User Instruction Manual

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Contents

Introduction

The Ultravap Mistral has been developed to be an automation friendly, compact, stand alone blow down sample concentrator, to allow evaporation of solvents, from microplates in minutes, rather than hours. This instrument encourages integration by incorporating a shuttle style plate carrier.

The instrument eliminates the traditional “bottleneck” of solvent evaporation prior to analysis or reconstitution in buffer. It has been designed to be used with ANSI/SBS format 96 well plates (conforming to the standards mentioned on the next page). The instrument when fitted with compatible straight or spiral needle heads, which offers improved drying efficiency, can be used with 96 well plates. All evaporator heads are easily interchangeable. The device will accommodate either 96 or 384 well plates, with straight needles, or spiralled needles (96 plate only).

The Ultravap Mistral blows heated gas (typically Nitrogen) into the wells and accommodates both deep and shallow well plates. The platform containing the well plates, is programmable in elevation to suit well plate dimensions and dry-down protocol.

The concentrator has been configured to be simple to install, operate and maintain. Installation requires connection to a gas supply of nitrogen or clean dry air and a suitable electrical supply. Safe operation is ensured as the CE marked unit fits into fume cupboards, or may be integrated into a dedicated fume extraction unit.

Installation

Before use, carry out the following steps:

• Visually inspect Ultravap Mistral for damage

• Check that correct needle head is supplied and inspect for damage

• Ensure transformer is supplied (if required) and a suitable power cord is available

• Ensure that gas and electrical supplies are correct – see **Specifications & System Requirements.**

• Place Ultravap Mistral on a flat surface with a fume hood or well-ventilated area

• Connect the Ultravap Mistral to gas and electrical supplies – see **Connecting the Gas & Power Supply.**

• Fit the Needle Head – see **Fitting / Changing Needle Head.**

• Carry out adjustments (if needed) of the Ultravap Mistral – see **Adjustments.**

Report all damaged or missing components to your supplier or distributor immediately.

Microplate Requirements

The Ultravap Mistral can be used with 96 well microplates that, as a minimum, conform to the following standards:

ANSI/SBS 1-2004: Microplates – Footprint dimensions
ANSI/SBS 4-2004: Microplates – Well positions

Health & Safety

It is Important that the Ultravap Mistral is installed and operated in such a way that all applicable Heath and Safety requirements are met. It is the users responsibility to ensure that all relevant Health and Safety Regulations are identified and complied with. Failure to do so, may result in damage to the equipment and could cause personal injury. In particular, the user should study the contents of this guide carefully before handling or operating this equipment.

All users should be fully trained and have a full operational knowledge of the equipment.

Under no circumstances will the supplier of this equipment be liable for any incidental, consequential or any special damages of any kind whatsoever, including but not limited to lost profits arising from, or in anyway connected with the use of this equipment or this instruction manual.

If the unit is opened or tampered with in any way, the units Warranty is invalidated immediately.

WARNING SYMBOLS in accordance with IEC 417

Risk of Electric Shock

Moving Equipment

WARNING
Refer to accompanying documentation

Earth Protective Conductor

Mains Switch Symbols

I - 0
I = ON 0 = OFF

DANGER - Hot Surface/Area

Health & Safety

Environmental Requirements:

Temperature Range:	Operating 15^0C to 40^0C	Storage 0^0C to 40^0C
Relative Humidity:	Operating 10% to 80%	Storage 10% to 80%

Statement: WARNING - Do not operate this instrument in an atmosphere containing explosive gases.

Statement: WARNING - Only approved, supplied mains cord must be used with this instrument.

Statement: WARNING - If an extension lead is required, the lead MUST be earthed.

Statement: VOLTAGE – The Ultravap Mistral is supplied for direct connection to normal 115VAC or 230VAC supply, with a variation in supply that gives a voltage range of 108VAC to 250VAC.

- The provided covers MUST be used at ALL times during the operation of the unit.
- At no time should the plates be inserted whilst the unit is in its application state.
- The use of solvents on the unit is not recommended.
- The air supply must be removed and the electrical supply disconnected, prior to the removal of any covers.

The Mains Plug supplied with the Ultravap Mistral unit, is fitted with the following fuse:

Supply	Fuse fitted in plug	Fuse fitted in MiniVap
230VAC U.K	13 Amp	IEC Main inlet to rear of unit is twin fused, Live & Neutral fuse. (2 x T5AH 250V)
230VAC Europe	No fuse	
115VAC	No fuse	

Only refit the correct type of Fuse. Must be IEC127 approved for use in EC Countries.
Must be C.S.A. or UL listed or recognised for use in Canada or the United States of America.

Porvair Sciences Limited accepts no responsibility for the misuse of this equipment.

Specifications & System Requirements

Power Supply:	115 - 240 - V AC 50/60Hz
Fuse Rating:	2 x 5 Amp Anti-surge (T5AH 250V)
Dimensions:	180mm x 480mm x 450mm (W x H x D)
Weight:	17.5 Kg
Gas Input:	8mm Inlet
Min Operating Pressure:	4 bar (60 psi)
Max Operating Pressure:	7 bar (100 psi)
Flow:	30 L/min -100 L/min
Min Operating Temp:	15^0C
Max Working Temp:	40^0C
Protection:	IP 40

Optimum Conditions

Pressure:	**5.5 bar (80 psi)**
Flow:	**70 L/min**

Gas Supply Information

A suitable clean, dry, regulated gas supply should be connected to the instrument using 8mm tubing. Use of a filter / separator in addition to supply regulator is strongly recommended. Typical gases suitable for use with the Ultravap Mistral are Nitrogen and compressed air.

For samples that are easily oxidised it is strongly recommended that Nitrogen is used. The gas can be supplied from cylinders/bottles, via in-house systems, local compressor (air) or from a gas generator (Nitrogen).

What's in the Box

Before installing your Ultravap Mistral, please check that all the required contents are in the box. See below for a full list of items.

1 x Ultravap Mistral Unit

1 x 4mm Allen Key

1 x 3mm Allen Key

1 x Stubby Flathead Screwdriver

1 x Touch Screen Stylus

1 x UK Power Lead

1 x EU Power Lead

1 x US Power Lead

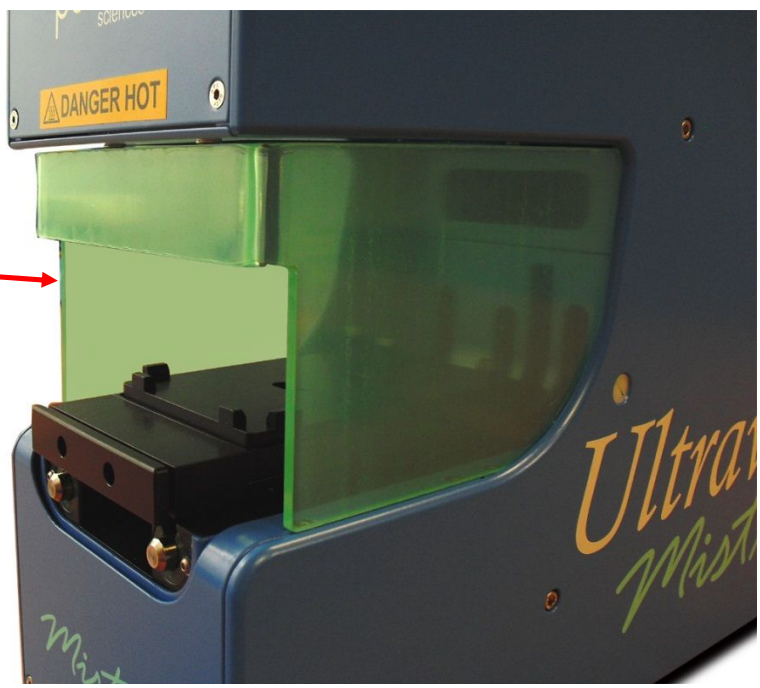
Protective Covers

Prior to using your Ultravap Mistral, ensure protective films and packaging are all removed:

Peel off screen protector film

Remove screen bezel protecting foam pad

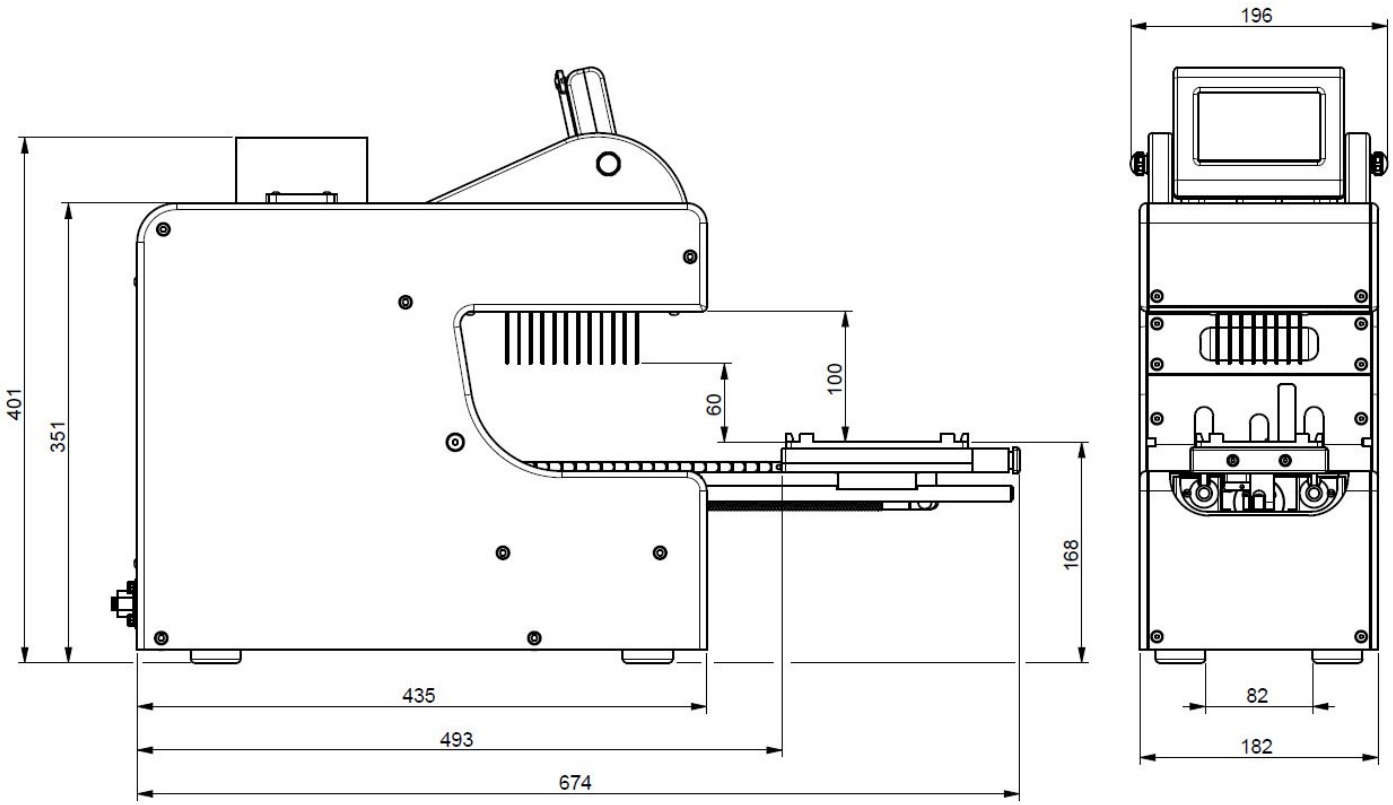
Remove safety guard green protective film (remove splash guard first)



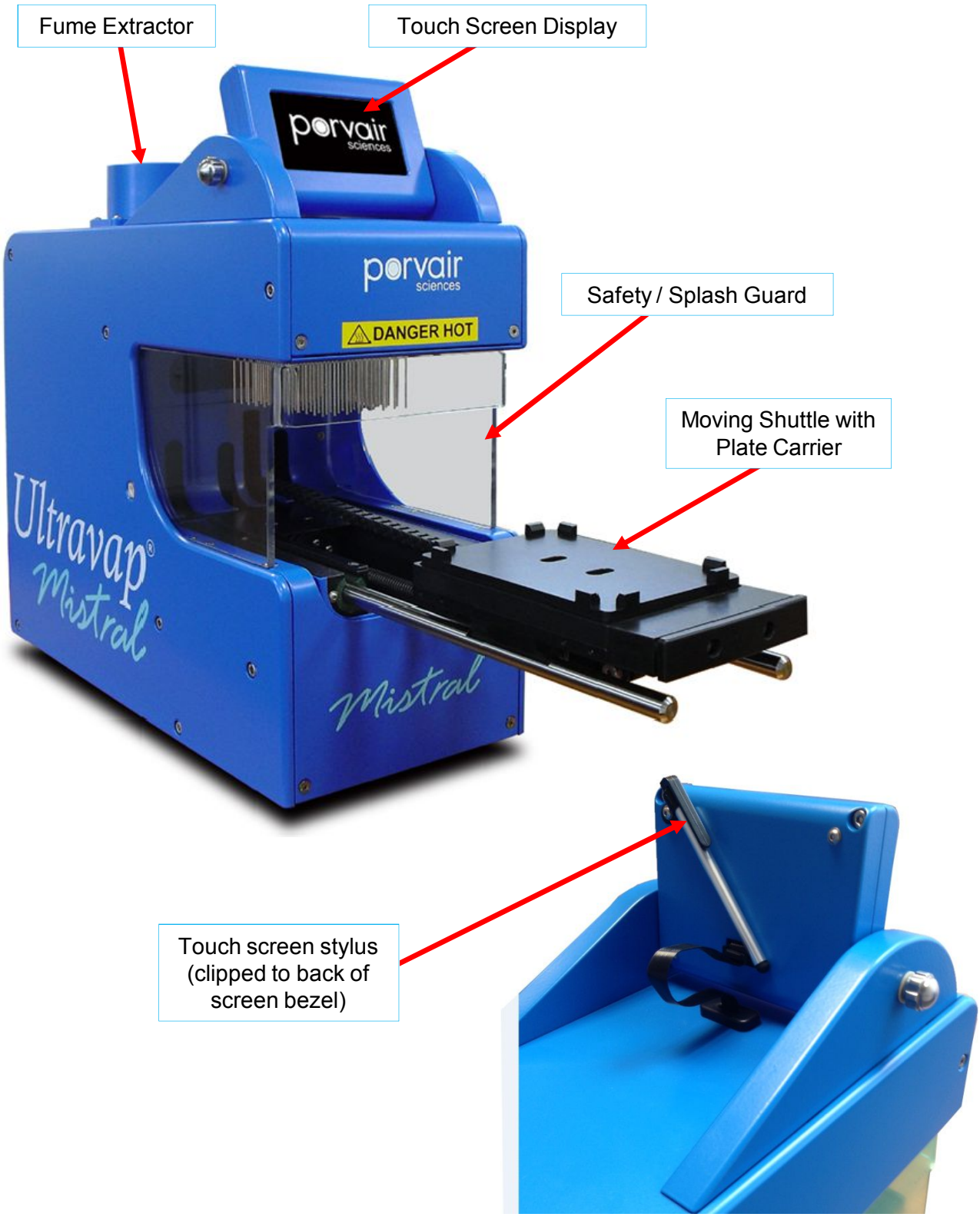
Operating Instructions

The Ultravap Mistral has been designed to assist the use of integrating; please take note of the dimensions below for accommodating the size of the unit. All dimensions are in mm.

Note: *The Ultravap Mistral features a safety function for the shuttle travelling out. It includes a "bump" action stop in case an obstruction is detected. Once the safety switch is activated, the procedure will be paused and an error message will appear. The carrier can be homed once the error has been cleared on the display. See* **Error Messages** *for details.*



Operating Instructions



Connecting the Gas & Power Supply

Connecting the Gas Supply

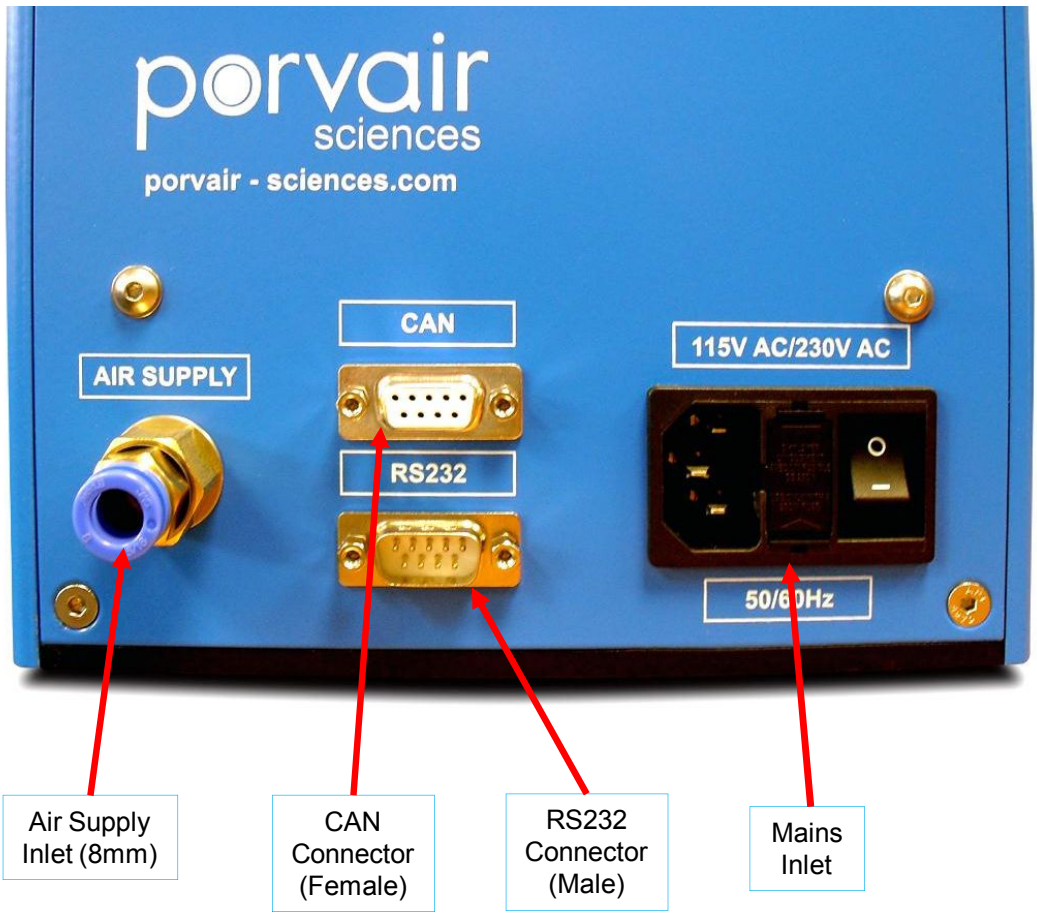
Check that the gas supply is within the system requirements.

The gas supply should be connected to the universal connector female 8mm (internal diameter) on the rear of the unit. The connecting tube is a one-touch connection.

Gas pressure should not exceed 7 bar (100 PSI). Exceeding this pressure may damage the unit.

Connecting the Power Supply

The Ultravap Mistral utilises a standard Euro inlet, which is fused and switched prior to inserting the connector. Check that the correct voltage is being applied.



Adjustments

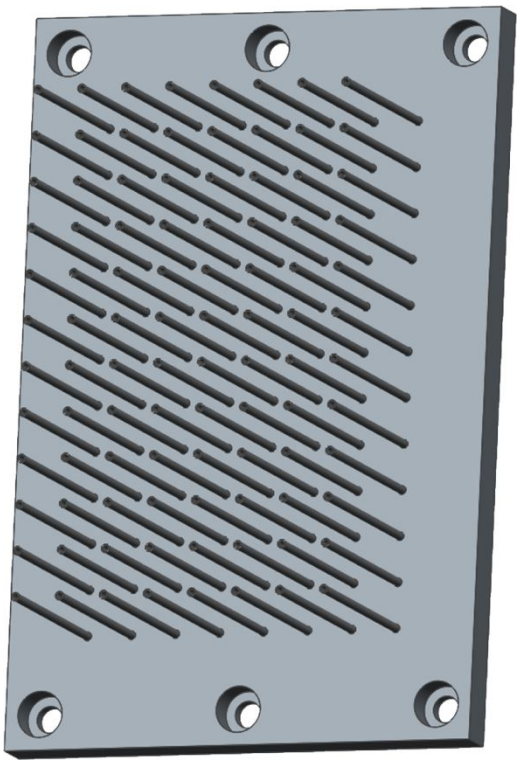
BEFORE USING ULTRAVAP MISTRAL CARRY OUT THE FOLLOWING STEPS:

When unpacking your Ultravap Mistral unit, visually inspect the needle array for correct pitch.

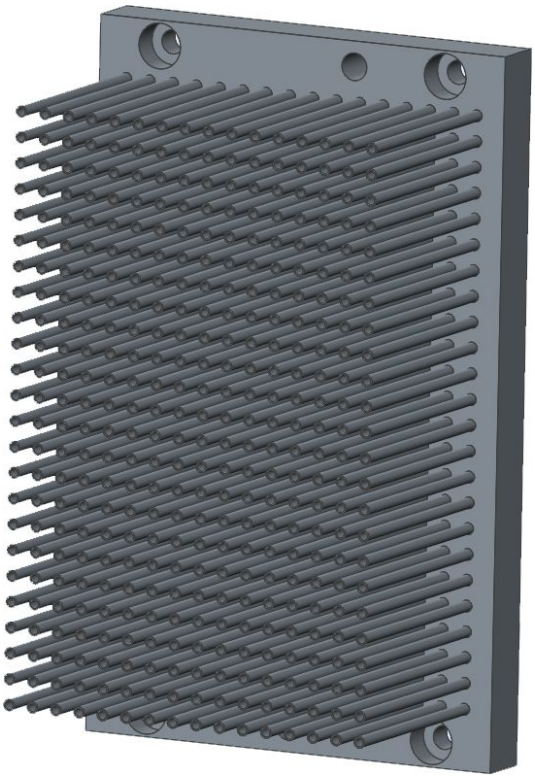
- 96 well pitch (distance between pins) should be 9.00mm
- 384 well pitch should be 4.50mm

This maybe checked by offering up a standard 96/384 well plate.
Check visually, that no obvious damage has occurred during shipping.

Once you have correctly followed the instructions on connecting Ultravap Mistral to gas and power supplies, the unit is ready for use.



96 Well Head



384 Well Head

Adjustments

Removing the Safety Guard

The Ultravap Mistral features a safety guard to protect users from potential pinch points between the shuttle and the needles. However the safety guard can be removed by taking out the screws either side with the flat head screwdriver provided.

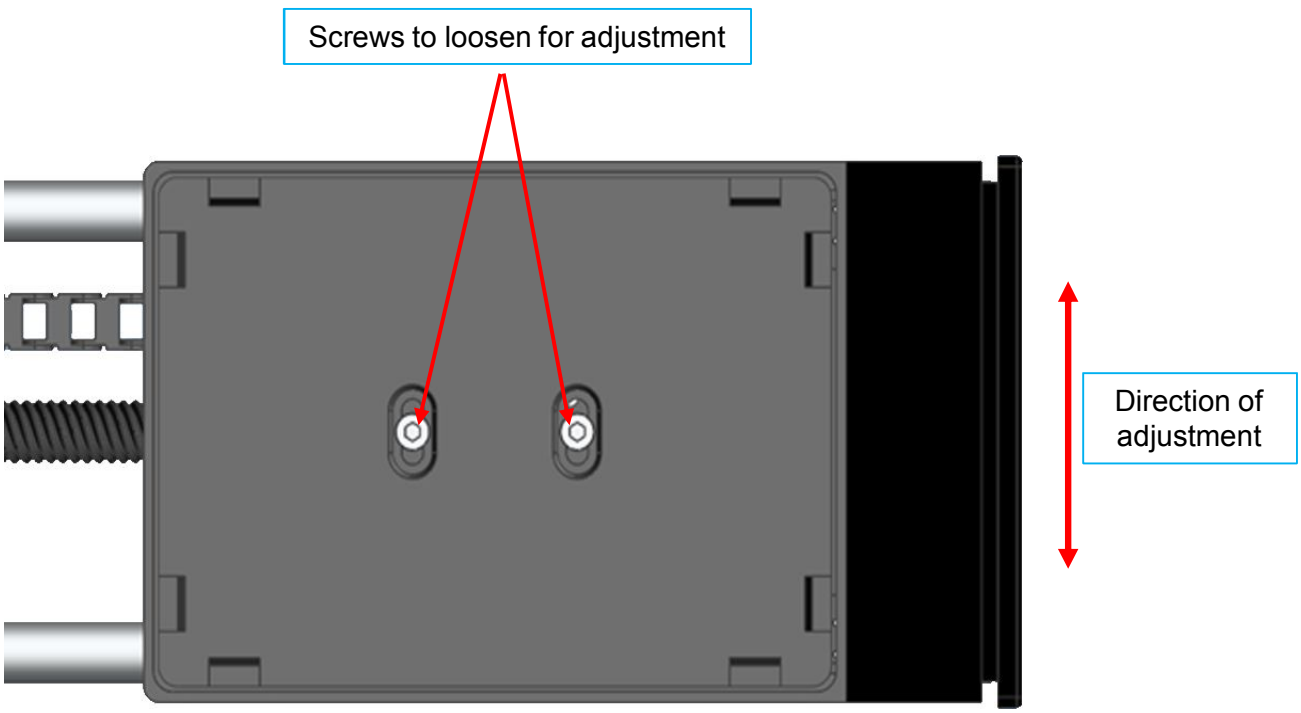
Adjustments

Adjusting the Shuttle Carrier

The Ultravap Mistral has an adjustable carrier, which can be moved for microplate location. They are set up to fit Porvair Sciences Limited deep well plate as standard.

- Adjustment is carried out by loosening the location screws, positioning the plate and re-tightening the screws.
- Check that the needles are centrally located above each well. If the plate is not located properly, move the carrier to correctly align the plate.

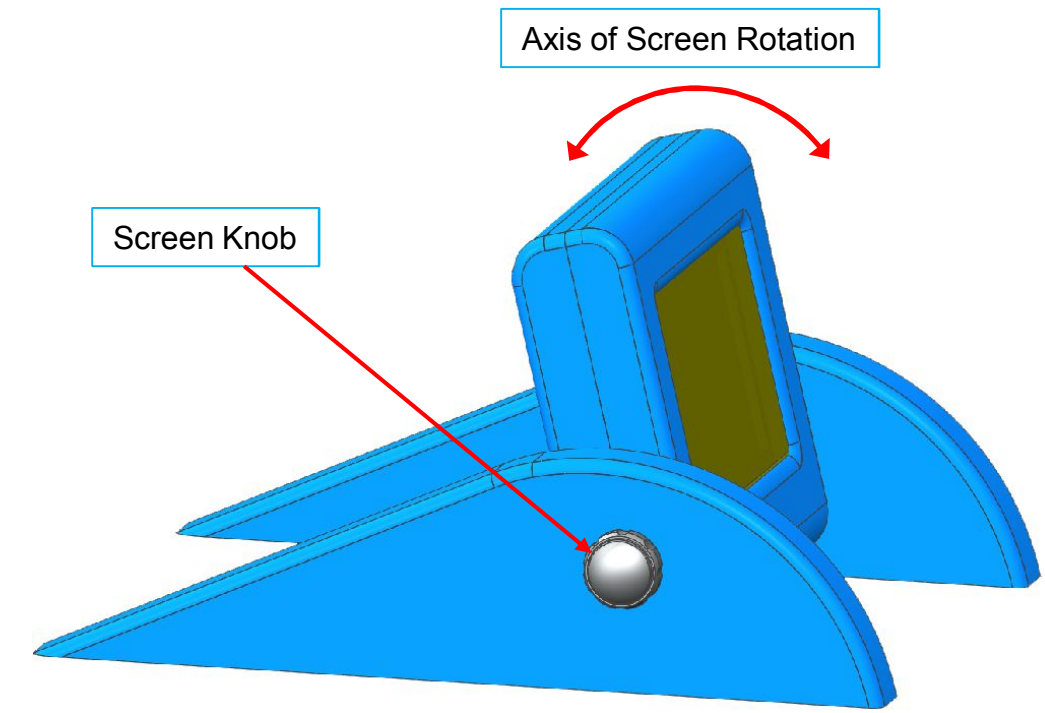
Note: *The carrier can be driven manually to a desired location in* ***Position Setup,*** *under the services menu, see* **Operating Procedure.**

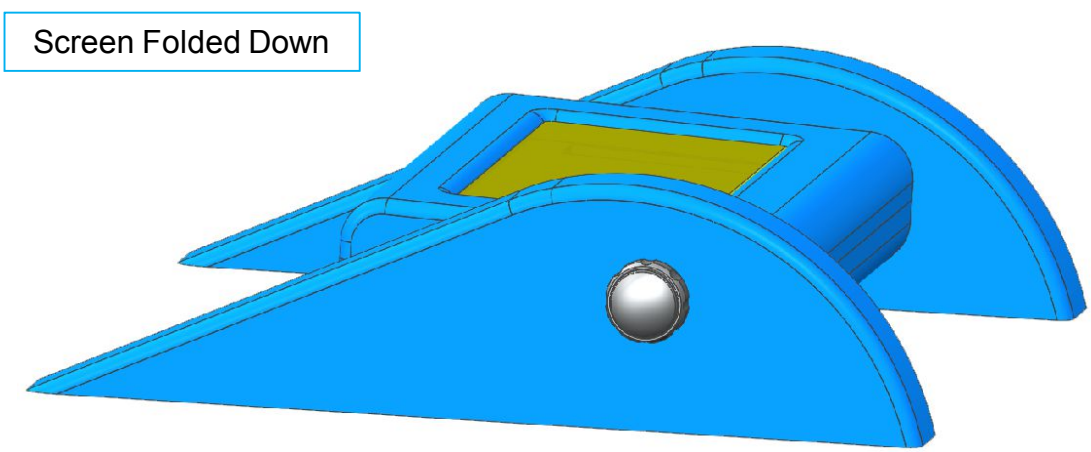


Adjustments

Adjusting the Screen

The touch screen featured on the Ultravap Mistral can be adjusted by hand for optimum viewing, also the screen can be folded down for protection during transportation of the instrument.





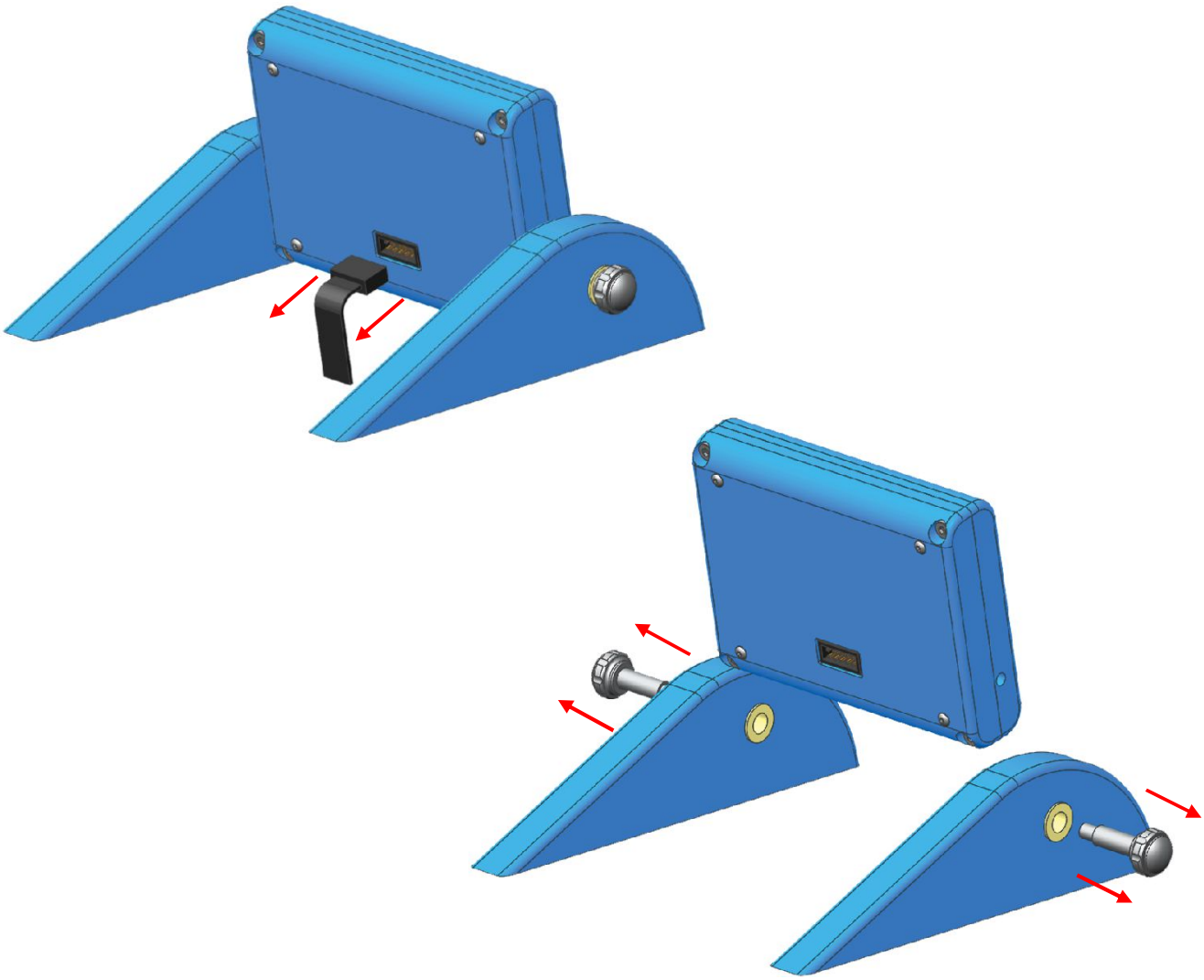
Adjustments

Adjusting the Screen

Another feature of the adjustable screen on the Ultravap Mistral is that it can be turned around to face backwards; this can be done to assist the user during integration. (For example when the instrument is faced against a machine it can be difficult to reach the screen).

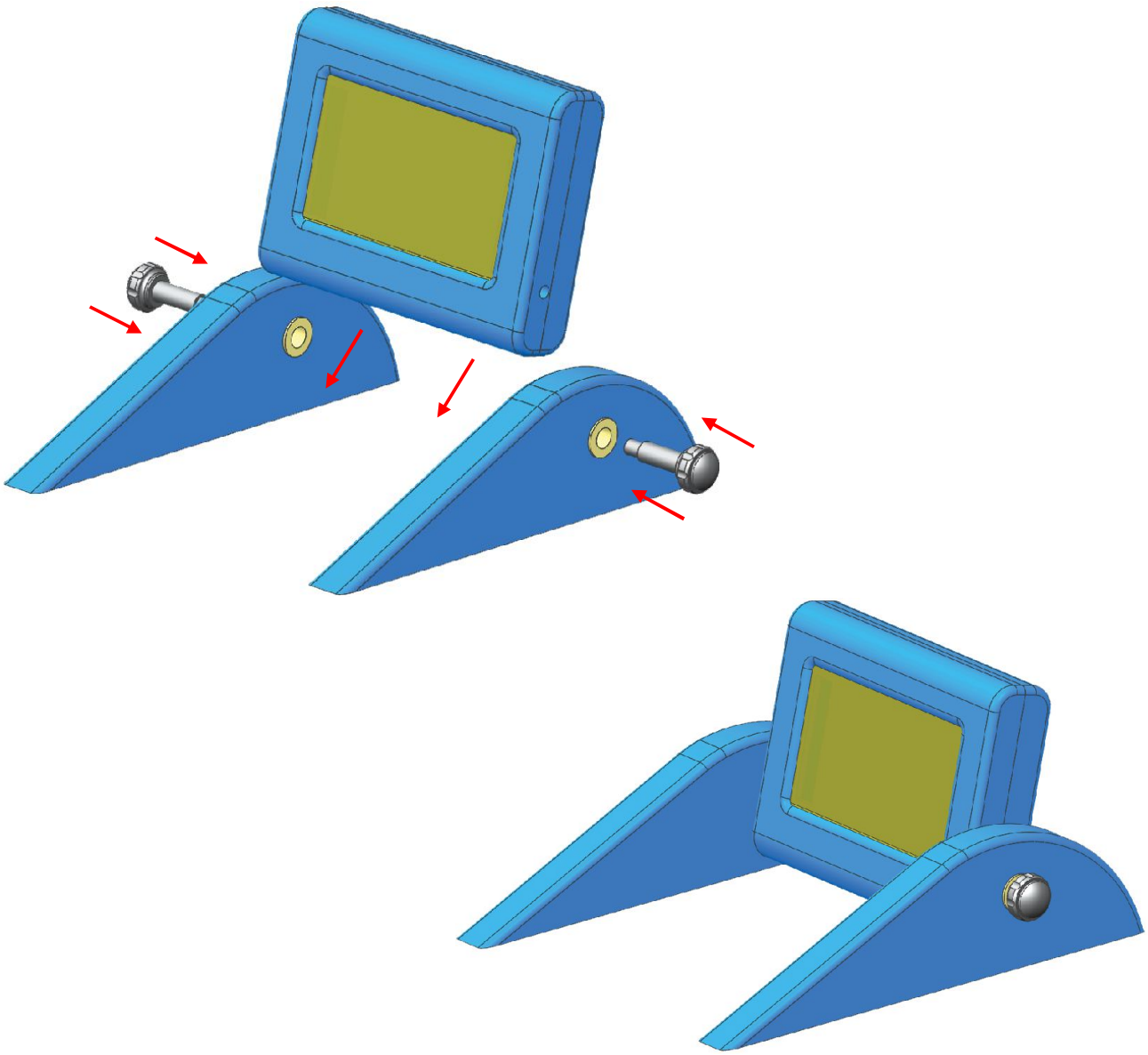
To turn the screen around follow these steps:

- Disconnect any power to the instrument
- Unplug the black connector from the back of the screen bezel
- Loosen and remove both of the screen knobs
- Turn the screen bezel around to face the opposite way
- Put the screen knobs back in and tighten up enough to support the screen bezel
- Plug the black connector back in to the screen bezel without twisting (fits both ways round)



Adjustments

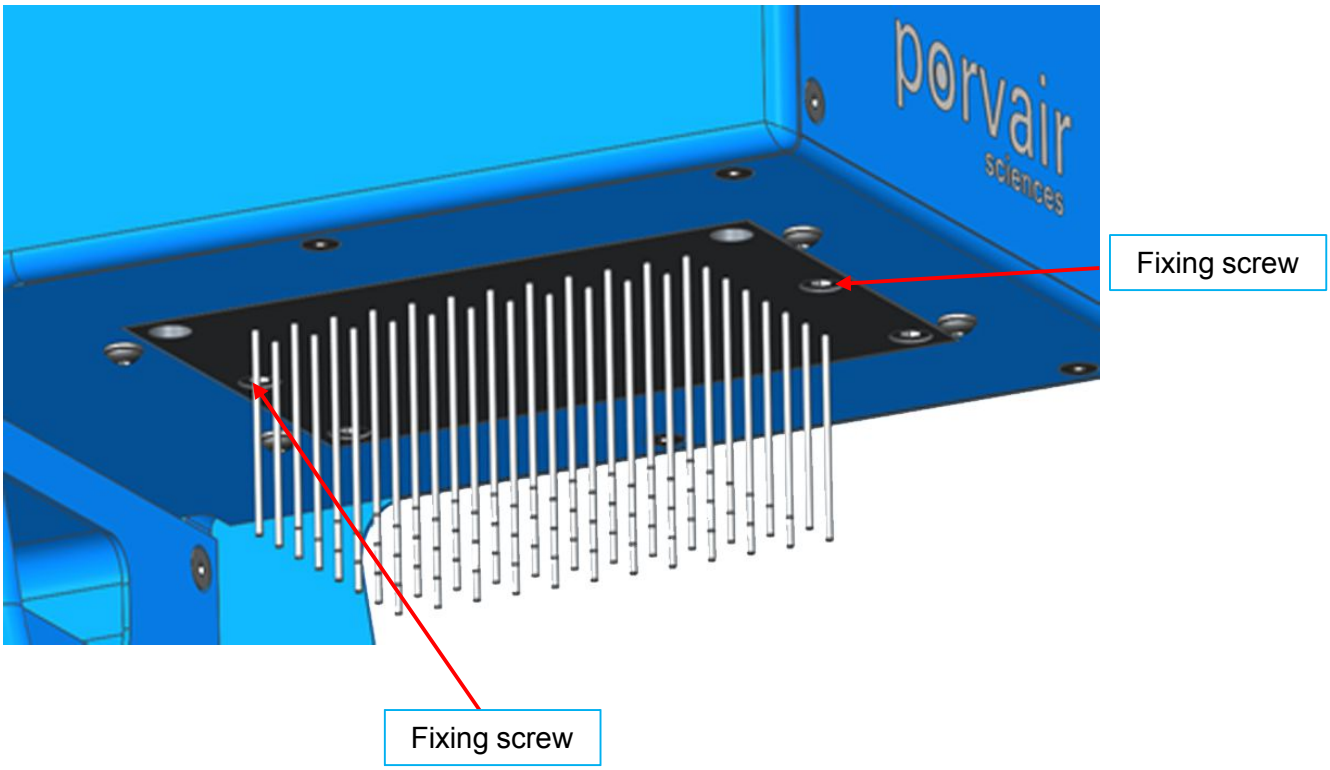
Adjusting the Screen



Fitting / Changing Needle Head

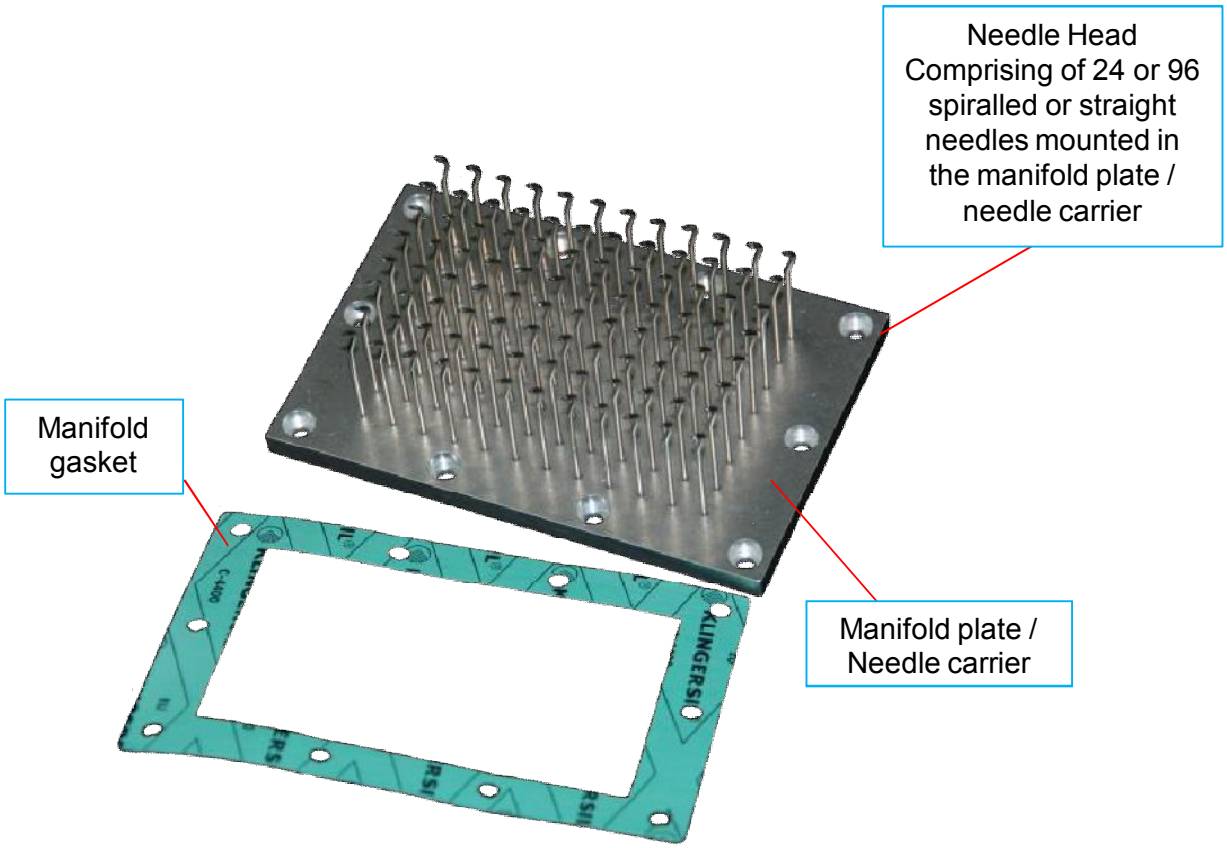
Before removing / changing the needle head, disconnect the unit from any electrical supplies and gas. Also ensure Ultravap Mistral has cooled down sufficiently if used.

- Remove the safety guard.
- To remove the needle head, remove the two fixing screws, using the Allen key provided. Turning the unit on it's side may make this process easier (ensure it is placed on a suitable surface and a cloth is used if necessary for protection).
- Carefully remove the head, avoid bending or damaging needles.
- Inspect gasket for tears and replace if needed.
- When replacing the needle head, great care must be taken to ensure that the gasket is present and fitted correctly. Also, ensure that the needle head locates on the dowels and the opposing corner screws are used so that the needle head is fixed evenly. For ease of fitting; the needle head will fit either way round.



Fitting / Changing Needle Head

Disassembled Needle Head showing 96 spiral needles:



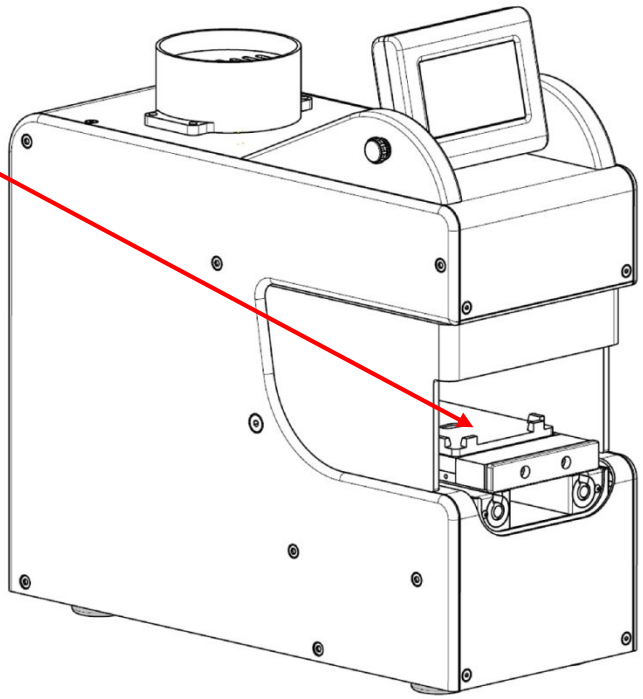
Operational Procedure

Starting Up

Once the unit has been powered up the loading screen below will appear, whilst this screen is displayed the system will home the shuttle (if it is not in the home position already).

Loading Screen

Ultravap Mistral in the *home* position (shuttle in and down)



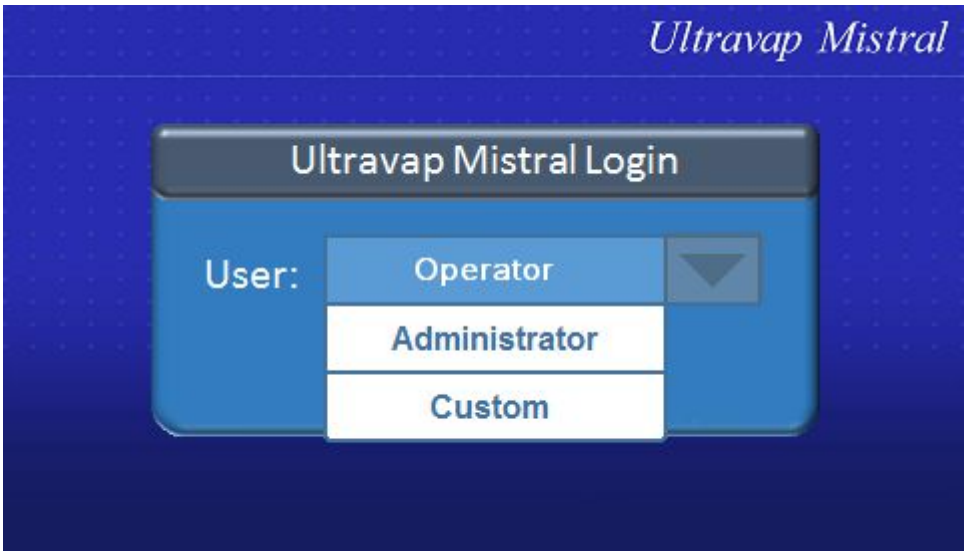
Operational Procedure

User Login

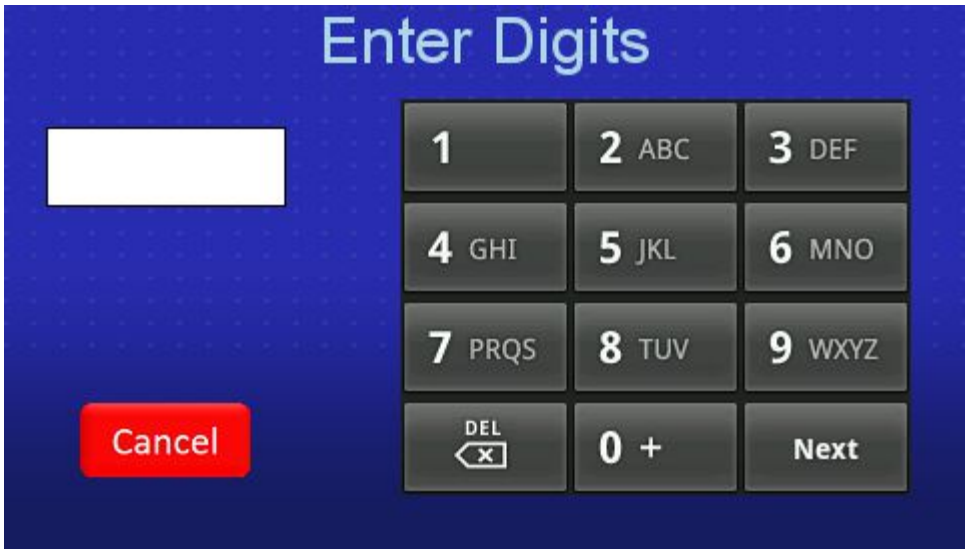
- To start using your Ultravap Mistral select Administrator from the drop-down menu
- The keypad will then be prompted
- Enter the PIN number: **5972**
- Press next to continue

Note: The Operator is the default login user and does not need a PIN to log in. The Operator has limited functionality; primarily used for solely running methods.

Login Screen



Keypad

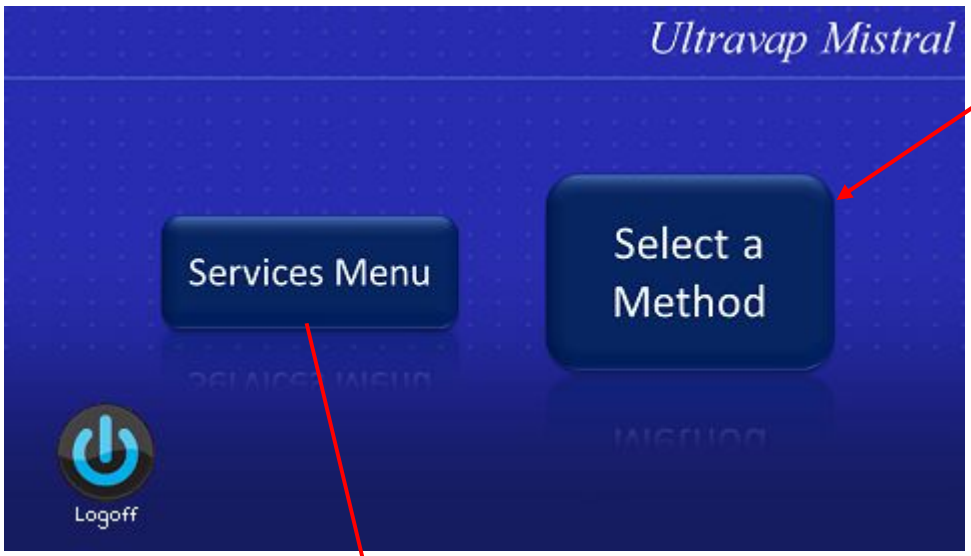


Operational Procedure

Main Menu

This is the Ultravap Mistral main menu. From here a method can be selected to begin running a cycle or the services menu can be accessed.

Main Menu



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Services Menu

Note: The **Admin Settings** and **Position Setup** are only accessible by an Administrator.

Operational Procedure

System Information

This screen displays the Ultravap Mistral's unique system information including serial number (which can also be found on the back of the unit). This screen also displays the station ID when linking instruments together, used in remote mode.

System Information

Operational Procedure

Eco Mode

When set to on, this option will turn the system's extraction fan off after 10 minutes of operation after a cycle has completed. Otherwise the fan will remain on at all times.

Toggle ECO Mode

Operational Procedure

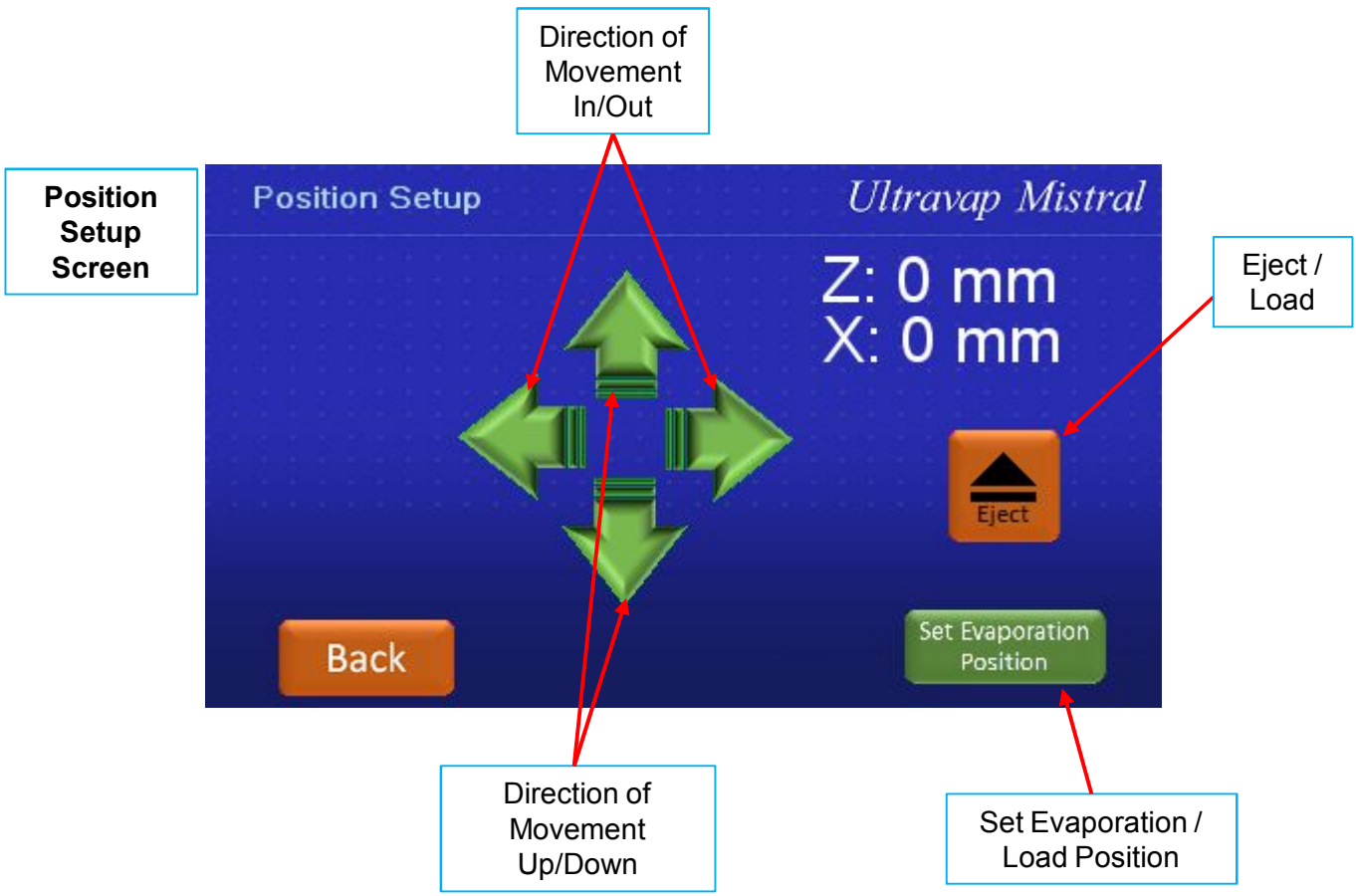
Setup Position

The Ultravap Mistral carrier can be moved manually to set the load and evaporation position on the x-axis (in/out). The z-axis (up/down) can also be saved to set up the load position, but not to set up the evaporation position. (The z-axis is set up whilst setting up **Select a Method**).

Once the load and evaporation positions are set, the instrument will default to these positions for running methods (until changed or the **Factory Reset** has been selected).

To manually move the carrier, press the arrow in the direction you want it to move.
The movements are in 0.25mm increments, however the arrows can be held down for faster movement. The carrier can also be moved to the furthest point in or out by selecting either load or eject respectively.

Note: *The Ultravap Mistral will move to the home position once saved, note that the instrument will always move to the lowest point of travel before taking the carrier inwards. - This is for safety reasons. The Setup position menu can only be accessed by an administrator.*



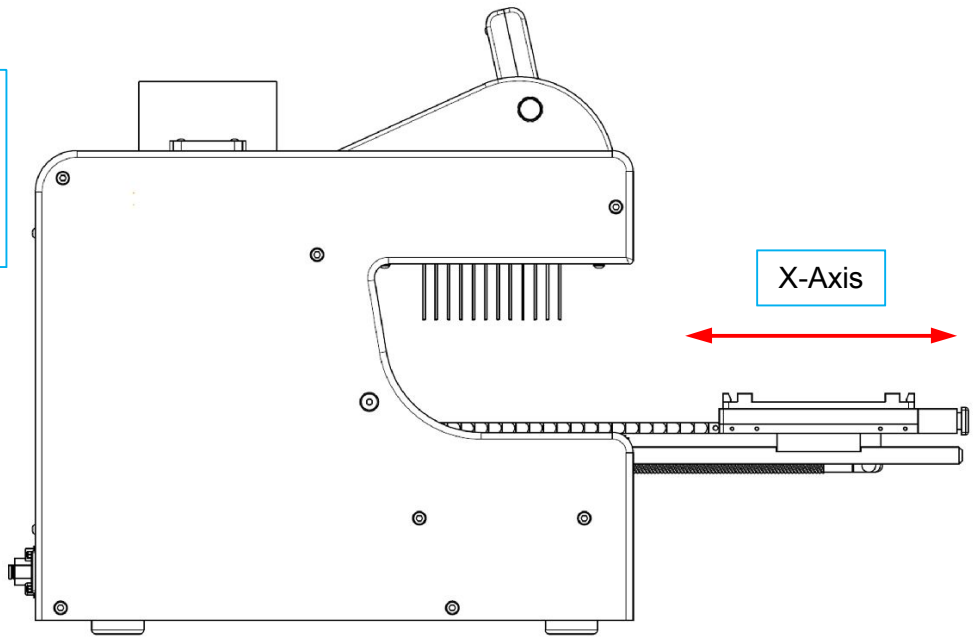
Operational Procedure

Setup Position – Shuttle Travel Limits

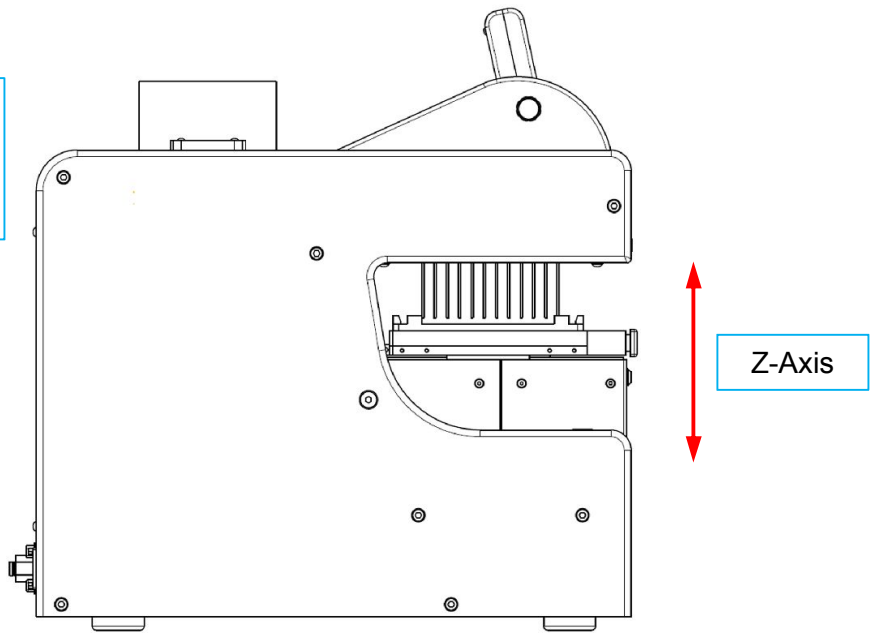
The maximum travel distance for the shuttle x-axis is 240mm (in/out), the default distance is set at 230mm. This gives the user an optional extra travel distance if needed.

The maximum travel for the z-axis (up/down) is 58mm, the default distance is set at 55mm. *Please note that spiral needles are longer than straight needles, so this must be accommodated when loading samples.*

Shuttle in the furthest out position (240mm)



Shuttle in the furthest up position (58mm)



Operational Procedure

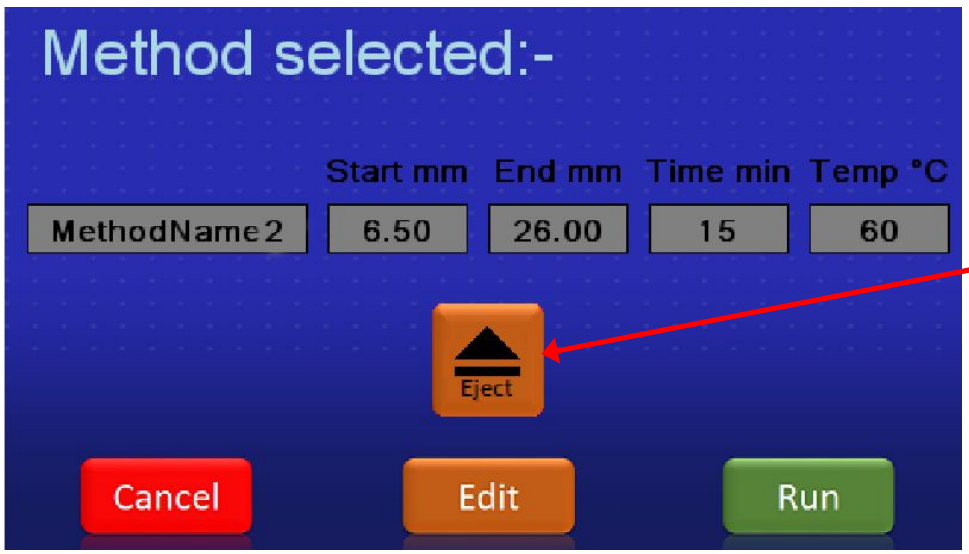
Running a Method

After selecting the **Select a Method** option in the main menu, the Ultravap Mistral will display 15 customisable methods. These methods will be saved in the system, even after powering down. Press on the chosen method followed by **"Select"** to customise the cycle.

Method Selection

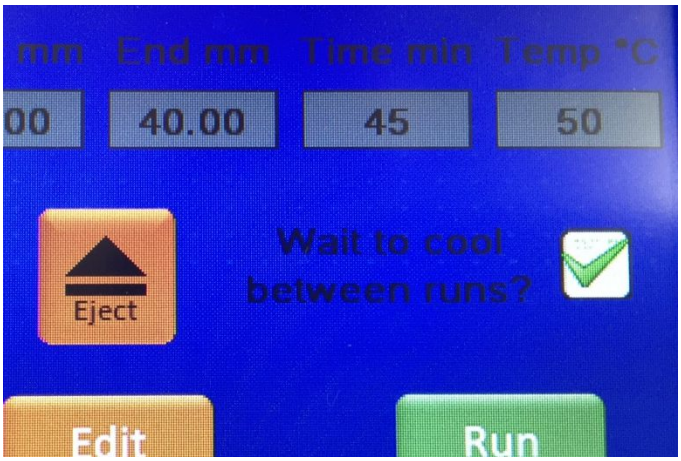
Once a method has been selected, it can then be edited. The start and end positions, cycle time and temperature of gas can all be changed for each stage. To change the values, simply press in the desired box and enter the required value. If needed, the carrier can be ejected to load a sample.

Method Confirmation



Note: Only the Administrator can edit values in the methods.

Operational Procedure



This tick box allows The unit to wait for temperature

Running a Method

The Ultravap Mistral features five different changeable stages for running a method, this can be used to blend a program gradually over time. However these can be removed for a simpler run by changing the time in minutes to zero on a stage.

Each stage can be different for temperature and flow; if the temperature is set lower than the previous stage it will need to cool to the desired temperature before continuing the method. The Ultravap Mistral does this by continuing to blow gas with the heater temporarily off and the shuttle will be moved to home position (in and down) so it does not interfere with the sample. If the temperature is set higher than the previous stage; it will continue to run the method whilst increasing the temperature.

Note: *The Ultravap Mistral will reach required temperatures faster when running on higher flow.*

Method Summary

Operational Procedure

Running a Method

To edit the options for the start / end positions click on the text then the up / down arrows to change the values followed by the save button.

Note: *the Ultravap Mistral will move the shuttle to the selected height whilst it is being changed.*

Method Editing

Operational Procedure

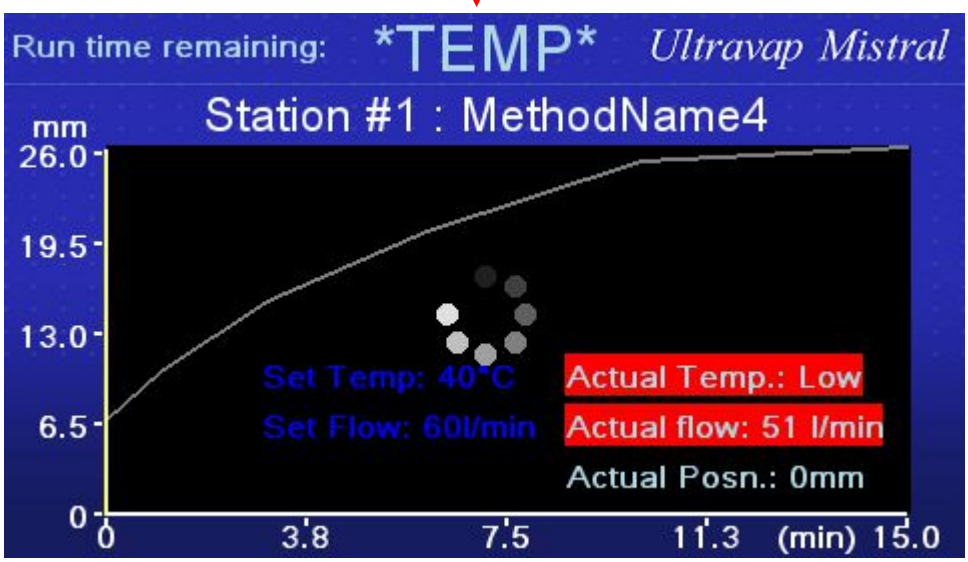
Running a Method

This screen is displayed during a cycle, notice when initially running a cycle the instrument will need to reach the required temperature. This screen shows the set temperature at 40°C.

Note: *the instrument may take a few minutes to reach required temperature, especially high temperatures from cold.*

TEMP to indicate instrument heating / cooling to required temperature

Method Running



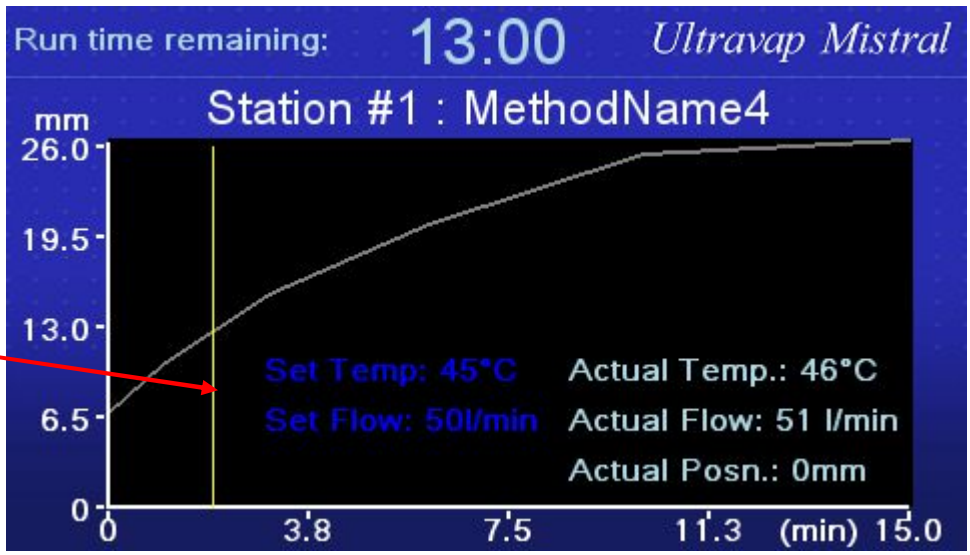
Operational Procedure

Running a Method

Once the instrument has reached the required temperature, it will begin to run the set method. The screen will display a real-time graph to represent the distance the carrier is moving (mm) over the time (min). The yellow bar represents the current position.

Method Running

Current position



Once the instrument has finished running a method, the screen will indicate the evaporation is complete and eject the carrier to the set load position. The user can then either load a new sample and repeat same method, or select a new method to program.

Note: *Please wait for Ultravap Mistral to eject the carrier fully before repeating a new method.*

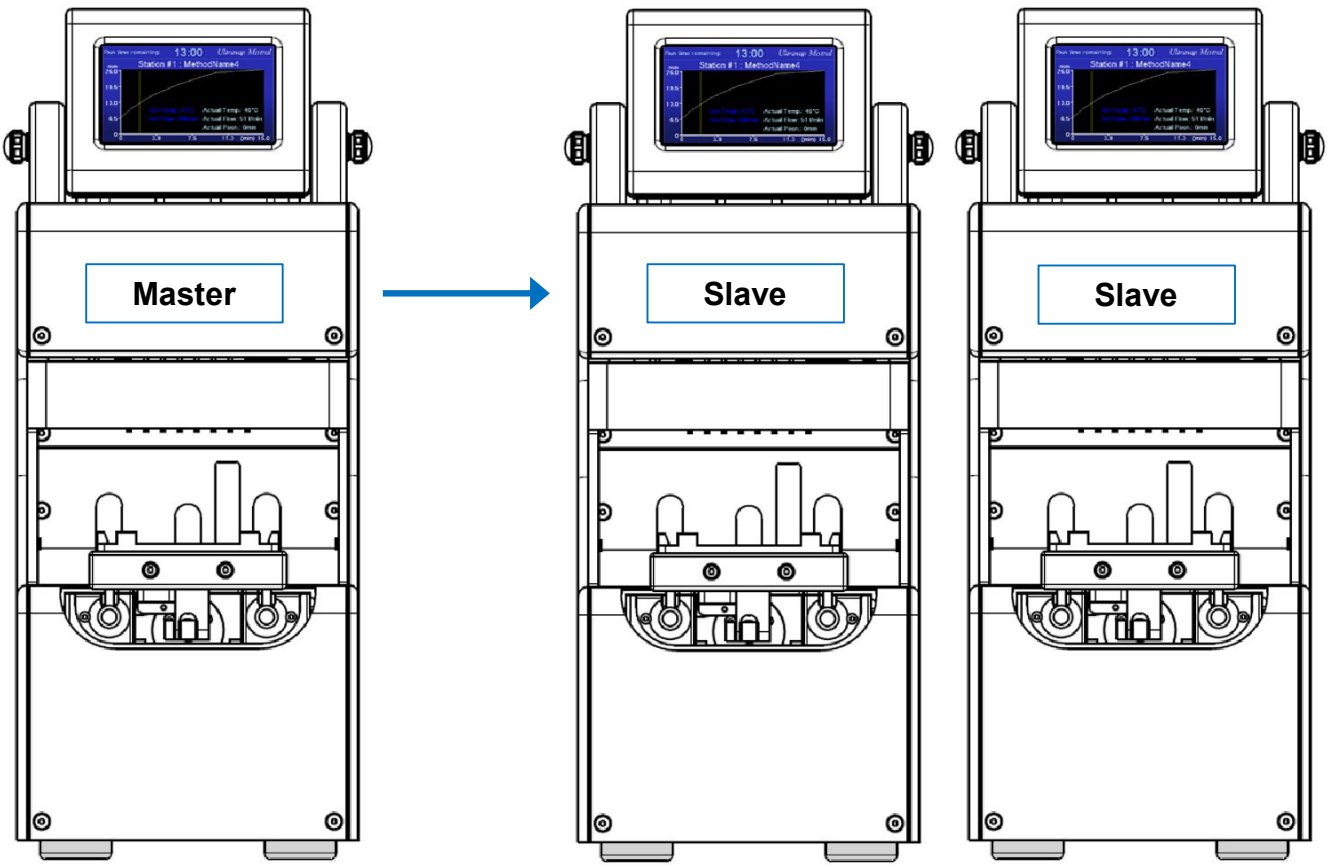
Method Complete

Master & Slave

Setting up Master & Slave

If two or more Ultravap Mistrals are owned; they can be linked together and all controlled from one master. The slave units do not need to be logged in to run a method.

Note: The additional communications cable with RS232 and CAN connections will be needed to use the Master and Slave feature. *(See* **Spare Parts & Accessories***)*.



Master & Slave

Setting up Master & Slave

- To connect a master Ultravap Mistral to a slave, simply connect units via the CAN to RS232.
- Then link the RS232 and CAN on the slave with the double ended cable.

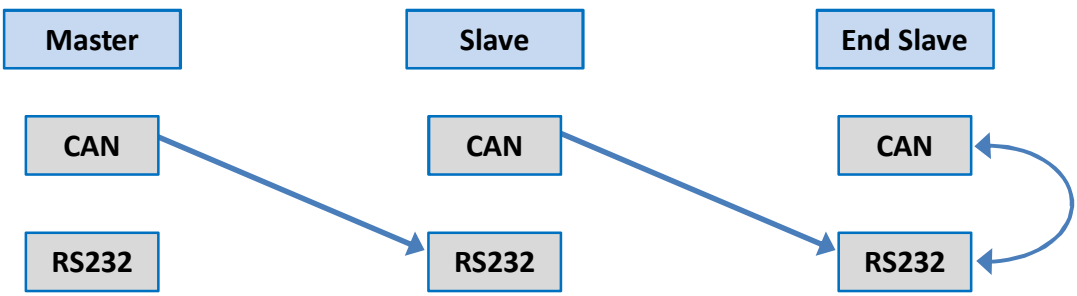
Master

End Slave

Connecting Multiple Ultravap Mistrals

If additional Ultravap Mistrals are being used (3 or more), connect the master CAN to the slave RS232 port to the first slave and repeat this for subsequent slaves. On the last slave, link the CAN and RS232 with the short cable.

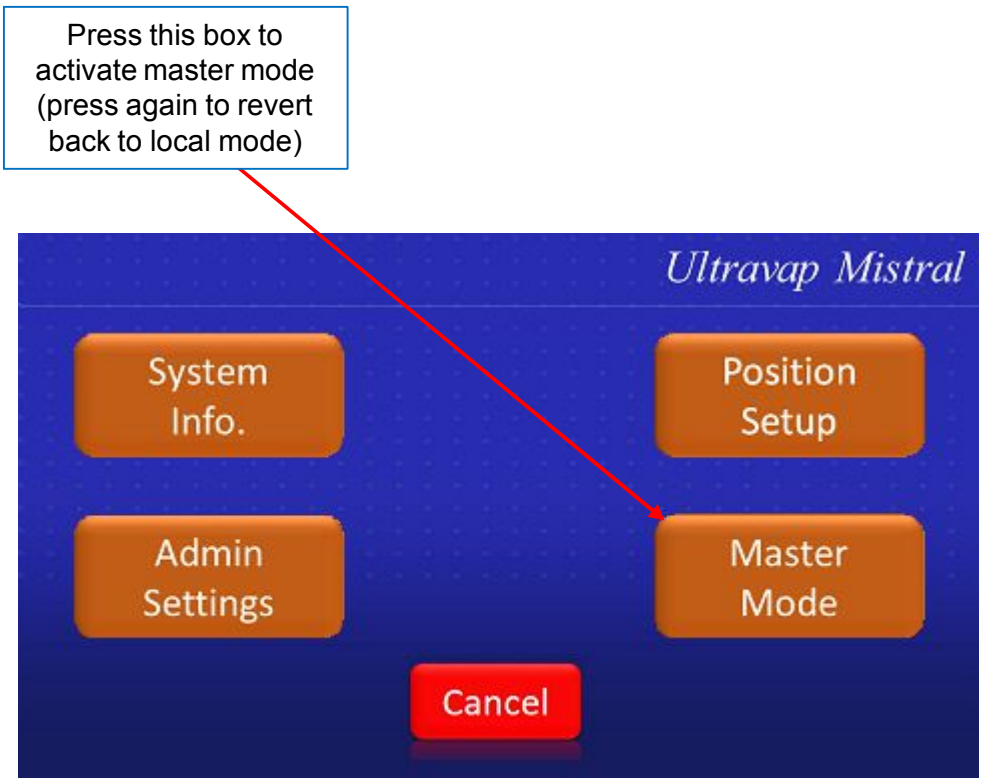
Note: The RS232 port is left open on the master so that it can be controlled by remote communications via a PC.



Master & Slave

Activating Master & Slave

Once Master Mode has been activated (located in the main menu), any methods run on the master unit will also run in unison with any connected slave units. The **System Info.** menu also displays what mode the Ultravap Mistral is in.



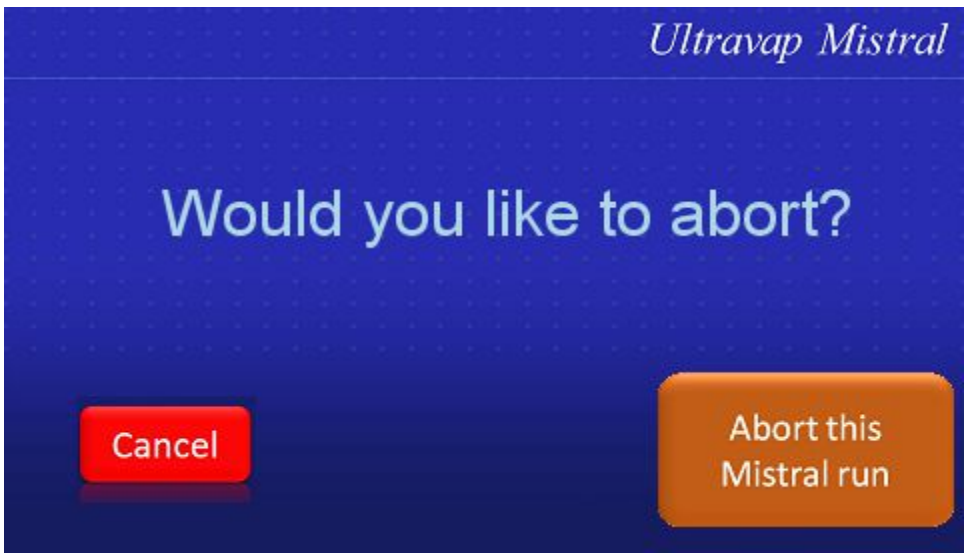
Master & Slave

Aborting Slave Units

The master Ultravap Mistral can be abort all slave units that are connected by pressing the screen, or abort just itself.

Note: If a slave unit has been run from a master, it will need to power down before returning to local mode.

If an Ultravap Mistral needs to be stopped during a run for any reason, it can be aborted separately by pressing the screen to bring up the abort option. The user will then have the ability to abort a single Mistral run individually without affecting other connected slave units.



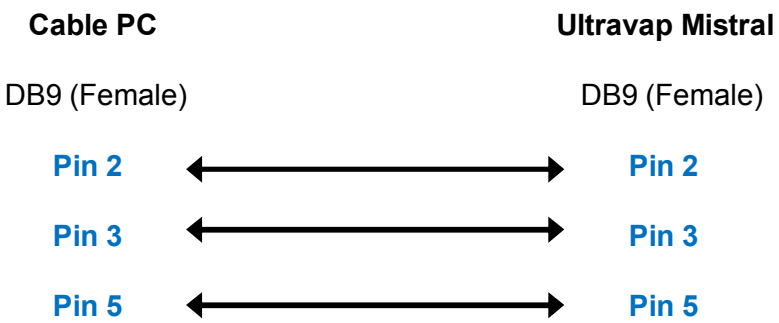
Remote Communications Protocol

Remote Communications Setup

The Ultravap Mistral can be configured for remote computer operation using the following commands. Connection between the Ultravap Mistral and the host PC is via a correctly configured RS232 cable.

Serial Port Set-up

Baud Rate: 9600 Data
Bits: 8
Parity: none
Stop Bits: 1
Handshaking: none



Message Response Time

The Ultravap Mistral responds to each message with 100 milliseconds

System Initialisation

The system automatically initialises on power up
While initialising the system status is reported as „busy" (status bit 0 is set to 1)

Remote Communications Protocol

Status Message

PC sends: ?<cr>
Ultravap Mistral replies: <status byte><cr>
<cr> = Carriage return
The status byte is a hexadecimal value represented in ASCII, i.e. the characters „FF" means 0xFF hex.

bit values:

bit 0	busy
bit 1	error

Begin Evaporation Command

PC sends: R<cr>
Ultravap Mistral replies: ok<cr>

if the evaporation operation has commenced
or err<cr> if it unable to start the operation
The Ultravap Mistral will not start the evaporation if the following conditions exist:

bit 0	busy
bit 1	error

Error Message

PC sends: E<cr>
Ultravap Mistral replies: ##<cr>
where ## is a decimal value represented in ASCII i.e. the characters „01" means error 1
Error numbers:

1	No or Low Gas	
2	Limit Error	Platform makes safety / protection switch
3	Obstruction	Platform movement is obstructed
4	Home 1	Platform fails to reach Z down switch
6	Thermocouple	Thermocouple failure

Remote Communications Protocol

Setting Evaporation Parameters

In addition to the standard parameters in the form

P%=###<cr> and P%<cr>

The following parameters are possible in the form

P%%=###<cr> and P%%<cr>

Parameter	Description	Units	Limits
01	*Gas Temperature 1	˚C	1 to 60
02	*Gas Temperature 2	˚C	1 to 60
03	*Gas Temperature 3	˚C	1 to 60
04	*Gas Temperature 4	˚C	1 to 60
05	*Gas Temperature 5	˚C	1 to 60
06	Distance 1	0.25mm	1 to 220
07	Distance 2	0.25mm	1 to 220
08	Distance 3	0.25mm	1 to 220
09	Distance 4	0.25mm	1 to 220
10	Distance 5	0.25mm	1 to 220
11	Distance 6	0.25mm	1 to 220
12	Time 1	Minutes	1 to 60
13	Time 2	Minutes	1 to 60
14	Time 3	Minutes	1 to 60
15	Time 4	Minutes	1 to 60
16	Time 5	Minutes	1 to 60
17	**Gas flow 1	5L/min	1 to 18
18	**Gas flow 2	5L/min	1 to 18
19	**Gas flow 3	5L/min	1 to 18
20	**Gas flow 4	5L/min	1 to 18
21	**Gas flow 5	5L/min	1 to 18

Note *For Gas Temperature the Mistral has no direct cooling facility, The Mistral`s lowest achievable temperature is to ambient

Note ** For Gas flow the Low Flow Error may appear if the Flow rate is set to < than 20 L/min also the temperature will not increase if the flow is set to < than 30 L/min.

Remote Communications Protocol

Reading Evaporation Parameters

PC sends: P%<cr>
Ultravap replies: ###<cr>
where % is the parameter number and ### is the parameter value
% is a single digit decimal number and ### is a 3 digit decimal value represented in ASCII
e.g. To read the current temperature 1 setting
PC sends: P1<cr>
Ultravap replies: 050<cr> if the temperature setting is 50ºC

Extended Commands

PC sends Z<cr> Run is cancelled and platform returns to home position
F<cr> Ultravap replies with set temperature
C<cr> Ultravap replies with current platform position in mm
T<cr> Ultravap moves through run position and moves to home
V<cr> Ultravap replies with time left for current run
A<cr> Ultravap replies with current temperature during run

Extended Commands

PC Sends	O<cr>	Tray ejects
	L<cr>	Tray loads
	H<cr>	System performs home function

Remote Communications Protocol

Other Useful Functions

stageXstartpos is in mm
stageXendpos is in mm
stageXtime is in minutes
stageXtemperature is in degrees C
stageXflow is in L/min

Remote Communications Protocol

Set Remote Method

PC Sends
S!
stage1startpos,stage1endpos,stage1time,stage1temperature,stage1flow,stage2startpos,stage2endpos,stage2time,stage2temperature,stage2flow,stage3startpos,stage3endpos,stage3time,stage3temperature,stage3flow,stage4startpos,stage4endpos,stage4time,stage4temperature,stage4flow,stage5startpos,stage5endpos,stage5time,stage5temperature,stage5flow

Where values are same as above.

Query Local Method

PC Sends Mxx?<cr>

Mistral replies
Mxx!
methodname,stage1startpos,stage1endpos,stage1time,stage1temperature,stage1flow,stage2startpos,stage2endpos,stage2time,stage2temperature,stage2flow,stage3startpos,stage3endpos,stage3time,stage3temperature,stage3flow,stage4startpos,stage4endpos,stage4time,stage4temperature,stage4flow,stage5startpos,stage5endpos,stage5time,stage5temperature,stage5flow

Where values are as above plus:
xx is method number 0-14
methodname is ascii string of no more than 15 characters

Set Local Method

PC Sends
Mxx!
methodname,stage1startpos,stage1endpos,stage1time,stage1temperature,stage1flow,stage2startpos,stage2endpos,stage2time,stage2temperature,stage2flow,stage3startpos,stage3endpos,stage3time,stage3temperature,stage3flow,stage4startpos,stage4endpos,stage4time,stage4temperature,stage4flow,stage5startpos,stage5endpos,stage5time,stage5temperature,stage5flow<cr>

If a command is successful the Mistral will reply ok, if not the Mistral will reply errr.

Cleaning Information

Before using any cleaning or decontamination method, other than that recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the unit.

Always remove the power and pneumatic supplies before cleaning the unit.

Never turn on power and pneumatic supplies before the unit is fully dry.

DO NOT USE ACETONE OR ABRASIVE CLEANERS.

Cleaning Information

The Ultravap Mistral is designed to provide years of trouble free operation with virtually no maintenance. Follow the simple procedures below to ensure that your Ultravap Mistral continues to deliver top performance.

General Cleaning

- Wipe clean all splashes immediately with a clean tissue or lint-free cloth.
- Switch off and disconnect from mains power supply before cleaning the instrument.
- The instrument is to be cleaned only by wiping with Virkon or similar decontaminating solution at manufacturer's guideline concentration applied using a clean tissue or lint-free cloth.
- Do not allow the instrument to come into direct contact with solvents or other potentially corrosive solutions.
- Do not autoclave any parts of this instrument other than the Needle Head.

Cleaning Information

Cleaning / Examining Needles

It is occasionally necessary to clean or examine the needles. To facilitate either of these operations remove the Needle Head according to previously noted instructions – *refer to **Fitting / Changing the Needle Head**.*

To clean contaminated needles carry out one of the following procedures:

1. Autoclave the Needle Head according to your company's standard protocol.

2. Using a 2ml deep well microplate (Porvair P/N 219009), immerse the needles fully into the plate, partially filled with a suitable strong solvent. DO NOT use strong alkali solutions since they could damage the aluminium Manifold plate. Ensure that the cleaning solution only comes into contact with the needles.

3. After a suitable period of time (possibly overnight), remove the Needle Head from the solvent and examine. If it has been cleaned satisfactorily/decontaminate it with a suitable solvent or de-ionised water reinstall the Needle Head and operate the Ultravap for several minutes until needles are completely dry.

Cleaning the Needle Head

This can be achieved in two ways:

1. Remove the needle head and autoclave to your company’s standard protocol.

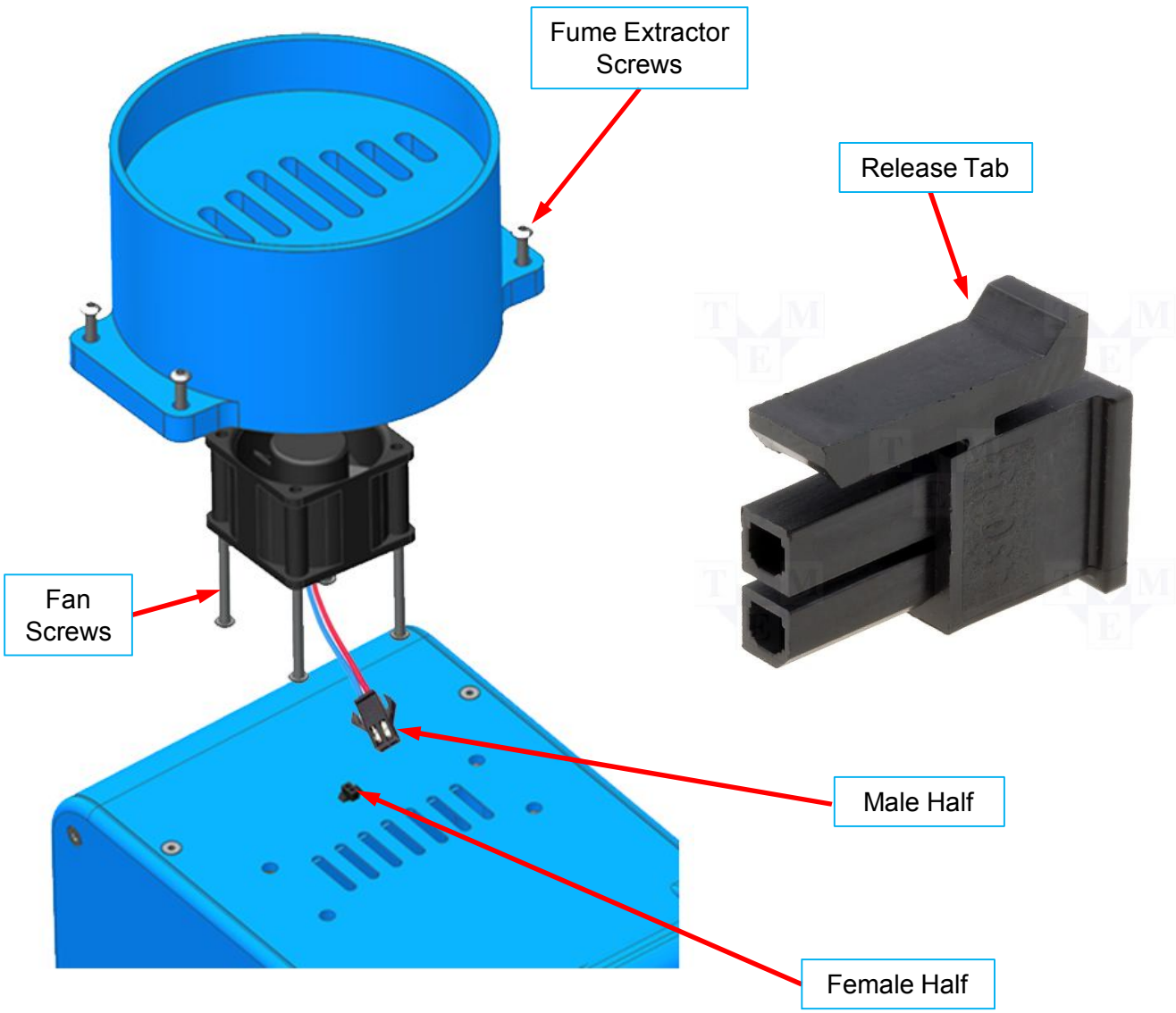
2. Using a 2.0ml deep well micro-plate, immerse the needles fully into the plate, filled with a suitably strong solvent (Nitric acid is commonly used).

3. After a suitable period of time, remove the needle head from the plate and operate the Ultravap Mistral for several minutes, until the needles are completely dry.

Replacing the Fume Extractor Fan

The extraction fan fitted in the Ultravap Mistral has been installed in such a way that it can be replaced if needed. To remove the extraction fan follow these steps:

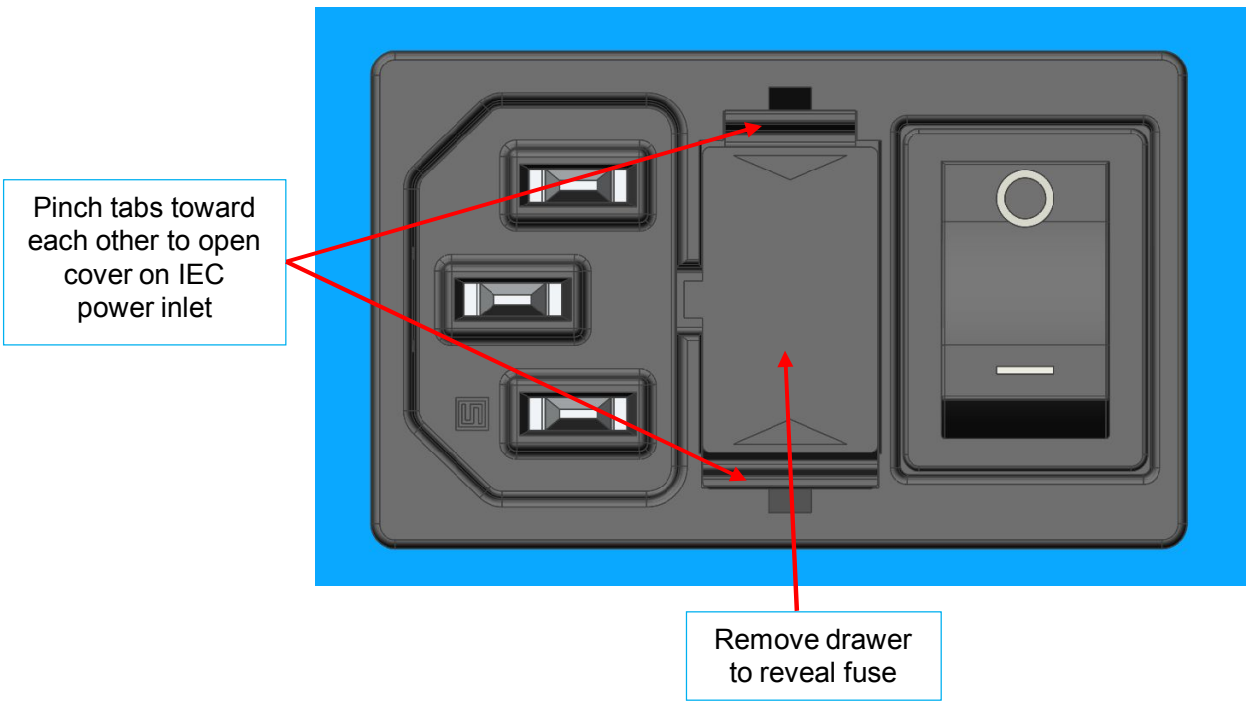
- Remove the four screws holding the fume extractor.
- Disconnect the Molex two-way connector (male) from mating half mounted in top cover (female) by pinching the release tab.
- Remove four fan screws.



Changing Mains Protection Fuse

To replace mains protection fuse, in the event of failure, carry out the following procedure:

- Switch off and disconnect from mains power supply.
- Pinch tabs together (can use small flat-bladed screwdriver) to open fuse cover on IEC mains power inlet.
- Replace defective fuse – ensure replacement fuse is of the correct rating – refer to **Specifications and System Requirements.**
- Close fuse drawer and cover.
- Reconnect to mains power supply, switch on and test.

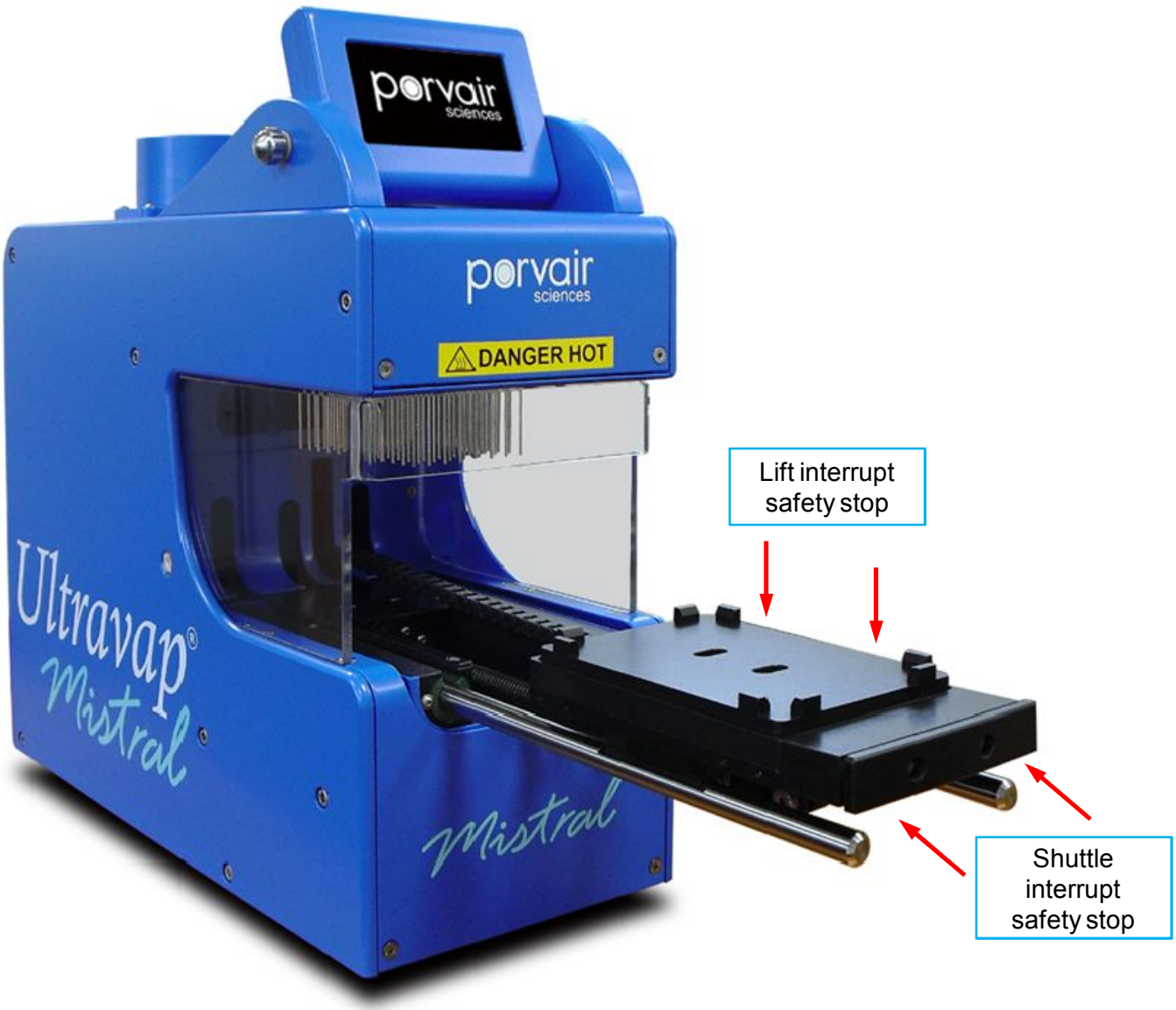


Error Messages

Safety Stops

The Ultravap Mistral is fitted with interrupt safety stops on the x-axis (in/out shuttle) and the z-axis (up/down).

The plate carrier is spring loaded on switches, so that if there is any conflicting objects or collisions the springs will compress and activate the safety switches. The same principal applies to the front of the shuttle.



Error Messages

Safety Stops

If at any time any obstructions occur, the corresponding error message will appear:

Error Clearing

As soon as an obstruction occurs and a error message appears, the instrument will stop all movement. Once the user has cleared the error, by pressing the clear button, the shuttle will then move to the home position (in and down).

Error Messages

Low Flow

During **Run a Method**, if there is low gas supply for a prolonged amount of time or the supply is restricted; a low flow error message will be displayed. The method running will be cancelled until the gas supply is above 20 litres per minute, the method will also need to be restarted.

Factory Reset

How to Reset Ultravap Mistral

The Ultravap Mistral can be reset to it's factory settings, the methods and positions stored will have to be re-programmed. This feature can help to eliminate any re-occurring bugs that may be in the software.

Fault Finding

WARNING: THIS EQUIPMENT SHOULD ONLY BE DISMANTLED BY PROPERLY TRAINED PERSONNEL. REMOVING THE MAIN COVER EXPOSES POTENTIALLY LETHAL MAINS VOLTAGES.

Common Faults	Solution
• Nothing happens when the unit is switched on	○ Check power to the unit. Check the condition of the fuses.
• The unit turns on but the gas does not heat	○ Check that the inlet gas pressure is greater than 4 Bar (60 psi). Turn the unit off and on again to reset heater.
• No gas emits from the needles	○ Check that the gas inlet supply is sufficient. Check integrity of head gasket. Check for gas leaks.
• Certain wells do not dry down	○ Check visually that the needles are not blocked. Check visually that the needles are not bent or damaged. Due to the nature of the heated gas, the pins towards the centre of the head plate will generally be slightly warmer.
• The instrument does not move to it's set position when running a method	○ Check that the load and eject positions are set correctly in the Setup Position menu.
• The instrument continues to emit gas after a method has finished.	○ Turn the unit on and off to reset the gas regulation.

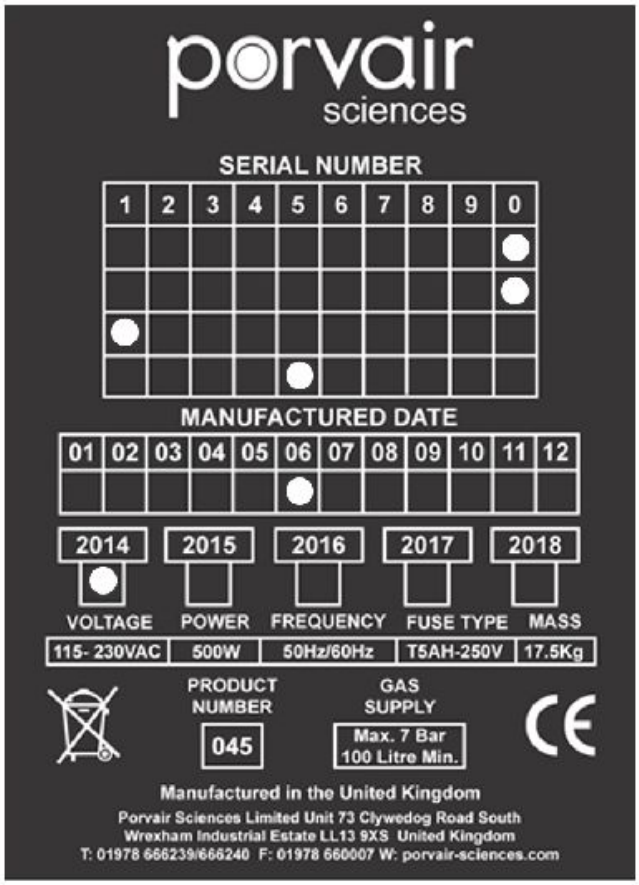
Special Note

For other failures it is recommended that you contact your supplier. Do not dismantle the unit, as this will invalidate the warranty.

Identifying Your Ultravap Mistral

Identifying Your Ultravap Mistral

For all warranty and service requests the serial number and year of manufacture of the Ultravap Mistral are required. These are located on the back panel at the rear of the instrument. The serial number and details of each Ultravap Mistral can also be found in **System Information.**



Serial Number = **045-0015**
with product number in the prefix
(example shown)

Date of Manufacture = 06 / 2014
(example shown)

Declaration of Conformity

CE

kbiosystems Ltd
Units 5 to 10 Paycocke Close
Basildon
Essex SS14 3HS
United Kingdom

Tel: 01268 522431
www.kbiosystems.com

EC Declaration of Conformity
Document Reference: CE Dec Mistral 25th April 2014

We kbiosystems Ltd at above address declare under our sole responsibility that the product detailed below complies with the requirements of the following EU Directives,

- *Machinery Directive 2006/42/EC*
- *Low Voltage Directive 2006/95/EC*
- *Electromagnetic Compatibility Directive 2004/108/EC*
- *RoHS Directive 2011/65/EU*

Equipment description: **Ultravap Mistral Sample Evaporator**

Product Model: **250-10045**

Compliance of the equipment has been demonstrated by assessment with reference to the following harmonised European Standards:

- *EN 61010-1:2010 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements*
- *EN ISO 12100:2010 Safety of machinery — General principles for design — Risk assessment and risk reduction*
- *EN 61326-1:2006 - Electrical equipment for measurement, control and laboratory use. EMC requirements.*

A technical file for this equipment is retained at the above address.

	**Signature**
Alan Shepherd	**Name of signatory**
Technical Director	**Position of signatory**
Basildon April 2014	**Place and Date of Issue**

Spare Parts & Accessories

Description	Part Number
Replacement needle head with 24 straight needles	229409
Replacement needle head with spiral needles for Ultravap 96	229072
Replacement needle head with straight needles for Ultravap 96	229036
Replacement needle head with straight needles for Ultravap 384	229073
Gas filter (5 micron)	229088
Gasket for manifold	229048
CAN / RS232 lead (for use with Master & Slave)	500193
Replacement fan	500194

Warranty & Returns

In the event that your Ultravap Mistral malfunctions or requires repair it is recommended that you consult your local supplier directly. Alternatively, for warranty issues please contact Porvair Sciences directly at the address below.

Do not dismantle the unit without prior authority of Porvair Sciences Limited or the manufacturer since this will invalidate the warranty. There are no user serviceable parts within the casing of the instrument.

NOTICE

Do not attempt to repair the Ultravap Mistral yourself. Repairs should be performed only by Authorised personnel only.

Porvair Sciences Ltd.
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LL13 9XS
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Email: int.sales@porvair-sciences.com

Notes

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