

## Quick Start Guide For Pearl Liquid Transmission Accessory P/N GS31000 Series



This Quick Start Guide is intended to help you through the steps required for the correct first time installation and alignment of the **Pearl Liquid Transmission Accessory** into your IR spectrometer system. This guide is a supplement to the User Instruction Manual provided for the accessory itself where more detailed information can be found.

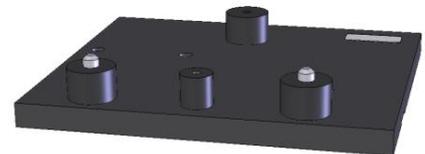
The Pearl Liquid Transmission Accessory consists of a light grey coloured Pearl optical unit with a choice of seven different coloured handles for the slider tray assemblies. An Oyster liquid cell assembly is installed into a slider tray assembly for loading into the Pearl optical unit for sampling.

**Note:** For an alignment of the Pearl accessory it is not necessary to install an Oyster liquid cell into the slider tray assembly, but the slider tray assembly **must be closed shut** into the Pearl optical unit.

### PART 1 – Installation and Alignment of the Pearl Optical Unit

#### Step 1 – Install the Benchmark™ Baseplate into your spectrometer

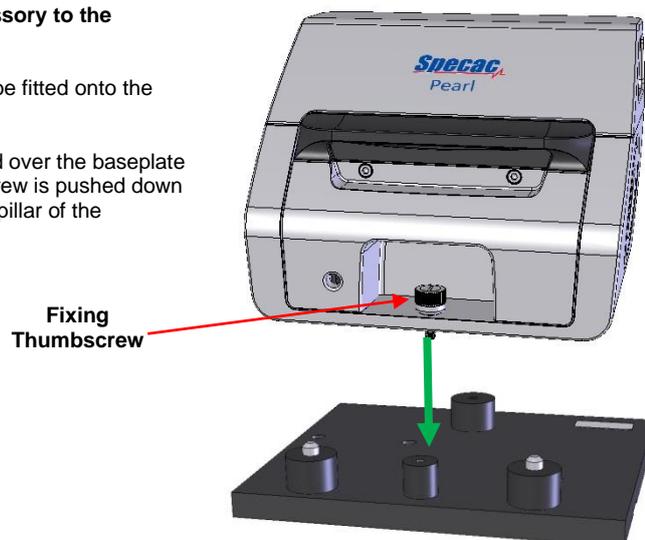
The Benchmark™ baseplate supplied allows the Pearl Liquid Transmission Accessory to be positioned correctly in the sample compartment of your specific spectrometer. Please consult the relevant page of the Benchmark™ Baseplate Installation Guide instruction manual (21-549-000-7) if you need more information.



#### Step 2 – Fit the Pearl Liquid Transmission Accessory to the Baseplate

The Pearl Liquid Transmission Accessory can now be fitted onto the baseplate.

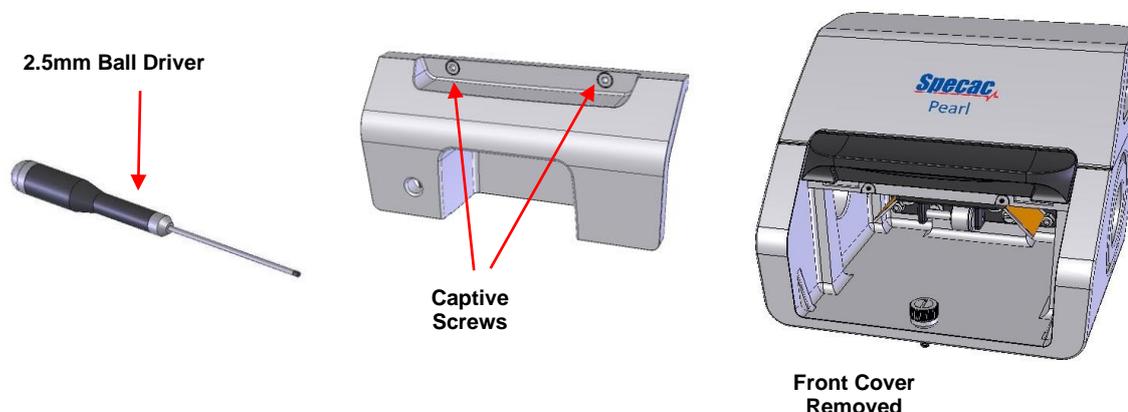
The optical unit part of the Pearl accessory is placed over the baseplate support pillars and the central front Fixing Thumbscrew is pushed down and clockwise screw tightened into the front central pillar of the baseplate.



### Step 3 – Remove the Front Cover of the Pearl Optical Unit

For alignment of the Pearl accessory, the front cover is removed from the Pearl optical unit to gain access to the mirrors for their fine adjustment. The *slider tray assembly must be closed shut in the Pearl optical unit* to gain access to the front covers two captive fixing screws for the front covers removal.

Use the 2.5mm ball driver (supplied) to undo the two captive screws shown and pull the top of the front cover forward to remove it.



### Step 4 – Alignment Procedure

With the spectrometer in its energy monitoring mode, use the 2.5mm ball driver (supplied) to adjust the rotation and tilt alignment screws for the **output** and **input** adjustable mirrors. (The screws are identified in the diagram below). Rotate each screw clockwise or anticlockwise (one at a time) for the steps to obtain the maximum energy level.

**Note:** The beam direction from source to detector through the spectrometer sample compartment denotes a right to left (**R to L**) or left to right (**L to R**) passage and determines the **output mirror to adjust first**. The alignment instructions are given here for a **R to L** beam passage.

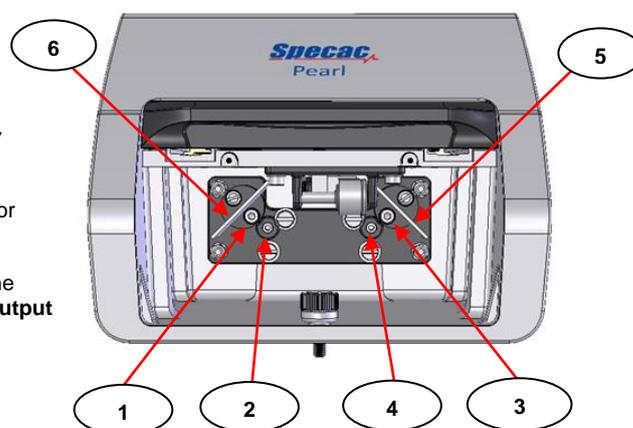
Step A) For the **output mirror (6)** turn the mirror **rotation screw (1)**, for a peak energy maximum.

Step B) For the **output mirror (6)** turn the mirror **tilt screw (2)**, for a peak energy maximum.

Step C) For the **input mirror (5)** turn the mirror **rotation screw (3)**, for a peak energy maximum.

Step D) For the **input mirror (5)** turn the mirror **tilt screw (4)**, for a peak energy maximum.

If adjustment of screws (3) and (4) for the **input mirror** alters the energy throughput level markedly, rebalance by adjusting the **output mirror** screws (1) and (2) again as a final adjustment.



### **Do not adjust any other screws!**

Depending upon the spectrometer system, typical target energy throughput levels for alignment are between 40% to 70% compared to an unobstructed (open) beam through the sample compartment at 100%. This alignment process only has to be done once when first setting up the Pearl Liquid Transmission Accessory in the spectrometer, so it is worth spending a small amount of time now in order to get the best performance from it in the future.

### Step 5 – Replace the Front Cover

Once aligned, the front cover can be replaced to maintain a stable environment inside the accessory. (Do not overtighten the captive screws of the front cover when refitting.) To fit the purge bellows or introduce a dry air or N<sub>2</sub> gas supply to purge the Pearl accessory, refer to the procedures as described in the Pearl Liquid Transmission Accessory User Instruction Manual.

### Step 6 – It's Ready to Use!

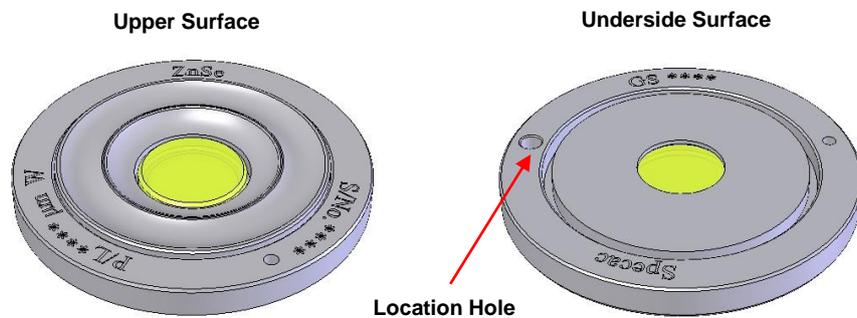
For safety information and detailed instructions on getting the best from your Pearl Liquid Transmission Accessory please refer to the User Instruction Manual 21-31000-4 supplied.

## PART 2 – Fitting an Oyster Cell into the Slider Tray Assembly

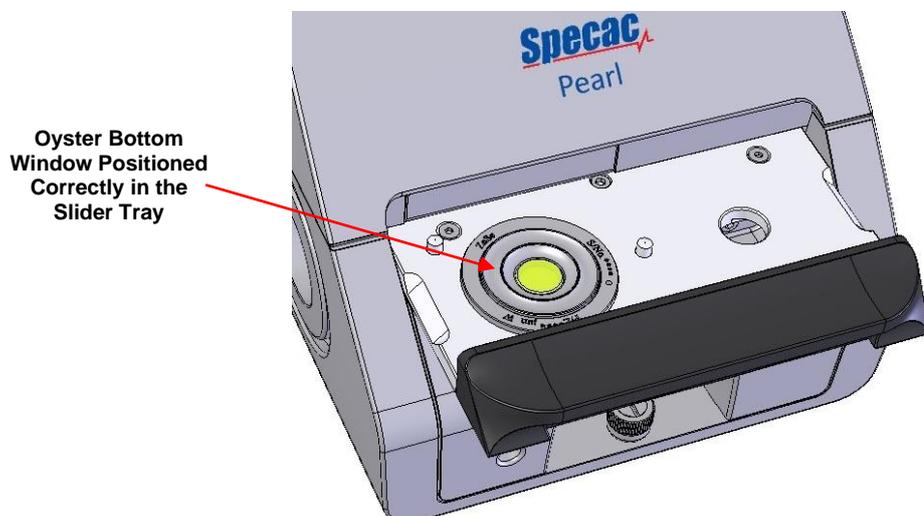
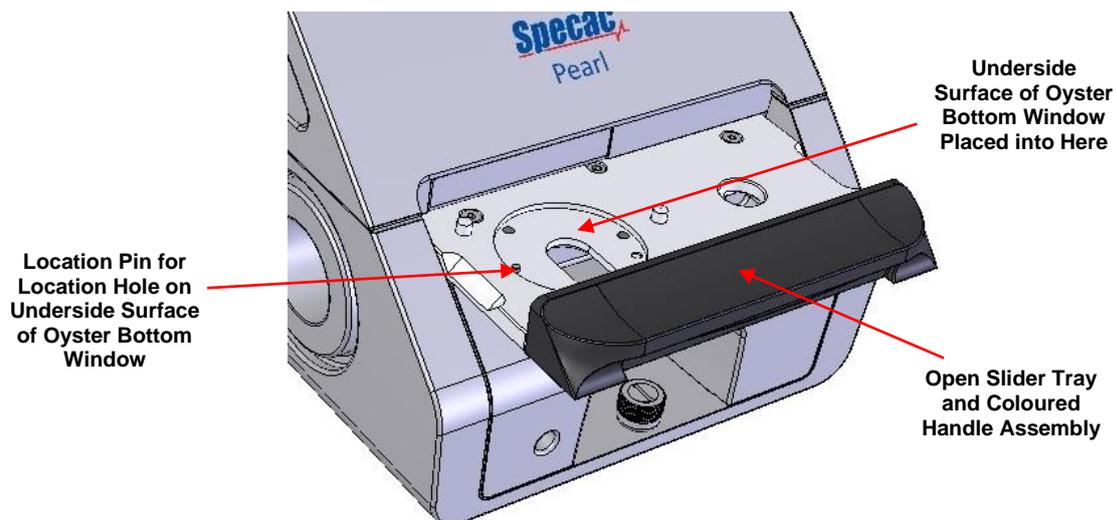
When the Pearl Optical Unit has been aligned for use in the spectrometer, the choice of Oyster cell for a top and bottom window assembly is fitted into the slider tray assembly as follows.

The Oyster top window assembly is fitted into a top window housing part to fit correctly over the Oyster bottom window assembly as installed into the slider tray to form a complete Oyster cell. Fitting of a specific Oyster bottom window assembly determines the pathlength of the Oyster cell and if it is a parallel or wedge angle window type.

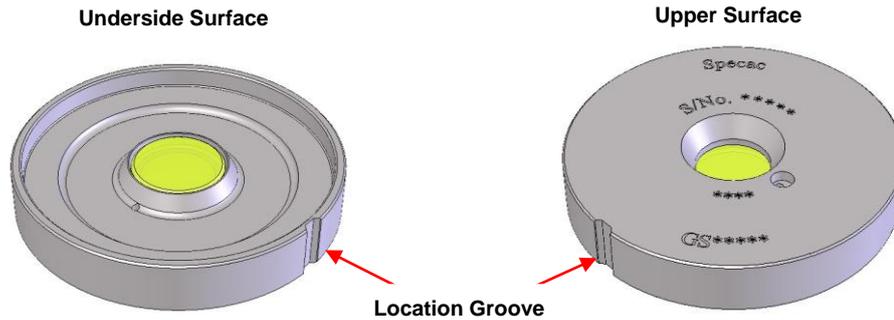
### Oyster Bottom Window Assembly



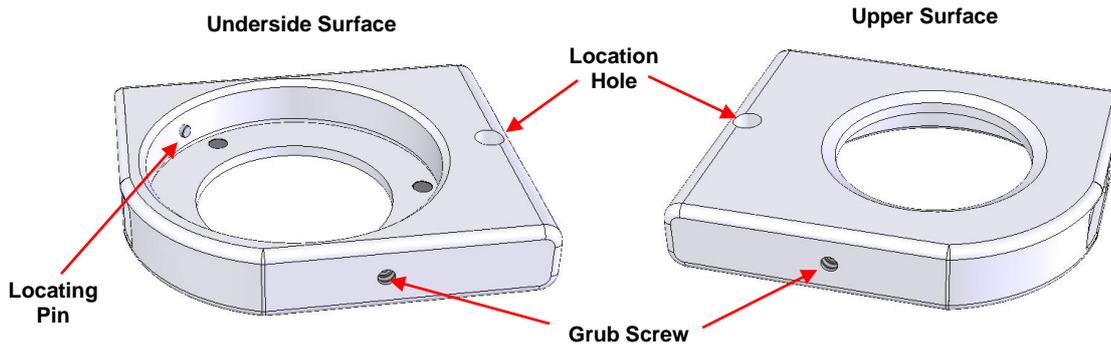
Open the slider tray assembly of the Pearl optical unit by pulling on the coloured handle. The slider tray is motion damper assisted and will open fully to a natural stop. Place the **underside surface** of the Oyster bottom window assembly face down into the recess area on the left side of the slider tray assembly. The **location hole** on the Oyster bottom window is positioned over the **location pin** in the slider tray recess area. The Oyster bottom window assembly is held securely by three "pull down" magnets.



## Oyster Top Window Assembly

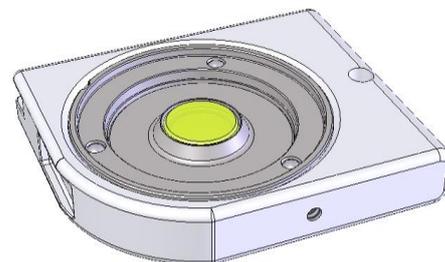


## Top Window Housing

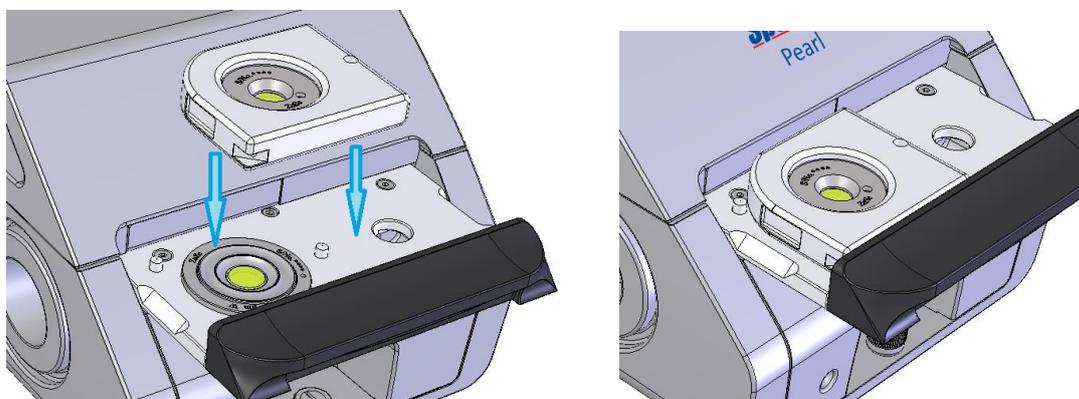


The **upper surface** of the Oyster top window assembly is placed into the circular aperture of the **underside surface** of the top window housing. The **location groove** of the Oyster top window assembly aligns with the **locating pin** on the inside of the circular aperture of the top window housing and the Oyster top window assembly is pushed into position as far as it will travel. It is held in position within the top window housing by three small magnets, but it is secured by tightening of a **grub screw** in the top window housing using the 1.5mm Allen ball driver tool supplied. Do not overtighten the grub screw to secure the Oyster top window assembly in position.

An Oyster top window assembly correctly fitted into the top window housing results in the assembly as shown to the right,



To create an Oyster cell, the **underside surfaces** of both the Oyster top window in the top housing assembly of parts is placed over the installed Oyster bottom window assembly. The location hole of the top window housing fits over the central location pin on the slider tray and a side location pin rests against the outer edge of the top window housing.



## Completed Installation/Fitting of Bottom and Top Window Assemblies