



# Cryogenic Subcooler

## *Vertical*

An advanced liquid nitrogen subcooler, engineered to deliver a guaranteed **77 K (-196 °C)**, zero-vapor liquid quality to your process, regardless of your storage tank's level, pressure and insulation conditions. By transforming standard LN<sub>2</sub> into a subcooled state with extremely low enthalpy, we eliminate flash-off, ensure maximum thermal transfer efficiency and precise temperature control with flow rates of up to **3,500 kg/hr**.

### Typical Applications

- **Food Industry** - Tunnel freezers and meat mixing
- **Pharmaceutical Manufacturing** - For Spray Freeze Drying (lyophilization) of drug solutions (vaccines, APIs, biotech products) and precise cryogenic reactor cooling for sensitive synthesis
- **Electronics Manufacturing** - Process cooling
- **Semiconductor Testing** - For chip testing and qualification under extreme temperatures
- **Aerospace** - For supercooled liquids in rocket tank filling and thermal testing in space simulation chambers
- **Oil & Gas / LNG** - Gas purification and cryogenic distillation
- **Metal Processing** - For cryogenic deburring of metal or plastic parts

### Ergonomic Features and Benefits

- **Lowest Coolant Losses** – Super vacuum insulation with lowest heat leak
- **High Efficiency Subcooling** – Maintains constant liquid density for stable, high-quality performance
- **User-defined Pressure** - Keeps outlet pressure equal to inlet pressure (up to 10 bar) for reliable and consistent operation
- **Corrosion Resistant** – Built from stainless steel 300 series for durability and long service life
- **High Mass Flow Rate** – Handles capacities from 500 - 3500 kg/hr to fit wide range of operational needs
- **Lowest Maintenance** – Designed for hassle-free operation with minimal service requirements
- **Ease of Installation** – Plug-and-play setup for quick, skill-free installation
- **Applications Flexibility** – Suitable for LN<sub>2</sub>, LO<sub>2</sub>, LAr, and LNG, covering diverse cryogenic applications
- **5 Years Vacuum Warranty** – Lowest cost of ownership

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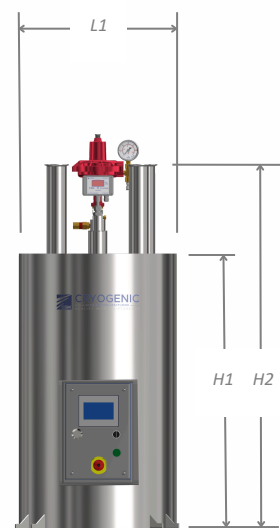
## Specifications

Models	CSV.500	CSV.1500	CSV.3500
Subcooling Rate	500 kg/hr	1500 kg/hr	3500 kg/hr
Max. Process Inlet Pressure	150 psi (10 bar)		
Bath Pressure	Atmospheric		
Bath Level Control	Automatic (Pneumatic)		
Weight - Empty	80 kg (lbs)	120 kg (lbs)	250 kg (lbs)
Weight - Full Process & Bath	120 kg (lbs)	200 kg (lbs)	450 kg (lbs)
Vacuum Insulation	Static		
Material	Stainless Steel 300 series*		
Bath Level Control	Cryo-Stic Level Sensor		
Certifications	NEMA 4X, CE		
Standard Testing	Dimensional Check He Leak Check at $1 \times 10^{-9}$ cc/s		
Optional Services	Vacuum Retention Testing, LN2 Cold Shock, Pre-material Certification, X-ray, ASME B31.3 Certification, CFOS Cleaning for O2 Application		
Utilities	Liquid Nitrogen LN <sub>2</sub> : ≤ 150 psi (10 bar) Gaseous Nitrogen GN <sub>2</sub> : 87 psi (6 bar) Electrical: 80-240 VAC		

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## Dimensions

Models	L1	H1	H2
CS.500	406 mm	744 mm	1005 mm
CS.1500	500 mm	880 mm	1160 mm
CS.3500	600 mm	1450 mm	1700 mm



All dimensions provided are for indication purposes only and may not accurately represent the actual product dimensions. Please contact us for updated and actual measurements.