



U-AVS109D 29 gallons (109 liters)
U-AVS249D 66 gallons (249 liters)
U-AVS430D 114 gallons (430 liters)

PRI_{BIO}

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LABORATORY/GENERAL PURPOSE SQUARE AUTOCLAVE RANGE

Models available

Model No.	Chamber Dimensions	Size (litres)	Door Type	Steam Type
U-AVS109D	16" x 16" x 26" (406 x 406 x 660)	29 gallons (109 liters)	Automatic	Direct Steam
U-AVS249D	20" x 20" x 38" (508 x 508 x 965)	66 gallons (249 liters)	Automatic	Direct Steam
U-AVS430D	26" x 26" x 39" (660 x 660 x 990)	114 gallons (430 liters)	Automatic	Direct Steam

Application

The Astell Lab series of sterilizers is designed for use in today's shared laboratories. With a selectable temperature range of 110°C (219°F) to 135°C (275°F), they are particularly suited for the decontamination and sterilization of laboratory products.

Applications include the sterilization of:

- Wrapped and unwrapped hard goods
- Porous and non-porous hard goods
- Liquids in unsealed open containers
- Biohazard waste
- Animal feed
- Animal bedding
- Bowie Dick
- Leak test

Options Available

In addition to the standard options listed to the right, the options below are available to add to your sterilizer:

- Integral Steam Generator made from stainless steel
- Chart Recorder
- Stainless process piping
- Load Probe (for fluid cycles)
- BSL 3 effluent filter
- Biologically sealed flange
- Loading system
- Validation port

Water Conservation

All Astell vacuum sterilizers are fitted with liquid ring vacuum pumps that use a fraction of the water needed in comparison to vacuum ejector systems. Also, if there is cooling water available from a chilled water loop system, the water usage can be reduced by up to 95%.



Product Description

The Lab series is a general purpose, compact designed vacuum steam sterilizer which has been specifically designed for the needs of today's shared laboratory.

All models come with the following standard features:

- Easy to use color touch screen PLC controller (see controller section for more information)
- Temperature in degrees Celsius/Fahrenheit
- Pressure in PSI or Bar
- Emergency stop button
- Chamber/jacket/steam pressure gauges
- Adjustable/lockable castors for easy installation
- Stainless Steel fully jacketed rectangular chamber
- Internal base shelf and four position rack
- Powered vertical sliding door
- Recessed into wall or fitted with cabinet side panels
- Ink panel printer
- Vacuum - A liquid ring vacuum pump as standard
- 50+ programmable cycles
- Electro polished chamber
- Auto drain cool down to 60°C/140°F

Vessel Material And Construction

The chamber is constructed from 316L stainless steel and the outer jacket is configured with U channel sections. All the U section channels are joined to complete a fully jacketed chamber.

The door face is manufactured from 316L stainless steel and a box section construction for strength. The inside of the chamber is electro polished. The exterior is insulated and covered with aluminum clad. The door seal (gasket) is mounted in a stainless steel groove.

The pressure vessel is designed and manufactured to meet the ASME code section VIII division 1 and all chambers are U-1 stamped and delivered with a certificate.

The chamber floor is configured with a slope towards the chamber drain to direct all liquid condensate. The chamber is fitted with an ASME approved safety relief valve.

Design And Manufacturing Approval

Designed and manufactured in accordance with ASME code section VIII division 1, U-1 stamped.

- ASME "U-1" Stamp
- IEC 61010
- ISO 9001: 2015
- ISO13485: 2003

At the design stage, the vessel drawings are submitted to an insurance company for approval within the normal operating conditions of full vacuum to 3.88 bar absolute and 142.6°C (288.7°F). Astell Scientific is accredited to UKAS and ISO9001:2015. NB registered.

Steam Source

All sterilizers are supplied ready to accept a site steam supply of 50 to 80 psi. The sterilizer steam connection is valved and trapped to accept a ½ NPT steam supply.

If site steam is not available, please see the steam generator option below. Steam pipe work is constructed of brass/copper and terminated with an isolation valve.

Steam Generator (Optional Extra)

The optional steam generator is manufactured from 304 grade stainless steel as standard, and is either 24kW or 48kW (as required, dependant on model).

Steam generators are fitted as standard with the following features:

- Power on/off separate to the sterilizer controls
- Stainless steel high/low water float switches allowing any kind of water to be used
- Water fill pump
- Manual blow down
- Low water alarm
- Low water indicator
- Heating indicator
- ASME safety relief valve
- Adjustable pressure switch control
- Over temperature safety cut out
- Pressure gauge

Pipework And Valve Construction

General pipework is constructed from copper/brass with unions and threaded fittings for serviceability. All valves are brass construction mounted to allow easy access for servicing. All process valves are electrically operated solenoids eliminating the need for compressed air.

Door Gasket Construction

The door gasket is fitted into a fabricated stainless steel groove. The door seal is a high temperature silicon round section. The gasket is energised by steam at the start of the cycle and maintained during the cycle process. Once the cycle is complete, the gasket is retracted and the door can be safely opened.

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Controller

All Astell sterilizers are fitted with a state of the art control system consisting of a wipe clean 5.7" easy to use color touch screen. Features include:

- 32 digital inputs
- 32 digital outputs
- 4 digital temperature displays (Continuous Display) Resolution 0.1 degF
- 2 Digital pressure displays (Continuous Display) Resolution 0.1 PSI

Secure

- Continuous data archived up to 5000 cycles
- USB port
- 5 Levels of password security

Flexible

- Multi programme controller
- Cycle jump facility (*helpful during maintenance*)
- Continuous cycle display
- Easy to edit cycle times and temperatures (password protected)
- Create & modify cycles
- Programmed cycle printout reports
- Easy to copy/rename cycle function
- Force inputs/outputs (*helpful during maintenance*)
- Delayed start function
- F/O calculation
- Fault indication
- Calibration from the touch screen

Informative

- Cycle Counter
- View inputs/outputs
- Stage display
- Continuous pressure and temperature display
- Print any cycle from the data archive library

Supportive

- Help screen
- Complete fault history
- Machine service timer

Laboratory/General Purpose Square Autoclave Range 3

Design

Astell sterilizers are engineered for ease of serviceability, safety and most important reliability. All components are non-proprietary industrial grade to reduce downtime.

Door Operation

Vertical sliding door with powered operation. As soon as the door is closed, it is locked in position. Simple control from the touch screen unlocks the door. The door cannot be opened during the process cycle.

The powered door is driven from an electrical actuator. If an obstruction is encountered during door travel, the door will immediately stop and return to the open position.

Cycles

Vacuum cycles

- Stage 1 - Pre vacuum
- Stage 2 - Negative steam pulsing
- Stage 3 - Positive steam pulsing
- Stage 4 - Heating to sterilization
- Stage 5 - Sterilization
- Stage 6 - Drying
- Stage 7 - Air break
- Stage 8 - Complete

Fluid Cycles

- Stage 1 - Pre vacuum
- Stage 2 - Negative steam pulses
- Stage 3 - Heat to sterilize
- Stage 4 - Sterilization
- Stage 5 - Cooling/chamber venting
- Stage 6 - Complete

Vacuum System

The Astell vacuum system consists of a liquid ring vacuum pump fitted as standard, minimising the amount of water required to achieve vacuum cycles.

The vacuum pump is capable of achieving vacuum levels of less than 50 mbar with water temperature below 25°C (77°F). This system is by far the best form of air removal from the load, and combined with the heated jacket ensures the dry cycle results you would expect.

Loading Equipment

A full range of easy to operate external trucks and internal carriages are available. The internal loading cars are manufactured from 304 stainless steel and come complete with a base shelf and multi position shelf.

The external trolley is manufactured from mild steel and powder coat painted. The external truck locks against the chamber rails for safety.

4 Laboratory/General Purpose Square Autoclave Range

Safety Features

- A cycle cannot start until the door(s) are closed and locked. Steam/ heating cannot be applied to the chamber unless the door(s) are closed and locked.
- The door release is interlocked with the chamber pressure switch to ensure all residual pressure has completely and effectively vented to atmosphere before the doors can be opened.
- The door(s) will retain their positions in the event of failure of any service. The door seal is steam and vacuum resistant, and will seal effectively without trapping or entrapment of 'foreign' material.
- The door(s) are thermally insulated to prevent the surface temperature presenting a hazard to operators. The surface temperature will not exceed IEC 61010 requirements.
- If the door(s) are not closed, the steam supply to the chamber will be turned off and remain turned off. If the pressure in the chamber exceeds 0.1 bar the doors remains locked.

Testing & Documentation

Astell supply the following with your autoclave:

- Manuals
- Drawings
- Schematics
- Parts Lists
- Pressure Vessel Test Certificate
- Installation Drawing (if applicable)

Works Tested Prior to Delivery

All electrical equipment is Safety Tested in accordance with the Low Voltage Directive. Astell shall perform standard Factory Acceptance Tests. Details available upon request.



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Single door Model Instrumentation

Chamber Pressure	Analogue and digital
Jacket Pressure	Analogue (if fitted) and digital
Chamber Temperature	Digital
Load Temperature	Digital (if fitted)

Sensors And Transducers

- Temperature sensors will be connected to the autoclave to monitor temperatures at the following locations:
 - Chamber Vent Temperature
 - Load Temperature (Flexible Probe, if fitted)
- Temperature sensors duplex PT100 as standard (Flexible probe, if fitted).
- Pressure transmitters will be connected to the autoclave at the following locations:
 - Autoclave Chamber
 - Autoclave Jacket - (if applicable and fitted)

Operating Range

100-138°C (212-280°F) (0.2 - 2.4 bar)

Warranty

12 months. This commences from the completion of installation. (Must be within 18-months of receipt).

IQ/OQ Documentation (Optional Extra)

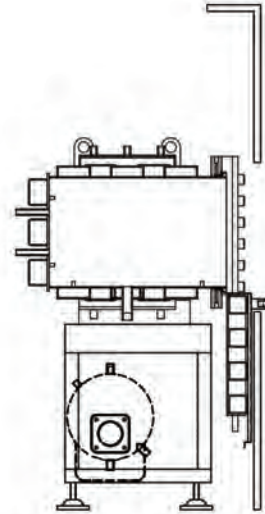
The IQ/OQ documents package provides the user with blank documents for them to complete. The IQ section includes:

- Details of calibration equipment
- ASME Compliance
- Declaration of Conformity and Door safety checks
- FAT (Factory Acceptance Test) Sheet and Drawing Schedule
- ISO 9001:2015 Certification and Pressure vessel specification

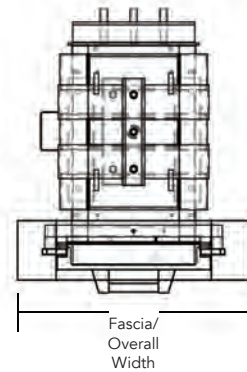
The OQ Documentation includes: an Automatic control test sheet (per cycle) and Chamber temperature distribution (per cycle).

Images for illustration purposes only. Model displayed includes optional steam generator construction layer.

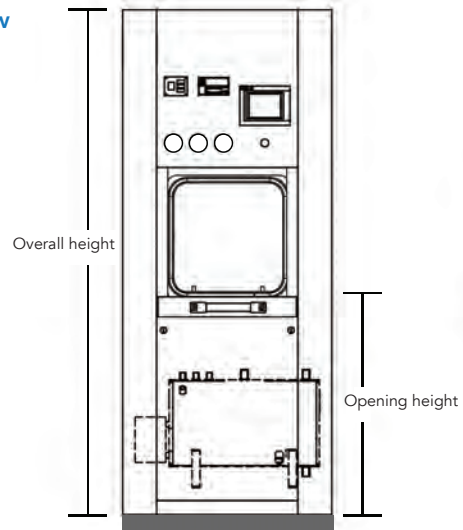
Service Side



Plan View



Elevator View



Autoclave Safety

Please note that all Astell autoclaves are manufactured to the highest standards and in full compliance with ASME code section VIII division 1, U-1 stamped. Whilst all units have the necessary safety features to minimise user risk, and help ensure long term reliability, it is recommended that:

- Routine safety checks are carried out in accordance with Astell manuals and in compliance with current pressure regulations and/or insurance requirements.
- Autoclaves are serviced regularly by Astell or Astell trained/recommended engineers.

It is recommended that at least 20" is allowed on both sides and the rear of the autoclave to allow easy access for servicing and maintenance.

U-AVS109D

Product Summary

Model	U-AVS109D
Chamber Dimensions	16" x 16" x 26" (406x406x660mm) (WxHxD)
Capacity	29 US gall (109L)
Number of Doors	1
Vacuum	Yes
Steam Generator	Optional, 24kW
Dry Weight	1,760 lb (800kg)

Dimensions

Overall Width	33.5" (850mm)
Overall Depth	47.2" (1,200mm)
Overall Height	78.7" (2,000mm)
Loading Height	35-39" (900-1,000mm)

Dimensions (If fan cooling (internal) is fitted)

Chamber Dimensions	Contact our sales office for advice
Overall Width	
Overall Depth	
Overall Height	
Loading Height	

Materials

Vessel/Chamber:	316 Stainless Steel
Door:	316 Stainless Steel (Wetted Parts)
Header Ring:	Mild Steel
Stand:	Zinc Coated Painted Steel
Steam Generator (if applicable):	Stainless Steel
Jacket (If applicable):	Full Stainless Steel
Vessel Interior:	Electro polished
Exterior Panelwork:	Epoxy painted

Water Conservation

The water conservation system is designed to minimise the water usage of the autoclave during each cycle by controlling the water temperature in the water tank. A thermostat only allows water to be added to the water tank if the tank water temperature rises above the set point.

Installation

We recommend installation/commissioning is carried out by an Astell approved and trained Service Engineer.



Service Requirements



Water

DN15 5.2 US gall.(20 litres) per min <77°F(25°C). Normal Tap Water (softened if necessary). Hardness <50ppm. pH Neutral



Power

Available: 208V 3-phase, or 415V, 3-phase + neutral



Drainage

DN35 Floor Level (Open Free Drainage) Floor level, 35mm, non-manifolded, capable of withstanding freeflowing steam. Must be free vented to atmosphere if sealed.



Steam

House steam supply or optional steam generator required.



Air

Compressed air is required to operate the pneumatic valves in the Autoclave door. For this purpose a supply of 40 US gall (150l)/min peak at 6 Bar via a 6mm connection is required (or the Air Compressor (AAQ503) option).If the unit is also fitted with the Air Ballast option, a supply of 53 US gall (200l)/min peak at 6 Bar via a 15mm connection is required (or the Air Compressor (AAQ525) option).

Other

Vent/Safety Outlets - DN 22 X 2(3) to floor (outside by others)

U-AVS249D

Product Summary	
Model	U-AVS249D
Chamber Dimensions	20" x 20" x 38" (508x508x965mm) (WxHxD)
Capacity	66 US gall (249L)
Number of Doors	1
Vacuum	Yes
Steam Generator	Optional, 24kW
Dry Weight	1,870 lb (850kg)

Dimensions	
Overall Width	33.5" (850mm)
Overall Depth	55.1" (1,400mm)
Overall Height	78.7" (2,000mm)
Loading Height	35-39" (900-1,000mm)

Dimensions (If fan cooling (internal) is fitted)	
Chamber Dimensions	Contact our sales office for advice
Overall Width	
Overall Depth	
Overall Height	
Loading Height	

Materials	
Vessel/Chamber:	316 Stainless Steel
Door:	316 Stainless Steel (Wetted Parts)
Header Ring:	Mild Steel
Stand:	Zinc Coated Painted Steel
Steam Generator (if applicable):	Stainless Steel
Jacket (If applicable):	Full Stainless Steel
Vessel Interior:	Electro polished
Exterior Panelwork:	Epoxy painted

Water Conservation






The water conservation system is designed to minimise the water usage of the autoclave during each cycle by controlling the water temperature in the water tank. A thermostat only allows water to be added to the water tank if the tank water temperature rises above the set point.

Installation

We recommend installation/commissioning is carried out by an Astell approved and trained Service Engineer.



Service Requirements

	Water	DN15 5.2 US gall.(20 litres) per min <77°F(25°C). Normal Tap Water (softened if necessary). Hardness <50ppm. pH Neutral
	Power	Available: 208V 3-phase, or 415V, 3-phase + neutral
	Drainage	DN54 Floor Level (Open Free Drainage) Floor level, 54mm, non-manifolded, capable of withstanding freeflowing steam. Must be free vented to atmosphere if sealed.
	Steam	House steam supply or optional steam generator required.
	Air	Compressed air is required to operate the pneumatic valves in the Autoclave door. For this purpose a supply of 40 US gall (150l)/min peak at 6 Bar via a 6mm connection is required (or the Air Compressor (AAQ503) option).If the unit is also fitted with the Air Ballast option, a supply of 53 US gall (200l)/ min peak at 6 Bar via a 15mm connection is required (or the Air Compressor (AAQ525) option).
	Other	Vent/Safety Outlets - DN 22 X 2(3) to floor (outside by others)

U-AVS430D

Product Summary

Model	U-AVS430D
Chamber Dimensions	26" x 26" x 39" (660x660x990mm) (WxHxD)
Capacity	114 US gall (430L)
Number of Doors	1
Vacuum	Yes
Steam Generator	Optional, 48kW
Dry Weight	2,387 lb (1,085kg)

Dimensions

Overall Width	49.2" (1250mm)
Overall Depth	66.9" (1700mm)
Overall Height	78.7" (2000mm)
Loading Height	35-39" (900-1,000mm)

Dimensions (If fan cooling (internal) is fitted)

Chamber Dimensions	24" x 25" x 35" (610x635x890mm) (WxHxD)
Overall Width	49.2" (1250mm)
Overall Depth	74.8" (1900mm)
Overall Height	78.7" (2000mm)
Loading Height	35-39" (900-1000mm)

Materials

Vessel/Chamber:	316 Stainless Steel
Door:	316 Stainless Steel (Wetted Parts)
Header Ring:	Mild Steel
Stand:	Zinc Coated Painted Steel
Steam Generator (if applicable):	Stainless Steel
Jacket (If applicable):	Full Stainless Steel
Vessel Interior:	Electro polished
Exterior Panelwork:	Stainless Steel

Water Conservation

The water conservation system is designed to minimise the water usage of the autoclave during each cycle by controlling the water temperature in the water tank. A thermostat only allows water to be added to the water tank if the tank water temperature rises above the set point.

Installation

We recommend installation/commissioning is carried out by an Astell approved and trained Service Engineer.



Service Requirements



Water

DN15 5.2 US gall.(20 litres) per min <77°F(25°C). Normal Tap Water (softened if necessary). Hardness <50ppm. pH Neutral



Power

Available:
208V 3-phase (direct steam only), OR
415V 3-phase + neutral, OR
480V 3-phase + neutral



Drainage

DN54 Floor Level (Open Free Drainage) Floor level, 54mm, non-manifolded, capable of withstanding freeflowing steam. Must be free vented to atmosphere if sealed.



Steam

House steam supply or optional steam generator required.



Air

Compressed air is required to operate the pneumatic valves in the Autoclave door. For this purpose a supply of 40 US gall (150l)/min peak at 6 Bar via a 6mm connection is required (or the Air Compressor (AAQ503) option). If the unit is also fitted with the Air Ballast option, a supply of 53 US gall (200l)/min peak at 6 Bar via a 15mm connection is required (or the Air Compressor (AAQ525) option).

Other

Vent/Safety Outlets - DN 22 X 2(3) to floor (outside by others)