Julabo
THE TEMPERATURE CONTROL COMPANY

AWC100

Compact Recirculating Cooler

Original operating manual

1.950.4820.en.V08

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Legal

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Illustrations in this operating manual are for illustrative purposes and are not necessarily displayed to scale.

Contents

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 regarding the operation of the unit or the operating manuals, please call us or send us an e-mail or fax.

Contact:

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2 About this manual

This manual is intended for the equipment specified on the cover page.

NOTE

Observe the safety instructions!
Read the Safety section of this manual before using the equipment for the first time.

2.1 Original JULABO spare parts

Hassle-free continuous operation and safety also depend on the quality of the spare parts used.

Only original JULABO spare parts guarantee the highest possible quality and safety. Original JULABO spare parts are available directly from JULABO or your specialist dealer.

Please note that JULABO cannot provide a warranty service if non-original JULABO spare parts are used.

2.2 Accessories

JULABO offers a wide range of accessories for the devices. Accessories are not described in this manual.

The complete range of accessories for the devices described in this manual can be found on our website **www.julabo.com**. Use the Search function on the website.

2.3 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.

2.4 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

3 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.

4 Safety

4.1 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 operator must ensure that the mains supply has a low impedance to prevent influencing other devices powered by the same supply.

4.2 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

4.3 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

4.4 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

5 Product description

5.1 Function 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.

5.2 Operating and functional elements

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

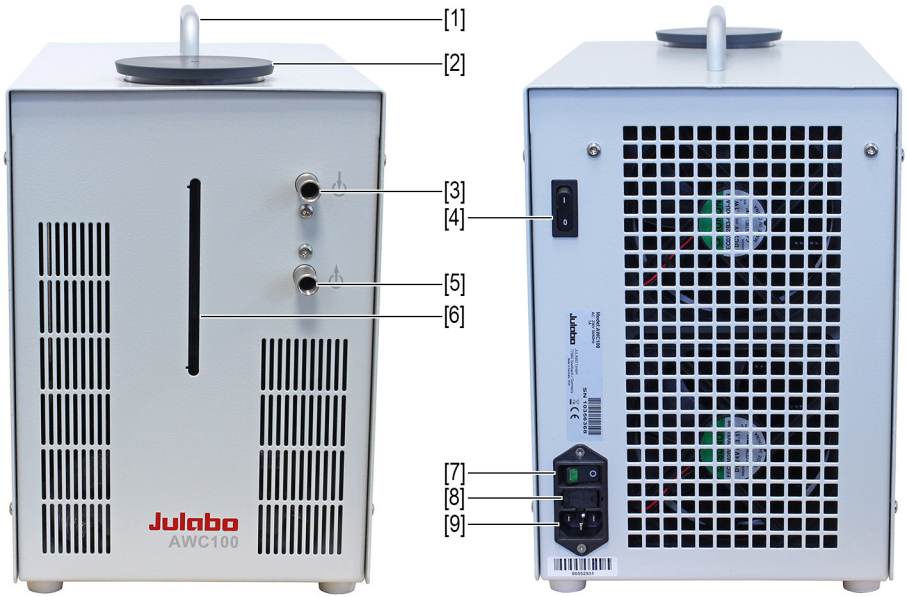


Fig. 1: Control and function elements

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

5.3 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.

In accordance with IEC 61010-1, the device is designed for safe operation under the following ambient conditions:

- Indoor use
- Altitude up to 2000 m above sea level
- Ambient temperature +5 … +35 °C
- Maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly down to 50% relative humidity at 35 °C
- Mains voltage fluctuations up to ±10 % of the nominal voltage permissible if not otherwise specified

Protection class according to EN 60 529:

- Protection class IP21

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			

5.4 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

6 Transport and installation

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.

7 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.

8 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.

9 Maintenance

9.1 Replace detachable power cord

The device is equipped with a detachable power cord.

If the power cord needs to be replaced, ensure that the new one is at least dimensioned for the device power requirements. Insufficiently dimensioned power cords must not be used. See type plate for mains voltage and current value.

We recommend only using original JULABO spare parts.

9.2 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.

9.3 Clean device

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!

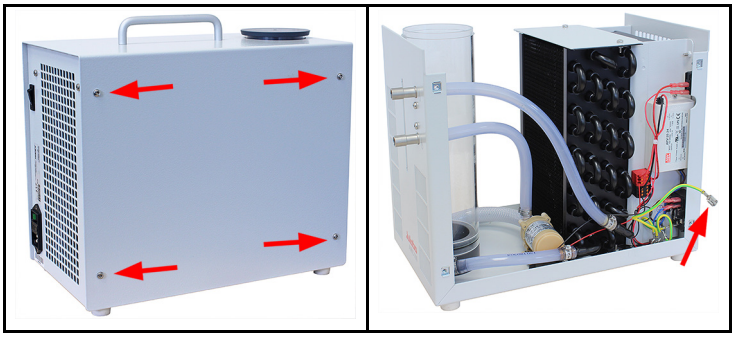
Service and repair work carried out by unauthorised persons may result in damage to the unit.

- 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 screwdriver, size T20

► 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.

9.4 Device storage

This section describes how to store the device.

► The device is switched off and disconnected from the mains voltage.
1. Empty all system components completely.
2. Clean the device.
3. Carefully dry the device and all its system components, e.g. with compressed air.
4. Close all connections.
5. Store the device in a dust-free, dry and frost-free location.

✓ The device is protected and can be safely stored there. It can be put into operation again as needed.

9.5 Technical Service

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

JULABO GmbH
Technical Service
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel.: +49 7823 51-66
Fax: +49 7823 51-99
Service.de@julabo.com

Before sending a device to Technical Service, the following points must be observed:
- Clean and decontaminate the device properly to avoid endangering service personnel.
- Include a brief description of the fault.
- Package the device safely for shipment.

9.6 Warranty

JULABO provides a warranty that the device will function perfectly as long as it is connected and used correctly and as described in the operating manual.

The warranty period is one year from the invoice date.

With the 1PLUS warranty, the warranty can be extended to two years free of charge.

The 1PLUS warranty gives the user a free extended warranty to 24 months, limit to a maximum of 10,000 hours of service.

A prerequisite for this is that the user registers the device at **www.julabo.com**, quoting its serial number, within four weeks of initial operation. The warranty applies from the date of JULABO GmbH's original invoice.

9.7 Device 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.

10 EC Declaration of Conformity

EG-Konformitätserklärung
EC-Declaration of Conformity

Hersteller / *Manufacturer*:

JULABO GmbH
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel: +49 7823 51-0

CE

Hiermit erklären wir, dass das nachfolgend bezeichnete Produkt
We hereby declare, that the following product

Produkt / *Product*: Luft- / Wasser- Umlaufkühler
Air- / Water Recirculating Cooler

Typ / *Type*: AWC 100 **Serien-Nr. / *Serial-No.*:** siehe Typenschild / *see type label*

aufgrund seiner Konzipierung und Bauart in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheits- und Gesundheitsanforderungen der nachfolgend aufgeführten EG-Richtlinien entspricht.
due to the design and construction, as assembled and marketed by our Company – complies with fundamental safety and health requirements according to the following EC-Directives.

Niederspannungsrichtlinie 2014/35/EU; Low-Voltage Directive 2014/35/EU
EMV-Richtlinie 2014/30/EU; EMC-Directive 2014/30/EU
RoHS-Richtlinie 2011/65/EU; RoHS-Directive 2011/65/EU

Angewandte harmonisierte Normen und techn. Spezifikationen:
Applied following harmonized standards and technical specifications:

EN IEC 63000:2018
Technische Dokumentation zur Beurteilung von Elektro- und Elektronikgeräten hinsichtlich der Beschränkung gefährlicher Stoffe
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EN ISO 12100 : 2010
Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung (ISO 12100:2010)
Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

EN 61010-1 : 2010 / A1 : 2019 / AC : 2019-04, EN 61010-1 : 2010 / A1:2019
Sicherheitsbestimmungen für elektrische Mess-, Steuer-, Regel- und Laborgeräte, Teil 1: Allgemeine Anforderungen
Safety requirements for electrical equiment for measurement, control, and laboratory use, Part 1: General requirements

EN 61326-1 : 2013
Elektrische Mess-, Steuer-, Regel- und Laborgeräte- EMV-Anforderungen- Teil 1: Allgemeine Anforderungen
Electrical equipment for measurement, control, and laboratory use - EMC requirements - Part 1: General requirements

Die Konformitätserklärung wurde ausgestellt
The declaration of conformity was issued and valid of

Seelbach, 19.11.2021

B. Rother

i.V. Bernd Rother, Senior Expert Products & Innovation

11 UK Declaration of Conformity

UK Office: JULABO UK Ltd., Unit 7, Casterton Road Business Park,
Old Great North Road, Little Casterton, Stamford, PE9 4EJ, United Kingdom,
Tel.: +44 1733 265892

UKCA-Declaration of Conformity

Manufacturer:

JULABO GmbH
Gerhard-Juchheim-Strasse 1
77960 Seelbach / Germany
Tel: +49 7823 51-0

UK CA

This declaration is issued under the sole responsibility of the product manufacturer

Product: Air- / Water Recirculating Cooler
Type: AWC 100 **Serial-No.:** see type label

The object of the declaration described above is in conformity with the relevant UK Statutory Instruments and their amendments:

Electrical Equipment (Safety) Regulations 2016
Electromagnetic Compatibility Regulations 2016
The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

Applied following harmonized standards and technical specifications:

EN IEC 63000:2018
Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

EN ISO 12100 : 2010
Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)

EN 61010-1 : 2010 / A1 : 2019 / AC : 2019-04, EN 61010-1 : 2010 / A1:2019
Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1: General requirements

EN 61326-1 : 2013
Electrical equipment for measurement, control, and laboratory use - EMC requirements - Part 1: General requirements

Authorized representative in charge of administering technical documentation:

JULABO UK Ltd., Mr. Gary Etherington, Unit 7, Casterton Road Business Park, Little Casterton, Stamford PE9 4EJ United Kingdom, Telephone: +44 1733 265892

The declaration of conformity was issued and valid of

Seelbach, 24.03.2021

B. Roth

i.V. Bernd Rother, Senior Expert Products & Innovation