



# Helifier™ - Helium Recovery and Liquefaction

The Helifier provides an economical way to recover helium exhaust from laboratory cryostats and liquefy it for continued use. Cooled by the powerful ARS CS215S cryocooler the Helifier will generate liquid helium at a rate of 18L/day and store up 100 liters of liquid which is roughly a weeks worth of normal helium usage for cryostat applications.

This product is ideally suited for labs with moderate liquid helium usage and give you the freedom to choose when and how you perform your experiments.

## Applications

Reclaim boil-off during short term measurements from a variety of cryostats:

- Flow Cryostats
- Bath Cryostat
- VTI's

Dedicated recovery from one or more permanent installations:

- Superconducting Magnet
- MRI Machines
- NMR Spectrometers

## Features

- 18L/day
- 100L Storage
- Low Electricity Consumption
- Easy to Operate

## Typical Configuration

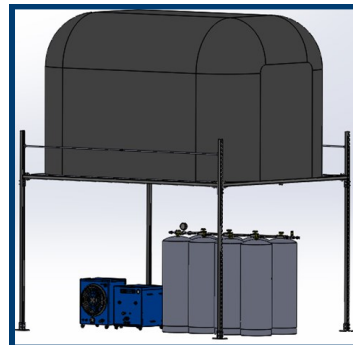
- Helium Liquefier
- Liquid Nitrogen Cooled Helium Purifier
- Atmospheric pressure helium recovery bag
- Medium pressure (400psi) compressor and gas storage tanks

## Options and Upgrades

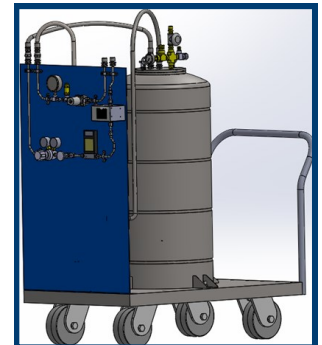
- High pressure (2700psi) compressor and gas storage tanks
- Cryogen Free helium purifier
- Larger Atmospheric pressure recovery bag
- Additional Gas storage Banks
- Cold Swap Purifiers.



Helium Liquefier, Model HeL-18.



Low pressure recovery and medium pressure storage



Helium Purifier



## HeL-18 Liquefier Specifications

### Liquid Helium Production-

Production Rate	18 L/day
Storage	100 L
Initial Startup	40 hours
Operating Pressure	2.5 - 10 PSIG (0.17 - .68 Bar)

### Gas Management -

Input Purity (from purifier)	99.99%
Maximum Inlet Pressure	10 psig
Flow Rate	8.53 SLPM (at max liquefaction)

### Cooling Technology-

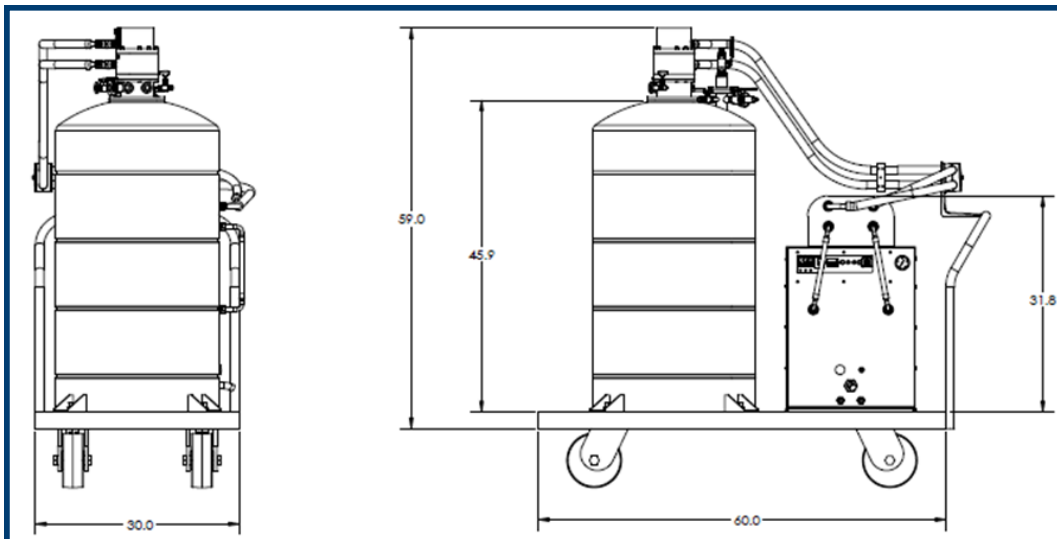
DE-215	Closed Cycle Cryocooler
Base Temperature	< 2.70 K
2 <sup>nd</sup> Stage Cooling Capacity	1.5 W @ 4.2 K
1 <sup>st</sup> Stage Cooling Capacity	30 W @ 45 K
Maintenance Cycle	10,000 Hours

### Cart Physical Characteristics

Dimensions - L x W x H	60" x 30" x 59"
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### Cryocooler Compressor -

Compressor Model		ARS-10HW	
Frequency		60 Hz	50 Hz
Standard Voltage	Min	208 V	190 V
	Max	230 V	210 V
High Voltage	Min	440 V	380 V
	Max	480 V	415 V
Power Usage	Phase	(3 Ph) 7.7 kW	
Refrigerant Gas		99.999% Helium Gas, Pre-Charged	
Noise Level		60 dBA	
Ambient Temperature		5 - 40 C (40 - 104 F)	
Cooling Water	Consumption	5.7 L / min (1.5 Gal. / min)	
	Temperature	< 20C (68F)	
	Connection	1/2 in. Swagelok Fitting	
Dimensions:	L	533 mm (21 in)	
	W	483 mm (19 in)	
	H	617 mm (24.3 in)	
Weight		105 kg (230 lbs)	
Typical Maintenance Cycle		30,000 hours	





# Helifier™ - Helium Recovery and Liquefaction

## Recovery System

### Standard Storage Bag

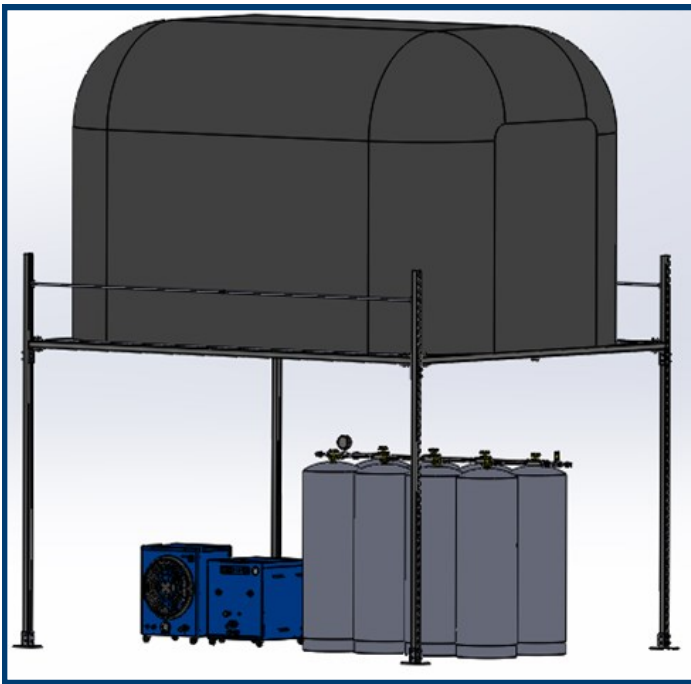
Storage - Liquid Equivalent	11 L
Gas Volume	8.3 m <sup>3</sup> (300 ft <sup>3</sup> )
Inflated Dimensions	3.2 m x 2.1 m x 2.0 m (10.5 ft x 7 ft x 6.5 ft)
Maximum Pressure	0.15 psig

### Standard Gas Storage - Medium Pressure

Storage - Liquid Equivalent	28 L
Gas Volume	20.7 m <sup>3</sup> (746 ft <sup>3</sup> )
Number of Cylinders	2
Cylinder Size (dia x h)	76 cm x 145 cm (30 in x 57 in)
Operating Pressure	350 psig

### Medium Storage Compressor -

Compressor Model		ARS-4HW	
Frequency		60 Hz	50 Hz
Standard Voltage	Min	208 V	190 V
	Max	230 V	210 V
Transformer Options	10%		220 V, 230 V
	15%		240 V
Power Usage	1 Phase	3.6 kW	3.0 kW
Refrigerant Gas		99.999% Helium Gas, Pre-Charged	
Noise Level		60 dBA	
Ambient Temperature		12 - 40 C (54 - 104 F)	
Cooling Water	Consumption	2.3 L / min (0.6 gal / min)	
	Temperature	10 - 35 C (50 - 95 F)	
	Connection	3/8 in	
Dimensions:	L	483 mm (19 in)	
	W	434 mm (17.1 in)	
	H	516 mm (20.3 in)	
Weight		72 kg (160 lbs)	
Typical Maintenance Cycle		30,000 hours	





# Helifier™ - Helium Recovery and Liquefaction

## Helium Purifier

### Gas Management

Helium Outlet Purity	99.99%
Maximum Pressure	400 psig
Operating Flow Rate	8.53 SLPM
Dewar Volume	100 L
Minimum LN <sub>2</sub> level	1 inch
Dewar Hold Time	2 weeks

### Trap Regeneration

Interval between Regeneration Cycles	4 weeks @ 8.53SLPM (assuming 99.9% inlet purity)
Time to Regenerate	24 hours
Bakeout Temperature	150 C
Bakeout Pressure	400 mTorr

### Cart Physical Characteristics

Dimensions - L x W x H	60" x 30" x 59"
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