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 regarding the operation of the unit or the operating manuals, please call us or send us an e-mail or 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 designed for temperature control of liquid media. An external cooling circuit is connected to the connections, using which media can be constantly cooled.

The recirculating coolers are not suitable for direct temperature control of food or other items intended for human consumption, pharmaceutical products, or medical products. Direct temperature control means an unprotected contact of the material to be temperature-controlled with the bath fluid.

The units are not suitable for use in a potentially explosive environment.

Any other uses not listed here are not considered as intended.
### 3 Warnings

The operating manual contains warnings intended to increase safety when handling the unit. The general warning sign, consisting of an isosceles triangle enclosing an exclamation mark and displayed in signal colours, precedes the signal words. The meaning of the danger is classified in conjunction with a signal word.

<table>
<thead>
<tr>
<th><strong>CAUTION</strong></th>
<th>The signal word indicates a hazard with a low degree of risk which, if not avoided, may result in minor to moderate injury.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WARNING</strong></td>
<td>The signal word indicates a hazard with a medium degree of risk which, if not avoided, may result in death or serious injury.</td>
</tr>
<tr>
<td><strong>DANGER</strong></td>
<td>The signal word indicates a hazard with a high degree of risk which, if not avoided, will result in death or serious injury.</td>
</tr>
<tr>
<td><strong>NOTE</strong></td>
<td>The signal word indicates a potentially harmful situation. If it is not avoided, the system or objects in its vicinity may be damaged.</td>
</tr>
</tbody>
</table>
4 Symbols used

Symbols are used as additional structural elements in various places in the manual.

The list describes the symbols used in the manual:

- Tool required for a following procedure
- Prerequisite for the following procedure
- Action steps are numbered consecutively
- The symbol shows an intermediate result for individual action steps
- The symbol shows the final result of a procedure

5 Responsibilities of the operating company

It is the responsibility of the operating company to ensure that the safety instructions described in this operating manual are observed.

5.1 General safety instructions, operating company

The products of JULABO GmbH are safe when installed, operated, and maintained according to the generally accepted rules of safety. This chapter explains the potential hazards that can arise in conjunction with operation of the recirculating cooler and describes the most important safety measures for eliminating these hazards when possible.

- The operating company is responsible for the qualifications of the operating personnel.
- The operating company ensures that the operating personnel have been instructed in the handling of the recirculating cooler.
- The operators must be trained on a regular basis on the hazards that occur during their activities and on measures for mitigating these hazards.
- The operating company must ensure that the persons entrusted with operation, installation and maintenance have read and understood the operating manual.
- When using hazardous materials or substances that may become hazardous, only persons qualified to handle these substances and the recirculating cooler may operate the recirculating cooler.

5.2 General safety instructions, operator

It is important that you follow all safety instructions in order to avoid personal injury and property damage. These instructions supplement workplace safety regulations.

- 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
6 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.

6.1 Operating and functional elements

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

![Operating and functional elements](image)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handle</td>
</tr>
<tr>
<td>2</td>
<td>Cooling water reservoir cover</td>
</tr>
<tr>
<td>3</td>
<td>Hose connection, cooling water inlet</td>
</tr>
<tr>
<td>4</td>
<td>Cooling capacity two-way switch</td>
</tr>
<tr>
<td>5</td>
<td>Hose connection, cooling water outlet</td>
</tr>
<tr>
<td>6</td>
<td>Level indicator, cooling water reservoir, min/max</td>
</tr>
<tr>
<td>7</td>
<td>Mains switch</td>
</tr>
</tbody>
</table>
### 6.2 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.

<table>
<thead>
<tr>
<th>Technical data</th>
<th>°C</th>
<th>+20 … +40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working temperature range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling capacity depending on the temperature differential between the return line and ambient temperature</td>
<td>°C</td>
<td>20  15 10 5</td>
</tr>
<tr>
<td>Stage 0 W</td>
<td></td>
<td>400  320 220 120</td>
</tr>
<tr>
<td>Stage 1 W</td>
<td></td>
<td>550  440 300 180</td>
</tr>
<tr>
<td>Circulating pump</td>
<td>l/min</td>
<td>3.5 0.49</td>
</tr>
<tr>
<td>Pressure, max.</td>
<td>bar</td>
<td></td>
</tr>
<tr>
<td>Sound level at 1 m distance</td>
<td>db (A)</td>
<td>55</td>
</tr>
<tr>
<td>Filling volume, reservoir</td>
<td>l</td>
<td>0.9</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
<td>cm</td>
<td>20x34x30</td>
</tr>
<tr>
<td>Protection class according to EN 60 529</td>
<td>IP</td>
<td>21</td>
</tr>
<tr>
<td>Permissible ambient temperature range</td>
<td>°C</td>
<td>5 … 40</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>11</td>
</tr>
<tr>
<td>Mains connection</td>
<td>V/Hz</td>
<td>100 … 230/50-60</td>
</tr>
<tr>
<td>Current consumption (230 V)</td>
<td>A</td>
<td>1</td>
</tr>
</tbody>
</table>

Environmental conditions according to IEC 61 010-1:
- For indoor use only
- Up to 2000 m above sea level
- Ambient temperature +5 … +40 °C
- Maximum relative humidity 80 % for temperatures up to 31 °C, decreasing linearly to 50 % relative humidity at a temperature of 40 °C
- Permissible voltage deviation ±10 %
6.3 Bath fluids

JULABO recommends suitable bath fluids that ensure a long life-time of the unit.

**NOTE**

JULABO assumes no liability if non-approved bath fluids are used!

Unsuitable, non-approved bath fluids can damage the unit.

- Only water is permitted as bath fluid
- JULABO recommends a water mixture of 70 % softened/decalcified water and 30 % tap water
- Consult with JULABO before using a bath fluid other than the recommended bath fluids

The unit is suitable for the following bath fluids:

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

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

6.4 Recommended hoses

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

<table>
<thead>
<tr>
<th>Order number</th>
<th>Designation</th>
<th>Inner diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>8930008</td>
<td>1 m CR hose</td>
<td>8 mm</td>
</tr>
<tr>
<td>8930010</td>
<td>1 m CR hose</td>
<td>10 mm</td>
</tr>
</tbody>
</table>
7 Operation

7.1 Transport

This section describes how to transport the unit safely.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk of injury due to the unit tipping over!</td>
</tr>
<tr>
<td>An unsecured unit may tip over during transport and cause injury.</td>
</tr>
<tr>
<td>• Secure the unit against tipping over and falling during transport</td>
</tr>
<tr>
<td>• Secure loose parts against falling during transport</td>
</tr>
<tr>
<td>• Transport the unit in an upright position using a suitable means of transport</td>
</tr>
</tbody>
</table>

- 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.

7.2 Initial operation

This section describes how to put the unit into operation.

<table>
<thead>
<tr>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure hose connections against slipping!</td>
</tr>
<tr>
<td>If the hose connections are installed incorrectly, they may leak or slip off the connection pieces.</td>
</tr>
<tr>
<td>• Secure the hose connections against slipping off</td>
</tr>
<tr>
<td>• After initial operation, check all hose connections for leaks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not exceed the maximum filling level in the cooling water reservoir!</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>• When switching off the unit, prevent the water from flowing back from the external application</td>
</tr>
<tr>
<td>• Insert a stopcock or hose clamp into the external circuit</td>
</tr>
</tbody>
</table>

- The unit is unpacked.
  1. Place the unit on a horizontal and firm surface.
  2. Place the unit on a horizontal and firm surface.
  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.

7.3 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 unit is ready for operation and connected to the external application.
▶ The two-way switch for the cooling capacity is set to stage 0.
1. Switch unit 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 two-way switch to stage 1.
   ➔ The second ventilator is switched on.
✓ The unit is in operation.

7.4 Emptying

If the unit is to be sent to Technical Service or disposed of properly, it must be completely emptied.
In general, the unit should be completely emptied before any extended shutdown and when changing 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.
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

梓 Torx bit, size T20
梓 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.
7.6 Technical Service

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

JULABO GmbH
Technical Service
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Fax +49 782351-99
Service.de@julabo.com
www.julabo.com/support

7.7 Sending a unit

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

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

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

7.8 Disposal

When disposing the unit, the usual 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.
EU-Konformitätserklärung
EU-Declaration of Conformity

Hersteller / Manufacturer:
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77960 Seelbach / Germany
Tel: +49(0)7823 / 51 - 0

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

aufgrund seiner Konzipierung und Bauart in der von uns in Verkehr gebrachten Ausführung den grundlegenden
Sicherheits- und Gesundheitsanforderungen den 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:
The above-named product is in compliance with the following harmonized standards and technical specifications:

EN 50581 : 2012
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 61010-1 : 2010
Sicherheitsbestimmungen für elektrische Mess-, Steuer- und Regelgeräte, Teil 1: Allgemeine Anforderungen
Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1: General requirements

EN 61010-2-010 : 2014
Sicherheitsbestimmungen für elektrische Mess-, Steuer- und Regelgeräte, Teil 2-010: Besondere Anforderungen an Laborgeräte für das Erhitzen von Stoffen
Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 2-010: Particular requirements for laboratory equipment for the heating of materials

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

Das CE-Zeichen wurde angebracht
The CE marking was affixed

Seelbach, 03.07.2019

M. Juchheim, Geschäftsführer / Managing Director

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