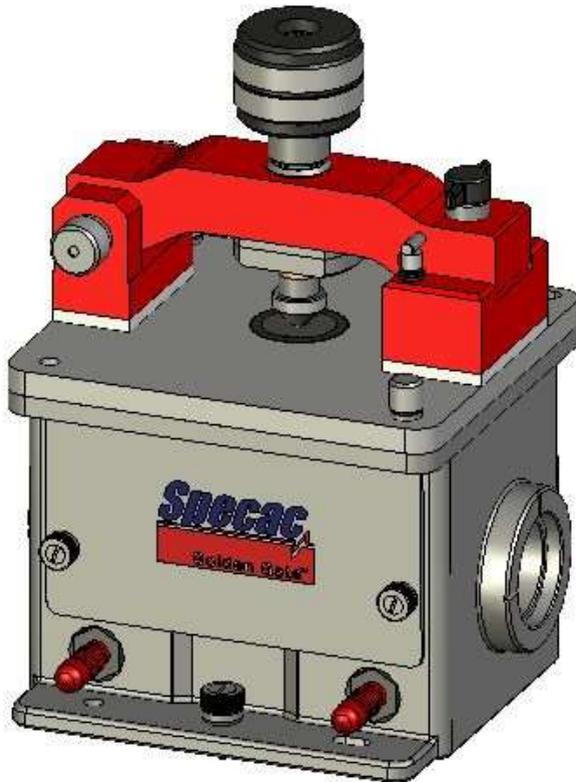




Golden Gate™ High Temperature Heated Diamond ATR Top Plate



2I-10642 Issue 7

Golden Gate™ High Temperature Heated Diamond ATR Top Plate User Manual

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1. Introduction

The Golden Gate™ with High Temperature Heated Diamond ATR Top Plate (GS10642) is one of a series of top plates which can be used on the optical base assembly of the Golden Gate™ ATR system. The High Temperature Heated Diamond ATR Top Plate is operable across a temperature range from ambient to 300°C using the temperature controller. See 2I-10640 issue 5 for use with 4000 series controllers.

The diamond ATR crystal, tungsten carbide support puck is sealed around its edge with silicone resin and a black PEEK™ heat insulation ring. Sealing prevents ingress of any liquid samples or volatile solvent vapours passing through to the optical components within the Golden Gate™ assembly.

This specific instruction manual for the High Temperature Heated Diamond ATR Top Plate is to be used in conjunction with the standard Golden Gate™ manual (GS10500 Series) supplied with every Golden Gate™ system and the separate temperature controller manual.

2. Safety Considerations

List of Safety Symbols

Safety Symbol	Meaning
	General Caution. (Reference ISO 7000-0434B, 2004-01)
	Caution – Hot Surface. Reference IEC 60417-5041, 2002-10)
	Caution – Possibility of Electric Shock
	Indoor Use Only

Electrical Safety



Warning: The temperature controllers supplied with the Golden Gate accessory are of Class 1 (earthed) construction and must be connected to an earthed mains socket outlet.



Warning: Disconnect the mains from the temperature controller before cleaning. Clean only with a soft cloth, lightly moistened with water.

General Operational Safety Use



Caution: Always follow local laboratory safety protocols and procedures when using potential toxic or flammable substances with this equipment. The equipment is intended for use by suitably trained personnel only.



Caution: For sample analysis of potential flammable liquids the puck is designed to operate with less than 0.1 ml in volume.



Caution: No user serviceable parts within, contact the manufacturer or approved service agent for advice if the product is not functioning correctly or is visibly damaged.



Caution: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired



Warning: Risk of burns when operated at high temperatures on accessible parts surrounding the puck assembly.

End of Lifetime Equipment Use



If any parts have reached their limit of lifetime and need to be replaced, use appropriate WEEE and other local regulations for the safe disposal of electrical equipment and toxic chemicals.

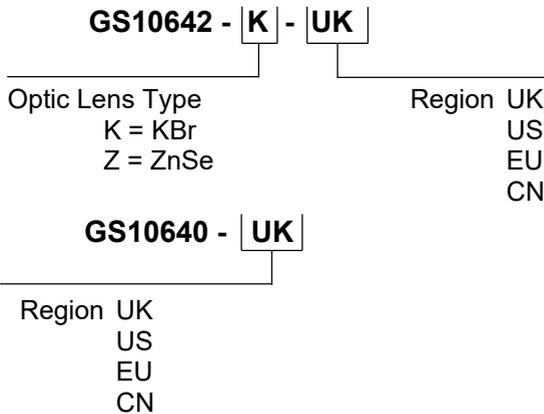


3. Specification

The Golden Gate™ High Temperature Heated Diamond ATR Top Plate is provided with its own dedicated Temperature Controller. A separate manual is supplied for specific operation of the Temperature Controller. This device is designed to use in a controlled laboratory environment only.

Model / Part No.	Description	Weight - Kg	Dimensions (LxWxH mm)
GS10640	Golden Gate™ High Temperature Heated Diamond ATR Top Plate with Temperature Controller	1.77	123x140x120
GS10642	Golden Gate™ with High temperature top plate and optical assembly and Temperature Controller	2.53	130x157x203
261-058	USB Temperature Controller	0.14	70x81x32
267-045	USB Desktop power supply (PSU)	0.78	170x58x44
523-075	100-230V 50/60Hz 150W 4000 Series Controller	4.50	410x110x214

Model number configurations:



Golden Gate™ High Temperature Heated Diamond ATR Top Plate Specification with Temperature Controller

Temperature range:	Ambient to 300°C maximum.
Thermocouple type:	K Type (Chromel-Alumel).
Heating rate (puck):	6 mins, 20°C to 300°C (≈45°C / min).
Cooling rate:	25°C/min from 300°C.
DC input rating:	30V --- 4.17A
Humidity:	0% to 80% RH, non-condensing.
Operating temperature:	5 to 40°C
Storage temperature:	-20 to 60°C.
Temperature set steps:	0.1°C.
Temperature stability:	±0.1°C in stable environment.
Thermocouple accuracy:	±1.5°C at 300 °C.
Maximum power output:	150 Watts.

Power Supply AC input ratings for USB temperature controller.

Voltage (Vac)	Frequency (Hertz)	Input Current (A)	Short circuit protection
100-240	50-60	2.5 Max	Continuous – hiccup mode (auto recovery)

4000 Series temperature controller AC input ratings.

Voltage (Vac)	Frequency (Hertz)	Input Current	Short circuit protection
110/230V	50/60	3.0/1.5A	Continuous – hiccup mode (auto recovery)
Fuse rating			
250V	-	T1.6AH	EU, UK, CN
250V	-	T3.15AH	US, JAPAN

4. Unpacking and Checklist

On receipt of the equipment please check that the following have been supplied:

- Golden Gate™ High Temperature Heated Diamond ATR Top Plate
- Golden Gate™ Optical unit with choice of ZnSe or KRS-5 lenses and appropriate Benchmark baseplate (if GS10642 ordered)
- 4000 Series temperature controller or USB temperature controller with tabletop inline power supply and connecting Cables

Remove the top plate and Golden Gate™ optics unit from their packing and install the Golden Gate™ ATR unit into the spectrometer once assembled (see Golden Gate™ Manual GS10500).

For instructions on heating of the Golden Gate™ High Temperature Heated Diamond ATR Top-Plate please refer to the specific Temperature Controller Manual. The temperature controller is pre-configured and tuned to the accessory, and so needs no further set up adjustments.

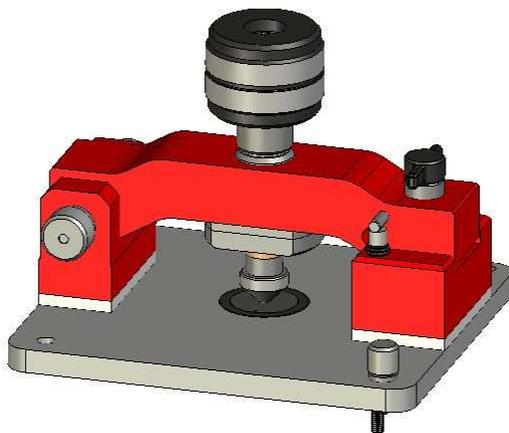


Fig 1. Top View of High Temperature Heated Diamond ATR Top-Plate

5. Operation

It is advisable to operate the Golden Gate™ High Temperature Heated Diamond accessory in a spectrometer with the sample compartment lid of the spectrometer closed (if possible). This will help with stability of the working temperature.

If the sample compartment lid must be kept open during operation, always wear protective safety spectacles whenever in the vicinity of the accessory.



Caution: It is advised not to heat flammable samples above their rated flash point. When using liquid samples, do not exceed the recommended maximum volume of 0.1 ml.

Note: If the sample compartment volume of the spectrometer is smaller than 200mm x 200mm x 200mm when the lid is closed, then the sample compartment lid must be kept open to prevent activation of the safety thermal protection system. Opening of the compartment lid will allow natural heat convection to prevent the unit from overheating. However, if the sample compartment lid must be kept closed, Specac recommend that a purging gas of N₂ is used through the sample compartment.

Consult the manufacturer or their authorised representative if any doubt.

Load Limitation to Samples at High Temperature

Note: *When pressing solid samples against the diamond using the sapphire anvil P/N GS10531, the load **must** be applied from the standard torque mechanism knob assembly. (See use of torque limiter screw item 21 described in Golden Gate™ Manual 10500). If a greater load than standard is applied from the torque wrench and Torx head adapter parts P/N GS10504 and GS10505 respectively, damage will occur to the sapphire tip on the anvil.*

Worldwide Distribution

France

Eurolabo - Paris.
Tel.01 42 08 01 28
Fax 01 42 08 13 65
email: contact@eurolabo.fr

Germany

L.O.T. - Oriel GmbH & Co,
KG - Darmstadt
Tel: 06151 88060
Fax: 06151 880689
email:info@LOT-Oriel.de
Website: www.LOT-Oriel.com/de

Japan

Systems Engineering Inc. -Tokyo
Tel: 03 3946 4993
Fax: 03 3946 4983
email:systems-eng@systems-eng.co.jp
Website: www.systems-eng.co.jp

Spain

Teknokroma S.Coop C. Ltda Barcelona
Tel: 93 674 8800
Fax: 93 675 2405
email: comercial@teknokroma.es

Switzerland

Portmann InstrumentsAG
Biel-Benken
Tel: 061 726 6555
Fax: 061 726 6550
email: info@portmann-instruments.ch
Website:www.portmann-instruments.ch

USA

SPECAC INC.
414 Commerce Drive
Suite 175,
Fort Washington,
PA 19034, USA
Tel: 215 793 4044
Fax: 215 793 4011

United Kingdom

Specac Ltd.
Science and Innovation Centre,
Halo Business Park,
Cray Avenue,
Orpington,
Kent BR5 3FQ
Tel:+44 (0) 1689 873134
Website: www.specac.com

Brilliant Spectroscopy™

www.specac.com

SPECAC INC.

414 Commerce Drive
Suite 175,
Fort Washington,
PA 19034, USA
Tel: 215 793 4044
Fax: 215 793 4011

SPECAC LTD.

Science and Innovation Centre,
Halo Business Park,
Cray Avenue,
Orpington,
Kent BR5 3FQ
Tel: +44 (0) 1689 873134