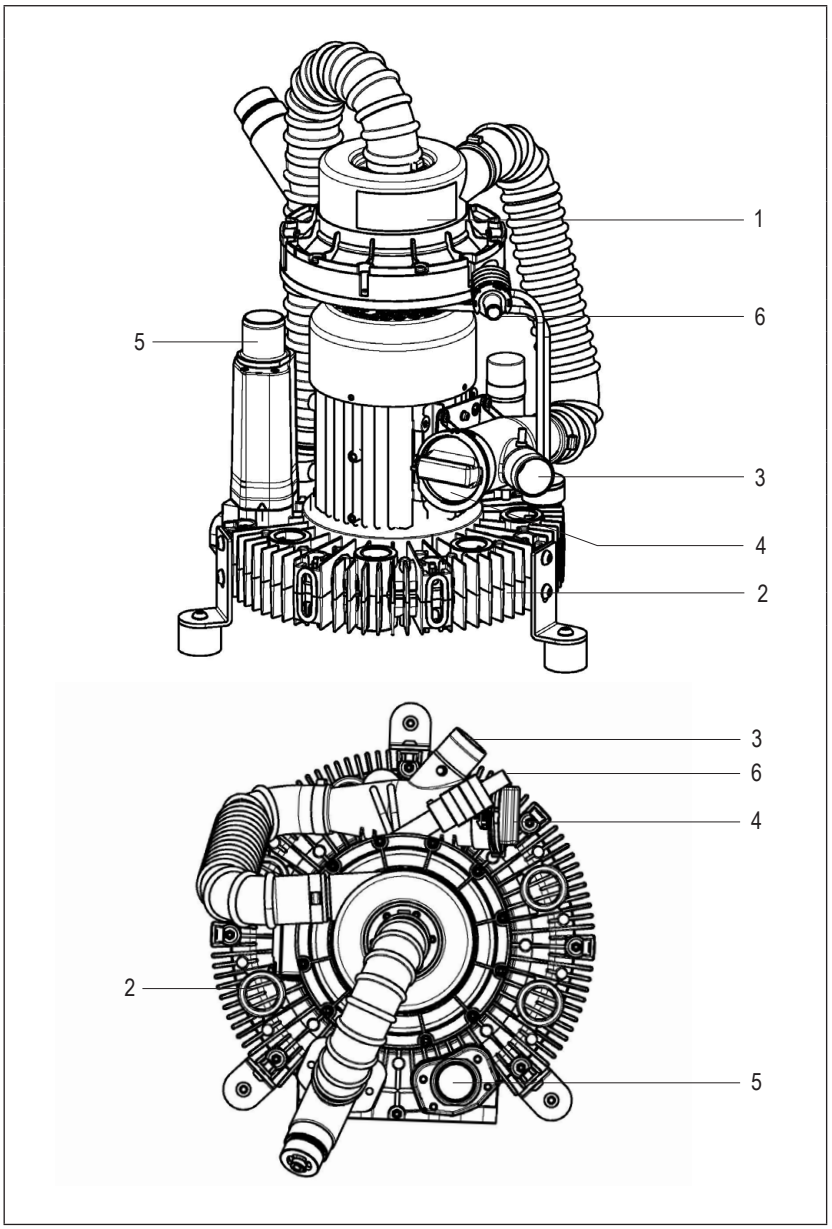


1 Suction machine
2 Separation
3 Air inlet valve
4 Air transition
5 Air OUT
6 Filter
7 Suction current
8 Water OUT
9 Control box
10 Outlet separated air
11 Fan wheel
12 Exhaust air
13 Rotor
14 Suction current (water-air mixture)
15 Separation impeller (separation of air & water)
16 Separated water outlet
17 Stator
18 Capacitor
19 Impeller

4.4.3. EXCOM hybrid 5



1	Suction machine and separation unit	The suction machine is a dry-running vacuum generator with side channel pump. The extracted liquids and solids are dynamically separated from the air flow centrally in the separation unit, without interrupting the suction power. An additional separation unit in the dental unit is therefore not necessary.
2	Control unit	The control unit contains all electrical components for controlling and monitoring the suction machine.
3	Pre-filter	Coarse solid particles are retained in the pre-filter
4	Hose connections	
5	Water collector	The water collector protects the suction machine from water backwater and directs the water to the outside.



1 Separation
2 Suction machine
3 Suction current
4 Filter
5 Exhaust air
6 Separated water outlet

4.5. Functional description

The suction process starts when a suction hose is lifted at the hose tray of the treatment unit. After the negative pressure has built up, the place selection valve (not included in the scope of delivery) of the corresponding treatment place opens. The waste water from the rinsing basin flows through the inlet valve into the suction line, which also starts the EXCOM hybrid central suction system.

The mixture of liquid, solids and air sucked in by the treatment unit enters the separation unit through the suction air connection and the pre-filter. This mixture is accelerated in a circle by the rapidly rotating vanes. In the process, the liquid and solid components are ejected, while the air passes through the wing axles into the suction machine via the hose line with the air inlet valve.

The dry air is led from the exhaust air connection via the germ filter (optionally available) to the outside.

The factory-set run-on time of the dynamic water/air separation and the suction machine is approx. 60 seconds, although this can be extended depending on the installation situation.

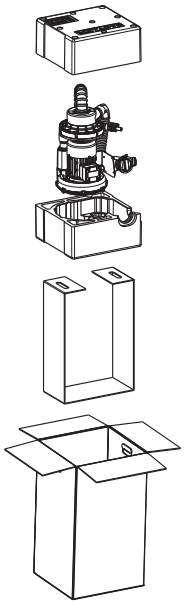
The centrifuged liquids and solid particles smaller than the mesh of the prefilter are either led into the normal sewage system via the water outlet and the drainage connection or directed into an amalgam separator (ECO II or ECO II Tandem).

5. Preparation for use

5.1. Transport and storage

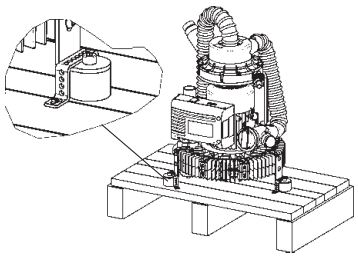
EXCOM hybrid 1s:

The device is shipped in a box. The suction machine is fixed in this box using EPS half shells and can be removed from the box via a cardboard strap.

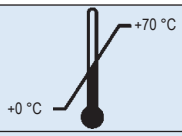


EXCOM hybrid 1 | 2 | 5:

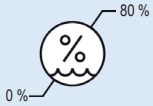
The device is shipped in a cardboard box on a disposable pallet.



For any onward and return transports, the original packaging must be used and stored accordingly. The device must always be transported and stored in an upright position. The device must be transported to the installation site in a fully packed state, only then remove the transport lock and lift the unit from the pallet. After unpacking the device, check for completeness and possible transport damage.

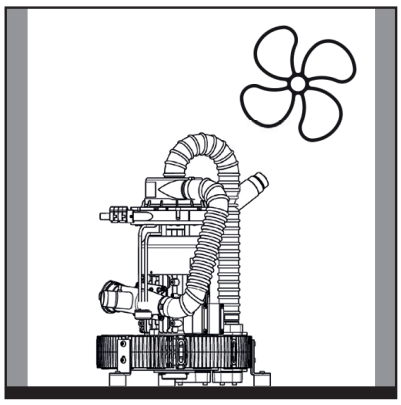


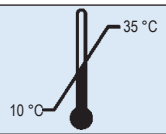
Transport and storage temperature



Transport and storage humidity limitation

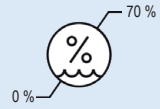
5.2. Installation requirements





Operating temperature: 10°C to 35 °C

Attention: For room temperatures above +35° C, an additional ventilation system must be installed in the installation room!



Humidity limit max. 70 %

Max. 3,000 m above sea level

> Only set up in dry, adequately ventilated rooms (recommendation: air-conditioned rooms) - see 5.3.2. Calculation of heat output
> the device can be installed in a technical room on the same floor as the treatment unit or one floor below it
> To avoid vibrations, place the appliance only on a firm surface
> for the hose routing on the connection side, a wall clearance of min. 150 mm must be maintained
> the front of the device must be freely accessible

For devices with cover (optionally available):

> Do not cover or put weight on the device or the cover!
> Maintain a minimum clearance of 5 cm around the entire devices
> for sufficient air circulation as well as easy removal of the cover, a minimum distance at the height of the device must be maintained upwards

Attention:

The main switch must not be switched off during the suction process!

Do not lift the unit by the separation unit!

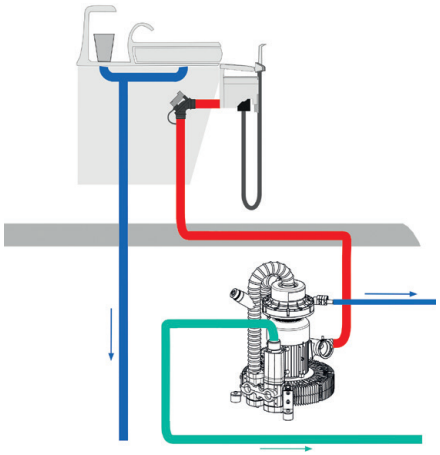
Danger:

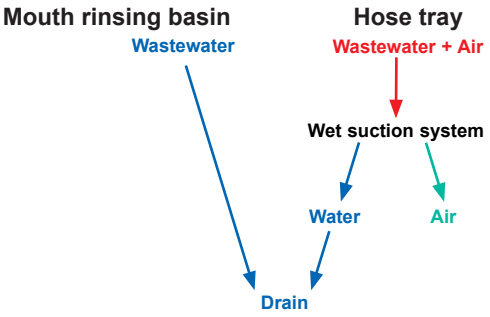
Use in explosive or flammable locations is prohibited!

5.2.1. Assembly variants

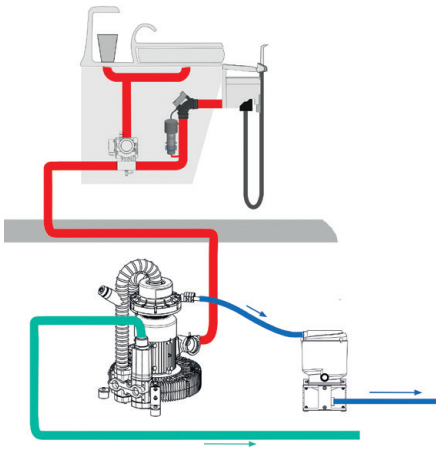
Wet suction

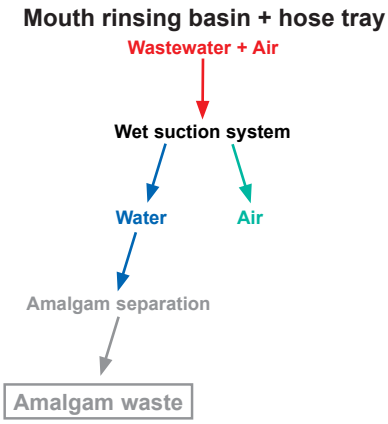
without amalgam separation



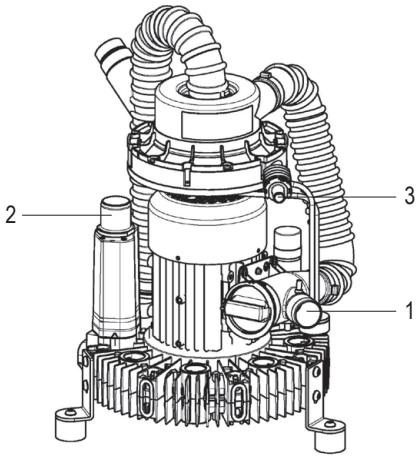


with amalgam separation





5.2.2. Pipe and hose connections



Example picture

1	**Air inlet Ø**
2	**Exhaust air Ø**
3	**Drain Ø**

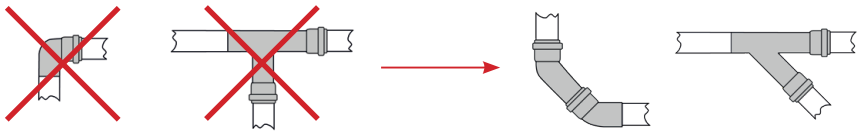
	Suction hose length	1	2	3
EXCOM hybrid 1s	< 5 m	40 mm	≥ 40 mm	15 mm
	> 5 m	40 mm	≥ 50 mm	15 mm
EXCOM hybrid 1	< 5 m	40 mm	≥ 40 mm	15 mm
	> 5 m	40 mm	≥ 50 mm	15 mm
EXCOM hybrid 2	< 5 m	40 mm	≥40 mm	15 mm
	> 5 m	40 mm	≥70 mm	15 mm
EXCOM hybrid 5	< 5 m	40 mm	≥50 mm	15 mm
	> 5 m	40 mm	≥70-100 mm	15 mm

Requirements for hose and pipeline assemblies and connections:

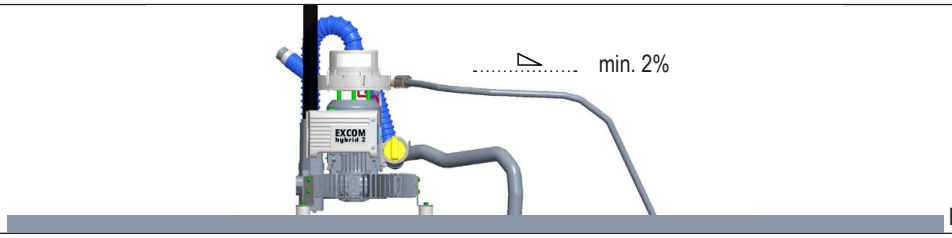
Warning:

All hose connections must be secured with hose clamps!

> Use only vacuum-tight pipe material (e.g. HT drainage pipes made of PP, PVC-C, PVC-U, PEHD) that is resistant to all chemicals commonly used in dental practice
> Use flexible spiral hoses made of PVC or equivalent material
> Make hoses and pipelines as short as possible: The suction line should not exceed a maximum length of 25 m!
> Recommended pipe cross-section of 40 mm to minimise suction losses
> Avoid 90° bends (recommendation: 2 x 45° bends)



> Drain pipes are to be designed in accordance with the respective national law or DIN 1986, Parts 1 & 2.
> The wastewater must be able to flow freely and without backwater.
> The drain pipes must have a gradient of at least 2 %.

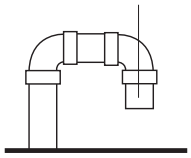
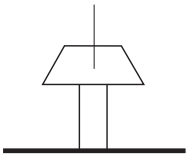
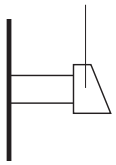


Example picture

Attention:

In case of water leakage at the water collector, all connections, especially the water drainage channel, are to be checked

> For hygienic reasons and due to possible noise pollution, we recommend fitting the exhaust air connection with a germ filter.
> The Ø connection for the exhaust air must be greater than or equal to the Ø connection of the suction line.
> The exhaust air connection must be guided outdoors. Precautions must be taken (such as protective covers for the exhaust air shaft) to protect the device or the device room from rain or condensation water and other weather influences and to prevent animals from entering.

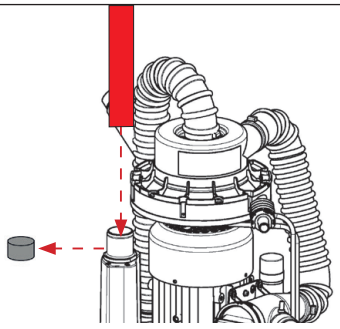
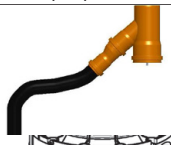
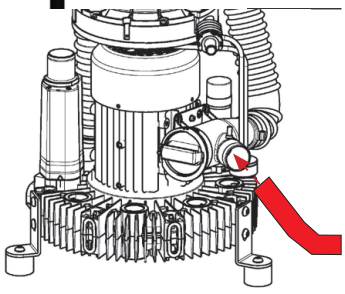
Roof mounting		Wall mounting
Protective grille	Protective plate and grille	Protective plate and grille
		

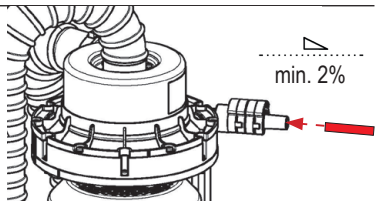
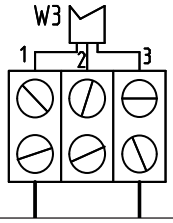
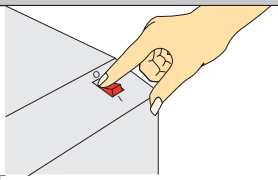
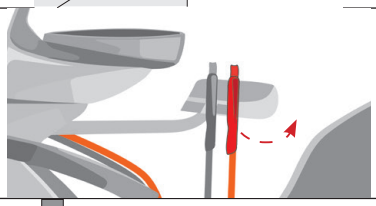
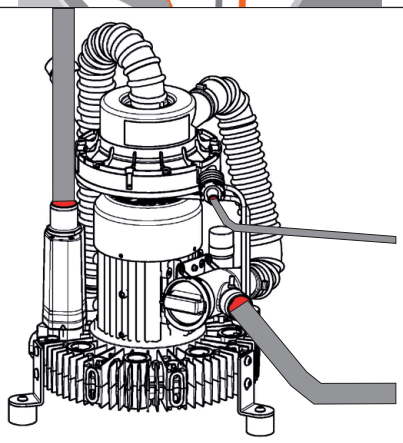
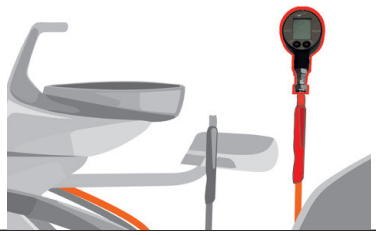
Warning:

Only heat-resistant (≥ 130 °C) hose and pipe materials may be used for the exhaust air connections!

5.3. Installation, assembly and commissioning

Installation

1	Read the instructions carefully before installation and commissioning!	
	Meet spatial requirements	see 5.2. Installation requirements
2	Remove the foam plug from the exhaust air connection Connect high temperature hose, exhaust air connection	 Example picture
3	Possible installation of a condensation water outlet (exhaust air side)	
4	Connection of the suction line, air inlet	 Example picture

5	Connection of the water outlet from the separation into the drain pipe or to the amalgam separator - min. 2% slope	 Example picture
6	Connect contacts 1 and 3 to the dental unit	
7	Connect the device (except EXCOM hybrid 5) to the power supply according to EN 60601-1 (comply with all country-specific standards and safety requirements!)	see 5.4. Electronics
8	Inform the dentist about product function, operation, care and warranty conditions.	
Commissioning		
9	For devices without control box: Switch on practice main switch For devices with control box: Switch on the practice and device main switches	
10	Remove the suction hose from the hose tray of the treatment unit	
11	Check that all hose connections and suction line connections are leak-tight	 Example picture
12	Measure the vacuum at the suction line with a vacuum gauge (min. 120 mbar - max. 180 mbar)	

13 Suck off 3 l of water to check the correct functioning of the suction system

5.3.1. Calculation for suction systems

Suction power:

Suction volume (l/min; m3/h)

Vacuum range (mbar; kPa; psi)

Dental equipment: High and medium volume suction systems

The suction system of a dental unit generates an air flow which removes spray mist, liquids and solids from the mouth of the dental patient during dental treatment by suction. To make this possible, a suction volume of at least 250 l/min must be achieved at the large cannula.

Size charts

1 HVE corresponds to 2 SE

	HVE	=	High volume evacuator / large cannula, ~300 l/min each
	SVE	=	Low volume evacuator / small cannula, ~150 l/min each
	SE	=	Saliva ejector, ~80 l/min each

	EXCOM hybrid			
	1s	1	2	5
Consumers	HVE SE	HVE SE	HVE SE	HVE SE
Number of consumers (with simultaneous use)	1 + 1	1 + 1	3 + 3	5 + 5
	0 + 2	0 + 3	2 + 5	5 + 7
			1 + 7	2 + 11
			0 + 9	0 + 15

Main / Clinic	2 x EXCOM hybrid		3 x EXCOM hybrid	
	1s	1	2	5
Consumers	HVE SE	HVE SE	HVE SE	HVE SE
Number of consumers (with simultaneous use)	6 + 6	10 + 10	9 + 9	15 + 15
	4 + 10	8 + 14	7 + 13	13 + 19
	2 + 14	6 + 18	5 + 17	11 + 23
	0 + 16	4 + 22	2 + 21	9 +27
		2 + 26	0 + 25	7 + 31
		0 + 30		5 + 35
				0 + 45

Calculation of the suction volume requirement

Number of dental units	 Number x 300 l/min	+	 Number x 150 l/min	+	 Number x 80 l/min	=	Total suction volume requirement
_____ Dental units	_____ l/min	+	_____ l/min	+	_____ l/min	=	_____ l/min

Calculation of the required pipe diameter

Max. air flow Qpmax through pipe diameter Ø			
Pipeline Ø		Qpmax (l/min)	
[mm]	[inch]	at v=15 m/s	at v=20 m/s
DN15	½	159	212
DN20	¾	283	377
DN25	1	442	589
DN32	1 ¼	724	965
DN40	1 ½	1.131,00	1.508,00
DN50	2	1.767,00	2.356,00
DN70	2 ¾	3.464,00	4.618,00
DN100	4	7.069,00	9.425,00

Optimum flow velocity (v) in suction lines = between 15 and 20 m/s

5.3.2. Calculation of heat output

EXCOM hybrid 1s

Rough calculation:

EXCOM hybrid 1s output power: *PEh*1 ~ 0,63 kW

Heat output approx. 70% (assumed)

Pges = *PEh*1 * 0,7 = 0,441 kW = 0,4 kW (rounded)

Safety = 0,2 kW

P = *Pges* + Safety = 0,6 kW

Δ = 15°C (assumed) → Permissible increase in room temperature

$\rho L = 1{,}29 \ \frac{kg}{m^3}$ Air density

$cp = 1{,}005 * 10^3 \ \frac{Wsec}{kg°C}$ → Specific heat capacity of the room air

Approximately required air volume → V^1:

$$V^1 = \frac{Pges}{\rho L * cp * \Delta} = \frac{0{,}6 * 10^3}{(1{,}29 * 1{,}005 * 10^3 * 15)} = 0{,}0309 \ \frac{m^3}{s} = 1854 \ \frac{l}{min}$$

EXCOM hybrid 1

Rough calculation:

EXCOM hybrid 1 output power: *PEh*1 approx. 1.1 kW

Heat output approx. 70% (assumed)

Pges = *PEh*1 * 0,7 = 0,77 kW = 0,8 kW (rounded)

Safety = 0,2 kW

P = *Pges* + Safety = 1,0 kW

Δ = 15°C (assumed) → Permissible increase in room temperature

$\rho L = 1{,}29 \ \frac{kg}{m^3}$ Air tightness

$cp = 1{,}005 * 10^3 \ \frac{Wsec}{kg°C}$ → Specific heat capacity of the room air

Approximately required air volume → V^1:

$$V^1 = \frac{Pges}{\rho L * cp * \Delta} = \frac{1{,}0 * 10^3}{(1{,}29 * 1{,}005 * 10^3 * 15)} = 0{,}051 \ \frac{m^3}{s} = 3060 \ \frac{l}{min}$$

EXCOM hybrid 2

Rough calculation:

EXCOM hybrid 2 output power: *PEh*2 approx. 1.3 kW

Heat output approx. 70% (assumed)

Pges = *PEh*1 * 0,7 = 0,77 kW = 0,8 kW (rounded)

Safety = 0,2 kW

P = *Pges* + Safety = 1,1 kW

Δ = 15°C (assumed) → Permissible increase in room temperature

$\rho L = 1{,}29 \ \frac{kg}{m^3}$ Air density

$cp = 1{,}005 * 10^3 \ \frac{Wsec}{kg°C}$ → Specific heat capacity of the room air

Approximately required air volume → V^1:

$$V^1 = \frac{Pges}{\rho L * cp * \Delta} = \frac{1{,}1 * 10^3}{(1{,}29 * 1{,}005 * 10^3 * 15)} = 0{,}057 \ \frac{m^3}{s} = 3420 \ \frac{l}{min}$$

EXCOM hybrid 5

Rough calculation:

EXCOM hybrid 5 output power: *PEh*5 approx. 1.75 kW

Heat output approx. 70% (assumed)

Pges = *PEh*5 * 0,7 = 1,225 kW = 1,2 kW (rounded)

Safety = 0,2 kW

P = *Pges* + Safety = 1,4 kW

Δ = 15°C (assumed) → Permissible increase in room temperature

$\rho L = 1{,}29 \ \frac{kg}{m^3}$ Air tightness

$cp = 1{,}005 * 10^3 \ \frac{Wsec}{kg°C}$ → Specific heat capacity of the room air

Approximately required air volume → V^1:

$$V^1 = \frac{Pges}{\rho L * cp * \Delta\delta} = \frac{1{,}4 * 10^3}{(1{,}29 * 1{,}005 * 10^3 * 15)} = 0{,}072 \ \frac{m^3}{s} = 4320 \ \frac{l}{min}$$

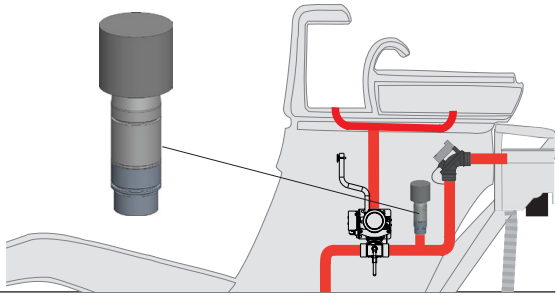
5.3.3. Installation and assembly of optional accessories, retrofit parts and spare parts

Assembly, modifications and repairs may only be carried out exclusively by authorised specialist personnel (see 3.2. Safety instructions)! The METASYS technical customer service is also available for further information and assistance in carrying out repairs, retrofitting, fault analyses, etc.

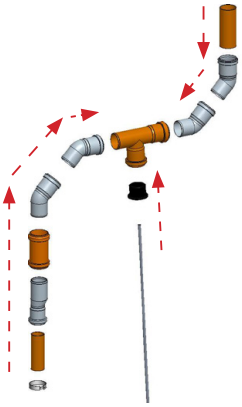
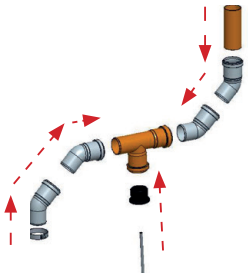
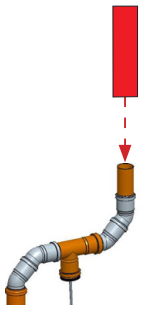
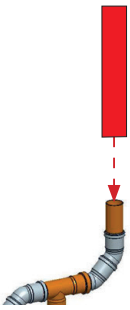
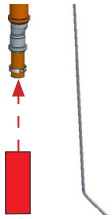
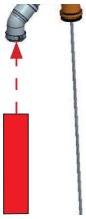
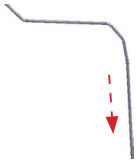
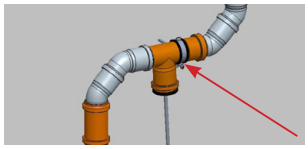
5.3.3.1. Installation of a bypass valve

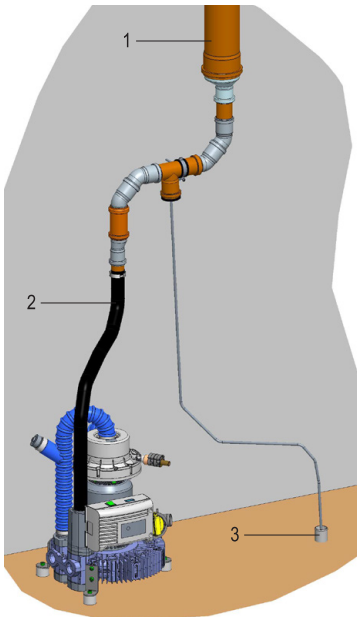
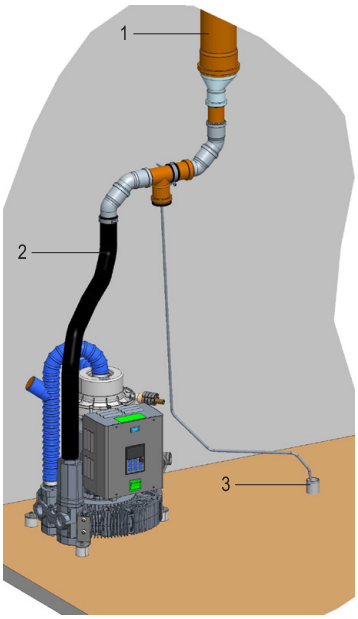
The suction capacity of a suction system can fluctuate due to impaired liquid transport. This problem occurs mainly when the rinsing basin valve is operated without a suction cannula.

In order to optimise the liquid transport, a secondary air valve must be installed in the treatment unit, which ensures an air flow of approx. 100 l/min when the suction unit is in operation. This ensures that the waste water from the rinsing basin is safely transported through the suction line. The bypass valve must be installed in the unit furthest away.

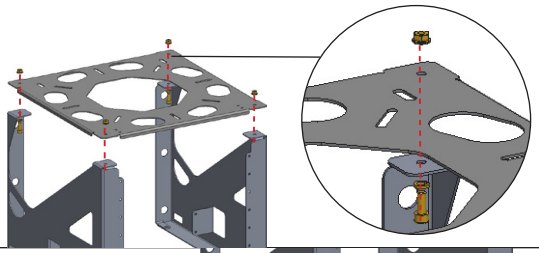
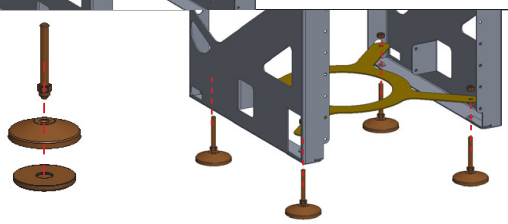
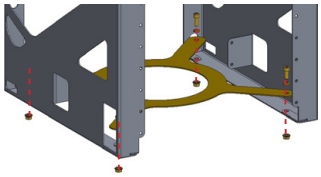
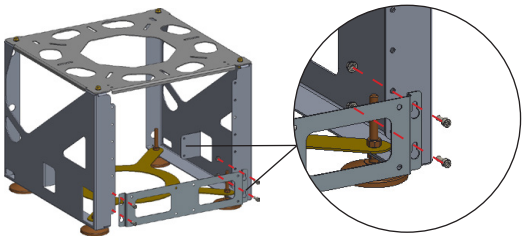
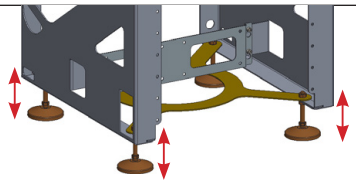


5.3.3.2. Installation of an exhaust air condensate separator (EXCOM hybrid 1/2/5)

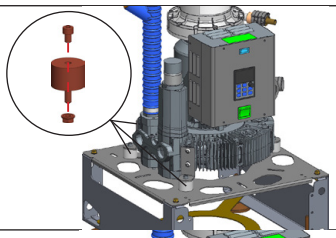
		EXCOM hybrid 1 / 2	EXCOM hybrid 5
1	Put the parts together according to the drawing		
2	Connection of existing exhaust air duct		
3	METASYS exhaust air hose connection EXCOM hybrid 1/2: Ø 40 EXCOM hybrid 5: Ø 50		
4	Drain line connection		
5	Recommendation: Wall mounting of the exhaust air condensate separator (not included in the scope of delivery)		

		EXCOM hybrid 1 / 2	EXCOM hybrid 5
6	Installation overview 1 Existing exhaust air duct 2 Exhaust air hose EXCOM hybrid 1/2: Ø 40 EXCOM hybrid 5: Ø 50 3 Drain		

5.3.3.3. Installation / retrofitting of the floor console (EXCOM hybrid 1/2/5)

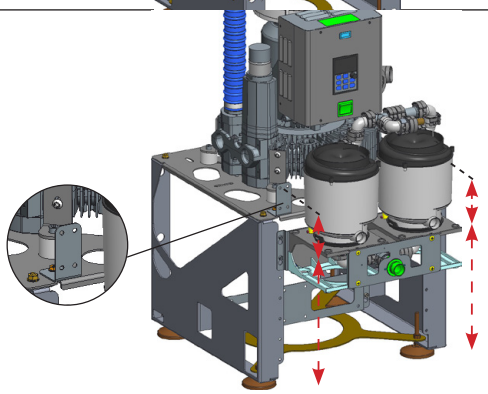
1	Connect the upper mounting sheet to the side sheet parts	
2	For floor bracket: Assemble articulated adjustment feet (4 pieces) Fit the articulated feet and fix the lower stabilisation plate	
	For wall bracket: Fix the lower stabilisation plate	
3	Fix the front stabilisation plate	
4	Floor bracket only: Adjust the height on the joint adjustment feet	

5 Assemble suction machine



If necessary, fit an amalgam separator.

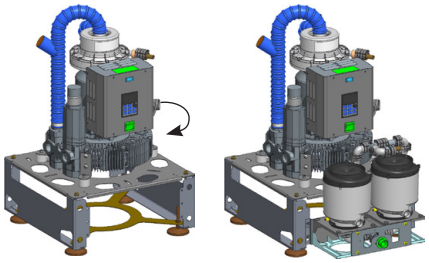
6 Adjustable height of the amalgam separator. Height can be extended using extension brackets.



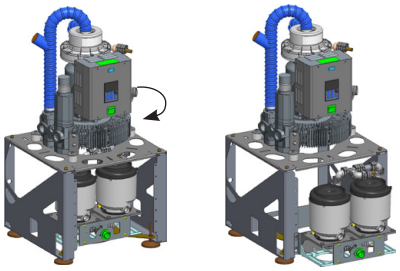
Example picture

Examples for mounting variants

7



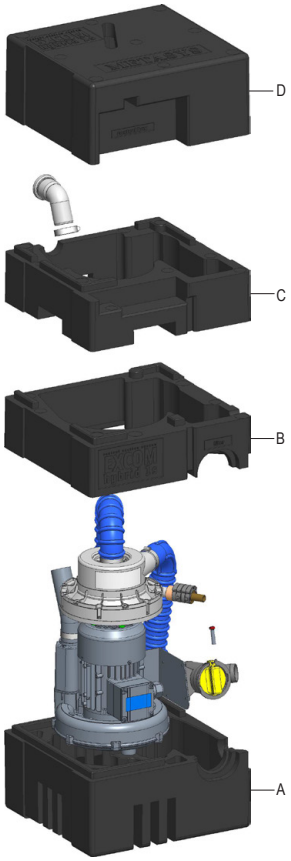
Floor/wall bracket, small - Example picture



Floor/wall bracket, large - Example picture

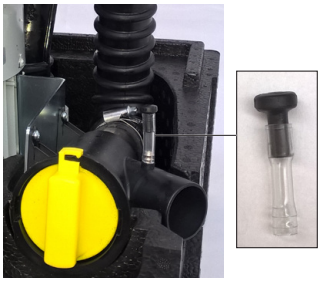
5.3.3.4. Retrofitting of the hood (soundproof housing) (EXCOM hybrid 1s)

Overview of the work steps

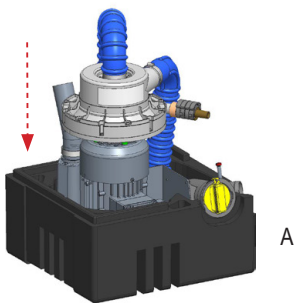


1 Remove sealing cap

2 Fix check valve with hose on prefilter

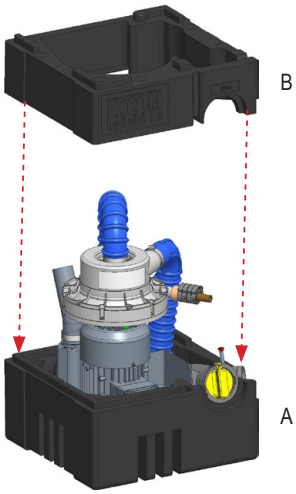


3 Place suction machine in the bottom part (part A) of the hood



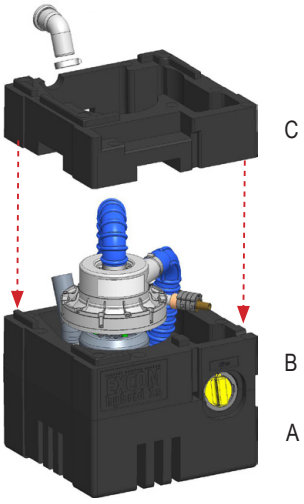
4 Installation exhaust hose: Fix exhaust hose using hose clamp

5 Place part B on part A

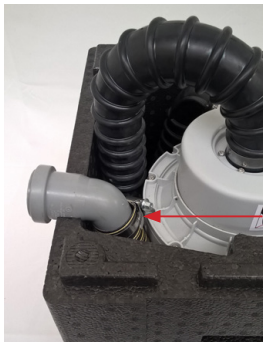


6 Wastewater hose connection: Fix wastewater hose using hose clamp

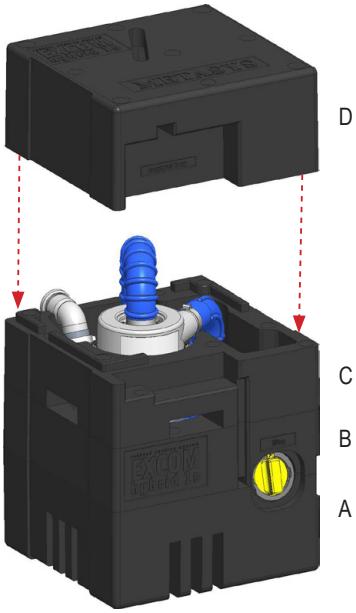
7 Place part C on part B



8 Fix exhaust air connecting nozzle using hose clamp



9 Place part D on part C

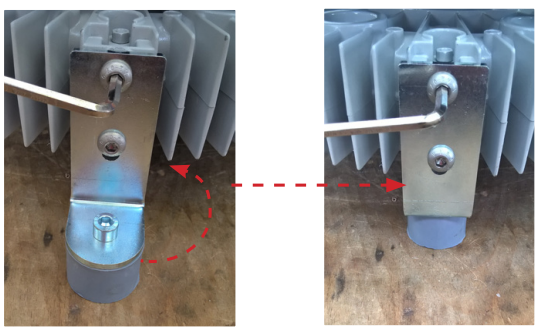


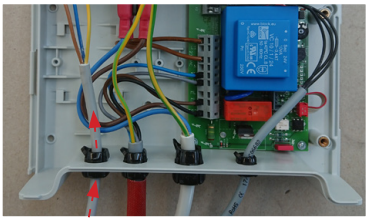
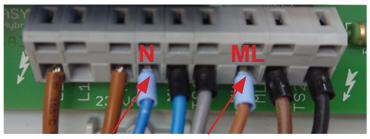
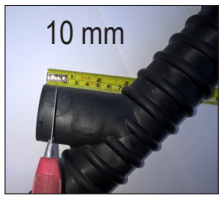
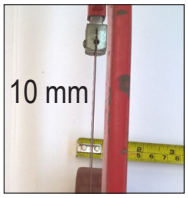
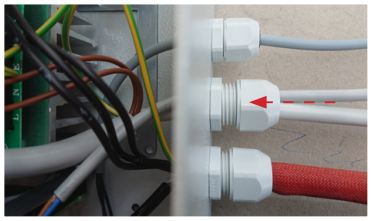
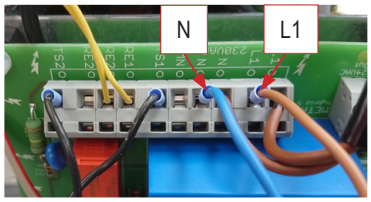
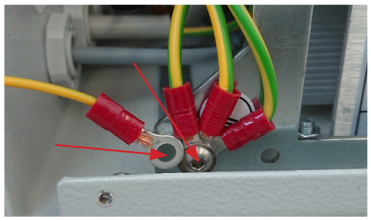
Only with control box:

10 Place connected control box in the recess (see 5.3.1.3 Installation / replacing of the EXCOM hybrid 1s control box).

5.3.3.5. Retrofitting of the hood (soundproof housing) (EXCOM hybrid 1/2/5)

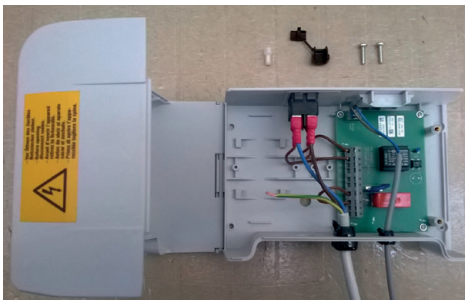
1 Convert the feet according to the picture (3 pieces)



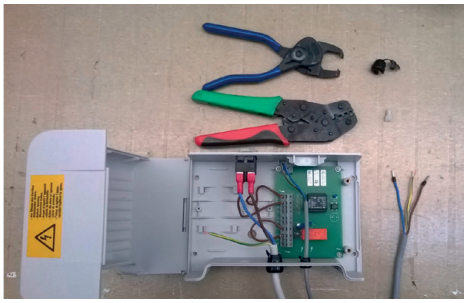
2	EXCOM hybrid 1 | 2	Insert fan control cable into the control box	
		Connect the cable to the circuit board (ML=brown, N=blue)	
		Connect fan earth cable with end connector (yellow/green)	
	EXCOM hybrid 5	Modify the hose	  
		Insert fan control cable into the control box	
		Connect the cable to the circuit board (L1=brown, N=blue)	
		Ground screw (yellow / green)	
3	Connect exhaust hose, drain hose and suction line		

5.3.3.6. Connection of the control box (EXCOM hybrid 1s)

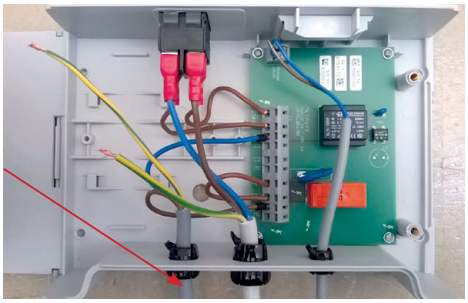
1 Scope of delivery



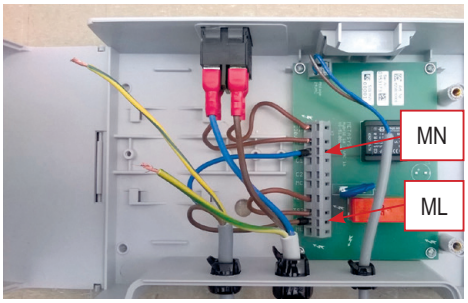
2 Work preparation



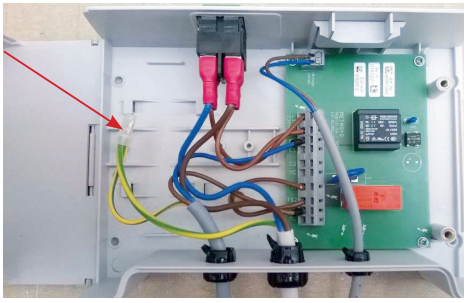
3 Insert motor cable



4 Connect motor cable



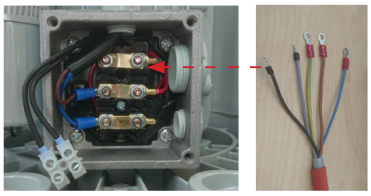
5 Connect protective earth



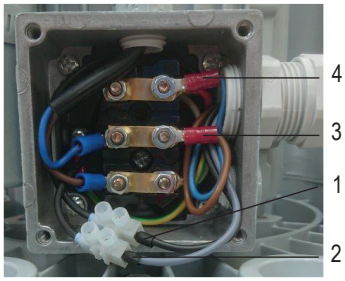
6 Close control box cover, insert screws into the openings and screw in.

5.3.3.7. Connection of the control box

1 Insert motor cable



Connect motor cable:
black cable to 1
2 gray cable to 2
brown wire to 3
blue wire to 4



5.3.4. Connecting to other devices

When connecting the METASYS device to other devices or systems, hazards can arise. It must therefore be ensured that no hazards arise for the user or the patient and that the environment is not affected. The specifications of the manufacturer of the device or system to be connected must be observed.

5.4. Electronics

Attention:

The electrical connection must be made in compliance with the technical regulations for the installation of low-voltage systems in areas used for medical purposes

Danger:

The suction machine must only be connected to the power supply using the mains cable supplied. Do not use extension cables!

Danger:

The motor connection cable must be laid in such a way that it cannot come into contact with hot surfaces

> The mains connection may only be carried out by a qualified electrician. The electrical installation must be carried out in accordance with the applicable local regulations. Before connecting to the mains, compare the rated voltage on the device type plate with the mains voltage.
> Before commissioning, check the mains voltage with the voltage indicated on the type plate.
> When connecting to the mains, make sure that the circuit is equipped with an all-pole disconnector (all-pole switch).
> The suction machines can only be connected to the mains via a fixed cable connection.
> The mains cable may only be replaced by an authorised person in accordance with EN 60601-8.11.3.
> The suction machine is controlled via the controller on the external control box

Circuit protection:

> Circuit breaker 16 A, characteristic C according to EN 60898

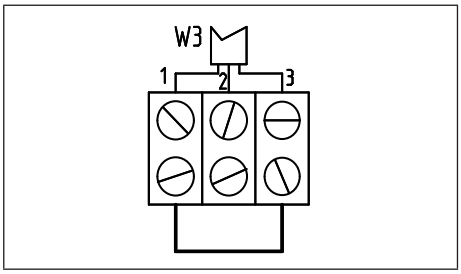
Main switch:

The connection to the mains (230 V) must be made after the practice's main switch. The suction machine is controlled by the electronics located in the switchbox.

The suction machine must be positioned so that the circuit breaker is easily accessible. The switchbox must be easily accessible for switching off the suction machine.

Stacking signal:

The control line for the stacking signal is already connected internally and implemented via a 3-pole cable 3 m in length. Connecting wires 1 and 3 starts the suction system. The control line must be properly connected in a junction box

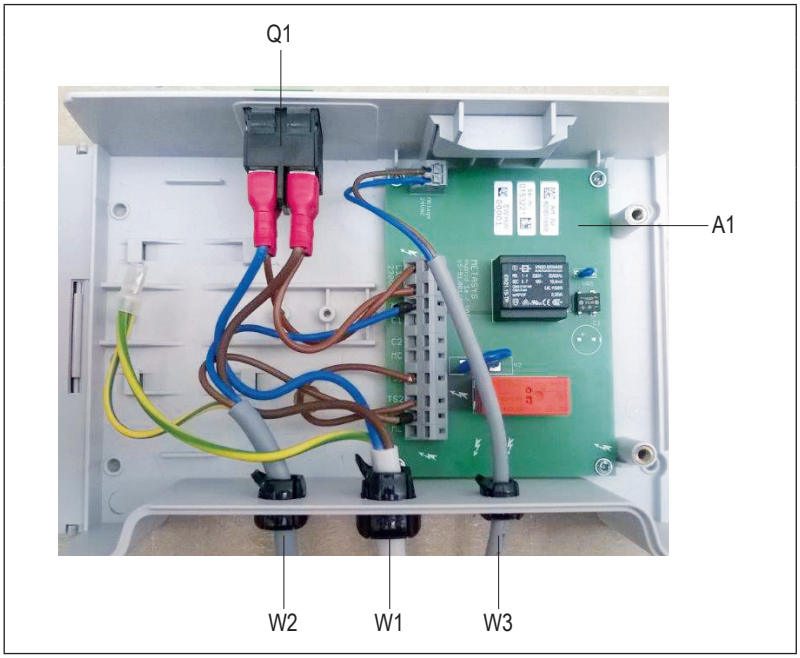


Run-on time:

The run-on time of the suction system is set to approx. 60 seconds in the factory. The run-on time can be regulated via the rotary knob P2 on the circuit board.

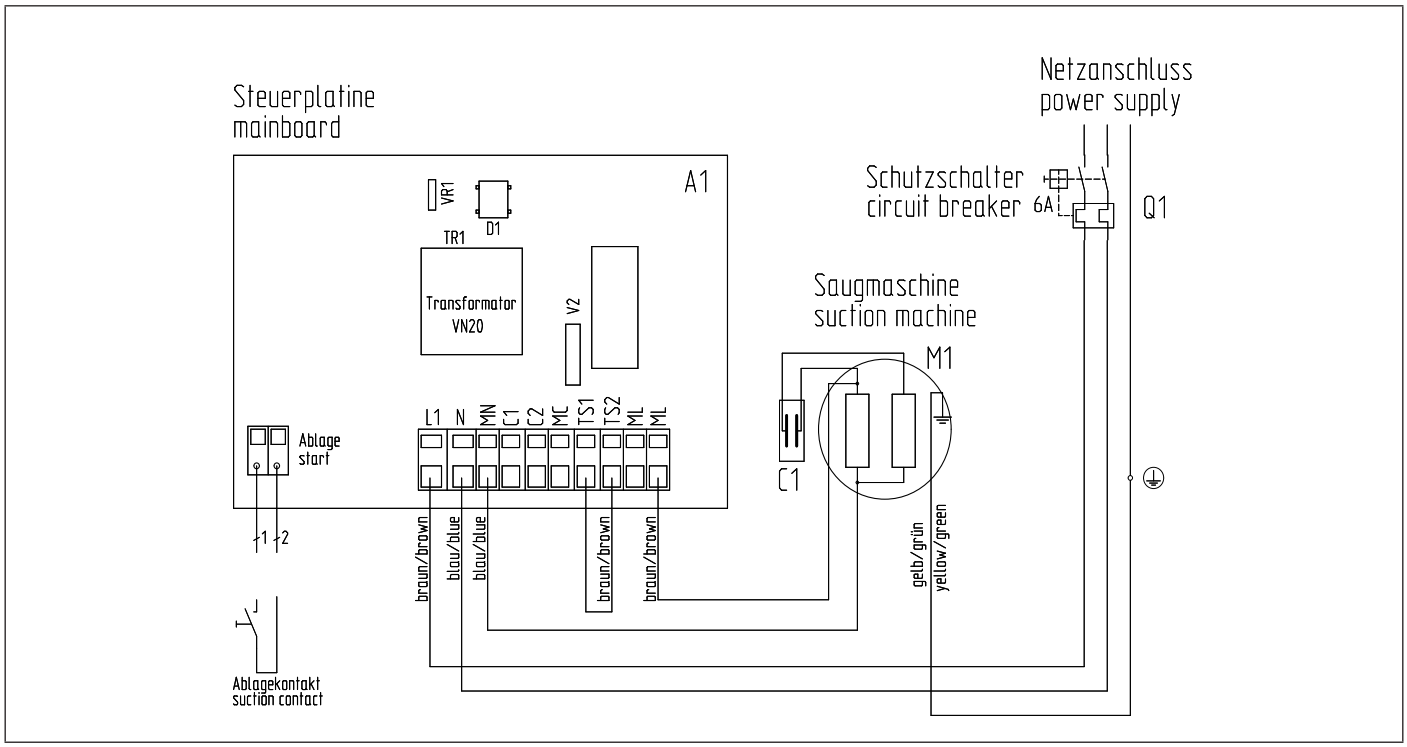
5.4.1. EXCOM hybrid 1s

5.4.1.1. Electrical connections



A1	EXCOM control circuit board
Q1	Device circuit breaker
W1	Suction machine control cable
W2	Mains connection
W3	Stacker contact control cable

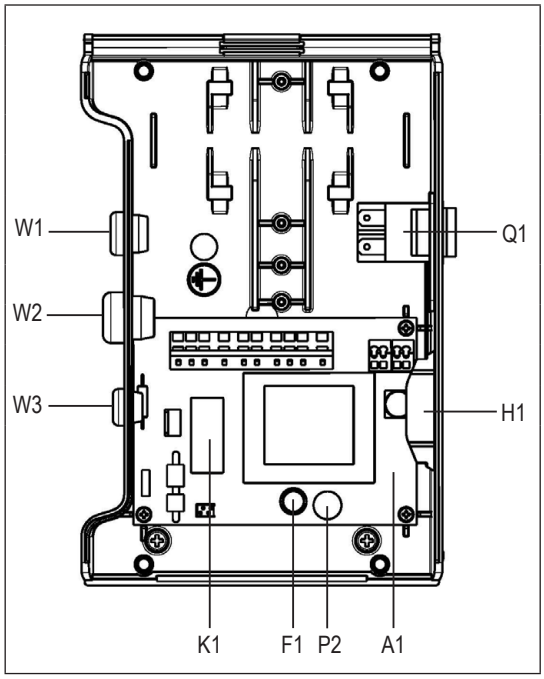
5.4.1.2. Circuit diagram



A1 EXCOM control circuit board
K1 Motor contactor
M1 Suction machine
Q1 Device circuit breaker

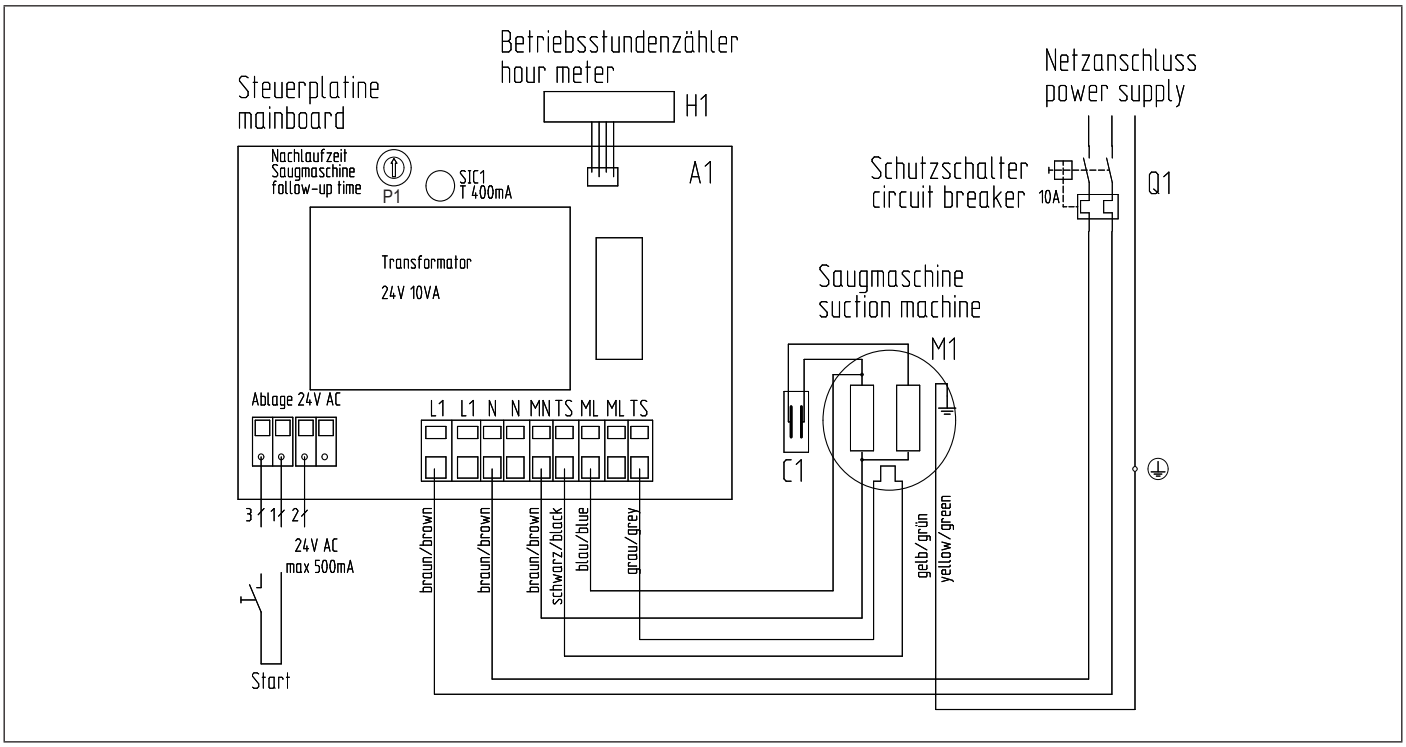
5.4.2. EXCOM hybrid 1 / 2

5.4.2.1. Electrical connections



A1	EXCOM control circuit board
F1	Fuse In = 0.400 A, Un = 250 V, Icu = 35 KA
H1	Operating hours counter
K1	Motor contactor
Q1	Device circuit breaker In = 10 A, Un = 240 V, Icu = 2 KA
W1	Suction machine control cable
W2	Mains connection
W3	Stacker contact control cable
P2	Run-on time

5.4.2.2. Circuit diagram

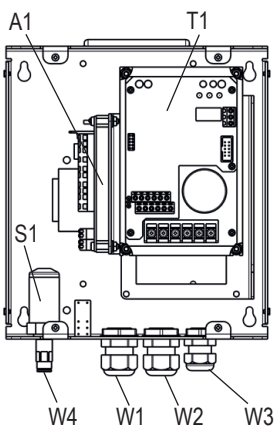


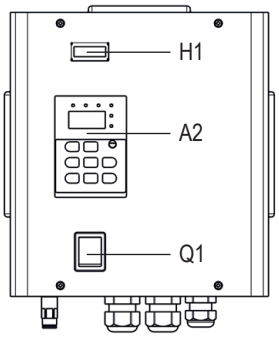
A1	EXCOM control circuit board
C1	Motor capacitor
H1	Operating hours counter
M1	Suction machine
Q1	Device circuit breaker In = 10 A, Un = 240 V, Icu = 2 KA
SIC1	Fuse In = 400 mA, Un = 250 V, Icu = 35 Amp
P1	Run-on time

5.4.3. EXCOM hybrid 5

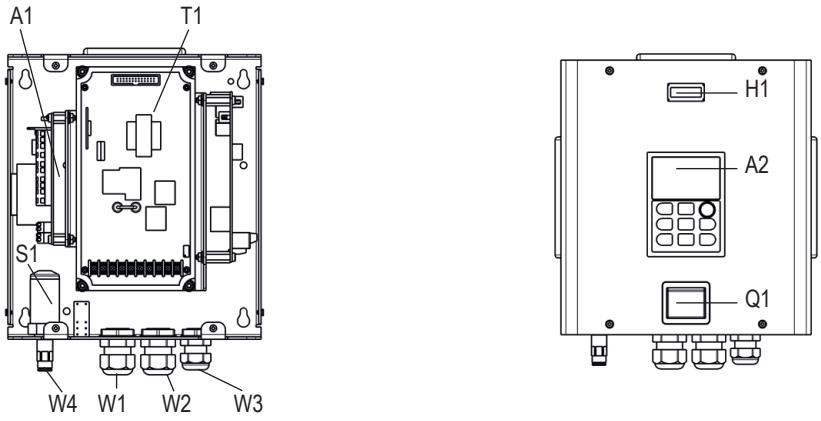
5.4.3.1. Electrical connections

EXCOM hybrid 5 - 230 V





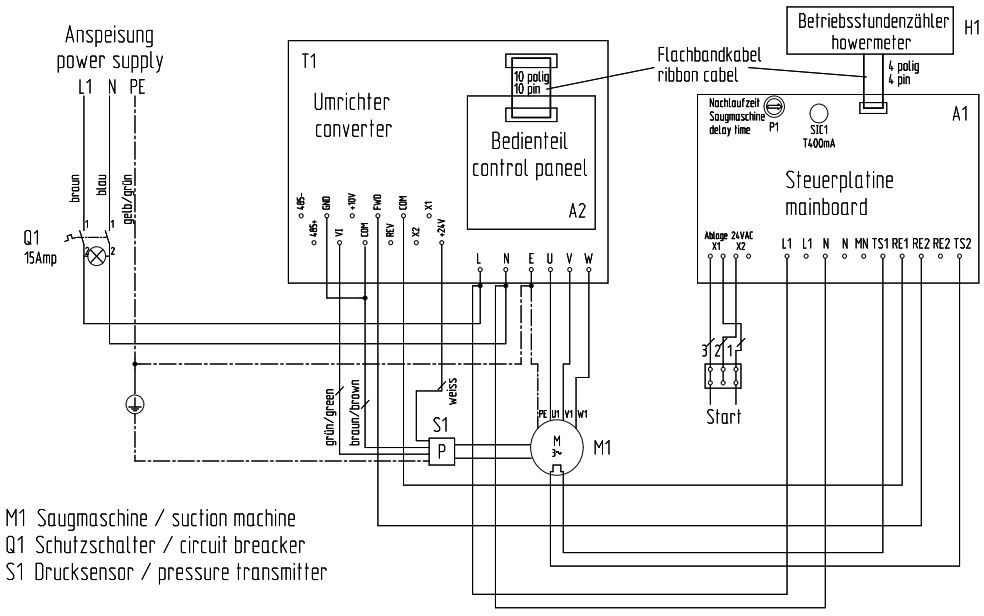
EXCOM hybrid 5 - 400 V



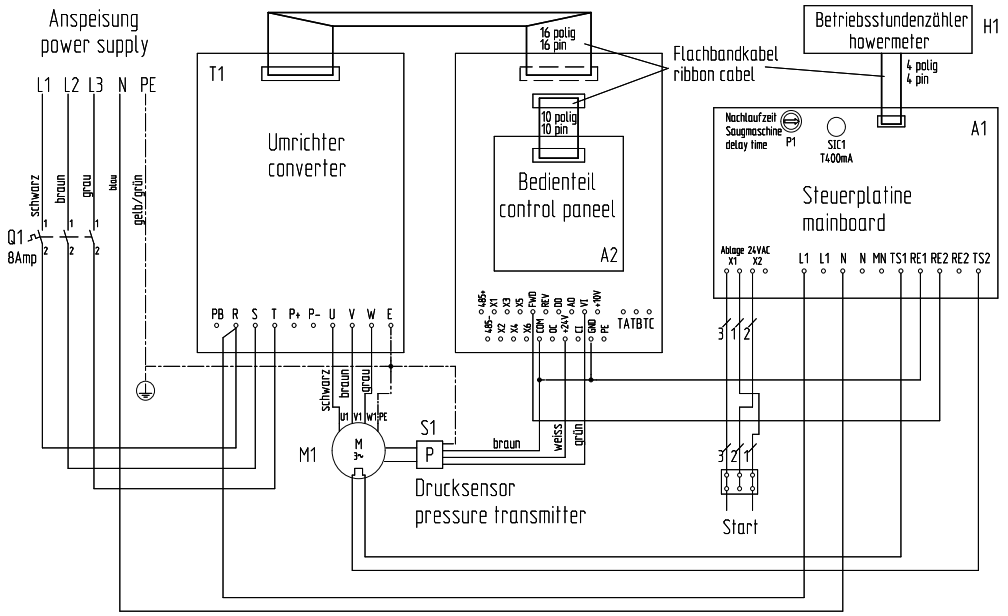
A1	EXCOM control circuit board		
A2	Control panel		
H1	Operating hours counter		
Q1	Device circuit breaker	**230 V**	**400 V**
		In = 15 A	In = 8 A
		Un = 240 V	Un = 415 V
		Icu = 2 KA	Icu = 2 KA
S1	Pressure sensor		
T1	Frequency converter		
W1	Suction machine control cable		
W2	Mains connection		
W3	Stacker contact control cable		
W4	Connection negative pressure		
T1	Frequency converter		

5.4.3.2. Circuit diagram

EXCOM hybrid 5 - 230 V



EXCOM hybrid 5 - 400 V

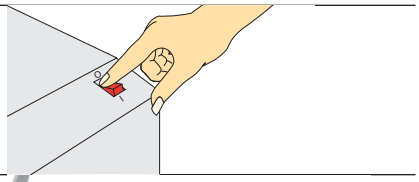


A1	EXCOM control circuit board
H1	Operating hours counter
M1	Suction machine
Q1	Device circuit breaker 230 V: In = 15 A, Un = 240 V, Icu = 2 KA 400 V: In = 8 A, Un = 240 V, Icu = 2 KA
SIC1	Fuse 230 V: In = 0,4 A, Un = 250 V, Icu = 35 Amp 400 V: In = 0,4 A, Un = 250 V, Icu = 35 Amp
S1	Pressure sensor
P1	Run-on time
T1	Frequency converter

6. Use

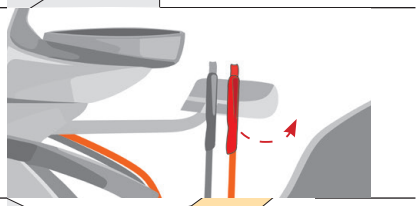
6.1. Normal operation

1 Switch on the practice or unit main switch* at the start of the workday, machine starts automatically.

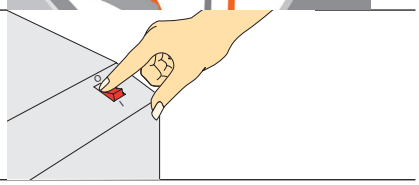


2 Remove the suction hose from the hose tray of the treatment unit to start the suction process automatically.

The suction process stops with a run-on time of 60 seconds as soon as the suction hose is put down again on the hose tray



3 At the end of the working day, switch off the practice or device main switch*



* Depending on the installation situation, the device can be used for daily operation:

> Can be switched on and off directly at the device switch
> Switched on and off at the practice main switch. In this case, the device switch is always on and the power supply is controlled centrally via the practice main switch.
> Be permanently switched on and ready for use. It does not affect the device in any way.

6.2. Error messages

Assembly, modifications and repairs may only be carried out exclusively by authorised specialist personnel (see 3.2. Safety instructions)! The METASYS technical customer service is also available for further information and assistance in carrying out repairs, retrofitting, fault analyses, etc.

Error message	Possible cause	Countermeasures
Device does not start	No mains voltage	Check mains voltage. Check fuses (mains fuse, fuse in the control box or on the circuit board).
	Mains voltage too low	Check the mains voltage, contact an electrician if necessary
	Capacitor defective	Measure capacitor capacitance and replace if necessary
	Start signal (suction contact)	Check and measure start signal (suction contact), establish if necessary
	Thermal protection in motor winding triggers	Measure current; check fine running of motor; allow to cool down - restart
	Separation impeller blocked by solid particles or sticky contamination (e.g. due to unsuitable cleaning agents and disinfectants)	Measure current; check fine running of the motor
Suction power too low	Suction line leaking	Check suction line for leaks and repair/replace if necessary.
	Filter screen clogged at inlet filter	Clean filter sieve
	Air inlet valve misaligned	Contact the METASYS technical support service: customerservice@metasys.com +43 (0)512 205420 - 510

6.2.1. Error messages (EXCOM hybrid 5)

Error code	Error code	Possible error causes
E-01	Start (acceleration) overcurrent	Acceleration time too short
		(V/F) Curve configuration not suitable
		Engine restart when running
		Torque boost configuration too high
		(VFD) Capacitance too low
E-02	Stop (Delay) Overcurrent	Delay time too short
		Potential load or load inertia too great
		(VFD) Capacitance too low
E-03	Overcurrent at constant speed	Load change
		(Acceleration or deceleration) Duration too short
		Input voltage abnormal
		Load abnormal
		(VFD) Capacitance too low
E-04	Transient Inverter (VFD) overload	Transient Inverter (VFD) overload
		Start (acceleration) duration too short
		Engine restart when running
E-05	Stop (delay) overvoltage	(Delay) Duration too short
		Potential load or load inertia too great
E-06	Overvoltage at constant speed	Input voltage abnormal
		(Acceleration or deceleration) Duration too short
		Abnormal change in input voltage
		Load inertia too large
E-07	Overvoltage of power supply for control unit	Input voltage abnormal
E-08	Inverter (VFD) overheating	Obstruction in the air duct
		Ambient temperature too high
		Fan damaged
		(VFD) module abnormal
E-09	Inverter (VFD) overload	(Acceleration) Duration too short
		(DC) Braking value too high
		(V/F) Curve configuration not suitable
		Engine restart when running
		Mains voltage too low
		Load too high
E-10	Motor overload	(V/F) Curve configuration not suitable
		Mains voltage too low
		Main motor runs for a long time at low speed and high load
		Incorrect motor overload protection factor configuration
		Motor stalled or sudden load change
E-11	Undervoltage during operation	Mains voltage too low
E-12	Inverter (VFD) module protection	(VFD) Over Current
		Three-phase current error on output or short to ground
		Air duct obstruction or fan damaged
		Ambient temperature too high
		Connection cable to switch panel or plug-in unit loose
		Current curve abnormal due to missing phase at output etc.
		Auxiliary power supply damaged or undervoltage on input voltage
		Control panel abnormal

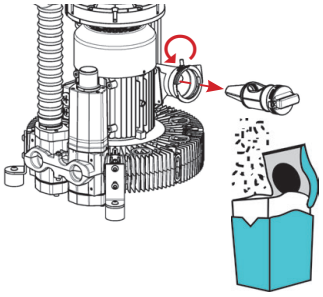
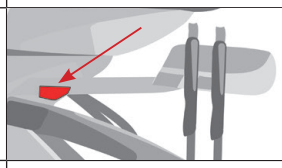
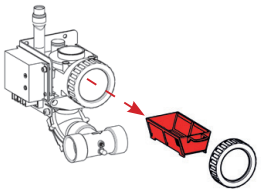
Error code	Error code	Possible error causes
E-13	Peripheral error	Close external fault connections
E-14	Circuit fault detected	Loose wiring or connector connections
		Auxiliary power supply damaged
		Reverb module damaged
		Amplifier circuit abnormal
E-15	RS232/485 communication error	Incorrect baud rate configuration
		Serial interface communication error
		Incorrect error alarm parameter setting
		Upstream computer not working
E-16	System intervention	Shows the actual pressure value
		(DSP) read/write error
E-17	E2PROM error	Control parameters read/write error
E-18	Motor parameters overcurrent error	Motor and VFD power range mismatch
E-19	Input phase loss protection	One of the ports R, S, T has no voltage
E-20	Overcurrent error on restart	Overcurrent on VFD restart and speed control

6.2.2. Malfunctions (EXCOM hybrid 5)

Malfunction	Items to check	Countermeasures
Engine not running	Wiring correct?	Correct the parameters
	Parameters correct?	Correct the parameters
	Overload?	Reduce the load
	Motor damage?	Investigate disruption
	Fault protection triggered?	
Motor runs in wrong direction	U,V,W wiring correct?	Correct the wiring
	Parameters correct?	Correct the wiring
Motor runs, speed cannot be adjusted	Wiring correct for lines with specified frequency?	Correct the wiring
	Running mode set correctly?	Correct the parameters
	Overload?	Decrease the load
Motor speed too high or too low	Motor ratings correct?	Check data on type plate
	Parameters correct?	Correct the parameters
Unstable motor running	Overload?	Decrease the load
	Excessive load change?	Reduce load change
	Phase loss?	Increase capacity
	Motor malfunction?	Correct the wiring
Power supply tripped	Line current too high?	Check the wiring
		Reduce the load
		Check the inverter

7. Care and maintenance

7.1. Regular cleaning measures

Measure	Interval	
Cleaning and disinfection of the suction system	2 x daily	see 7.1.1. Daily cleaning with GREEN&CLEAN M2
Empty pre-filter	At least 1 x per week, depending on workload, emptying may also be necessary daily	Remove and empty the filter sieve. Collect the residues containing amalgam from the filter drawer in a suitable container. 
Empty and clean the filter of the hose tray or the suction line	1 x weekly	
Empty the filter of the spittoon drain or valve	At least 1 x per week, depending on workload, emptying may also be necessary daily	Remove, empty and clean the filter drawer. Collect the residues containing amalgam from the filter drawer in a suitable container. 

7.1.1. Daily cleaning with GREEN&CLEAN M2

2 x daily (noon/evening) and after surgical interventions, disinfection must be carried out with the prescribed disinfectant and cleaning agent GREEN&CLEAN M2.

Ideally, GREEN&CLEAN M2 should be used prior to the treatment unit remaining at a standstill for extended periods (lunchtime, end of the day or holidays).

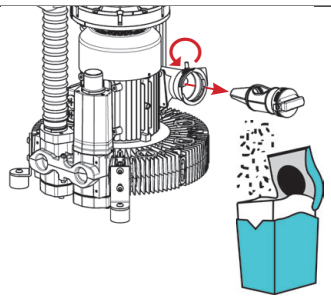
For information on use and safety instructions, see the GREEN&CLEAN M2 instructions for use.

7.1.2. After every treatment

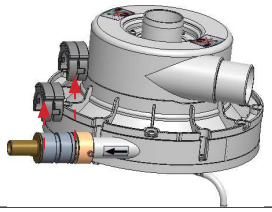
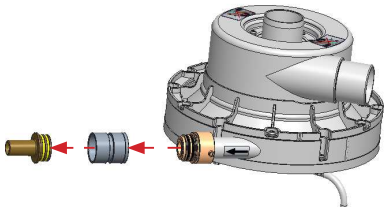
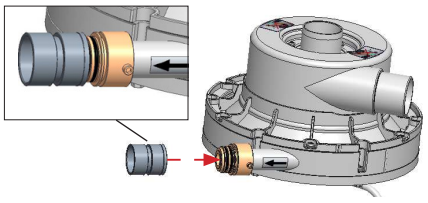
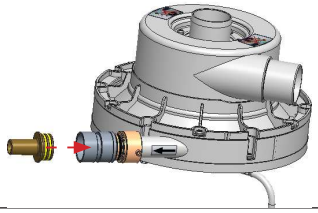
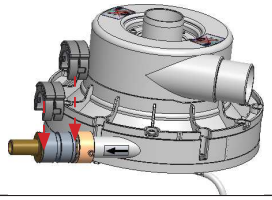
To remove residues from the lines and the suction system, the rinsing basin must be operated briefly after each treatment and each suction hose must be flushed with cold water.

7.2. Maintenance and service

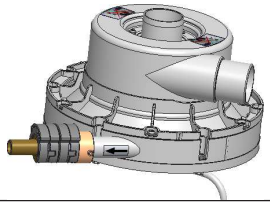
	Assembly, modifications and repairs may only be carried out exclusively by authorised specialist personnel (see 3.2. Safety instructions)! For further information and assistance in carrying out repairs, retrofitting, fault analyses, etc., the METASYS technical customer service is also available!
	**Warning:** Risk of contamination: To avoid infection, wear personal protective equipment (hand, eye, nose and mouth protection) and disinfect and clean the device!
	**Warning:** Switch off the main switch of the treatment unit!

Measure	Interval	
Replace exhaust air germ filter	1 x monthly (can be installed optionally)	
Replace pre-filter	if necessary	
1-year service (EXCOM hybrid 1/2/5 only)	1 x monthly	see 7.2.1. 1-year service
Service for separation unit (EXCOM hybrid 1/2/5 only)	if necessary	see 7.2.2. Service for separation unit

7.2.1. 1-year service (EXCOM hybrid 1/2/5 only)

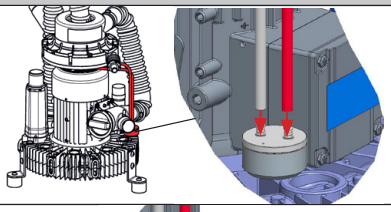
Connecting the connection adapter	
1 Remove the safety clips.	
2 Pull off the connection adapter and the insertion sleeve.	
3 Attach the new connection adapter (observe the marking!).	
4 Reconnect the insertion sleeve.	
5 Secure with safety clips.	

6 Check connections for tightness.

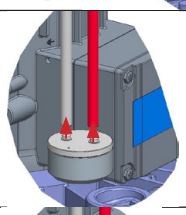


Replace the water collector

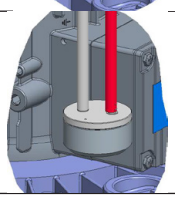
1 Pull the water collector off the hoses.



2 Connect the new water collector to the hoses.



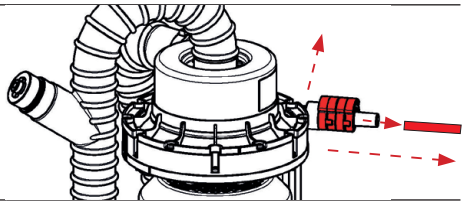
3 Check for leaks.



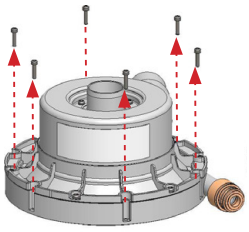
7.2.2. Service kit for the separation unit (EXCOM hybrid 1/2/5 only)

Warning:
Switch off the main switch of the treatment unit!

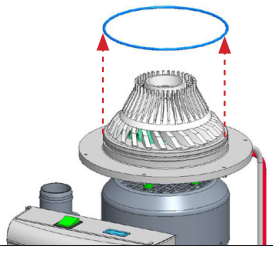
1 Remove the wastewater hose, the safety clip and the hose connection at the water outlet



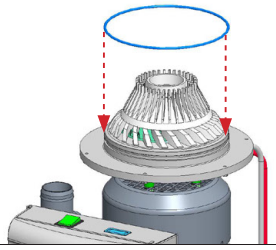
2 Unscrew the separation unit from the device



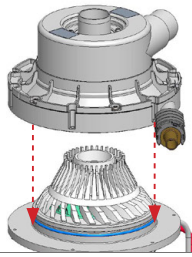
3 Remove the O-ring from the suction machine



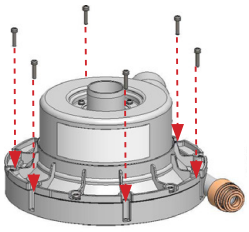
4 Grease the new O-ring with Vaseline and place it on the suction machine



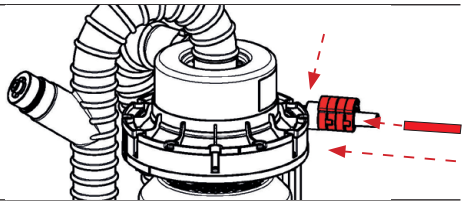
5 Position the separation unit on the device



6 Insert the screws into the holes and tighten them to a torque of 2 Nm



7 Reconnect the hose connection at the water outlet, secure it with the safety clip and reconnect the wastewater hose.



8. Negative pressure - frequency control (EXCOM hybrid 5 only)

A2	Control panel
H1	Hour meter
Q1	Device circuit breaker

Frequency control display

After switching on for the first time, the display 1 first shows y-H and after 1 second the display shows 50.00

This display flashes continuously at standstill. If the first start command (start signal from the dental unit) is successful, the display jumps to 0.00 and then always shows the current frequency of the motor. This value is always between 30.00 and 70.00.

The EXCOM hybrid 5 is factory-set to a negative line pressure of -180 mbar (corresponds to a parameter of 0.350). The negative pressure is reduced via the parameter P7.05 by pressing the down arrow key after the key lock (parameter P3.01) has been removed.

Parameter / negative pressure table:

Value [-]		Negative pressure [mbar]
0.350	≙	-180
0.330	≙	-170
0.310	≙	-160
0.290	≙	-150

Attention:
The parameter value must not be entered higher than 0.350!

Enter the parameter using the up arrow / down arrow keys (when the device is stopped):

1 factor of 1

2 factor of 10

3 factor of 100

Attention:

If the arrow key is pressed longer (approx. 1 second), the value jumps to the factor of 10 or 100 and counts down. An exact setting can be achieved by pressing the arrow key several times.

Query of the performance data

The performance data is queried via the 2x arrow to the right buttons.

Code	IST (=ACTUAL) value + MAX value 230 V / 400 V	Designation	Description	Unit - Steps 230 V / 400 V
b-00	30.00 - 70.00	Output frequency	Actual output frequency	0.01 Hz
b-01	30.00 - 70.00	Required frequency	Actually set frequency	0.01 Hz
b-02	0-230 / 0-400	Output voltage	Effective value of the output voltage	1 V
b-03	0-7.5 / 0-4.5	Output current	Effective value of the output current	0.1 A
b-04	0-390 / 0-780	Intermediate circuit voltage	Shows the value of the inter-mediate circuit voltage	1 V
b-05	- / 0	Module temperature	IGBT heatsink temperature	- / 1 C°
b-06	0000-4100	Engine speed	Actual engine speed	1 r/min
b-07		Not relevant	Not relevant	-
b-08		Not occupied	Not occupied	-
b-09	0-10	Analog input VI	Value analog input VI	0.01 V
b-10		Not relevant	Not relevant	5.33 / 0.00
b-11		Not relevant	Not relevant	-
b-12	7.5 / 4.5	Inverter - rated current	Inverter rated current	0.1 A
b-13	220 / 380	Inverter - Rated Voltage	Inverter rated voltage	1 V
b-14	0.105 / 0.350	Target pressure	Shows the target pressure value	0.105 / 0.350
b-15	0.000-0.500	Actual pressure	Shows the actual pressure value	0.001

By pressing the up arrow / down arrow keys once, the value jumps to b-00. If you press this key again, the value counts up (to b-15).

9. Decommissioning

9.1. Disassembly

Warning:

Remove from power source before disassembly!

Warning:

Risk of contamination: To avoid infection, wear personal protective equipment (hand, eye, nose and mouth protection) and disinfect and clean the device!

If it is necessary to return the device to the depot or to METASYS, the original METASYS packaging must be used. Before packing the METASYS device to be transported, clean and disinfect it. Possible openings where residual fluids could escape must be closed.

9.2. Recycling and disposal

The device may be contaminated! Advise the disposal company of this so that appropriate precautions can be taken. Parts that are contaminated with amalgam, such as sieves, filters, hoses, etc., must also be disposed of in accordance with the national regulations.

Uncontaminated plastic parts of the device can be recycled as normal plastics. The integrated electronic components (including circuit board) are to be disposed of as electronic waste. Metal parts are to be disposed of as scrap metal.

Alternatively, the device can be returned to the manufacturer for proper disposal. Before packing the METASYS device to be transported, clean and disinfect it. Possible openings where residual fluids could escape must be closed. The original METASYS packaging must be used for shipping.

The proof of installation and the device logbook must be kept for 5 years after the device has been disposed of.

10. Annex

10.1. Warranty conditions

METASYS grants a guarantee of 12-36 months for specific products (duration of guarantee depends on the product according to the information in the current price list).

The guarantee covers all material faults that more than negligibly affect the function of the device. The guarantee does not cover damages caused by incorrect or improper handling as well as normal wear. Furthermore, the guarantee does not apply to the replacement of the amalgam collection container or to fragile parts such as glass, plastic, hoses, filters, condensate filters or membranes. Any incurred working and travel times are excluded from the warranty.

In order to determine the validity of the guarantee, the installation proof accompanying the device must be returned to METASYS immediately after proper assembly has taken place. In this case the warranty period begins with commissioning. In the event of installation without returning the installation proof to METASYS, any warranty claim is forfeited. Installation and return of installation proof must be completed within 24 months from the date of sale from METASYS.

Furthermore, any warranty claims of the customer expire if only one of the following circumstances arises, regardless of whether the circumstances arise for the customer of METASYS or a later owner or operator:

> Improper installation, operation, maintenance or transport of the device. If METASYS parts have to be returned, the original METASYS packaging must be used for shipping. Prior to packaging and shipping, the METASYS device must be cleaned and disinfected. Any openings where residual fluids could leak must be closed.
> Installation and return of installation proof have not been completed in the aforementioned 24 months.
> Failure to send the Installation Proof to METASYS.
> Installation and use of non-original METASYS parts.
> Installation of the device by personnel who are neither trained nor authorized by METASYS.
> Occurrence of damages through improper handling and operation or use of unapproved cleaning and/or disinfecting material, as well as non-compliance with the instructions for use.
> Execution of repairs by unauthorised repair shops or unathorised personel.
> Failure to comply with the prescribed maintenance intervals. Maintenance must be carried out 11-12 / 23-24 / 35-36 months after installation of the respective METASYS item.
> Missing entries in the Equipment Logbook regarding the installation as well as prescribed servicing by technicians trained by METASYS.
> Failure to take reasonable immediate measures to avoid further damages in the event of a malfunction.
> Shipping of devices or components to METASYS without proper accompanying paperwork, in particular without error description or invoice for the purchase of the device.
> Failure to provide visual images (photos, video clips ...) of the METASYS item complained about, as well as of its installation situation and ambient conditions.

METASYS reserves the right to demand the documentation supplied with the device to check the maintenance intervals for the assertion of warranty claims. The processing of warranty claims takes place exclusively according to the following method:

In the event of malfunctions, the device must be opened by an authorized technician, the relevant component taken out and sent to METASYS unopened and cleaned. The customer sends the device or component in question to METASYS at his own expense. METASYS checks whether there is a warranty claim. METASYS will repair the device or component if it is cost-effective. The customer is charged for the costs incurred for the repair, but not the replacement parts covered by the guarantee. The consignment of the device or component to METASYS always represents a repair order for METASYS. For cost estimates for the repair of returned devices, a processing fee* is charged if the warranty period has expired or no warranty case exists. For products inspections only without any cost estimates a processing fee* can be charged. When sending the device or component to METASYS, an error description with all importation information about the device must always be included. The customer of METASYS may only provide payment in advance after consultation with METASYS. Only the affected component is to be sent in (smallest possible unit). If contaminated, intact parts are sent to METASYS without technical necessity, METASYS is entitled to destroy them without separate payment. The new part corresponding to the part to be destroyed is only delivered after a separate order and invoice. In any case, METASYS has the right to handle the guarantee through credit note or the return of new parts without conducting repairs. Guarantee services do not result in an extension of the warranty period nor do they initiate a new warranty period. The warranty period for installed replacement parts ends with that for the originally delivered device. The METASYS customer is obligated to make his customer aware of the conditions regarding the warranty processing. The statutory warranty rights of the customer remain unaffected.

* The current warranty conditions and fees can be found in the current METASYS price list.

10.2. Order numbers and scope of delivery

Order number	Designation
104000001	EXCOM hybrid 1s, 230 V, 0.55 kW, 120 mbar Suction machine (ready for connection) and instructions for use
104000002	EXCOM hybrid 1s, 230 V, 0.55 kW, 120 mbar, Steuerung with control unit, Suction machine (ready for connection) and instructions for use
104000003	EXCOM hybrid 1s, 230 V, 0.55 kW, 120 mbar, Abdeckung with cover, Suction machine (ready for connection) and instructions for use
104000004	EXCOM hybrid 1s, 230 V, 0.55 kW, Steuerung, Abdeckung with control unit and cover, Suction machine (ready for connection) and instructions for use
104000005	EXCOM hybrid 1, 230 V, 0.94 kW, 180 mbar Suction machine (ready for connection) and instructions for use
104000006	EXCOM hybrid 2, 230 V, 1.1 kW, 180 mbar Suction machine (ready for connection) and instructions for use
104000007	EXCOM hybrid 3, 230 V, 1.3 kW, 180 mbar Suction machine (ready for connection) and instructions for use
104000008	EXCOM hybrid 5, 230 V, 1.5 kW, 180 mbar Suction machine (ready for connection) and instructions for use
104000009	EXCOM hybrid 5, 400 V, 1.5 kW, 180 mbar Suction machine (ready for connection) and instructions for use
104000010	EXCOM hybrid 6, 230 V, 1.8 kW, 230 mbar Suction machine (ready for connection) and instructions for use
104000011	EXCOM hybrid A1, ECO II, 230 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000012	EXCOM hybrid A2, ECO II, 230 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000013	EXCOM hybrid A2 D, ECO II D, 230 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000014	EXCOM hybrid A5, ECO II Tandem, 230 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000015	EXCOM hybrid A5, ECO II Tandem, 400 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000016	EXCOM hybrid A5 D, ECO II Tandem D, 230 V Suction machine with amalgam separator (ready for connection) and instructions for use
104000017	EXCOM hybrid A5 D, ECO II Tandem D, 400 V Suction machine with amalgam separator (ready for connection) and instructions for use

10.2.1. Accessories, service kits, collection containers and spare parts

Spare parts

Order number	Designation
120000442	ET EXCOM hybrid/VAC 1s, control unit UK
120000443	ET EXCOM hybrid/VAC 1s, control unit
120000444	ET EXCOM hybrid/VAC 1s, mounting plate for control unit
120000445	ET EXCOM hybrid/VAC 1s, main board
120000446	ET EXCOM hybrid, water collector
120000447	ET EXCOM hybrid, pre-filter
120000448	ET EXCOM hybrid, control box parallel connection for 3 units
120000449	ET EXCOM hybrid, control box parallel connection for 2 units

Order number	Designation
120000450	ET EXCOM hybrid, fuse T 400 mA, 5 pcs.
120000451	ET EXCOM hybrid, contactor, 400 V
120000452	ET EXCOM hybrid, contactor, 24 V
120000453	ET EXCOM hybrid, hose, separation/condensate separator
120000454	ET EXCOM hybrid, hose, pre-filter separation
120000457	ET EXCOM hybrid, non-return valve suction line
120000458	ET EXCOM hybrid, non-return valve parallel connection
120000459	ET EXCOM hybrid, parallel connection for 3 units
120000460	ET EXCOM hybrid, parallel connection for 2 units
120000461	ET EXCOM hybrid, secondary air valve
120000463	ET EXCOM hybrid, circuit breaker, 3-pole, 8 A
120000464	ET EXCOM hybrid, circuit breaker, 3-pole, 5 A
120000465	ET EXCOM hybrid, circuit breaker, 3-pole, 4 A
120000467	ET EXCOM hybrid, filter sieve
120000468	ET EXCOM hybrid, operating hours counter for control box
120000471	ET EXCOM hybrid, connection water outlet connector
120000472	ET EXCOM hybrid, connection outlet non-return valve
120000473	ET EXCOM hybrid, connection drain hose
120000480	ET EXCOM hybrid 5, capacitor, 40 µF
120000481	ET EXCOM hybrid 5, inspection kit pressure reduct., 230/400 V
120000482	ET EXCOM hybrid 5, impeller, spare parts kit
120000484	ET EXCOM hybrid 5, control unit, 230 V
120000485	ET EXCOM hybrid 5, control unit, 400 V
120000487	ET EXCOM hybrid 5, hose separation
120000488	ET EXCOM hybrid 5, germ filter, Ø 50
120000489	ET EXCOM hybrid 5, main board
120000509	ET EXCOM hybrid 2/5, main switch, 2-pole
120000510	ET EXCOM hybrid 2/5, connection ECO II/Tandem
120000511	ET EXCOM hybrid 2, impeller, spare parts kit
120000512	ET EXCOM hybrid 2, air inlet valve
120000513	ET EXCOM hybrid 2, capacitor, 25 µF
120000514	ET EXCOM hybrid 2, germ filter, Ø 40
120000515	ET EXCOM hybrid 1s/VAC, capacitor, 20 µF
120000516	ET EXCOM hybrid 1s, hose pre-filter separation
120000517	ET EXCOM hybrid 1s, suction system separation hose
120000518	ET EXCOM hybrid 1s, cover/soundproof housing
120000519	ET EXCOM hybrid 1/2/5, floor and wall bracket, small
120000520	ET EXCOM hybrid 1/2/5, floor and wall bracket, large
120000521	ET EXCOM hybrid 1/2/5, cover with fan, white
120000522	ET EXCOM hybrid 1/2, control unit, 230 V
120000523	ET EXCOM hybrid 1/2, hose separation
120000524	ET EXCOM hybrid 1/2, silencer air inlet valve
120000525	ET EXCOM hybrid 1/2, condenser, 30 µF
120000526	ET EXCOM hybrid 1/2, main board
120000528	ET EXCOM hybrid 1, impeller, spare parts kit
120000529	ET EXCOM hybrid 1, air inlet valve
120000530	ET EXCOM hybrid 1, germ filter, Ø 32

Order number	Designation
120000531	ET EXCOM hybrid, pipe silencer, Ø 100, 600 mm
120000610	ET EXCOM hybrid 1/2/5, exhaust air condensate separator

Service kits

Order number	Designation	Scope of delivery
120000527	ET EXCOM hybrid 1/2, annual inspection kit	Water collector with non-return valve, connection adapter for separation, PVC fabric hose
120000490	ET EXCOM hybrid 5, 1-year inspection kit	Water collector with non-return valve, connection adapter for separation, PVC fabric hose
120000469	ET EXCOM hybrid, exchange kit 1/2/5	Separation, adapter, clip, adapter wit ho-ring

Accessories

Order number	Designation
120000282	ET META Connect, connector 15-16 mm, 5 pcs
120000274	ET META Connect, safety clip for connectors
120000109	ET hoses, heat-resistant exhaust air hose Ø32 mm, max 4 m
120000108	ET hoses, heat-resistant exhaust air hose Ø40 mm, max 4 m
120000107	ET hoses, heat-resistant exhaust air hose Ø50 mm, max 4 m
120000142	ET O-ring, NBR, 17x1.5, 10 pcs
120000437	ET circuit breaker, 10 A

Upgrading to ECO II

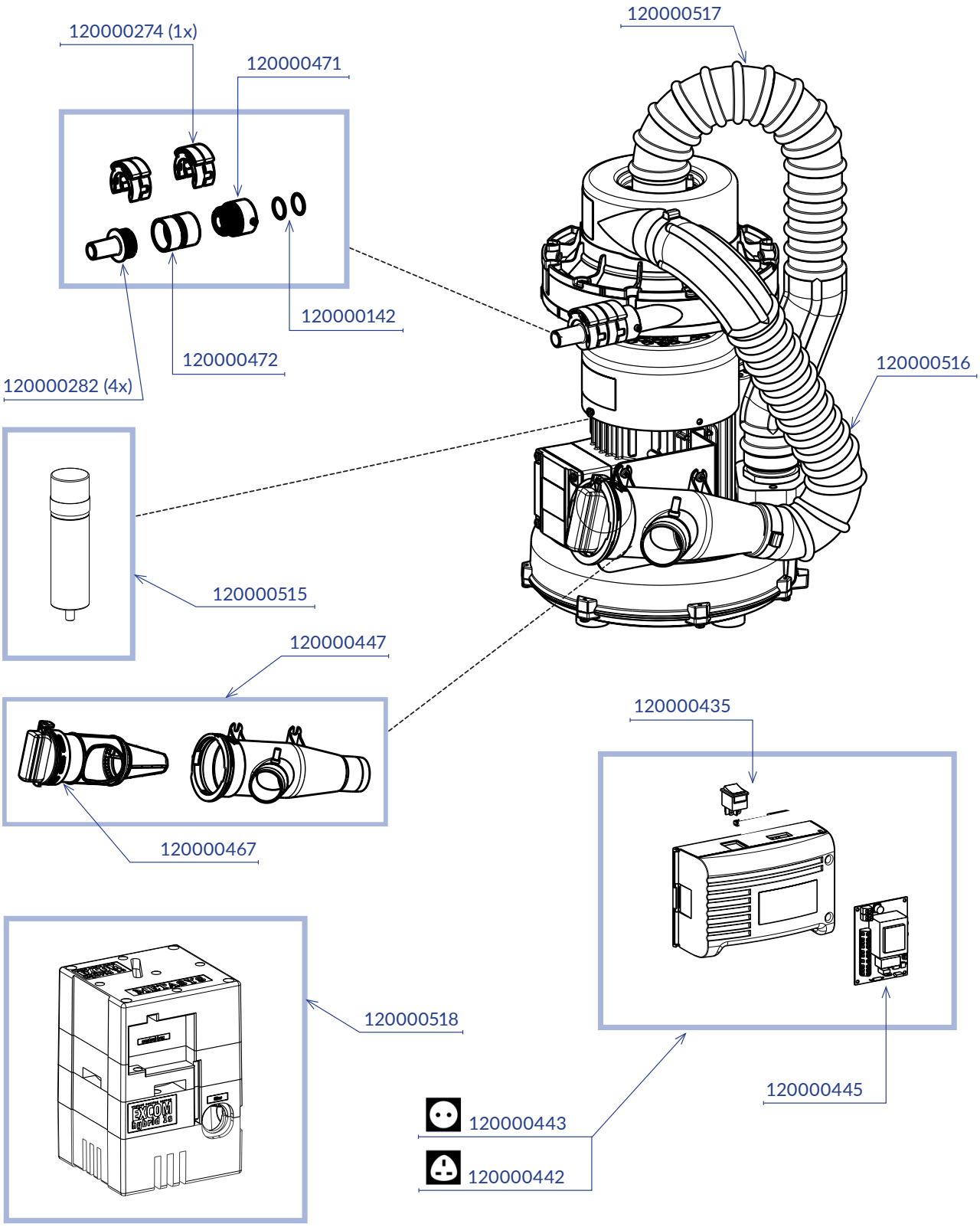
Order number	Designation
101000016	ECO II D, intro kit
101000017	ECO II Tandem D, intro kit
101000015	ECO II International, intro kit
101000018	ECO II Tandem International, intro kit
113000034	EB ECO II, replacement container, international
120000542	ET ECO II D/ECO II Tandem D, expansion tank

Disinfectant

Order number	Designation
122000026	GREEN&CLEAN M2 red/green 500 ml, each 1 bottle, dispenser
122000027	GREEN&CLEAN M2 red/green 500 ml, each 2 bottles
122000028	GREEN&CLEAN M2 red/green 500 ml, each 1 bottle
122000030	GREEN&CLEAN M2 green 500 ml, 25 bottles
122000031	GREEN&CLEAN M2 red 500 ml, 25 bottles
121000009	AH GREEN&CLEAN, M2, dosing dispenser

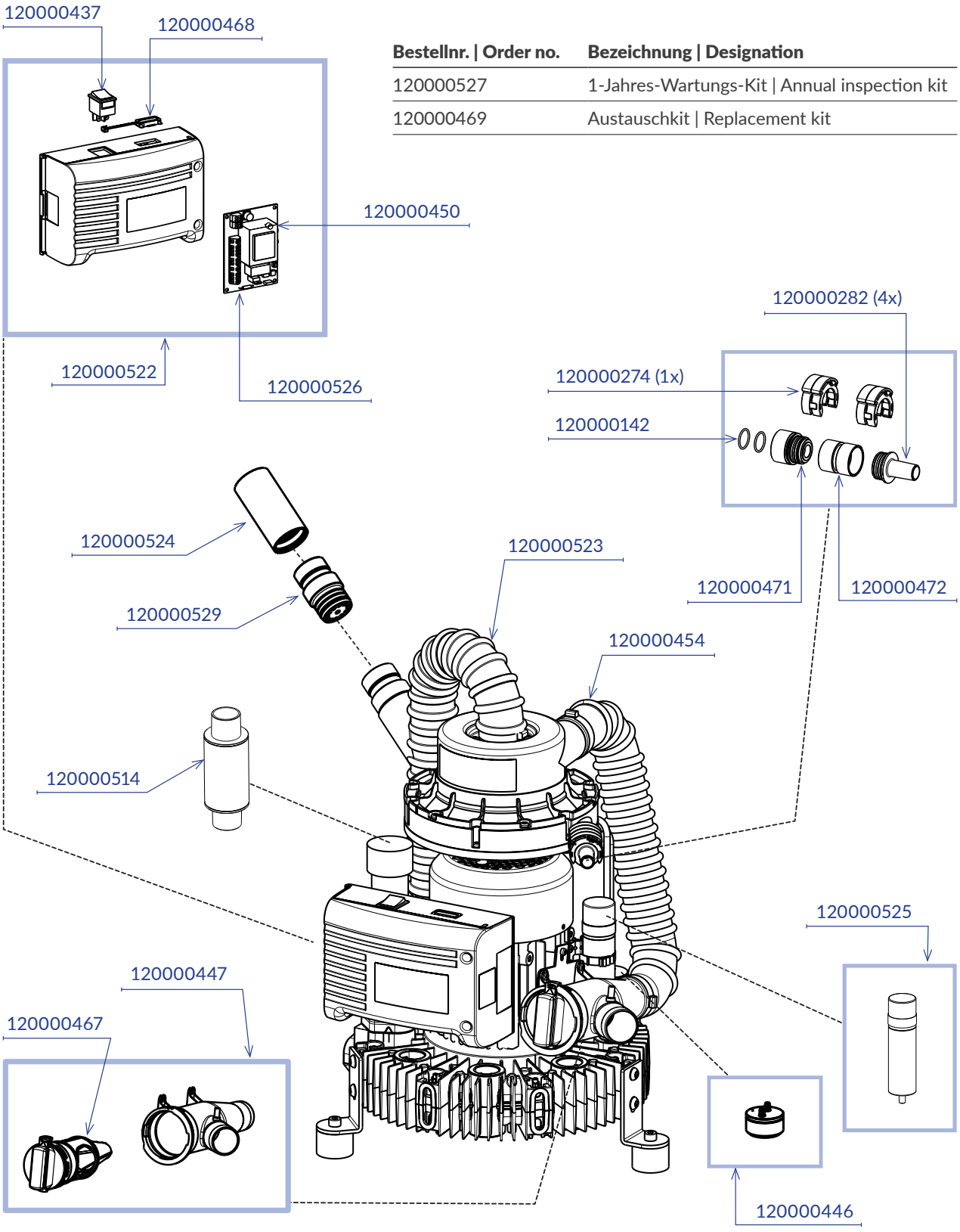
EXCOM hybrid 1s

EXCOM hybrid 1s



EXCOM hybrid 1

EXCOM hybrid 1

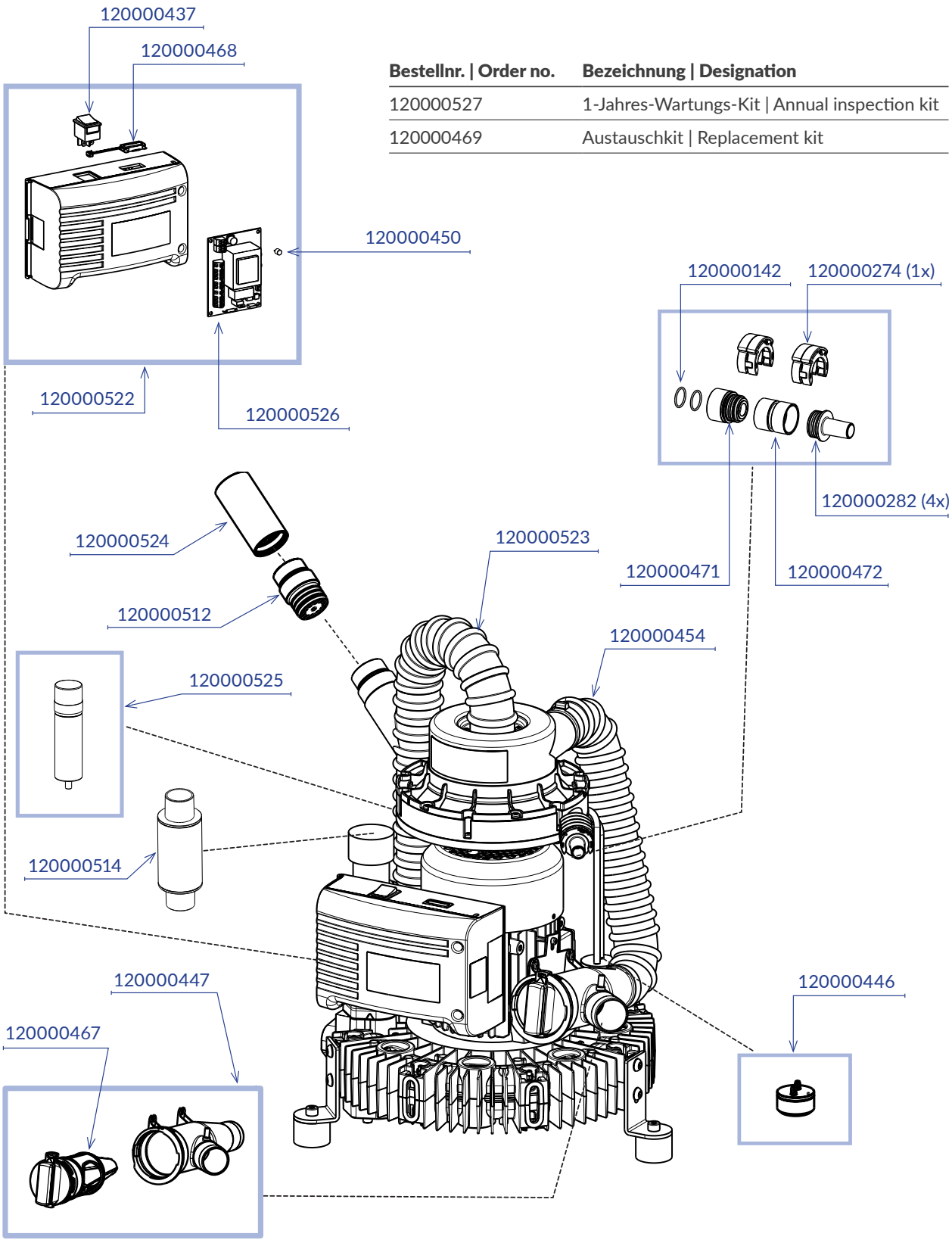


Bestellnr. | Order no.	Bezeichnung | Designation
120000527	1-Jahres-Wartungs-Kit | Annual inspection kit
120000469	Austauschkit | Replacement kit

EXCOM hybrid 2

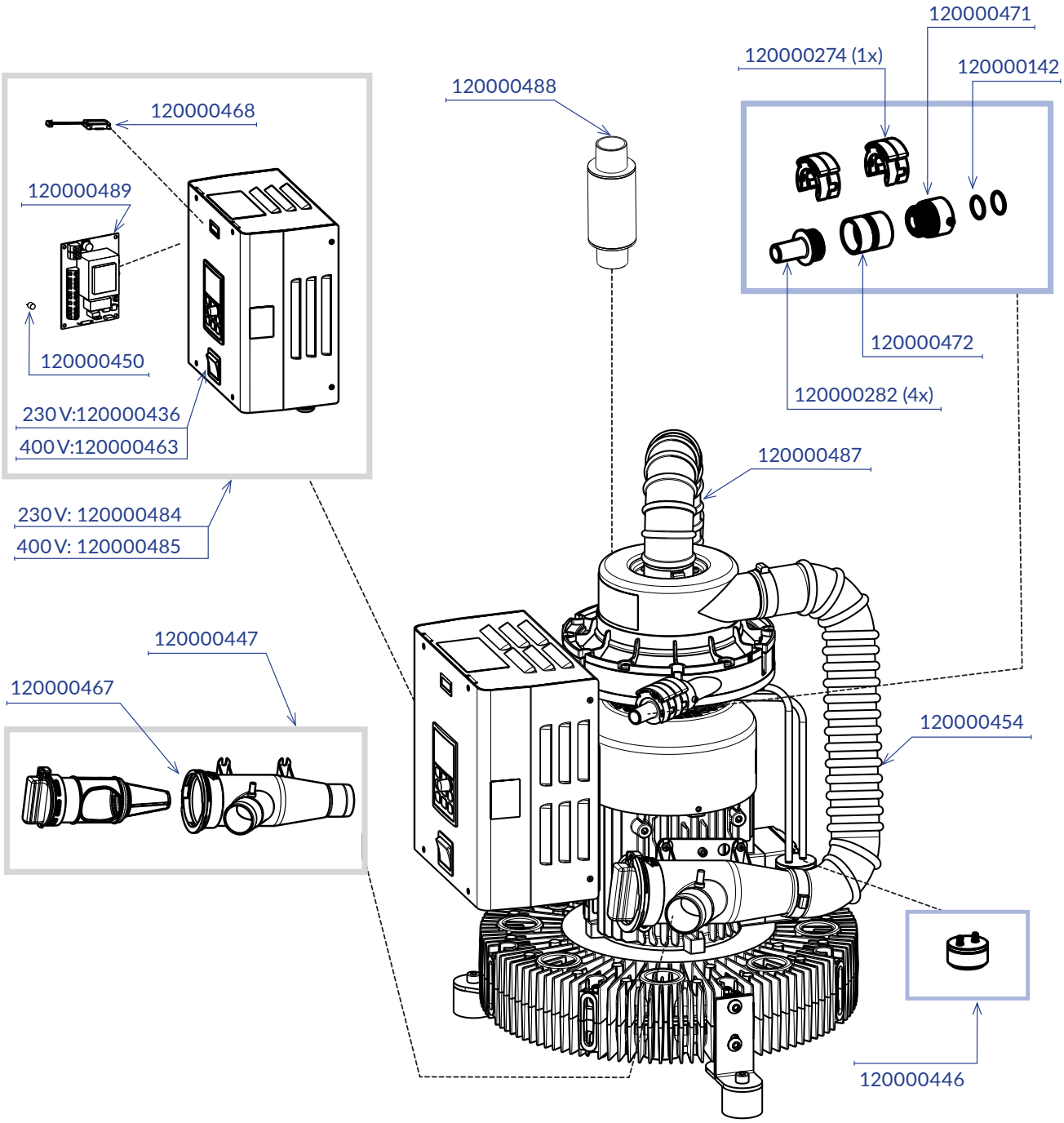
EXCOM hybrid 2

Bestellnr. | Order no.	Bezeichnung | Designation
120000527	1-Jahres-Wartungs-Kit | Annual inspection kit
120000469	Austauschkit | Replacement kit



EXCOM hybrid 5

EXCOM hybrid5



Bestellnr. | Order no.	Bezeichnung | Designation
120000490	EXCOM hybrid 5, 1-Jahres-Wartungs-Kit | Annual inspection kit
120000469	EXCOM hybrid, Austauschkit | Replacement kit
120000481	EXCOM hybrid 5, Wartungskit Druckabnahme | Inspection kit pressure reduction

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