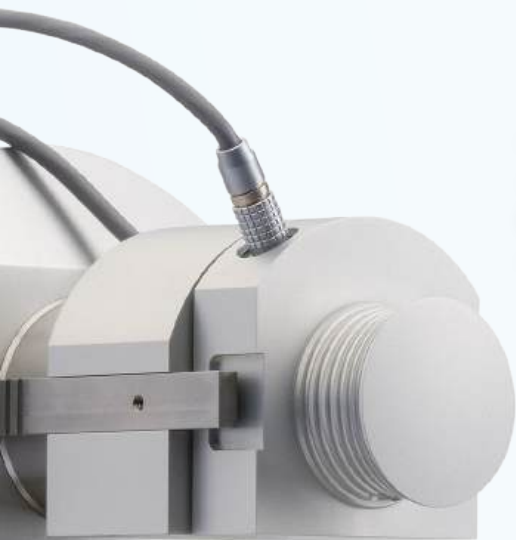




# GM CRYOCOOLERS



For almost 40 years, we've been integrating our proprietary cryocoolers into custom open-flow and closed-cycle cryogenic systems.

**Manufactured in the UK**, these cryocoolers are among the most compact, light weight, efficient, and reliable on the market.

Unlike conventional cryocoolers that operate at a fixed speed, ours run at **variable speeds up to 90 RPM**. This versatility allows engineers to balance the required cooling power against coldhead wear and energy consumption.



By machining the components and assembling them in-house, we provide exceptional quality assurance and close collaboration with customers to develop new features, such as the **ruggedised ports** we designed for SARAO's MeerKAT telescopes, where resistance to dust and moisture is critical.

With additional models in development and new helium compressors on the horizon, OxCryo remains committed to providing the most **versatile and efficient GM cryocoolers** on the market.

## WHY GIFFORD MCMAHON?

Gifford McMahon cryocoolers are an affordable solution that deliver comparable or superior performance to Pulse Tube coolers. They are widely regarded as the most reliable cryocoolers, simple to maintain, and easy to integrate.

# KEY ATTRIBUTES

## COMPACT

Free from orientation, our light weight and compact cryocoolers are ideal for integration into custom systems where space is limited.



## VERSATILE

Fine-tune your cryocooler with variable motor speeds of up to 90 RPM, allowing you to prioritise cooling power against energy efficiency and coldhead wear.



## RUGGEDISED

When research takes you outdoors, optional ruggedised ports ensure your cryocooler has the durability to withstand dust and moisture.



## ADAPTABLE

Get to 10 Kelvin on single phase power with our proprietary helium compressor and run two coldheads simultaneously.

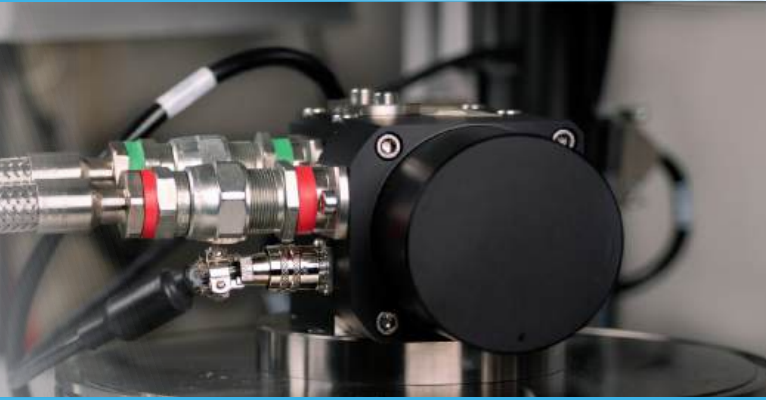


# APPLICATIONS

Cryocoolers are vital for a range of high-tech applications, delivering precise cooling where low temperatures are crucial for optimal performance. From materials research and advanced imaging to astronomy and telecoms, they reduce thermal noise and enhance signal clarity. Their compact, efficient, and reliable design makes them the go-to solution for industries requiring consistent, long-term cryogenic cooling.

## MATERIALS

Cryocoolers enhance the accuracy of material characterisation by providing precise temperature control, enabling the study of superconductors, advanced alloys, and nanomaterials.



## AEROSPACE

Precise cooling is essential in characterising and calibrating instruments before deployment. By simulating the low-temperature of high altitude and outer space, they ensure sensors, detectors, and optics perform optimally under real mission conditions.



## RADIOMETRY

Cryocoolers to enhance signal clarity for infrared, ultra violet, X-ray, and gamma-ray detection. Whether in astronomy, medical imaging, or defense, they help achieve high-resolution imaging and accurate measurements.



## RADIO ASTRONOMY

Oxford Cryosystems' cryocoolers play a vital role in both MeerKAT and the international SKA Observatory's mid-frequency array (SKA-Mid), which will soon be one of the most advanced radio telescopes on Earth.

Used to cool the EMSS RF receivers, these cryocoolers enhance the signal-to-noise ratio, improving the detection of deep-space signals, while their ruggedised ports withstand dust and rain and remote control enables precise performance tuning, maximising efficiency, reducing running costs, and extending service intervals.

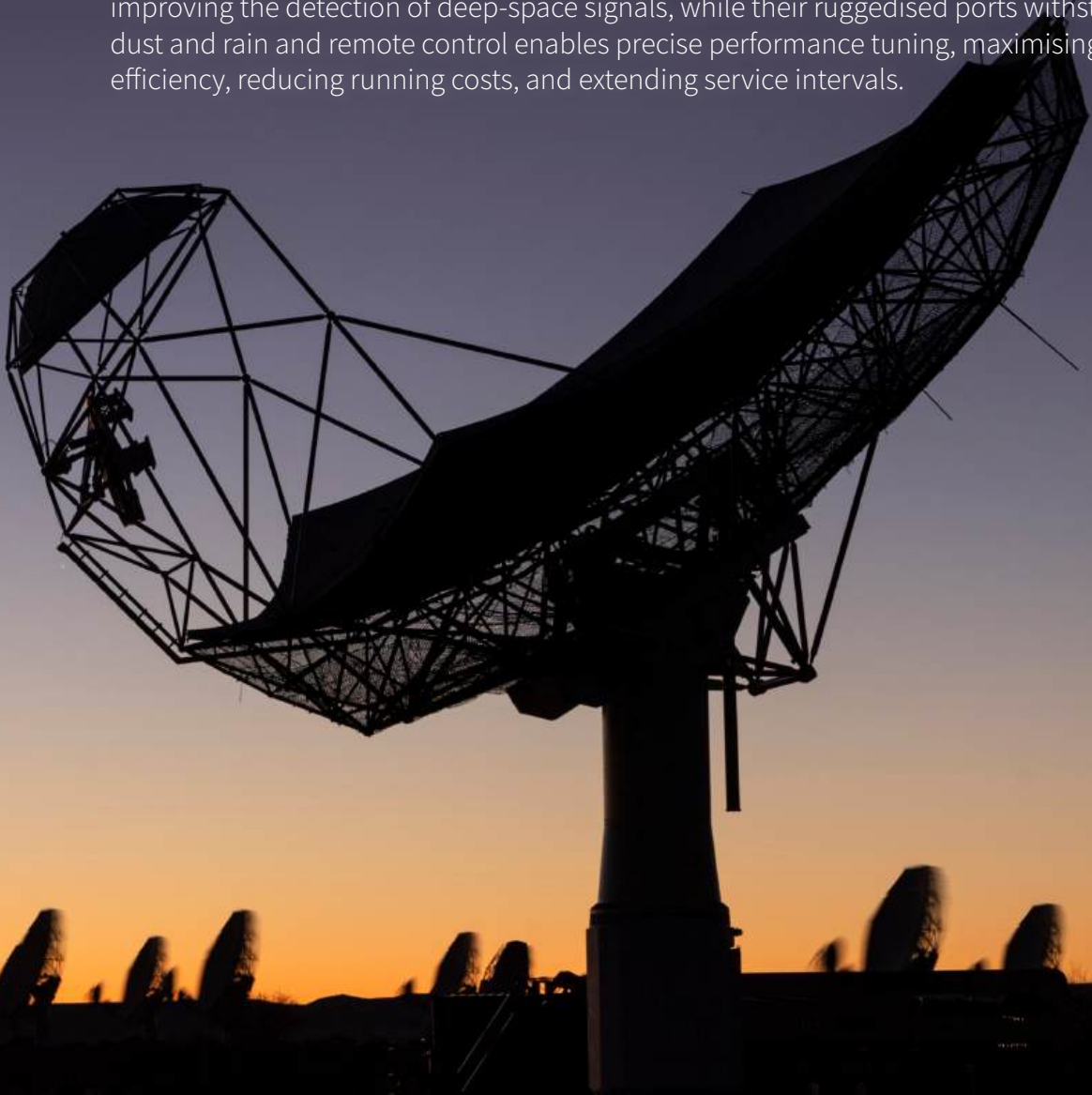


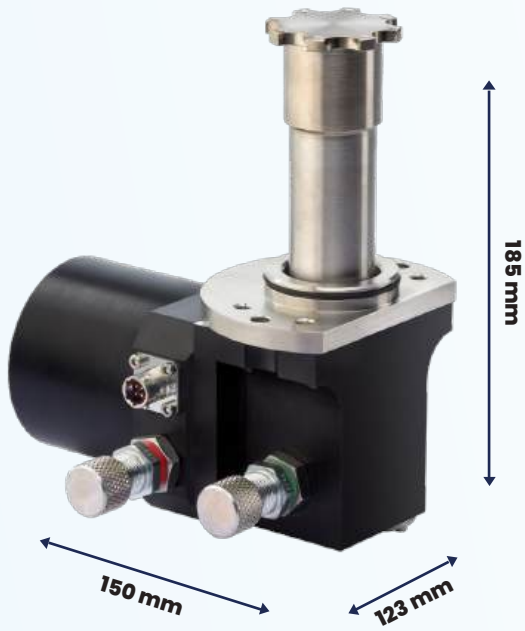
Photo courtesy of SKAO, © Max Alexander

**ABSOLUT  
SYSTEM**  
INNOVATIVE CRYOGENIC SOLUTIONS

**EMSS**  
ANTENNAS

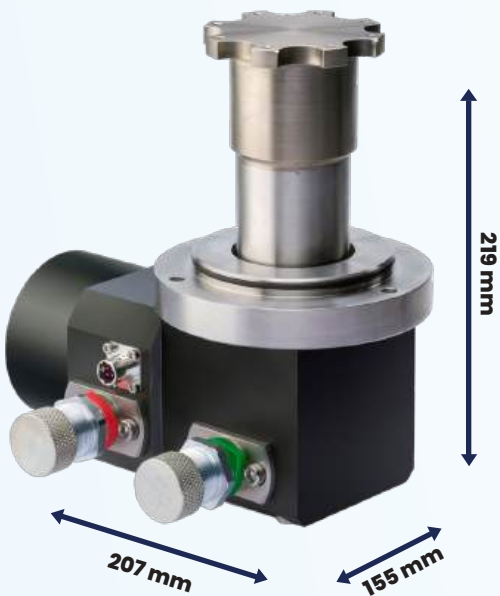
# SINGLE-STAGE

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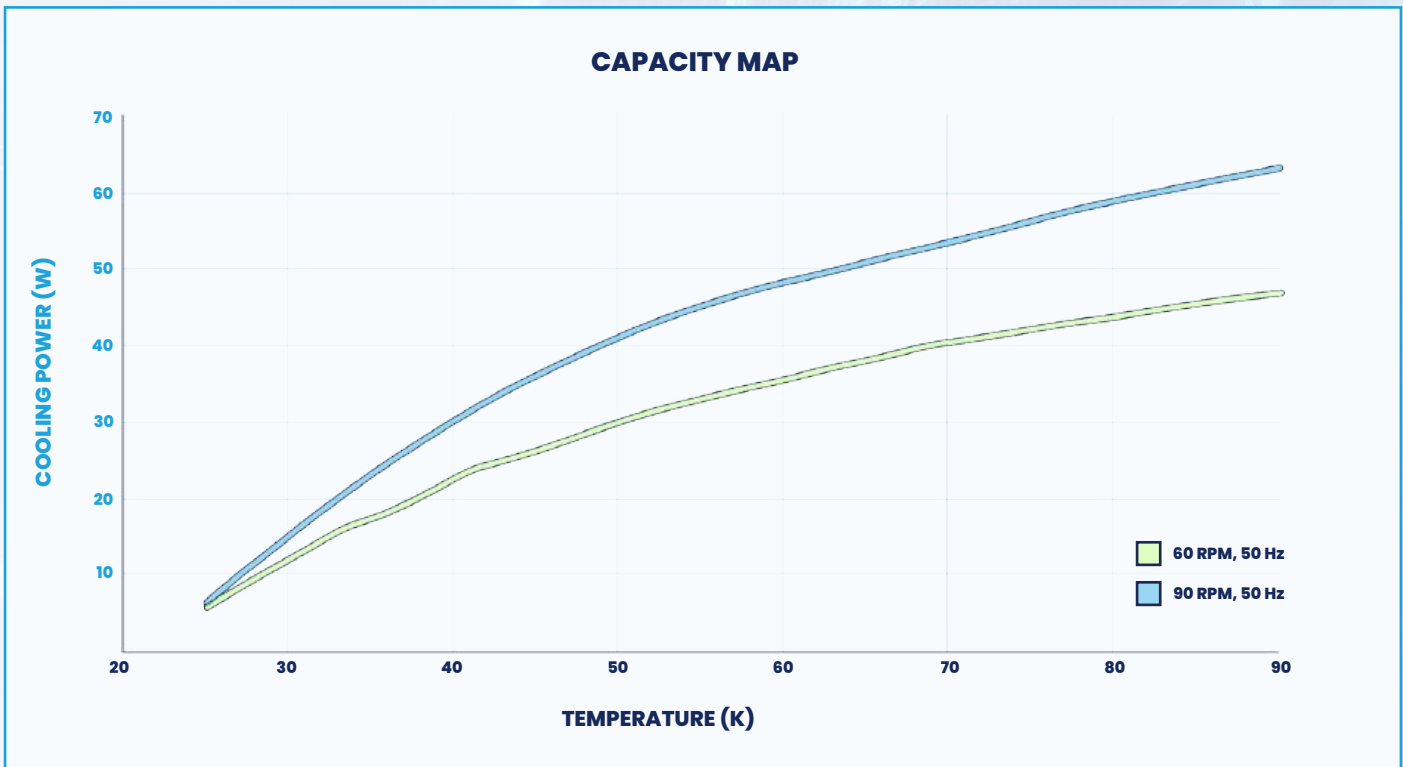
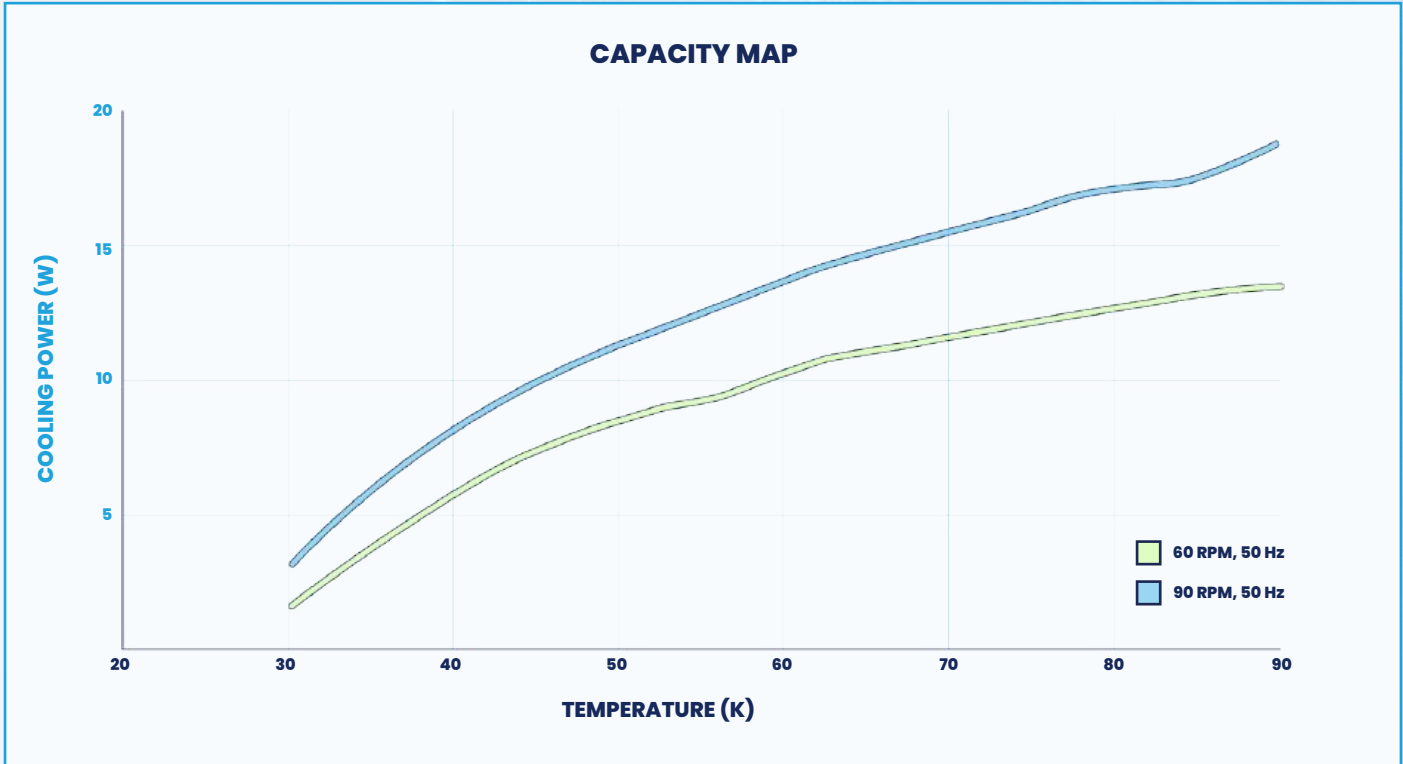


SPECIFICATIONS		
Base Temperature (Unloaded)		30 K
Unit Weight		2.4 KG
Cooling Power		<b>@ 77 K</b>
	70 RPM	12 W
	90 RPM	17 W

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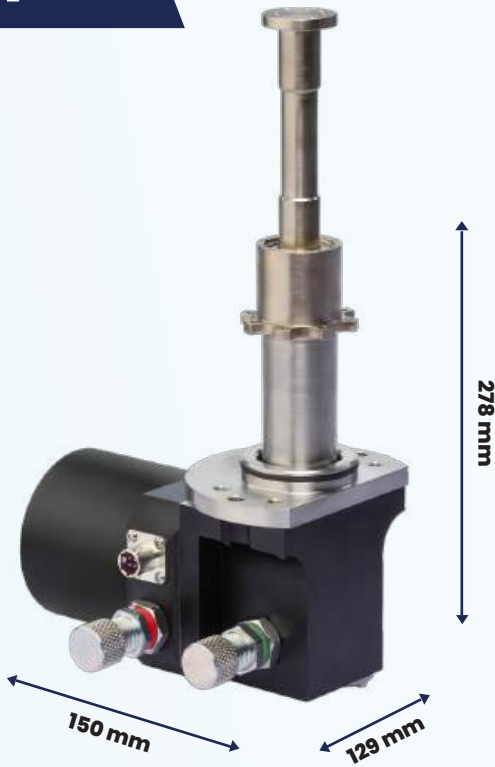


SPECIFICATIONS		
Base Temperature (Unloaded)		30 K
Unit Weight		5.6 KG
Cooling Power		<b>@ 77 K</b>
	70 RPM	42 W
	90 RPM	57 W



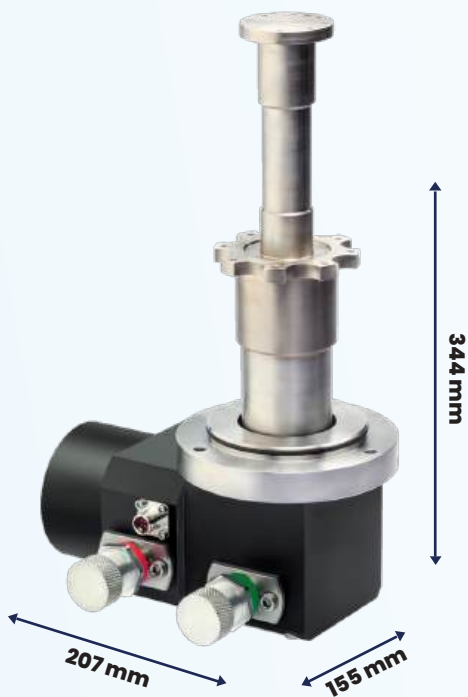
# TWO-STAGE

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SPECIFICATIONS			
Base Temperature (Unloaded)		10 K	
Unit Weight		2.5 KG	
Cooling Power		<b>Stage 1 @ 77 K</b>	<b>Stage 2 @ 20 K</b>
	40 RPM	3.75 W	0.25 W
	50 RPM	6.25 W	0.75 W
	60 RPM	9 W	1.25 W
	70 RPM	10.75 W	1.75 W
	80 RPM	12 W	2.25 W
	90 RPM	13.75 W	2 W

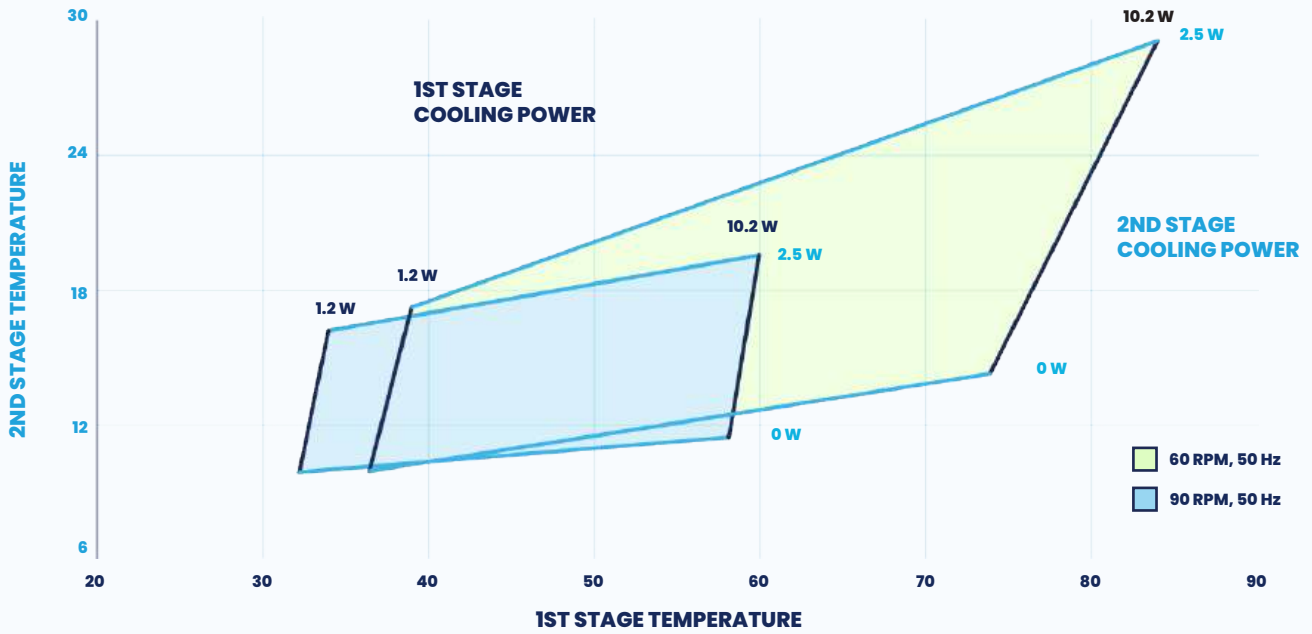
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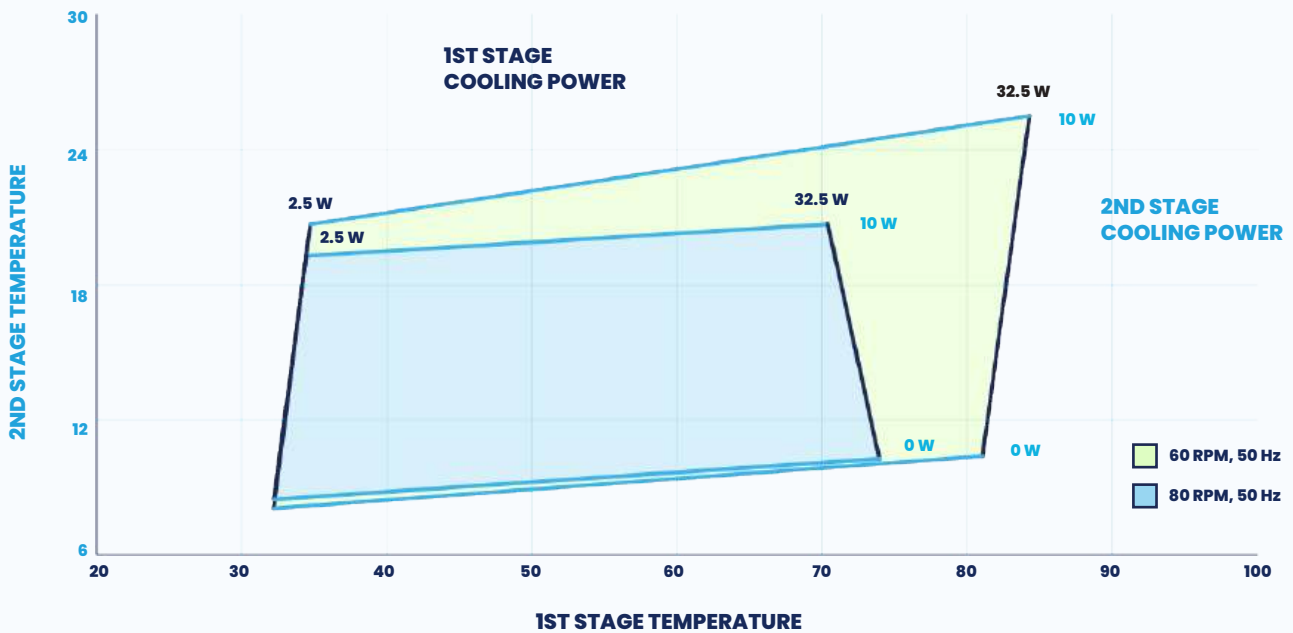
SPECIFICATIONS			
Base Temperature (Unloaded)		10 K	
Unit Weight		6.1 KG	
Cooling Power		<b>Stage 1 @ 77 K</b>	<b>Stage 2 @ 20 K</b>
	40 RPM	15 W	4.5 W
	50 RPM	22 W	6.5 W
	60 RPM	27.5 W	8 W
	70 RPM	29.5 W	8.5 W
	80 RPM	33.5 W	9 W
	90 RPM	30.5 W	8.5 W



### CAPACITY MAP



### CAPACITY MAP



# HELIUM COMPRESSORS



A helium compressor is the driving force behind a cryocooler, supplying high-pressure helium gas in a closed-cycle refrigeration process. The K450 has been specifically engineered to allow for total control of these GM cryocoolers.

By precisely controlling the coldhead motor speed, and the helium flow and pressure, the compressor enables highly customisable performance tuning to ensure efficient, reliable, and adaptable cooling. The control is not limited to the K450, there is also free software that easily integrates for local and online monitoring and control.

## MULTI-DRIVE

The K450 Helium Compressor can run two coldheads at once, this not only saves space but it's also more energy efficient, saving money too.



## CONTROL

Free from orientation, compact and lightweight, these cryocoolers are ideal for easy integration into custom systems where space is limited.



# K450

## ELECTRICAL REQUIREMENTS

	50 Hz	60 Hz
<b>Supply Voltage</b>	200 - 240 V	208 - 230 V
<b>Operating Current</b>	17.0 A	15.7 A
<b>Operating Power</b>	3.4 kW	3.6 kW
<b>Fuse Rating</b>	20 A (Starting Current 65 A)	
<b>Chilled Water Requirements</b>	5 l/min @ 180 C	



# AC3

## ELECTRICAL REQUIREMENTS

	50 Hz	60 Hz
<b>Supply Voltage</b>	200 - 240 V	208 - 230 V
<b>Operating Current</b>	17.0 A	15.7 A
<b>Operating Power</b>	3.4 kW	3.6 kW
<b>Fuse Rating</b>	20 A (Starting Current 65 A)	
<b>Chilled Water Requirements</b>	5 l/min @ 180 C	

