
WATER SEPARATOR WS4 ES

USER MANUAL



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User Manual WS4 ES

Intended use

The Corroventa WS4 ES water separator is developed and intended for use during suction drying of floating floors and other layered constructions and it has the capacity to remove not only water but also particles and dust.

As all other Corroventa machines, the WS4 ES is of a very robust design, a prerequisite for a very long life. Its housing is made of stainless steel and the built-in, submersible pump was selected for its ruggedness and suitability for this very tough environment. The pump is attached to the lid which also integrates all the electronics and the power cable. Thus, when the lid is removed, all that remains is a very easily cleaned housing. Although physically much smaller and weighing only 20 kg, the WS4 ES has the same efficient three step filtering as its predecessor. Naturally, it is compatible with all Corroventa turbines, old as well as new.

Features:

• High capacity	• Service friendly
• Robust	• Very low noise

Manufacturing Directive

The Corroventa WS4 ES is CE approved.

Waiver of Liability

Faulty, incorrect installations and/or incorrect use can cause damage to property and human injury. The manufacturer assumes no responsibility or liability for damages or injuries caused by non-compliance with the instructions herein, use for other purposes than the intended, or failure to observe its warnings. Such damage, injuries or liabilities are not covered by the product warranty. The product warranty does not cover consumables or normal wear and tear.

It is the responsibility of the buyer to inspect the product at time of delivery and before use to ensure its good function. The product warranty does not cover damage resulting from use of faulty products. Changes or modifications to the equipment must not be made without written consent by Corroventa Avfuktning AB.

The product, technical data and/or installation and operation instructions can be changed without prior notice.

This manual contains information that is protected by the Intellectual Property laws. No part of this manual may be copied, stored in an information system or transferred in any form or in any way without the written consent of Corroventa Avfuktning AB.

Any comments on the contents of this document shall be sent or addressed to:

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Safety information

This equipment can be used by children aged eight (8) years or above and people with reduced physical, sensory or mental capabilities or with lack of experience and knowledge provided they have been given instructions and information on how it is safely used and that they understand the hazards involved.

Children must not be allowed to play with the equipment. Cleaning and maintenance must not be performed by children without SuperVision.

Furthermore, the following warnings and instructions shall be read and observed:

1. The machine is intended for indoor use only.
2. The machine must be leveled when installed and operated. It must not be tilted more than 5 degrees.
3. The machine must not be powered until the installation is finished in accordance with this manual.
4. The machine must not be covered as this can lead to overheating and fire hazard.
5. The machine must not be used as table, trestle, pallet or stool.
6. The machine must not be used to step or stand on.
7. Never use the machine without all filters installed as the particles, the dust and the water that escapes the machine will be released with the air and will also, on the way, damage the turbine. Ensure that the filters are clean as a cluttered filter inevitably stops or disturbs the drying process and can also cause the connected turbine to overheat.
8. The machine must not be used in spaces where explosive gases can be present.
9. Install the machine steadily and leveled so that it cannot fall over.
10. Keep children, animals and spectators away from the work place while installation is undertaken.
11. If the machine is broken, if the power connector or the cable is damaged, contact the retailer. Do not repair the equipment if you have not received specific training by the manufacturer.
12. Be careful not to damage the power cable. The cable must not go through water or pass sharp edges.
13. Never carry or tow the machine by its cable.
14. To use electrical equipment in humid or wet environment can be dangerous. Never power the machine if it is standing in water.
15. The machine must only be connected to grounded power outlet with 230VAC, 50Hz, max 16A.
16. A residual-current device / ground fault circuit interrupter should be used to minimize the risk of electric shocks.
17. Water must not come in contact with the electrical components of the machine. If this has happened, ensure that the equipment is dry before it is used again.
18. The power must always be disconnected before the machine is opened.
19. Repairs and maintenance of the electronics and the electrical system of the machine must only be made by qualified electrician.
20. Air hoses/pipes that are used and connected to the machine must be corrosion-resistant, able to withstand 80°C heat and have sufficient structural strength not to collapse or break from the underpressure generated by connected turbine.
21. The machine must never be used with any other accessories than those listed in this manual or those specifically approved by Corroventa Avfuktning AB.

For further advice on product safety and use, please contact the supplier.

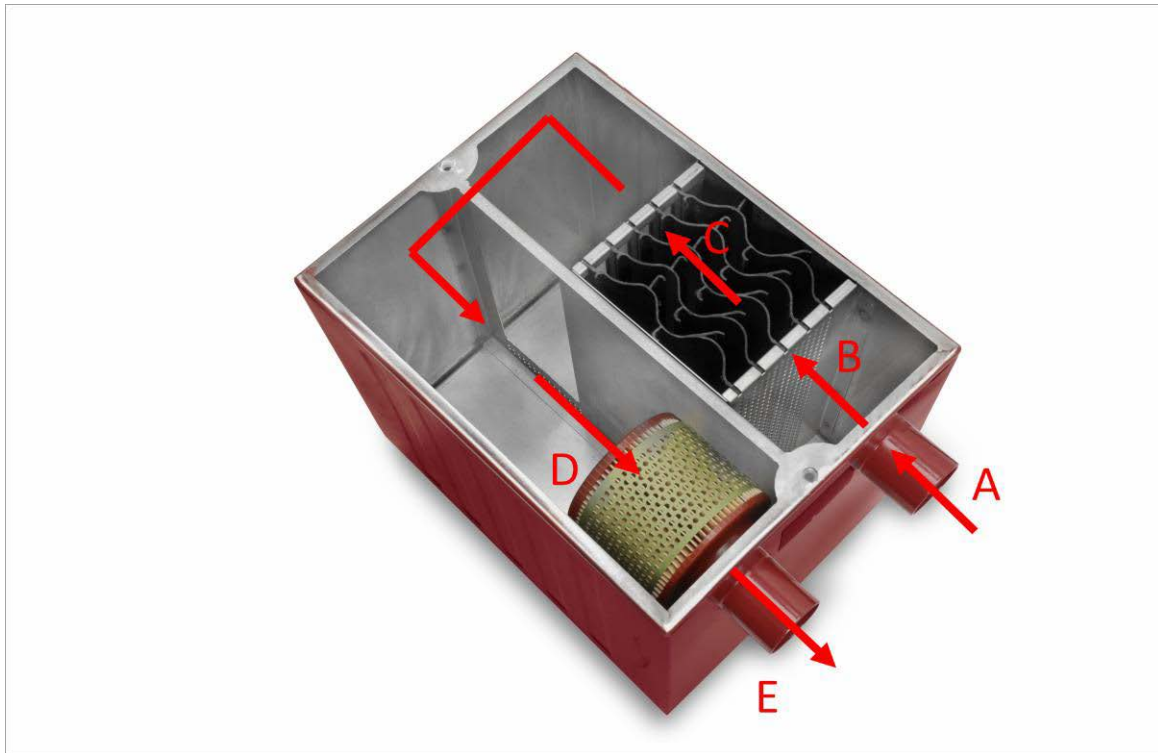
Use of WS4 ES for suction drying

The Corroventa WS4 ES, as earlier described, developed and intended for use during suction drying of layered constructions. As this, foremost, is a matter of drying material, the process is preferably assisted by an adsorption dryer as it creates a better Δx , a bigger difference in water contents between in- and outgoing air, than a condensing dryer does which increases the speed of the drying process.

To achieve circulation, movement of air, through the construction, the adsorption dryer is used in parallel with a turbine installed to draw air from the construction creating an underpressure that makes ambient air processed by the dryer enter it through drilled holes, gaps by the walls etc. Particularly in the beginning of the process the turbine normally pulls free water from the construction and this is where the need for a WS4 ES water separator arises. The system inlet is through hose/hose system connected to the construction and the outlet is connected to the turbine so that all air from the construction passes the filter before it reaches the turbine. This way, the water is collected allowing its disposal to be controlled and particles and dust gather in the filters. While protecting the turbine from water and dust related damages, naturally the quality of the air that is released from the turbine at suitable point outside the area to be dried is also significantly improved.

Functional overview, WS4 ES

The Corroventa WS4 ES filtering process functions as depicted and described below.



A	Inlet from water damaged construction
B	Step 1, Coarse filter
C	Step 2, Water separation
D	Step 3, air filter
E	Outlet to turbine or Kombi machine

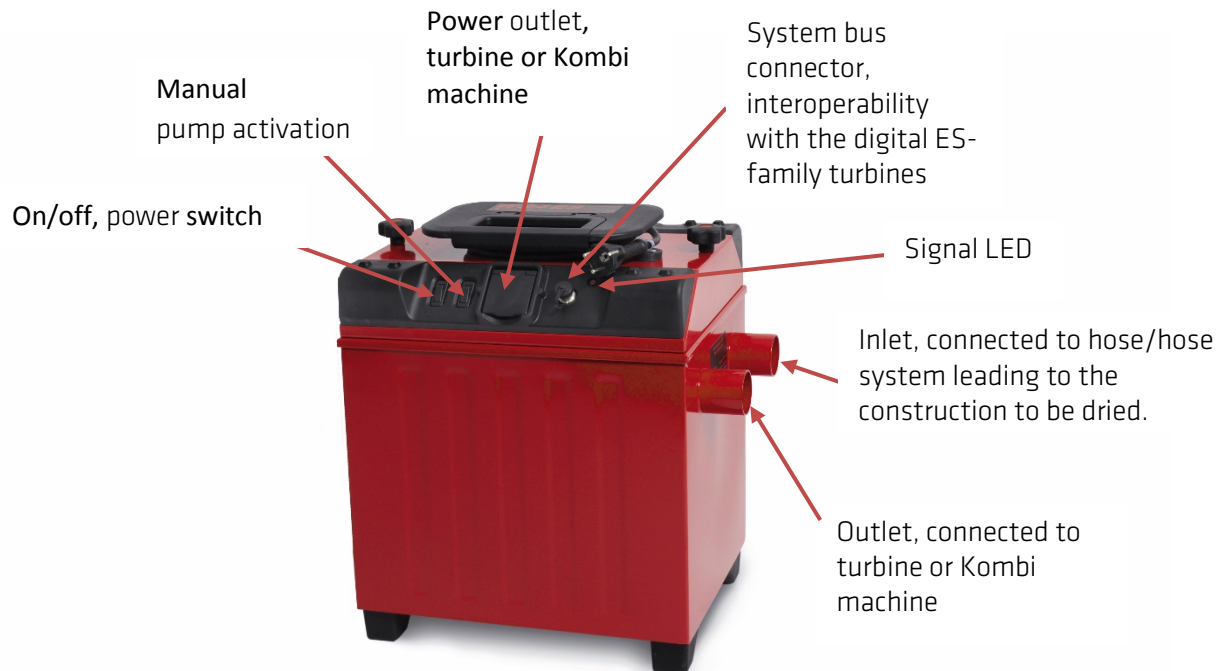
Delivery inspection

The Corroventa WS4 ES is delivered with the following items included:

WS4 ES	1 pc
Water hose	1 pc
Manual	1 pc

Product Overview

Below pictures present the WS4 ES with all its external features and controls



Installation

Before use, verify that the machine's interior is clean and that the air filter is not dirty or clogged. If necessary, clean the machine's interior and replace the air filter before the work is initiated.

Always use the power outlet on the WS4 ES machine to supply the turbine or the Kombi machine to ensure that it is stopped when the pump is activated. If the turbine/Kombi machine does not stop, the pump will not be able to empty the machine and water will reach turbine or the Kombi machine.

Installation:

1. Place the machine steadily and leveled to ensure that it does not fall over. The machine must not be tilted more than 5 degrees in order for it to work properly.
2. Connect the air hoses. The inlet is connected to the hose/hose system that leads to the construction. The outlet is connected to the turbine/Kombi machine.
3. Connect the water hose and lead it to suitable drainage.
4. **Connect the turbine/Kombi machine power cable to the power outlet of the WS4 ES.** Doing so ensure that the turbine/Kombi machine is stopped when the pump is activated, preventing water from reaching the turbine and also allowing the pump to function as intended. The built-in pump support elevation heights of up to 3.5 meters.
5. If using the WS4 ES with a digital ES-family turbine, in addition to the power cable, the WS4 ES can also be connected to the turbine with a system cable. Doing so allows for the turbine to count the number of times the water separator has been emptied and also to keep track of when the last cycle was completed. This connection is optional, not necessary. **Regardless of whether this connection is used or not, the turbine power cable shall always be connected to the WS4 ES.**
6. When installation of the turbine/Kombi machine is finished in accordance with its manual, connect the machine power cable to grounded, single phase 230VAC, 50Hz power outlet with maximum 16A fuse. As the machine is normally used in humid environment, the use of residual-current device / ground fault circuit interrupter is recommended.
7. Start the system with the On, Start, button. The alarm indicator will give one brief flash as to indicate that the start-up was successful and no errors were detected. If there is water in the WS4 ES, it empties this automatically before it powers the turbine/Kombi machine. If no water is detected, the turbine/Kombi machine is started immediately.
8. Verify that the air flows through the turbine and the construction are correct so that intended drying effect is achieved and that the process is not interrupted by overheating turbine/Kombi machine.



Use of WS4 ES with digital ES-family turbine

When using the WS4 ES water separator with a new ES family turbine, the power cable connection to the WS4 ES can be supplemented with a system cable so as to allow for the turbine to count how many cycles the WS4 ES has performed which is a good indication of how much water has been removed. In addition to the counting of the cycles, the turbine also keeps track of time and date of the last pump activation so that the user can get a good understanding of whether there is still coming any free water out of the construction or not.



WS4 ES connected to digital ES family Turbine with system cable.
This connection is optional, it does not have to be used.
Regardless of whether it is used or not, the turbine power cable shall always be connected to the power outlet of the WS4 ES.

Function and indicator signals




To operate the WS4 ES and to understand its indicator signals it is beneficial to know the following:


When the machine is powered, the power switch is activated, a short flash of the indicator LED shall be observed as indication of everything operating as intended.

If the machine detects water at start-up, it always runs the pump before it starts the turbine.

The switch for manual pumping will stop the turbine and activate the pump. When the machine is emptied, it automatically resumes normal operation and thus, if a turbine or Kombi machine is still connected, it will start again.

The WS4 ES indicator signals shall be understood and managed as follows:

Alarm	Action
 <p>Series of single flashes</p>	<p>A series of single flashes means that the levels sensors do not work correctly. The WS4 ES will continue to operate but the machine might not be fully emptied in each cycle and thus the pumping cycle frequency may increase.</p> <p>A probable cause to this alarm is a collection of dirt at the bottom of the machine. Stop the machine, disconnect the power and clean the machine in accordance with the instructions of this manual.</p>
 <p>Series of two flashes</p>	<p>A series of dual flashes means is a warning of the pumping being slower than expected. The warning is activated after ten minutes of pumping, to be compared with a normal pumping cycle of approximately one minute. As long as the pumping is completed within 30 minutes, the process will continue. If not completed within this time frame, the machine will stop and the WS4 ES will present a series of triple flashes.</p> <p>If this warning is presented, check that there is water coming out of the hose, that the hose is not squeezed or clogged. When this is done, stay by the machine until the pumping is completed and the turbine resumes operation.</p> <p>If this does not occur, stop the machine and disconnect the power. Clean the machine in accordance with this manual and try again.</p>
 <p>Series of three flashes</p>	<p>A series of triple flashes means that the pump has failed to empty the machine within 30 minutes and the operation was stopped to prevent damage. This alarm is persistent and will not disappear until the machine has been restarted.</p> <p>If this warning is presented, check that the hose is not squeezed or clogged. Use manual pump switch to see if the pump is functioning or if the problem remains. If it does remain, stop the machine and disconnect the power. Clean the machine in accordance with this manual and try again.</p>

 <p>Series of four flashes</p>	<p>A series of four flashes means that the overflow sensor has been triggered at least once. The third time these sensors is triggered the operation is stopped. The alarm is persistent and will not disappear until the machine has been restarted. If the sensor was triggered immediately at start- up the machine will not start the turbine.</p> <p>A probable cause to this alarm is that the second, middle sensor does not work due to collection of dirt. Stop the machine and disconnect the power. Clean the machine in accordance with this manual and try again. If the alarm was presented immediately at start-up, the overflow sensor could be clogged or malfunctioning. Stop the machine and disconnect the power. Clean the machine in accordance with this manual and try again.</p>
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After finished job, dismant

When the job is finished, follow below instructions:

1. Stop the turbine, turn it off.
2. Push manual pump button to empty the WS4 ES.
3. Turn the WS4 ES off and disconnect power.
4. Disconnect hoses.

At a suitable location, loosen and remove the lid. With water, clean and empty the WS4 ES of all collected dirt and dust. If it is dirty, replace the filter

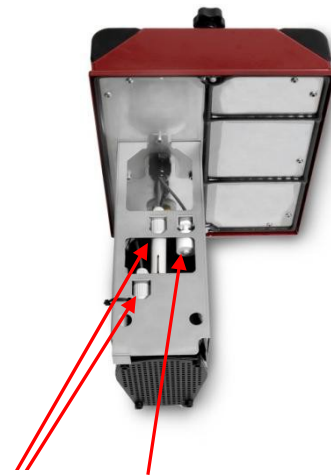
Maintenance and service

Filter replacement

The air filter in the machine shall be regularly replaced, suitably for each new job or as soon as it is dirty and/or clogged.

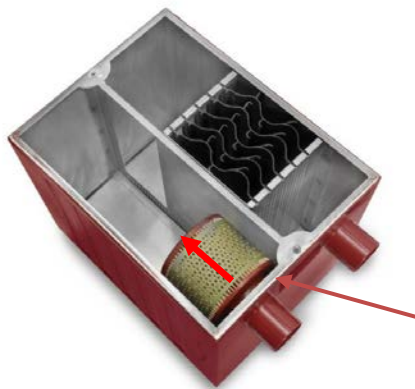
1. Make the machine powerless, disconnect the power cable.
2. Turn the knobs on the lid anti-clockwise and then remove the lid. Pull out the dirty filter and, without any tools install the new one pushing it into place.
3. Put the lid back on and lock it by turning the knobs clockwise.

Turn the knobs anti-clockwise to loosen the lid. Lift it out of the machine.



Sensors, pump stop and, higher up, pump start.

Overflow sensor



Pull the filter inwards to remove it. Push the new filter in position on pipe.

Cleaning the WS4 ES

The WS4 ES should, for maximum life length and reliability, be cleaned after usage and this is very easily done.



The WS4 ES must be made powerless before it is cleaned.

1. Loosen the lid by turning the knobs anti-clockwise and then remove it.
2. Remove the air filter and use water hose to flush and clean the machine interior. Empty the machine of all water and dust.
3. Install new air filter.
4. Before putting the lid back on, inspect the sensors and the bottom of the pump to see that no dirt is collected there. Put the lid back on and secure it by turning the knobs clockwise.

Accessories and consumables

The following articles are available as accessories and consumables to the WS4 ES:

Article Number	Name
10603	Air filter, Inline
21214	Hose, 10m
6000342	Hose connector, female, for hose 21214
6000341	Hose connector, male, for hose 21214

Fault finding

For information on the different indicator signals and how to address them, please refer to paragraph Function and indicator signals.

Symptom	Probable cause	Action
Although the pump is running, the machine is never emptied.	<p>The water hose can be clogged/squeezed or lead higher than 3,5 meters, the maximum elevation height of the pump.</p> <p>The turbine/Kombi machine power cable is not connected to the machine but to a separate power outlet. Therefore, it does not stop and the underpressure prevents the pump from functioning.</p>	<p>If necessary, clean the hose and make sure the elevation is not higher than 3.5 meters.</p> <p>If not done already, connect the turbine/Kombi machine power cable to the machine so that it is stopped when the pump is activated.</p>
The pump does not start or makes noise.	Heavily dirty or failing pump and/or sensor/float switch.	<p>Clean the machine in accordance with the instructions of this manual.</p> <p>Verify that the installation is correct</p> <p>If the problem(s) still remain, contact your retailer for repair.</p>
It is not possible to start the pump manually, the WS4 ES does not react to the manual pump switch.	<p>There is no water in the WS4 ES.</p> <p>If there is water in the machine and the pump still does not start, either the sensor or the pump is failing.</p>	<p>If the WS4 ES does not detect any water, the pump will not start.</p> <p>Try to clean the machine. If that does not help, contact your retailer for repair.</p>

Turbine/Kombi machine does not start.	<p>Depending on the situation: Pump is active.</p> <p>An alarm has been triggered and stopped the WS4 ES.</p> <p>The turbine/Kombi machine is not correctly connected or started.</p> <p>WS4 ES failure.</p>	<p>Trouble shoot as follows, given the situation:</p> <p>Check to see if water is coming out through the drainage hose. If so, the turbine will resume when the WS4 ES has been emptied.</p> <p>Check the WS4 ES alarm indicator. If it is flashing, signaling an alarm, please refer to paragraph Function and indicator signals.</p> <p>Verify that it is connected to the power outlet of the WS4 ES, that it is activated and that there is power to the WS4 ES.</p> <p>If the above has not helped, restart the WS4 ES and check that it, upon activation, gives a short flash of the alarm indicator confirming that it has not detected any errors. If so, continue the trouble shooting with the turbine/Kombi machine that may be the cause of the problem. If not, contact your retailer for service and repair:</p>

Technical data

Max pump elevation (m)	3,5
Capacity (l/min)	25
Voltage	230 VAC / 50 Hz
Rated power (W)	700
Height x width x length (mm)	487 x 293 x 446
Weight, kg	20



DO YOU HAVE QUESTIONS OR NEED HELP?

*Visit www.corroventa.com or call us to speak with an expert.
We have the knowledge and the equipment to find a solution as efficiently as possible.*

Corroventa develops, manufactures, sells and rents high quality products for dealing with water damage, moisture, odours and radon. We are one of the market leaders and specialists in innovation within the industry. Our products are compact, effective, ergonomic and energy efficient. In emergency situations and during flooding, Corroventa's customers have access to one of the largest rental parks in Europe. All our products are manufactured in Bankeryd, Sweden.



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