



## USB290 Technical Details:



<b>Format:</b>	Front loading
<b>Capacity:</b>	290 liters
<b>Temperature range:</b>	100-138 °C
<b>Pressure range:</b>	0.2-2.4 bar

<b>Power requirements (heaters in chamber):</b>	
<b>Single phase version:</b>	Not applicable
<b>Three phase version:</b>	208V, 16kW.

<b>Power requirements (with optional steam generator):</b>	
<b>Three phase only:</b>	208V, 28kW, 60Hz (using 28KWSG)

<b>Water requirements:</b>	A cold water supply of 4-6 Bar minimum, 4 liters/min is required for the 'Autofill', vacuum and water cooling options. Max temperature 25 °C, Max flow rate 20 liters/min. Requirements vary for RO/de-ionised/hard water.
<b>Drainage requirements:</b>	Floor level, 35mm, non-manifolded, capable of withstanding free-flowing steam. Free vented to atmosphere if sealed.
<b>Air requirements:</b>	Compressed air is required for units fitted with air ballast or vacuum (100l/min).
<b>Vent/safety valve:</b>	DN 15 or DN 22 X 2(3) to floor (outside by others)

<b>Chamber diameter:</b>	600mm	<b>Chamber depth:</b>	1024mm
		<b>Chamber usable depth:</b>	886mm
		<b>Required bench depth:</b>	Not applicable

<b>Approximate dimensions (wxdxh):</b>	<b>Machine:</b>	<b>Packed:</b>
<b>Standard model:</b>	900x1370x1405mm	117x172x181cm
<b>Vacuum/steam generator model:</b>	900x1570x1405mm	107x204x182cm

<b>Approximate weights:</b>	<b>Machine:</b>	<b>Packed:</b>
	470kg	490kg

<b>Duran bottle capacities:</b>	
<b>500ml:</b>	50, 61 with optional middle shelf.
<b>1000ml:</b>	32, 36 with optional middle shelf
<b>2000ml:</b>	18
<b>Option capacities:</b>	3x Discard containers AAN300; 3x Container trays AAN080 (9 with optional middle shelf)

<b>Cooling locks:</b>	In accordance with H.S.E. PM73 preventing opening of the autoclave above 80°C. (for fluid & discard cycles)
<b>Alarms:</b>	For Cycle Fault - Cycle Interruption - Sterilize Failure - Water Low - Door Unlocked

<b>Door:</b>	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.
<b>Door seal:</b>	Self-energising/service independent.
<b>Interlocks:</b>	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. 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.

<b>Controller:</b>	VGA (640x480) color TFT + analogue resistive touchscreen	
<b>Controller hardware:</b>	<i>Processor:</i> Intel E620T 333Mhz <i>Memory:</i> 256MB DDRAM, 32KB FRAM <i>Physical Memory:</i> 2GB	
<b>Real time clock:</b>	Gold Foil capacitor (1000 hours)	
<b>Program storage:</b>	Software stored internally, Configuration data and cycles stored on a permanently attached USB stick	
	<b>Standard units</b>	<b>Variation for units with vacuum, or heated/cooling jacket (where available)</b>
<b>Interfaces:</b>	1x Powerlink 24VDC 1x X2X communication interface 1x Ethernet 10/100Mbit/s 2x USB 2.0 ports 1x Powerlink port (currently spare) 1x RS232 serial port	
<b>I/O hardware:</b>	X209300 - Communication card X208971 - Digital Input card, 8 Inputs  X208322 - Digital Output card, 8 Outputs X202622 - Analogue Pressure Input module 2 inputs 4-20mA X202222 - Analogue Temperature Input module 2	X208371 - Digital input card 8 inputs 2x X209371 - Digital Input card, 12 Inputs 5x X208332 - Digital Output card, 8 Outputs  X204622 - Analogue Pressure Input module 4 inputs 4-20mA X204222 - Analogue Temperature Input module 4 inputs
<b>Applicable standards:</b>	ASME Section VIII, Division 1, "U" stamp, NB registered; ANSI/AAMI ST55:2010; ISO 17025:2005 (UKAS); IEC 61010; ISO9001:2015	

**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 Quality Management System procedures ISO9001:2015

**IQ/OQ Documentation Details (Optional Extra):** IQ Documentation - Details of calibration equipment; ASME (American Society of Mechanical Engineers) Compliance; Declaration of Conformity; FAT (Factory Acceptance Test); Drawing Schedule; ISO 9001:2015 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.

**Autoclave safety:** All Astell autoclaves are manufactured to the highest standards and in compliance with Section 4 of the ANSI/AAMI ST55:2010 standard. 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).

It is recommended that at least 50cm is allowed on both sides and the rear of the autoclave to allow easy access for servicing and maintenance. Astell cannot be held responsible for any failed cycles that could occur as a result of non-validation of loads.