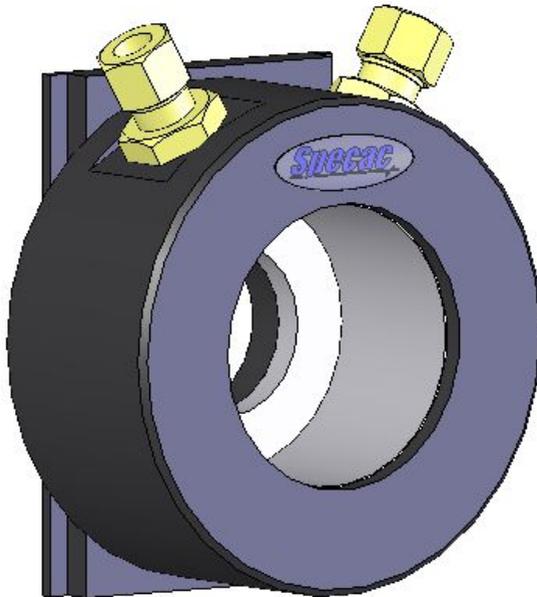




Water Heating Jacket

User Manual



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2I-20710 Issue 3

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1. Introduction

Thank you for purchasing a Specac product.

The Water Heating Jacket P/N GS20710 has been designed to allow for the study of solid and liquid samples over a temperature range from just above freezing to circa 90°C, via transmission spectroscopy ranging from the Far UV through to the Far IR. The variation in temperature is achieved by flowing chilled or thermocirculated water around the Heating Jacket whilst a particular liquid or solid cell holder is contained within the Heating Jacket.

A thermocirculating fluid pumping system is required by the user to connect to the Water Heating Jacket to provide the means to heat and or cool the Water Heating Jacket. Connections are made to the Water Heating Jacket using 6mm O.D. tubing. (Plastic or silicone type, etc.)

The Water Heating Jacket has been designed to hold a variety of liquid and solid sample cell holders. The range of sample cell holders compatible for use with the Water Heating Jacket are seen in Section 3 of this instruction manual.

(Note that the Specac solid holder P/N GS20610 will not fit the Water Heating Jacket.)

The Water Heating Jacket is supplied mounted to a standard 3" x 2" slide mounted back plate. The Water Heating Jacket containing a sample cell holder is placed into a spectrometer sample compartment via use of this 3" x 2" slide mount plate.

2. Checklist of Contents

Check that the following items have been supplied:

- Water Heating Jacket with 3" x 2" slide mount plate.
- Instruction manual for the Water Heating Jacket.
- Any sample cell holder ordered to be used in the Water Heating Jacket.

Remove the Water Heating Jacket from its packaging.

If a Liquid Cell under the part numbers of P/N's GS20500, GS20510, GS20560, GS20570, GS20580 or GS20590 Series has been ordered, do not unwrap it from its protective packing until ready to use as certain windows that may be used for the liquid cell (e.g. NaCl or KBr) may fog on exposure to the ambient atmosphere.

3. Sample Cell Holders

A variety of different cell holders for various sample types can be used within the Water Heating Jacket. These include:

- Heatable Sealed Liquid Cells P/N GS20500 Series.
- Heatable Demountable Liquid Cells P/N GS20510 Series.
- Heatable Flow Sealed Liquid Cells P/N GS20560 Series.
- Heatable Flow Sealed Liquid Cells P/N GS20570 Series.
- Heatable Flow Demountable Liquid Cells P/N GS20580 Series.
- Heatable Flow Demountable Liquid Cells P/N GS20590 Series.
- High Pressure Heatable Liquid Flow Cells P/N's GS05910, GS05915, GS05920 and GS05925 Series.
- Spectroelectrochemical Cells P/N GS20900 Series.
- Solids Cell Holder P/N GS20600.

The liquid sample cell holders can use a range of window materials, all available from Specac. (A comprehensive list of IR transmitting materials and their properties can be found at the back of Specac's Catalogue). The solids holder GS20600 does not require any window material.

The High Pressure Heatable Liquid Flow Cells P/N's GS05910, GS05915, GS05920 and GS05925 Series, can also be used in the Water Heating Jacket. Variations of these cells are manufactured for high pressure applications (up to 5000 psi with Sapphire windows) covering a temperature range of 25°C to 180°C.

Spectroelectrochemical Cells P/N GS20900 Series can also be used in the Water Heating Jacket, although because of their application capability, they may be more suited for operation at sub zero °C temperatures offered by Specac's Variable Temperature Cell P/N GS21525.

4. Installation

To Fit a Sample Cell Holder into the Water Heating Jacket

A separate instruction manual has been written for the operation and use of the various sample cell holders (Liquid Cell Holders P/N GS20500 and GS20510 Series) and the Solids Cell Holder P/N GS20600 that are used within the Water Heating Jacket. This manual should be consulted prior to the use of these sample cells in this accessory.

A specific instruction manual for the High Pressure Heatable Liquid Flow Cells P/N's GS05910, GS05915, GS05920 and GS05925 Series, is also available. Once again, when using any of these liquid cells in the Water Heating Jacket this manual should be consulted prior to use.

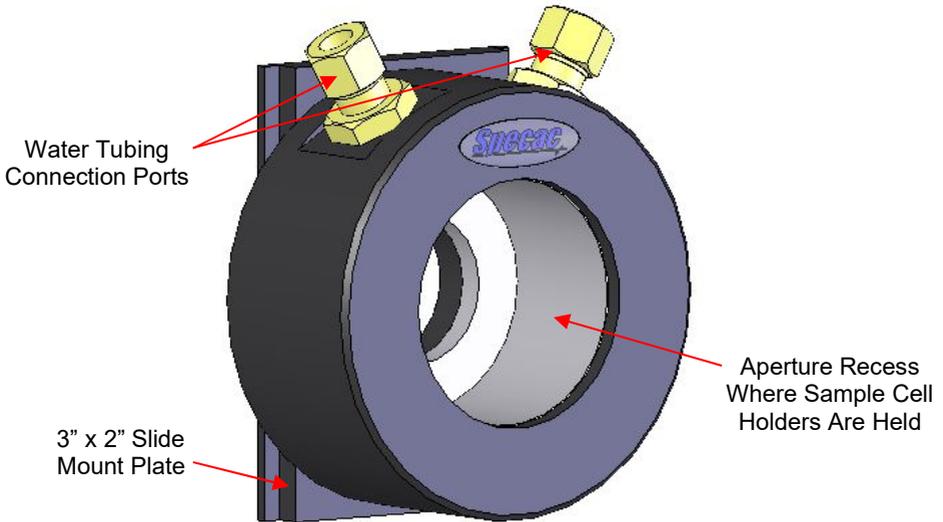


Fig 1: Water Heating Jacket Assembly

Fig 1. shows the Water Heating Jacket. **Any** of the sample cell holders that can be used with this accessory are placed into the aperture recess as shown. The temperature of the surrounding fluid in the Heating Jacket is transferred to the sample cell holder after a period of time when the Water Heating Jacket and the sample cell holder will be at equilibrium.

Installation of Water Heating Jacket into the Spectrometer

It is usually necessary to first install the Water Heating Jacket into the sample compartment of a spectrometer via the 3" x 2" slide mounting plate. Slide the Water Heating Jacket into position and check that the beam path of the spectrometer will be running centrally through the aperture of the Water Heating Jacket and the focus point of the beam will be at the centre of any sample cell holder that is to be installed into the Water Heating Jacket.

Connections for the thermocirculating fluid are made via the two brass water tubing connection port fittings on the Water Heating Jacket as shown. The fittings accept 6mm O.D. tubing that push and compression fit into position. (The fitting itself has 1/8" BSP threading for connection to the Water Heating Jacket body). A steady, constant temperature achievable with the Water Heating Jacket is dependent upon the fluid and type of thermocirculating system being used. It would be expected that a circulating flow of circa 1 liter of fluid per minute should be sufficient to maintain a constant temperature.

To improve thermal contact and minimize any heat losses from the system, it may be possible to wrap the outside of the Water Heating Jacket and sample cell holder contained within using a cloth or some type of insulation material. If doing so, ensure that you do not accidentally cover the aperture of the sample cell holder, which would prevent any spectral measurements from being made.

Cleaning and Storage

After use, advice for cleaning of any sample cell holder that has been used should be followed from its own instruction manual. The tubing to the Water Heating Jacket can be disconnected and the Jacket can be flushed through with an air flow, via the connection port fittings, to remove any traces of thermocirculating fluid within the Jacket. The Jacket can then be stored in a dry cabinet area.

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