

Cobra

Non-liquid Nitrogen
Cryostream



OxfordCryosystems

Cobra

Cobra is the open flow Nitrogen Cooler from Oxford Cryosystems. Simple Cryostream-like efficiency and reliability without the liquid... Cobra truly offers the best of both worlds!

As Cobra uses nitrogen gas it offers complete freedom from liquid nitrogen, and the challenges it presents such as storage, logistical and safety issues or simply the worry and responsibility of remembering to refill the Dewar! In fact, the Cobra can be left to run for weeks or even months without any user intervention, offering complete peace of mind and a stress-free laboratory environment.

Like the Cryostream, the Cobra is fully programmable, and can produce a cold stream at any temperature between 80 and 500 Kelvin, with a stability of 0.1 Kelvin. If a laboratory nitrogen gas supply is available, this can be used for the Cobra. Otherwise, an optional nitrogen gas generator can be provided, which produces pure dry nitrogen gas from the air.

Features of the Cobra

- No liquid nitrogen required
- 80-400 K (80-500 K for Plus version)
- Run for weeks without user attention
- Stability of 0.1 K with ability to log and record temperatures
- New 800 series touch-screen controller
- Integrates with most commercial X-ray Diffractometers
- Monitor and control remotely via Cryoconnector software and Oxford Connect

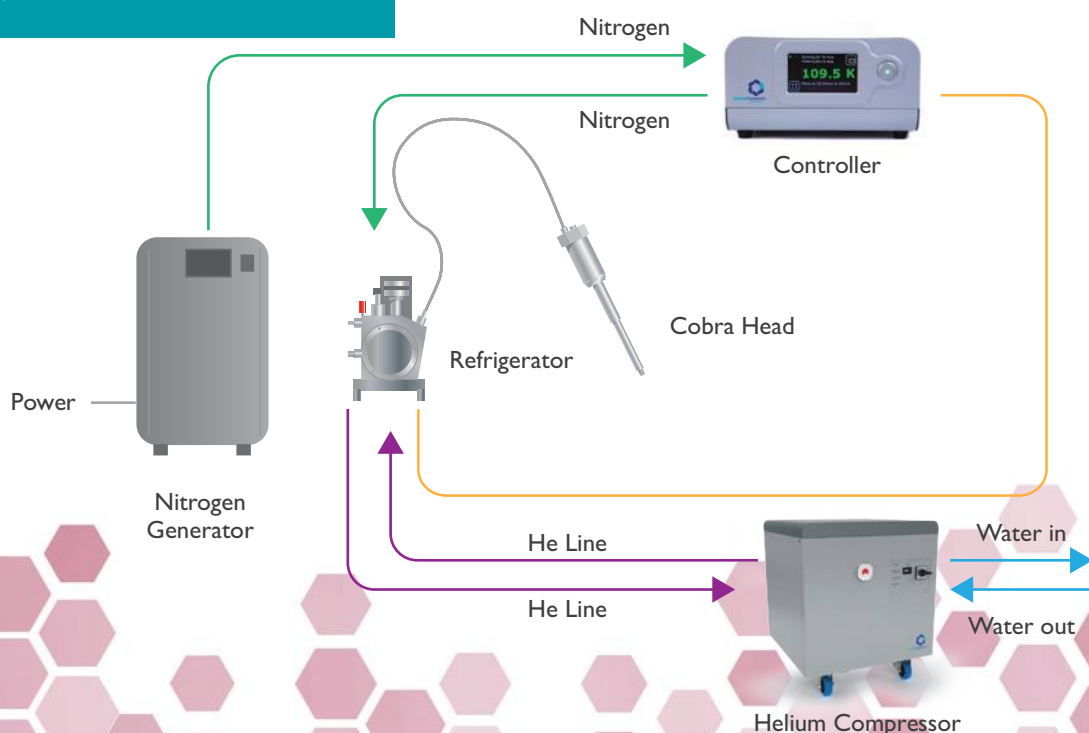
Mode of Operation

Room temperature compressed nitrogen gas is cooled by the Cobra refrigerator (which incorporates a GM closed cycle cooler) and delivered to the Cobra head via a vacuum insulated transfer line. Whilst the Cobra head is smaller than the Cryostream coldhead, the dimensions of the nozzle have been retained, meaning the Varibeam support stand can be used to support and position the gas delivery head. An external stream of nitrogen gas (or dry air) at room temperature provides the shield gas, which prevents icing of the sample.

Cobra consists of:

- Cobra gas delivery head and nozzle*
- 2 m flexible insulated vacuum hose connecting Cobra head to Cobra refrigerator*
- Cobra refrigerator incorporating a single stage GM coldhead*
- Water-cooled helium compressor
- Optional nitrogen gas generator

The first 3 items are permanently joined to form an integrated assembly



Optional Nitrogen Generator

The Cobra utilises dry compressed nitrogen gas which is cooled to <80 K by the Cobra's integrated GM coldhead. Many labs have access to a piped-in dry nitrogen supply which can be used directly by the Cobra. If dry nitrogen gas is not available however, Oxford Cryosystems can supply a nitrogen gas generator, which produces pure dry nitrogen gas from the air.

The generator has 2 outlet ports, both providing gas at 1.2 bar for the inner and outer streams, thus avoiding the need for a dry air unit.

Oxford Connect and Cryoconnector

OxfordConnect is a completely free website from Oxford Cryosystems. By using our Cryoconnector software and registering Cobra at OxfordConnect, you will be able to...

- Connect to your Cobra via the web
- Remotely monitor and control your Cobra from a PC, smartphone or tablet
- Automatically log your device data
- Enable Oxford Cryosystems to remotely view your device performance for faster tech support
- Receive status notifications when your device status changes

The Cobra controller now offers USB and ethernet ports, in addition to RS232, meaning all users can monitor and control their system via Oxford Connect whilst still interfacing to their diffractometer software.

The Oxford Cryosystems Philosophy

When you buy a product from Oxford Cryosystems, you are investing in over thirty years of research and development in low temperature devices for X-ray crystallography. We see your low temperature device as more than an accessory; to us, it is central to your research. We know that if your low temperature system were to let you down, then we would have let you down.

Because of our focus on low temperature systems, you will find that every one of our products has superior functionality, reliability and control. For example, the Cobra is built on a unique software platform which allows the constant monitoring of up to 14 different inputs and outputs within the system. The controller then manages a number of unique relationships such as gas temperature as a function of flow or cooling power as a function of vacuum quality.

A perfect example of our superior engineering is the unique gas delivery nozzle design which is used by both the Cryostream and Cobra. Experience and development have led us to create the ideal laminar flow system ensuring that the likelihood of ice forming anywhere near the sample is extremely low, and that the temperature at the crystal is accurately mapped and very stable.

These are just a few of the many unique design features engineered into all Oxford Cryosystems' low temperature devices. We take great pride in taking our product development that bit further, so that our customers benefit from the most stable, reliable and efficient devices available.

Technical Specifications

Cobra Gas Delivery Head*		
Temperature range	80-400 Kelvin (or 80-500 Kelvin for Cobra Plus)	
Nitrogen gas flow rate	5 or 10 litres/minute	
Temperature stability	0.1 Kelvin	
Cool down time to 100 Kelvin	60 minutes	
Length of transfer line	2000 mm	
Cobra Controller		
Controller weight	7 kg	
Controller size	263 mm W x 141 mm H x 299 D	
Mains power supply	100 - 240 V 50/60 Hz	
Controller Power Consumption	500VA	
Cobra Refrigerator*		
Refrigerator weight	15 kg	
Refrigerator dimensions	278 mm x 200 mm x 277 mm	
K450 Compressor Electrical requirements		
	50 Hz	60 Hz
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)
SupplyFuse Rating	20 A (Starting current: 65 A	
Weights and Dimensions	639mm H x 610mm D x 540mm W, 100 kg	
Water Cooling Requirements	Chiller requirement of 3.0 kW, Typical flow rate 5l/min at 18°C	
Lab nitrogen supply (if available)		
Gas purity	>97.5% purity	
Gas pressure	Regulated to 1 - 1.4 bar (or Regulator kit available)	
Gas flow	Approx 25 litres/minute per Cobra	
Nitrogen gas generator (optional)		
Nitrogen weight	95 kg	
Generator dimensions	900 mm W x 700 mm H x 310 mm D	
Mains power supply	230V 50Hz, 100V 50Hz, 120V 60Hz, 100V 60Hz	

* These items permanently joined to form an integrated assembly

Support for all our customers...

Aside from our development expertise, Oxford Cryosystems have also gained an excellent reputation over the past thirty years for customer service and support. Whilst Oxford Cryosystems' products are known for their reliability and ease of use, users may occasionally require advice on technical aspects of their system. Technical support is offered to all Oxford Cryosystems customers on all products. There are no time limits, no expensive telephone numbers and no small print. If you need support, you'll get it - it's that simple!

Service when you need it...

Although Oxford Cryosystems design their devices to be as efficient and economical to maintain as possible, products such as the Cobra, due to its mechanical components, will need reasonably regular maintenance.

Therefore, Oxford Cryosystems offers a choice of pre-paid scheduled maintenance packages for complete peace of mind, or the more traditional reactive servicing approach. Whatever route you choose, you can be assured that we will advise you of the optimal service intervals. We simply don't believe in annual servicing for the sake of it - if your product needs servicing only every 2 years, or even every 3, we will tell you! For further details on the service packages we offer, simply contact your local Oxford Cryosystems office or agent.



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