

# Genesis 35L

## Pilot Lyophilizer



### Specifications

	EL
Lowest shelf temperature (50 Hz / 60 Hz)	≤ -67°C / -70°C
Shelf temperature control range*	-55 to 65°C
Shelf pull-down from 20°C to -40°C†	≤ 30 minutes
Lowest condenser temperature (50 Hz / 60 Hz)	≤ -82°C / -85°C
Maximum condenser capacity	≥ 35 L
Condenser surface area	750 in <sup>2</sup> (4,838 cm <sup>2</sup> )
Condenser pull-down from 20°C to -45°C	≤ 25 minutes
Maximum ice condensing capacity in 24 hours‡	≥ 20 L
Maximum deposition rate‡	≥ 0.83 L/hour
Number of compressors	2
Compressor horsepower	1.5 hp, 1 hp
Vacuum time to 100 mTorr <sup>§</sup>	≤ 20 minutes
Vacuum rate of rise <sup>§</sup>	≤ 30 mT/hour
Vacuum Control +/- 5mTorr	50mTorr to 500mTorr
Volume-based leak rate <sup>§</sup>	≤ .0016 mbar•L/sec
Lowest system vacuum <sup>§</sup>	≤ 15 mT
Temperature uniformity <sup>¶</sup>	± 1.0°C

Note: Performance specifications are based on SP test data from units operating at an ambient room temperature of approximately 20°C. SP recommends an optimum operating range of 15-25°C (59-77°F).

### Utility Requirements

	EL
Compressed air (for units with isolation valve)	80 psig (6.5 bar)
Ambient room temperature	15-25°C (59-77°F)
Approx. peak room heat generated (air-cooled units)	11,500 BTU/h
Approx. peak room heat generated (water-cooled units)	4,100 BTU/h (1.2 kW)
Cooling water usage**	1-3 gpm (4-12 Lpm)
Cooling water load	7,400 BTU/hr

### Electrical Requirements

Voltage	Phase	Hertz	Breaker Amperage	Recommended Outlet
208-230 VAC <sup>\\</sup>	1 Φ	60 Hz	30 A	NEMA L6-30R
200-220 VAC <sup>\\</sup> 230-240 VAC <sup>\\</sup>	1 Φ	50 Hz	30 A	NEMA L6-30R
230-240 VAC <sup>\\</sup> (4 wire)	3 Φ	50 Hz	30 A	N/A
400 VAC <sup>\\</sup> (4 or 5 wire)	3 Φ	50 Hz	20 A	N/A

Note: Other electrical configurations available.



Standard configuration shown.

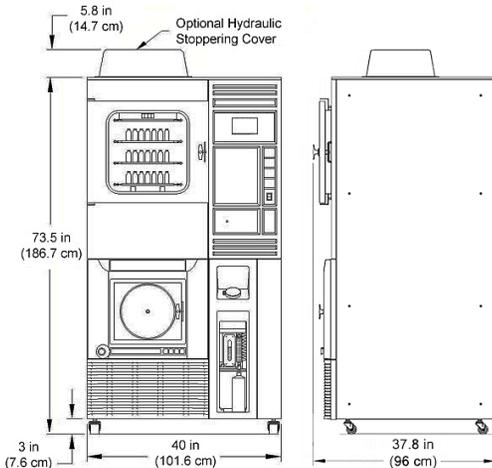
### Key Features

- Compact, freestanding, mobile design
- Easy scale-up from research to full production
- Available with a Merlin or LyoS™ control system
- Optional hydraulic stoppering system available
- Narrow and cleanroom configurations available with 8-inch vapor port

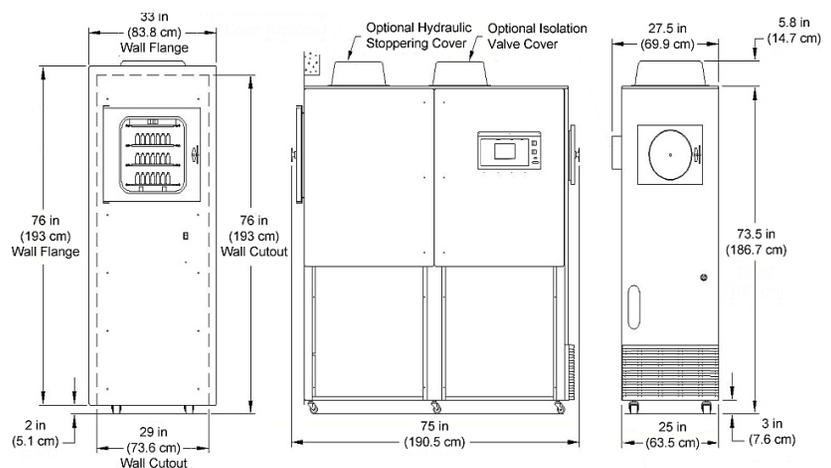
### Refrigerant Information

	Gas 1	Gas 2
F gas	R407C	R508B
Charge (Kg)	1.245	0.462 (AC); 0.446 (WC)
GWP	1774	13396
EPA SNAP	IPR/VLTR	IPR/VLTR
Safety Class	A1	A1
Total CO2e (t)	8.398 (AC); 8.180 (WC)	

## Standard Configuration



## Cleanroom Configuration



## Dimensional Data

	Standard Configuration	Narrow Configuration	Cleanroom Configuration
Width	40 in (102 cm)	25 in (64 cm)	25 in (64 cm)
Depth	30 in (76 cm)	76 in (193 cm)	75 in (191 cm)
Height <sup>††</sup>	73.5 in (187 cm)	73.5 in (187 cm)	73.5 in (187 cm)
Max. weight	800 lb (363 kg)	850 lb (386 kg)	850 lb (386 kg)
Min. clearance on all sides	10 in (25 cm)	10 in (25 cm)	10 in (25 cm)

Note: SP recommends a 24-inch (61 cm) clearance around all sides of the unit for serviceability. If machines are placed side by side, increase the minimum clearance to 48 inches (121.9 cm)

## Additional Information

Construction	316L stainless steel shelves, product chamber and condenser chamber
Stoppering	Top-down hydraulic
Defrost type	Hot gas
Refrigerant type	CFC-free
Vapor port <sup>§§</sup>	4 in (10.2 cm)

## Shelf Configuration<sup>††</sup>

	Shelf Area	Shelf Clearance	Shelf Clearance with Optional Shelf Latching	
			1 Shelf Latched	2 Shelves Latched
1 Shelf	1.5 ft <sup>2</sup> (1,394 cm <sup>2</sup> )	12.9 in (328 mm)	N/A	N/A
2 Shelves	3.1 ft <sup>2</sup> (2,880 cm <sup>2</sup> )	6.2 in (158 mm)	12.5 in (318 mm)	N/A
3 Shelves	4.6 ft <sup>2</sup> (4,274 cm <sup>2</sup> )	4 in (102 mm)	6.1 in (155 mm)	12.1 in (307 mm)
4 Shelves	6.1 ft <sup>2</sup> (5,667 cm <sup>2</sup> )	2.9 in (74 mm)	3.9 in (99 mm)	5.9 in (150 mm)
5 Shelves <sup>††</sup>	7.7 ft <sup>2</sup> (7,154 cm <sup>2</sup> )	2.3 in (58 mm)	2.8 in (72 mm)	3.8 in (97 mm)
6 Shelves	9.2 ft <sup>2</sup> (8,547 cm <sup>2</sup> )	1.8 in (46 mm)	N/A	N/A

Shelf size (W × D): 10.8 in × 20.5 in (274.3 mm × 520.7 mm)

\* Shelf fluid temperature controlled to within ± 0.5°C of the setpoint within the Shelf Temperature Control Range.

† Shelf Pull-Down times are based on units with one (1) to three (3) shelves. The increased mass of stainless steel and additional heat transfer fluid required for four (4) or more shelves will increase the pull-down time. Use the following multipliers when determining the pull-down time specification for the following shelf configurations:  
4-shelf units, standard pull-down time × 1.33 5-shelf units, standard pull-down time × 1.67 6-shelf units, standard pull-down time × 2.0

‡ The specified Maximum Ice Condensing Capacity in 24 Hours and Maximum Deposition Rate are based on the process of freeze-drying water as aggressively as possible. The freeze dryer's ability to collect ice at an hourly rate or over a specified period will always be application dependent.

§ Vacuum specifications are based on SP test data from similar units equipped with Leybold D8B two-stage rotary vane vacuum pump. Units equipped with other vacuum pumps may yield different results.

¶ Shelf temperature deviations shall not exceed the specification relative to the mean of the highest and lowest temperature readings.

∥ SP VirTis units are highly customizable and SP can configure any unit to conform to the service requirements of a wide range of international voltage and phase configurations. Contact SP for more information.

\*\* Cooling water temperatures should not exceed 24°C.

†† The stoppering option and/or isolation valve option adds 5.8 inches (14.7 cm) to overall height.

‡‡ Units with the stoppering option are only available with up to five shelves.

§§ Standard configuration units have a 4-inch (10.2 cm) vapor port. Narrow and cleanroom configuration units have an 8-inch (20.3 cm) vapor port.