Product Summary

The SCI-tive range of advanced hypoxic workstations are designed to mimic ‘in-vivo’ conditions providing a continuous cell culture environment which eliminates cellular stress linked to variations in temperature, pH and oxidation yielding better stem cell lines. SCI-tive allows long term cell culture under perfect hypoxic or anoxic conditions, with user defined temperature, CO₂ and humidity levels.

The SCI-tive Dual symmetric workstation provides two chambers with individually controlled atmospheres.

Features and Benefits

Complete ‘Lab in a Box’
- Large incubated working area allows incubation, passaging, media transfers and cell culture.
- Large pass-through interlock* easily holds a variety of flasks, dishes and tubes.
- Up to 15 T75 flasks working capacity.

Accurate & Stable Environmental Control
- O₂ stability from 0.0% (anoxia) to 20.9% (ambient) in 0.1% increments
- CO₂ stability from 0.1% to 30.0% in 0.1% increments.
- Temperature control from ambient +5° C to 45° C.
- Humidity control from ambient to 85% RH.
- One touch sensor calibration

Economic & Reliable for Long-Term Savings
- Minimal maintenance and downtime.
- 1 year and 2-year preventative maintenance kits available.

Convenient & Comfortable to Use
- Quick and easy direct access - Ezee Plug / Ezee Sleeve (gloveless cuffed system) allows you to get your hands inside the workstation in less than 20 seconds.
- Read plates easily without exposure to ambient oxygen conditions - energy-saving fluorescent lighting for perfect illumination.
- Automatic and easy-to-access controls.
- Advanced integrated gas mixing system with touch screen simplifies calibration process, provides rapid equilibration, and facilitates the download of data.
• Cycle programming allows a user-defined timed sequence of up to 4 different O₂ and CO₂ concentrations.
• Removable front cover — allows easy access for cleaning or placing instrumentation into the unit.
• Three electrical power sockets within each work area.
• Optional HEPA (High-efficiency particulate air) filtration system provides HEPA-filtered air within the work area to protect research from airborne contaminants.
• Optional enhanced containment package provides added protection for user.

*Easily Accommodates Your Analytical Tools*

• Each chamber of the SCI-tive Dual can easily accommodate a variety of analytical equipment. Please contact Ruskin or your local distributor for a list of approved products. Products must be suitably safety approved in the country of use.

*Note.* The use of the word Interlock in this manual is medical terminology, and refers to the environmental working area between both chambers. It does not refer to the engineering safety interlock switch mechanism.
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8. Disposal information

9. Contact details
1. Overview
Please read this manual carefully to familiarise yourself with the operation and maintenance of your SCI-tive Dual Workstation.

1.1 Safety Instructions
For your safety, the safety of others using the workstation and those around you;

- The AC Mains outlet the SCI-tive Dual is connected to MUST not be obstructed by the SCI-tive Dual or any other equipment, and MUST be accessible in case of emergency. In case of emergency, disconnect the SCI-tive Dual from the AC Mains Outlet.
- In case of damage to the SCI-tive Dual, disconnect the SCI-tive Dual from the AC Mains Outlet and contact your Local Distributor for advice.
- The covers at each end, the top and the rear of the workstation must not be removed by anyone other than a qualified service engineer. There are no end user serviceable parts within these covers.
- The workstation AND stand must be connected to a protective earth.
- Only the power cord supplied with the workstation should be used to connect the workstation to the mains supply.
- The power cord set must be an appropriately rated and approved cord-set in accordance with the regulations in the country it is used in.
- Only Ruskinn Technology Limited replacement parts should be used.
- The mains supply voltage fluctuations must not exceed +/- 10% of the nominal mains voltage.
- Gas regulators must be used for each gas supply. A 2 stage regulator should be used for a bottled gas supply. The maximum supply pressure permissible is 4 bar gauge. Over pressure could damage the workstation.
- For anoxic operation, Hydrogen gas in Nitrogen is required. The maximum permissible concentration is 5.5% Hydrogen in Nitrogen.
- Only the gasses specified in this manual may be used.
- The workstation must be disconnected from the mains supply before removing either of the front screens. The workstation must not be reconnected to the mains supply until the both front screens have been reinstalled.
- The maximum power ratings of the internal sockets must not be exceeded.
- Before connecting any equipment to the internal sockets ensure that the equipment has or is connected to a protective earth. If in doubt please contact the equipment manufacture.
- The exhaust valve outlets must not be covered or blocked.
- The cooling fan covers and cooling vents must not be covered or blocked.
- The weight limit for the interlock floor tray is 4kg. The weight must be evenly distributed.
- The humidifier tank must not be overfilled.
- The SCI-tive Dual workstation should be used in a well ventilated area.
- The use of Radioactive materials in the SCI-tive Dual is strictly prohibited.

**WARNING:** Do not modify this equipment without the authorisation of the manufacturer.

FAILURE TO ADHERE TO THESE SAFETY INSTRUCTIONS COULD CAUSE SERIOUS INJURY AND WILL INVALIDATE THE WORKSTATION WARRANTY. RUSKINN TECHNOLOGY LIMITED ACCEPTS
1.2 Regulatory compliance

1.2.1 European Region

CE

This product complies with the essential EEA requirements for Electrical Safety and Electromagnetic compatibility as set out in the EMC directive 2004/108/EC and the Low Voltage Directive 2006/95/EC and has been tested and found to comply in full with the requirements of the following standards:

Electrical Safety:

EN 60601-1:2006 Medical electrical equipment - Part 1: General requirements for basic safety and essential performance

Electromagnetic Compatibility

EN 60601-1-2:2007 Medical electrical equipment - Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests

1.2.2 Precautions

The SCI-tive Dual has been tested and approved to EN60601-1:2006. This means that the SCI-tive Dual meets or exceeds the requirements for electrical medical equipment in terms of its levels of emitted electromagnetic (EM) radiation and its susceptibility to electromagnetic radiation from other devices. It should be noted that the SCI-tive Dual may be affected by high levels of stray EM radiation from other electronic devices (even those which comply with relevant CISPR emission standards) that are being used in close proximity to it.

WARNING: This system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the equipment or shielding the location.
1.3 Symbols

Before using the SCI-tive Dual, please ensure that you are familiar with the symbols on the SCI-tive Dual. **Note:** The workstation should be located in a well-ventilated area. Figure 1 explains the symbols found on the SCI-tive Dual;

**Figure 1: SCI-tive Dual symbols**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Book" /></td>
<td>Refer to user manual.</td>
</tr>
<tr>
<td><img src="image" alt="Alternating current" /></td>
<td>Alternating current</td>
</tr>
<tr>
<td><img src="image" alt="Off" /></td>
<td>Off</td>
</tr>
<tr>
<td><img src="image" alt="On" /></td>
<td>On</td>
</tr>
<tr>
<td><img src="image" alt="Primary earth connection" /></td>
<td>Primary earth connection</td>
</tr>
<tr>
<td><img src="image" alt="CE" /></td>
<td>This product complies with the essential EEA requirements for Electrical Safety and Electromagnetic compatibility as set out in the EMC directive 2004/108/EC and the Low Voltage Directive 2006/95/EC</td>
</tr>
<tr>
<td><img src="image" alt="Caution" /></td>
<td>Caution, do not remove covers. No end user serviceable parts behind covers. Please refer to this manual in all cases where this symbol appears, in order to find out the nature of the Potential Hazard and actions to be taken in order to avoid the Hazard.</td>
</tr>
<tr>
<td><img src="image" alt="Warning" /></td>
<td>Warning, this equipment contains high voltage circuitry.</td>
</tr>
<tr>
<td><img src="image" alt="Warning Biohazard" /></td>
<td>Contains material or substances that may be hazardous to human health. Please refer to your local biohazardous material handling procedure for further advice on the handling and disposal of these items.</td>
</tr>
</tbody>
</table>
1.4 System Overview, Installation and relocation

The SCI-tive Dual Workstation provides hypoxic or anoxic environments with control of temperature and humidity, to provide the optimum environment for cell biology incubation and experimentation.

SCI-tive Dual should only be installed or relocated by a qualified engineer. To arrange installation or relocation, please contact your local distributor.

The mains socket that forms connection to the SCI-tive Dual, is not to be obstructed by SCI-tive Dual or any other equipment, and must be accessible in case of emergency. In case of emergency, disconnect the SCI-tive dual from the AC mains outlet.

1.5 Weight and dimensions

The SCI-tive Dual workstation weighs approximately 355kg. Figure 2 lists the dimensions of the SCI-tive Dual workstation;

* Internal height between floor tray and ceiling panel. Internal height of microscope allowed in both chambers is 600mm.
1.6 **Environmental Operating Conditions**
The SCI-tive Dual Workstation should only be operated under the following environmental conditions:

- Temperature – Between 15°C and 30°C
- Humidity – Between ambient and 90% RH, Non-Condensing

1.7 **Storage Temperature**
When not in use, the SCI-tive Dual Workstation must only be stored under the following environmental conditions:

- Temperature – Between 0°C and 30°C

Storage outside of this range may damage the workstation.
2. Gas and electrical supply requirements

2.1 Gas supply requirements

The Gas supplies are connected to the back of the SCI-tive Dual Workstation as shown in Figure 3. A full description of the rear of the unit is provided in Section 3.1.4. Please refer to Figure 1 for Hazard symbol explanations.

Figure 3: Gas and electrical connections

Figure 4 lists the gasses required for operation of the workstation;

Figure 4: SCI-tive Dual gas requirements

<table>
<thead>
<tr>
<th>Gas</th>
<th>Symbol</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>N₂</td>
<td>Oxygen Free</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>CO₂</td>
<td>100%</td>
</tr>
<tr>
<td>Air</td>
<td>N/A</td>
<td>Compressed</td>
</tr>
</tbody>
</table>

In addition to the gasses in Figure 4, Figure 5 shows gasses that are required for specific conditions;

Figure 5: SCI-tive Dual gas requirements for specific conditions

<table>
<thead>
<tr>
<th>Gas</th>
<th>Symbol</th>
<th>Specification</th>
<th>Replaces</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen in Nitrogen</td>
<td>H₂/N₂</td>
<td>Maximum of 5.5% Hydrogen in Nitrogen</td>
<td>N/A</td>
<td>For anoxic mode</td>
</tr>
<tr>
<td>25% Oxygen in Nitrogen</td>
<td>O₂/N₂</td>
<td>Maximum of 25% Oxygen in Nitrogen</td>
<td>Air</td>
<td>For maintaining oxygen at levels higher than 17%</td>
</tr>
</tbody>
</table>

NOTE: Only gasses listed in Figure 4 and Figure 5 may be used with the workstation. The use of any other gasses will invalidate the warranty and may cause serious injury.
2.2 Gas regulator requirements
Gas regulators must be used with all gas supplies to the workstation. A 2 stage regulator must be used for each bottled gas supply. Regulators should be available from your local gas supplier. Ruskinn Technology Limited does not supply gas regulators.

The gas regulator should provide a minimum supply pressure of 3 bar gauge. The maximum supply pressure permissible is 4 bar gauge. A supply pressure greater than this will damage internal components of the workstation and will invalidate the warranty.

2.3 Electrical supply requirements
The workstation must be connected to a mains power supply. A power cord is supplied to connect the workstation to the mains supply as shown in Figure 3. Only the power cord supplied should be used to connect the workstation to the mains supply. The workstation must be connected to a protective earth.

The mains socket the SCI-tive Dual is connected to should not be obstructed by SCI-tive Dual or any other equipment, and must be accessible in case of emergency. In case of emergency, disconnect the SCI-tive Dual from the AC mains outlet.

2.4 Voltage and frequency requirements
To ensure safe operation of the workstation, it must be connected to a supply of the correct voltage and frequency. The mains supply voltage fluctuations must not exceed +/- 10% of the nominal mains voltage. The input voltage and frequency for SCI-tive Dual workstations are;

Input voltage and frequency: 230 Volts AC, 50Hz.

2.5 Power consumption
The power consumption for the Sci-tive Dual is shown below in Figure 6.

<table>
<thead>
<tr>
<th>Figure 6: Power Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Current</td>
</tr>
<tr>
<td>Maximum Current</td>
</tr>
<tr>
<td>Power, 230V</td>
</tr>
</tbody>
</table>

2.6 Powering the workstation
The SCI-tive Dual is fitted with an Un-Switched Mains Inlet to isolate the equipment from the mains supply, disconnect the mains plug from the AC Outlet.

In case of emergency, disconnect the SCI-tive Dual from the AC mains outlet.
3. **Workstation overview**

3.1 **Workstation layout**

3.1.1 **Front view**

The SCI-tive Dual is shown below in Figure 7. The left hand side chamber is identical in size and function as the right hand side chamber. Each side is controlled via the central touch screen controllers. The top controller controls the right hand side and the bottom controller controls the left hand side.

Additional optional features on some models include an Ocular Cover for Microscopes on either the Left Hand Chamber or Right Hand Chamber. Please refer to the Ruskinn web site ([www.ruskinn.com](http://www.ruskinn.com)) for specific product features.

- Two USB ports are featured below the Left hand side controller, together with a blue LED.
- USB flash drives are provided with the Workstation and have to be present at all times for data logging. Only memory storage devices are to be connected to the USB ports.
- Only USB storage devices that do not require an external power supply are to be used with the workstation.
- The Left USB stores data for the Left Hand Chamber and the Right Hand USB stores data for the Right Hand Chamber.
- The blue LED, when lit, indicates mains power is present to the SCI-tive Dual workstation.
- The Interlock door is situated below the Workstation control screens.

*Note:* Only memory storage devices are to be connected to the USB port(s). Only USB storage devices that do not require an external power supply are to be used with the workstation.
3.1.2 Humidifier End Panel (Left hand side view)

Figure 8: SCI-tive Dual Humidifier End Panel Left hand side. Figure 9 shows the RCCB for the workstation, refer to Section 6.6 for advice on steps to follow if the RCCB trips. Please refer to Figure 1 for Hazard symbol explanations.

1. Workstation Residual Current Circuit Breaker (RCCB)
2. Humidity Port Vent (Do not obstruct)
3. Fan vent (Do not obstruct)
4. Exhaust vent (Do not obstruct)
5. Auxiliary Access Panel and Vacuum Pump line
6. Oil Level tank viewing area (Secondary Pressure Relief)
7. Humidity System Water tank viewing area

**Hazard labels:** WARNING THIS EQUIPMENT MUST BE EARTHED
CAUTION: Risk of Electrical Shock. Do Not Operate

**Note:** A blue drain pipe for the condensate module can be found below each side. Locate a beaker or flask below the drain pipe, and regularly check the fill level of the beaker. The condensate module is a result of the drying process for the sample of the internal atmosphere for gas control.
3.1.3 Right hand side view
Figure 10 shows the right hand side of the SCI-tive Dual workstation;

![Figure 10: SCI-tive Dual Right hand side view](image)

1. Humidity Port Vent
2. Fan vent (Do not obstruct)
3. Exhaust vent (Do not obstruct)
4. Auxiliary Access Panel and Vacuum Pump line
5. Oil Level tank viewing area (Secondary Pressure Relief System)
6. Humidity System Water tank viewing area

Hazard labels: WARNING THIS EQUIPMENT MUST BE EARTHED

CAUTION: Risk of Electrical Shock. Do Not Open

Note: A blue drain pipe for the condensate module can be found below each side. Locate a beaker or flask below the drain pipe, and regularly check the fill level of the beaker. The condensate module is a result of the drying process for the sample of the internal atmosphere for gas control.
3.1.4 Rear View
Figure 11 shows the rear of the SCI-tive Dual workstation;

Figure 11: SCI-tive Dual Rear view

1. Secondary Pressure relief system vent Do not obstruct
2. Rear Electrical and Gas connections (see figure below)

Figure 12: Rear electrical connections

1. Air vents. Do not obstruct vents
2. Cooling Fans.
3. Gas inlets. (Maximum Pressure Must Not Exceed 5bar)
4. Ethernet port (For service personnel only).
5. Primary ground.
6. Fuse Points 12.5A F1 F2.
7. Mains inlet.

Hazard labels: WARNING THIS EQUIPMENT MUST BE EARTHED
CAUTION: Risk of Electrical Shock. Do Not Open
### 3.1.5 Internal Chamber

Each Chamber of the SCI-tive Dual Workstation, is equipped with:

- Two Internal lights (Left hand side and Right hand side)
- Three electrical points (Figure 15)
- Water tank access point for filling. (Figure 13). Refer to Section 4.6.4 for details of filling water tank.
- Temperature and Humidity sensors
- Interlock internal door
- Interlock inner door control button and indicator (Figure 14) Refer to Section 5.2.1 for operation.

The control and operation for the above features are achieved via each chambers touch screen controller.

---

**Figure 13: Water Tank fill port**

1. Water Tank Access point for filling

**Figure 14: Interlock internal door release**

2. Interlock internal door release button

**Figure 15: European Internal Power sockets**

---

Please refer to Figure 1 for Hazard symbol explanations.
4. Controller Overview

4.1 SCI-tive Dual Workstation Control Panels

The SCI-tive Dual Workstation is equipped with two touch screen control panels.

The top screen controls the Right Hand Side chamber, and the bottom screen controls the Left Hand Side chamber. The bottom screen is the master controller for the workstation.

Figure 16: SCI-tive Workstation controllers

1. Right Hand Side Controller
2. Left Hand Side Controller
3. Power indicators for each chamber of the SCI-tive Workstation
4. Right Hand Chamber’s USB Ports
5. Left Hand Chamber’s USB Ports
4.2 Initial Power Up

When the SCI-tive Dual Workstation is initially powered up the first screen displayed is as shown below in Figure 17. This is quickly followed by the Main Control Screen Top menu window as shown in Figure 18. It is recommended that the user checks both the water tank and oil tank levels before operation.

Figure 17: Initial Power Up Screen

Figure 18: Main Control Screen Menu
4.3 Internal Lights

The internal Lights can be set from the menu on the left hand side of the “Gas Control Settings”, “Hypoxic Cycle Settings” or “Anoxic Settings” screens, which are accessed from the Main Control Screen shown in Figure 18.

Figure 19: Atmosphere Control Screen Light settings

![Atmosphere Control Screen](image)

Each chamber is equipped with two internal lights (left and right). These are displayed by a light bulb on the Left Hand Side menu, one for the left light, and one for the right light.

To activate the left light, touch the Left Light Bulb icon on the screen, and the button will change from displaying a red “OFF” indicator to a green “ON” indicator on the screen, when the light is on.

Figure 20: Light Bulb switch on and off

![Light Bulb switch on and off](image)

To switch off each light, touch the relevant left or right light bulb button, and the button will turn from displaying a green “ON” to red “OFF” and the internal light will be switched off.
4.4 Internal Power sockets

Both workstation chambers have 3 internal power sockets, located on the back wall of the workstation chamber, as shown in Figure 15.

The Internal power sockets can be set from the menu on the left hand side of the “Gas Control Settings”, “Hypoxic Cycle Settings” or “Anoxic Settings” screens, which are accessed from the Main Control Screen shown in Figure 18.

To activate the internal power sockets, located at the back wall of the chamber, press the power socket button as shown in Figure 21. The button will change from displaying a red “OFF” indicator to a green “ON” indicator on the screen, when the internal power sockets are on.

![Figure 21: Internal power socket switch](image)

To switch the internal sockets off, press the power socket button and the button will turn from displaying a green “ON” to Red “OFF” and the internal power sockets will be switched off.

⚠️ The Maximum Power rating per chamber is 480W.

Note: The Maximum Power Rating is the combined total of the three internal mains sockets and the maximum power should not be exceeded. Note also that any devices placed inside the workstation should be checked for compatibility with the temperature and humidity conditions within the workstation chamber. Ruskinn Technology Limited accepts no liability for items damaged inside the workstation chamber that are not suitable for the conditions.
4.5 Temperature Control

The temperature can be set for each chamber by using the relevant Left (bottom), Right (top) touch screen controllers.

From the main menu control screen (Figure 18), select the first button “Gas Control Settings”. When selected, the Atmosphere Control Screen will be displayed as shown in Figure 23.

The SCI-tive Dual workstation chambers Temperature Control is set ON by default at power up, and the temperature in each chamber is set to 37°C by default.

The Temperature Control can be set from the menu on the left hand side of the “Gas Control Settings”, “Hypoxic Cycle Settings” or “Anoxic Settings” screens, which are accessed from the Main Control Screen shown in Figure 18.

To switch the temperature control off, in each chamber, press the temperature control button, and the button will turn from displaying a green “ON” to Red “OFF”.

Figure 22: Temperature Control Button

The temperature can be controlled between ambient + 5°C and 45°C.

To change the temperature, touch the Temperature Set Point box shown in Figure 23, and a numeric pad will appear to allow a different value to be entered, as shown in Figure 24. The resolution of the temperature input setting is 0.1°C.

The Temperature Set Point box sets the temperature for each zone of the chamber and the interlock.

**NOTE:** The interlock temperature follows the temperature that has been set in the Left Hand Side Chamber, Temperature Set Point box. The interlock temperature cannot be set independently.

The Zone 1 and Zone 2 values display the temperature at the left and right monitor points within each chamber. These cannot be set by the user.
Figure 23: Atmosphere Control Screen

Atmosphere Control

- Interlock
  - Door
  - Release
- ON
  - Left
- ON
  - Right
- OFF

O₂ Set Point: 0.0 %
O₂ Value: 0.0 %
CO₂ Set Point: 0.0 %
CO₂ Value: 0.0 %

Temperature Set Point: 0.0 °C
Zone 1: 0.0 °C
Zone 2: 0.0 °C
Interlock: 0.0 °C

(% RH) Set Point: 0%
(% RH) Value: 0%

MAIN MENU
OFFSET
TREND

Figure 24: Temperature set screen

Atmosphere Control

- O₂ Set Point: 0.0
- CO₂ Set Point: 0.0

Max: 45.0
Min: 0.0

1 2 3 CLR
4 5 6 <-
7 8 9 -
0 . ENTER

Temperature Set Point: 0.0
(% RH) Set Point: 0%
Value: 0
4.5.1 Temperature alarms

Each chamber has an alarm function built into the temperature controller. An audible alarm will sound if the temperature increases or decreases +/- 1.0°C of the temperature setting. An alarm screen will appear as shown in Figure 25, and a “Temperature Alarm Present” message will appear on the main Atmosphere Control Screen shown in Figure 26.

Figure 25: Temperature Alarms

Temperature Alarm

The alarm is turned off when the temperature returns to within +/- 1.0°C of the temperature setting.

The user can acknowledge the alarm, using the “Acknowledge” button on the alarm screen in Figure 25 which will disable the audible alarm, however the alarm is not cleared until the temperature returns to within +/- 1.0°C of the temperature setting.

If the temperature alarm is acknowledged and the temperature control system is unable to achieve the Temperature Set Point after twenty minutes the alarm will reactivate.

The temperature alarms are disabled when the temperature control is turned off from the main menu.
The "Temperature Alarm Present" message is displayed on the main Atmosphere Control screen as shown in Figure 26.

The location of the temperature alarm is indicated by each of the Zone 1, Zone 2, Interlock words becoming red on the main screen. This is shown above in Figure 26, indicating that there is a temperature alarm present in each of the zones of the relevant chamber and the Interlock.

When the temperature adjusts to within +/- 1.0°C of the temperature setting, the temperature alarm clears.
4.6 Humidity control Overview

The SCI-tive Dual workstation has a humidity control function for each chamber. The humidity can be controlled between ambient and 85% relative humidity.

Note that at high humidity levels (greater than 70% relative humidity), condensation may form on the inside of the front screen of the workstation. This is due to the temperature difference between the inside of the workstation and the room it is located. To minimize the chance of condensation forming, it is recommended that the workstation is not located by air conditioning vents or windows.

The humidifier system uses a water tank to provide humidity for the workstation. Water is vaporised and is injected into the workstation chamber to increase humidity when required. If the humidity is too high, water vapour is condensed and returns to the water tank. Each workstation chamber has its own humidifier system. The humidifier system is disabled if the water level is too low. If the water level exceeds the maximum level viewed on the side panel water tank, shown in Figure 8 and Figure 10, then water is to be removed from the tank.

4.6.1 Humidity control

The humidity control can be activated from the menu on the left hand side of the “Gas Control Settings”, “Hypoxic Cycle Settings” or “Anoxic Settings” screens, which are accessed from the Main Control Screen shown in Figure 18.

The Humidity settings are achieved via a % setting from the “Atmosphere Control Screen”.

Before activating the humidity system, the user should check:

- The water level is above the minimum level in the water tank as indicated on the end panel of the relevant chamber as shown in Figure 8 and Figure 10.

The Humidity control button is activated by pressing the rain and umbrella button as shown below.

If the humidity system is not required it can be disabled / turned off by pressing the button to OFF.

Figure 27: Humidity Control Button

The % relative humidity can be set by entering a % value into the (% RH) Set Point box from the “Atmosphere Control Screen”. The % relative humidity can only be set when the humidity system is on and the humidity button indicates a green ON.
### 4.6.2 Humidifier Alarms

To ensure the humidifier systems function correctly, the humidifier tanks must be filled to the correct level as indicated on the end panel of the relevant chamber as shown in Figure 8 and Figure 10. When the workstation is installed and powered up, a green information message will appear for 1 minute on the screen to show the level is ok as shown in Figure 28.

This information message will also appear after the humidifier water tank is filled.

**Figure 28: Humidity System water ok**

- **Atmosphere Control**
  - **O₂ Set Point**: 0.1 %
  - **O₂ Value**: 20.3%
  - **CO₂ Set Point**: 0.0 %
  - **CO₂ Value**: 0.1 %

  Humidity System Water Level OK

- **Temperature Set Point**: 22.5 °C
- **(% RH) Set Point**: 55 %
- **Zone 1**: 23.3 °C
- **(Zone 1) Value**: 61%
- **Zone 2**: 22.6 °C
- **Interlock**: 22.3 °C

If the humidifier water level is too low, an alarm will sound and an alarm message will be displayed on the control screen as shown in Figure 29.

**Figure 29** shows the failure alarm message that appears when the Humidity System Water Level is too low and has stopped working. This requires immediate attention to allow operation of the humidity system to continue. The user needs to re-fill the humidity water tank as described in Section 4.6.4, until the audible alarm is off. If the water tank is not filled, the humidity system will continue to switch off, as indicated on the humidity button.

When the tank is filled to the appropriate level as shown by the indicators on the outside panel of the chamber, the information message will be displayed for 1 minute as shown in Figure 28, to show that the level is ok.

After a water fill, the humidity system will need to be re-activated by pressing the Humidity Control Button as shown in Figure 27.
4.6.3 Humidifier water consumption
The humidity system injects water into the workstation chamber as a vapour. This consumes water from the humidifier tank. As the workstation is used, some humidity is lost via the interlock, the waste port, the exhaust valves and the Ezee Sleeves. The water consumption creates the requirement for the water tank to be refilled.

4.6.4 Refilling the humidifier tank
The water tank is filled from inside each chamber, by means of a small water bottle with a pipette end, as shown below in Figure 30. Ionised sterile water must be used to avoid contamination.
A water bottle with a pipette end is to be passed into the chamber through the interlock and purge process.

Once the bottle is inside the chamber, the user accesses the left most glove post, picks up the bottle of ionised sterile water and inserts water into the tank at the side of the chamber. Fill the water according to the physical MAX and MIN water level indicators on the tank.

The audible alarm will stop when there is sufficient water in the water tank.

After a water fill, the humidity system will need to be re-activated by pressing the Humidity Control Button as shown in Figure 27.

For the Right hand chamber, the water is to be filled accessing the right most glove port.

4.7 Environmental gas composition - Atmosphere control
To set up Gas control for the chambers the user should select “Gas Control Settings” from the main menu. Once selected the Atmosphere Control screen as shown in Figure 32 is displayed.

4.7.1 Gas control overview

Figure 32: Gas controller menu screen- Atmosphere Control

The O₂ Set point and CO₂ Set point can be set using the Atmosphere Control screen as shown above.

**O₂ Set point:** This is the required oxygen concentration. The O₂ set point can be set between 0.1% and 20.9% in this menu.

For oxygen concentrations of 0.0%, use the “Anoxic Control Menu” option as described in Section 4.9.

For oxygen concentrations greater than 17.0% a combination 75% Nitrogen and 25% Oxygen supply will need to be connected to the Air connection at the rear of the workstation as shown in Section 3.1.4. A red warning screen will appear if this is set above 17.0% as shown in Figure 34.

**CO₂ Set point:** This is the required carbon dioxide concentration. The CO₂ set point can be set between 0.1% and 30.0%.

**O₂ Value:** This is the actual oxygen concentration.

**CO₂ Value:** This is the actual carbon dioxide concentration.

The Trend button provides the Trend log for the parameter. Please refer to Section 4.12 for further information on the event log.
4.7.2 Atmosphere Control Alarms
Individual alarms are displayed on the Control Screen for low pressure on the O₂, CO₂ and N₂.

If gas pressure alarms are present check the incoming gas supplies at the rear of the workstation.

Figure 33: Atmosphere Control Alarms Screen

This alarm occurs when the O₂ set point has been set above 17.5% requiring the compressed air cylinder to be changed.

The user can acknowledge the alarm, using the “Acknowledge” button on the alarm screen.
Figure 35: Failure to reach Set Point Alarm

This alarm occurs when the internal control time limit to reach Set point has been exceed and the cycle is aborted. This function prevents excessive gas usage. It is recommended to adjust the set point and re-start the cycle. If this alarm occurs repeatedly see trouble shooting in Section 6.6.

Figure 36: Low Pressure Time Limit Alarm

The low pressure time limit alarm occurs when the chamber has been un-able to reach the required level over a set time period (15 minutes default). This could be due to glove ports being left off, leakage, or the incoming gas supply needing to be changed.
4.8 Setting up a Hypoxic cycle

From the main control screen menu, select the **Hypoxic Cycle Settings** button. The user can choose to run a Continuous Cycle or a Non Continuous Cycle.

![Figure 37: Main Control Menu - Hypoxic Cycle Settings](image)

Press the **O₂ VALUES** button to enter O₂ set up screen and the **CO₂ VALUES** button to enter the CO₂ screen. The Cycles will be shown on the main **HYPOXIC CYCLE** screen shown in Figure 38.

![Figure 38: Hypoxic Cycle Menu](image)

Press the **TREND** button provides the Trend log for the parameter. Please refer to Section 4.12 for further information on the event log.
4.8.1 Setting a Non Continuous Cycle

Set the cycle by setting each of the Steps and the required time for each step, by entering the required values.

**Step 1 Set point 1:** This is the oxygen concentration for the first phase of the hypoxic cycle. Time: This is the time span of the first phase of the hypoxic cycle in minutes.

**Step 2 Set point 2:** This is the oxygen concentration for the second phase of the hypoxic cycle. Time: This is the time span of the second phase of the hypoxic cycle in minutes.

**Step 3 set point 3:** This is the oxygen concentration for the third phase of the hypoxic cycle. Time: This is the time span of the third phase of the hypoxic cycle in minutes.

**Final Set Point.** This is the oxygen concentration for the final phase of the hypoxic cycle. The final phase will operate until the cycle is aborted by the user.

**No. of Cycles.** This allows the number of cycles to be set. This can be set on either O₂ or CO₂ screens, however the number of cycles is to be set the same. This is the last value to be entered on either the O₂ or CO₂ screen.

- Select “Set point 1” and enter the required value (between 0.1% and 21.0%) and time in minutes. Please refer to Section 4.7.1 for setting higher than 17.0%.
- Select “Set point 2” and enter the required value (between 0.1% and 21.0%) and time in minutes.
- Select “Set point 3” and enter the required value (between 0.1% and 21.0%) and time in minutes.
- Select “Final” and enter the required value (between 0.1% and 21.0%) and time in minutes.
- Select “No. of Cycle” to set the number of cycles required.
- Return to previous screen and select CO₂ Values button.
Step 1 Set point 1: This is the Carbon Dioxide concentration for the first phase of the hypoxic cycle. Time: This is the time span of the first phase of the hypoxic cycle in minutes

Step 2 Set point 2. This is the Carbon Dioxide concentration for the second phase of the hypoxic cycle. Time: This is the time span of the second phase of the hypoxic cycle in minutes

Step 3 set point 3. This is the Carbon Dioxide concentration for the third phase of the hypoxic cycle. Time: This is the time span of the third phase of the hypoxic cycle in minutes

Final Set Point. This is the Carbon Dioxide concentration for the final phase of the hypoxic cycle. The final phase will operate until the cycle is aborted by the user.

No. of Cycles. This allows the number of cycles to be set.

- Select “Set point 1” and enter the required value (between 0.1% and 30.0%) and time in minutes.
- Select “Set point 2” and enter the required value (between 0.1% and 30.0%) and time in minutes.
- Select “Set point 3” and enter the required value (between 0.1% and 30.0%) and time in minutes.
- Select “Final” and enter the required value (between 0.1% and 30.0%) and time in minutes.
- Return to previous screen and press START.

The hypoxic cycle will now start and the number of cycles remaining will be displayed on the hypoxic cycle screen as shown in Figure 38.
4.8.2 Setting a Continuous Cycle

To set a continuous cycle, press the **Continuous Cycle** button on the O₂ screen and a three Step cycle can be set with the respective times for each step.

![Figure 41: Set O₂ Values for Continuous Hypoxic Cycle](image1)

The Continuous Cycle will operate until the cycle is aborted by the user. The Cycle is aborted by pressing the **RETURN TO PREVIOUS SCREEN** button.

![Figure 42: Set CO₂ Values for Continuous Hypoxic Cycle](image2)
4.8.3 Hypoxic Control Alarms
The “HYPOXIC CONTROL” screen will display both Humidity System and Temperature Alarm messages in Red text on the screen.

Figure 43: Hypoxic Control Alarms
4.9 Anoxic Control
The Anoxic Control menu allows the workstation to be run in anoxic mode (0.0% oxygen). To run in anoxic mode, Hydrogen gas in Nitrogen is required. The maximum permissible concentration is 5.5% Hydrogen in Nitrogen.

In addition to this, two small catalyst sachets are required per chamber. The catalyst combines Hydrogen and Oxygen to form water, thereby removing all Oxygen from the inside of the chamber.

Note that there is no oxygen control in this operating mode.

4.9.1 Overview
To enter the anoxic mode, select “Anoxic Settings” from the main menu. The Anoxic Control screen will then be displayed as shown in Figure 44.

Figure 44: Anoxic control screen

![Anoxic Control Screen]

**O₂ Value:** This is the actual oxygen concentration in the workstation chamber.

**CO₂ Set Point:** CO₂ % can be set.

**CO₂ Value:** This is the actual CO₂ concentration in the workstation chamber.

4.9.2 Anoxic Menu
The Anoxic Menu is password protected and for use by service personnel only.

4.9.3 Trend Screen
The Trend button provides the Trend log for the parameters. Please refer to Section 4.12 for further information on the Trend log.
4.10 Oxygen (O₂) Sensor Calibration

4.10.1 Overview
To ensure the correct function of the gas mixer, the oxygen sensor must be calibrated. The auto calibration function of the gas mixer allows the oxygen sensor to be calibrated without destabilising the environment in the workstation chamber. Ruskinn Technology Limited recommends that the oxygen sensor is calibrated on a monthly basis using the O₂ Sensor calibration and replaced biennially by a qualified service engineer.

4.10.2 Screen layout
To enter the oxygen sensor auto calibration screen, select “O₂ Sensor Calibration” from the main menu. Figure 45 shows the oxygen sensor calibration screen;

![Image of Oxygen sensor calibration screen]

**Start Calibration.** This starts the oxygen sensor automatic calibration.

**Time Remaining.** This gives the time remaining in seconds of the oxygen sensor automatic calibration.

**Last Calibration.** This gives the date and time of the last oxygen sensor auto calibration.

**Change Timers.** This opens the service engineer screen, which is password protected. This function is included for the use of qualified service engineers only. If the password screen is entered accidentally press the return button on the password screen.

**Previous.** Press to return to the main menu via the return to main menu screen.
4.10.3 Calibrating the oxygen sensor

To calibrate the oxygen sensor;

- Enter the oxygen sensor auto calibration screen by selecting “Oxygen Calibration” from the main menu.
- Press “Start Calibration”. The time remaining counter will then begin.
- Once the calibration has finished, the calibration result will be displayed.

Note; if the oxygen sensor fails calibration, it must be replaced.

It is recommended to replacement the sensor biennially.

For oxygen sensor replacement, please contact your local distributor.
4.11 Setting the date and time

The date and time are set by the installer and are required for the Trend log.

To set the date and time, select “Other settings” from the main menu and then press the SET DATE/TIME button as shown in Figure 46.

The date and time screen will be displayed as shown in Figure 47.

Use the appropriate button to adjust the Day / Month / Year / Hour / Min / Second settings. Press “RETURN TO PREVIOUS SCREEN” button to return to the previous screens.
4.12 Trend log
The Trend log provides a historical record of the environmental conditions within the workstation. The Trend log stores all data for each chamber when there is a USB device connected. Data is recorded at 1 minute intervals.

4.12.1 On Screen Trend log
The on screen Trend log shows the latest 1 hour of data (60 data entries).

Note that upon entering the event log, the earliest recorded data will be displayed. A 60 minute window can be scrolled through on the control screen. To view data over 60 minutes, the USB stick should be removed and connected to a computer. The USB device can capture many years of data.

Note that when the USB stick is removed from the workstation, there will be no data logging for the length of time that the USB is removed.

4.12.2 Removing the USB
The Trend log is downloaded to a USB for each chamber. Each chambers USB must be present at all times of operation.

The USB can be removed by pressing the “USB Status” button (and if a USB stick is present), the following screen will be displayed.
The Green “Press to Safely Eject USB Memory” button should be pressed to safely remove the USB stick. The Left USB stick contains the Left Hand Side Chamber Trend Log data, and the Right USB stick contains the Right Hand Side Chamber Trend Log data. Wait until the red “USB has been ejected” message to appear as shown in Figure 50, then remove the USB.

When the USB has been removed the following alarm screen is displayed. As shown below in Figure 51.
The Trend Log screen also shows a red warning box with a message that the USB Memory is not present.
4.12.3 Trend log on the USB device

The Trend log is continually downloaded to a USB device and can be uploaded to a PC to be analysed. Note that the USB device must be formatted in the FAT32 data format. A Ruskinn Technology Limited USB stick is provided with the workstation, pre formatted in FAT32 format. It is recommended that the Ruskinn Technology Limited USB stick should be used for downloading the event log. Note that only devices that insert directly into the USB ports should be used. Devices attached via a cable should not be used.

**Figure 52: Trend Log**

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The Trend log gives the following data:

- Date.
- Time.
- Oxygen concentration present value (O\textsubscript{2} PV).
- Oxygen concentration set point (OPSP).
- Carbon Dioxide concentration present value (CO\textsubscript{2} PV).
- Carbon Dioxide concentration set point (CO\textsubscript{2} PSP).
- Oxygen Deadband (O\textsubscript{2} DB).
- Carbon Dioxide Deadband (CO\textsubscript{2} DB).
- Oxygen Deadband Counter (O\textsubscript{2} Count).
- Carbon Dioxide Deadband Counter (CO\textsubscript{2} Count).
- Temperature System Set Point (Temp SP).
- Zone1 Temperature Present Value (Z1 Temp PV).
- Zone2 Temperature Present Value (Z2 Temp PV).
- Interlock Temperature Present Value (Int Temp PV).
- Humidity Set Point (Humidity SP).
- Humidity Present Value (Humidity PV).
- Pressure Switch Counter (PS).

Note that the column PS refer to the pressure switch which is provided for the use of service engineers.

Pressure switch operation. This is the time in minutes since the last operation of the pressure switch. The pressure switch operates when the pressure in the workstation chamber falls below a set level. Nitrogen is injected into the workstation to increase the pressure, to maintain a positive internal pressure.

**Note:** “Deadband” is the control limit around the target. In this limit gas will not be injected. E.g. For a deadband of 0.2 around a 5% target, gas will not be injected if the sensor reads anywhere between 4.8% and 5.2%.
When the USB stick is removed from the workstation, there will be no data logging for the length of time that the USB is removed.

4.13 Gas usage, change times and stability

The workstation uses a combination of nitrogen, compressed air and carbon dioxide to maintain the desired atmospheric conditions inside the workstation chamber. The amount of gas consumed by the workstation will depend upon the environmental conditions required, and the frequency of use.

For more information on the Gas usage, please refer to *CI-001 SCI-tive Testing and validation document* on the Ruskin web site (www.ruskinn.com).
5. Using the interlock

The interlock is provided as a means of introducing and removing material to and from the workstation chamber without disturbing the internal Atmosphere of the workstation chamber.

The interlock can be controlled via the either the Left or Right Chamber Control screen. The temperature is controlled by the left hand side chamber setting.

Note: The use of the word Interlock in this manual is medical terminology and refers to the environmental working area between both chambers. It does not refer to the engineering safety interlock switch mechanism.

5.1 Interlock overview

The interlock consists of a small chamber with two inner doors and an outer door. Inside the chamber there is a heated sliding tray. The tray can slide into either workstation chamber when the required interlock inner door is open. This is to provide easier access to items transferred through the interlock.

The interlock inner environment is controlled through the purging process to control the oxygen level to the user setting value. This allows the user to introduce samples in the interlock at any required level up to 10% oxygen. Items cannot enter the chamber until a successful purge has been completed.

Figure 53: Interlock door Open and Closed

Please refer to Figure 1 for Hazard Warning Label Explanation.
5.2 Opening the interlock outer door

To open the interlock outer door, press and hold the interlock door button for 3 seconds from the “Gas Control Settings”, “Hypoxic Cycle Settings” or “Anoxic Settings” screens, which are accessed from the Main Control Menu on the Left or Right Hand Chamber control screen.

Figure 54: Interlock Door Release Button

To close the interlock outer door, push the interlock outer door closed. A click will be heard when the outer door closes as the magnets engage to lock the interlock outer door.

5.2.1 Opening the interlock inner doors

To open the interlock inner doors, press the interlock inner door button inside the chamber. This can only be pressed when the LED illuminates.

Figure 55: Inner door open button

To close the interlock inner doors, slide the open interlock inner door forwards until closed.

Only 1 inner interlock door can be opened at one time.

5.2.2 Transferring material into a workstation chamber via the interlock

To transfer materials into a workstation chamber it is necessary to set the desired O₂ level for the interlock.

- Press and hold the interlock outer door button for 3 seconds on the main screen to open the interlock outer door.
- Pull the interlock outer door down to fully open the interlock outer door. **Warning: Do not place items on the interlock outer door. This could cause damage to the interlock outer door and the shell of the workstation.**
- Place the material to be transferred into a workstation chamber onto the interlock floor tray inside the interlock chamber.
- Close the interlock outer door.
When the interlock door is closed a purge of the interlock will take place. The doors cannot be opened at this time and the following screens will be displayed.
Enter your hands into the workstation chamber via the Ezee Sleeves. 
When the interlock inner door LEDs are illuminated press the interlock inner door button to release the interlock inner door clamps. 
Slide the interlock inner door back. 
If required, slide the interlock tray into the workstation chamber. 
Remove material from the interlock floor tray and place in the workstation chamber. 
When all material has been removed from the interlock floor tray, push the interlock floor tray back into the interlock chamber. 
Slide the interlock inner door forward to close the interlock chamber.
Note: The interlock inner doors should not be left open other than when moving material from the interlock chamber to a workstation chamber and vice versa.

If the interlock door is left open for more than 30 seconds, the LED flashes to indicate the inner door should be closed.

5.2.3 Removing material from the workstation chamber via the interlock
To remove materials from the workstation chamber:

- Open and close the outer Interlock door, and repeat the purge process.
- When the interlock inner door LEDs are illuminated press the interlock inner door button to release the interlock inner door clamps.
- Slide the interlock inner door back.
- If required, slide the interlock tray into the workstation chamber.
- Place the materials to be removed onto the interlock floor tray.
- When all material has been placed on the interlock floor tray, push the interlock floor tray back into the interlock chamber.
- Slide the interlock inner door forwards to close the interlock chamber.
- Remove hands from the Ezee Sleeves.
- Press and hold the interlock outer door button for 3 seconds to open the interlock outer door.
- Pull the interlock outer door down to fully open the interlock outer door. **Warning: Do not place items on the interlock outer door. This could cause damage to the interlock outer door and the shell of the workstation.**
- Remove the material from the interlock floor tray inside the interlock chamber.
- Close the interlock outer door.
5.2.4 Transferring material between the workstation chambers
To transfer materials between the workstation chambers;

- Open and close the outer door and purge system
- When the interlock inner door LEDs are illuminated press the interlock inner door button to release the interlock inner door clamps.
- Slide the interlock inner door back.
- If required, slide the interlock tray into the workstation chamber.
- Place the materials to be removed onto the interlock floor tray.
- When all material has been placed on the interlock floor tray, push the interlock floor tray back into the interlock chamber.
- Slide the interlock inner door forwards to close the interlock chamber.
- Remove hands from the Ezee Sleeves
- Enter your hands into the other workstation chamber via the Ezee Sleeves.
- When the interlock inner door LEDs are illuminated press the interlock inner door button to release the interlock inner door clamps.
- Slide the interlock inner door back.
- If required, slide the interlock tray into the workstation chamber.
- Remove material from the interlock floor tray and place in the workstation chamber.
- When all material has been removed from the interlock floor tray, push the interlock floor tray back into the interlock chamber.
- Slide the interlock inner door forward to close the interlock chamber.

5.2.5 To cancel a purge
To cancel a purge the user can press the CANCEL button to open the interlock door. If a purge has started the "Interlock Door Release" button can be pressed and held for 3 seconds from the menu screen of the Left or Right Hand Side chamber Control Panel. As shown in Figure 54.
5.3 Hand access to the workstation chambers

Direct hand access to the workstation chambers is provided via the glove ports and the Ezee Sleeve system. The Ezee Sleeves provide direct bare hand (or gloved) access to the workstation chamber.

5.3.1 Overview

The Ezee Sleeves consists of a sleeve, a cuff and an Ezee Plug. There are 3 sizes of Ezee Sleeve available; small, medium and large. Each size of Ezee Sleeve has a corresponding Ezee Plug.

The sleeves attach to the glove ports via 2 O-rings. The cuff is then attached to the sleeve via an O-ring. The Ezee Plug can be inserted into the cuff when the sleeves are not in use for short periods of time. For longer periods of non-use the glove port inner doors should be used. When in use, the Ezee Plug and glove port inner doors can be stored in their holders. Alternatively Ezee Cuffs can be used for very quick access into the workstation. When not in use the glove port caps should be used.

For both Ezee Sleeve and Ezee Cuff, Glove port outer covers are to be used when the workstation is not in use to help avoid possible contamination.

Note: The workstation should not be used without the Ezee Sleeves or Ezee Cuff attached or the workstation will use excessive amounts of gas.

5.3.2 Entering a workstation chamber using the Ezee Sleeves

To enter a workstation chamber via the Ezee Sleeves;

- Remove the glove port outer covers from the 2 glove ports to be used. The glove port covers can be stored in the glove port cover holders located on the workstation stand.

- Hold one Ezee Sleeve cuff with your right hand and push it towards the glove port to minimise the ambient atmosphere in the sleeve.
• Supporting the Ezee Sleeve cuff with your other hand, push the cuff of the sleeve over your hand. Ensure that you have pushed your arm through far enough such that the cuff is tight around your wrist.

• Then using your hand that is already sleeved to hold the other cuff push the free hand into the cuff. Ensure that you have pushed your arm through far enough such that the cuff is tight around your wrist.

• Open the two glove port inner doors by rotating the handles 90 degrees.
• Stow the two glove port inner doors in the holders in the ceiling of the workstation.

Note:
• The cuffs must be properly supported when entering the workstation chamber. Failure to support the cuffs can cause the Ezee Sleeves to come off the glove ports.
• The Ezee Sleeve cuffs must be tight around the wrists. This is to ensure a gas tight seal between the cuff and the wrists. Remove any jewellery and/or wrist watches from the wrists before using the Ezee Sleeves. The sleeves of clothing should be rolled up to prevent them entering the cuffs of the Ezee Sleeves.
• Ezee Sleeves can be lubricated with Talc for easier use. Talc is available from Ruskinn Technology Limited.

5.3.3 Exiting the workstation chamber using Ezee Sleeves and Internal Glove Port Doors
To exit the workstation chamber via the Ezee Sleeves using the glove port doors;

• Remove the glove port inner doors from the holders.

• Make sure the handles are aligned vertically and then pull them towards the glove ports. The black alignment marks on the glove ports match up with the locating pins on the doors.
• Rotate the door handles 90 degrees to a horizontal position (either clockwise or anti-clockwise) to lock them in place (Image below showing the secured doors without sleeves).

• Place the sleeves and cuffs into the glove port recess to allow the glove port outer covers to be fitted.

Note: Ensure that the cuffs are properly supported when exiting the workstation chamber. Failure to support the cuffs can cause the Ezee Sleeves to come off the glove ports.

5.3.4 Exiting the chamber workstation using Ezee Sleeves and Ezee Plugs

To exit the workstation chamber via the Ezee Sleeves using the glove Ezee Plugs.

Note: Ezee Plug use for exiting the workstation is only recommended for periods of up to 5 minutes to avoid condensation build up on the inside of the sleeves.

• Remove the Ezee Plugs from the holder.
• Pull your hand(s) towards you slowly to avoid excessive negative pressure being built up in the workstation.

• Place the Ezee Plugs on the floor tray of the workstation (still inside the sleeves).

• Replace the glove port outer cover.

Note: Ensure that the cuffs are properly supported when exiting the workstation chamber. Failure to support the cuffs can cause the Ezee Sleeves to come off the glove ports. Note also that the Ezee Plugs must be correctly inserted into the cuffs, such that a gas tight seal is formed.
5.3.5 Entering the chamber workstation using Ezee Sleeves and Ezee Plugs

To enter the workstation chamber via the Ezee Sleeves and Ezee Plugs.

- Hold an Ezee Plug with one hand and use the other to support the cuff.

- Push the Ezee Plug towards the workstation chamber and push your hand through the cuff. Ensure that you have pushed your arm through far enough such that the cuff is tight around your wrist.

- Stow the Ezee Plug in the holder.
• Hold the other Ezee Plug and push it into the workstation

• Support the cuff of the second sleeve with your hand that is already in the workstation and push your hand through the cuff. Ensure that you have pushed your arm through far enough such that the cuff is tight around your wrist.

• Stow the Ezee Plug in the holder.

**Note:**
- The cuffs must be properly supported when entering the workstation chamber. Failure to support the cuffs can cause the Ezee Sleeves to come off the glove ports.
- The Ezee Sleeve cuffs must be tight around the wrists. This is to ensure a gas tight seal between the cuff and the wrists. Remove any jewellery and/or wrist watches from the wrists before using the Ezee Sleeves. The sleeves of clothing should be rolled up to prevent them entering the cuffs of the Ezee Sleeves.
5.3.6  Arm gas displacement volume and pressure changes

When entering and exiting the workstation chamber using the Ezee Sleeves, the internal volume of the workstation will change due to the displacement of your arms. The change in volume will cause a change in pressure within the workstation.

When entering the workstation, the pressure inside the workstation chamber will increase. This will cause the exhaust valve to open to relieve the pressure. The water level in the humidifier will also increase until the pressure has returned to its normal level. To minimise the pressure increase, enter the workstation via the Ezee Sleeves slowly.

When exiting the workstation, the pressure inside the workstation chamber will decrease. This will cause the gas mixer to inject nitrogen into the workstation, as the pressure switch activates. The level in the humidifier will also decrease, until the pressure has returned to its normal level. To minimise the pressure decrease, exit the workstation via the Ezee Sleeves slowly.
5.4 Waste port

SCI-tive Dual can be equipped with a waste port in each chamber, for disposing of waste materials from the workstation.

Hazard Warning: Contains material or substances that may be hazardous to human health. Please refer to your local biohazardous material handling procedure for further advice on the handling and disposal of these items.

5.4.1 Waste port overview
The waste port consists of 3 sections; the waste port, the waste port lid and the waste port base. In addition to these components, a waste port bag is required to avoid gas leaks.

The waste port must be used with the bag.

5.4.2 Using the waste port
To use the waste port;

- Remove the lid from the waste port by turning it anti-clockwise (counter-clockwise).
- Place the waste material inside the waste port.
- Replace the lid by turning it clockwise until it is tight. Care should be taken not to over tighten or cross thread the lid.

Note: The end user is responsible for disposing of all waste. Waste should be dry. It is not recommended to place paper waste inside the waste port as it may be blown back into the workstation chamber when using the waste port at a later time.

5.4.3 Waste port bags.
Only Ruskinn Technology Limited waste port bags should be used with the waste port. For ordering details for additional waste port bags, please refer to the Ruskinn Web site (www.ruskinn.com).
6. Cleaning and maintenance

6.1 Cleaning the workstation
To ensure that your SCI-tive Dual workstation remains at optimum working conditions, it must be cleaned on a regular basis. A basic clean is required after each use. Deep cleaning is required at regular intervals, dependent upon the nature of the materials used in the workstation. As a guide, a deep clean should be performed at between 3-6 month intervals.

6.1.1 Cleaning agents
The correct cleaning agents must be used to clean the workstation. The use of incorrect cleaning agents will damage the workstation and invalidate the warranty. The following cleaning agents are permitted;

- Ethanol, laboratory grade at a maximum concentration of 70% by volume ethanol in distilled water.
- Propanol, laboratory grade at a maximum concentration of 70% by volume propanol in distilled water.
- Tristel Fuse Sachet, 1 sachet diluted in 3 litres of distilled water, or Tristel Duo Foamer. Tristel Fuse Sachets and Duo Foamer are available from Ruskinn Technology Limited.
- Ruskinn Technology Limited anti static cleaner.
- Distilled water.

No other cleaning agents are permitted.

The use of UV light is prohibited in the workstation, as it will damage the acrylic shell. The use of UV Light within the Workstation will invalidate the warranty.

6.1.2 Cleaning procedure – during and after each use
During use, clean any spills immediately using paper towels soaked in an appropriate cleaning agent. Wipe dry using a dry paper towel.

After each use;

- Remove all waste materials from the workstation chamber(s).
- Wipe the workstation chamber floor tray(s) using paper towels soaked an appropriate cleaning agent.
- Wipe the workstation chamber floor tray(s) clean using paper towels to dry.
- Wipe the interlock floor tray using paper towels soaked in an appropriate cleaning agent.
- Wipe the interlock floor tray using paper towels to dry.
- If the workstation chamber has been used, check the waste port bag. If the waste port bag is full, empty the waste port bag.
6.1.3 Cleaning procedure – deep clean with front screens removed

To deep clean the workstation;

Preparing the workstation

- For the relevant workstation chamber return the Control screen to the main menu.
- Turn the humidity control on both chambers off.
- Remove all cells/samples to an alternative storage facility.
- Open the interlock outer door. Leave the interlock door in a vertical position to avoid damage whilst cleaning the workstation chamber.
- Switch the workstation off at the mains and remove the plug from the mains.
- Remove the front screens.
- Remove the storage racks from the left workstation chamber.
- Remove any other equipment installed in the workstation chambers.
- In each chamber, remove the workstation floor tray by tilting the floor tray up from the right hand side.
- Remove the detox sachets.
- Remove the waste port lid.
- Remove the waste port bag

Cleaning the workstation chambers

- The components that require cleaning are:
  - Workstation floors.
  - Workstation side walls.
  - Workstation inner rear walls (the rear wall that is visible from the front of the workstation).
  - Workstation floor trays.
  - Workstation ceiling panels.
  - Interlock inner doors.
  - Storage racks.
  - Front Screens.
  - Waste port
- For all workstation components, wipe with a paper towel soaked in an appropriate cleaning agent. Take care not to get cleaning agents on the fans (below the inner rear wall), plug sockets, interlock internal door control panels.
- Wipe dry using paper towels.
- For the front screens ensure that both sides are cleaned.
- Clean any other equipment placed in the workstation following the manufacturer’s instructions.
- Care should be taken to avoid the front screen studs when cleaning inside the workstation chamber.

Cleaning the interlock chamber

- The components that require cleaning are:
  - Interlock inner doors.
Interlock chamber floor tray.
- Interlock chamber side wall.
- Interlock chamber rear wall.
- Interlock chamber ceiling.
- Interlock chamber floor.
- Interlock outer door (inside and outside).

Note that the interlock floor tray can be lifted for cleaning. Figure 61 shows the interlock floor tray levels;

Figure 61: Interlock Floor Trays

- For all interlock components, wipe with a paper towel soaked in an appropriate cleaning agent. Take care not to get cleaning agents on the wiring for the heater mat.
- Wipe dry using paper towels.
- When the interlock chamber is clean, close the interlock outer door.

6.1.4 Reinstalling workstation components
- In each chamber, place the floor tray inside the workstation chamber. Ensure that the floor tray is correctly sat on the floor tray pillars.
- Reinstall any equipment removed from the workstation chambers.
- Reinstall the storage racks.
- In each chamber replace the waste port lid.
- Underneath the workstation chamber, install a new waste port bag.
- Reinstall the front screens.
- Plug the workstation back in at the mains.
- Switch the workstation on.
- Allow the temperatures to rise to within 2°C of set point in both workstation chambers.
- Switch the humidity controls on from the main control menu.
- Select the required mode from the main control menu for both workstation chambers.
- Cells can be reintroduced to the workstation from the alternative storage facility.

6.2 Maintaining the workstation – End user maintenance
To ensure that your SCI-tive Dual workstation remains at optimum working conditions, it must be maintained on a regular basis. Many basic tasks can be performed by the end user.

6.2.1 Replacing an Ezee Sleeve

To remove an Ezee Sleeve;

- Return the Control screen to the main menu.
- Remove a glove port cover by turning the cover anti-clockwise (counter-clockwise). The glove port cover can be stored in the glove port cover holders located on the workstation stand.
- Supporting the cuff with one hand, use the other hand to push the mandrel through the cuff.
- Place the mandrel on the workstation floor tray.
- Remove the O-rings that hold the Ezee Sleeve to the glove port. Note: The O-rings will be tight. Figure 62 shows the glove port with the two O-rings.

![Figure 62: Glove port with O-rings](image)

- Remove the Ezee Sleeve.
- Remove the mandrel from the workstation chamber.

To install an Ezee Sleeve;

- Place the mandrel inside the workstation chamber on the floor tray. Make sure that the mandrel is the correct size for the Ezee Sleeve being installed.
- Place the new Ezee Sleeve onto the glove port, ensuring that the O-ring grooves are completely covered and that the Ezee Sleeve is not kinked or overlapping.
- It is recommended to use 2 O rings on each Glove port at all times
- Reinstall the O-rings over the Ezee Sleeve. Note that the O-rings will be a tight fit. This is intentional, to provide a gas tight seal. Note that the O-rings must completely cover the Ezee Sleeve to provide a gas tight seal. The O-rings should be located into the 2 O-ring grooves on the glove port.
- Supporting the cuff with one hand, pull the mandrel through the cuff with the other hand.
- Replace the glove port cover by turning the cover clockwise.
6.2.2 Changing the waste port bag
To change the waste port bag;

- Ensure that the waste port lid is closed.
- Supporting the waste port bag with one hand, roll the white O-ring off with the other hand. Figure 63.

Figure 63: Waste port bag removal

- Dispose of the waste in the bag. The end user is responsible for ensuring that all waste is disposed of in the correct manner.
- Place the O-ring over the top of the new bag.
- Place the new bag onto the waste port. Note that the bag will support its own weight on the waste port.
- Slide the O-ring up until it is completely seated in the O-ring groove. The O-ring must be seated in the groove to provide a gas tight seal.

6.2.3 Removing and reinstalling the front screens
The front screens of the workstation can be removed to provide a large aperture for cleaning and equipment installation purposes. To remove the front screen;

- For the relevant workstation chamber return the Control screen to the main menu.
- Turn the humidity controls off at the main menu.
- Remove all cells/samples to an alternative storage facility.
- Switch the workstation off.
- Unplug the workstation from the mains power supply.
- For each chamber, remove the glove port covers by turning the cover anti-clockwise (counterclockwise). The glove port covers can be stored in the glove port cover holders located on the workstation stand.
- Remove the Ezee Sleeves.
Undo the front screen knobs by turning anti-clockwise (counter-clockwise). Store the glove port knobs in a safe location.

Remove the front screen knob washers. Store the front screen knobs in a safe location.

Remove the front screen by lifting away from the workstation.

To reinstall the front screen;

- Place the front screen back onto the workstation, ensuring that it is correctly aligned on the front screen studs.
- Place a front screen washer on each of the 4 corner front screen studs.
- Tighten 4 front screen knobs onto the 4 corner studs by turning the knobs clockwise. Take care not to over tighten or cross thread the front screen knobs.
- Place the remaining front screen washers on the front screen studs, ensuring that there is 1 washer on each stud.
- Tighten remaining front screen knobs onto the front screen studs by turning the knobs clockwise. Take care not to over tighten or cross thread the front screen knobs. The knobs should be tight enough to compress the seal underneath the front screen.
- Reinstall the Ezee Sleeves
- Reinstall the glove port covers.
- Plug the workstation back in at the mains.
- Switch the workstation on.
- Allow the temperature to rise to within 2°C of set point.
- Switch the humidity controls on at the main menu
- Select the required modes from the Gas Control menu.
- Cells can be reintroduced to the workstation from the alternative storage facility.

Note: Do not install the front screen knobs without a front screen washer. Installing the front screen knobs without the front screen washer will damage the front screen. Take care not to over tighten the front screen knobs, as this will also damage the front screen.

6.2.4 Replacing detox sachets
Detox sachets are supplied with SCI-tive Dual workstations. The detox sachets adsorb volatile organic compounds, improving the air quality within the workstation chamber. Detox sachets need to be replaced annually.

To replace the detox sachets;

- For the relevant workstation chamber return the Control screen to the main menu.
- Turn the humidity controls off at the main menu.
- Remove all cells/ samples to an alternative storage facility.
- Switch the workstation off.
- Unplug the workstation from the mains power supply.
- Remove the front screen.
- Remove the storage racks from the each chamber.
- Remove any other equipment installed in the workstation chamber(s).
- In each chamber, lift the front of the floor tray.
• Remove the old detox sachets from their holders.
• Remove the new detox sachets from their packaging and place in the sachet holders.
• Lower the front of the floor tray back to its usual position.
• Reinstall any equipment removed from the workstation chamber.
• Reinstall the storage racks.
• Reinstall the front screen
• Plug the workstation back in at the mains.
• Switch the workstation on.
• Allow the temperature to rise to within 2°C of set point.
• Switch the humidity control required at the main menu.
• Select the required Gas Control modes from the main menu.
• Cells can be reintroduced to the workstation from the alternative storage facility.

Note; it is recommended that a deep clean be performed at the same time as replacing detox sachets. The sachets should be replaced in both workstation chambers at the same time. Detox sachets are replaced as part of an annual service.

6.2.5 Installing/ replacing a catalyst sachet
Catalyst sachets are available as an accessory for SCI-tive Dual workstations. The catalyst sachets are required for anoxic operation of the workstation.

To install the catalyst sachets;

• For the relevant workstation chamber return the Control screen to the main menu.
• Turn the humidity controls off at the main menu.
• Remove all cells/ samples to an alternative storage facility.
• Switch the workstation off.
• Unplug the workstation from the mains power supply.
• Remove the front screen.
• Remove the storage racks from each workstation chamber.
• Remove any other equipment installed in the workstation chamber(s).
• In the each chamber, lift the front of the floor tray.
• Remove 1 detox sachet from its holder. (The detox sachet can be dried out and stored).
• Remove the new catalyst sachet from its packaging and place in the sachet holder.
• Lower the front of the floor tray back to its usual position.
• Reinstall any equipment removed from the workstation chamber.
• Reinstall the storage racks.
• Reinstall the front screen
• Plug the workstation back in at the mains.
• Switch the workstation on.
• Allow the temperature to rise to within 2°C of set point.
• Switch the humidity control required at the main menu.
• Select the required Gas Control modes from the main menu.
• Cells can be reintroduced to the workstation from the alternative storage facility.

To replace the catalyst sachets;
• For the relevant workstation chamber return the Control screen to the main menu.
• Turn the humidity controls off at the main menu
• Remove all cells/ samples to an alternative storage facility.
• Switch the workstation off.
• Unplug the workstation from the mains power supply.
• Remove the front screens
• Remove the storage racks from the left workstation chamber.
• Remove any other equipment installed in the workstation chamber(s).
• In the each workstation chamber, lift the front of the floor tray.
• Remove the catalyst sachet from its holder.
• Remove the new catalyst sachet from its packaging and place in the sachet holder.
• Lower the front of the floor tray back to its usual position.
• Reinstall any equipment removed from the workstation chamber.
• Reinstall the storage racks.
• Reinstall the front screens.
• Plug the workstation back in at the mains.
• Switch the workstation on.
• Allow the temperature to rise to within 2°C of set point.
• Switch the humidity controls required at the main menu.
• Select the required Gas Control modes from the main menu.
• Cells can be reintroduced to the workstation from the alternative storage facility.

Note; it is recommended that a deep clean be performed at the same time as installing/ replacing catalyst sachets. The sachets should be installed/ replaced in both workstation chambers at the same time, if both workstation chambers are to be used anoxically.

6.2.6 Cleaning the Water Tank
Please refer to the Ruskinn web site (www.ruskinn.com) on Water tank cleaning.
6.2.7 Replacing the mains fuse
To replace the mains fuse;

- Remove the plug from the mains socket.
- Remove the mains fuse caps using a small flat bladed screwdriver and turning Anti-Clockwise. Figure 64 shows the removal of the mains fuse cap.

*Note: Replacement fuse must match the original fuse.*

For more information, contact your local distributor.
6.3 Service requirements

To maintain the best performance from your SCI-tive Dual workstation, it must be serviced at regular intervals. Figure 65 lists the servicing requirements, intervals and persons capable of performing the service;

Figure 65: SCI-tive Dual servicing Requirements

<table>
<thead>
<tr>
<th>Action</th>
<th>Frequency</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean workstation</td>
<td>After each use</td>
<td>End User</td>
</tr>
<tr>
<td>Empty waste port bag</td>
<td>Weekly</td>
<td>End User</td>
</tr>
<tr>
<td>Fill humidifier tanks</td>
<td>Weekly</td>
<td>End User</td>
</tr>
<tr>
<td></td>
<td>Daily check recommended</td>
<td></td>
</tr>
<tr>
<td>Calibrate oxygen sensors</td>
<td>Monthly</td>
<td>End User</td>
</tr>
<tr>
<td>Deep clean workstation</td>
<td>3-6 months depending on usage</td>
<td>End User</td>
</tr>
<tr>
<td></td>
<td>Daily check recommended</td>
<td></td>
</tr>
<tr>
<td>Replace detox sachets</td>
<td>Annually</td>
<td>End User/ Qualified service engineer</td>
</tr>
<tr>
<td>Replace catalyst sachets (if used)</td>
<td>Annually</td>
<td>End User/ Qualified service engineer</td>
</tr>
<tr>
<td>Annual service</td>
<td>Annually</td>
<td>Qualified service engineer</td>
</tr>
<tr>
<td>Biannual service</td>
<td>Biannually</td>
<td>Qualified service engineer</td>
</tr>
</tbody>
</table>

To arrange a 1 year or 2 year service, contact your local distributor. Note that the 2 year service includes a 1 year service.
6.4 Spare parts and accessories
A range of spare parts and accessories are available for your SCI-tive Dual workstation. Note that only Ruskinn Technology Limited spare parts should be used. The use of unapproved spare parts will invalidate the warranty of your workstation and may cause damage to your workstation.

6.4.1 Overview
To order spare parts and accessories, please contact your local distributor for the latest pricing and availability.

6.4.2 Spare parts and cleaning agents
Figure 66 lists the spare parts available for your SCI-tive Dual workstation. To order spare parts, please contact your local distributor for the latest pricing and availability. All items are sold individually except where stated.

Figure 66: SCI-tive Dual end user spare parts and cleaning agents

<table>
<thead>
<tr>
<th>Part</th>
<th>Where used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Ezee Sleeve</td>
<td>Ezee Sleeve</td>
</tr>
<tr>
<td>Medium Ezee Sleeve</td>
<td>Ezee Sleeve</td>
</tr>
<tr>
<td>Large Ezee Sleeve</td>
<td>Ezee Sleeve</td>
</tr>
<tr>
<td>Medium Mandrel</td>
<td>Small Ezee Sleeve</td>
</tr>
<tr>
<td>Large Mandrel</td>
<td>Medium Ezee Sleeve</td>
</tr>
<tr>
<td>Extra Large Mandrel</td>
<td>Large Ezee Sleeve</td>
</tr>
<tr>
<td>Sleeve to port O-ring</td>
<td>Ezee Sleeve</td>
</tr>
<tr>
<td>Talc</td>
<td>Ezee Sleeve</td>
</tr>
<tr>
<td>Glove port compression O-ring (2)</td>
<td>Glove ports</td>
</tr>
<tr>
<td>Oxygen Sensor</td>
<td>Gas Controller</td>
</tr>
<tr>
<td>3m Hydrogen supply hose and clips</td>
<td>Gas Mixer</td>
</tr>
<tr>
<td>3m Carbon Dioxide supply hose and clips</td>
<td>Gas Mixer</td>
</tr>
<tr>
<td>3m Compressed Air supply hose and clips</td>
<td>Gas Mixer</td>
</tr>
<tr>
<td>3m Nitrogen supply hose and clips</td>
<td>Gas Mixer</td>
</tr>
<tr>
<td>Mains lead</td>
<td>Mains lead</td>
</tr>
<tr>
<td>Front screen knob</td>
<td>Front screen</td>
</tr>
<tr>
<td>Front screen washer</td>
<td>Front screen</td>
</tr>
<tr>
<td>Waste port bags (50)</td>
<td>Waste port</td>
</tr>
<tr>
<td>Anti static cleaner (600ml)</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Tristel Duo Foamer</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Tristel Fuse Sachet</td>
<td>Cleaning</td>
</tr>
<tr>
<td>Small Detox Sachet</td>
<td>VOC filtration</td>
</tr>
<tr>
<td>Small Catalyst Sachet</td>
<td>Anoxic operation</td>
</tr>
<tr>
<td>Small Sachet Holder</td>
<td>VOC filtration/ anoxic operation</td>
</tr>
<tr>
<td>Anaerobic Indicator Strips</td>
<td>Anoxic operation</td>
</tr>
<tr>
<td>T12.5A 250V Mains Fuse</td>
<td>Mains Fuseholder</td>
</tr>
</tbody>
</table>

6.4.3 Accessories
A range of accessories are available to enhance the functionality of your SCI-tive Dual workstation. Please contact your local distributor for the latest pricing and availability.
### 6.5 Workstation malfunction

In the event of a workstation malfunction, please check section 6.6 for a list of common problems and solutions. If you cannot find a solution to your problem, please contact your local distributor, quoting the serial number of your workstation. If the problem is related to the gas mixer, please download the event log to a USB device as it will be required by your local distributor. If the malfunction cannot be resolved, the workstation must be turned off and the plug disconnected from the mains.

### 6.6 Common problems and solutions

#### 6.6.1 Workstation general problems

Figure 67 gives a list of common problems and solutions. Please consult this list as a first reference in the event of a malfunction of your workstation.

Figure 67: Common Problems and solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The workstation will not switch on</td>
<td>The workstation is not plugged in</td>
<td>Plug the workstation into the mains</td>
</tr>
<tr>
<td></td>
<td>The mains socket is not switched on</td>
<td>Switch the mains power on</td>
</tr>
<tr>
<td></td>
<td>The mains fuse has blown</td>
<td>Replace the mains fuses.</td>
</tr>
<tr>
<td></td>
<td>The earth leakage circuit breaker has tripped</td>
<td>Reset the earth leakage circuit breaker. If the circuit breaker continues to trip, contact your local distributor.</td>
</tr>
<tr>
<td>RRCB trips</td>
<td>Electrical failure or fuse blown</td>
<td>Remove any internal electrical connection from the internal sockets, and re-set the RCCB. If the RCCB trips again, disconnect SCI-Dual Workstation from the mains supply and contact your local distributor.</td>
</tr>
<tr>
<td>The touch screen controllers and LED indicators are not on</td>
<td>Power supply fuse has blown.</td>
<td>Contact your local distributor</td>
</tr>
<tr>
<td>A constant alarm is sounding</td>
<td>The temperature is outside of the alarm range inside a workstation chamber</td>
<td>If the temperature is at the desired set point, check for leaks from glove ports.</td>
</tr>
<tr>
<td></td>
<td>The water level in the humidity tank is low</td>
<td>Check water level and add more sterised ionised water if required.</td>
</tr>
<tr>
<td></td>
<td>The gas pressure is low</td>
<td>Check Gas tanks.</td>
</tr>
<tr>
<td>Devices plugged into the internal socket are not powering up</td>
<td>The internal socket is not switched on</td>
<td>Check that the internal power is switched on</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
<td>Solution</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>The power switch on the device is not switched on</td>
<td>Press the power switch button on the controller</td>
</tr>
<tr>
<td></td>
<td>The plug for the device is not fully inserted into the socket</td>
<td>Check that the plug is correctly inserted into the socket</td>
</tr>
<tr>
<td></td>
<td>The fuse in the device has blown and/ or the device has failed</td>
<td>Check that the internal power switch is illuminated. If it is, the device fuse has blown or the device has failed</td>
</tr>
<tr>
<td></td>
<td>The internal socket fuse has blown</td>
<td>Contact your local distributor</td>
</tr>
<tr>
<td></td>
<td>Failure to Reach Set Point</td>
<td>Check for leaks:</td>
</tr>
<tr>
<td></td>
<td>Time required to reach Set Point exceeded</td>
<td>- Replace port covers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Check interlock door closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Check oil level on Secondary Pressure Relief System</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Confirm gas lines and fittings are correct</td>
</tr>
</tbody>
</table>
### 6.6.2 Interlock problems

Figure 68 gives a list of common interlock problems and solutions;

**Figure 68: Interlock problems and solutions**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>An interlock inner door will not open</td>
<td>The interlock outer door is open</td>
<td>Close the interlock outer door and wait for the interlock purge cycle to run</td>
</tr>
<tr>
<td></td>
<td>The other interlock inner door is open</td>
<td>Close the other interlock inner door.</td>
</tr>
<tr>
<td></td>
<td>The interlock is purging</td>
<td>Wait for the interlock purge cycle to finish</td>
</tr>
<tr>
<td>The interlock inner door will not close</td>
<td>The interlock floor tray is in the way</td>
<td>Slide the interlock floor tray fully into the interlock chamber</td>
</tr>
<tr>
<td>The interlock outer door will not open</td>
<td>An interlock inner door is open</td>
<td>Close the interlock inner door</td>
</tr>
<tr>
<td>The interlock outer door will not close</td>
<td>The interlock outer door is obstructed</td>
<td>Check for obstructions to closing the interlock outer door and remove them</td>
</tr>
</tbody>
</table>
7. Warranty information

Ruskinn Technology Limited warrants for the applicable time period that the SCI-tive Dual will substantially perform in accordance with the user documentation. The terms of this Agreement do not affect or prejudice the statutory rights of a consumer acquiring the Ruskinn Technology Limited SCI-tive Dual otherwise than in the normal course of a business.

**THIS WARRANTY DOES NOT APPLY IN THE FOLLOWING CIRCUMSTANCES:**

(A) IF THE Ruskinn Technology Limited SCI-tive Dual HAS BEEN REPAIRED BY PERSONS NOT AUTHORIZED BY Ruskinn Technology Limited; OR

(B) THE Ruskinn Technology Limited SCI-tive Dual and associated accessories/peripherals HAVE BEEN ALTERED, MODIFIED, OR MISUSED; OR

(C) THE Ruskinn Technology Limited SCI-tive Dual IS USED WITH NON-Ruskinn Technology Limited COMPONENTS; OR

(D) THE Ruskinn Technology Limited SCI-tive Dual OR A COMPONENT IS USED FOR OTHER USES (FOR EXAMPLE USE WITH OTHER CIRCUIT BOARDS OR SOFTWARE) OR

(E) THE Ruskinn Technology Limited SCI-tive Dual HAS NOT BEEN MAINTAINED OR USED IN ACCORDANCE WITH THE INSTALLATION AND USER GUIDE. UNLESS PROHIBITED BY LAW, THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, THE IMPLIED WARRANTY OF MERCHANTABILITY, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE. Ruskinn Technology Limited DOES NOT WARRANT THAT THE Ruskinn Technology Limited SCI-tive Dual WILL FUNCTION ERROR FREE.

If within the Warranty Period, the Ruskinn Technology Limited SCI-tive Dual does not conform to the express warranty set forth above, Ruskinn Technology Limited's sole obligation and User's sole remedy shall be, at Ruskinn Technology Limited's option: 1. to repair or replace the non-conforming component; or, 2. refund the purchase price.

**LIMITATION OF LIABILITY.**

UNLESS PROHIBITED BY LAW, Ruskinn Technology Limited WILL NOT BE LIABLE TO USER OR OTHERS FOR ANY OTHER DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES INCLUDING, FOR EXAMPLE, LOST PROFITS, BUSINESS, INVESEMENTS, OR OPPORTUNITIES EVEN IF Ruskinn Technology Limited HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

The parties agree that Ruskinn Technology Limited total cumulative liability to User for direct damages for all causes under this Agreement shall not exceed £5,000,000 (FIVE MILLION UK STERLING POUNDS), or the price paid for the Ruskinn Technology Limited SCI-tive Dual, whichever is higher. Some states or countries may have laws which require liability rights different from those stated above. In such states or countries, the minimum required liability terms shall apply.
8. Disposal information
SCI-tive Dual contains hazardous components and must not be disposed of at a household waste site. Instead it should be taken to the appropriate collection point for the recycling of electrical and electronic equipment. Alternatively please contact your local distributor for disposal instructions.

SCI-tive Dual Workstation contains recyclable parts. Please contact your local distributor for more advice.
9. **Contact details**
Ruskinn Technology Limited

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Bridgend Industrial Estate
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YouTube channel: http://www.youtube.com/ruskinntechnology

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