

SWIFTLOCK SECURE-TOUCH COLOUR +

TOUCHSCREEN CONTROLLER

Operator and Programming manual



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# SECURE-TOUCH COLOUR+ Control system

Part No MXN782 issP01 ed a

To be read in conjunction with the appropriate Astell "Machine" instruction manual

CE 0120 (MDD)

**C€** 0353 (PED)

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## INTRODUCTION

The **"SWIFTLOCK SECURE-TOUCH COLOUR+"** Steriliser models are modern, functional Benchtop or Floorstanding Autoclave/Sterilisers designed with ease of use in mind . The **SECURE-TOUCH COLOUR +** Control system is Explained in separate manuals ;-

## PROGRAMMING MANUAL ( this one ) MACHINE INSTRUCTION MANUAL ENGINEERING MANUAL ( AVAILABLE TO ASTELL APPROVED ENGINEERS )

Programming Manual Engineering Manual apply to a wide range of models. The Machine Instruction Manual isspecific for the particular machine & covers the facilities and hardware supplied with that machine version)

There are also some additional manuals for special options such as RS23 2communications, etc.

## Safety Warning IEC61010

In accordance with IEC61010

The safety features and protection for the operator in this equipment are only designed to operate when the equipment is used in the way described in these instructions. & if used in any way not specified such protection may be impaired.

## **GENERAL OPERATION & LOG-BOOK**

Although the safety record of laboratory Sterilisers is good, remember at all times that they store considerable potential energy, and should be treated with respect and care . If correctly used and cared for, your Steriliser will give you long and safe service .

Pay proper attention to regular maintenance . Never force the locking mechanism, or operate the machine with any leaks, or incorrectly operating parts.

Report any defects to your Supervisor . If deterioration or defects are noticed, record them in a log book and contact our Service Department .

Record also the results of annual and periodic inspections . Every 4 to 6 weeks is recommended. Check the logbook before you start using the machine, as someone else may have recorded a fault of which you are not aware.

Date	Issue	Filename	Detailsof changes and revisions +
& MR no	&Edition		software issues & notes
xx00709	P01 ed A	Mxn782-1-po1 ed a	Original issue

## **DOCUMENT ISSUES AND DETAILS**

# SAFETY VALVE IMPORTANT INFORMATION

#### All these machines contain a Safety Valve (PRESSURE RELIEF SAFETY VALVE)

To comply with typical safety regulations this must be kept in a serviceable condition and it must also be regularly tested. Test periods depend upon local regulations, however;-

# Astell Scientific advise that the Safety Valve should be tested every 3 months.

A special SAFETY VALVE TEST PROGRAM is provided to make this easier, accessed from the Supervisor level.

# SERIAL NUMBER & VOLTAGE RATING PLATE

This is the metallic plate sited on the back panel of the machine. it provides various information including;-

Serial Number Model Number of the machine Model number of accessories or options. ELECTRICAL ratings

# IMPORTANT You MUST quote the Model & Serial number for spares and service requests.

To avoid having to move the machine for access please record these for future use.

Model No	Serial No

# ELECTRICAL FIRE RISK HANDLING/MOVING POSITIONING/LOCATION POWER, WATER & DRAINAGE SAFETY SYSTEMS SPARES & SERVICE

For Details of all these aspects & use of your machine please refer to the appropriate **Machine Instruction manual.** 

ELECTRICAL TESTING FULL AND PARTIAL CALIBRATION SYSTEM SETTINGS Detailed Technical information

For Details of all these aspects & use of your machine please refer to the SECURE-TOUCH COLOUR+ CALIBRATION & ENGINEERING MANUAL

## **OPERATING & Programming INSTRUCTIONS**

The following Sections provide Operating instructions together with Cycle Programming Information for the control system

Full details of the Program Entry Procedure and further technical details are provided in sections in this manual.

Other options such as the RS232 Communications option are detailed in separate instruction manuals.

## INFORMATION ON APPROVED USE

This equipment is only designed for use other as a medical or laboratory general steam steriliser within the temperature and pressure ratings of the chamber design.

Any alternative use or method of operation not covered and specified within this and associated instruction manuals is specifically excluded and may be hazardous. The manufacturer does not approve such alternative use and under no circumstances will the manufacturer his or agents accept responsibility for loss, damage, or injury, consequential or otherwise, as a result of such alternative use.

The manufacturer reserves the right ,in certain cases, to reassess &/or amend the design or specification, and provide individual written instructions detailing any alternative use that is considered acceptable.

This Steriliser Is designed and intended for a very wide range of loads and process cycles. It is not possible in this manual to encompass every possible cycle or load requirement that may be encountered.

General principles are provided, with a selection of examples and explanations. It is to be expected that a certain amount of experimentation may be required before the most suitable process cycle or method of loading can be arrived at.

Astell Scientific and approved agents are able to offer advice and assistance in setting up and commissioning this steriliser. Please consult Astell Scientific or your supplier if necessary

## Secure-Touch cOLOUR+ Control System OVERVIEW

The **SECURE-TOUCH COLOUR+** controller Uses a LCD display with a LED backlight system.

The Front of the display is covered by a Glass touchscreeen which is sensitive to the touch of a finger or blunt stylus.

The system is able to detect the coordinates of the position on the screen that has been touched and can interpret this as if it was a "Button-Press".

The controller system is arranged to show a number of different screen layouts of information , together with the required "Buttons" -(shown on the screen as rectangles with bevelled corners)

When a screen shows a representation of a "button", then a press or touch on the "button" will select that item.

If the screen has lines or is smudged please advise your Agent or Service Engineer.

## PROTECTING YOUR SCREEN

Only touch the screen with your finger or a purposedesigned . touchscreen stylus

Do Not use a Pen, Pencil, screwdriver or any other sharp object or the screen may be damaged

A Suitable stylus is often supplied with a palm-type PDA.



# EXAMPLE OF TYPICAL DISPLAY

## SYSTEM CONTROLS

#### All machines have the following controls

## POWER ISOLATOR SWITCH

Turns on AC Mains Power to the system ( at rear of cabinet )

#### COOL LOCK THERMOSTAT

Senses chamber temperature . to restrict opening with hot fluids.

## **OVERTEMPERATURE THERMOSTAT**.

This takes over control of the heater in the event of water loss or overheating. It resets automatically when the temperature falls.

## OVERHEAT SAFETY CUTOUT.

## fixed- not user adjustable

This cuts out the heater in the event of excessive temperature rise (typically >150C

#### **EMERGENCY STOP BUTTON** with Key

(larger models only) Press to stop turn key to release – cuts power to system

## INSTRUMENTATION

The function of conventional "Instruments" is taken by computer sensors and displays shown on the LCD display. These readouts are only displayed when necessary in the cycle.

#### **CHAMBER Temperature Readout DEG C**

Shown on display during running Programs. (Accuracy better than +/- 1.0 Deg C )

#### LOAD SENSED Temperature Readout DEG C [ only if option fitted]

Shown on display during running Programs.if they include load sensed timing . (Accuracy better than +/- 1.0 Deg C )

#### PRESSURE Readout mBar Absolute

Shown on display during running Programs.. (Accuracy Better than+/- 0.04 Bar)

**PRESSURE Gauge** Dial Bourdon pressure gauge at front of machine. (Accuracy Better than+/- 5%) (This is for backup indication only )

## **INSTRUMENTATION CHECK**

Should there be an instrumentation problem such as a faulty sensor, a monitor system detects out-ofrange values and reports them as an ALARM condition with details of cause

# SAFETY INTERLOCKS

### PRESSURE INTERLOCK

Preset to [less than +0.15 Bar] this preventing the electrical release of the Closure lock if the chamber is pressurised.

## **OVERPRESSURE ALARM**

This is preset to approx 3.8 Bar( abs). This is above the safety valve point, to allow safety valve testing. If the pressure sensed by the pressure transducer exceeds this level, which suggests heating or control problems, then the heating is shut down, the cycle advances to "Cooling" and an Alarm condition generated.

## **TEMPERATURE INTERLOCKS**

#### **STARTING-INTERLOCK**.

Prevents starting a cycle with a dangerously hot or pressurised chamber.

#### **COOLING LOCKS**

There are two Cooling Locks to prevent the Steriliser being opened with a Liquid Load under unsafe conditions.

## **DUAL COOL-LOCKS**

Both Cooling locks must be satisfied for them to release the door.

They remain electrically LOCKED until the load has cooled to a safe handling temperature COOLING LOCKS operate for FLUIDS and DESTRUCT programs . ]They should be adjusted by the supervisor, or a person trained in Steriliser use & the setting of safe steriliser cycles.

### PRESET COOLING LOCK THERMOSTAT

This is a thermostat with Dial & scale calibrated & measures temperature of the Chamber outer Wall,

**NOTE;-**The temperatures will not be quite the same, due to differing thermal inertia. Normally the Chamber wall & Cooling Lock sensor will cool down faster than the load.

## PROGRAMMABLE COOLING LOCK.

This uses a Cooling-Lock-Temperature set by the user within each of the Program settings which is compared with the Chamber Internal Temperature Sensor reading (the same temperature as appears on the Temperature display). When the CHAMBER temperature is above this "PROGRAMMABLE" cool-lock temperature the lock is active (engaged) and Completion is inhibited preventing the door from unlocking. TOUCHSCREEN OMRONPLC PROGRAMMING

### Load Sensed Cooling Lock

# ( if LOAD SENSED TIMING OPTION is fitted & selected in SETTINGS )

In this case the "Cooling" Temperature set for the Program is compared **the Temperature measured by the flexible LOAD sensor**. When this Load- temperature is falling but still above the "Cooling" temperature the lock is active (engaged) and Completion is inhibited , so the door cannot be unlocked.

AS the LOAD SENSING PROBE detects the temperature within the LOAD itself, it will always represent the actual load temperature., assuming it has been correctly placed in the load.

The temperature of LOAD and CHAMBER must BOTH be below the two separately-set cool-lock temperatures to allow the cycle to complete.

## Cover Closure System Interlocks.

The cover is prevented from being opened by a solenoid locking bolt system. The system cannot be started unless the closure is fully secured and locked.

## The Cover can not be opened if:-

Chamber Temperature is above Programmed Cooling Lock setting ( liquid/fluid Programs only), and Pressure is above approx. 1.5 p.s.i. /0.2 Bar.( all Programs )

(The Programmable Cooling Lock Temperature is set within each program. But the PRESET cool lock temperature is a single setting applying to all programs.)

## The Cover is also Locked if POWER is OFF.

The Cover can only be opened by pressing the 'OPEN' button and waiting for the bolt to unlock.

The OPEN button will NOT open the Cover if inhibited by the Cooling Locks or the pressure interlock .

The system will only start and run cycles if the Cover is fully CLOSED & LOCKED.

It is not possible to pressurize the chamber with the Cover Unlocked.

## Steam Heating & Cooling systems

#### **HEATING SYSTEM:**

On most models Steam is generated from water held in the base of the chamber .The Electric Heating system uses an electrical immersion heater and a water level Conductivity sensor acts at "Filling" level . on AUTOFILL models Water is supplied from an internal tank and automatic Water Filling is provided as a function of the cycle.

A float level switch detects LOW WATER in the water tank.

## **AIRPURGEING SYSTEM**

Note; "Airpurgeing" is the Term used to describe an initial period of STEAM FLUSHING at atmospheric Pressure which uses the steam to displace the air from the chamber. This may also be called **FREESTEAMING**. The Program settings provide an adjustable period of 'AIRPURGE' to ensure steam penetration in loads such as Petri dishes, sample tubes, etc. with large numbers of trapped air spaces.

The temperature at which this starts is close to boiling point. This can be adjusted to allow for altitude effects.

## **TEMPERATURE CONTROL SYSTEM :**

The Chamber Temperature Is measured by a PT100 precision sensor. This is compared with the Sterilise Temperature - the "SETPOINT" stored in the Program Profile, and the controller acts to keep the chamber at or about that temperature by switching the heat source. Control of temperature does not rely on steam pressure.

The actual temperature that the control system tries to attain for will be varied automatically at different parts of the cycle . This does not require user attention during the cycle .

## **STERILISE TIMING SYSTEMS :**

## a] Standard Timing System;-

This operates if LOAD SENSED TIMING option is not fitted, or if fitted but it is not selected for this program. Timing starts a short time ( "stabilise time")after chamber reaches setpoint temperature, and terminates sterilisation at end of set period. Temperatures and Time are defined within the adjustable User Cycle Settings.

# b] Load Sensed Timing System;-

#### (Optional Extra)

When fitted , LOAD SENSED TIMING is selectable (on or off) within the Cycle Settings.

### **DRYING SYSTEM**

## (models with drying facility only

The Drying system operates for cycles requiring drying, (eg NOT Fluid cycles). It functions with the door opened at the end of the cycle. The Heater is power-controlled for a reduced proportion of the full heat –(typ 30%), which is convected around the load. Moist hot air exits via the open door.

## ASSISTED / NATURAL COOLING

## (Various options)

Cooling action operates whenever appropriate in the program and only for program types that do not require DRYING, eg Fluids cycles .

Cycles will not include Cooling and Drying in the same cycle

On autofill models 60L and below, At the end of Sterilise for Liquid /Fluid programs, initially convection *ambient* cooling cools the chamber to a preset pressure. When reached the water is discharged and the chamber then continues to cool until the Cooling Lock(s) are satisfied.

If the ASSISTED COOLING option is fitted the cooling system will start at a selected temperature, normally preset to just above 100C, which may be adjusted if required within each cycle.

#### FAST MANUAL EXHAUST OF STEAM

Please note that for safety reasons this machine design does NOT allow the operator to Exhaust steam at the end of a sterilise period or any other time.

#### SAFETY VALVE TESTING

This machine contains a Safety Valve (PRESSURE RELIEF SAFETY VALVE)

To comply with typical safety regulations this must be kept in a serviceable condition and it must also be regularly tested. Test periods depend upon local regulations, however;-

Astell Scientific advise that the Safety Valve should be tested every 3 months.

A special SAFETY VALVE TEST PROGRAM is provided to make this easier, accessed from the ENGINEER level.

## Safety valve Position

The Safety Valve is situated in different positions depending upon model specification and size. & is mounted at the rear or the side discharging downwards in a position allowing access for serviceing

All models – have an Automatic Safety Valve Test Warning System and monitor the date of the last Safety Valve Test Program.

At Power-On & Cycle Start the system checks the current date and shows a warning after the 3 month period has elapsed,

Note that this period is fixed to meet the requirements of most countries for Steam Safety Valve Testing.

The only way to cancel this warning is to run a Safety valve Test Cycle.

## **CALIBRATION POINTS**

The Safety Valve Test Program is designed to also provide for an engineer to carry out calibration at 121C and 134C. This requires Precision Thermometer equipment, and is normally done as part of the Calibration Schedule, which is Not the same as the 3 month Safety valve Test Schedule.

During the routine Safety Valve test just click on the [TICK] to move past the 121C and 134C stages on to the actual safety valve test

For Full details see page xxx



SELECT "TEST CYCLE" ON MENU

TOUCH "START" (To Start Cycle)



TEST CYCLE IS NOW RUNNING

Follow prompts on display. At 121c & 134c Points ,touch version when steam is seen coming from the safety-valve outlet, touch version to advance machine into cooling.

Note- depending on model the safety valve may operate by exhausting a blast of steam or by a continuous steam flow thro the valve

# LEAVE UNTIL COMPLETE & THEN OPEN DOOR

IF THE SAFETY VALVE DOES NOT OPERATE AT THE STATED PRESSURE IT MUST BE CHECKED AND ADJUSTED BY A QUALIFIED ENGINEER.

Safety Valve Test Quick Reference

## CONTROLLER OPERATION

# POWER ON, STARTING UP, OPENING

## **POWER-ON**

When power is applied the system goes through a START-UP PROCEDURE which displays the system Title and software issue

Then it shows the main system screen .

#### If the Door is CLOSED & LOCKED



Icon shows door CLOSED & LOCKED

#### If the Door is OPEN or UN-LOCKED



With the door SHUT AND LOCKED and all the facilities available and OK, the system is then "ready to Go...'

In this mode we can do the following:

- ••• Door Open / Close the Door •••
  - Select a Program to run Select Start
    - Start a cycle
  - Go to Main Menu Menu

# **OPEN THE DOOR**

#### Press the DOOR button.

•••

•••



The LOCKING BOLT withdraws Releasing the door.....



### **ROTATE the DOOR HANDLE**

If you have not opened the door, After approx 10 Seconds the door will Re-Lock itself

# **CLOSE THE DOOR**



Using the HANDLE CLOSE the door

**ROTATE** the DOOR HANDLE until it LOCKS.

OPEN

CLOSED & Locked



DOOR Icon Changes to show state of the door

#### Note;-

Never lean on the handle or hang anything over the handle as this will cause the bolt to stick and will cause early failure of the mechanism.

HANDLE LOCKED & DOOR OPEN

If the handle is rotated to the "LOCKED" position with the door open then the lock will engage so the door cannot be closed until the locked handle has been released.

Press the Door button.



ROTATE the DOOR HANDLE to the UNLOCKED position

## Water level detection & indication AUTOFILL

These models are available in two versions – with and without "Autofill "– Automatic Water Filling

## **AUTOFILL models**

These also vary with physical size.

a Larger models that are connected to a mains water supply have a water tank that is filled automatically from the water supply.

b Small models that are not directly connected to a mains water supply have a water tank that is filled by hand.

#### For these models please see the section below "AutoFill Models"

#### **CLASSIC** models

These are filled "by Hand" with water which is poured directly into the chamber.

## For these models please skip the section -" AutoFill models " and refer to the section after that- "MANUAL FILL"

## Larger Autofill Models,

These use a Mains water supply.

The supply tank is monitored by a Floatswitch. This detects whether there is sufficient water in the supply tank. If the display shows ;-



This message means the water supply has failedand so there is no water in the tank. **Please check the water supply.** 

## Small models with water tank

These have their water supply in a hand-filled tank.

#### Filling with water

Open the Tank Cover and add water until the water level is just level with the top of the stainless steel plate. Please add water with care-



After the Tank is filled the display changes to;-



## Water level detection and indication Classic manual-Fill Models

## **CLASSIC MODELS**

These are filled "by Hand" with water which is poured directly into the chamber.



The message above shows that the chamber needs water.

Add water slowly until the message disappears and changes to the "**Ready**" display



You can then select and start a cycle etc

lf

#### **SECURITY ACCESS & PASSWORDS**

The security system splits the users of this machine into the following groups

**OPERATORS SUPERVISORS** SITE ENGINEERS **ASTELL ENGINEERS DEVELOPERS** 

In each group there can be several individuals each known by name, and each with a Different Security Password Number (sometimes-called a PIN)

## **ENTERING PASSWORDS**

**ц**Э

Press the Button

for MAIN MENU

#### On the MAIN SETTINGS MENU ;-



For example- Press the SETTINGS button.

Now you have to LOG IN with your Password

Touch your User name;-



Astell Pioneers in Sterilization 18 3
recriticities
SUPERVISOR SITE ENGINEER



Touch on the PASSWORD Bar;-

0-9	1	2@	з <sup>#</sup>		×
A-P	4 <sup>\$</sup>	5 <sup>%</sup>	6	= +	$\otimes$
Q-Z	7 &	* 8	9(	} ]	$\checkmark$
Ŷ	<u>+</u>	()		1 }	

## Type your Password ;-,

Enter 6 Characters , then  $[\checkmark]$  (Enter)

The keypad covers 3 ranges of characters, selected by the "TAB" keys [0-9],[A-P] & [Q-Z]

$\checkmark$	Enter
$\langle \times \rangle$	Backspace
x	Cancel
Π.	Space

Shift (Next Character upper case)

You have now "Logged In"

# **TO CHANGE YOUR PASSWORD**

## Log in as described above

## Example- we will log in as "Operator"



Press EDIT PASSWORDS



## Press CHANGE Your PASSWORD

We will change password to 123456



Touch the PASSWORD bar



Key in the required PASSWORD. Then Press  $[\checkmark]$  (Enter)

Confirm the new password when asked Then Press  $[\checkmark]$  (Enter)

Press

2 times for the Main Menu

# TO CHANGE or ENTER USER NAME

SUPERVISORS SITE ENGINEERS ASTELL ENGINEERS DEVELOPERS

The Passwords and Names for all levels of users are added and edited in the same way ;-

You can ONLY change the Security Settings of a user who is at a lower level of access than you are,

SUPERVISORS can change OPERATOR codes

**SITE ENGINEERS** can change SUPERVISORS & OPERATOR codes

**ASTELL ENGINEERS** can change the SITE -ENGINEERS , SUPERVISORS & OPERATOR codes

**DEVELOPERS** can change all codes

Log In as a SUPERVISOR using a Supervisor password.



We will ADD an Operator Name ;- David



Astell	OPER	ATOR/USERS	20 7 2009 15:17:47
1	*****	OPERATOR	
2	*****	alan	
3	*****	Brian	
4	****	charles	
5	****		
6	404040404	$\sim$	
7	tototototototototototototototototototo	1 Contraction of the second se	
8	tokokokok		
9	****		
10	*****		
11	*****		
12	*****		
13	*****		
14	*****		
15	*****		
16	+okokokokok		
17	****		
18	<b>totototot</b>		
19	***		10007
20	*****		

Touch the screen

OPERATOR	<u> </u>	1
alan		
Brian		i i i i i i i i i i i i i i i i i i i
charles	1	
$\sim$		ì
	1	
		1
	1	1
		~
		Q2





Astell	Pioneers in Sterilization Technology	14 7 2009 13:22:11
	EDIT USER NAME	
5	<b>7</b>	

## Type the Name - eg David



Then Press ✓ [Enter]

The keypad covers 3 ranges of characters, selected by the "TAB" keys [0-9],[A-P] & [Q-Z]

- ✓ Enter
- ⊲ Backspace
- × Cancel
- □. Space
- **û**Shift ( Next Character upper case )



Enter the new Password for that user

Confirm the new password when asked Then Press  $[\checkmark]$  (Enter)



for the Main Menu

## Notes-

- A Multiple Users Can NOT have the same passwords
- B If you enter the wrong password the system will skip back to the previous menu.

**SELECTING A PROGRAM** 

(note temperatures and times may vary from those examples shown here)



Press "CYCLE SELECT" button

This will take you to a screen where you can select any one of the available programs.



Touch on the name of the selected Cycle (Here we will assume "INSTRUMENTS")

Note that the no. and type of program cycles available depends on the machine specification-

The display changes to show that a CYCLE has been selected and loaded



to show **Cycle Selected** 

loaded .

(Press To Change The Cycle Selection)

## **CHANGE CYCLE**

If you wish to select another Cycle press the Button



Then select a different cycle

# WARNING!

The NEXT press on the Button



Will START the Cycle!!



## **STARTING A CYCLE**

The Chamber Closure Door /Cover must be closed and locked

Select the chosen Program Cycle, as above

Press button to START cycle



#### **DELAYED START OPTION**

IF DELAYED START is NOT SELECTED in "Settings" . the Cycle Starts immediately

# SEE NEXT PAGE



For each of the Time Or Date Figures You Wish To Change ;-

Touch the Figure on the screen.

Eg To change the DAY

DAY :	20	$\sim$
MONTH :	7	Z
YEAR :	2009	
HOUR :	18	
MINUTE :	17	



Type the value you want using the numeric keys Then Press ✓ [Enter] When you are happy with the Date and Time shown Press the Button To save the changes.



PRESSURE 1000 mBar	CHAMBE	R 25.4°C	CYCLE COUNTER
PRESSURE 1000 mBar STAGE TIME 0:00:00			CYCLE TIME 0:15:02
DOOR CLOSED READY TO START	PRESSU	RE <mark>1000 mBar</mark>	STAGE TIME 0:00:00
boon decises news into smart		LOSED READY TO	START

When the elapsed time is up, the system will go directly to **START.** 

## Safety Note

If anything happens that could affect the safety of the unit it will exit the Delay Start Countdown automatically, including in the case of power failure

#### IMMEDIATE MANUAL START

Press the Start button



## CANCEL DELAYED START

- Press Select STAGE JUMP CONTROL
- 3 Login with your password etc
- 4 use **↑** & **↓** ;-

1

2

#### To START select Stage 1

Το CA	NCEL se	JUMP 1 2 HE lect CC	TO STAGE FREE STEAMING AT TO STERILISE OOLING – stage 4
		3 4 5	STERILISE COOLING COMPLETE
5	Press	$\checkmark$	

# STARTING CYCLE (Delayed Start Off)

The Chamber Closure Door /Cover must be closed and locked

Select the chosen Cycle, as above



Press button to START cycle



For CLASSIC Manual-Fill models the display goes to HEATING STAGE-

(disregard the Charging with water stage)

#### For AUTOFILL models ;-

System goes to "CHARGING WITH WATER" Water is admitted to the chamber.



"CYCLE TIME" ( shown above as 00:XX:XX.X) will start to count the elapsed cycle time

This continues until the water reaches the sensor in the chamber.

Then the system begins the HEATING stages



Information On the screen ;-

## HOLD TIME MM:SS

This is the FREESTEAM/AIRPURGE TIME Example here is 5.0 minutes

## SET PRESSURE mBar

Maximum pressure allowed during the airpurge period. Under certain conditions the pressure can build up and this will affect the purging efficiency. The system prevents this .

## SET POINT TEMP C

This is the Chamber temperature at which the the Air Purge Period will start timing.

## STAGE TIME 00:YY:YY

The time represented in this example by YY:YY etc is the elapsed duration of this stage. This will count up during the stage

## **CHAMBER TEMP**

This will rise towards 95-105C

## **AIR PURGE STARTS**



The Air Purge STAGE TIME will count up to the set hold time. The CHAMBER TEMPERATURE will rise from 95C to typically 101-105C approx When the AIRPURGE TIME is completed the system goes to **HEAT TO STERILISE** 



Information On the screen ;-

## STABILISATION TIME MM:SS.S

This is the time period allowed for the system to "STABILISE" before the Sterilise stage starts.

#### **CHAMBER TEMP**

This will rise towards The Sterilisation set temperature

#### **CHAMBER PRESSURE**

This may rise in line with the temperature rise

# **STERILISE STAGES**

# During HEAT TO STERILISE the STERILISE temperature is reached . The STABILISATION TIME begins



Above shows 21 secs into 1 min stabilise time

## STERILISE TEMP °C

#### STAGE TIME 00:YY:YY.Y

The time represented in this example by YY:YY etc is the elapsed duration of this stage. This will count up during the stage until the STABILISE time is reached then the next stage will begin -*STERILISATION* 

## STERILISE STAGE STARTS



## STERILISE TEMPERATURE °C

This is the temperature at which the Chamber will be controlled through the Sterilise Stage .

## STERILISATION TIME MM:SS.S

This is the time period the system to hold at the Sterilise Temperature.

## STAGE TIME 00:YY:YY.Y

The time represented in this example by YY:YY etc is the elapsed duration of this sterilisation stage. This will count up during the stage until the STERILISE time is reached

Example here "13 seconds" after the start of stage

## **COOLING STAGES**

At the end of the STERILISE TIME the behaviour of the system depends upon the type of cycle that is running.

## Note that CLASSIC models can only run cycles that do NOT have Drying or the fast venting of water and steam.

Cycles with Drying – eg Instruments, Glassware , vent the water quickly.

Fluids Cycles have a longer cooling period

The example below is an INSTRUMENT CYCLE with DRYING,-

## COOLING



When the pressure drops to typically 1030 mBar, the system goes to VENTING WATER , or EQUALISING

### VENTING WATER



#### COOLING TIME

This is the MINIMUM time period allowed for the system to COOL before the NEXT STAGE. This is a safety precaution to ensure that some

cooling takes place if this stage is skipped.

#### OVERRIDE TIME

This is the MAXIMUM time period allowed for the stage- if exceeded it will cause a FAULT .

## COOLING TEMPERATURE °C \*\*

(Dry Cycles disregard this setting) This is the COOLING LOCK RELEASE TEMPERATURE – (may be referred to elsewhere also as the PROGRAMMABLE COOLING LOCK TEMP. to differentiate between this and the Cooling Lock thermostat setting) Fluids/Media Loads only

#### STAGE TIME 00:YY:YY.Y

The time represented in this example by YY:YY etc is the elapsed duration of this stage. This will count up during the stage until the VENTING WATER ends then the next stage will begin.

\*\* The System must cool down to AT LEAST this Temperature before the COMPLETE stage can be reached & door can be opened.

The next stage is **EQUALISING** which allows a period of time for the pressures to equalise between inside and outside to ease the opening of the door.



Final stage is "CYCLECOMPLETE"

If the cycle has completed correctly & no faults have occurred

# **CYCLE COMPLETE -- PASSED**



#### Press the DOOR button.

The LOCKING BOLT withdraws Releasing the door.....

ROTATE the DOOR HANDLE & OPEN THE DOOR

If you do not open the door, After approx 10 Seconds the door will Re-Lock itself



# 25 **CYCLE COMPLETE -- -FAILED** If the cycle has failed for some reason the final stage is "CYCLE COMPLETE -- -FAILED" 10:46:58 Pioneers in Sterilization Technology 18. 3.2009 1 Instruments 121°C CHAMBER 75.8°C CYCLE COUNTER CYCLE TIME 0:35:28 STAGE TIME 0:00:00 995 mBar PRESSURE DOOR CLOSED READY TO START CYCLE COMPLETE - FAILED 中 Press the DOOR button. The LOCKING BOLT withdraws Releasing the door..... ROTATE the DOOR HANDLE & OPEN THE DOOR If you have not opened the door, After approx 10 Seconds the door will Re-Lock itself The STERILISE CYCLE is now Complete. BUT you will have to sort out the reason for the cycle Failure. Press the ALARM button to go to alarms page so you can investigate, then correct & reset the alerm

## **IS THE LOAD SAFE??**

After a failed cycle, you can carefully unload the chamber but a microbiological assessment is needed before use of the load ;- You will need to juddge whether the load has undergone sufficient processing to be sterilised enough to be safe or satisfactory to use.

## **DRYING PERIOD**

# For an INSTRUMENT (or Glassware) load with DRYING set to ON;

Then the DRYING STAGE is performed with the Door open – after the cycle has completed

When you have opened the door the system then allows you to choose whether or not to carry on with a timed period of Drying



Stage continues with a timed drying period.

1 Instrumen	ts 121°C	ology 18.3.2009
CHAMBER	75.8°C	CYCLE COUNTER
		CYCLE TIME 0:00:46
PRESSURE	983 mBar	STAGE TIME 0:00:11
DRYING		
HOLD TIME	5 MINUTES	ØSeconds
TEMPERATURE LIMIT	80.0°C	
COMPLETE DRY CYCLE		
V X		

### Note ;-

The DOOR must be kept OPEN during Drying. Open by 100 mm is best but fully open is OK.

# MANUALLY JUMP STAGES

At any point during the cycle you can press the Button



#### This will take you to the MAIN MENU



Press the STAGE JUMP button.

You will now need to LOGIN with your User Name and password as described earlier



Answer the ARE YOU SURE? Question

# **STAGE JUMP & SECURITY LEVELS**

- The STAGE JUMP facility is not available to the OPERATOR LEVEL
- The facilities are restricted for other users depending on the Secutity level.
- This is because there are some jumps that could be hazardous.
- ASTELL Engineer level can jump all ways.
- NOTE Some stage changes will result in a "failed" cycle.

## MANUALLY STOP CYCLE





Answer ARE YOU SURE?

This will change the stage & THE RESULT DEPENDS ON THE SELECTED PROGRAM TYPE

- Fluid loads WILL COOL down ... and eventually cool to COMPLETE. (WITH FAILED CYCLE)
- Drying Types loads WILL omit any cooling, then vent the water and once pressure has gone, go to COMPLETE. (WITH FAILED CYCLE)

Note- The door cannot be opened until COMPLETE ,when cooling has finished.

## **NOTES ON CYCLE TYPES**

## **INSTRUMENT CYCLES**

The Instrument Cycles are for sterilising Metal or heat-proof Solid Items Like Surgical Instruments or Metal Dishes.

#### They must NOT be used for anything containing Fluids .

The cycle is not guaranteed as suitable for sterilizing WRAPPED INSTRUMENTS because there is no Vacuum stage to give optimum drying.

## **DRY DISCARD CYCLE**

This is intended for sterilization of contaminated items such as glassware, petri dishes, sharps, test tubes etc, where the majority of the load is solid, with just a small liquid part, eg agar media on petri dishes. **DO NOT** use for large volumes of liquids.

## **GLASSWARE CYCLES**

The Glassware Cycles are for sterilising EMPTY glass, metal or similar containers.

They must NOT be used for anything containing Fluids .

Note-

- Dry Discard, Instrument and Glassware Cycles on Autofill models vent the water as soon as possible with the chamber hot to give improved drying of the load
- The Drying Stage is only available for Instrument and Glassware loads.

## **MEDIA CYCLES**

The Media cycle and the INSTRUMENT CYCLE differ as follows;-

- The Media Load needs allowance to be made in the CYCLE SETTINGS for the large Thermal mass of the Media load which will make heating to sterilise much slower and will probably need adjustment to the sterilise settings to obtain best performance.
- If available LOAD SENSED TIMING will automatically compensate for this load heat-up delay.
- After the Sterilise period, the system cools down with the chamber sealed, until there is just sufficient pressure left to push the water out of the chamber. This is normally 0.3Bar above ambient. (1300 mB display). This is to reduce boiling over in the load.

 The Cooling locks both operate to prevent opening the chamber until the temperature has fallen to the set safe temperature and it is safe to remove the Liquid loads

## **FLUID DISCARD CYCLE**

This is intended for sterilization of contaminated Fluid loads such as liquid filled containers, petri dishes with large media content, etc.

You may need to use special containers for thesesee the Machine manual for details

NOTE – "CLASSIC MODELS" "CLASSIC" MODELS DO NOT HAVE DRYING , INSTRUMENT or GLASWARE CYCLES.

FOR CLASSIC MODELS , ALL CYCLES ARE THE SAME AS THE FLUIDS or MEDIA TYPE ( Drying is not available)

# HOLDWARM

#### HOLDWARM

This is an ASTELL special feature that keeps the chamber temperature WARM at a selected level, after the Cycle has completed to avoid setting and keep the load liquid.

If a MEDIA load is not immediately required for use it may be left for some time in the chamber and HOLDWARM will prevent it cooling to the point where the Media SETS and becomes unusable.

**HOLDWARM** may be selected as on / off in the CYCLE SETTINGS COOLING Stage for any FLUIDS or MEDIA cycle. ( COOLING 1 must be on)

The **HOLDWARM TEMPERATURE** is set in CYCLE SETTINGS COOLING Stage - Typically this is 50 or 55C, just hot enough to maintain the media in a melted condition for pouring but not too hot to handle, or to cause degradation of the media.

The system performs the same sequence of actions as for a standard MEDIA/FLUIDS cycle until just before COMPLETE;-

When all the parameters are met that are satisfied to normally go to "COMPLETE", the next stage changes and instead of going to "COMPLETE", the stage is "HOLDWARM" which continues until stopped by the operator.

During HOLDWARM, initially the chamber continues to cool, with the load, just as before. When the temperature that has been set for "HOLDWARM" is reached, the system uses the internal heater, which operates to warm the water in the chamber. This maintains the chamber temperature around the Holdwarm temperature.

This can be maintained for quite long periods- up to 24 hours, although this is unlikely to be necessary in practice and can cause quality problems with the media itself.

#### NOTE 1

IF HOLDWARM is selected the water is NOT blown out of the chamber during COOLING.

## NOTE2

This may also be useful if for a particular cycle if you do not wish to vent the water from the chamber.

Just set HOLDWARM to ON, & open when ready & it has completed

## **SAFETY VALVE TEST CYCLE**

## **SELECT A SAFETY VALVE TEST**

THIS IS A SPECIAL CYCLE DESIGNED FOR TESTING THE SAFETY VALVE. AND TO FACILITATE CALIBRATION

SHORT VERSION OF THESE INSTRUCTIONS IS AT THE BEGINNING OF THE MANUAL

Press Button for MAIN MENU



On the MAIN SETTINGS MENU ;-



SELECT SETTINGS - The Password screen opens

OPERATOR alan Brian	Astell	Pioneers in Sterilization Technology	20 7 2009 14:45:18
alan Brian	OPERATOR		
Brian	alan		
	Brian		
charles	charles		
			N N





Astell PLEASE ENTER PASSWORD

## **Enter Site Engineer password**



## SELECT "EDIT MACHINE SETTING"



SELECT "Safety TEST" (The Background Turns Green)

TOUCH arrow 3 tlmes (Return To Main Menu) Þ

CLOSE & LOCK DOOR

Select "SITE ENGINEER

## Starting a Safety Valve Test

## IMPORTANT \* THE MACHINE MUST BE ATTENDED AT ALL TIMESS UNTIL THE TEST IS COMPLETED.



## **TOUCH START ICON**



# SELECT "TEST CYCLE" ON CYCLE MENU



TOUCH START Button

TEST CYCLE BEGINS.....

#### The chamber will heat up, to 121C





Press Button

The chamber will continue to heat above 134C.

The chamber design pressure limitation means that the pressure must not exceed Bar(abs)

The Pressure will rise. At a pressure of between 3.64 and 3.88 Bar(abs) the safety valve must operate.

#### SAFETY VALVE OPERATES

This will show as a burst of steam from the safety valve outlet, or on smaller models there may be no actual steam burst, but instead a steady flow of steam out of the safety valve.

Observe this carefully to check it takes place

The purpose of this is to prove that the Safety Valve opening has been achieved so that we can be sure that it would do so correctly in the event of a serious problem.

# When you are satisfied the safety valve has operated

Press Button Safety-Valve- Test- Complete



The system will go to the COOLING stage and cool down normally.

When it reaches "Complete" you may open door

This completes the Safety Valve Test

# IMPORTANT

IF THE SAFETY VALVE DOES NOT OPERATE DURING THE TEST AT THE STATED PRESSURE THE MACHINE SHOULD NOT BE USED UNTIL IT HAS BEEN CHECKED AND ADJUSTED BY A QUALIFIED ENGINEER

#### LOAD - SENSED TIMING

Note ;- LOAD SENSED TIMING is an optional extra that may be installed on the machine- If the required extra parts are not installed then this option cannot be used.

( It can be retro-fitted to a machine on site if required. )

All Steriliser loads have "Thermal Mass". This means that the load will ALWAYS heat up more slowly than the actual Steriliser chamber and display. If allowances are not made for this in the sterilise program profile, the load will not be subject to correct sterilizing conditions, ie it will be exposed to the sterilise temperature for too short a time. Load Sensed Timing avoids this problem.

## **INSTRUMENT LOADS**

Most "Instrument" loads are of fairly large surfacearea/mass ratio, and will heat up quickly following the chamber temperature closely without the need for load sensed timing.

#### **BOTTLED-FLUID LOADS (Liquids)**

These are of high mass , small area and suffer from the slower heat-up . Load Sensed Timing is entirely suitable, and extremely effective in reducing this problem.

#### WASTE DESTRUCT LOADS

These are best used Without Load Sensed Timing. The Profile should provide sufficient tolerance to ensure the cycle specification is achieved.

#### SELECTING

If installed and configured, then Load sensed Timing may be selected for each Program.

A suitable LOAD TEMPERATURE ( threshold temperature ) is set in the STERILISE STAGE PARAMETERS (in addition to the Sterilise Temp. ) Once the chamber has achieved the Steriklising Temperature but the Load is still heating to this temperature, then this Threshold is compared with the Temperature measured by the LOAD SENSING PROBE ,( the flexible wandering probe placed within the load ).

When the "Sensed" temperature in the load rises above the Threshold the Sterilising Stage Timer System is started and the Display changes to show "STERILISING".

If load sensed Timing is not required set the "LOAD TEMPERATURE" to 0.0C

#### IMPORTANT

If correctly positioned the LOAD SENSING PROBE detects the actual temperature within the LOAD and so will ensure that the load experiences the set conditions for the set time, There is no need to compromise or extend times to allow for the load to catch-up in temperature with the chamber.

### SPECIAL LOAD SENSORS

The Load sensor provided with this system is normally a 6mm Dia flexible type thermocouple but some models use PT100 sensors instead This may be too stiff or solid to use for some delicate loads.

In this case Alternative probes May be available. Please consult Service dept. or your dealer

## **COOLING LOCKS & LOAD SENSING**

Setting a program Cycle up with LOAD SENSED TIMING in a LIQUID or WASTE DESTRUCT program also implements a LOAD SENSED COOLING LOCK function for that program . In this case the COOLING LOCK senses and acts upon the actual Load temperature

The Cooling Stages operate normally but the "COMPLETE" stage cannot be reached until the load, and hence the LOAD SENSING PROBE has cooled to a temperature below the COOLING LOCK TEMPERATURE set for that Program.

## LOAD TEMPERATURE DISPLAY

For any Cycle where you require Load Sensed Timing, selected by setting an appropriate LOAD TEMPERATURE in the Sterilise Stage of "Cycle Settings" (Note that the Load Sensor input must be properly configured for use- See Engineer Manual for details.)

The Load Temperature is then displayed together with Chamber temperature and Pressure.

15141124 Pione 5 Media	ers in Sterilization Techno a 121°C	ology <b>3.8.200</b> 9
CHAMBER	116.9°C	
LOAD	76.7°C	2
	1	0:01:57
PRESSURE	1835 mBar	STAGE TIME 0:01:16
HEAT TO ST	FERILISE	
STABILISATION T	IMER 1 MINUTES	ØSeconds
7		

# LOAD TEMP displayed , if LOAD SENSING selected in Program

Note;- if a cycle without load sensed timing is selected after one which used load sensed timing then the "LOAD" display may not disappear until the cycle has started – and visa versa .

# **SETTING AND MODIFYING CYCLES**

# MODIFYING A CYCLE

- Each cycle comprises a number of stages
  - Charging with water (Not Classic models)
  - Heating (to generate steam)
  - Airpurge period
  - Heating to Sterilise
  - Sterilise stabilization
  - Sterilise Timed period
  - Cooling-Includes Cooling, Venting water, Optional Holdwarm etc
  - Equalise & Complete

## A typical graph of a cycle is shown below;-





Note- you may not see all the options shown above.



Press the FILE button to view available cycles

Astell EDIT CYCLE	27 7 2009 13:47:01
2 Glassware Safety lest Cycle 1 Instruments	
3 Dry Discard 4 Fluid Discard 5 Media	û
	û
🖻 🖬 🗙 🗉	÷ 🗘

Use the **1** buttons to move the pointer to the chosen Cycle. (here "Glassware")

Then press the **FILE OPEN** button to open that cycle ..





Touch the centre of the screen

This opens the PARAMETERS for that stage



We can now enter or edit the parameters for The Heatup & Freesteam Stage

Touch the NUMBER of the parameter to change (ie above for MONITOR TIME touch the "60min")

The Numeric keyboard appears



Type the Parameter Value you want

Then press [ ✓ ]

Note - for Hrs, Mins and seconds, you enter each part separately

Press to leave the parameter screen



NOTE- actual parameters may vary- please see separate section detailing parameter values.





You set each of these parameters, using the Numeric Pad, just as for the FREESTEAM stage

#### The Procedure is the same for all parameters;-

- Use arrows to select stage
- Touch centre of screen
- Select parameter and touch it to edit it
- Type in value
- Press ✓ and go to next stage

## **SAVING YOUR CHANGES**

To Save the modified values you need first to press The FILE SYSTEM button;-





Confirm that this is the "CYCLE NAME" you want, or you can edit it or create a new name if you wish

Then press the "SAVE" button



A Thermometer bar shows on screen as the system saves the data

(See further on in this section)

# **STAGE PARAMETER DETAILS**

## AIRPURGE STAGE PARAMETERS

# For typical and example values see the SETTINGS TABLE later in this manual

#### **Monitor Time**

This is the maximum time that would be allowed in this stage if something went wrong with the timing, before a FAULT is triggered. Must be greater than the **HOLD TIME**.

## Hold Time

This is the actual FREESTEAM/AIRPURGE TIME

Practical values range from 3 to 35 minutes depending on the model and the load

## **Print Interval**

IF PRINTER FITTED this is the interval at which the printer will print data. Typically 1.0 min

#### Set Pressure

This is the maximum pressure during the airpurge period. Under certain conditions the pressure can build up and this will affect the purging efficiency. Recommended level 1200 mBar.

#### Set Point Temperature

This is the Chamber temperature at which the Heating will continue but the Air Purge Period stage will start timing. Recommended level 95-97C. ( at high altitudes should be 90-92C)

## HEAT TO STERILISE STAGE PARAMETERS

#### **Monitor Time**

This is the maximum in stage before a FAULT is triggered. Must be greater than the Stabilisation Time .

#### Print Interval – see above

#### **Stabilisation Time**

This is the DELAY time before the Sterilise Stage begins. Typically 1 Min but may be longer depending on the model and the load.

## **STERILISING – STAGE PARAMETERS**

#### **Monitor Time**

This is the maximum in stage before a FAULT is triggered. Must be greater than the Stabilisation Time .

## Print Interval - see above

#### **Sterilisation Time**

This is the time for the Sterilise Period. Value depends upon Temperature , the load and required sterilisation conditions.

#### **Sterilisation Temperature**

This is the temperature for the Sterilise Period. Value depends upon, the load and required sterilisation conditions.

## TEMPERATURE

Drain /Chamber----- xx.xCLoad----- yy.yC( load only shows if Load Sensed Probe is available)

These are the temperature(s) that the system must reach before the sterilize timed period will start.

36

## **COOLING – STAGE PARAMETERS**

Note ;- the main differences between the cycle types are in what happens during the COOLING stage- so there are a lot of parameters shown on 2 pages.

## **Monitor Time**

This is the maximum in stage before a FAULT is triggered. (greater than the Stabilisation Time )

## Print Interval - see above

## **Cooling Pump Delay**

This is the delay time before the Assisted Cooling Fan or Water cool starts Typ 1.0 min

#### **Cooling Time**

This is a safety feature.

This is the MINIMUM time that the cooling system must undergo before the door could be opened. If the Interlocks fail or are overridden this will prevent opening until this time is up. Minimum 10 min. *Ideally set by commissioning* 

engineer when typical cooling time is known.

#### **Cooling Override Time**

This is the MAXIMUM cooling time that should be required for that load. After this time is up the door can be opened by use of a password..

#### **Cooling Pressure (1)**

This is the pressure at which the system blows out water during the FLUIDS/Media Cycles.

## Standard value 1300 mBar \*

#### **Cooling Temperature** ° C

This is effectively the "PROGRAMMABLE COOLING LOCK RELEASE TEMPERATURE". – see Cooling Locks section. Normally 80C or below & normally set using a digital thermometer or by trial and error. If Load Sensed Timing not in use then this is Ideally set by commissioning engineer when typical cooling behaviour of load is known.

#### Cool Interlock 1 Yes/No Yes= Cooling Lock Operating No= Cooling Lock Off

Press the button

To see the next page of Parameters



## **Cooling Start temp**

This is the temp at which the Assisted cooling Fan or water cool starts. It is set to a temperature compronmise between extending the overall cooling time and reducing the boiling over in the load. Typ. 110C which may cause some boiling over.

## **Cool Pressure 2**

This is the pressure at which the system blows out water during the Instrument Cycles loads. Standard value 1800 mBar\* Applies to – Cool1 mode only

# Cool Pressure 3

This is the pressure at which the system detects all water has been blown out water during the Instrument Cycles loads. Standard value 1050 – 1070 mBar

## **Cooling Mode**

Cool1 Selects Cycle sequence for FLUID-MEDIA loads

Cool2 Selects Cycle sequence for INSTRUMENT/GLASSWARE loads

## Holdwarm

Applies to – Cool1 mode only Yes= Holdwarm Operating at end of cycle No = No Holdwarm at end of cycle

#### Holdwarm temperature

Applies to – Cool1 mode only Sets operating temp for holdwarm period

## **DRYING - STAGE PARAMETERS**

## (Cooling2 mode only)

## **Monitor Time**

This is the maximum in stage before a FAULT is triggered. Must be greater than the Stabilisation Time .

## **Hold Time**

This is the set Drying Time

## **Temperature Limit**

The Maximum temperature that will be allowed in the chamber during the drying stage, typ 80C

## **EQUALISE – STAGE 6**

Stage Parameters -None equalise stage has no parameters to set up

## **COMPLETE STAGE 7**

Stage Parameters - None complete stage has no parameters to set up

## Press the button

To see the Previous page of Parameters



# B TO SAVE AS A NEW CYCLE

# SAVING THE MODIFIED CYCLE

# SAVING YOUR CHANGES

Each Cycle has a name.

A You may save the cycle as one already present – ( overwrite the original ) Or

**B** You may save it as a new cycle , allocate this a new NAME and save that.

A SAVE AS THE CURRENT SELECTED CYCLE



Note- To Save the modified values you need to press The FILE SYSTEM button;-



A Thermometer bar shows on screen as the system saves the data

press The FILE SYSTEM button;-





Scroll down to a blank space on the list Then Touch the Black "TITLE BAR "

~ ~	Α		10	In I	1
0-9	~	D			×
A-P	Е	F	G	Н	$\otimes$
Q-Z	1	J	K	L	$\checkmark$
	M	N	0	Ρ	

Key in the new TITLE & [ ✓ ] – here "Media Special"



# 39

## **DELETE A CYCLE**

To Delete a cycle, go to the "CURRENT CYCLE" page

# CYCLES - TYPICAL PARAMETERS

# The factory settings and typical cycle settings are given in the Machine Instruction Manual



Press Delete





If you are sure you want to delete it, click on the



## **EDIT MACHINE SETTINGS**



**PRINTER** Yes/No Selects Printing Functions.

## START START / END

Selects Printing throughout cycle(START) Or Printing at END of CYCLE (End)

## CHART RECORDER

Selects auto control of a chart recorder

## BAR CODER

Selects input from a Bar Coder

## BATCH NUMBER

Selects User input of Batch Number at start

## LOAD NUMBER

Selects User input of Load Number at start

## CALIBRATION TEMPERATURE 1 CALIBRATION TEMPERATURE 2

The Safety test cycle is also used as a calibration check. These two temperatures are the cal. Test points. This cycle will stop at each and request a user input before continuing

## SET PRESSURE

This is the pressure that the machine will aim for & TRY to achieve - this will not actually be achieved since the safety valve will operate first

#### **REQ. TEST FREQUENCY**

Period between safety valve tests Max of 90 days recommended by Astell Scientific.

# SET TIME AND DATE

Astell SET DATE & T	IME	18_3_2009 09:33:49
DAY :	18	
MONTH :	3	
YEAR :	2009	
HOUR :	9	
MINUTE :	33	
SECONDS:	44	

For each of the Time Or Date Figures You Wish To Change ;-

Touch the Figure on the screen. – eg [18]

Type in new figures on the Numeric Keyboard Then press  $\checkmark$ 

When you are happy with the Date and Time shown Press the Time Set Button To save the changes.



## These are restricted to Engineer Levels. Machine calibration details are in the CALIBRATION AND ENGINEERING MANUAL

# **CUSTOMER DETAILS**

This holds CUSTOMER DETAILS There are several lines for Name Address, Machine Type, Serial No etc

## **CONTACT DETAILS-**

ie Supplier or Astell Scientific Factory address.

To edit any of these touch the line , then enter the characters using the alphanumeric keypad as already described



These are restricted to Engineer Levels.

## Machine SYSTEM SETTINGS details are in the ENGINEERING MANUAL

# USB BACKUP - RESTORE



This allows the Backup of the Cycles, calibration, & all other settings onto a USB Flash Disk

PRESS

BACKUP

RESTORE

CFGdata backs up the configuration Cycletypes backs up the cycle type settings Customercycles backs up the cycle parameters LOG backs up the onboard Logging

# PRESS

CFGdata restores the configuration Cycletypes restores the cycle type settings Customercycles restores the cycle parameters LOG restores the onboard Logging

Warning- RESTORE will overwrite any existing data which cannot then be retrieved.

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## Safety VALVE test

The SAFETY VALVE TEST button toggles

between Red and Green;-

- Red -- Normal ( no Test Program)
- Green Safety Valve Test programme available

When "Yes"/ Green safety valve test programme shows on the SELECT CYCLE list of programmes

Astell	SELECT	CYCLE	26 7 2009 16:46:30
Safety	Test Cycl	е	
1 Instru	iments		
2 Glass	ware		
3 Dry D	iscard		
	Û	₽	¢

# I/O OVERRIDE

#### **Engineer Levels Only**

This facility allows an engineer to control the outputs manually. This could be hazardous and should only be done by a qualified person. Please refer to Engineering manual.

# PRINTING



# PRINT CURRENT CYCLE

This will print out the most recent Cycle

## **PRINT MACHINE SETUP**

This will print out complete machine setup- you may need to print this for Service Requests.

### LOG HISTORY PRINTING

Prints saved Cycle Records

CURRENT	CYCLE LOG LOADED	1	5:46:04
Û	70 - ue jul 21 13:29:36 2009 69 - ue jul 21 12:57:12 2009 68 - ue jul 21 12:57:12 2009 67 - ue jul 21 12:31:35 2009 66 - ue jul 21 12:31:35 2009 66 - ue jul 21 12:13:47 2009 66 - ue jul 21 09:45:01 2009 66 - ue jul 10 09:59:35 2009	슙	LogDate
Ŷ	63 - Wed Jul 8 08:59:35 2009 60 - Thu Jun 25 16:07:21 2009 59 - Thu Jun 25 15:46:58 2009 58 - Thu Jun 25 15:45:14 2009 57 - Thu Jun 25 15:35:14 2009 55 - Thu Jun 25 15:35:24 2009 53 - Thu Jun 25 08:14:37 2009	₽	
Ê	#0		¢

Use The Coarse and Fine arrow buttons To select the saved Record.

상 압

Press File Open Button to load the record

Press the PRINT# button to print The selected record



The Log-Dates button will re-organise the list after restore operations ,etc



#### Printing..Cont.

#### PRINTER INDEPENDANCE

Please note that the fitted printer is not independent & has no separate sensors or intelligence – it records from the control sensors and prints the same data as available on the display..

If your QA requirements dictate that the printer gives a totally independent readout and record of measurements Please consult your Agent or Astell Scientific. A range of independent printing solutions are available that work together with these models.

# PRINTOUT

Printout is automatic whenever it is set in the Customer Cycle etc

## START / END PRINTING selection

(in "Machine settings")

Cycle Progress is printed automatically as the cycle runs if the PRINTING function in Machine settings is set to **[START]** 

If this is set to **[END}** the complete set of data is printed after the cycle completes.

In CUSTOMER CYCLE EDIT , for each of the CYCLE STAGES where you want Printout you select "PRINTING YES"



#### What is Printed-

All relevant events such as;-Start information, Cycle selected, Cycle details, Temperatures pressures & Times etc Cycle No, Stage, Completion details and Time etc Manual Stage Changes or operator intervention Faults if & when they occur

## **RS232** Communications Option

This provides 1-way communications only. The Controller outputs data but accepts no data or instructions from the computer system, The text output that would normally go to the printer is fed to a Comms. serial input on a computer. The data will be exactly the same as the data printed by the internal printer option. Ie; printout of programs during or after the cycle , and download of Archived programs etc. The output is plain text & is not formatted for import into a spreadsheet.

Please see Engineer manual for full details;

## Set for "Printing" as described earlier

The Serial port on the computer is set to 9600 Baud 8 Bits No Parity 1 Stop Bit & the Connection lead is a standard 9 pin D type Serial Lead ( Null Modem ),

On models with the Printer Option fitted as well as RS232 comms. normally there is a small Toggle Switch on the machine - labelled " Printer" & "RS232". This routes the signal to the RS232 or the Printer. You cannot have both at the same time.

## TO CAPTURE THE DATA

Start Hyperterminal, and create a connection as specified above. Save this connection with a suitable name for future use. It would be useful to copy this to the Desktop. In Windows xp these are stored in *"StartMenu\Programs\HyperTerminal Private Edition\HyperTerminal Connections"* Open Hyperterminal with the Chosen connection.

- a on Transfer menu, select Capture Text
- **b** Enter the filename to save the **data** file.
- c Select [START] to start capture process.

The PC screen goes back to the hyperterminal window and you can see the text coming in. when you have finished with the process of downloading text, Go to Transfer menu, select Capture Text and then [STOP] to end capture.

d The file will then be available

**e** You may select Start and leave the system running with Hyperterminal in the background as only the data normally printed during running cycles will be saved to the file so there is no risk of file sizes running out of control.

## MAIN SETTINGS MENU



This section allows you to inspect the inputs and outputs for service use. These are normally Engineer level items however You may be asked to look at and report on these in the event of a service request.



This shows the digital inputs to the system.

Press

<sup>1</sup>()-



This shows the digital Outputs from the system.



for analog signals



This shows the current measured values .

# SYSTEM INFO



# **Screen Contrast**

On System Info Page (see above)



Press + or- to change the screen contrast



## Select language by pressing the Flag button.

Example shows French and English, - other languages may be available.

## **OVERHEAT FAULT**

IF there is a water level problem with water in the chamber or in some cases if a valve sticks open, blowing out the water, & the system does Boil Dry then the heater will be exposed and **the Overtemperature Thermostat** will start to operate.

This will take over control and shut down the heater until the temperature falls ,after some minutes and then it will come back on..

This will cause the temperature to vary very widely up and down as the heater cuts in & out and the Pressure will not match the Temperature (- eg the Chamber might be above 100C but the pressure might be zero or much lower than normal )

Possible indications include repeated Fault Alarms

#### "ALARM- Sterilise Over Temp "

If this is the case then Service attention will be required to locate the cause.

## FAULTS AND ALARMS

If any of the functions monitored for faults are triggered then the system will ensure that a safe condition is generated.

This may stop the cycle early and then go to "Complete - failed "

## The ALARM button FLASHES RED

Press the ALARM button For the ALARM LIST



#### Login with your Username and Password

The example below is for the case where the most recent fault is the door is detected as **Not Bolted** ( during a cycle.)



## Notes

When the source of the Fault is gone & you press the ACK button , the button changes from Flashing to continuous GREY



If the button will not change to GREY you have not removed the source of the alarm!

## **STERILISATION CYCLES NOTES & Advice**

## **INSTRUMENT & GLASS CYCLES**

## AVAILABLE ONLY ON "AUTOFILL" MODELS WITH "INSTRUMENT" CYCLES& with DRYING

**INSTRUMENT CYCLE** Suitable for processing Surgical or Dissection Instruments, Scissors, forceps and utensils that are suitable for Steam Sterilisation. Also suitable for small solid items, grilles, parts of Lab Cages, small trays, and solid objects.

**GLASSWARE CYCLE** suitable for sterilizing all types of empty glassware.

Note:- During Drying the items are subjected to Dry Heat at 130C or above. If the item cannot withstand this set Drying Time to ZERO.

## LOADING

Please see general comments in Loading Section.

A variety of Trays and Racks are available for this machine.

With the Instrument-Tray Rack in place standard instrument trays (less lids) can be fitted into the purpose-designed runners. Polypropylene and Aluminium trays are available. It is desirable to use trays with perforated bases for optimal drying performance.

Place the instruments in the trays and fit the trays into the rack.

#### **CYCLE PARAMETERS**

Typical cycles use the following settings;-

#### AIRPURGE

Set the Airpurge period to 3 – 8 minutes .. LOAD SENSED TIMING

Option- see Load Sensed Timing

#### Sterilise Time ;

Set the Sterilise time to the desired exposure time eg 3min, 15 min etc

#### Sterilise Temperature;

Set to the desired sterilise temperature .

## eg 121C, 123C, 135C etc

COOLING

Cooling mode is automatic

# COOLING LOCK

this is Disabled for instrument loads.

#### DRYING

Set the drying time to produce the desired dryness in the finished load. Typically this will be 15 - 30 minutes

## INSTRUMENT LOADS AND "HEATING TO STERILISE"

Instrument Loads do not normally require an allowance for the time to heat-up as they follow the chamber temperature closely due to the large heated area..

In this case the Sterilise time may be set to the same as or a little longer than the desired "Sterilise Time" without allowing significant extra time for the load to heat-up.

Where a load is more complicated , heavier, and has thicker parts with significant thermal mass such as heavy utensils or glassware, an allowance is needed for the time taken for the load to catch up with the chamber temperature. Extra time should be added to the Sterilise time to compensate for this but the actual extra time can not be calculated. It must be determined by trial and error, or by setting a long time , and monitoring the actual load with a thermocouple thermometer.

# FLUID/LIQUID and WASTE DESTRUCT CYCLES

#### FLUIDS OR LIQUID CYCLE

This is suitable for processing Media or other fluids etc in UNSEALED containers.

## WASTE DESTRUCT Cycle

This is suitable for processing laboratory waste;petri dishes, tubes, jars, bottles etc. These must be in a shallow open container and not sealed in a plastic bag.

## AIRPURGE

#### LIQUIDS ;-

On models below 80 Litres capacity Set the Airpurge period to 3-15 minutes.

#### WASTE DESTRUCT ;-

Set the Airpurge period to 10-20 minutes .. On models of 80 Litres capacity and above you may need as long as 35 minutes.

#### LOAD SENSED TIMING

Option- see Load Sensed Timing

## Sterilise Time ;

Set the Sterilise Time to the desired "exposure time". At the sterilise temp.

# Allowance For Extra Time For Load To Reach Sterilise Temp

These Loads normally require an allowance for extra time for heat-up as they suffer from high thermal inertia .If the LOAD SENSED TIMING option is not used an allowance is needed for the time taken for the load to catch up with the chamber temperature. Extra time should be added to the Sterilise time to compensate.

#### Sterilise Temperature;

Set to the desired Sterilise Temperature .

## COOLING

The COOL1 or COOL2 must be set to determine the type of cycle.

## COOLING LOCK(S)

Set to 80C for safety.-Please see SETTING UP AND COMMISSIONING SECTION

# SETTING CYCLES WITH LOADSENSE TIMING OPTION .

The Load Sensed Timing system detects the Load temperature , and automatically allows for the timelag caused by the load delay in reaching sterilise temperature.

Set up the system as described above for the system Without Load Sensing, but with the following detail changes .

In STERILISE Stage Cycle Settings;-

- a) Set the STERILISE TIME to the Actual STERILISE TIME.( no extra allowance heat up )
- b) Set the LOAD TEMPERATURE to about 1-2 C below the sterilise temperature

When the load reaches set Load Temperature the Stabilise time will begin , followed by theSterilizing Timer starting , and the cycle will proceed. ( It is not necessary to note down any value or time .)

## MEDIA HOLDWARM

If Media Holdwarm is required at the end of the cycle, then 'HOLDWARM' should be set to ON in the program..

The Holdwarm system is designed to allow sterilisation of MEDIA loads ,with a holding stage during the cooling process that maintains the temperature of the load and chamber warm enough to permit pouring of the melted media. The media will be kept warm for up to 48 Hrs . The Autoclave may be set to operate overnight with a Media Load, in the knowledge that it will contain a useable load when opened in the morning.... or later in the day

"Holdwarm" takes place between COOLING and COMPLETE

When the Complete Conditions are met as described above, if selected, the system goes instead to the **HOLDWARM** stage

## **COOLING LOCKS**

The Cooling Locks are disabled for Instrument and Glassware programs

During cooling inside the chamber, the load cools slower than the chamber temperature and gives up heat to the chamber walls. This means that the chamber will reach 80C before the load so ( unless load sensed timing is fitted + on) the cooling lock setting will need to be BELOW the temperature

It is possible to set the cooling locks in a simple way as shown below, but they are ideally set using a thermocouple (t/c) and digital thermometer with the t/c sealed inside the chamber immersed in the liquid load. This is quicker and more accurate but is normally carried out by a service or commissioning engineer requiring use of a Thermocouple entry adaptor, and details are in the Service Manual.

## To set the Cooling lock without a thermocouple, a laboratory liquids thermometer reading to 100C is required.

Load the chamber with the desired load, and make a first approximation of cooling lock temperatures . 80C is suggested for both the Programmable and Preset settings. Start the cycle and allow it to complete. <u>Very Carefully</u> remove the load, using insulating gauntlets and suitable face protection in case the load is too hot. Immediately measure the temperature of the liquid in the load container that was nearest the centre.

Record this temperature and compare it with the desired opening temperature (80C suggested ).

The measured temp. is likely to be higher than the desired temperature. Adjust the Programmable and Preset settings as required and repeat the cycle with the same load, open, measure and re-adjust if required. Continue until the desired Cooling Lock release temperature is reached.

# SETTING COOLING LOCKS with LOAD SENSED TIMING OPTION

## **COOLING LOCK TEMPERATURE**

The LOAD SENSING option automatically changes the PROGRAMMABLE COOLING LOCK to a mode which detects the Temperature of the Load itself via the LOAD SENSING PROBE, instead of sensing the temperature in the Dummy Load..

Set the COOLING LOCK TEMPERATURE to the actual Temperature of the LOAD at which the Cooling Lock is to RELEASE and allow the door to be opened. It is advisable to err on the Cooler side , for safety.

Because the lock senses the <u>actual load</u> <u>temperature</u> there is no compromise, estimation or guesswork required over the release temperature.

## STERILISE TEMPERATURE & TIME Selecting A Suitable Sterilise Temperature & Time

The U.K. Medical Research Council recommended the following time/temperature relationships for the achievement of sterilizing conditions:-

Minimum Sterilise Temperature	Maximum Sterilise Temperature	Minimum Sterilise Hold Time
134	138	3 min
126	129	10 min
121	124	15 min
115	118	30 min

Lower temperatures or shorter times may have to be used to prevent degradation of bacterial growth media. This may be adequate for culture purposes, but does may not constitute full sterilisation. The manufacturer of the media will usually specify the sterilizing temperature.

#### **Temperature Tolerance**

Please note that during sterilizing the temperature will normally cycle up and down over a range of approx +/- 0.7C around the set sterilise temperature. Where temperature is specified as "-0 +??" adjust the temperature as shown here.

Specified Settings	Recommended Program Settings
134C -0+4	135C or 136C ;
3 mins	3 mins
126C -0+3	128C
10 mins	10 mins
121C -0+3	123C or 122C
15 mins	15 mins
115C-0+3	116C
30 mins	30 mins

# SPARE PARTS AND SERVICE

When ordering spare Parts or requesting Service Assistance please have ready the SERIAL NUMBER and the MODEL NUMBER - both of these are on the RATING PLATE fixed at the rear of the machine .

# CERTIFICATION

A Certificate of Examination is supplied with every Steriliser. This meets P.E.D requirements & includes details of Chamber etc. relating to the pressure vessel, specifies the design pressure, the test pressure to which the Chamber was subjected during manufacture, and the date of the Pressure Vessel testing, which will be required by an insurance company..

Please note that this equipment comes under the requirements of the CE Pressure Equipment Directive and your machine will certainly need insurance cover and regular inspections. Most QA systems require a formal maintenance contract in place and regular calibration must be carried out.

It is a statutory requirement of the U.K. Health & Safety at Work Act and in many other countries that Sterilisers be thoroughly inspected by a competent person prior to use ( usually an Engineering Surveyor from an Insurance Company ), and at least every 14 months thereafter. (Section 35(5) of the Factories Act 1961.)

The information on the Test Certificates will be required by the Inspector, and you are advised to take good care of your Certificate.

Test certificates for Electrical safety and Calibration of the control system are supplied as standard, Full test analysis results are available to special request.

Pressure Temperature Correlation Chart

# Pressure/Temperature Calibration

This chart shows Pressure and Temperature correlation for Saturated Steam, and the Maximum/Minimum acceptable Temperature display Values for a Correlation Accuracy of +/- 2%. It applies to ASTELL Sterilisers only.

Pressure	Temperature	Temperature	- Tolerance
Bar	Deg C	Min Temp	Max temp
	5	•	·
0.65	114.51	112.22	116.80
0.70	115.40	113.09	117.71
0.75	116.28	113.95	118.61
0.80	117.14	114.80	119.48
0.85	117.96	115.60	120.32
0.90	118.80	116.42	121.18
0.95	119.63	117.24	122.02
1.00	120.42	118.01	122.83
1.037	121.00	118.58	123.42
1.05	121.21	118.79	123.63
1.10	121.96	119.52	124.40
1.15	122.73	120.28	125.18
1.25	124.18	121.70	126.66
1.30	124.90	122.40	127.40
1.35	125.59	123.08	128.10
1.40	126.28	123.75	128.81
1.45	126.96	124.42	129.50
1.50	127.62	125.07	130.17
1.55	128.26	125.69	130.83
1.60	128.89	126.31	131.47
1.65	129.51	126.92	132.10
1.70	130.13	127.53	132.73
1.75	130.75	128.14	133.37
1.77	131.00	128.38	133.62
1.80	131.37	128.74	134.00
1.85	131.96	129.32	134.60
1.90	132.54	129.90	135.19
1.95	133.13	130.47	135.79
2.00	133.69	131.02	136.36
2.05	134.25	131.57	136.94
2.10	134.82	132.12	137.52
2.15	135.36	132.65	138.07
2.20	135.88	133.16	138.60
2.25	136.43	133.70	139.16

Note:-This chart is for checking Pressure/Temperature Steam Correlation only & is appropriate for Press/ Temp. instruments specified as individually accurate to +/- 1% . It should not be used as a calibration standard for Pressure or Temperature indicators, which must be calibrated in accordance with the Manufacturer's Specifications.

