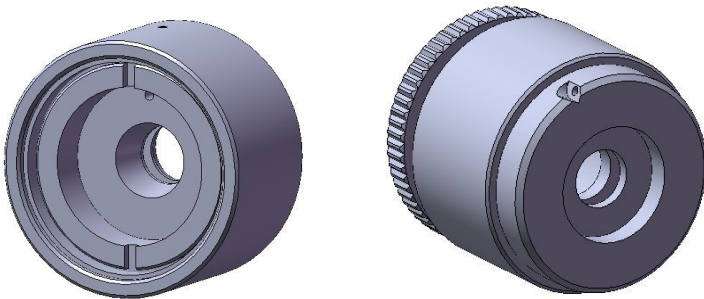




Solids Cell Holders

User Manual



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2I-20600,20610 Issue 2

Solids Cell Holders GS20600 and GS20610

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1. Introduction

Thank you for purchasing a Specac product.

The Solids Cell Holders P/N's GS20600 and GS20610 have been designed to allow for the study of solid samples at various temperatures, via transmission spectroscopy ranging from the Far UV through to the Far IR.

A solid sample is prepared and is fitted into either the P/N GS20600 or P/N GS20610 Solids Cell Holder. In turn the Solids Cell Holder with its sample is then fitted into a particular Mount Holder for installation into the spectrometer sample compartment for spectral measurement. The specific Mount Holder used will determine the temperature range that can be applied to the solid sample in the Solids Cell Holder.

The Solids Cell Holders and their associated parts have been made from brass with a chrome plating finish.

The Solids Cell Holder P/N GS20600 can be used in the following Specac mount holders:

P/N GS20710 - Water Heating Jacket (Temperature capability of ambient to 90°C).

P/N GS20730 - Electrical Heating Jacket (Temperature capability of ambient to 250°C).

P/N GS20740 - Ambient Temperature Cell Holder (Ambient temperature capability).

The Solids Cell Holder P/N GS20610 can be used in the following Specac mount holders:

P/N GS20710 - Water Heating Jacket (Temperature capability of ambient to 90°C).

P/N GS20740 - Ambient Temperature Cell Holder (Ambient temperature capability).

P/N GS21525 – Variable Temperature Cell (Temperature capability of -185°C to 250°C).

2. Checklist of Contents

Check that the following items have been supplied:

- For Solids Cell Holder P/N GS20600.

- Body
- Pressure Plate
- Clamp Ring
- Clamp Ring Key

- For Solids Cell Holder P/N GS20610.

- Outer threaded cell body
- Inner threaded cell body
- 3 sets/pairs of flat and recessed sample pressure plates

- Instruction manual for the Solids Cell Holder.

Remove the Solids Cell Holder and its specific parts from their packaging.

3. *The Solids Cell Holders*

Solids Cell Holder GS20600

The body of the Solids Cell Holder P/N GS20600 has a fixed size aperture of 10mm diameter, with an overall outer diameter of 41mm. Solid samples from 12mm to 28mm diameter and up to 3mm thick can be inserted into the body to be analysed by transmission spectroscopy.



Fig. 1 Solids Cell Holder GS20600

Solids Cell Holder GS20610

The Solids Cell Holder P/N GS20610 is used specifically in the Variable Temperature Cell P/N GS21525. This Solids Cell Holder consists of outer and inner cell threaded bodies and three pairs of pressure plates. The varying aperture sizes of the pressure plates enable samples with a diameter of 12 - 17mm, 17 - 22mm and 22 - 30mm and thicknesses of a few microns to 8mm thick to be inserted into the inner threaded body to be analysed.

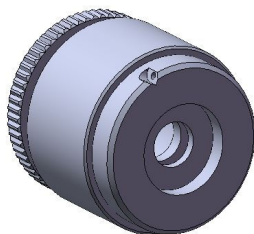


Fig. 2 Solids Cell Holder GS20610

Loading a Solid Sample into the GS20600 Solids Cell Holder

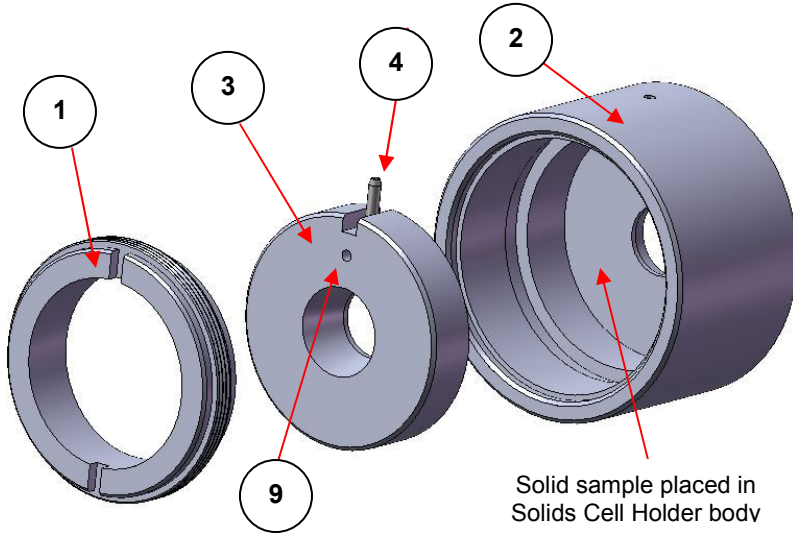


Fig. 3 Exploded view of Solids Cell Holder GS20600

1. Remove the screw retaining ring (1) (turn anticlockwise) from the Solids Cell Holder body (2) by means of the square key provided. The square key locates into the slots of the retaining ring (1) (See Fig.3). The pressure plate (3) will now be accessible. Remove the pressure plate (3) from the body (2).
2. Insert an appropriate sized solid sample such that it lays flat in the Solids Cell Holder body (2).
3. Replace the pressure plate (3) onto the solid sample, by placing it inside the body (2) and aligning it by engagement of the anti-rotation pin (4). There is a taper to the aperture of the pressure plate (3), whereby one side has a larger diameter to the aperture than the other. Ensure that the smaller diameter aperture side of the pressure plate (3) is in contact with the solid sample.

4. Replace the retaining ring (1) into the body (2) and tighten (turn clockwise) by means of the square key. Ensure that the sample is firmly clamped in the Solids Cell Holder holder, taking care not to over-tighten in case of damaging the sample.

The Solids Cell Holder P/N GS20600 containing a solid sample is now ready for use. Removal or replacement of a solid sample in the Solids Cell Holder is the reverse procedure of steps 1 to 4.

Loading a Solid Sample into the 20610 Solids Cell Holder

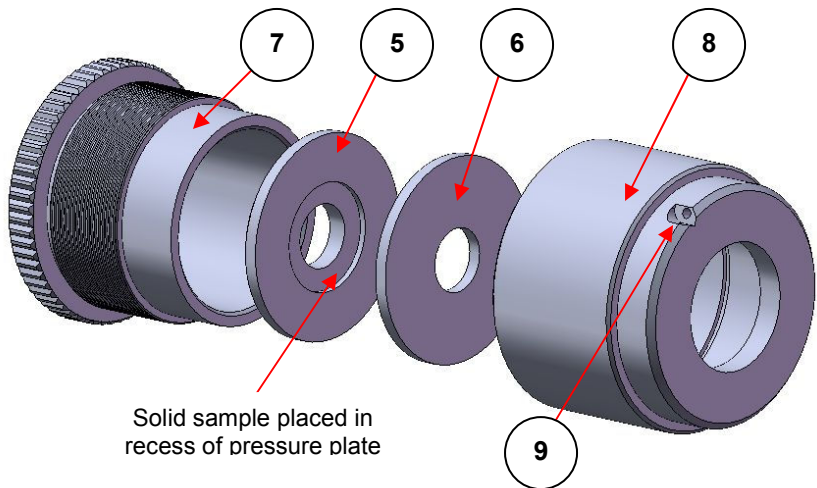


Fig. 4 Exploded view of Solids Cell Holder GS20610

There are three matched pairs of different aperture pressure plates (5 and 6) that are used in the assembly of the Solids Cell Holder P/N GS20610. (See Fig. 4). One of the pressure plates (5) is a location plate. An appropriate size sample is placed into the recess of the location plate on the face of the plate as indicated at Fig. 4. The opposite face of the location plate (5) has a stepped circumference, which enables the location plate to fit within the outer threaded body part (7). (See Fig.5).

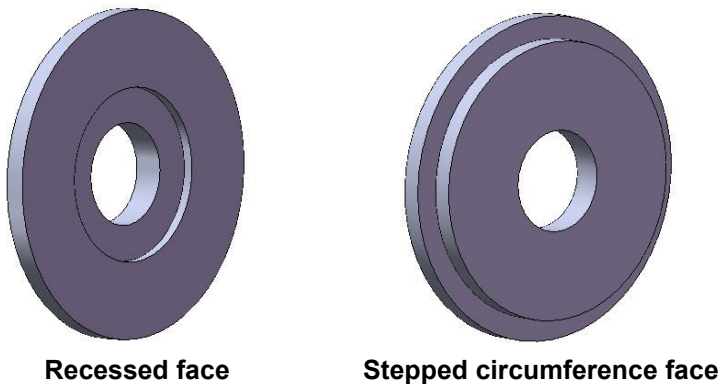


Fig. 5 Location plate (5) faces

The three different location plates (5) for the pairs of pressure plates (5 and 6) have apertures of 10mm, 15mm and 20mm diameter. The corresponding recess diameters for 10mm and 15mm aperture location plates (5) are 17mm and 22mm diameter respectively, both with a depth of recess of 1mm. The 20mm diameter aperture location plate (5) **does not** have a recess. The face is flat to its overall outside diameter of 32mm. (32mm is the outside diameter of all three location plates).

The other pressure plate (6) of the pair is flat on both faces. A matched, pair of pressure plates (5 and 6) have the same aperture diameter.

5. Place the correct aperture location pressure plate (5) into the end of the inner threaded cell body (7) as seen at Fig. 4.
- 5a. For a solid sample with a diameter between 12mm and 17mm and up to 8mm thick, place the sample in the recess of the 10mm diameter location pressure plate (7).
- 5b. For a solid sample with a diameter between 17mm and 22mm and up to 8mm thick, place the sample in the recess of the 15mm diameter location pressure plate (7).

- 5c. For a solid sample with a diameter between 22mm and 30mm and up to 8mm thick, place the sample on the flat face of the 20mm diameter location pressure plate (7).
6. Put the plain flat pressure plate (6) with the same corresponding aperture diameter as the location plate (5) on top of the sample. Ensure that the pressure plates (5 and 6) and the solid sample that is held between them are well aligned.
7. Place the outer threaded cell body (8) over the inner threaded cell body (7) holding the pressure plates (5 and 6) and the solid sample and turn the outer body clockwise until the sample is firmly located in place. Take care not to over-tighten the assembly in case of damaging the sample.

The Solids Cell Holder P/N GS20610 containing a solid sample is now ready for use. Removal or replacement of a solid sample in the Solids Cell Holder is the reverse procedure of steps 5 to 7.

Thermocouple Well Hole Connections

When the Solids Cell Holder P/N GS20600 is to be used in the Electrical Heating Jacket P/N GS20730, a connection must be made to the temperature controlling thermocouple assembly of the Electrical Heating Jacket. The tip of the thermocouple is securely fitted into the Solids Cell Holder via the thermocouple well hole (9) – see Fig. 3. Explanation of how to connect the thermocouple is found from the instruction manual for the Electrical Heating Jacket P/N GS20730.

Similarly, when the Solids Cell Holder P/N GS20610 is to be used in the Variable Temperature (VT) Cell P/N GS21525, it is possible to connect an additional “monitoring” thermocouple assembly to the Solids Cell Holder to measure the temperature of the solid sample more precisely than the temperature value shown for the VT Cell from its own temperature controlling thermocouple. The tip of the monitoring thermocouple is securely fitted into the Solids Cell Holder via the thermocouple well hole (9) – see Fig. 4. Explanation of how to connect the monitoring thermocouple is found from the instruction manual for the VT Cell P/N GS21525.

4. Legend of Bubble Part Numbers

For Solids Cell Holder P/N GS20600

- 1) Retaining ring.
- 2) Body.
- 3) Pressure plate.
- 4) Alignment pin.
- 9) Thermocouple well hole.

For Solids Cell Holder P/N GS20610

- 5) Location plate.
- 6) Pressure plate.
- 7) Inner threaded cell body.
- 8) Outer threaded cell body.
- 9) Thermocouple well hole.

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