

# Assembly and Operating Instructions

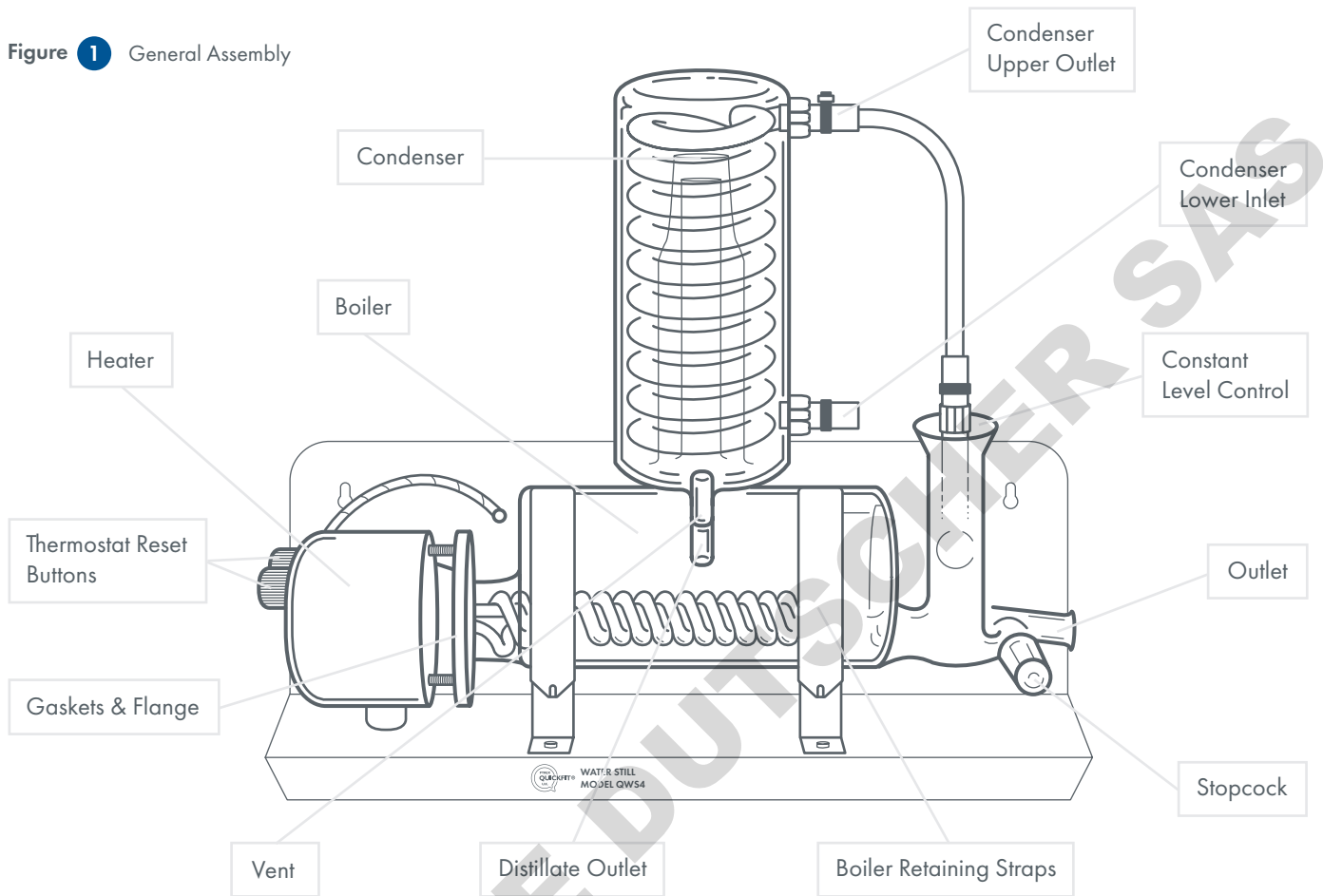
Quickfit® Water Still  
QWS4 & QWS4/220V



SciLabware

## Quickfit® Water Still QWS4 & QWS4/220V

Figure 1 General Assembly



Thank you for  
choosing to buy  
this **Quickfit®**  
Water Still.

The **QWS4** and **QWS4/220V** are manufactured in the United Kingdom and use the highest quality **Pyrex®** glassware and double earthed chromium plated heating element. We are confident that this Water Still will give many years' service.

### Important Notice

The **QWS4** and **QWS4/220V** are classified as 'Permanently Connected Equipment'. This means that they should only be connected to your electricity supply by a qualified electrician.

This Water Still is designed to operate under the following conditions:

- For indoor use only in an ambient temperature range (between 5°C to 40°C)
- Altitudes not exceeding 2000 metres
- Relative humidity not exceeding 80%
- Mains voltage supplies can fluctuate. For the optimum performance of this Water Still, voltage fluctuations should not exceed +/-10% of nominal

## Prior To Assembly

Before you start to assemble the Water Still, consider where you will locate the unit. The [QWS4](#) and [QWS4/220V](#) Water Stills can be either bench or wall mounted, using the two pre-drilled holes in the back panel of the Water Still stand. The location you choose must have convenient access to the following services:

<b>Electricity Supply</b>	<p>Before connecting the Water Still to the electrical supply, please ensure that the line supply is suitable for installing this equipment.</p> <p>The <a href="#">QWS4</a> Water Still is suitable for connection to electrical supplies rated at 3kW, 220-240V, 50/60Hz~ single phase.</p> <p>The <a href="#">QWS4/220V</a> is suitable for connection to electrical supplies rated at 3kW, 200-240V, 50/60Hz~ single phase.</p> <p>The electrical supplies should be fitted with a 30mA RCD circuit breaker.</p>
<b>Water Supply</b>	<p>The input water for this Water Still must be a cold water supply capable of providing a minimum flow rate of 60 litres per hour. A flow rate of less than 60 litres per hour may impair the proper function of the Water Still. <b>All water supplies must be earth bonded.</b> A mains water tap is usually suitable as a water supply.</p>
<b>Drain</b>	<p>You will need to drain away the cooling water when the Still is working. Ensure that the waste water drain, such as a sink, is below the level of the Still. The waste water drain pipe should be straight without any kinks or bends, to allow an unimpeded flow into the drain. All drainage systems should also be earth bonded.</p>
<b>Reservoir</b>	<p>Collect your distilled water in a suitable container. SciLabware supply a range of suitable polypropylene and glass aspirator bottles that can be used as a distilled water reservoir. The reservoir should be located below the Water Still.</p>

## Unpacking And Assembling Your Water Still

Unpack the outer carton carefully. The Water Still components are packed in separate boxes to ensure that all the parts are received in pristine condition.

Check that all the components are present:

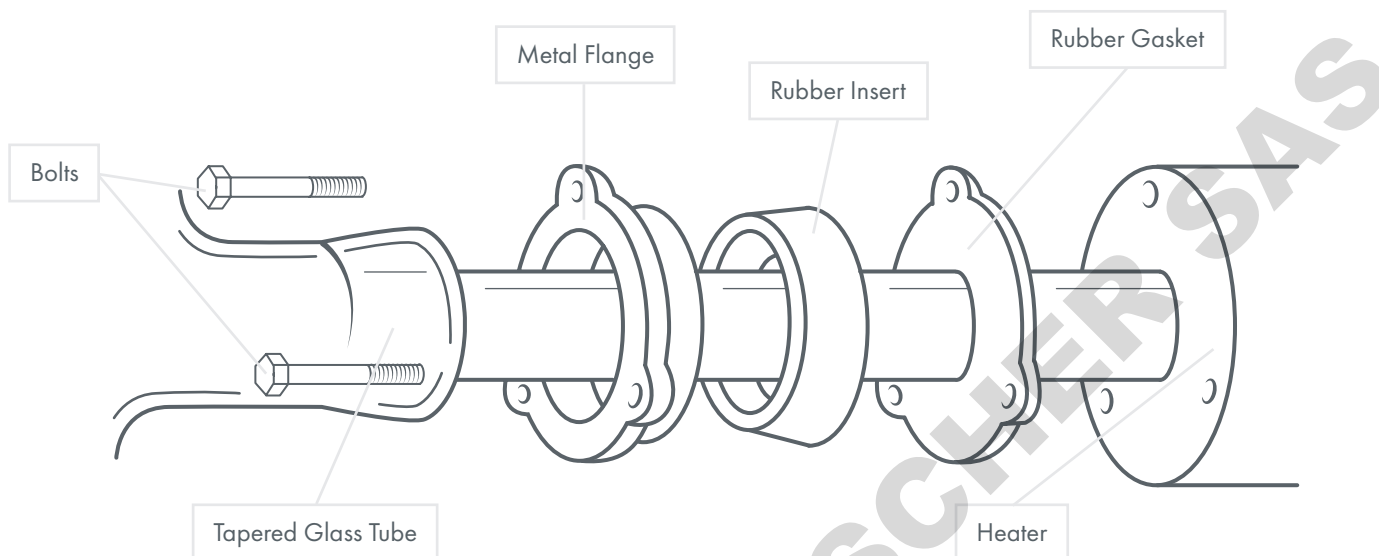
Qty / Case	Catalogue No.	Component Description
1	–	Water Still support stand with 2 boiler retaining straps
1	QWS4B	Pyrex® Water Still boiler
1	QWSC	Pyrex® Water Still condenser
1	QWS4H	Chromium plated heating element 3kW 220-240V with gasket kit <b>or</b>
1	QWS4H/220V	Chromium plated heating element 3kW 200-240V with gasket kit
1	QWS4HK	Hose kit

When you have **checked** the components to ensure that they are present, you can begin to assemble the Water Still.

## Fitting The Heating Element

Fit the heating element into the boiler as illustrated in **Figure 2** below:

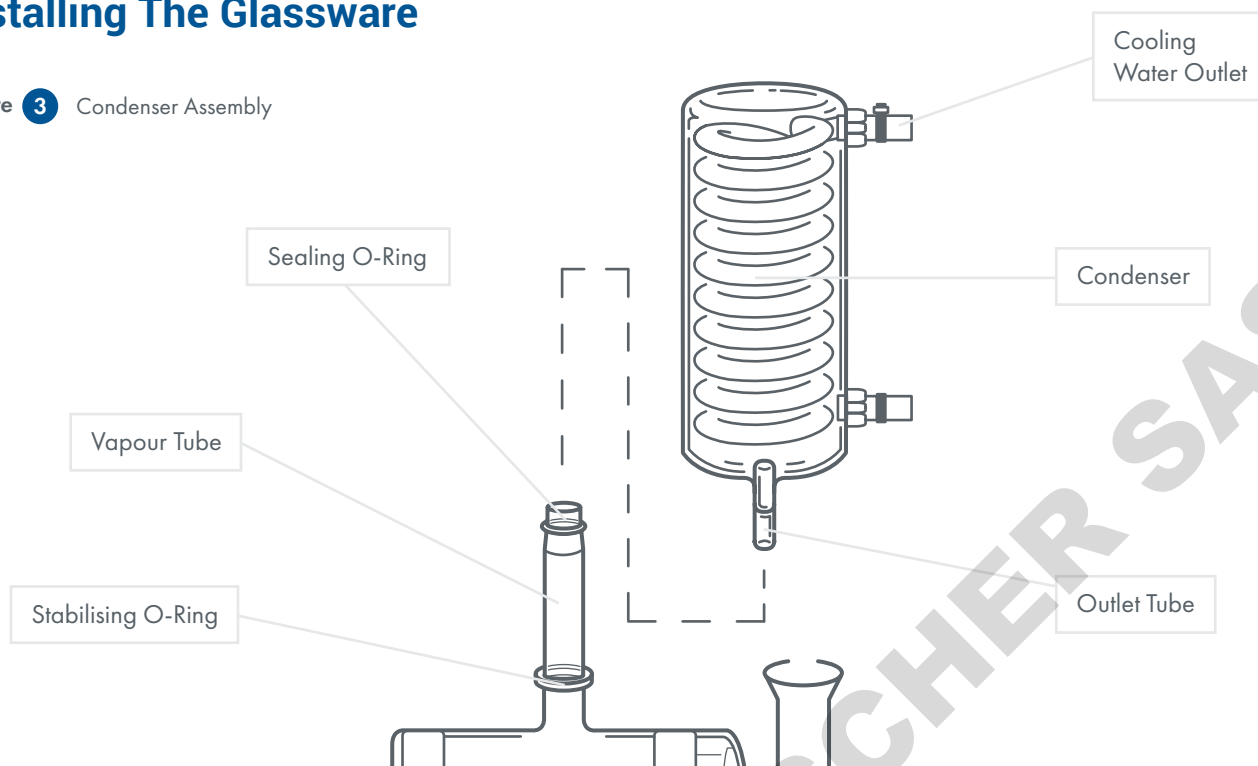
**Figure 2** Heater Flange Assembly



<b>Step One</b>	Insert the 3 metal bolts provided in the heating gasket kit into the holes in the metal flange. Place the metal flange over the tapered glass tube on the side of the boiler. The flat side of the flange must face the boiler. It is important when handling the glassware to ensure that you do not chip or in any other way damage the glassware during assembly.
<b>Step Two</b>	Take the cone shaped rubber insert and place this around the tapered glass tube and insert it into the metal flange. Pull the flange and rubber insert towards the end of the tapered glass tube so that they press onto the glass.
<b>Step Three</b>	Place the flat rubber gasket over the heater coils and then insert the heating element through the tapered glass tube and into the boiler.
<b>Step Four</b>	Now secure the heating element in place using the 3 bolts. Place the threaded ends of the bolts through the holes in the flat rubber gasket and into the three securing holes located on the heating element. <b>Do not over tighten.</b>

## Installing The Glassware

Figure 3 Condenser Assembly



<p><b>Step One</b></p>	<p>Feed the loose end of the electric cable of the heating element through the hole in the base of the support stand, taking care not to scratch the cable. Place the assembled boiler and heater in the 'cradle' of the stand. The blue drain stopcock attached to the contact level control must be facing to the front. Secure with the boiler with the 2 metal straps provided. The spring part of the strap should be hooked around the securing tab on the back of the cradle, and the hole in the metal strap should be hooked around the securing tab on the front of the cradle.</p>
<p><b>Step Two</b></p>	<p>Ensure that the smaller sealing O-ring and larger stabilising O-ring are correctly positioned, as shown in <b>Figure 3</b>. Fit the <b>Pyrex®</b> condenser by mounting it onto the vertical vapour tube of the boiler. The distillate outlet tube on the condenser should face to the front of the unit.</p>
<p><b>Step Three</b></p>	<p>From the hose kit, take the 225mm length of 8mm bore plastic hose fitted with red plastic screwthread connectors at either end. Screw one end of the hose on to the upper outlet of the condenser and the other end on to the glass thread on the constant level control (the funnel shaped assembly attached to the boiler). If the still has been correctly assembled, the hose should comfortably reach, without any strain.</p>
<p><b>Step Four</b></p>	<p>Take the 1 metre length of 16mm bore plastic hose and connect this to the outlet of the constant level control (this is the outlet tube fitted with the blue drain stopcock). To make it easier to connect the tubing, you can first warm the hose in hot water. Secure this hose in place with a tie wrap.</p>
<p><b>Step Five</b></p>	<p>Take the free end of the tubing to drain. Make sure that the tube falls away from the still with no kinks or bends, which may impair the water flow.</p>
<p><b>Step Six</b></p>	<p>Ensure the blue <b>Rotaflo®</b> General Purpose stopcock on the constant level control is closed.</p>

## Step Seven

Connect the lower inlet on the condenser to the cold water feed supply. A plastic screwthread connector is provided for easy attachment of the cold water feed supply tube to the condenser.

**Choose a good quality tubing as the cold water feed supply tube and ensure that all the connections are secured with hose clips.**

## Step Eight

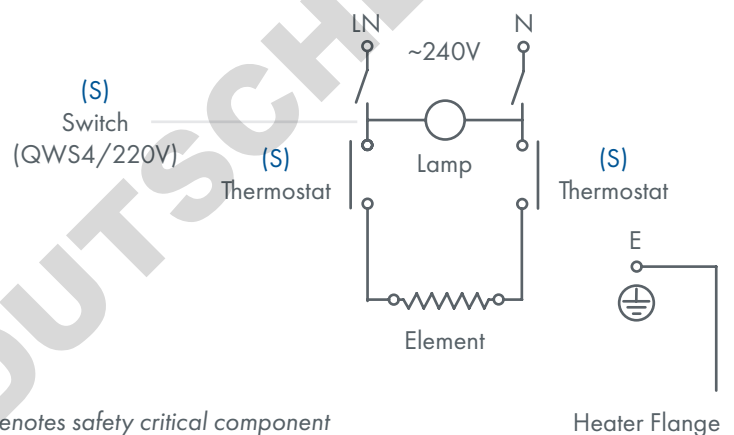
Connect the distillate outlet pipe on the front of the condenser to a suitable collection reservoir by means of a flexible hose. Ensure that the tube falls away from the Still with no kinks or bends, which may impede the distillate flow.

## Step Nine

Turn on your cold water supply to the Still to test for leaks, then turn the water off.

## Electrical Installation

Figure 4 Circuit Diagram



### THIS EQUIPMENT MUST BE EARTHED.

The electrical installation of this Water Still should **only** be carried out by a qualified electrician.

The equipment is supplied with 1.7m of flexible triple core circular cable to CMA 3183 TQ specification. The conductors are 1.5mm<sup>2</sup> to BS 6360 Class 5 insulated with E.P.R. The outer sheath is 85°C heat resisting type C.S.P. to HOFR, BS 6500 Table 9.

Connection to the mains electrical supply should be via a double pole 30mA RCD isolation circuit breaker with a continuous current carrying capacity of 15A at 250v and overcurrent protection of 15A, 250V.

These devices should be located near to the Water Still and clearly marked '**Disconnect device for Water Still**'.

Connect to the line supply noting that the wires in the Water Still lead are coloured in accordance with the following code:

**Brown – Live**  
**Blue – Neutral**  
**Yellow/Green – Earth**

**If the Water Still mains lead requires replacement, please contact the manufacturer.**



# Operating Your Water Still



**WARNING:** Some parts of the Water Still will become hot during use. These parts are clearly marked with a warning label. **Do not touch these parts.**

This Water Still should not be left unattended and the progress of the distillate collection should be monitored.

<b>Step One</b>	<p>Turn on the cold water supply and adjust the flowrate to approx. 60 litres per hour. This is the equivalent of a fast running tap.</p> <p><b>CAUTION:</b> It is recommended that you measure the flow rate into the water still, as failure to do this may result in possible injury from hot water exiting the Water Still.</p> <p>Observe that the water flows via the condenser coils and into the boiler. Wait until the boiler water level is at the correct height. Excess water will start to flow out of the boiler through the water level control to the drain.</p>
<b>Step Two</b>	<p>Switch on the electricity supply to the heating element at the mains isolation switch.</p> <p>Switch on the heating element by operating the switch located below the two thermostats on the end of the heating element.</p>
<b>Step Three</b>	<p>After a few minutes the water will start to boil and distillate will flow from the condenser. When the still has been newly installed, or after cleaning, we recommend that you discard this distillate for approximately 30 minutes before starting to collect the distilled water.</p>
<b>Step Four</b>	<p>To turn off the water still, first turn off the heating element but allow the cooling water to continue for a further 10 minutes to allow the still to cool. This will ensure the durability of your new system.</p> <p><b>!</b> <b>WARNING:</b> This Water Still should not be used to distil any other liquid than water.</p>

## Safety Cut-Outs

Your Water Still is protected by **two** safety cut-outs:

Should the boiler water level fall and expose the heating element, the thermostats will operate and turn off the electricity supply to the element.

After operation of either of the thermostats, it is necessary to reset the thermostats to allow normal operation of the still to continue. This is done by pressing the respective thermostat reset button mounted on the end of the heater end cover.

Remove the black plastic cover and press the thermostats reset button. A slight click will be heard if the thermostat had operated.

**CAUTION:** The Water Still should be allowed to cool down completely and the cause of the thermostat cut-out should be identified and rectified before resetting either of the thermostats.

## Care And Maintenance Of Your Water Still

**CAUTION:** Before starting any maintenance, cleaning or fault finding procedures on your Water Still, you must ensure that the equipment is isolated from the mains electricity supply. Any of these procedures should only be carried out by a suitably qualified person.

Only original **Quickfit**<sup>®</sup> Water Still spare parts and components, supplied and approved by SciLabware Limited or its agents, should be used. The fitting of non-approved parts could affect the performance and/or safety of this Water Still.

### Maintenance

It is necessary to check on the condition of the components used on this Water Still periodically. In particular, plastic connectors and hoses should be checked to ensure that these components are in good condition, and are not cracked or damaged in any way. There should be no strain on the connectors or hoses.

**If any damage is discovered, the Water Still should not be used until the defective parts have been replaced.**

### Cleaning

Over a period of operation, scale deposits will build up inside the glass boiler. To obtain the optimum performance from the Water Still, the scale should be removed on a regular basis. The intervals in time between cleaning, depends significantly on the hardness of the water supply and the amount of use. Frequently used Stills in hard water areas may need descaling once a week, whereas Stills used in a soft water area may need descaling every few weeks.

**Note:** Heavy scaling will reduce distilled water quality and will shorten the life of the heating element.

The **Quickfit**<sup>®</sup> Water Still can be descaled without having to dismantle the glassware.

<b>Step One</b>	Switch off the electricity supply to the Water Still and make sure that it cools down completely before starting the cleaning procedure.
<b>Step Two</b>	Turn off the cooling water supply.
<b>Step Three</b>	Open the stopcock on the constant level control and allow the boiler to drain completely, then close the stopcock.



<b>Step Four</b>	Turn on the cooling water supply and allow the boiler to fill to approximately half way to its normal operating level. Turn off the water supply when the water has reached this level.
<b>Step Five</b>	<p>Carefully add 1 litre of 10% formic acid solution or kettle de-scaler into the open funnel of the constant level control. Do not use strong acids such as hydrochloric to clean your Water Still, as this will cause severe corrosion of the metal heating element.</p> <p><b>!</b> <b>WARNING:</b> Always handle acids with great care. Protective clothing, gloves and face masks must be worn during the descaling procedure. Remove any acid spills <b>immediately</b>.</p> <p>Turn on the cooling water supply and fill the boiler to the normal operating level. The water will flush the acid into the boiler. The water supply should be turned off when the level in the boiler is slightly below the overflow.</p>
<b>Step Six</b>	Leave the acid in the boiler to dissolve the scale. This may take some time depending on how much scale has accumulated in the boiler.
<b>Step Seven</b>	<p>Open the drain stopcock and allow the boiler to drain.</p> <p><b>Note:</b> If the acid in the boiler has not been completely neutralised, the liquid flowing to the drain may be highly acidic. All necessary safety precautions should be observed around the drain and any effluent control procedures followed.</p>
<b>Step Eight</b>	Close the drain stopcock, turn on the cooling water and allow the boiler to fill with cold water. Turn off the water, then re-open the stopcock and allow the boiler to drain. Repeat this procedure three times to ensure you have flushed out any remaining descaler.
<b>Step Nine</b>	<p>You can now restart your <b>Quickfit</b><sup>®</sup> Water Still by following the instructions in the 'Operating your Water Still' section of this manual.</p> <p><b>Note:</b> The stand and outer surfaces of the glassware should be cleaned using a damp cloth and a mild detergent solution to remove any traces of descaler.</p>

## Warranty

SciLabware warrants this Water Still to be free from defects in material and workmanship, when used under normal laboratory conditions, for a period of three (3) years. In the event of a justified claim, SciLabware will replace any defective component or replace the unit free of charge.

This warranty does not include the heating element, which is only guaranteed for a period of one (1) year.

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.

To activate your warranty, please email the SciLabware Technical Department at [technical@scilabware.com](mailto:technical@scilabware.com).

## Fault Finding

In the event of operating difficulties with your **Quickfit**<sup>®</sup> Water Still, the following notes may help to solve the problem.

If these fail to identify and rectify the fault, we would recommend that you contact your supplier, or you can contact Scilabware directly by emailing [technical@scilabware.com](mailto:technical@scilabware.com).

**CAUTION:** Before starting any fault finding procedures on your Water Still, you must ensure that the equipment is isolated from the mains electricity supply. Any of these procedures should only be carried out by a suitably qualified person.

Fault	Possible Cause	Remedy
Water level in boiler is too low – heater is exposed	<ol style="list-style-type: none"> <li>1 Feed/cooling water supply is insufficient</li> <li>2 Drain stopcock inadvertently left open</li> </ol>	<ol style="list-style-type: none"> <li>1 Increase cooling water flowrate to approx. 60 litres per hour</li> <li>2 Close stopcock</li> </ol>
Water level in boiler is too high – boiling water surging into condenser	<ol style="list-style-type: none"> <li>1 Feed/cooling water flowrate is excessive</li> <li>2 Flow of drain water is constricted</li> </ol>	<ol style="list-style-type: none"> <li>1 Reduce cooling water flowrate to approx. 60 litres per hour</li> <li>2 Ensure drainage tubing falls freely</li> </ol>
Water in boiler is 'pumped' out of boiler to drain	<ol style="list-style-type: none"> <li>1 Tubing from condenser distillate outlet to reservoir is constricted</li> <li>2 Vent on condenser distillate outlet is blocked</li> <li>3 Supply of feed cooling water is insufficient</li> </ol>	<ol style="list-style-type: none"> <li>1 Ensure tubing falls freely to reservoir</li> <li>2 Remove obstruction</li> <li>3 Increase cooling water flowrate to approx. 60 litres per hour</li> </ol>
Distillate temperature is high – above 50°C	Flow of cooling water is insufficient	Increase cooling water flowrate to approx. 60 litres per hour
Distillate rate less than 4 litres per hour	<ol style="list-style-type: none"> <li>1 Mains voltage low</li> <li>2 Excessive cooling water flow</li> </ol>	<ol style="list-style-type: none"> <li>1 –</li> <li>2 Reduce cooling water flowrate to 60 litres per hour</li> </ol>
Distillate quality poor*	Boiler heavily scaled	Clean boiler
Heater not working	<ol style="list-style-type: none"> <li>1 Burnt out heater</li> <li>2 Mains electricity fuse blown</li> <li>3 Thermostat operated</li> </ol>	<ol style="list-style-type: none"> <li>1 Replace heater</li> <li>2 Replace fuse</li> <li>3 Reset thermostat</li> </ol>
Persistent tripping of the RCD	The integrity of the heater	Replace the RCD

\*The distillate quality, when determined by pH or electrical conductivity, is significantly affected by temperature and the presence of absorbed carbon dioxide.

## CE Statement

This product meets the applicable EC harmonised standards for radio frequency interference and maybe 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 Technical Department of SciLabware Limited.

### Declaration of Conformity

#### Quickfit® Water Stills, Models QWS4 & QWS4/220V

These products comply with the requirements of the EU Directives listed below:

Low Voltage Directive	2006/95/EC
EMC Directive	2004/108/EC
RoHS Directive	2011/65/EC

Compliance with the requirements of these Directives is claimed by meeting the following harmonised standards:

IEC/EN 61010-1:2020	Safety requirements for electrical equipment for measurement, control and laboratory use. <b>Part 1:</b> General requirements
IEC/EN 61010-2-010:2003	Particular requirements for laboratory equipment for the heating of materials.
IEC/EN 61326-1:2006	Electrical equipment for measurement, control and laboratory use. EMC requirements. <b>Part 1:</b> General requirements (Class A)

Year of CE marking: 2018

For more information visit our website [www.scilabware.com](http://www.scilabware.com)

Email us with your questions [technical@scilabware.com](mailto:technical@scilabware.com)

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