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SMALL-SIZE OPTICAL CT-CRYOSTATS

Small size cryostats of " CT " series are designed for transmission coefficients measurements of different optical samples of temperature in range from helium to room. The "CT" series is presented by three cryostats for samples with diameter up to 25, 50, 75 mm.

THE PRINCIPLE OF ACTION

Sample holder with built-in heat exchanger is located in vacuum. Temperature regulators sample is made by blowing the heat exchanger of the holder of refrigerant required temperature, inlet of the heat exchanger of the system of temperature regulation, equipped with a built-in heater. The refrigerant in heat exchanger of the system of temperature control is fed by overflowing siphon by pumping vacuum pump or blowing due to the surplus pressure created in the transport, accordingly, helium or nitrogen Dewar vessel. A built-in carbon cryogetter pump is arranged on the supply line of a refrigerant.

Mode of functioning, Application

Cryostats are used in the conditions of production for appraisal and selection of finished products, in research laboratories in the study of the temperature dependence:

× transmittance coefficient of the solid materials and coatings;

× transmittance coefficient of the liquid substances located in ampoules;

× characteristics of the photosensitive materials, photo detectors;

× characteristics of semiconductor emitters, etc.

Cryostats can be used as cryogenic attachments for the standard spectral devices

A cryostat structure is represented in Fig.1.

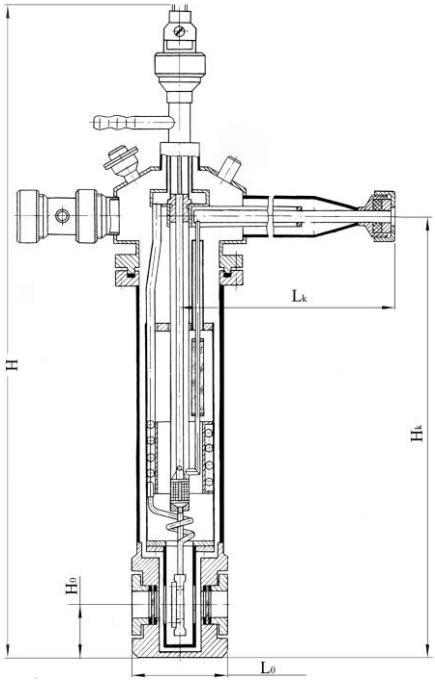

Fig. 1

The sample is changing after heating and demounting of the cryostat. Demounted cryostat is shown in Fig.2

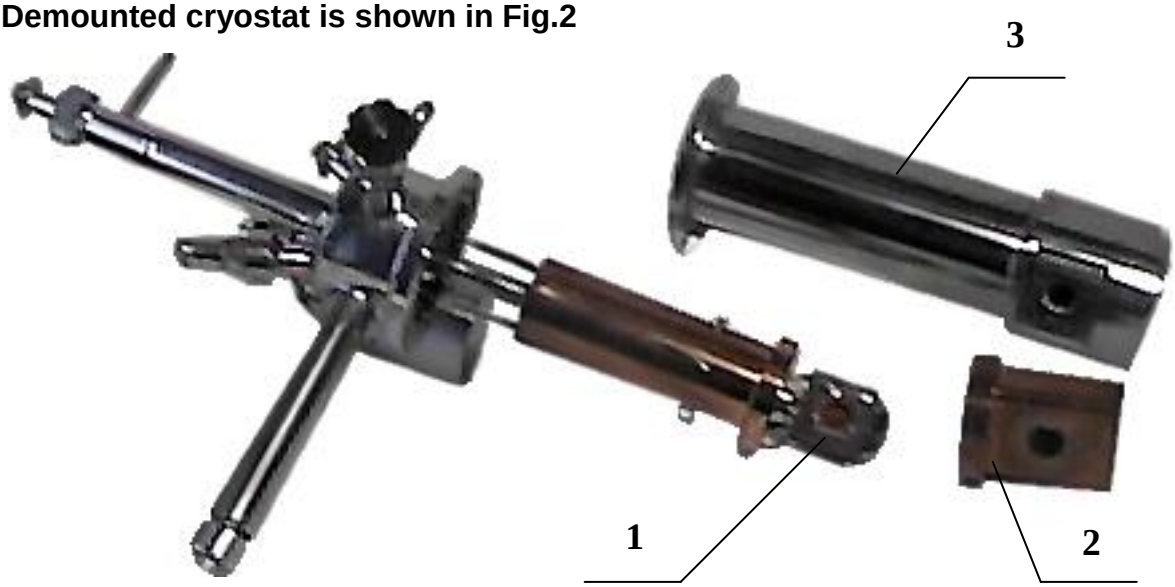

Fig. 2

1 – Sample holder;
2 – Screen demountable part; 3 – Cashing demountable part.

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Performance specification

Temperature control range, K	**CT-25**	**CT-50**	**CT-75**	
- using liquid helium at consumption 1 l/h			**3 – 300**	
- using liquid nitrogen at consumption 1 l/h			**65 – 300**	
Investigating sample dimensions, mm				
- diameter	**10 – 25**	**10 – 50**	**10 – 75**	
- number of optical windows	**2**	**2**	**2**	
Window diameters "in the light"	**20**	**42**	**65**	
Inclination of plane of the windows to horizontal axis, deg.	**10**	**10**	**10**	
Overall dimensions in optical axis zone, mm:				
- maximum dimension along optical axis, L_0		**75**	**90**	**110**
- height of optical axis, H_0	**55**	**60**	**65**	
- L_k		**350**		
- H_k		**350**		
- H		**600**		
maximum weight, kg.	**6.5**	**8**	**10**	

Merits

- High certainly of results of sample transmission coefficient measurements.
- High vacuum and no-sediments on sample surface during the experiment. It is conditioned on application of the built in cryopump.
- Extended spectral range of investigation because of existing of exchanging windows.
- Efficiency in experiment preparation and realization.

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