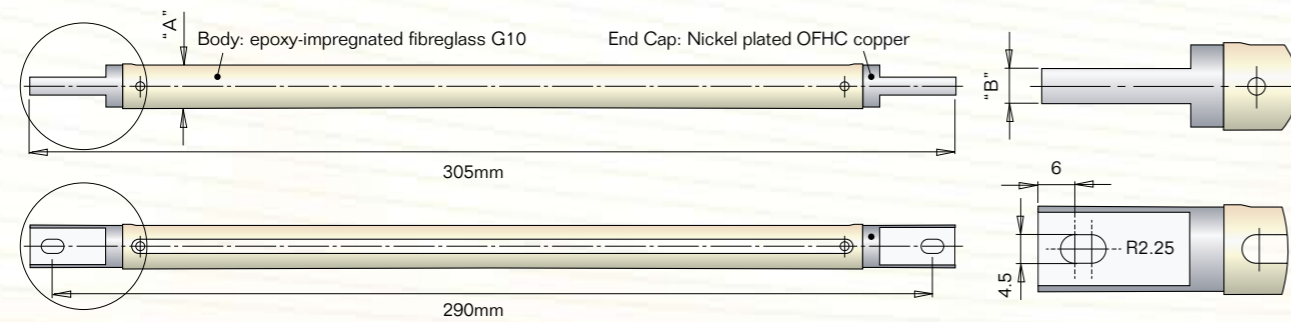


CryoSaver™ Current Leads

Standard Leads

The Standard CryoSaver™ leads use a fiberglass composite body to encase the HTS wire for structural integrity. Nickel plated copper endcaps are used for warm and cold end connections. Standard lead models are listed below (see diagram for dimensional information). Shorter versions of the Standard lead design are also available, with an overall length of 170mm and a typical increase in heat leak of around 75% compared to Standard leads.

Product	Operating current (at 64K)	Body Diameter A		Dimension B		Conductive Heat Leak at 64K-4.2K (per pair)
		Inches	mm	inches	mm	
CS010030	100A	0.375	9.53	0.13	3.30	32mW
CS025030	250A	0.438	11.13	0.25	6.35	76mW
CS050030	500A	0.563	14.30	0.25	6.35	145mW
CS100030	1000A	0.750	19.05	0.375	9.53	285mW
CS200030	2000A	1.00	25.4	0.438	11.13	480mW



Hermetic Leads

Designed for service in cryogenic liquid or vapour, CryoSaver™ Hermetic leads utilize a thin-walled stainless steel outer body and lid to form a hermetic seal against absorption of helium into the HTS wire. Mounting point center to center and overall length are the same as equivalent Standard leads (see diagram above).

Product	Operating current (at 64K)	Conductive Heat Leak at 64K-4.2K (per pair)
CSH010030	100A	50mW
CSH025030	250A	95mW
CSH050030	500A	155mW
CSH100030	1000A	285mW

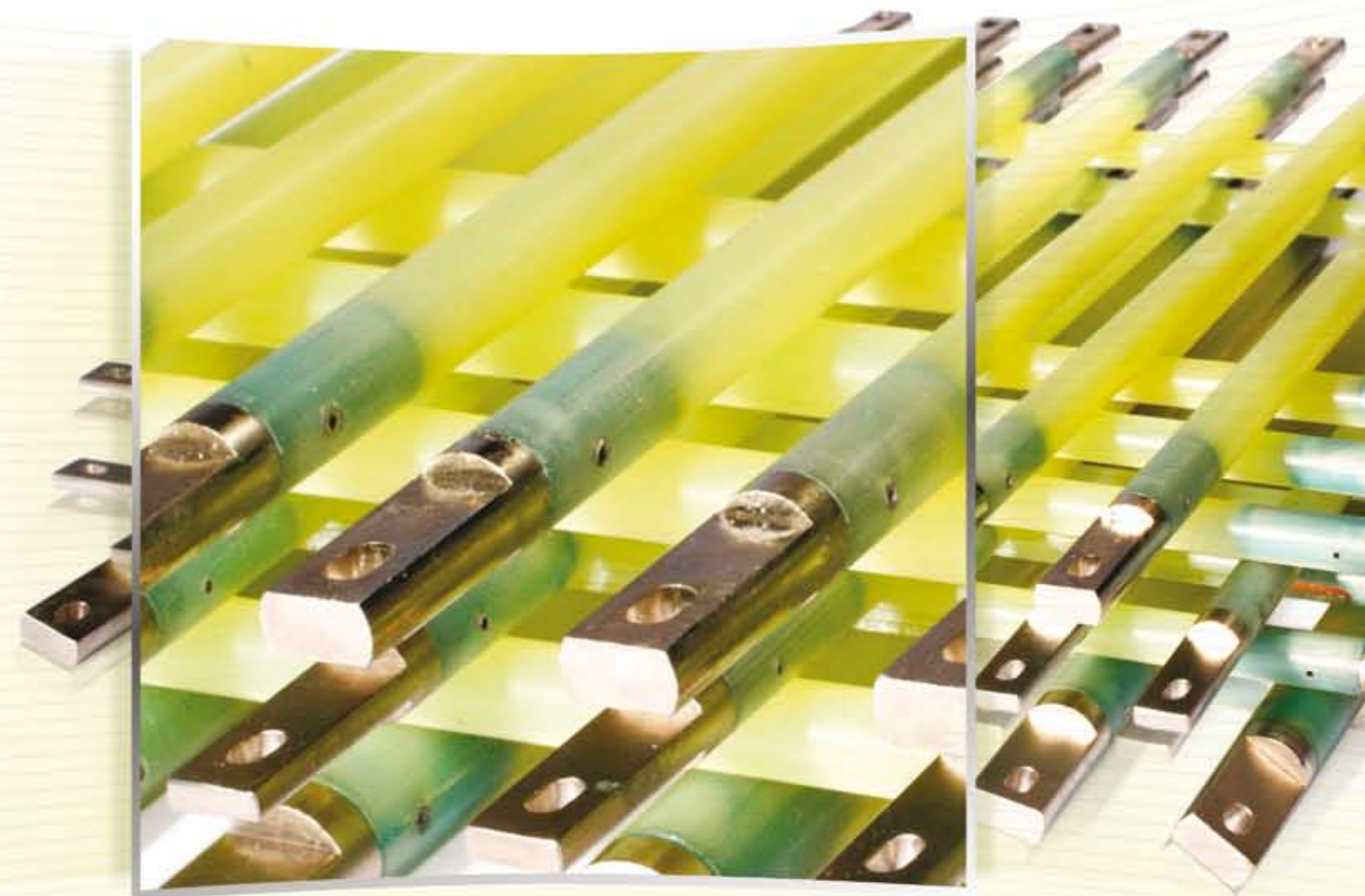
High Amperage Integrated Leads

HTS-110 also has a standard line of high amperage, fully integrated HTS leads, specifically designed for open cycle cooling applications. This innovative design provides the user with a complete current path from room temperature to the cold mass and has a 6-10 kiloamp current range. Helium vapor is used to cool the HTS lead section, while the resistive section is efficiently cooled with liquid nitrogen. These leads have proven field reliability against thermal cycling and are stable to current ramping of at least 200 A/s. Typical thermal performance results in a 10x heat load reduction to the cold source over conventional lead designs.



Custom Leads

If HTS-110's wide range of standard products does not suit your specific application needs, completely custom lead designs are available. Our technical staff and fast flexible production facility have the ability to develop your project needs into hardware, quickly and accurately.



HTS-110

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HTS-110 Magnetic Solutions

CryoSaver™ Current Leads

HTS-110 has a full range of current leads from 100 amps to greater than 10,000 amps. The CryoSaver™ family of current leads uses multi-filamentary high temperature superconducting (HTS) tapes to create a robust, reliable lead.



Low Heat Leak

The HTS conductor is a composite that places HTS filaments in a low thermal conductivity matrix. The composite conductor has a very high current density, translating into a small cross-section of conductor and a low heat leak. The conductor displays tolerance for strain and thermal cycling that is superior to other types of HTS lead. The CryoSaver™ current lead is designed for conduction cooling and requires no helium vapour flow.

Durability

The conductor sits in a fibreglass housing that is robust and stress tolerant. The nickel-plated copper end caps are strong, corrosion-resistant and easy to make mechanical connections to. The CryoSaver™ lead is designed to tolerate large numbers of thermal and electrical cycles. With the conductor bonded to a rigid fibreglass support the leads are resistant to Lorentz forces from high currents and magnetic fields.

Field Tolerance

CryoSaver™ current leads exhibit superior tolerance for applied magnetic fields along two axes. The anisotropic nature of the leads allows the lead to be positioned in a cryostat such that applied fields are along a favourable axis. This is a distinct advantage over isotropic bulk materials, which have relatively poor field tolerance that is equal along all axes.

Stability

The CryoSaver™ lead has a superior ability to ride through and recover from minor cooling system upsets without damage or burnout. The matrix metal in the conductor slows temperature rise after loss of cooling.

Ease Of Integration

Electrical connection to the caps is easily made mechanically or by soldering for low contact resistance and low Joule heating. The CryoSaver™ lead requires no special storage or handling and can be kept for months in normal conditions without any loss of performance. The rigid structure requires no special engineering by the user for support, stress relief, or vibration isolation. The existing product range includes standard, hermetically sealed, high-current, custom and short leads.