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Operating Manual

Compact Recirculating Cooler AWC100



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1 Foreword

Congratulations!

You have made an excellent choice.

JULABO would like to thank you for the trust you have placed in our company and products.

This operating manual will help you become acquainted with the use of our units. Read the operating manual carefully. Keep the operating manual handy at all times.

If you have any questions about operation of the device or the operating manual, please call us, write us an email or send a fax.

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2 Intended use

This section defines the purpose of the unit so that the operator can operate the unit safely and avoid misuse.

Recirculating coolers are intended for the temperature control of liquid media. An external cooling circuit is connected to the connections, via which media can be constantly cooled.

Only use the device if it is in technically perfect condition and only use it in accordance with its intended use. Be aware of safety issues or hazards and comply with the operating manual! In particular, always immediately rectify malfunctions that could impair safety!

The recirculating coolers are not suitable for direct temperature control application of food, other consumables or pharmaceutical or other medical products.

The devices are not suitable for use in an explosive environment.

Any other uses not listed here are not considered as intended.

3 Safety

3.1 General Safety Instructions for the operating company

This section outlines the General Safety Instructions that must be observed by the operator to ensure safe operation.

- The operator is responsible for the qualifications of its operating personnel.
- The operator must ensure that the operating personnel has been instructed in use of the device.
- The device operators must receive regular training about the dangers involved in their work and measures to prevent such dangers.
- The operator must ensure that persons entrusted with the operation, installation and maintenance have read and understood the operating manual.
- The device may only be configured, installed, maintained and repaired by trained personnel with appropriate qualifications.
- If hazardous substances or substances that may become hazardous are used, the device may only be used by personnel who are qualified to handle these substances and the device.
- The operator must ensure that the device is checked for safety and functionality at regular and usage-related intervals.
- The integrity of the safety symbols on the device must be checked at least every two years.
- The operator must ensure that the mains supply has a low impedance to prevent influencing other devices powered by the same supply.

3.2 General Safety Instructions for the operator

This section outlines the General Safety Instructions that must be observed by the user to ensure safe operation.

- The unit may be connected to protected earth (PE) mains power outlets only
- The mains plug serves as a safe protective separation from the power supply network and must always be freely accessible
- Do not attempt to use the unit if the mains cable is damaged
- Install the unit on an even surface on a supporting layer made of non-combustible material
- Be sure to read the operating manual before initial operation
- Use tubing suitable for temperature control purposes
- Secure hose connections against slipping
- Avoid kinking the tubing
- Regularly check tubing for material fatigue, such as cracks
- Never put a damaged or leaking unit into operation
- Before performing service or repair tasks or transporting the unit, switch the unit off and remove the power plug from the socket
- Completely drain the unit before transporting it
- Switch off the unit and disconnect the mains plug before carrying out any cleaning work
- Transport the unit carefully
- Shaking or falls may damage the inside of the unit
- Observe safety labels

- Do not remove safety labels
- Service and repairs may be performed by authorised expert personnel only

3.3 General safety instructions for bath fluids

Bath fluids must meet a variety of requirements. The following safety instructions must be observed to guarantee safe operation in the long term.

Please note when using bath fluids:

- Due to its high lime content, hard water is not suitable as a bath fluid as it can lead to premature calcification of the unit
- Water containing iron can lead to the formation of rust, even on stainless steel components
- Chlorinated water can lead to pitting corrosion
- Distilled and deionised water can also lead to corrosion of stainless steel components

3.4 Safety symbols

There are safety symbols included with the device, which should be attached to the device before initial operation.

Safety symbols	Description
	Warning of a danger zone. Note operating manual
	Read operating manual before switching on

3.5 Warnings

The manual contains warnings to increase safety when using the device. Warnings must always be observed.

A warning sign displayed in signal color precedes the signal word. The signal word, highlighted in color, specifies the severity of the hazard.



CAUTION

This signal word designates a danger with a low level of risk which, if it not prevented, may result in minor to moderate injuries.



WARNING

This signal word designates a danger with a medium level of risk which, if it not prevented, may result in death or serious injuries.



DANGER

This signal word designates a danger with a high level of risk which, if it not prevented, will result in death or serious injuries.



NOTE

This signal word designates a possibly harmful situation. If it is not avoided, the system or objects in its vicinity may be damaged.

3.6 Symbols used

Various symbols are used throughout this manual to aid reading comprehension. This list describes the symbols used.

- 🛠 Tools needed for the following approach
- ▶ Prerequisite to be met for the following procedure
- 1. Numbered action steps
- ➥ Interim result for individual action steps
- ☝ Additional note for individual action steps
- ✓ Final result of a procedure

4 Description

The recirculating cooler AWC 100 can be used as a cooling unit for water in closed circuits.

A pump delivers the cooling water via the cooling water outlet into the external circuit and cools the connected application. The cooling water flows back into the recirculating cooler via the cooling water inlet. Heat is permanently extracted from the flowing liquid in the recirculating cooler. The water temperature depends on the ambient temperature and must not exceed 40 °C.

4.1 Operating and functional elements

The following figure shows the operating and functional elements and their position on the unit.

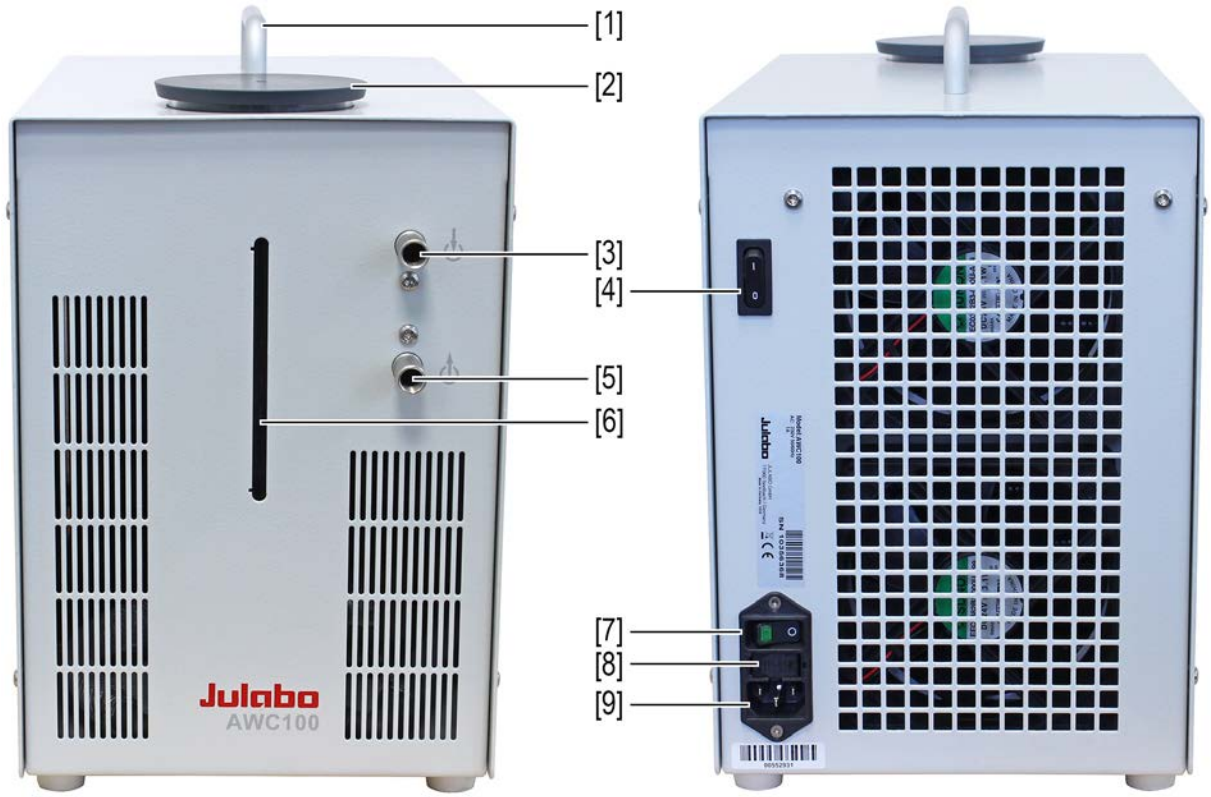


Fig. 1: Control and function elements

1	Handle
2	Cooling water reservoir cover
3	Cooling water inlet hose connection
4	Cooling capacity switch
5	Cooling water outlet hose connection
6	Cooling water reservoir min./max. level indicator
7	Mains switch

8	Fuse 2 x T 1,25 A
9	Mains connection

4.2 Technical data

The table contains the technical data of the unit. It refers to the rated voltage and rated frequency as well as to an ambient temperature of 20°C.

Technical data						
Working temperature range		°C	+20 … +40			
Cooling capacity depends on the temperature difference between the runback and ambient temperature		°C	20	15	10	5
	Stage 0	W	400	320	220	120
	Stage 1	W	550	440	300	180
Circulating pump Flow rate, max. Pressure, max.		 l/min bar	 3.5 0.49			
Noise level at 1 m distance		db (A)	55			
Storage tank filling volume		l	0.9			
Dimensions (WxHxD)		cm	20x34x30			
Protection class according to IEC 60529			IP 21			
Permissible ambient temperature range		°C	5 … 40			
Weight		kg	11			
Mains connection		V/Hz	100 … 230/50/60			
Current consumption (230 V)		A	1			
Power cable 3x1 mm², 2.5 m		V/A	250/10			
Fuse 2x		A	1.25			

The device is designed for safe operation under the following ambient conditions:

- Indoor use
- Altitude up to 2000 m NHN
- Ambient temperature +5 … +40 °C
- Maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly down to 50% relative humidity at 40 °C
- Mains voltage fluctuations up to ±10% of the nominal voltage permitted if not otherwise specified

4.3 Bath fluids

The most important criterion when selecting the bath fluid is the working temperature range in which the application is operated.

- Selection of the bath fluid must ensure that the flash point is never exceeded when it comes into contact with the ambient air.
- Recommended bath fluids and further information can be found on our website



NOTE

No liability accepted for usage of bath fluids that are not suitable!
Unsuitable bath fluids that are not approved by JULABO can damage the water bath.

- Use bath fluids that are recommended by JULABO
- Before filling, check the parts that are in contact with the medium for compatibility with the bath fluid
- Do not exceed the maximum permissible viscosity during operation
- Consult JULABO before using a bath fluid other than the recommended one

The unit is suitable for the following bath fluids:

- Softened/decalcified water, temperature range +5 … +80 °C

4.4 Recommended hoses

The hoses listed in the table are recommended for the unit. These can be ordered from JULABO.

Order number	Designation	Inner diameter
8930008	1 m CR hose	8 mm
8930010	1 m CR hose	10 mm

5 Operation

5.1 Transport

This section describes how to transport the unit safely.



CAUTION

Risk of injury, device may tip over!
Unsecured devices may tip over during transport and cause injuries.
- Secure the device against tipping and falling during transport
- Secure loose parts against falling during transport
- Transport the device upright and with suitable means of transport
- Wear protective shoes

▶ The unit is switched off and drained.
▶ A suitable transport trolley is ready.
1. Disconnect the mains plug of the unit.
2. Close the cooling water reservoir using the cover.
3. Place the unit upright and centrally on the transport trolley.
4. Secure the unit on the transport trolley against tipping over.
5. Place loose parts, such as cables, with the unit on the transport trolley.

✓ The unit is ready for transport.

5.2 Initial operation

This section describes how to put the unit into operation.



NOTE

Secure the hose connections to prevent them sliding off.
Improper assembly of the hose connections may cause them to leak or slip off the connection nozzles.
- Secure the hose connections to prevent them sliding off
- After initial operation, check all hose connections for leaks and a secure fit



NOTE

Do not exceed the maximum filling level in the cooling water reservoir!
The maximum fill level in the cooling water reservoir must not be exceeded. When the unit is switched off, excess water can flow back from the external application and overflow.
- When switching off the unit, prevent the water from flowing back from the external application
- Insert a stopcock or hose clamp into the external circuit

► The unit is unpacked.

1. Place the unit on a horizontal and firm surface.

➥ For good ventilation and heat emission, a distance of at least 20 cm from the wall and adjacent equipment must be maintained.

2. Connect the unit with the mains plug to a mains power outlet.
3. Connect the hoses of the external application to be cooled to the connections of the unit.
4. Remove the cover of the cooling water reservoir.
5. Fill the cooling water reservoir with water up to the maximum mark.
6. Close the cooling water reservoir using the cover.
7. Switch unit on at the mains switch.

➥ The pump starts to pump the water through the condenser and the external application.

8. Observe the level in the cooling water reservoir and top up with water when the level reaches the minimum mark.

➥ The level should always be between the minimum and maximum marks during operation.

✓ The unit is ready for operation.

5.3 Operation

The recirculating cooler is very user-friendly. If it is connected to an external application, it is sufficient to switch it on. No settings are required. The recirculating cooler is designed for continuous operation under normal conditions.

► The device is ready for use and connected to an external application.

► The cooling output switch is set to Stage 0.

1. Switch the device on at the mains switch.

➥ The pump starts to pump the water through the condenser and the external application. The lower ventilator is active.

2. If you need a higher cooling capacity, switch the cooling capacity to Stage 1.

➥ The second ventilator is switched on.

✓ The device is in operation.

5.4 Emptying

The device must be completely drained if it is to be sent in for technical service or is to be properly disposed of.

In general, the device should be completely emptied before longer shutdowns or when there is a change to the external application.

► The unit is switched off.

► The external application is disconnected from the unit.

1. Disconnect the mains plug of the unit.
2. Remove the cover of the cooling water reservoir.
3. Provide a sufficiently large collecting vessel.
4. Tilt the unit quickly forwards over the collecting vessel.

➥ The water flows from the cooling water reservoir into the collection vessel provided.

5. When the cooling water reservoir is completely empty, close it with the cover.

✓ The unit is emptied.

5.5 Maintenance

The recirculating cooler is maintenance-free. If the cooling capacity decreases, it is sufficient to clean it. Proceed as described below.

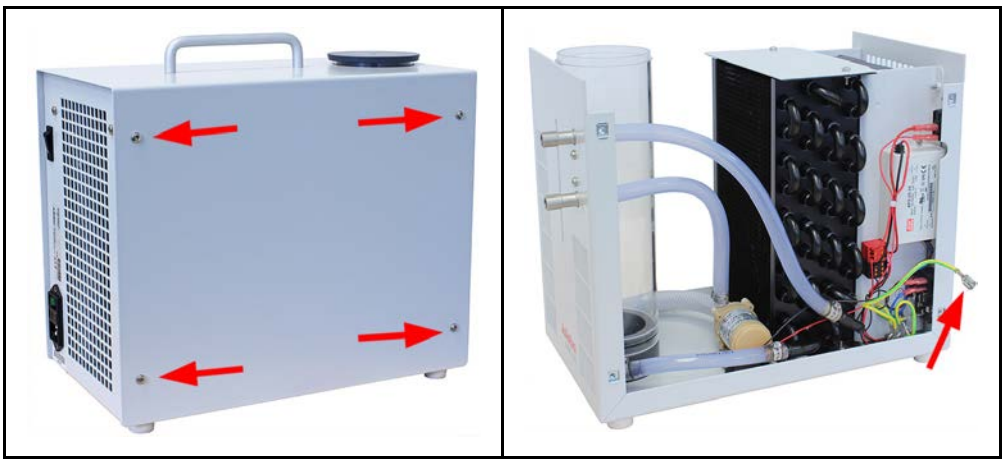
	NOTE
	Property damage due to service and repair work not carried out by an expert! Service and repair work carried out by unauthorised persons may result in damage to the unit. • Service and repair work may only be performed by qualified electricians • JULABO accepts no liability for property damage caused by service and repair work not carried out by authorised specialist personnel

🛠 Torx bit, size T20

🛠 Bit holder

▶ The unit is switched off.

1. Disconnect the external application from the unit.
2. Empty the unit.



3. Remove four fastening screws each on the left and right side of the unit [arrows, left figure].
4. Carefully remove the hood upwards and disconnect the earthing cable [arrow, right figure].
5. Use a vacuum cleaner to carefully remove dust and dirt from the inside of the unit.
6. Position the hood and connect the earthing cable [arrow, right figure].
7. Mount the hood with the fastening screws.
8. Clean the unit surface with a lint-free cloth and a mild cleaning agent.
9. Vacuum the vents.

✓ The unit is cleaned.

5.6 Technical Service

If the unit shows faults you cannot resolve, please contact our Technical Service.

JULABO Technical Service
Tel.: +1(610) 231-0250 Option 3
Fax: +1(610) 231-260
Email: Service@julabo.us

5.7 Warranty

Initial Warranty

Upon Seller's receipt of payment in full for the products and subject to Buyer's compliance with the terms of sale and any other agreement with Seller relating to the products, Seller warrants to the Buyer that the products manufactured by the Seller are free from defects in material and workmanship for a period not to exceed two (2) years of operation from the date the product is shipped by Seller to Buyer (the "Initial Warranty").

EXCLUSION OF ALL OTHER EXPRESS WARRANTIES; EXCLUSION OF ALL IMPLIED WARRANTIES.

OTHER THAN THE INITIAL WARRANTY, NO OTHER EXPRESS WARRANTIES ARE MADE. ALL IMPLIED WARRANTIES OF EVERY TYPE AND KIND, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, ARE EXCLUDED IN ALL RESPECTS AND FOR ALL PURPOSES. SELLER DISCLAIMS AND MAKES NO IMPLIED WARRANTIES WHATSOEVER.

Exclusions

The Initial Warranty does not include damage to the product resulting from accident, misuse, improper installation or operation, unauthorized or improper repair, replacement or alteration (including but not limited to repairs, replacements, or alterations made or performed by persons other than Seller's employees or authorized representatives), failure to provide (or use of improper) maintenance, unreasonable or unintended use or abuse of the product, or failure to follow written installation or operating instructions.

Buyer must return the product's record of purchase to the Seller or one of Seller's authorized representatives within thirty (30) days of the date the product is shipped by Seller to Buyer in order to make a claim under the Initial Warranty. Notwithstanding anything contained herein to the contrary, all glassware, including but not limited to reference thermometers, are expressly excluded from the Initial Warranty.

Buyer's sole remedies; Limitations on Seller's Liability

Buyer's sole and exclusive remedy under the Initial Warranty is strictly limited, in Seller's sole discretion, to either: (i) repairing defective parts; or (ii) replacing defective parts. In either case, the warranty period for the product receiving a repaired or replaced part pursuant to the terms of the Initial Warranty shall not be extended. All repairs or replacements performed by Seller pursuant to these Warranty Provisions shall be performed at one of the Seller's facility in Allentown, Pennsylvania, U.S.A. or at the facility of an authorized representative of Seller, which location shall be determined by Seller in its sole discretion; provided, however, that Seller may, in its sole discretion perform such repairs or

replacements at Buyer's facility in which case Buyer shall pay Seller's travel, living and related expenses incurred by Seller in performing the repairs or replacements at Buyer's facility. As a condition precedent to Seller's obligation to repair or replace a product part under the Initial Warranty, Buyer shall (i)promptly notify Seller in writing of any such defect; (ii) shall have returned the product's record of purchase to Seller or to Seller's authorized representatives within thirty (30) days of the date the product is shipped by the seller; and (iii) assist Seller in all respects in its attempts to determine the legitimacy and basis of any claims made by or on behalf of Buyer including but not limited to providing Seller with access to the product to check operating conditions. If Buyer does not provide such written notice to Seller within the Initial Warranty period or fails to return the product's record of purchase as set forth above, Seller shall have no further liability or obligation to Buyer therefor. In no event shall Seller's liability under the Initial Warranty exceed the original purchase price of the product which is the subject of the alleged defect.

THE REMEDIES PROVIDED IN THE INITIAL WARRANTY ARE THE SOLE AND EXCLUSIVE REMEDIES AVAILABLE TO THE BUYER. NOTWITHSTANDING ANYTHING TO THE CONTRARY CONTAINED HEREIN, AND EVEN IF THE SOLE AND EXCLUSIVE REMEDIES FAIL OF THEIR ESSENTIAL PURPOSE FOR ANY REASON WHATSOEVER, IN NO EVENT SHALL SELLER BE LIABLE FOR BUYER'S MANUFACTURING COSTS, LOST PROFITS, GOODWILL, OR ANY OTHER SPECIAL, INDIRECT, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES TO BUYER OR ANY THIRD PARTY AND ALL SUCH DAMAGES ARE HEREBY DISCLAIMED.

Assignment

Buyer shall not assign any of its rights or obligations hereunder without the prior written approval of Seller; provided, however, that if Buyer is a distributor of Seller, the rights and obligations of Buyer under these Warranty Provisions shall inure to the benefit of and be binding upon Buyer's customers who provide the product's proof of purchase to Seller pursuant to the terms set forth herein. Seller may assign any or all of its rights or obligations hereunder without Buyer's prior consent.

Governing Law

The Warranty Provisions and all questions relating to their validity, interpretation, performance, and enforcement shall be construed in accordance with, and shall be governed by, the substantive laws of the Commonwealth of Pennsylvania without regard to its principles of conflicts of law.

Waiver

Any failure of the part of Seller to insist on strict compliance with the Warranty Provisions shall no way constitute a waiver of such right. No claim or rights arising out of a breach of the Warranty Provisions by Buyer may be discharged in whole or in part by a waiver of the claim or right, unless the waiver is in writing signed by an authorized representative of Seller. Seller's waiver or acceptance of any breach by Buyer of any provisions of the Warranty Provisions shall not constitute a waiver of or an excuse for nonperformance as to any other provision of the Warranty Provisions nor as to any prior or subsequent breach of the same provision.

Freight

Seller will arrange and pay for shipping and handling for the return of the unit to the Buyer.

Out of Box Failure (OBF)

An Out of Box Failure (OBF) is defined as a product failure immediately following unpacking and installation of a newly delivered product. JULABO provides a 14-day grace period after the date of shipment, during which time the delivered product must be checked for defect. The same exclusions that apply to the regular warranty also apply to OBF classification. For example, JULABO will not be liable for transport damage, damage inflicted by the customer or any other party, or defects arising from improper installation or usage.

5.8 Sending a unit

After consulting with our Technical Service, the unit can be returned. The unit must be prepared accordingly for shipment.

1. Completely drain the unit.
2. Close all connections with nuts and plugs.
3. Pack the device carefully and protect it from damage.
4. Mark the packaging for upright transport of the device.
5. Complete the online return form at www.julabo.com/service.

✓ The device is ready for shipment and can be sent to JULABO Technical Service.

5.9 Disposal

When disposing of the device, the applicable country-specific guidelines must be observed.

1. Empty the unit completely.
2. Contact an authorised disposal company for disposal of the unit.

➥ It is not permissible to dispose of the unit in household waste or similar facilities intended for collecting household waste.

✓ The unit can be disposed of properly.

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