



EVE-WR-65D

EVE-WR-45D

EVE-WR-25D



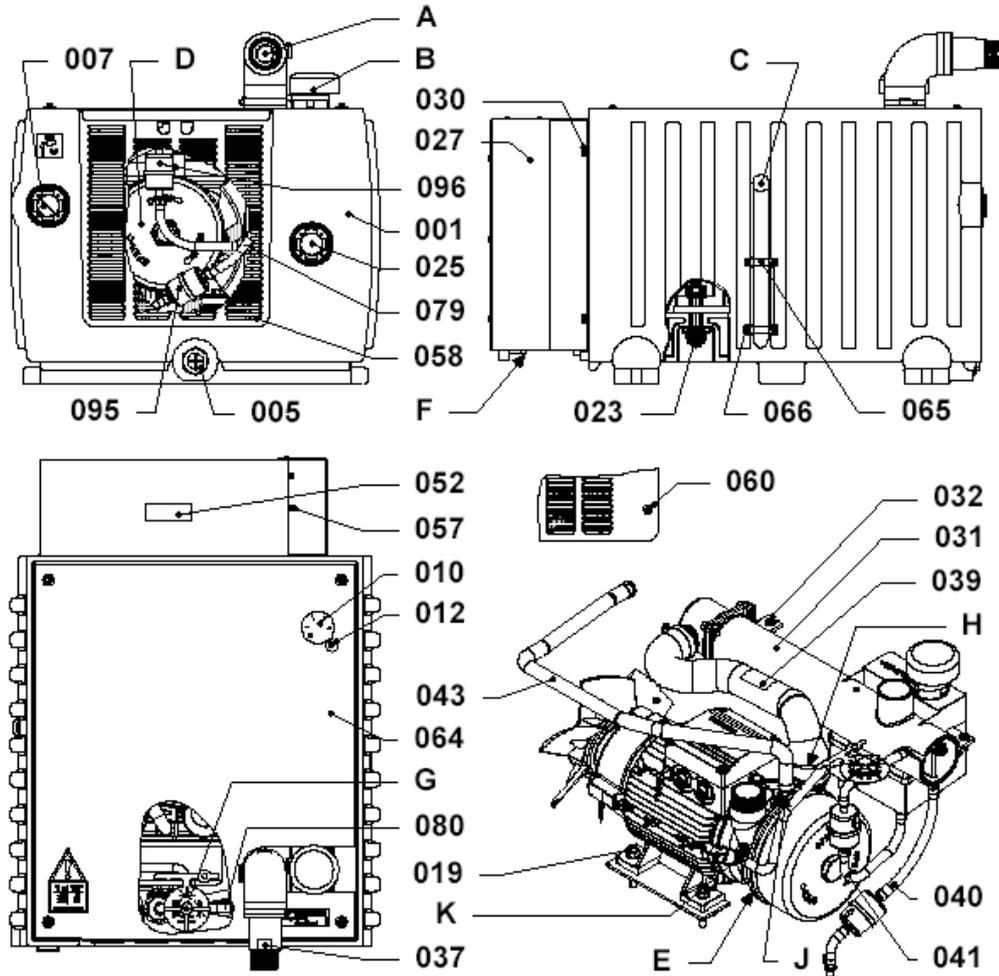
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- Exploded views EVE/WR 25 - 65**
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1 System structure



- | | | | |
|-----|--|-----|-------------------------------|
| A | Suction nozzle | 027 | Cooler |
| B | Outgoing air nozzle | 030 | Screw |
| C | Cable inlet | 031 | Condensation cooler |
| D | Integrated unit | 032 | Screw |
| E | Integrated unit drain | 037 | Connection piece |
| F | Cooler drain | 039 | Suction hose with check valve |
| G | Three-way valve | 040 | Water injection line |
| H | Threaded nozzle | 041 | Condensate line |
| J | Operating liquid hole | 043 | Operating liquid line |
| K | Cavitation protection hole | 052 | Type plate |
| 001 | condenser | 057 | Screw |
| 005 | Drainage opening | 058 | Protective grille |
| 007 | Fill opening and drainage regulator connection | 060 | Screw |
| 010 | Fill level indicator | 064 | Cover plate |
| 012 | Screw | 065 | Strain relief clamp |
| 019 | Nut | 066 | Screw |
| 023 | Nut | 079 | Water line throttle sleeve |
| 025 | Supply regulator connection | 080 | Air line throttle sleeve |
| | | 095 | Water filter |
| | | 096 | Air filter |

See the appendix to the document for exploded views of the pumps

2 Safety



Please observe the accident prevention regulations for condensers (VBG 16), especially section III C “Installation” and IV “Operation” and VBG 4 “Electrical systems and equipment”.

The vacuum pump may only be modified or changed with the approval of the manufacturer.



The vacuum pump generates a lot of heat: Install the vacuum pump so that hot surfaces cannot be touched or protect the movement range, cordon off the area or attach warning signs.

3 Intended use

The vacuum pump is used to generate underpressure (vacuum). The figures apply to a height of 800m above NN. It is not suitable for transporting or compressing toxic or flammable media. Run the vacuum pump so that only normal atmospheric air can be drawn in. If media containing dust are transported, the temperature must remain below the ignition temperature of the resulting dust air mix.

The vacuum pumps are designed for operation with the following **operating liquids**:

- ⇒ with a pH value of 6 to 9, free of solids (such as sand, for example)
- ⇒ usually normal tap water
- ⇒ if other pH values or operating liquids are used, the service department must be contacted



All other uses shall be considered abuse and are prohibited!

4 Technical specifications

		EVE-WR-25-AC3	EVE-WR-45-AC3	EVE-WR-65-AC3
		10.03.05.00014	10.03.05.00015	10.03.05.00016
Weight (without water filling)	[approx. kg]	38	55	68
Weight (with water filling)	[approx. kg]	61	97	110
Fill quantity for operating liquid ¹	[max. l]	23	42	42
Fill quantity for de-liming agent ²	[approx. kg]	2	4	4
Fill quantity for anti-corrosion agent ³	[l]	0,6	1,0	1,0
Fill quantity for de-liming liquid ⁴	[l]	0,6	1,0	1,0
Sound level at 50 Hz ⁵	[dB(A)]	63	67	70
Sound level at 60 Hz ⁵	[dB(A)]	66	70	74
Operating speed		See rating plate		
Electrical data		See rating plate on water cooler of the condenser		
Max. suction temperature	[°C]			
Exit temperature	[°C]	~ Ambient temperature		
Max. operating liquid temperature	[°C]	+60		
Max. ambient temperature range ⁶	[°C]	+10 to +40		
Min./max. suction pressure ⁷	[kPA abs]	5 / 80		
Vacuum connection		R ¾" / D= 30mm	R 1¼" / D= 50mm	R 1¼" / D= 50mm
Recommended vacuum hose		VSL 41/32 PVC	VSL 60 / 50 PUR-SH	
Water supply connection		G ¾"	G ¾"	G ¾"

¹ Normal tap water is usually used as the operating liquid

² Use granulated citric acid as a de-liming agent. The citric acid fill quantities specified refer to medium filling of the condenser with operating liquid

³ In order to guarantee sufficient protection, the entire interior of the integrated unit must be filled with anti-corrosion agent. Use only anticorrosion agents based on ethylene glycol without additives, e.g. Antifrogen by Hoechst!

⁴ Use 10% ethanoic acid as a de-liming liquid

⁵ Measurement surface sound level in accordance with DIN 45635, T13, measured at 1m at medium throttle (100 mbar abs.) and with lines connected, tolerance ± 3dB (A)

⁶ Note the yellow label on the cover plate if the ambient temperature is below 10°C. Add more ethylene glycol to operating liquid in condenser accordingly.

⁷ No throttle may be installed on the pressure side!

5 Transport



Store the vacuum pump in a dry area and protect against splashes.
 Use suitable transport straps to lift and transport the pump.

Attach the lifting straps to the lifting points as shown in the illustration:

- ⇒ Use two lifting straps routed under the system.
- ⇒ The lifting straps should fit securely in the shaped indentations at the base of the system (two on each long side), so that the system cannot slip out.
- ⇒ The lifting straps must be sufficiently long (spread angle less than 90°)
- ⇒ Ensure that attached fittings are not damaged.

6 Installation



Inexpert handling of the system can cause serious or even lethal injuries!

Have you read the safety instructions in the “Safety” chapter? Do not work with or on the system until you have done so!

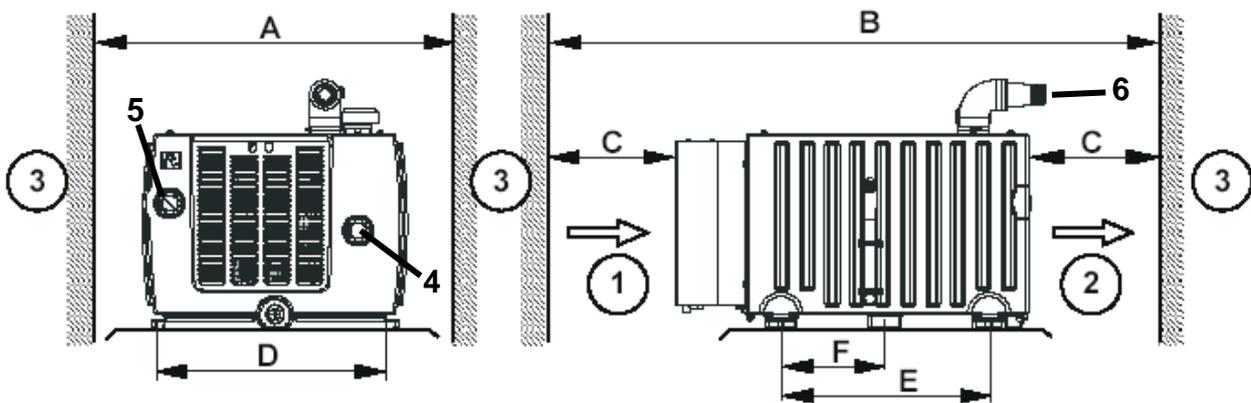
Note: See the “System structure” chapter on the structure of the system. The position numbers (pos.) specified in the text refer to this illustration.

6.1 Setup

Note on subsequent transport!

Place the system with its feet on rails or other supports to facilitate subsequent transport, e.g. with a lift truck!

Distances for heat dissipation and attachment



- | | | | | | |
|-----|--|---|--------------------|---|---|
| A-C | Minimum distances for heat dissipation | 1 | Cooling air inlet | 4 | Supply regulator water connection |
| D-F | Attachment eyelet distances | 2 | Cooling air outlet | 5 | Drainage regulator water connection |
| | | 3 | Wall | 6 | Vacuum connection (direction can be adjusted) |

		EVE-WR-25D	EVE-WR-45D	EVE-WR-65D
Minimum distance A	[m]	0.5	0.7	0.7
Minimum distance B	[m]	1.4	1.6	1.6
Minimum distance C	[m]	0.4	0.4	0.4
Distance D	[mm]	360	495	495
Distance E	[mm]	345	450	450
Distance F	[mm]	-	225	225

Before setting up the pump

The system must be set up as follows:

- ⇒ On even, horizontal surfaces,
- ⇒ On stationary (fixed) surfaces or structures,
- ⇒ With the feet facing down (do not attach with the feet facing a wall, for example),
- ⇒ At a height of max. 1000m above NN
- ⇒ If the installation height is more than 1000m above NN, please consult the service department



Observe minimum distances!

Fastening

There are two options:

- ⇒ Install the system without fastening it
- OR
- ⇒ Fix the feet of the system to the supporting surface using suitable fastening elements (screws)
4 x M10 screws and washers in accordance with ISO 7093-1

6.2 Electrical connection

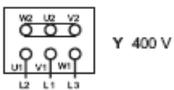
Attaching the connection cable



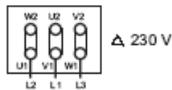
- ⇒ Use a flexible cable for the electrical connection
- ⇒ Remove the cover plate
- ⇒ Feed the connecting cable through the strain relief clamps on the side wall of the condenser and into the interior of the condenser through the cable inlet.
- ⇒ Feed the connecting cable via the cable inlet opening into the terminal box of the integrated unit
- ⇒ Secure the connecting cable as follows to **relieve the tension**:
 - ⇒ Via the cable threads on the terminal box of the integrated unit
 - ⇒ Via the strain relief clamps on the outside of the condenser

Connection to the motor terminal box

Integrate the vacuum pump in the power supply in such a way that all relevant regulations are observed. The motor or pre-prepared plug-in models may only be connected according to the circuit diagram (in the terminal box) by a qualified electrician: observe connection voltage and frequency.



Y 400 V



Δ 230 V

Check whether the local power supply requires star voltage mode or delta voltage.

The bridges in the terminal box must be set accordingly.

Connect the PE conductor to the terminal with the following symbol:



Integrate a motor protection switch and overcurrent cutout (type C) and set them to the rated current of the motor (the specifications are on the motor type plate).

- ⇒ Fit the cover plate.



Danger from rotating external fan of the integrated unit!

Only run the system when the protective grille and the cover plate are mounted!

Running the unit dry ruins the mechanical seal within seconds.

DO NOT switch it on until the following conditions have been fulfilled:



- ⇒ The condenser must be properly filled with operating liquid
- ⇒ The interior of the integrated unit must be filled with operating liquid

Check the rotation direction

Ensure that the following conditions are fulfilled:

- ⇒ The condenser must be properly filled with operating liquid. (See fill level indicator).
- ⇒ The interior of the integrated unit must be filled with operating liquid.
- ⇒ The cover plate of the condenser must be fitted.



Danger due to underpressure!

If there is a danger of being sucked in by the system:

- ⇒ **Do not approach the suction nozzle with long open hair or loose clothing.**
- ⇒ **Do not look into the suction nozzle or stand with your eye at the opening of the suction nozzle.**

- ⇒ DO NOT connect the suction line to the suction nozzle
- ⇒ Switch on the power supply briefly. If the rotation direction is correct, cold air exits through the protective grille immediately.
- ⇒ Switch on power supply again
- ⇒ Switch the phase if the rotation direction is incorrect.
- ⇒ **Avoid more than 10 switch operations per hour.**

6.3 Filling



Proceed as follows:

- ⇒ Fill the condenser via the fill opening (pos. 007) with operating liquid (usually normal tap water)
- ⇒ See "Specifications" chapter for fill quantity

Checking the fill quantity of the condenser

Check via the fill level indicator (pos. 010). Do not fill above max. operating liquid level.



Max. operating liquid level:

**Lower edge of the fill opening (pos. 007) = Indicator position 1 of the fill level indicator (pos. 010).
Do not fill the condenser past this liquid level!**

Initial filling of the unit:



Pour an additional 1.5l operating liquid into the suction nozzle (pos. A) of the system, so that operating liquid enters the interior of the integrated unit.



Danger of emerging media!

Ensure that the condenser openings (inlet/outlet regulator connection opening, fill opening, drain opening) are tightly sealed (via threaded plug or integrated inlet regulator, outlet regulator, drain tap).

6.4 Connecting the pipelines and hoses

Ensure that pipelines are appropriately sized and clean (no welding beads, chips or other soiling). Attach lines of at least the same diameter as the connection threads. If the lines are more than 2m long, use then next largest diameter. Keep the connections free of oil, grease, water or other soiling.

Suction nozzle

Removing the cap

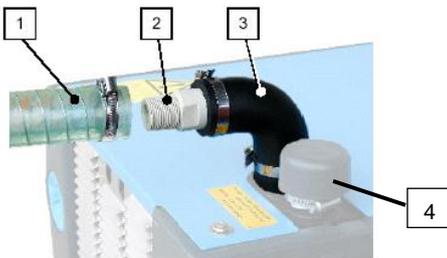
In order to prevent foreign bodies entering, the connection opening at the suction nozzle (pos. A) is sealed on delivery. Only remove the cap immediately before connecting pipelines/hoses.

Check valve

A check valve must be attached to the suction nozzle (pos. A) in the following cases:

- ⇒ If two or more systems are run in parallel, e.g. reserve system. (Note: a separate check valve must be attached to the suction nozzle for each system)
 - ⇒ If a vacuum can occur in the connected suction line for more than 5 minutes when the system is switched off
- The check valve prevents transported gases/vapours flowing back out of the system if the machine is stopped.

Connecting the suction line



Connect the machine-side line for the gases/vapours (suction line) to be transported to the connection piece of the suction nozzle (pos. 037).

- 1 Suction line
- 2 Connection threads
- 3 Connection piece
- 4 Outgoing air nozzle



**Attach the pipelines/hoses free of mechanical tension.
Support the weight of pipelines/hoses.**

Outgoing air nozzle

The gasses/vapours to be transported are output into the ambient air via the outgoing air nozzle (pos. B). They are not transported further in a pipe or hose. No assembly steps are required here.



**Danger due to overpressure!
Danger of blocking the system!
The protective cap on the outgoing air nozzle may not be removed!**



**If piping is required on the pressure side:
Consultation of the service department is essential!**

7 Initial startup

7.1 Preparation and starting

Proceed as follows:

- ⇒ Ensure that the following conditions are fulfilled:
 - The condenser must be properly filled with operating liquid (see fill level indicator).
 - The interior of the integrated unit must be filled with operating liquid.
 - The cover plate of the condenser must be fitted.
- ⇒ Switch on the power supply.
- ⇒ The system begins drawing in the gases/vapours to be transported.

Note: If the system does not generate a vacuum when started initially: Throttle the suction side briefly or close it and open it again.

7.2 Switching off

The system can be switched off from any operating condition (i.e. regardless of current pressure, temperature etc.). However, please check whether the current machine work process allows system operation to be stopped.

Proceed as follows:

- ⇒ Switch off the power supply.
- ⇒ The system stops drawing the transported gases/vapours.

If the system is to be idle for an extended period:

Follow the instructions in the "Shutting down and extended downtime" chapter.

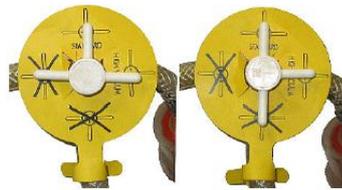
8 Operation

Starting and stopping in normal mode is identical to the procedure for initial startup.

8.1 Use in the working process

The unit can be used continually at maximum vacuum or minimal suction pressure (against a close suction slider). The power consumption of the system is lowest when used in this way.

When idle, we recommend running at minimal suction pressure (lowest power requirement).



STANDARD HIGH VACUUM

When operating at low suction pressure ($\leq 20\text{kPa abs.}$), the suction capacity of the system can be increased by switching the three-way valve (pos. G) to HIGH VACUUM.

When operating with suction pressures $\geq 20\text{kPa abs.}$, this valve setting can cause water spray to form on the outgoing air nozzle.

Operating fluid loss

With lower air moisture and high suction pressure ($> 35\text{kPa abs.}$), the water vapour content of the exiting gases is slightly greater than the gases drawn in. This results in loss of **operating liquid**.



Check the supply of operating liquid in the condenser regularly.



Do not use the system when the operating liquid level points to 0!

Liquid level at 0:

At a liquid level with the indicator at 0, the suction capacity of the system is reduced. If the system is operated under these conditions for extended periods, the vacuum may be broken, which could cause the system to run dry!

Take the following measures when the indicator reaches 0 (minimum):

- ⇒ Stop the system. See "Switching off" chapter.
- ⇒ Fill the condenser via the fill opening with operating liquid (to indicator position 1 (lower edge of the fill opening)).



Max. operating liquid level:

Lower edge of the fill opening = Indicator position 1 of the fill level indicator.

Do not fill the condenser past this liquid level!

Supply regulator

For maintenance-free operation, the vacuum pumps are equipped with a supply regulator as standard. The supply regulator automatically adjusts the liquid level for operating liquid loss.

See appendix for structure and installation of the supply regulator.

Operating fluid gain

The steam content of the emerging gases is slightly less than that of the gases drawn in if the **humidity is high** and the **suction pressure is low**. This results in slight gain of **operating liquid**.

If **water is also transported via the suction line**, there is also a **gain in operating liquid**.



Check the supply of operating liquid in the condenser regularly.
Overfilling cannot be checked via the fill level indicator!



Do not use the system when the operating liquid level is above 1!

Drainage regulator

A drainage regulator must be connected for operating liquid gain, to automatically adjust the liquid level for operating liquid gain. Please consult your vendor.

9 Shutting down and extended downtime

9.1 Draining

- ⇒ Switch off the system and pull the mains plug
- ⇒ Take the safety precautions listed above for working on the system.
- ⇒ If a supply regulator is installed, seal the supply line, remove supply regulator
- ⇒ Remove the cover plate (pos. 064) and the protective grille (pos. 058) on the condenser.
- ⇒ Hold a suitable gathering container ready
- ⇒ Open the following drainage openings:
 - Condenser drainage opening (pos. 005)
 - Cooler drain (pos. F)
 - Integrated unit drain (pos. E)
- ⇒ Allow the liquid to drain
- ⇒ Close all drainage openings again.
- ⇒ Attach the cover plate (pos. 064) and the protective grille (pos. 058) to the condenser again.

9.2 Preparation for extended downtime

Proceed as follows for extended downtime (from approx. 4 weeks) or **risk of frost**:

- ⇒ Drain the system as described in the "Draining" chapter.
- ⇒ Do not re-attach the cover plate (pos. 64) and the protective grille (pos. 058) to the condenser.
- ⇒ Remove the pipeline/hose from the threaded nozzle (pos. H) of the integrated unit. To do so open the clamp using a special pliers or screwdriver.



- ⇒ Select a suitable preservative. Use only anti-corrosion agents based on ethylene glycol (e.g. Antifrogen by Hoechst).
- ⇒ Pour the preservative into the open threaded nozzle (pos. H) using a funnel. Fill quantity: See "Specifications" chapter. The entire interior of the integrated unit must be filled with anti-corrosion agent.
- ⇒ During filling, turn the fan wheel approx. one turn by hand
- ⇒ Attach the removed pipeline/hose to the threaded nozzle (pos. H) of the integrated unit.
- ⇒ Attach the cover plate (pos. 064) and the protective grille (pos. 058) to the condenser again.
- ⇒ There are two options for downtime: Either the system remains connected to the machine, or the system is dismantled for storage.

Take the following measures for **startup after extended downtime**:

- ⇒ Measure the insulation resistance of the motor. Dry the coil if the value $\leq 1k$. per volt of rated voltage.
- ⇒ Drain the anti-corrosion agent via the integrated unit drain opening as described in the "Draining" chapter. Dispose of the preservative in accordance with the manufacturer's instructions.
- ⇒ Afterwards, clean the system:
 - Pour operating liquid into the system via the fill opening (pos. 007).
 - If necessary, start the system briefly to circulate the operating liquid in the system. See "Preparation and starting" chapter
 - Switch system off again. See the "Switching off" chapter.
 - Drain the system. See the "Draining" chapter.
- ⇒ For new systems:
 - Install the system as described in the "Installation" chapter.
 - Start the system as described in the "Startup" chapter.
- ⇒ For systems already installed in a machine:
 - Start the system as described in the "Startup" chapter.

10 Servicing

10.1 Maintenance

The system requires little maintenance.

The following maintenance work is required:

- ⇒ If water with a high lime content is used as the operating liquid, the operating liquid must be softened or the entire system and the integrated unit must be de-limed at regular intervals.
- ⇒ Check hoses and hose connections for possible leaks and secure fit!
- ⇒ If dirt or solid matter (e.g. dust or sand) or lime deposits enter the system via the operating liquid and/or the gases/vapours transported, it must be cleaned regularly. This prevents the running wheel becoming jammed and wear to individual parts of the system.
(see the table below)



Soiling/problem	Measure
Water consumption increases considerably after long operating time	Clean the cooling panels of the water cooler. Proceed as follows: <ul style="list-style-type: none"> ⇒ Take safety measures for the use of compressed air: <ul style="list-style-type: none"> – Put on personal protective equipment (gloves and protective glasses) – Cordon off the surrounding area. ⇒ Blow compressed air through the cooling panels of the water cooler (pos. 027). Replace the water filter (pos. 095) and air filter (pos. 096).
Highly polluted ambient air	Clean the cooling panels of the water cooler (pos. 027) regularly. See "Water consumption increases considerably after long operating time".
Dirt particles (e.g. dust) enter the system with the transported gases/vapours and gather in the condenser	Clean the condenser. Clean the condenser (pos. 001) regularly (interval depends on the concentration of dirt particles in the gases/vapours to be transported): <ul style="list-style-type: none"> ⇒ Shut the system down ⇒ Drain the system as described in the "Draining" chapter. ⇒ Flush the condenser with clean water ⇒ Consult the service department before using cleaning agents ⇒ Replace the water filter (pos. 095) and air filter (pos. 096) if necessary. OR <ul style="list-style-type: none"> ⇒ Install a suction filter upstream on the suction side of the system. ⇒ Replace the water filter (pos. 095) and air filter (pos. 096) if necessary.
Fine-grained dirt (e.g. sand) enters the integrated unit with operating liquid or transported gases/vapours	Clean integrated unit. Clean integrated unit (pos. D) at regular intervals. (Intervals depends on soiling, approx. once a year). Proceed as follows: <ul style="list-style-type: none"> ⇒ Shut the system down and secure it so it cannot be switched on again. ⇒ Remove the cover plate (pos. 064) and the protective grille (pos. 058). ⇒ Position a collecting container under the system. ⇒ Open the G¼ drain hole (Pos. E) of the integrated unit. Operating liquid flows out. It flows downwards through the opening in the base of the condenser. ⇒ WARNING: Danger: External fan of the integrated unit rotates! For safety reasons, attach the cover plate (pos. 64) and the protective grille (pos. 058). ⇒ Switch on the system briefly. The dirt is flushed out of the integrated unit with the operating liquid and flows out through the opening in the base of the condenser. ⇒ Shut down the system again, secure and open it as described above. ⇒ Close the G¼ drain hole (Pos. E) of the integrated unit again. ⇒ Re-assemble the system fully.
The running wheel of the integrated unit is jammed	Turn the shaft free. Proceed as follows: <ul style="list-style-type: none"> ⇒ Shut the system down and secure it so it cannot be switched on again. ⇒ Remove the cover plate (pos. 064). ⇒ Turn the shaft of the integrated unit (pos. D) by hand at the fan wheel. ⇒ If the shaft cannot be freed, the integrated unit must be de-limed.



Soiling/problem	Measure
<p>Water with a high lime content is used as the operating liquid (lime content > 15°dH)</p>	<p>Soften operating liquid.</p> <p>OR</p> <p>De-lime integrated unit. De-lime integrated unit (pos. D) at regular intervals. (Intervals depend on amount of lime.) Proceed as follows:</p> <ul style="list-style-type: none"> ⇒ Put on personal protective equipment (gloves and protective glasses). ⇒ Shut the system down and secure it so it cannot be switched on again. ⇒ Drain the system as described in chapter 8.1 "Draining", p. 22. ⇒ Do not re-attach the cover plate (pos. 064) and the protective grille (pos. 058) to the condenser. ⇒ Remove the pipeline/hose from the threaded nozzle (pos. H) of the integrated unit. To do so, open the clamp using a special pliers or screwdriver. ⇒ Use 10% ethanoic acid as a de-liming liquid. ⇒ WARNING: Ethanoic acid can be dangerous! Ethanoic acid can cause serious caustic burns! Observe the hazardous substance law (Gefahrstoffverordnung) §20, and the safety data sheet of the manufacturer! ⇒ The interior of the integrated unit must be filled with de-liming liquid. <p>Proceed as follows:</p> <ul style="list-style-type: none"> ⇒ Pour the de-liming liquid into the open threaded nozzle (pos. H) using a funnel. See "Specifications" chapter for fill quantity. The entire interior of the integrated unit must be filled with de-liming liquid. ⇒ CAUTION: Various seals in the system may be damaged by extended contact with ethanoic acid. The ethanoic acid may only enter the interior of the integrated unit. ⇒ Allow the de-liming liquid to work for at least 30min. ⇒ During this time, turn the shaft on the fan wheel by hand occasionally. ⇒ Position a collecting container under the system. ⇒ Drain the integrated unit. Open the G¹/₄ drain hole (Pos. E) of the integrated unit. The de-liming liquid flows downwards through the opening in the base of the condenser. The condenser is not chemically affected by this. Close the drainage hole again. ⇒ Attach the removed pipeline/hose to the threaded nozzle (pos. H) of the integrated unit. ⇒ Attach the cover plate (pos. 064) and the protective grille (pos. 058) to the condenser again. ⇒ Re-assemble the system fully. ⇒ The de-liming liquid can be poured down the drain. <p>OR</p> <p>De-lime the entire system. Depending on the operating conditions and the lime content of the operating liquid, it may be necessary to de-lime the entire system. Proceed as follows:</p> <ul style="list-style-type: none"> ⇒ Use citric acid as a de-liming liquid. ⇒ Pour citric acid into the system via the fill opening (pos. 007). See the "Specifications" chapter for the fill quantity of pure citric acid (granulated) for an average filling of the system with operating liquid. ⇒ Run the system approx. 10h with the operating liquid containing citric acid. The citric acid dissolves the lime. ⇒ Then drain the system as described in the "Draining" chapter. ⇒ Flush the system repeatedly with clean water.

10.2 Repair/troubleshooting

Note: If the fault cannot be rectified using the troubleshooting table, you must contact the service department.



Spare parts may only be installed by the service department!

Fault	Cause	Recommended action	Remedy by
Motor does not start, no running sound	Disconnection of at least two lines of the power supply	Rectify disconnection by fuses, terminals or supply lines	Electrician
Motor does not start, booming sound	Disconnection of one line of the power supply	Rectify disconnection by fuses, terminals or supply lines	Electrician
	The running wheel of the integrated unit is jammed	Turn the shaft free. See the "Freeing the shaft" section of the "Maintenance" chapter	Operator/ service dept.
		De-lime integrated unit. See the "De-liming integrated unit" section of the "Maintenance" chapter.	Operator
Motor protection switch triggered again on startup	Motor protection switch set too low	Set motor protection switch to rated current specified on the power plate	Electrician
	Short circuit in the coil	Have the coil tested	Electrician/ service dept.
	Counterpressure in outgoing air nozzle too high	Check outgoing air nozzle (pos. B) and condensation cooler (pos. 031) for soiling	Operator/ service dept.
	The running wheel of the integrated unit is jammed	See "Motor does not start, booming sound"	Operator/ electrician/ service dept.
Power consumption too high	Limescale or deposits	De-lime integrated unit. See the "De-liming integrated unit" section of the "Maintenance" chapter.	Operator
		De-lime the entire system. See the "De-liming the entire system" section of the "Maintenance" chapter.	Operator
		Clean integrated unit. See the "Cleaning integrated unit" section of the "Maintenance" chapter.	Operator
		Clean the condenser. See the "Cleaning the condenser" section of the "Maintenance" chapter.	Operator
System does not generate a vacuum	No operating liquid available	Pour operating liquid into the fill opening (pos. 007) as described in the "Filling" chapter	Operator
	Major leaks in the system	Seal the system	Operator
	Major leak in the machine	Seal the machine	Operator
	Incorrect rotation direction	Change the rotation direction by swapping two electrical connection lines	Electrician



Fault	Cause	Recommended action	Remedy
System generates insufficient vacuum	System too small	Use larger system	Operator
	Suction line too long or too thin	Use shorter or thicker line as a suction line	Operator
	Suction-side suction connections or suction line leaks	Check suction-side hose connections and suction line, seal if necessary	Operator
	Operating liquid flow insufficient	Check the operating liquid line (pos. 043) and operating liquid hole (pos. J) of the integrated unit for blockages. If necessary, clear blockage.	Operator/ service dept.
	Not enough operating liquid in condenser	Add operating liquid	Operator
	Operating fluid too warm (Nominal temperature 15°C)	The cooling panels of the water cooler (pos. 027) are dirty. Clean them. See the "Cleaning the cooling panels of the water cooler" section of the "Maintenance" chapter	Operator
	Minor leak in the machine	Seal the machine	Operator
	Suction filter (optional) is dirty	Replace suction filter	Operator
	Vacuum regulation valve (optional) is incorrectly set	Check and correct the setting of the vacuum regulation valve	Operator
Drops of water spray from pressure nozzle	Condensate is no longer sucked away	Check air filter (pos. 096) for soiling and clean/replace if necessary	Operator/ service dept.
		Clean throttle sleeves (pos. 079 and 080) as follows: <ul style="list-style-type: none"> ⇒ Shut the system down and secure it so it cannot be switched on again. ⇒ Remove the cover plate (pos. 064) and the protective grille (pos. 058). ⇒ Disconnect hose connections at the corresponding positions ⇒ Clean throttle sleeves (pos. 079 and 080) ⇒ Blow hose lines to the condensation cooler (pos. 031) clear with compressed air ⇒ Assemble parts again 	Operator/ service dept.
	Fill level in condenser too high (fill level indicator ≥ 1)	Install automatic drainage regulator (optional) if water is transported Check supply regulator (optional) for function	Operator Operator
Water consumption increases considerably compared to new condition	Throttle sleeves are blocked	Clean throttle sleeves (pos. 079 and 080). See "Drops of water spray from pressure nozzle".	Operator/ service dept.
	Air filter or water filter blocked	Clean the water filter (pos. 095) or air filter (pos. 096).	Operator/ service dept.
		Clean condenser (pos. 001) if necessary. See the "Cleaning the condenser" section of the "Maintenance" chapter.	Operator
	Cooling panels of the water cooler soiled	Clean the cooling panels of the water cooler (pos. 027). See the "Cleaning the cooling panels of the water cooler" section of the "Maintenance" chapter	Operator
Ambient temperature too high	Consult service department	Operator/ service dept.	
Abnormal squeaking sounds	Cavitation of the integrated unit	Check cavitation protection hole connection (pos. K) and condensate line (pos. 041) for blockage. See "Drops of water spray from pressure nozzle".	Operator/ service dept.
		Three-way valve (pos. G) may not be precisely set. Check the setting of the three-way valve and correct it if necessary.	Operator

10.3 Service/customer service department

Our service department (see cover of these operating instructions) is available for work (in particular installation of spare parts and maintenance and repair work) not described in the operating instructions.

When **returning systems**, please note the following:

- ⇒ Before shipping:
 - Drain the system complete as described in the “Draining chapter”.
 - Clean the exterior of the system (observe protection class in accordance with rating plate)
- ⇒ The system must be delivered in its entirety, i.e. not dismantled
- ⇒ Use the original packaging only for shipping.
- ⇒ A declaration of clearance form must be included with the delivery, as described in the “Decontamination and declaration of clearance” chapter.
- ⇒ The original rating plate of the system must be correctly attached, intact and legible. All guarantee claims are void for systems which are sent for damage evaluation without an original rating plate or with a damaged original rating plate.
- ⇒ The manufacturer must be informed of use conditions, operating hours etc. and other more detailed data if requested for guarantee claims.

10.4 Decontamination and declaration of clearance



Danger: combustible, caustic or poisonous substances!

For the protection of the environment and persons:

Systems which have come in contact with hazardous substances must be decontaminated before they are sent to a workshop!

A so-called **declaration of clearance** must be included with every system submitted to a workshop for inspection, maintenance or repair.

The declaration of clearance

- ⇒ is printed in the appendix as a form for photocopying,
- ⇒ is legally binding,
- ⇒ must be completed and signed by authorised qualified staff,
- ⇒ must be issued for each system sent (i.e. a separate declaration for each system),
- ⇒ must be attached to the exterior of the packaging of the system,
- ⇒ should also be sent as a copy e.g. per fax to the workshop in question.

This guarantees

- ⇒ that the system has not come into contact with hazardous substances,
- ⇒ that systems which have come into contact with hazardous substances have been sufficiently decontaminated,
- ⇒ that the inspection, maintenance or repair staff can take appropriate protective measures if necessary.



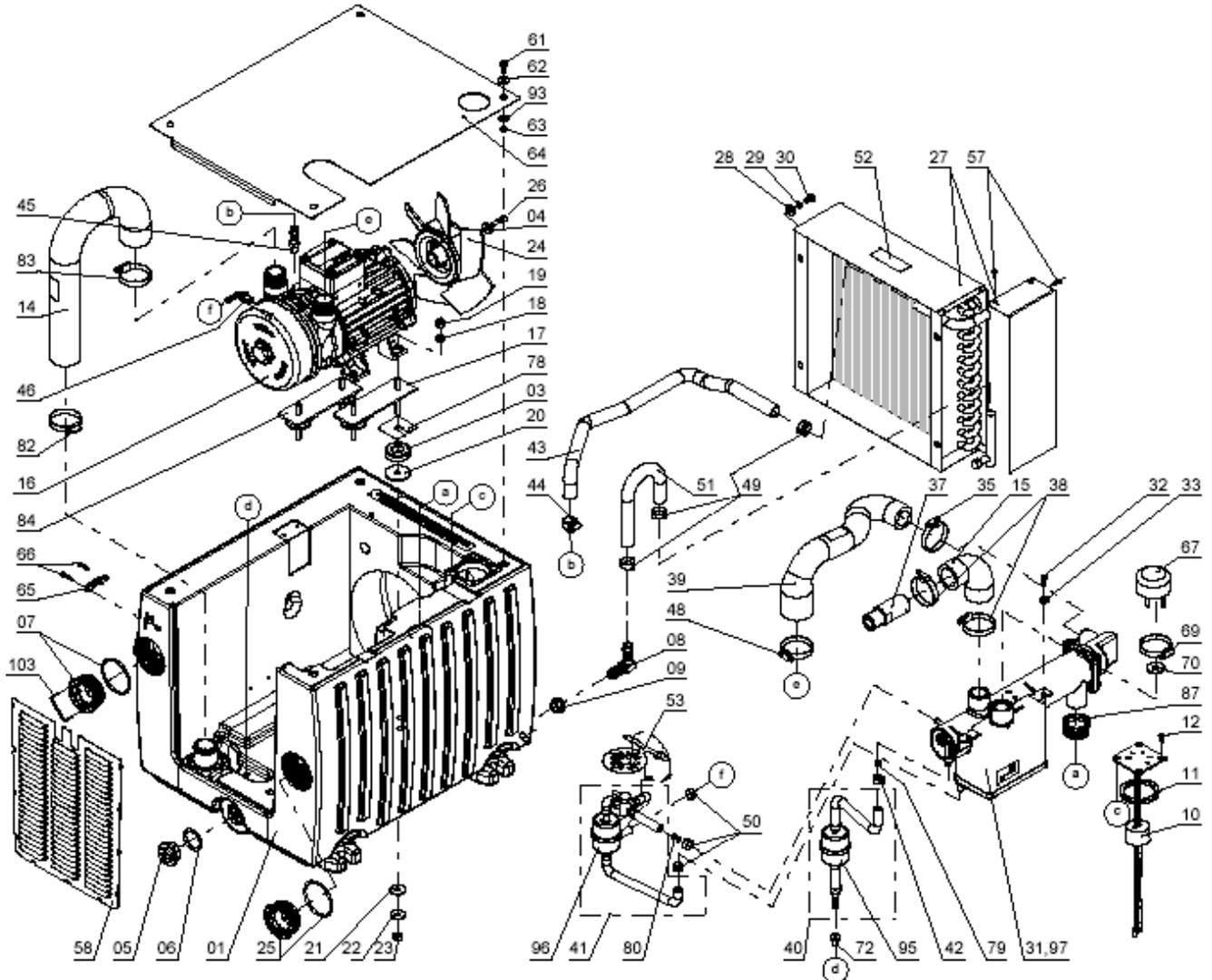
Inspection/maintenance/repair of the system in the workshop will not begin until the declaration of clearance has been submitted.

If the declaration of clearance is not supplied, delays may result!

11 Disposal

Have the entire system scrapped by a suitable disposal company. No special measures are required. For further information on disposing of the system, please contact the service department.

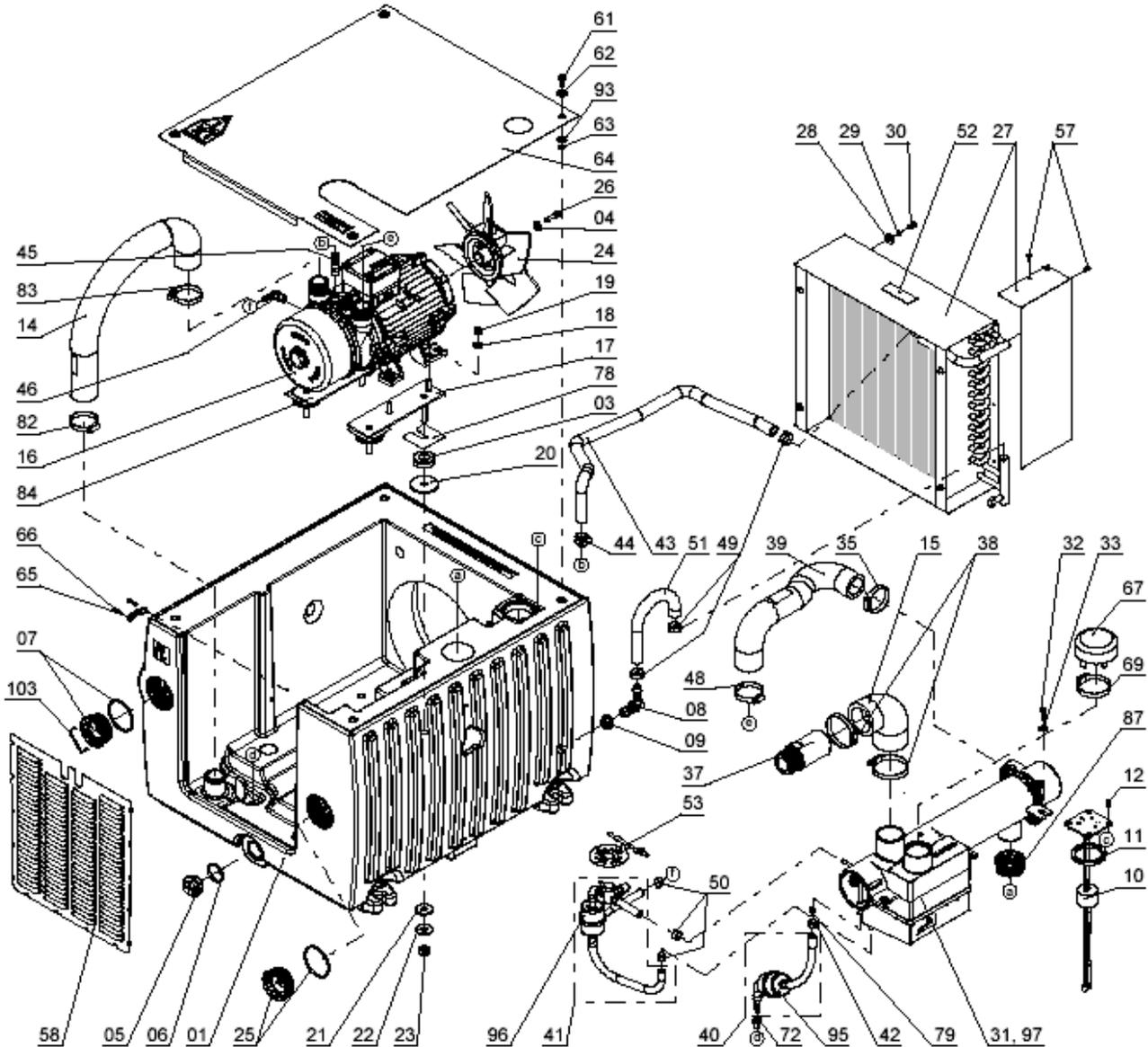
Exploded view EVE-WR-25D



1	shape separator	23	Nut	45	Screwed socket	70	Washer
3	Spacer washer	24	Cooling fan	46	Screwed socket	72	Nipple
4	Washer	25	Bung plug	48	Clamp	73	Air duct
5	Screw plug	26	Screw	49	Hose clamp	74	Air duct
6	O-ring	27	Water cooler	50	Hose clamp	76	Rubber plate
7	Bung plug	28	Washer	51	Hose section	77	Pressure relief valve
8	Hose nipple	29	Spring washer	52	Rating plate	78	Shim
9	Nipple	30	Screw	53	Valve tag	79	Throttle valve
10	Level indicator	31	Condensation cooler	56	Cooler cover	80	Throttle valve
11	Rectangular ring	32	Screw	57	Screw	82	Clamp
12	Screw	33	Washer	58	Protective grille	83	Clamp
13	Parallel key	34	Hose clamp	59	Washer	84	Bracket, complete
14	Discharge hose	35	Hose clamp	60	Screw	87	Rubber collar
15	Elbow	37	Connection piece	61	Sealing plug	93	Washer
16	Pump	38	Clamp	62	Washer	95	Filter
17	Bracket, complete	39	Inlet hose	63	Retaining ring	96	Filter
18	Washer	40	Injection line	64	Cover plate	97	Condensation cooler without braided tube bundle
19	Nut	41	Condensation pipe	65	Strain-relief clip		
20	Washer	42	Hose clamp	66	Screw		
21	Washer	43	Hose section	67	Protective cap	103	Square bail
22	Washer	44	Hose clamp	69	Hose clamp		

NOTE: Depending on the type of the S_200, details of the representation in the exploded view might be different.

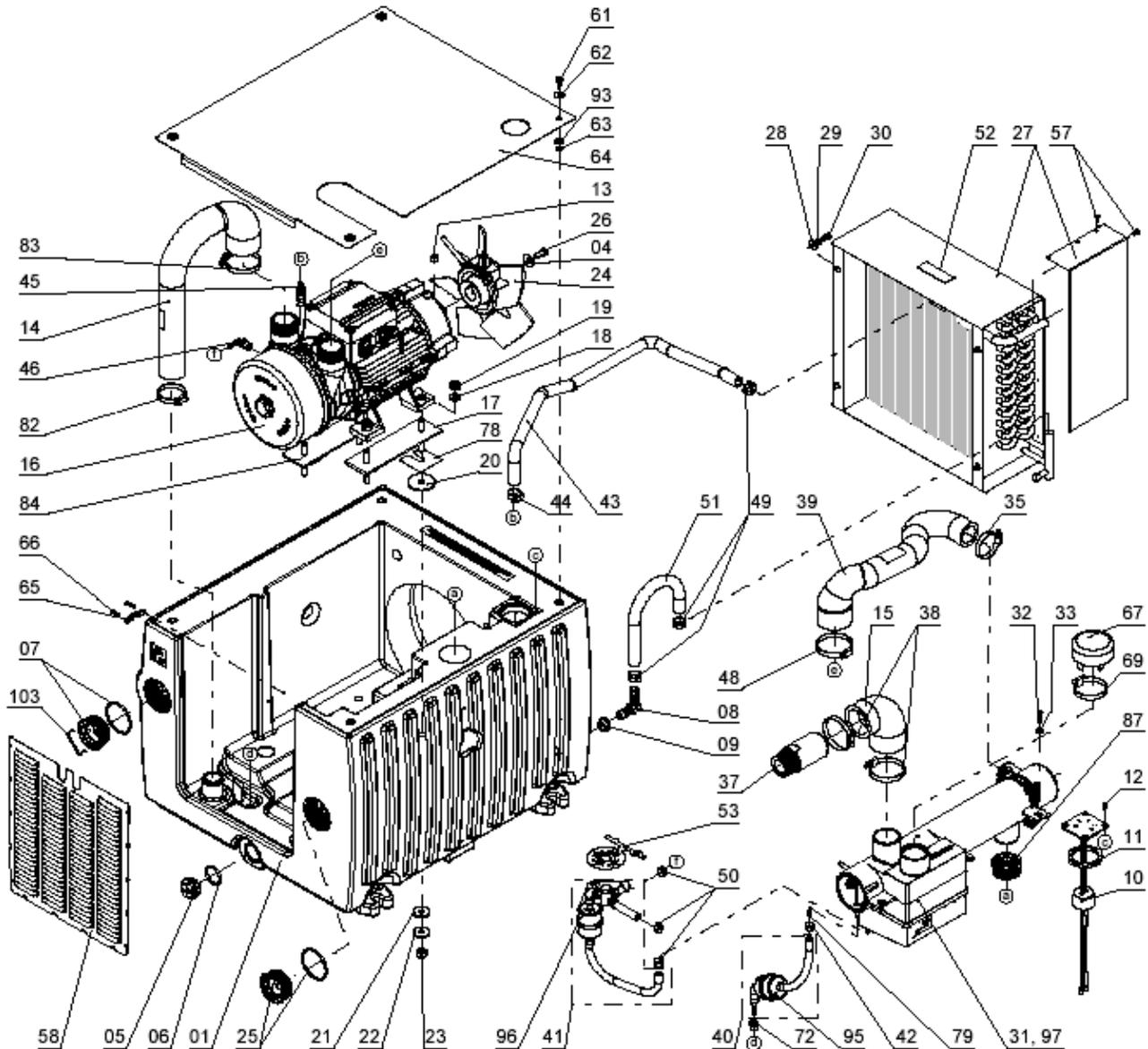
Exploded view EVE-WR-45D



1	shape separator	23	Nut	45	Screwed socket	70	Washer
3	Spacer washer	24	Cooling fan	46	Screwed socket	72	Nipple
4	Washer	25	Bung plug	48	Clamp	73	Air duct
5	Screw plug	26	Screw	49	Hose clamp	74	Air duct
6	O-ring	27	Water cooler	50	Hose clamp	76	Rubber plate
7	Bung plug	28	Washer	51	Hose section	77	Pressure relief valve
8	Hose nipple	29	Spring washer	52	Rating plate	78	Shim
9	Nipple	30	Screw	53	Valve tag	79	Throttle valve
10	Level indicator	31	Condensation cooler	56	Cooler cover	80	Throttle valve
11	Rectangular ring	32	Screw	57	Screw	82	Clamp
12	Screw	33	Washer	58	Protective grille	83	Clamp
13	Parallel key	34	Hose clamp	59	Washer	84	Bracket, complete
14	Discharge hose	35	Hose clamp	60	Screw	87	Rubber collar
15	Elbow	37	Connection piece	61	Sealing plug	93	Washer
16	Pump	38	Clamp	62	Washer	95	Filter
17	Bracket, complete	39	Inlet hose	63	Retaining ring	96	Filter
18	Washer	40	Injection line	64	Cover plate	97	Condensation cooler without braided tube bundle
19	Nut	41	Condensation pipe	65	Strain-relief clip		
20	Washer	42	Hose clamp	66	Screw		
21	Washer	43	Hose section	67	Protective cap	103	Square bail
22	Washer	44	Hose clamp	69	Hose clamp		

NOTE: Depending on the type of the S_200, details of the representation in the exploded view might be different.

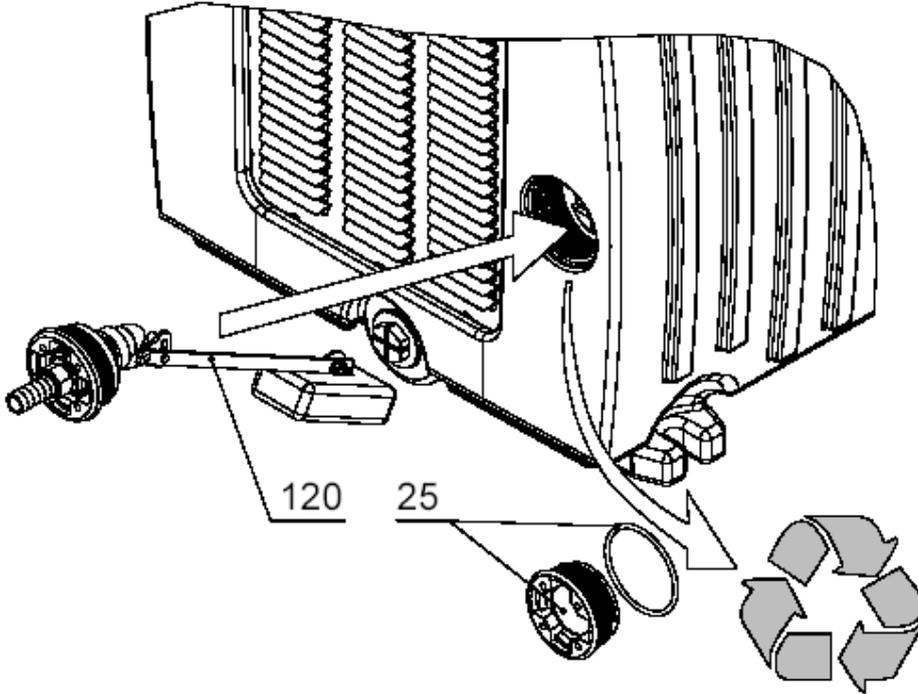
Exploded view EVE-WR-65D



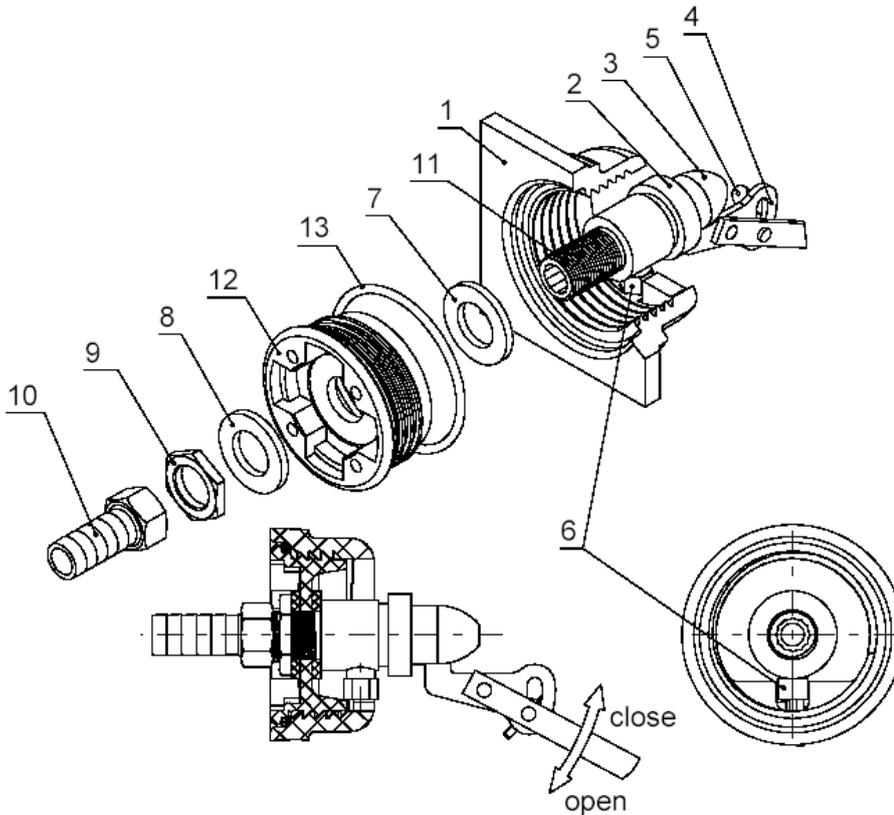
1	shape separator	23	Nut	45	Screwed socket	70	Washer
3	Spacer washer	24	Cooling fan	46	Screwed socket	72	Nipple
4	Washer	25	Bung plug	48	Clamp	73	Air duct
5	Screw plug	26	Screw	49	Hose clamp	74	Air duct
6	O-ring	27	Water cooler	50	Hose clamp	76	Rubber plate
7	Bung plug	28	Washer	51	Hose section	77	Pressure relief valve
8	Hose nipple	29	Spring washer	52	Rating plate	78	Shim
9	Nipple	30	Screw	53	Valve tag	79	Throttle valve
10	Level indicator	31	Condensation cooler	56	Cooler cover	80	Throttle valve
11	Rectangular ring	32	Screw	57	Screw	82	Clamp
12	Screw	33	Washer	58	Protective grille	83	Clamp
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16	Pump	38	Clamp	62	Washer	95	Filter
17	Bracket, complete	39	Inlet hose	63	Retaining ring	96	Filter
18	Washer	40	Injection line	64	Cover plate	97	Condensation cooler
19	Nut	41	Condensation pipe	65	Strain-relief clip		tube bundle
20	Washer	42	Hose clamp	66	Screw		
21	Washer	43	Hose section	67	Protective cap	103	Square bail
22	Washer	44	Hose clamp	69	Hose clamp		

NOTE: Depending on the type of the S_200, details of the representation in the exploded view might be different.

Installation of the feed regulator



Exploded view feed regulator



1	Feed/outlet regulator connection at the separator	8	Gasket
2	Knurled cap nut	9	Hexagon nut
3	Feed regulator	10	Hose nipple
4	Elbow section	11	R3/8 threaded pipe
5	Clamping screw	12	Bung plug
6	Water pipe	13	Sealing
7	Gasket		



**Declaration of clearance for the disassembly
of vacuum pumps/compressors**

When returning the pump-motor unit/the machine for repair and/or maintenance purposes, complete, sign and enclose this declaration.

The repair and/or maintenance of the returned pump-motor unit/machine in the workshop will only be carried out if this declaration has been completed, signed and enclosed. Each pump-motor unit/machine must be accompanied by a separate declaration.

The declaration must be attached to the outside of the packaging. In addition, prior to shipment a copy of the declaration should be forwarded to the workshop in charge, e.g. by fax.

This declaration may only be completed by authorized and qualified personnel of the operator.

Information on the operator:

Company/Department/Institute: _____
Address: _____
Postal/Zip code, city: _____
Contact person: _____
Position: _____
Phone: _____
Fax: _____

Information on the pump-motor unit/machine:

Product designation: _____
Type: _____
Serial number (No E/No N): _____
Reason for the return of the
pump-motor unit/machine: _____

The pump-motor unit/machine designated above and returned by the undersigned*)

has not come in contact with hazardous substances.
 was used for the following _____
applications _____

and has come in contact with the following substances which are subject to compulsory marking or are detrimental to health:

Trade name:	Chemical designation:	Properties (e.g. toxic, flammable, corrosive, radioactive):

*) Check where applicable



Prior to shipment the pump-motor unit/machine has been completely drained, purged and cleaned thoroughly both inside and outside according to the operating instructions.

Special safety precautions are not necessary for further handling.

The following safety precautions are required for further handling:

Safety data sheets in accordance with the relevant national and local codes and regulations are enclosed.

Legally binding declaration

We hereby affirm that the statements given in this declaration are correct and complete and that I, the undersigned, am capable of judging this. We are aware that we are liable to the contractor for any damage arising from incomplete or incorrect statements.

We undertake to hold the contractor harmless from third party damage claims arising from incomplete or incorrect statements. We are aware that - irrespective of this declaration - we are directly liable to third parties, in particular to the personnel of the contractor in charge of the handling as well as the repair/maintenance of the unit.

Place, date: _____ Name: _____

Company stamp: _____ Signature: _____