

**Astell Scientific Ltd**

19-21 Powerscroft Road  
Sidcup  
Kent  
DA14 5DT  
United Kingdom

Tel: +44 (0)20 8300 4311

Fax: +44 (0)20 8300 2247

email: [info@astell.com](mailto:info@astell.com)

Website: [astell.com](http://astell.com)

# Product Specification

**Model Ref.**

**AMA250BT**



## Astell AMA250BT – 90 litre Top Loading Autoclave –

### Full Colour Touch Screen Controller

Ideal for Liquids & Most laboratory applications, including Discard, Glassware, Laboratory Instruments etc

### Standard Features

All the following are Value - Added Features  
Included AS STANDARD

- Full Colour Touch Screen Controller
- 5 Programs
- Swiftlock rapid access safety closure
- Over temperature water cut out
- Thermocouple entry port
- Low Water Indicator
- Automatic timed air purge system
- Cool Lock Protection (fluid Cycles)
- Pressure gauge
- Vent valve
- Electro Polished Stainless Steel Pressure Vessel
- Safety Valve Testing
- On Screen Graph display
- Heaters in chamber



### Options

Integral **Data printer**  
**10 Program** Controller  
**Datalogger**  
**Load Sensed Process Timing**  
**Advanced Water Cooling**

**RS232**  
**Ethernet**  
Assisted Air **Cooling**  
**AutoFill**

### Accessories

½ Depth Stainless Steel **Basket**  
Full Depth Stainless Steel **Basket**  
½ Depth Morrison Discard **Container**  
Full Depth Morrison Discard **Container**  
**Load Support Plate**

See options & Accessory pages for full details

Overall Capacity	Chamber Diameter	Working Depth	Overall Dimensions	Operating Range
90 Litres	456mm	448mm	660x840x940 mm (wxdxh)	100 -138°C (0.2-2.4 bar)

<b>Power Requirements</b>	<b>1/3 phase 30/15A 7/10kW</b> (please specify when ordering)
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<b>Water &amp; Drainage Requirements</b>	Basic Units: Manual Fill. Units supplied with Autofill or Water Cooling: 15mm bsp; 2-6 Bar; 4L/min. Drainage: Floor level, 35mm, ideally non-manifolded, to withstand freeflowing steam
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Approx. Nett Weight:	Shipping Weight	Shipping Dimensions
160 Kg	183 Kg	110x79x120cm (wxdxh)

## Options & Accessories

The basic model quoted above is manufactured to the highest standards. It will be fully calibrated and tested prior to dispatch, and will be suitable for a wide range of sterilization procedures.

Please note however, that the following factory-fitted options are available for the above model. For certain applications, these options can provide increased flexibility and improved performance. If purchased with the autoclave, there would be no additional freight/FOB costs incurred.

**AAP800 Multi Program Controller:** A multi-program controller which allows storage of up to 10 programs for added speed and versatility in sterilization procedures. Additional features on this option include a digital pressure display and a "menu" allowing the user to display and cross check all programs at the press of a button. If the optional data printer (AAR100) is fitted, this may be printed out.

### Data Monitoring & Recording Options

**AAR100 Integral Data Printer:** This printer provides a permanent and traceable record of: "Time "Temperature "Pressure "Batch No. "Cycle Name. There is also provision for operator signature; the printer also provides reports of cycle settings and servicing information.

**AAR120 RS232 Interface:** This allows cycle progress to be monitored on an external computer equipped with suitable software.

**AAR122 Ethernet Interface:** Via VNC Viewer. Allows visual display of autoclave touch screen

### Important option to be considered if fluids are being processed

**AAN014 Load Sensed Process Timing:** Load Sensed Process Timing allows the sterilization cycle to be controlled via the temperature achieved in the centre of the load. The operation of load sensed process timing is controlled via the 'Secure' programmer. A 'wandering' probe, situated within the chamber is inserted into the load, or load simulator, and initiates the sterilization period once the probe reaches the programmed threshold temperature. A selectable 'Profiled Overshoot Boost' speeds up the cycle and minimises over-processing of media loads.

### Cooling Options

**AAP006 Assisted Air Cooling: (Non Vacuum Models)** A powerful fan-assisted cooling system which greatly reduces cool-down time. The operation of the Assisted Air Cooling system is controlled via the 'Secure' programmer and is available on all models.

**AAP080 Advanced water cooling** Water is circulated through cooling coils in contact with chamber, resulting in rapid decrease of temperature – advanced water cooling offers substantial time saving and is ideal for the busy Laboratory.

**AAP018 AutoDrain:** This feature can be selected on any cycle and will substantially decrease the time required to cool the chamber to a temperature where the door can be safely opened, especially when used in conjunction with Water or Air Cooling. At a pre-selected pressure during the cooling phase of the cycle, the water reservoir remaining in the chamber is evacuated to the drain. As the discharge water will be approx. 100° we would highly recommend that the **AVC100, Exhaust Heat Exchange System** is ordered in conjunction with this option. AAP019 Autofill must be ordered in conjunction with AAP018 AutoDrain

### Additional Options

**AVC100 Exhaust Heat Exchange System:** An option to significantly reduce the temperature of the exhaust/waste in situations where heat resistant drains are not present. N.B. This option requires a mains water supply.

**AAP019 Autofill (Automatic Water Fill):** (Electrically Heated Models Only) The Autofill option automatically maintains adequate water level within the chamber. This is a fully automatic system comprising an internal reservoir tank which accepts mains cold water at 0.2 – 6.0 Bar pressure. The water inlet is controlled by level switching and includes an air gap to comply with water regulations. The unit is readily connected to the water supply via a 1.5m flexible hose (supplied).

**AAN009 Pulsar Free Steaming: (Non Vacuum Models)** Selected via the 'Secure' Controller, this optional feature ensure adequate air removal from 'difficult' loads. The cyclical opening and closing of the vent valve greatly increases turbulence at the Freesteaming stage. Pulsar freesteaming All non-vacuum models

**AVC005 Option For CAT III Compliance - Non Vacuum Models**

For models without vacuum, or with heaters in the chamber, the bacterial retentive filter is fitted to the exhaust line and is sited to ensure that it is sterilized each cycle

**IQ/OQ Documentation Pack**

**IQ Documentation**

Details of calibration equipment \* Order Acknowledgement \* PED (Pressure Equipment Directive) Compliance \* Declaration of Conformity \* FAT (Factory Acceptance Test) \* Drawing Schedule \* ISO 9001:2000 Certification \* Pressure vessel specification \* Door safety checks

**OQ Documentation**

Chamber temperature distribution (per cycle) \* Automatic control test (per cycle)

***Please note: This is our standard IQ/OQ Documentation package. If other documents are required, please contact us with details of your specific requirements.***

**Chart Recorders**

**Astell are able to offer a comprehensive range of Chart Recorders.** Please either contact us or visit our website ([www.astell.com](http://www.astell.com)) for further information

**Accessories**

**AAN036** Stainless steel wire basket(400dx400hmm) Top loading models

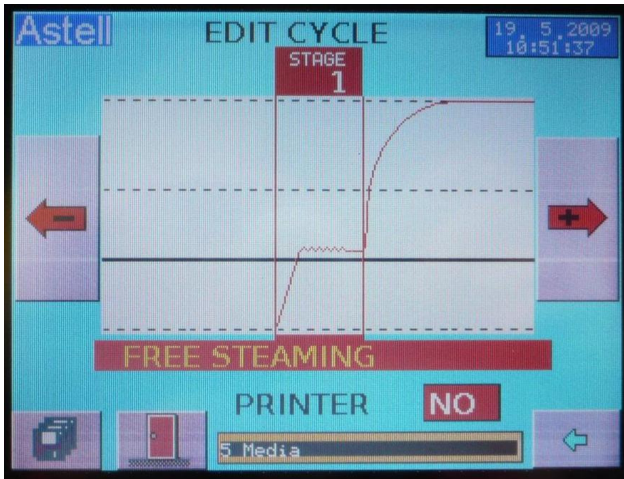
**AAN042** Stainless steel wire basket(400dx210hmm) Top loading models

**AAN048** Container with perforated base (380dx400hmm) Top loading models

**AAN056** Morrison discard container (390dx500h mm) Top loading models

**AAN058** Morrison discard container (390dx355h mm) Top loading models

## Full Colour Touch Screen Controller



- Full Colour Touch Screen
- Data Archiving
- 5 Selectable security operating levels with Password Protected Security
- Easy Fingertip Operation even when wearing Lab Gloves
- Easy selection of program by Name and Settings
- Audible confirmation of key presses
- Simple Cycle Selection
- RS232 Interface / Port - Allowing connection to other peripheral devices such as a printer
- Operator Interface
- Built-in provision for mandatory Safety valve tests etc
- Enables continual monitoring

- Warnings of Faults
- Onscreen Display of Program Info, Times, Temperatures, Pressure, Cycle stage, Cycle Counter etc
- Internal Fault Detection with automatic fault diagnosis and complete fault history for easy servicing
- Simple to use Controls set out on the large illuminated Touch Screen display with menus for all operations
- Optional Communications including Ethernet and RS232

This control system is an advance in sterilization control technology, bringing together years of unrivalled experience, to produce a user friendly, fully automatic control system, to meet and exceed the expectations of even the most demanding laboratories and centres of sterilization.

The controller consists of a wipe clean touch screen based on an industrial PLC controller, combined with a number of analogue and digital input/output modules.

The controller software has been developed by Astell for the precision control of autoclaves.

The code is split into well-defined blocks, each of which performs a specific function and has been written in high level language to allow maximum clarity.

**NB – This unit does not have a vacuum feature and is therefore unsuitable for wrapped instruments etc**

### Safety Features:

#### Design to PD97/23/EC

#### Overheat protection

#### Insulated safety door

#### Cooling locks

(in accordance with H.S.E. PM73) preventing opening of autoclave above 80°C. (for fluid & discard cycles)

#### Alarms

for Cycle Fault - Cycle Interruption - Sterilize Failure - Water Low - Door Unlocked

#### Door Seal

Self Energising / Service independent

#### Door

The door release is interlocked by both temperature and pressure to ensure all residual pressure has completely and effectively vented to atmosphere before the doors can be opened. The door will retain its positions in the event of failure of any service. The door is thermally insulated to prevent the surface temperature presenting a hazard to operators. The surface temperature will not exceed IEC 61010 requirements. A cycle cannot start until the door is closed and locked. Steam cannot be applied to the chamber unless the door is closed and locked.

## Interlocks

Safety interlocks are provided, and are achieved by hardware, separate from and additional to the control system. All interlocks are configured to fail-safe and to provide a signal to the control system to indicate that normal operation has been prevented, and to terminate the current cycle. The interlock system is designed so that its function can be tested during routine maintenance. Safety related interlocks are either hard wired or piped. The following safety interlocks are provided: ♦If the door is not closed, the steam supply to the chamber will be isolated ♦If the pressure in the chamber exceeds 0.15 bar the door will remain locked.

## Performance Tests

All electrical equipment is Safety Tested in accordance with the Low Voltage Directive.

Astell shall perform the following standard Factory Acceptance Tests. The tests are included in the machine costs as per the quotation prior to despatch:

**All Astell autoclaves are fully tested and calibrated before despatch in line with our ISO9001-2000 procedures.**

Connect and check all supplies	Produce printout for each cycle tested (When printer option fitted)
Check software version	Check door interlocks
Power up controller and check door open/close operation	Carry out sterilize monitor timer test on each cycle
Install relevant cycle data as required by client	Run cycle and check for any leaks
Calibrate all temperatures and pressures	Check all safety valves
Check rotation of all pumps and motors (if applicable)	Run each cycle and check conforms with applicable standards
Check and document safety devices	Document in Astell procedures

## Applicable Standards

PED EN/97/23/EC /

ISO9001-2000 / UKAS / IEC 61010

Medical Devices Directive 93/42/EEC

Medical Devices Quality Management System - BS EN ISO 13485:2003

### Autoclave Safety

N.B. Please note that all Astell autoclaves are manufactured to the highest standards and in full compliance with the Pressure Equipment Directive – i.e. PD5500/PED/97/23EC. Whilst all units have the necessary safety features to minimise user risk, and help ensure long term reliability, it is recommended that:

- a) Routine safety checks are carried out in accordance with Astell manuals and in compliance with current pressure regulations and/or insurance requirements.
- b) Autoclaves are serviced regularly by Astell or Astell trained/recommended engineers. *(UK only: Please contact us for further information and costs on our range of Preventative Maintenance contracts).*