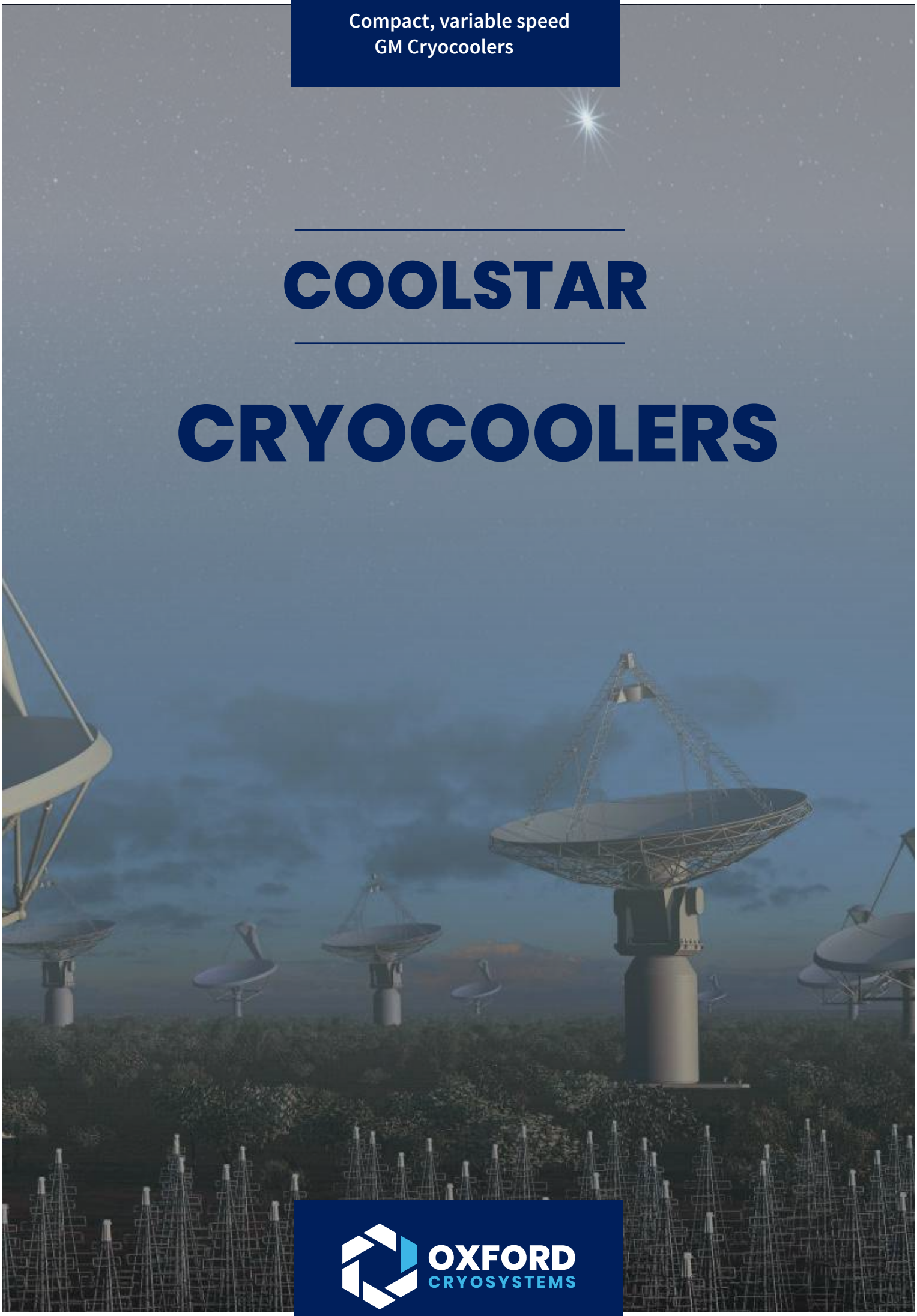
Compact, variable speed
GM Cryocoolers

COOLSTAR

CRYOCOOLERS



OXFORD CRYOSYSTEMS

COOLSTAR CRYOCOOLERS

COMPACT, VARIABLE SPEED GM CRYOCOOLERS

The Coolstar range of Gifford McMahon Cryocoolers has long been regarded as one of the most versatile, compact and cost-effective solutions available.

Comprising of single stage coldheads and two stage coldheads, coupled with the K450 helium compressor, Coolstar Cryocoolers all offer fast cool-down times, variable coldhead speed and compact size, making them the perfect choice for integration into a wide range of applications.

Today, the Coolstar range is manufactured in the UK by Oxford Cryosystems – a leader in the design and manufacture of cutting-edge cryostats for scientific research and industrial applications. Building on over 30 years of experience in cryogenic engineering, Oxford Cryosystems has developed and refined the Coolstar product range, resulting in a range of Cryocoolers that offer reliability, efficiency, compact design, variable coldhead speed and long service intervals.

COOLSTAR CRYOCOOLER FEATURES:

COMPACT AND POWERFUL DESIGN
Small coldhead allows easier installation in systems – particularly where space is at a premium

EFFICIENT AND POWERFUL SYSTEM
Capable of reaching 10 K with single-phase electrical power requirement

MULTI-DRIVE CAPABILITY
Enables up to two coldheads to be driven from a single compressor

PROPRIETARY SOFTWARE
Free Cryoconnector programme is easily integrated and features local PC and online control

MODE OF OPERATION:

Oxford Cryosystems' Coolstar is the only commercially available range of GM cryocoolers offering complete control of the coldhead speed. By using a variable speed stepper motor, combined with proprietary control sofware, every Cryocooler in the range can be operated at speeds from 40- 90 rpm. This offers major advantages to the user including:

PROLONGED SERVICE INTERVALS
Decreased coldhead speed during low demand periods reduces wear on coldhead seals.

COOLING POWER CONTROL
Varying the cycle rate second-by-second offers increased control for integration into cryostats or custom designs.

FAST COOLDOWN TIME
Increased coldhead speed makes it possible to reach 20 K in as little as 16 minutes (depending on Coldhead).

POTENTIAL APPLICATIONS OF THE COOLSTAR RANGE:

The compact size, range of cooling power and orientation independence of the Coolstar range lends itself to a wide range of applications including:

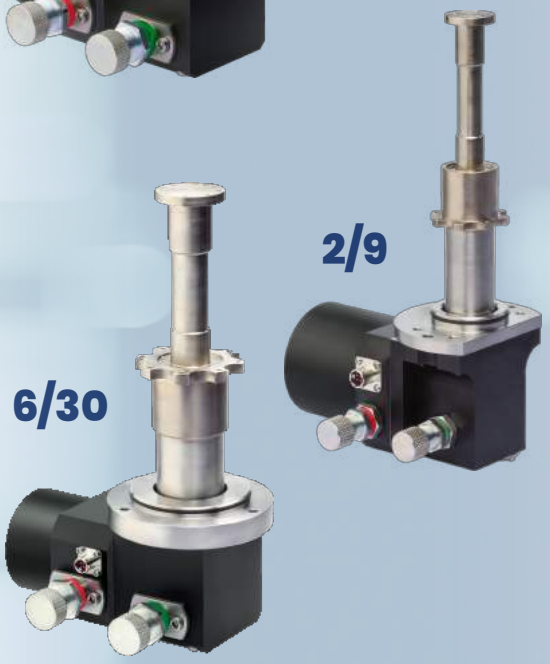
- shield coolers
- laboratory cryostats
- radio astronomy
- custom cryostat design

SINGLE STAGE COLDHEADS:
0/12 AND 0/40

The Coolstar single stage coldheads comprise the 0/12 and 0/40 models, respectively delivering cooling powers of 12 and 40 W at 77 Kelvin. These compact models have the major advantage of being some of the smallest and most cost-effective GM heads available, and can thus be installed in systems where space is at a premium. The coldheads function independently of orientation and can be used with the K450 helium compressor.

TWO STAGE COLDHEADS:
2/9 AND 6/30

The Coolstar two stage coldheads comprise the 2/9 model (delivering cooling power of 2 W at 20 K and 9 W at 77 K simultaneously) and 6/30 model (delivering cooling power of 6 W at 20 K and 30 W at 77 K simultaneously). Both of these coldheads can reach a base temperature of 10 K. These eficient coolers are still compact, lending themselves to a wide range of applications. The coldheads function independently of orientation and can be used with the K450 helium compressor.

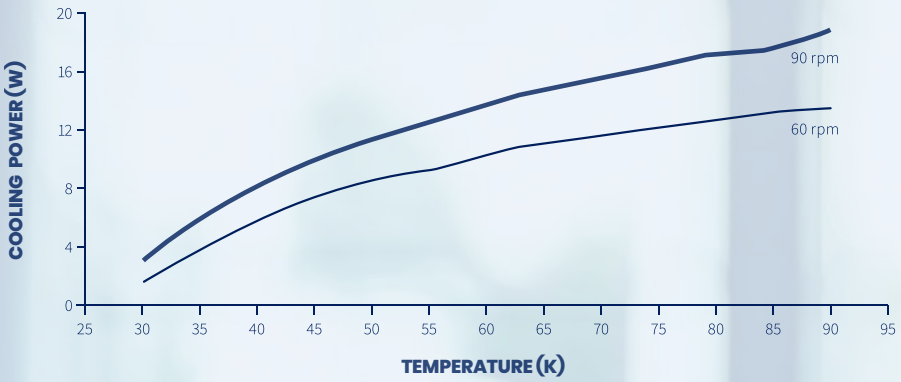


HELIUM COMPRESSOR:
K450

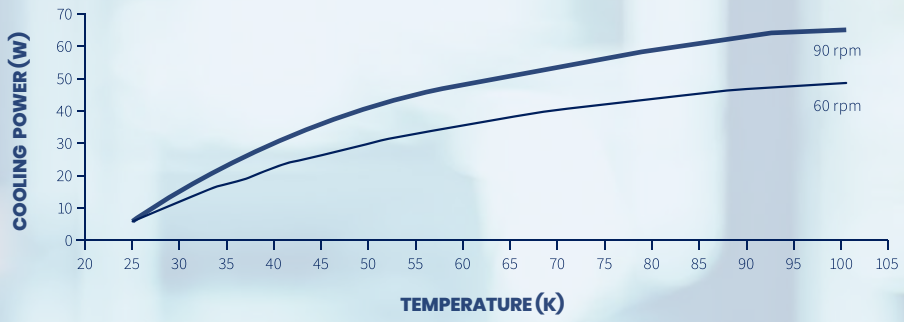
The K450 helium compressor has been designed to offer robust, powerful performance with long service intervals (30,000 hours). The K450 can be used with any Coolstar coldhead.

K450
HELIUM COMPRESSOR

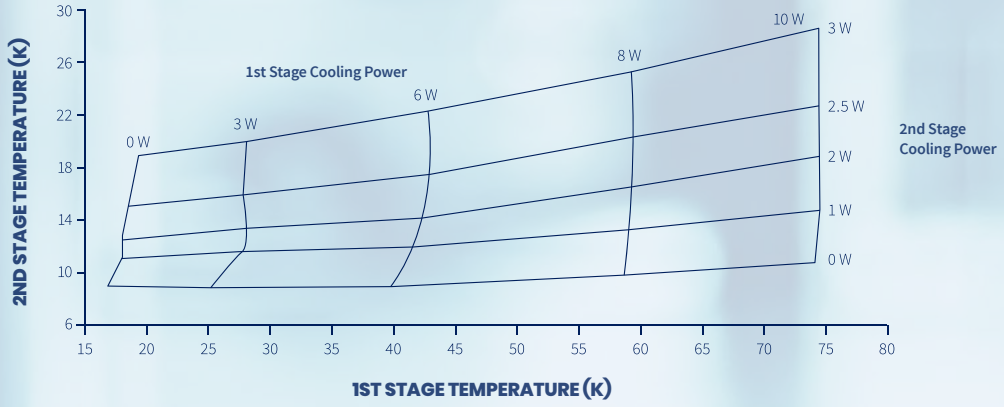
0/12 COLDHEAD



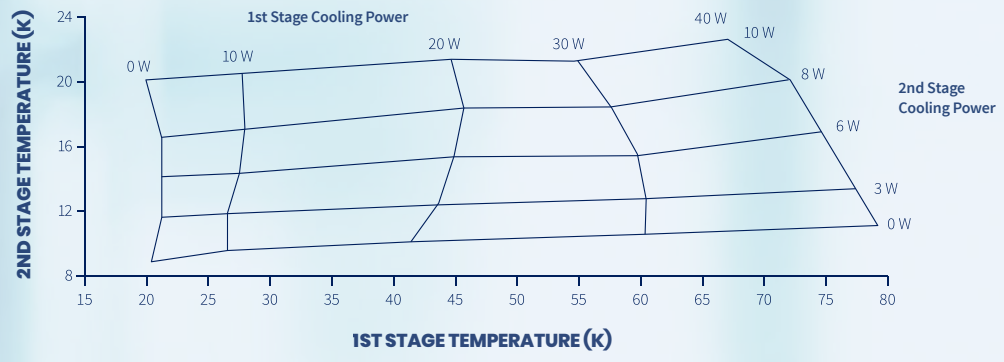
0/40 COLDHEAD



2/9 COLDHEAD



6/30 COLDHEAD



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COLDHEAD SPECIFICATIONS

	COOLSTAR 2/9	COOLSTAR 6/30	COOLSTAR 0/12	COOLSTAR 0/40
BASE TEMPERATURE (UNLOADED)	10K	10K	30K	30K
NOMINAL COOLING POWER AT 20K				
NORMAL SPEED (72 RPM)	2W	6W		
HIGH SPEED (90 RPM)	2.4W	7W		
NOMINAL COOLING POWER AT 77K				
NORMAL SPEED (72 RPM)	9W	28W	12W	42W
HIGH SPEED (90 RPM)	11W	30W	17W	57W
TIME TO COOLDOWN BARE COLDHEAD				
TO 20K	<16 MIN	<18 MIN		
TO 77K			<11 MIN	<11 MIN
INCREASE IN COOLDOWN TIME FOR EACH 100G COPPER ADDED	14 MIN	5.2 MIN	6 MIN	2 MIN
WEIGHT	2.5 KG	6.1 KG	2.4 KG	5.6 KG
DIMENSIONS	278 x 129 x 150 mm	344 x 155 x 207 mm	185 x 123 x 150 mm	219 x 155 x 207 mm

K450 COMPRESSOR SPECIFICATIONS

ELECTRICAL REQUIREMENTS		
	50Hz	**60Hz**
SUPPLY VOLTAGE	200 - 240 V	208 - 230 V
OPERATING CURRENT	17.0 A (@240 V)	15.7 A (@230 V)
OPERATING POWER	3.4 kW (@240 V)	3.6 kW (@230 V)
SUPPLY FUSE RATING	20A (Starting current: 65 A)	
HEAT DISSIPATION	Fan on enclosure outputs ~300W of heat into the environment	
SERVICE REQUIREMENTS	Adsorber change @ approx. 30 000 hours	
WEIGHT AND DIMENSIONS	H 639 x D 610 x W 540 mm 100KG	
WATER COOLING REQUIREMENTS	Chiller requirement of 3.0 kW Typical flow rate 5l/min at 180C	

SUPPORT AND SERVICE

Aside from our development expertise, Oxford Cryosystems has also gained an excellent reputation over the past twenty five years for customer service and support.

The Coolstar range of coldheads and compressors was designed to be as efficient and economical to maintain as possible. Oxford Cryosystems can provide a range of service kits and accessories with full user instructions so that customers can easily service systems in-house.
For those who prefer to have Oxford Cryosystems service their equipment, we maintain dedicated production and service facilities in the UK, where we take pride in the fast and efficient diagnosis, service and return of the Coolstar systems.

We can also offer a coldhead swap-out service on request.