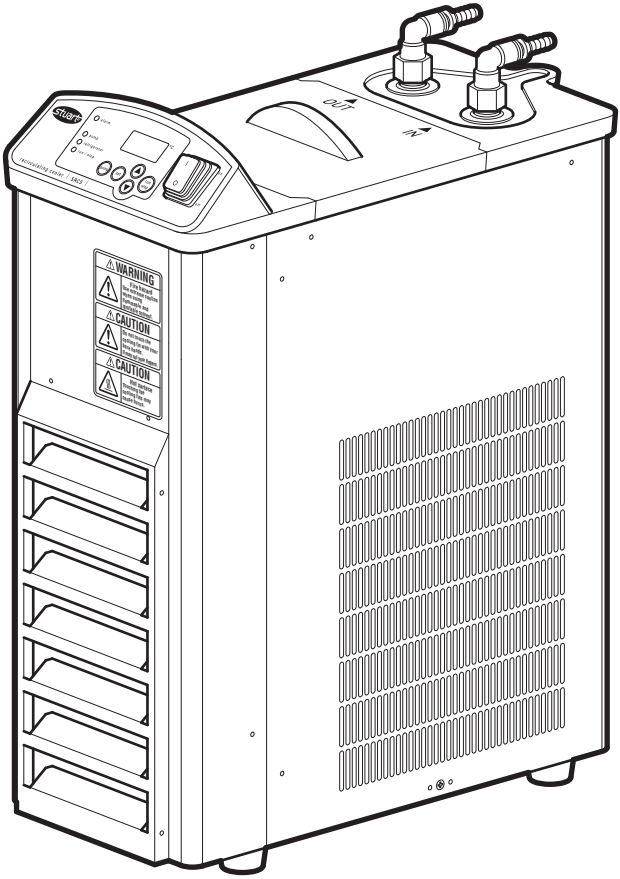
stuart®

Recirculating Cooler
SRC5



Instruction Manual

STU0004 / Version 1.1

Cole-Parmer®

Section 1 - Introduction

Thank you for purchasing this Stuart product. To get the best performance from the equipment, and for your own safety, please read these instructions carefully before use.

If the equipment is not used in the manner described in this manual and with accessories other than those recommended by the manufacturer, the protection provided may be impaired.

1.1 General Description

A Recirculating Cooler offers a powerful cooling for an external device. By accurately controlling the temperature of your cooling medium down to -20°C, efficiency of operations such as condensing can be greatly improved. A recirculating cooler is not only much more powerful than conventional water cooling, but is also an ideal alternative when water consumption is an issue for economical, environmental or practical reasons.

The SRC5 provides a powerful cooler with a compact footprint suitable for mounting on or under a bench. The LED digital display clearly shows the current temperature of the cooling medium to ±2°C, while the set temperature is revealed by a one button press.

The unit has a dedicated drain for easy emptying and cleaning. It also incorporates a built in safety alarm to indicate an overload relay for the refrigeration unit. A dust filter is incorporated and can be accessed without tools via the hinged front panel.

1.2 Important Safety Advice

Users should be aware of the following safety advice:

- **SHOCK HAZARDS OR UNSAFE PRACTICES ARE DANGEROUS** as they can cause severe personal injury, fire or death.
- **DO NOT** use combustible substances near hot objects.
- **DO NOT** cover any of the ventilation panels.
- **DO NOT** use the equipment in hazardous atmospheres.
- **DO NOT** operate or handle any part of the equipment with wet hands or use on surfaces that may become flooded.
- **NEVER** move the equipment while still connected to the power supply.
- **HIGH TEMPERATURES ARE DANGEROUS** as they can cause serious burns to operators and ignite combustible material.
- **USE CARE AND WEAR PROTECTIVE GLOVES TO PROTECT HANDS**.
- **NEVER** lift or carry the equipment during operation.
- **DO NOT** position the equipment unit so that it is difficult to disconnect from the mains supply using the mains plug.
- The mains outlet socket used should be located close to the equipment and readily identifiable and accessible to users.
- **DO NOT** leave equipment switched on and it is not recommended to leave any heating apparatus unattended during operation.
- The equipment should be transported and installed with a minimum of two people.
- The equipment is fitted with a power outage recovery mode. In case of mains interruption you can choose if you want the recirculating cooler to continue or stop once the power is restored, see section 4.3.
- **DO NOT** use the equipment with distilled or deionised water

1.3 Symbols Defined


BIOHAZARD


EARTH


HOT SURFACE


RISK OF ELECTRIC SHOCK


INFORMATION


WARNING


HEAVY OBJECT 2 PERSON LIFT REQUIRED


SHARP OBJECT

1.4 Electrical Requirements


THIS INSTRUMENT MUST BE GROUNDED

Before connection please ensure that the line supply corresponds to the power requirements below:

Model	Power	Supply requirements
SRC5	450 W	230 V ~ 50Hz

The equipment is provided with a power supply unit and three power cables consisting of a UK 3-pin and a "Schuko" 2-pin plug for 230 V installation.

Choose the power cable appropriate for your electrical installation and discard the others. Should none of the power cables be suitable for connecting to the power supply, replace the plug with a suitable alternative.

THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN.

NOTE: Refer to the equipment rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated. The wires in the mains cable are as follows:

230 V a.c.
HOT/LIVE - BROWN
NEUTRAL - BLUE
EARTH - GREEN/YELLOW

The appropriate power cable and power adaptor combination should be connected to the equipment BEFORE connection to the mains supply.

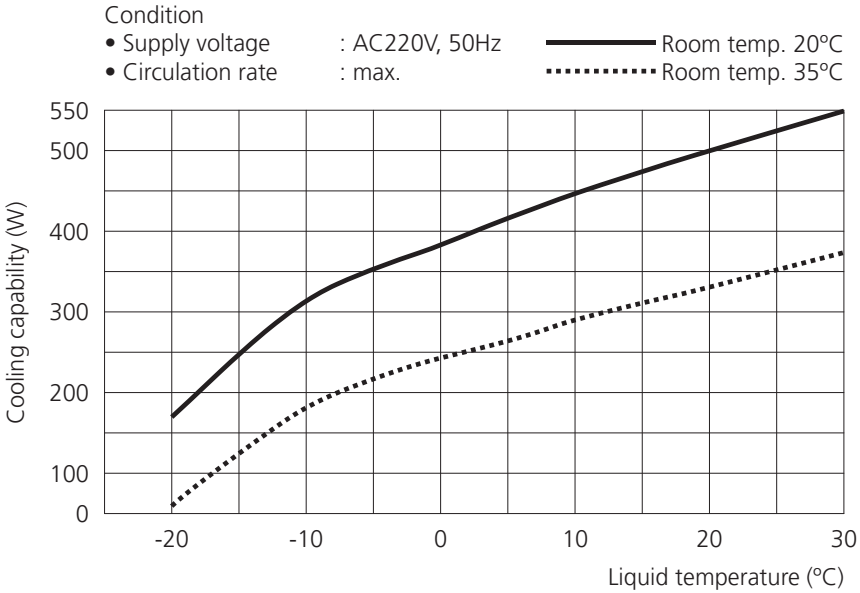
Should the mains lead require replacement please contact cpspares@coleparmer.com.


IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN

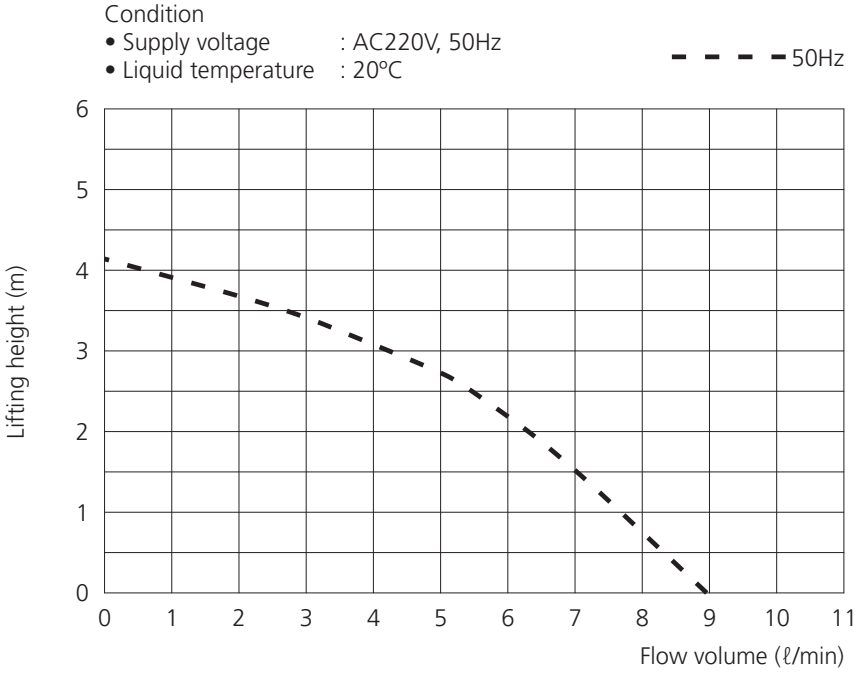
Section 2 - Specification

NOTE: Results can vary depending on environmental conditions, power supply voltage, solvent type and hose specification etc.

2.1 Cooling capability curve (Reference data)



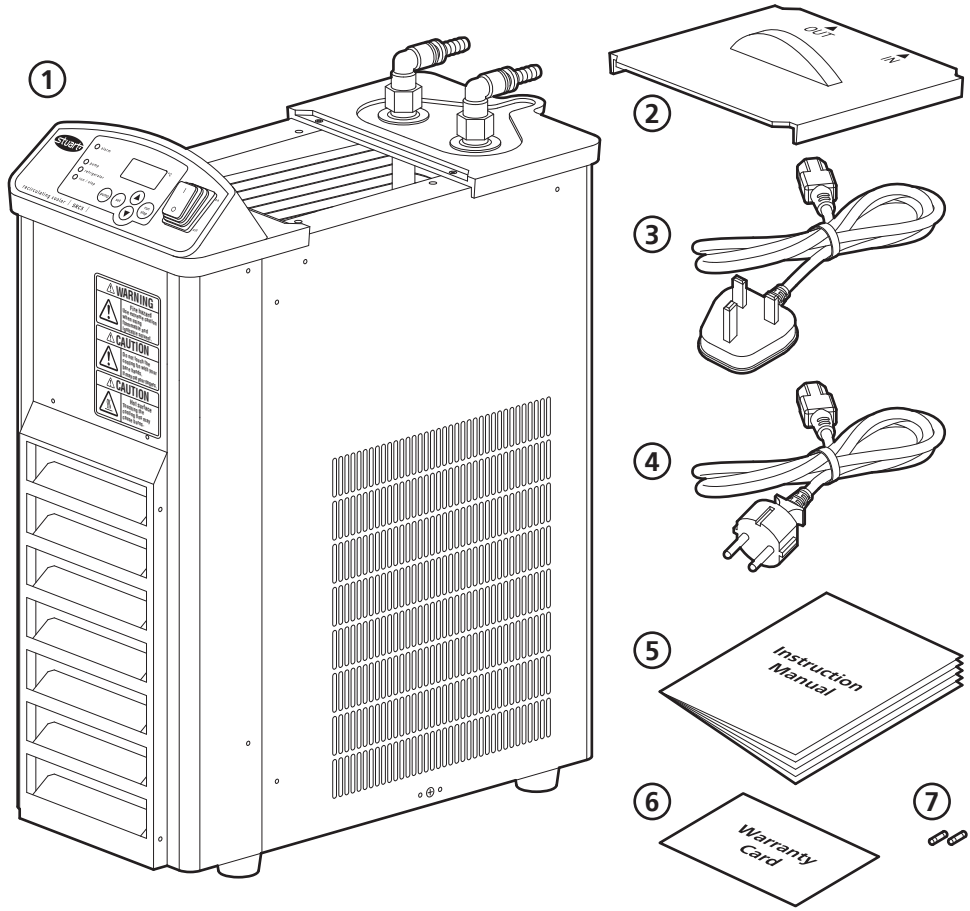
2.2 Circulation capability (Reference data)



Section 3 - Installation

3.1 Unpacking

Before discarding the packaging check that all parts are present and correct.

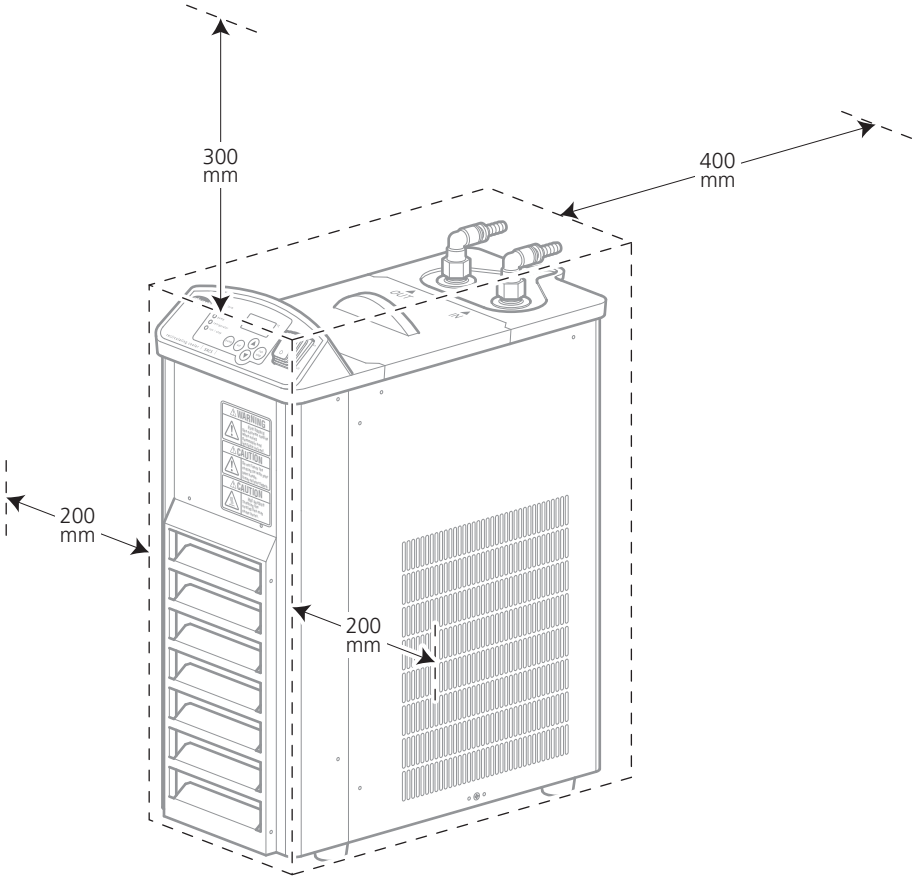


1. SRC5
2. Bath cover
3. UK power lead
4. Euro power lead
5. Instruction manual
6. Warranty card
7. Spare fuses x2

3.2 Installation Conditions

This equipment is designed to operate safely under the following conditions:

- For indoor use only
- Use in a well ventilated area
- Ambient temperature range 5°C to 35°C (41°F to 95°F)
- Altitude to 2000m (6500 ft)
- Relative humidity not exceeding 75% decreasing to 30% and free from condensation
- Mains supply fluctuations not exceeding 10% of nominal
- Overvoltage category II IEC60364-4-443
- Pollution degree 2 IEC664
- Use with the minimum distance shown from walls and other items as shown below.

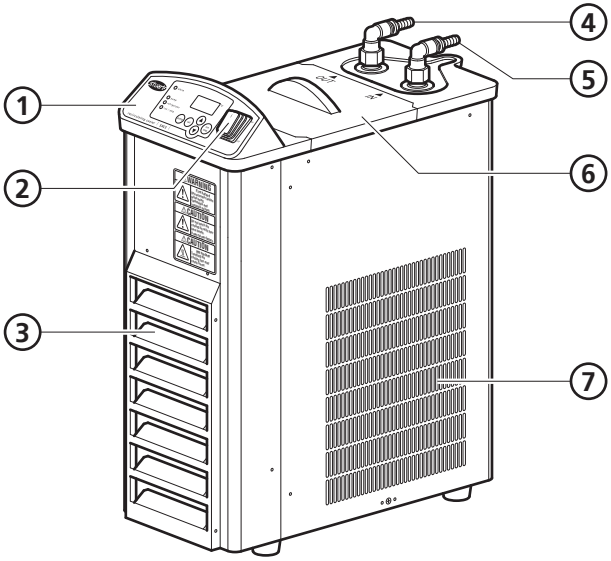


CAUTION: Two person lift required. This equipment weighs 28kg and should be transported and installed with a minimum of two people.

Place the equipment on a clean, firm, level surface which is free from drafts and away from direct sun light. Avoid installation on a slippery surface or on a surface prone to vibration or on a surface prone to flooding. You will require easy access to power, water supply and drain and vacuum line to use your recirculating cooler.

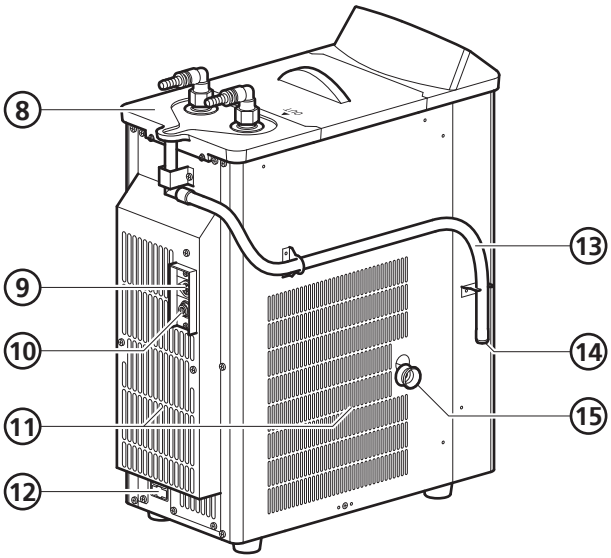
3.3 Overview

Main View



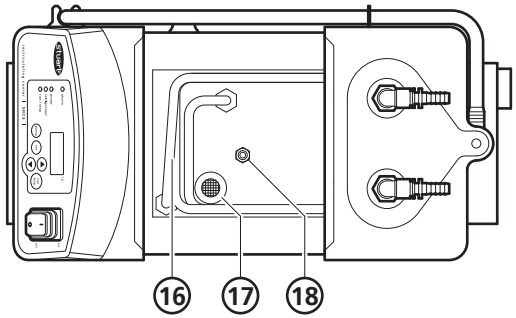
1. Control panel
2. Power switch
3. Ventilation cover
4. Water out
5. Water in
6. Bath cover
7. Ventilation

Rear View



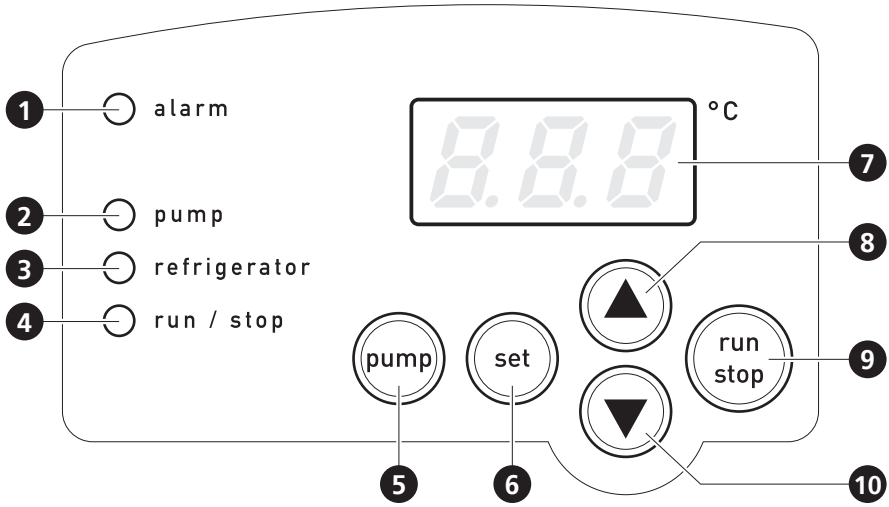
8. Tray
9. Communication connector
10. Communication terminal
11. Ventilation
12. Fused IEC connector
13. Tray drain hose
14. Tray drain plug
15. Drain plug

Rear View



16. Cooling coil
17. Strainer
18. Temperature sensor

Control Panel



1	Alarm light	- Comes on when an abnormal condition has been detected.
2	Pump light	- Comes on when the pump is ON.
3	Refrigerator light	- Comes on when the refigerator is ON.
4	Run/Stop light	- Comes on when temperature control is started.
5	Pump	- Use to switch the pump ON/OFF.
6	Set	- Use to switch between temperature setting and measurement mode. Clears alarm.
7	Display	- Temperature is displayed. Alarm is displayed when an abnormal condition occurs.
8	Up key	- Press to increase temperature by 1°C. Press and hold to continually increase value.
9	Run/Stop	- Use to switch between start/stop temperature control.
10	Down key	- Press to decrease temperature by 1°C. Press and hold to continually decrease value.

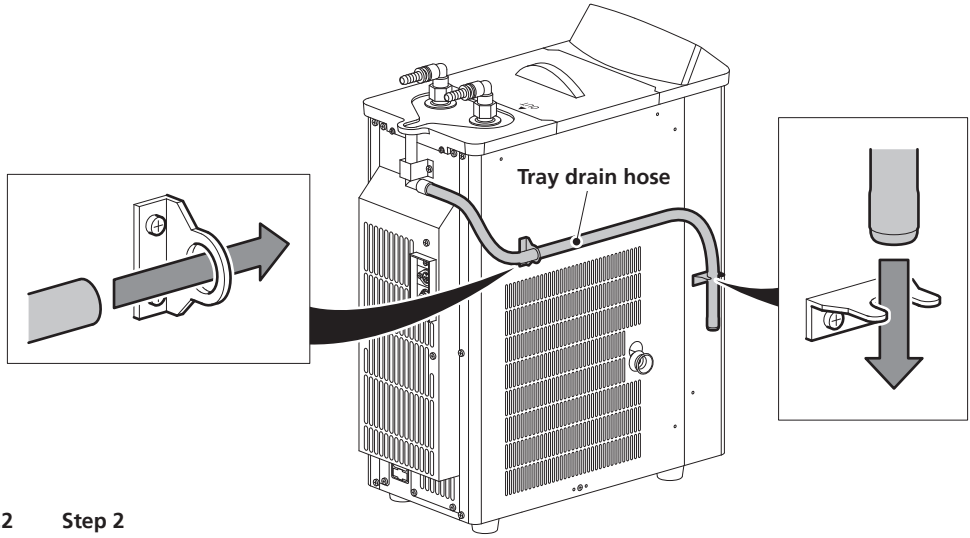
3.4 Assembly

WARNING: DO NOT use the refrigerated cooler with distilled or deionised water.
Use tap water or softened tap water. Using distilled or deionised water could corrode the cooling coil or circulation pump.

Use anti-freeze if you intend you use the equipment at temperatures of +7ºC and lower. Only use tap water or softened tap to water to dilute the anti-freeze DO NOT use distilled or deionised water.

3.4.1 Step 1

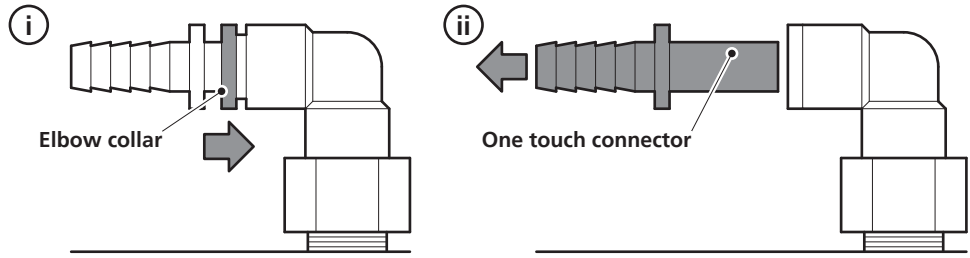
Pass the **Tray drain hose** through the 2 metal fittings as shown. Take care not to kink, twist or squash the hose.



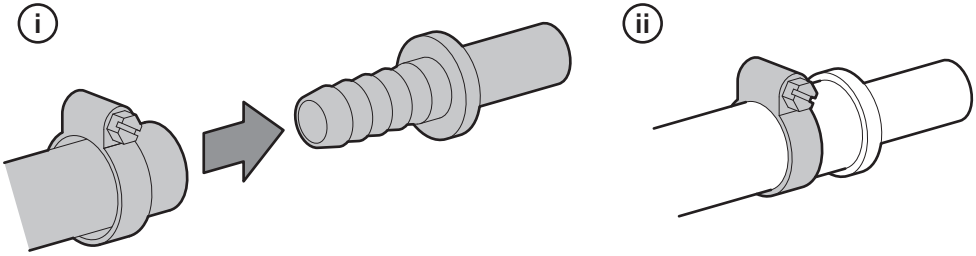
3.4.2 Step 2

To get the best results we recommend you connect the recirculating cooler using flexible hose of 9mm I.D. and keep hose length as short as possible.Using longer hoses than necessary can result in poor performance and could damage your equipment. You must use hoses that are suitable for your installation. Ensure hoses are sufficiently insulated for your installation.

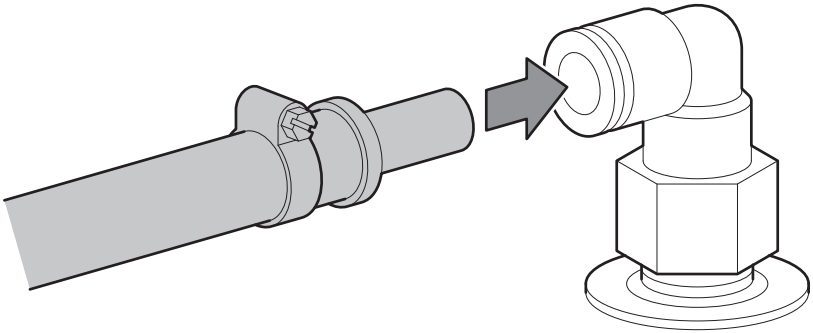
Remove the Water in and Water out one touch connectors from the 90º elbows. To do this, press the **Elbow collar** in and pull the **One touch connector** to remove.



Push the hoses over the Water in and Water out one touch connectors and secure with a suitable clip.

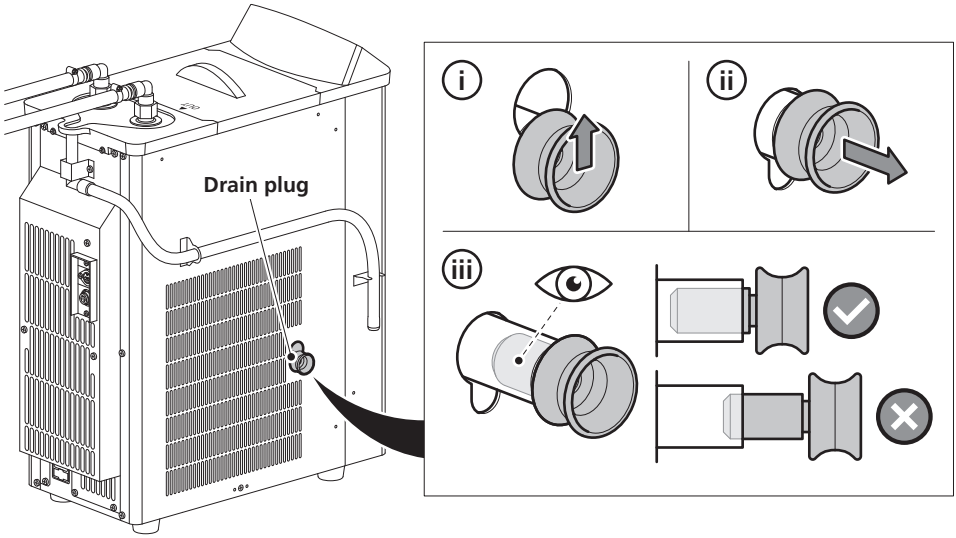


Push the Water in and Water out one touch connectors into the correct 90° elbows.



3.4.3 Step 3

Ensure that the **Drain plug** is fitted correctly to the drain hose before you start to fill the circulating bath.



Remove the bath cover and fill the circulating bath with your chosen liquid to a maximum of 2.7 litres.

Replace the bath cover.

3.4.4 Step 4

Ensure the power switch is OFF and connect the power lead to the recirculating cooler and then to the mains power.

Section 4 - Operation

Power outage recovery is ON when shipped.

Switch the equipment ON. The display will show [ccA] and after a few seconds the current temperature of the circluating bath will be shown.

NOTE: Before using check all connections are tight.

4.1 Setting the temperature

NOTE: The set temperature can be changed at anytime during operation.

NOTE: Factory default is 20ºC.

a. Press (set). The display will flash [20] or the temperature from the last session.

b. Press (▲) or (▼) to set the required temperature. Pressing the button will increase/decrease the temperature in increments of 1ºC, pressing and holding the button will increase/decrease the temperature continuously.

c. Press (set) to confirm.

NOTE: If any button is not pressed for 30 seconds during temperature setting any changes will not be saved and the previous set temperature will be used.

4.2 Setting the upper and lower temperature limit alarm

NOTE: Factory default for the upper temperature limit alarm is 80ºC, lower temperature limit alarm is -50ºC.

a. Press and hold (set) for 3 seconds or more, the display will show [A-4]. Press (▲) or (▼) to select either [AOH] (upper limit alarm) or [AOL] (lower limit alarm). Press (set) to confirm your choice.

b. Press (▲) or (▼) to set the required temperature. Pressing the button will increase/decrease the temperature in increments of 1ºC, pressing and holding the button will increase/decrease the temperature continuously.

c. Press (set) to confirm.

4.3 Power outage recovery mode

The equipment is fitted with a Power outage recovery mode.

Setting the power outage recovery mode

a. Press and hold (set) for 3 seconds or more, the display will show [A-4]. Press (set) to display the current power outage recovery mode. Press (▲) or (▼) to cycle through all the available modes (details of the modes are shown below) press (set) to confirm choice.

[on] - When power is restored the equipment will continue to operate and **Alarm** LED is **ON**.

[cnt] - When power is restored the equipment will continue to operate and **Alarm** LED is **OFF**.

[oFF] - When power is restored the equipment will not continue to operate and **Alarm** LED is **ON**.

[dIS] - When power is restored the equipment will not continue to operate and **Alarm** LED is **OFF**.

Press (set) to cancel alarm.

4.4 Starting operation

NOTE: The refrigerator has a protective timer function which means the refrigerator will not start until 70-90 seconds after the unit has been turned ON.

a. Press (pump). The circulation pump will start and the ○ pump LED will illuminate.

b. Press (run stop). Temperature control will start and the ○ run / stop LED will illuminate. While the refrigerator is on the ○ refrigerator LED will illuminate.

4.5 Stopping operation

NOTE: Before you switch the equipment **OFF** you **MUST** stop operation first.

a. Press (run stop). Operation will stop and the ○ run / stop and ○ refrigerator LED's will go off.

b. Press (pump). The circulation pump will stop and the ○ pump LED will go off.

NOTE: If you are not going to use the equipment for an extended period of time, switch the equipment OFF, unplug the power lead and disconnect from the mains power supply. Drain water from the circulation bath and ensure the hoses are empty.

4.6 Drain after use

CAUTION: DO NOT push the drain hose inside the equipment after removing the drain plug as this could damage the equipment

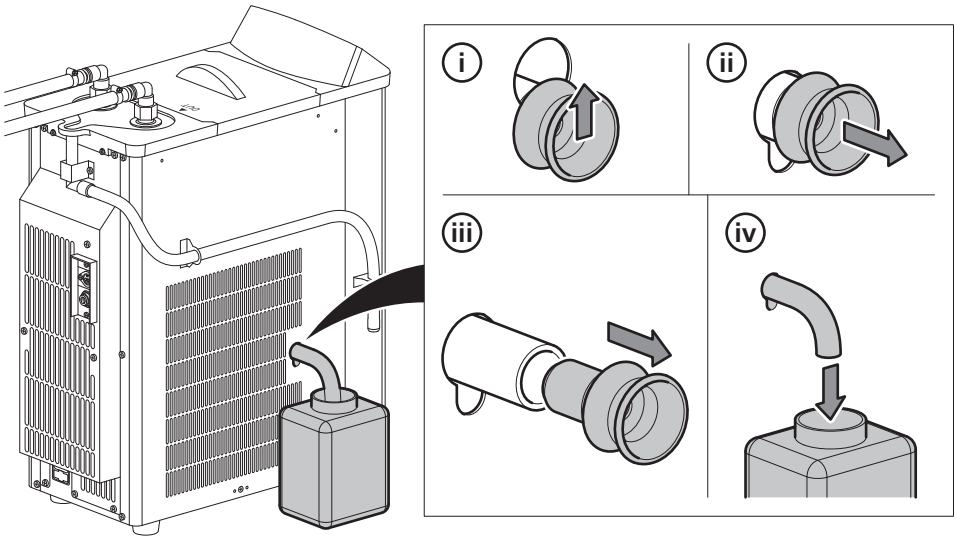
WARNING: Ensure the equipment is disconnected from the power supply before draining.

NOTE: Before you remove the **Drain plug**, ensure you have a suitable container to collect the water.#

a. Pull out the **Drain hose** and **Drain plug** as shown.

b. Remove **Drain plug** and allow the system to fully drain.

c. Replace the **Drain plug** onto the **Drain hose** and carefully push back into the unit.

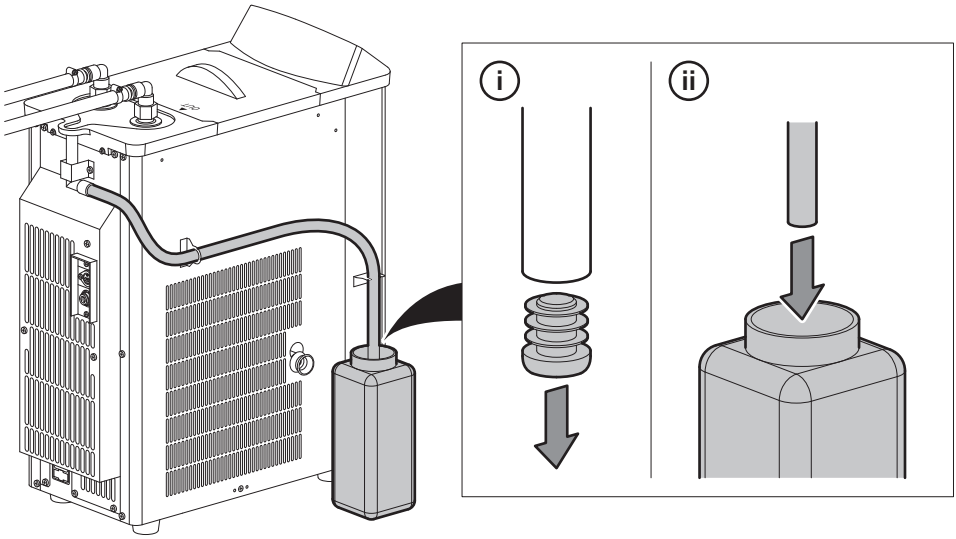


4.7 Draining condensation from the tray.

NOTE: Before you remove the **Tray drain plug**, ensure you have a suitable container to collect the water.

a. Pull out the **Tray Drain plug** as shown and allow the tray to drain.

b. Replace the **Tray Drain plug**.



Section 5 - Accessories and Spare Parts

5.1 Optional Accessories

Please visit www.stuart-equipment.com for a full list of available accessories.

5.2 Spare Parts

Please contact your local sales specialist or email cpspares@coleparmer.com to enquire about available spares.

Section 6 - Maintenance, Servicing and Cleaning

WARNING: Before attempting any maintenance, servicing or cleaning, ensure that the equipment has been allowed to cool down.

WARNING: Ensure the equipment is disconnected from the power supply before attempting any maintenance, servicing or cleaning.

6.1 Routine Maintenance

Ensure the external surfaces of the unit are clean and free from dust. The sample area should always be kept clean and any accidental spillage should be wiped away immediately. To give added protection when not in use, the equipment should be disconnected from the mains supply. Follow the advice below for cleaning your equipment:

WARNING: This product does not contain bio-seals as per EN 61010-1-2010 and cannot provide any level of containment in case of a spill or release of toxic, radioactive, or pathogenic micro-organisms thus these materials are not recommended to be used in this product.

NOTE: Do not use solvents for cleaning any parts of this equipment.

In Case of Accidental Spillage

WARNING: Do not touch if a spillage/breakage has occurred. Disconnect the power directly at the power supply source**.**

If any part of the unit except the circulation bath has been exposed to liquid, it cannot be assumed to meet all the safety requirements of EN 61010-1-2010 until the drying out process has been fully completed and all safety requirements are met before the unit is used again.

In Case of Contamination

WARNING: The following procedure is intended as a guide. Should spillage of a toxic or hazardous fluid occur, then additional special precautions may be necessary.

If the equipment has been exposed to contamination, the Responsible Body is responsible for carrying out appropriate decontamination. If hazardous material has been spilt on or inside the equipment, decontamination should only be undertaken under the control of the Responsible Body with due recognition of possible hazards. Before using any cleaning or decontamination method, the Responsible Body should check with the manufacturer that the proposed method will not damage the equipment. Prior to further use, the Responsible Body shall check the electrical safety of the unit. Only if all safety requirements are met can the unit be used again.

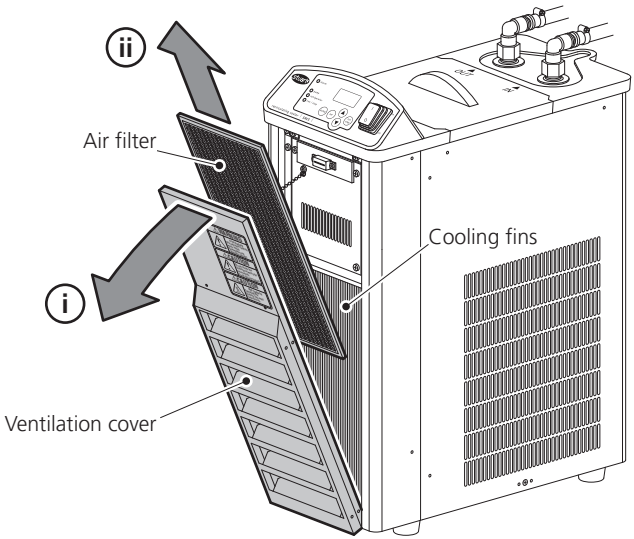
NOTE: In the event of this equipment or any part of the unit becoming damaged or requiring service, the item(s) should be returned to the manufacturer for repair accompanied by a decontamination certificate. Copies of the Certificate are available from the Distributor/Manufacturer.

At the end of its service life, the product must be accompanied by a Decontamination Certificate.

6.2 Cleaning the Air Filter

CAUTION: Take care when removing the **Air filter** as the **Cooling fins** have sharp edges.

Pull the **Ventilation cover** towards you. Remove the **Air filter** and wash with water and mild detergent. Ensure the **Air filter** is dry before re-fitting.



6.3 Cleaning Bath Strainer

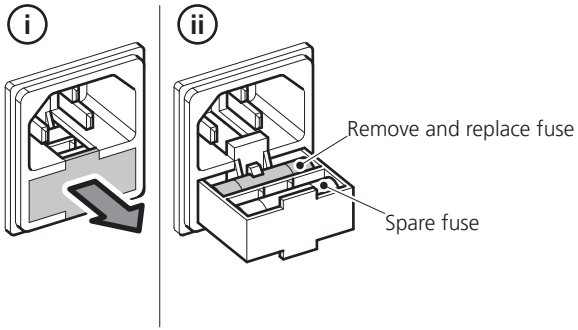
A strainer is provided to catch foreign objects in the circulation bath. Clean the strainer regularly. Before cleaning ensure the circulation bath is empty.

6.4 Check Hoses

Check hoses are not kinked or damaged before and after use.

6.5 Fuse Replacement

The mains fuse holder is located at the rear of your product. Refer to section 8.1 for correct fuse type and rating. Turn your unit off and disconnect it from the power supply. Always replace fuses with the correct type and rating.



6.6 Service, Repairs and Support

Any service, repairs or replacement of parts MUST be undertaken by suitably qualified personnel. Only spare parts supplied or specified by Cole-Parmer or its agents should be used. Fitting of non-approved parts may affect the performance and safety features designed into the instrument. For a comprehensive list of parts required by service engineers conducting internal repairs please contact the service department quoting the model and serial number:

Email: cpservice@coleparmer.com **Tel:** +44 (0)1785 810475

For technical support enquiries please contact:

Email: cptechsupport@coleparmer.com **Tel:** +44 (0)1785 810433

6.7 Warranty

Cole-Parmer Ltd. warrants this instrument to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of 3 years. In the event of a justified claim Cole-Parmer will replace any defective component or replace the unit free of charge. This warranty does NOT apply if damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by incorrect installation, adaptation, modification, fitting of non-approved parts or repair by unauthorised personnel.
This warranty does not apply to the glassware or vacuum seal.

Cole-Parmer Ltd,
Beacon Road,
Stone,
Staffordshire,
ST15 0SA,
United Kingdom
Email: cpservice@coleparmer.com
Tel: +44 (0)1785 810475
Web: www.stuart-equipment.com

Section 7 - Environmental Protection

7.1 Packaging Material

Packaging materials have been carefully selected so they can be sorted for recycling.

7.2 Waste Electrical and Electronic Equipment Directive (WEEE)

At the end of your product and accessories life, it must not be discarded as domestic waste. Ref: EU Directive 2012/19/EU on Waste Electrical and Electronic Equipment Directive (WEEE). Please contact your distributor / supplier for further information. For end users outside of the EU consult applicable regulations.

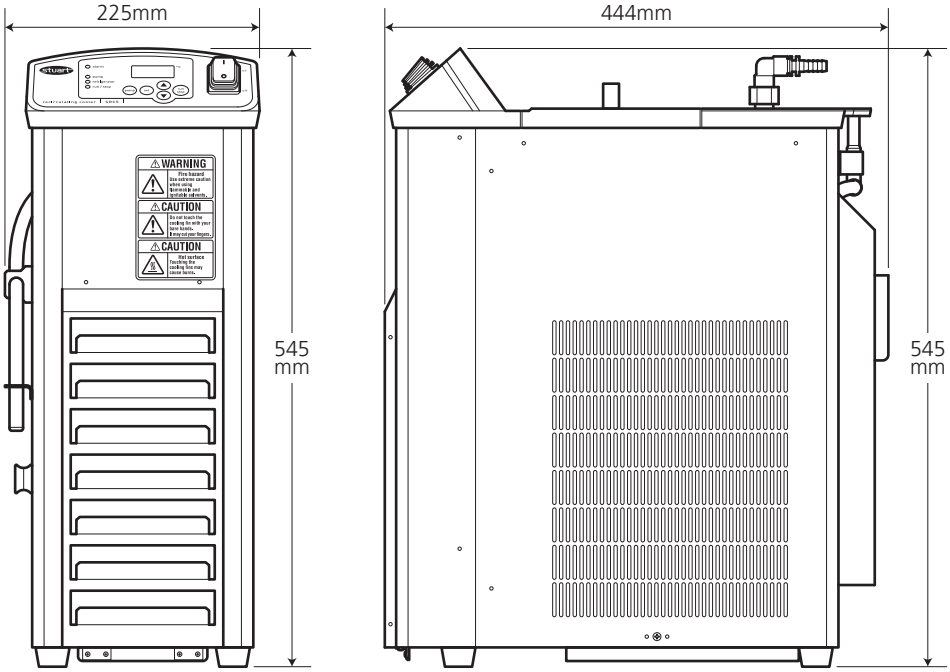
Section 8 - Technical Specification

8.1 General Specification

Safety functions	Refrigerator overload relay Refrigerator protection timer Fuse Self diagnostics function
Bath cover	PPO
Bath material	SUS304
Bath capacity	Approx. 3.2 litres Maximum. 2.7 litres
Size of bath (internal)	W130 x D230 x H115mm
External dimensions	W205 x D445 x H545mm
Pump rate	9 litres per minute
Weight	28kg
Display resolution	1°C
Accuracy	± 1°C (30°C – 0°C) ± 2°C (-1°C – -20°C)
Display	Digital Display
Control Sensor	PT sensor (100Ω)
Operating ambient temperature	5°C – 35°C (indoor use only)
Operating ambient humidity	30 – 75%RH (indoor use only)

Fuse Type	T6.3A 5 x 20 Glass slow blow
Power consumption	450W at 10°C 350W at 0°C 310W at -10°C
Temperature control	Refrigeration unit ON - OFF control
Electricity supply	230 V ~ 50Hz

8.2 Weights and Dimensions



Weight 28kg

Section 9 - Trouble Shooting

Problem	Cause	Solution
Temperature sensor failure alarm. Equipment has stopped and F01 is displayed and ○ alarm LED is on.	Temperature sensor is disconnected or broken.	Stop operation and contact a local service representative.
Refrigeration unit overload relay alarm. Equipment has stopped and A14 is displayed and ○ alarm LED is on.	Ambient temperature has exceeded 35ºC.	Set the ambient temperature at 35ºC or lower*****.
	The thermal load has exceeded the cooling capacity.	Keep the thermal load within the specification range*****.
	Air filter is dusty	Clean the air filter*****.
	Refrigerator fan is not operating.	Check the refrigerator fan*****.
	Low supply voltage	Check the power and voltage*****.
	Refrigerator start up failure	Start refrigerator in 10 minutes*****.
	*****Press set to cancel alarm. The overload relay will be ready to use in approx 10 minutes.	
Temperature upper limit alarm. Equipment has stopped and A0H is displayed and ○ alarm LED is on.	The temperature around the sensor exceeds the lower limit.	Press Set to cancel alarm. If necessary adjust temperature upper limit alarm to suit.
Temperature lower limit alarm. Equipment has stopped and A0L is displayed and ○ alarm LED is on.	The temperature around the sensor exceeds the lower limit.	Press Set to cancel alarm. If necessary adjust temperature lower limit alarm to suit.
Power outage recovery alarm. Equipment is still operating. A-4 is displayed and ○ alarm LED is on.	Power has been interrupted and then restored during operation.	Press Set to cancel alarm.
Power outage recovery alarm. Equipment has stopped and A-4 is displayed and ○ alarm LED is on.	Power has been interrupted and then restored during operation.	Press Set to cancel alarm. Equipment will need to be re-started.
Equipment has stopped, no alarm is present and there is nothing on the display	Self-diagnosis has detected a power supply problem.	Change the power supply and start equipment again. If problem persists, Stop operation and contact a local service representative.

Nothing is displayed when power is turned on.	The inlet fuse has blown.	Replace fuse (see section ??). If problem persists stop operation and contact a local service representative.
	Mains power is not connected properly.	Check power lead is connected properly.
	Power is not supplied.	Check consumer unit.
	Power switch is damaged.	Stop operation and contact a local service representative.
	Temperature controller is damaged.	
Refrigeration unit does not work.	Refrigerator is malfunctioning	Stop operation and contact a local service representative.
	SSR is malfunctioning	
	Overload relay has been activated.	Reduce thermal load.
		Use the equipment where the ambient temperature is lower than 35°C.
	Protective timer has been activated.	Confirm the refrigerator starts after 10 minutes.
The equipment does not cool down.	Refrigerator fan is not operating.	Check the refrigerator fan.
	Gas is leaking.	Stop operation and contact a local service representative.
	Ambient temperature has exceeded 35°C.	Set the ambient temperature at 35°C or lower
	The thermal load has exceeded the cooling capacity.	Keep the thermal load within the specification range.
The equipment is not cooling down properly.	Water level is low and colling coil is exposed.	Top up cooling liquid.
	An object is blocking exhasut and heat release.	Check that no vents are covered and the minimum space required around the object is observed (see section 3.2).
Water does not circulate.	Bath strainer is blocked.	Remove the blockage.
	Air is being sucked in.	Remove drain plug (see section 4.6) and make sure that water can flow, replace drain plug and press the pump 2 to 3 times to release the air blockage.
Low circulation rate of cooling liquid.	Hose has collapsed or kinked.	Check hose.
	Pressure has been lost.	Check and restore pressure
	Circulation destination is too high.	Check installation.
Temperature is set to 7°C yet the inside of the bath is frozen.	Restricted circulation due to pressure loss in hosing etc.	Use antifreeze.
	Temperature controller is malfunctioning or the refrigerator has stopped.	Stop operation and contact a local service representative.

CE This product meets the applicable harmonized standards for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in its vicinity will meet these standards and so we cannot guarantee that interference will not occur in practice. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advice before use, contact the manufacturer.

Declaration of Conformity is also available to view online at www.stuart-equipment.com

Cole-Parmer Ltd - UK
Beacon Road,
Stone,
Staffordshire,
ST15 0SA,
United Kingdom
Tel: +44 (0)1785 812121
Email: cpinfo@coleparmer.com
Web: www.stuart-equipment.com