

### Data and Specifications

#### PRODUCT

The Belimed Steam Sterilizers utilize a powerful **Programmable Logic Controller (PLC)** with ten pre-programmed cycles that are operator selectable. The cycles employ gravity air displacement, vacuum air displacement, vacuum chamber test and Bowie-Dick test cycles (Cycle Type 6050) as standard. Belimed utilizes door retainage on all 4-sides of the door for added safety which is unique in the industry. The chamber and jacket are constructed of 316L stainless steel.

#### APPLICATION

For general purpose steam sterilization of unwrapped equipment, wrapped instruments and utensils, glassware, stainless steel components, and liquids in vented or unsealed containers. Temperature range is from 105° – 134°C. The liquid cycle utilizes a programmable slow exhaust to control the cooling. Once the programmed temperature is reached, the cycle is complete.

#### CHAMBER SIZES

	Chamber Size (h x w x d)	Overall Size (h x w x d) In (mm)	Volume Ft <sup>3</sup> (ltr)	Approx. Weight
<input type="checkbox"/>	6-6-9 HS 30"x 26"x 41"	79" x 79" x 51" (2000 x 2000 x 1300)	18.5 (524)	3,740 lbs.
<input type="checkbox"/>	9-6-9 HS 43"x 26"x 41"	79" x 85" x 51" (2000 x 2150 x 1300)	26.5 (750)	4,840 lbs.
<input type="checkbox"/>	9-6-12 HS 43"x 26"x 55"	79" x 85" x 65" (2000 x 2150 x 1660)	35.6 (1008)	5,500 lbs.
<input type="checkbox"/>	11-6-9 HS 48"x 26"x 43"	89" x 94" x 63" (2250 x 2390 x 1600)	31 (878)	5,610 lbs.
<input type="checkbox"/>	11-6-12 HS 48"x 26"x 55"	89" x 94" x 75" (2250 x 2390 x 1900)	39.7 (1124)	6,160 lbs.

#### DOOR SELECTIONS

- Single Door (HS1)
- Double Door (HS2)

#### SERVICE SIDE

- Right Side Service (Standard)
- Left Side Service

#### INSTALLATION SELECTIONS

- Recessed Mounted – One Wall
- Recessed Mounted – Two Walls
- Recessed Cabinet
- Floor Mounted
- Pit Mounted (only for 11-6-9 and 11-6-12 sizes)
- No Bioseal
- Bioseal, Load End
- Bioseal, Unload
- Bioseal, Dual

#### CYCLE DOCUMENTATION

- 42 Column Printer
- 80 Column Ink Jet Printer (Standard)

#### STEAM SUPPLY OPTIONS

- Plant Steam or Clean Steam Customer Supplied [standard]
- Clean Steam Generator [requires Plant Steam, DI water]
- Pure Steam Generator [requires Plant Steam, WFI water]
- Electric Steam Generator

#### PIPING OPTIONS

- Stainless Steel Piping to Chamber [Standard]



#### STANDARD FEATURES

##### TOP 5000 GRAPHICAL USER INTERFACE

The TOP 5000 user interface with modern touch screen technology assures an orderly and simple operating control. Sophisticated management of user access rights ensures high operational safety and minimum margin for error.

Sterilization cycles can be documented either in detailed graphic form with a Deskjet printer or a compact built-in printer. The software is validated and complies with GAMP regulations.

##### STAINLESS STEEL CONSTRUCTION

The sterilizer chamber and door are constructed from solid type 316L stainless steel with an internal glass bead chamber finish. The internal chamber surfaces are crevice free and slope to the drain. A stainless steel mesh strainer protects the drain.

The sterilizer jacket is made of type 316L stainless steel and completely insulated with minimum 2" mineral wool encased in rigid removable sheet aluminum housing.

- Glass Bead Finish [Standard]
- High Grade Finish (Class 6870) Ra < 0.8 micron

##### DRAIN TEMPERING

The drain discharge is cooled down to reduce discharges to 140° F (60°C) or less.

##### MECHANICAL VACUUM PUMP

A highly efficient, liquid ring vacuum pump is provided to employ the high vacuum method of air removal from within the chamber. The pump achieves a minimum of 27" HG in 5 minutes or less with an empty chamber.

### **WATER CONSERVATION SYSTEM FOR VACUUM PUMP**

An additional heat exchanger is added between the vacuum pump and circulation tank that reduces the water consumption of the overall system to almost zero.

### **HORIZONTAL SLIDING DOOR(S)**

The doors are made of solid-walled, non-ribbed high-grade stainless steel. The doors are secured in place on all sides for 4-sided security. The doors run horizontally and are mounted on heat-resistant rollers. Non-ferrous-metal inserts and deflector rollers prevent abrasion on the stainless steel doors. The doors are driven by means of a geared electric motor via a chain and drive mechanism which is safeguarded by means of a slip clutch. For safety purposes a contract strip is mounted on the closing edge of the door, should the door closing operation encounter any resistance, the door will move back to the open position. A precision-milled slot in the chamber head-ring holds the round solid-silicone door seal. The seal is pressed against the solid door during the closing operation by means of micron filtered (< 0.01 micron) compressed air. After the sterilization process is complete the door seal is retracted back into the slot by the vacuum pump. The control system utilizes a special program which allows for easy change out or maintenance on the door seal. It is recommended that the door seal be changed after every 1000 batches!

### **PERSONNEL SAFETY FEATURES**

In addition to the door safety systems, the unit's chamber is provided with a 1.4 psi safety pressure switch to insure that all chamber pressure has been relieved prior to allowing the door(s) to open.

### **VALVES AND COMPONENTRY**

Process valves are pneumatically operated piston valves providing longer service life and less maintenance than typical electrical solenoid valves. All standard components are non-proprietary in nature.

### **MEASURING SYSTEM**

Twin PT-100 RTD's in a 3-wire circuit are provided as standard:

- 1A/1B fixed in the chamber
- 2A/2B fixed in the chamber outlet
- 3A/3B flexible in the chamber

Pressure Sensors:

- Chamber
- Jacket

Gauges:

- Cold Water
- Steam
- Compressed air
- Chamber
- Jacket
- Door seal(s)

### **OPTIONAL FEATURES**

#### **TOP 7500 GRAPHICAL USER INTERFACE**

The Programmable Logic Controller (PLC) and the Belimed software developed in accordance with GAMP 4. All input and output signals from the PLC are indicated by means of LED's. This allows the entire operating sequence to be monitored. The control features a plug-in connection (programming interface) for data transfer to a programming device or a PC. A 10" color infrared touch screen is integrated in the front panel for cycle control and operation selection. A touch screen display is mounted on the un-load side of the sterilizer.

#### **JACKET COOLING – TYPE 6065 PROGRAM**

The 6065 program combination provides for the sterilization of liquids in open, vented or sealed containers. Support pressure (compressed air) is brought into the chamber upon completion of the sterilization phase of the program.

Along with the support pressure inside the chamber, cold water is flooded into the jacket as a heat sink for the chamber temperature. The support pressure prevents the liquid from boiling during the cool-down portion of the cycle and the cold water in the jacket provides for heat displacement from the chamber. A controlled cool down is accomplished until atmospheric pressure is achieved and the product temperature has achieved the appropriate temperature.

#### **FILTER INLINE STERILIZATION (FIS)**

The filter can be co-sterilized and dried automatically with the running program, together with the sterilization pressure vessel and the product. Three (3) clamp connectors with blanking covers are provided for manual integrity testing. A twin PT-100 RTD is fitted in the filter housing.

#### **EFFLUENT DECONTAMINATION CYCLE (VAFI/KOST)**

Designed for biolevel (BSL-3 and 4) areas or similar. The air is extracted from the chamber via the vacuum pump through sterile filter housing in the top of the chamber. The filter prevents micro-organisms of 0.01 micron size from escaping from the environment. The filter is co-sterilized and dried together with the sterilization pressure vessel and product. Three (3) clamp connectors with blanking covers are provided for manual integrity testing. A twin PT-100 RTD is located at the outlet of the filter housing.

#### **PID CONTROL (GMP)**

Constant PID control of the working temperature in the chamber is provided. Temperature distribution in the working space during the hold time is +/-0.5 Celsius. Temperature fluctuation at the control sensor is +/-0.3 Celsius.

#### **HIGHER GRADE STAINLESS STEEL PIPING TO CHAMBER (GMP)**

Diaphragm valves are substituted for the standard piston valves. Tri-clamp connections are provided on all piping above 2" in diameter. All piping is orbitally welded and pickled. Surface finish is Ra <0.8 micron.

#### **HIGHER GRADE CHAMBER SURFACE (GMP)**

The sterilization chamber and doors are ground to Ra <0.8 micron.

#### **ELECTROPOLISHED CHAMBER AND PIPEWORK**

The sterilization chamber, door and chamber pipework are electropolished.

#### **SEISMIC RESTRAINTS**

Unit is designed in accordance with applicable state and local seismic codes.

#### **ELECTRICALLY HEATED STEAM GENERATOR**

Standalone electric steam generators are provided as the primary source of steam for the chamber and jacket.

#### **STEAM-HEATED STEAM GENERATOR**

These generators utilize steam heat on the shell side of the heat exchanger and are fed with DI or WFI water as the supply source for the chamber and jacket steam.



## BELIMED Series Horizontal Medium Steam Sterilizers

6050 SERIES DATA	MODEL 6-6-9 HS	MODEL 9-6-9 HS	MODEL 9-6-12 HS	MODEL 11-6-9 HS	MODEL 11-6-12 HS
<b>ELECTRICAL – EL</b>					
<input type="checkbox"/>	3 Ph, 60 Hz, 208 Volt	12 Amps	12 Amps	12 Amps	12 Amps
<input type="checkbox"/>	3 Ph, 60 Hz, 230 Volt	9 Amps	11 Amps	11 Amps	11 Amps
<input type="checkbox"/>	3 Ph, 60 Hz, 460 Volt	5 Amps	6 Amps	6 Amps	6 Amps
<input type="checkbox"/>	Vacuum Pump	V 250	V95	V95	V95
<b>STEAM SUPPLY – SS</b>					
Connection – MPT	1”	1 ¼”	1 ¼”	1 ¼”	1 ½”
Pressure – Psig	40	40	40	40	40
Peak Consumption – Lbs./Hr	176	330	400	400	440
Avg. Consumption – Lbs./Hr.	37	44	66	66	66
<b>COLD WATER – CW</b>					
Connection – MPT	½”	¾”	¾”	¾”	¾”
Pressure – Psig	30-75	30-75	30-75	30-75	30-75
Temperature – °F	<60	<60	<60	<60	<60
Flow Rate – GPM	6.6	8.8	9.7	9.7	11
<b>COMPRESSED AIR - CC</b>					
Connection – FNPT	¼”	¼”	¼”	¼”	¼”
Pressure – psig	75-105	75-105	75-105	75-105	75-105
Peak Rate – cfm	6.0	6.0	6.0	6.0	6.0
<b>DRAIN – A</b>					
Chamber Drain Connection	1 ¼”	1 ½”	1 ½”	1 ½”	1 ½”
Recommended Floor Drain	4”	4”	4”	4”	4”

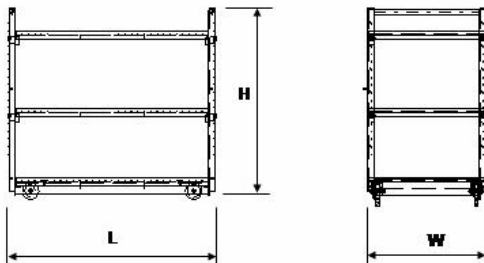
**NOTES AND COMMENTS:**

1. Above measurements and sizes are only valid for estimating purposes and are subject to technical changes.
2. Only one connection for the steam supply.
3. Only one connection for the water supply.
4. We also refer to our standard technical specifications LF150-E\_32.
5. Above data applies only to the 6050 Series.

### LOADING EQUIPMENT

- ❑ Batch Cart (requires a Transport Trolley)  
Frame rack made of rectangular tubing, with 4 integrated rollers and one permanently fitted baseplate. 1.4" (36mm) pitch in the frame for adjustable trays. Material, electropolished 304 stainless steel.

\_\_\_\_\_ Qty.



- ❑ Adjustable Shelves for the Batch Cart  
The air-permeable adjustable shelf can simply be engaged in the batch and loading carts at the required height. Material electropolished 304 stainless steel.

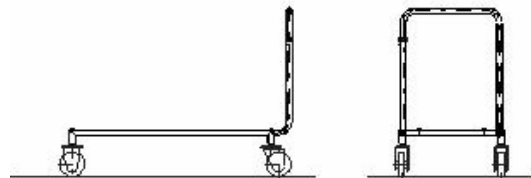
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- ❑ Pull-out Shelves (for manual loading)  
For manual loading of the sterilizers, shelves can be pulled out up to 50% of length (on both sides in the case of 2-door systems). The air-permeable trays made of electropolished 304 stainless steel slide on low-friction Teflon supports fitted on both sides on the chamber walls.

\_\_\_\_\_ Qty.

- ❑ Transport Trolley (for transporting the batch cart)  
Frame rack, comprising rectangular tubing. Rails for batch cart. Locking device for the batch cart. Coupling mechanism to the sterilizer. 2 steering rollers, lockable. 2 fixed rollers. Material electropolished 304 stainless steel.

\_\_\_\_\_ Qty



- ❑ Loading Cart (for pit mounted 11-6-9 & 11-6-12 units only) – No transport trolley required.  
For manual loading and unloading, for floor mounted sterilizers. The frame rack is made of tubular section 40/40/2 with one permanently fitted baseplate. 2 stainless and sterilizable swivel castors with break and 2 stainless and sterilizable fixed castors. 1.4" (36mm) pitch in the frame for an adjustable shelf.

\_\_\_\_\_ Qty.

