TA Instruments ARES-G2/RSA-G2 FCO Camera Installation Guide

Parts Supplied

Table 1 Parts supplied

Description	Part Number	Quantity
FCO Camera Kit Installation Instructions	401698.001	1
Camera viewer unit	401717.901	1
Camera adapter	401324.001	1
Camera enclosure back	401880.001	1
Camera enclosure front	401881.001	1
Camera insulation	401716.001	2
Ground wire	401912.901	1
Cable hooks	401719.001	3
Cable ties	299136.001	6
Hex wrench, 1.3 mm (for M2 × 5 mm flat head screws)	280255.006	1
Button head screws, M3 × 8 mm	603.03134.2A	9
Flat head screws, M2 × 5 mm	603.03127.103A	2
Sems screw, M3 × 10 mm LG	200834.002	1
Sems screw, M3 × 6 mm, stainless steel	200516.001	1
Belleville washers, M4	603.03107	2
Belleville washer, M3	200455.003	1
Hex nut with tooth washer, M3	200517.001	1
Camera serial cable, black, 6 ft	200683.001	1
RCA jack to USB video converter	200930.001	1
Phono (video) cable	543598.001	1
Y-fitting, 1/4-inch diameter	200571.001	1
Inlet tubing (yellow), 1/4-inch diameter, 2 ft	200578.001	1
Instant union, 1/4-inch diameter ×.020-inch orifice	200818.002	1

Tools Required

- Tool kit included with ARES-G2/RSA-G2 instrument
- Needle-nose pliers
- Phillips head screwdriver (for Sems screws)
- Nut driver

Installation Procedure

NOTE: Consult TRIOS Online Help for information on operating and capturing images with the camera accessory during experiments. Click the question mark icon in the upper-right corner of the TRIOS window to access Help.

These procedures explain how to install the Forced Convection Oven (FCO) Camera Kit on the TA Instruments ARES-G2 or RSA-G2 and how to install the camera driver software onto your computer. The following procedures assume an FCO mounted on the right-hand side of the instrument.

CAUTION: Please follow these instructions carefully. Improper installation of the camera, or insufficient cooling air flow, may result in destruction of the camera. Be sure that the camera is properly connected to the air source and that cooling air is flowing before operating the FCO. TA Instruments will not be responsible for instrument damage resulting from improper installation or maintenance of this equipment.

MISE EN GARDE: Suivez attentivement ces instructions. L'installation inappropriée de la camera ou l'écoulement insuffisant de l'air de refroidissement peut entraîner la destruction de la camera. Assurez-vous que la camera est correctement connectée à la source d'air et que l'air de refroidissement s'écoule avant d'utiliser le FCO. TA Instruments n'est pas responsable des dégâts causés sur l'instrument dus à l'installation ou à la maintenance inappropriée de cet équipement.

Prepare the Instrument

NOTE: Refer to your ARES-G2 / RSA-G2 documentation for detailed procedures on removing and reassembling instrument components.

1. Remove any geometries from the instrument and raise the stage to its maximum height.
2. Turn off the instrument and unplug the power cord.
3. Lock the motor and transducer.
4. Turn off any gas supplies at the source.
5. Remove components from FCO door:
   - **a** Swing the FCO arm out to allow yourself ample room to work.
   - **b** Remove the top and bottom heat shields using a 2.5 mm hex key. Save all four screws, as they will be re-used during camera installation. See Figure 1.

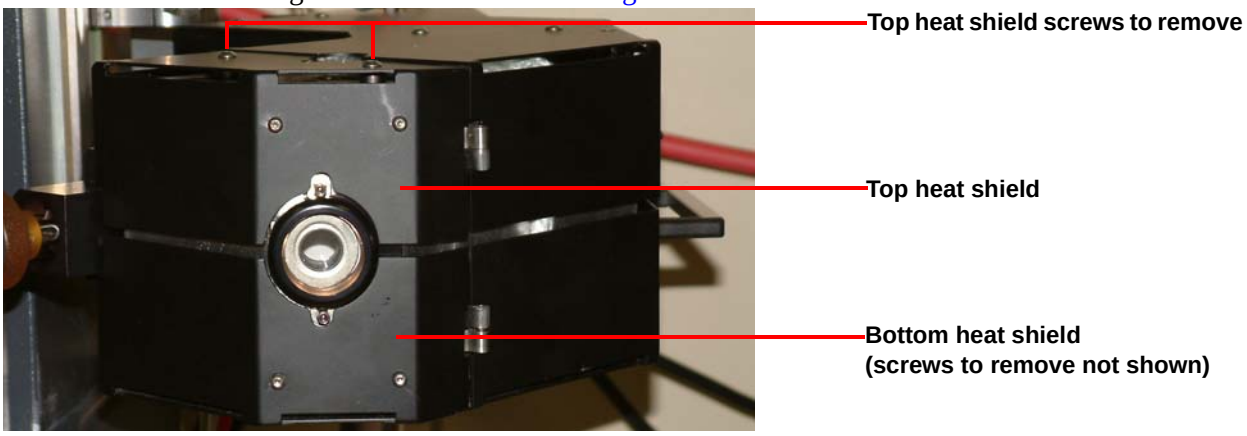

Figure 1 Heat shields on FCO before removal.

   - **c** Uninstall the window ring assembly by removing the two screws and two standoff fasteners (circled below in Figure 2). Save the two standoff fasteners for installing the camera adapter.

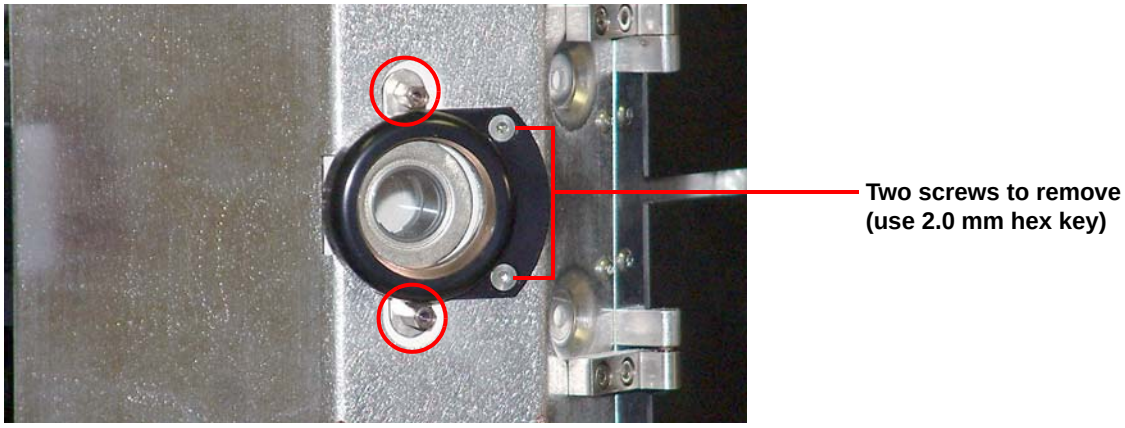

Figure 2 Window ring assembly.

d Remove the view port tube by opening the FCO door and gently pushing the tube towards you from behind the FCO door. Close the oven door and continue to the next section.

Install the Camera Viewer

NOTE: The FCO can be mounted to the left or the right side of the ARES-G2 main body. The factory position is the right side; the following instructions are valid for the installation of an FCO mounted on the right side. If the FCO is mounted to the left, then the camera must also be rotated 180° in order not to report an image that is upside down. If the camera is installed on an FCO mounted on the left side, proceed according to the instructions below, rotating the camera by 180° in step 10. As a result of this change, some cables have to be rerouted slightly.

1 Insert the camera adapter into the view part tube slot, aligning the screw holes on the adapter base with the rods in the slot.

2 Secure the camera adapter to the FCO door using the two previously-removed standoff fasteners. Refer to Figure 3.

NOTE: It may be necessary to tighten the standoff fasteners with needle-nose pliers, as the fasteners may be hard to reach with your fingers.

3 Install the long lead end of the ground wire onto the top of the FCO by aligning the lead end loop with the FCO door top screw hole and securing it with the Sems (M3 × 6 mm) screw. See the figure below.

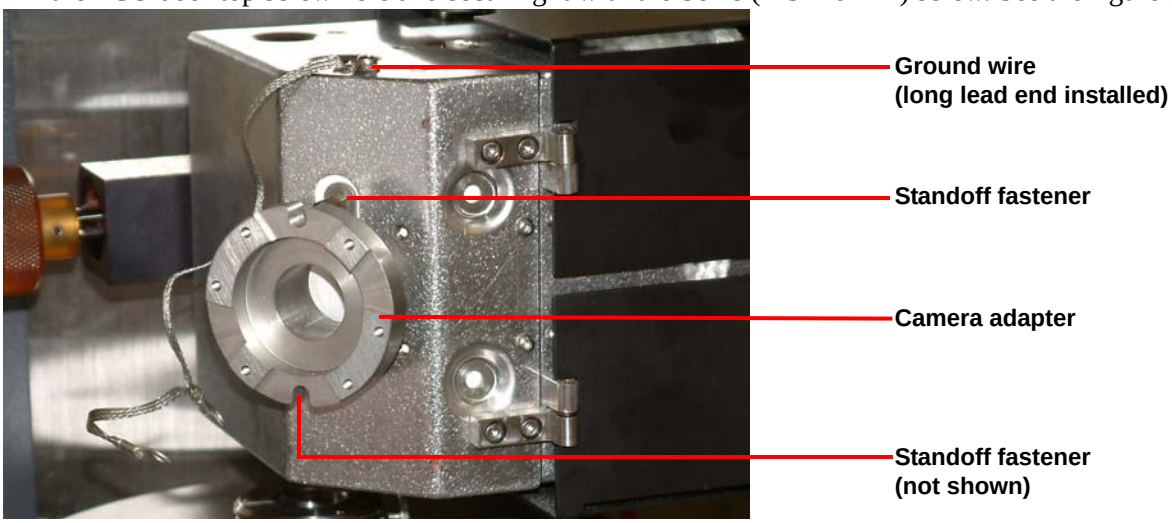

Figure 3 Camera adapter and ground wire installed on FCO door.

4 Place the top heat shield in its proper position on the FCO door, routing the ground wire through the standoff fastener cutout. Refer to Figure 4 for correct orientation.

5 Re-install the top and bottom heat shields on the FCO door using the four previously-removed screws. When finished, remove the two screws from each heat shield face and set the screws aside for enclosure back installation. See the figure below.

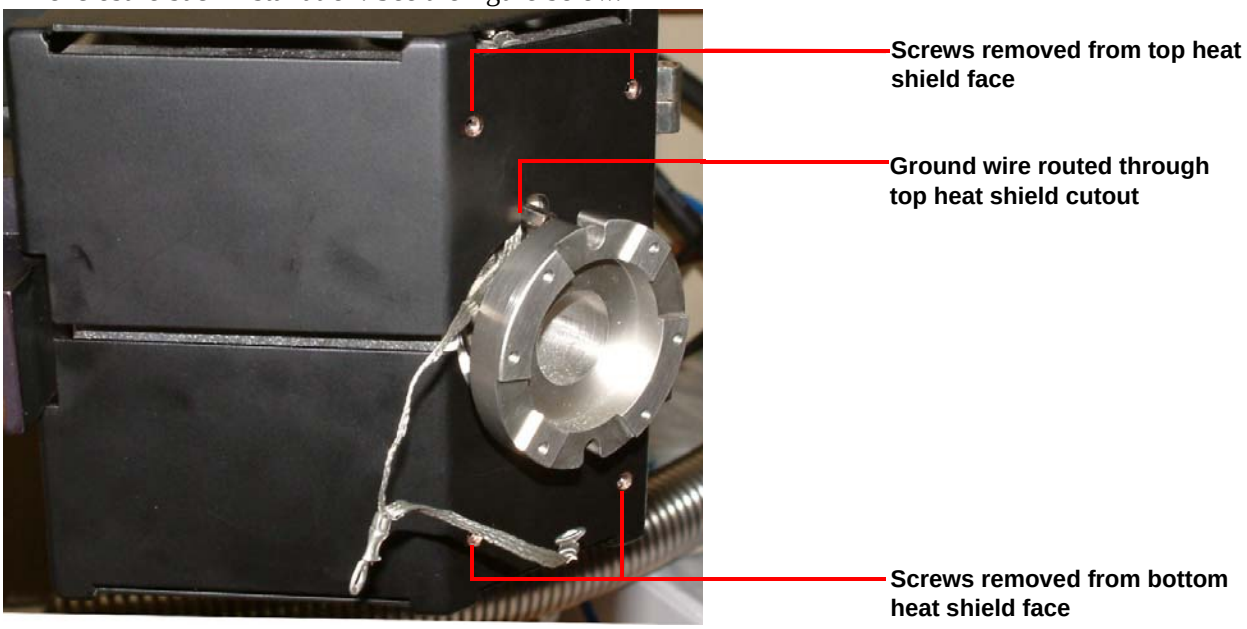

Figure 4 FCO door with heat shields re-installed.

6 Position a piece of insulation on the back of the enclosure back so that the screw recess on the insulation is facing out. Align the small screw hole in the middle of the insulation with the small screw hole on the top of the enclosure back. Using the 1.3-mm hex wrench, attach the insulation with a flat head (M2 × 5 mm) screw. Refer to Figure 5.

7 Attach the other piece of insulation to the bottom of the enclosure back by repeating the process in step 6.

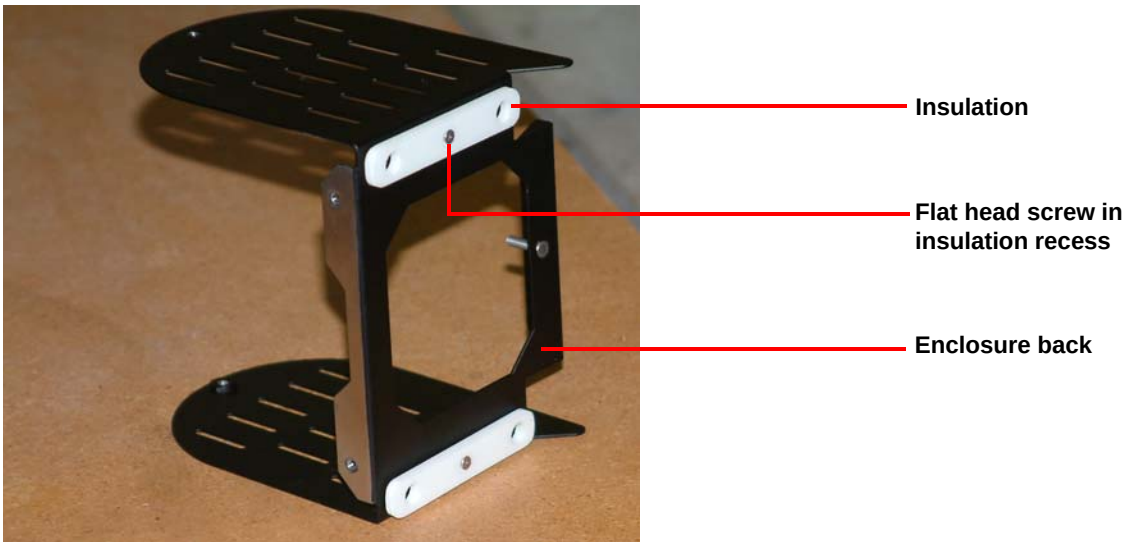

Figure 5 Insulation attached to enclosure back.

8 Route the ground wire through the large opening in the enclosure back, then mount the enclosure back (insulation-side first) on the heat shields using the four previously-removed screws. Ensure that when facing the enclosure back, the threaded rod is on your left. Refer to Figure 6 for proper orientation.

9 Slide the middle lead end loop of the ground wire over the threaded rod located on the left side of the enclosure back. Using a nut driver, secure the ground loop with the hex (M3) nut.

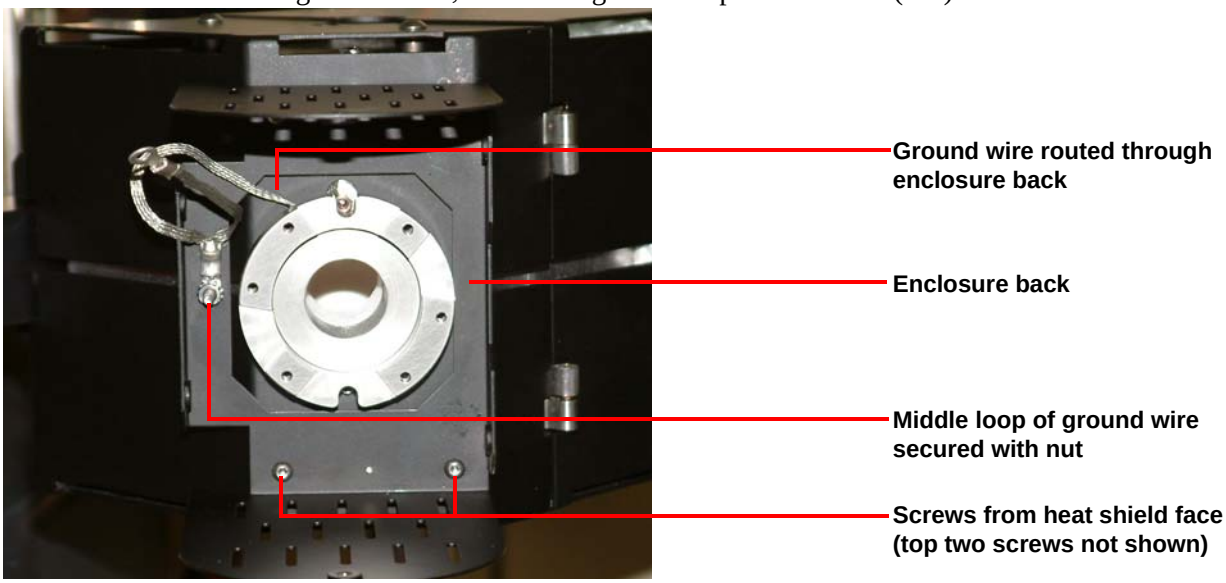

Figure 6 Enclosure back installed over camera mount; ground wire secured with nut.

10 Insert the camera viewer unit, gears facing out, into the camera adapter. Position the camera unit so that the camera viewer screw holes align with the camera adapter screw holes. Refer to Figure 7 for proper orientation.

NOTE: For FCOs mounted on the left-hand side of the instrument, turn the camera viewer over 180°.

11 Align the remaining ground wire lead end loop with the camera viewer ground screw hole and install the Sems (M3 × 10 mm) screw. Finish securing the camera unit to the camera adapter using two button head (M3 × 8 mm) screws – one on the bottom-left and one on the bottom-right of the camera viewer unit. See the figure below.

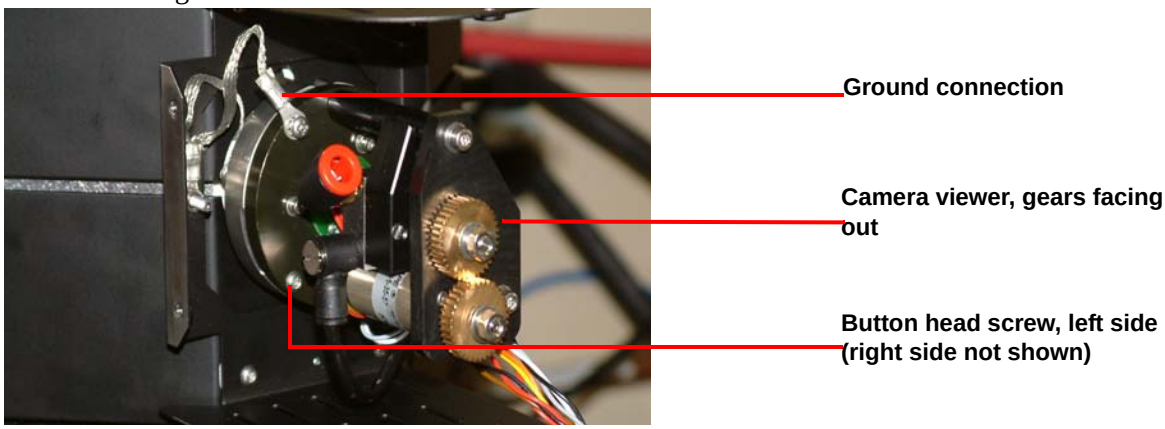

Figure 7 Camera unit and ground wire installed.

12 Join the camera serial cable with the camera unit's connector cable, as shown below.

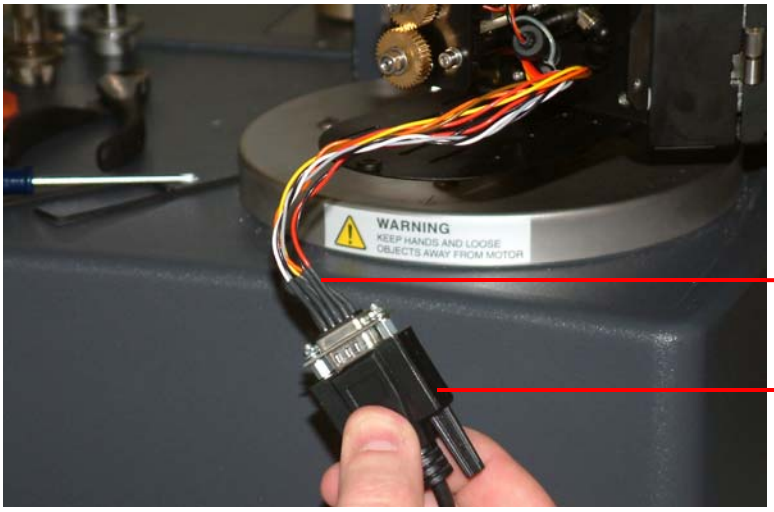

Figure 8 Serial and connector cable connected.

13 Position the joined cables between the camera viewer and bottom platform of the enclosure back. Use the cable ties to secure the cable connection to the enclosure back platform. Refer to Figure 9.

14 Install the yellow inlet tubing into the tubing connector. See the figure below.

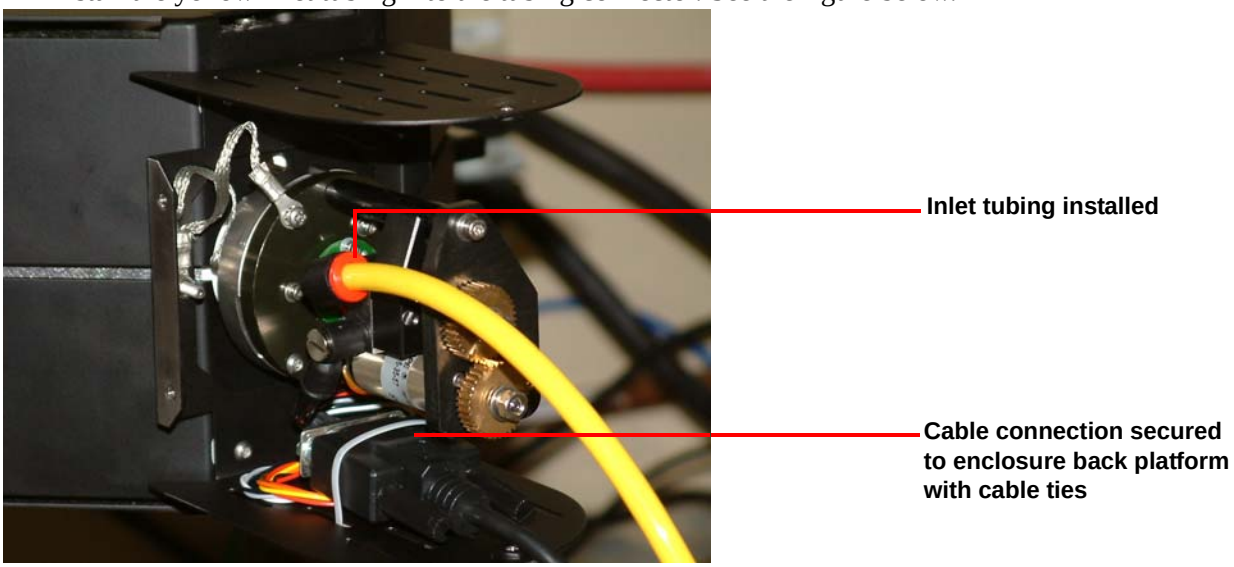

Figure 9 Cables secured and yellow hose installed.

CAUTION: To avoid potential damage to the camera, be sure the inlet tube is properly connected to the camera.

MISE EN GARDE: Pour éviter des dégâts potentiels sur la camera, assurez-vous que le tuyau d'arrivée est correctement raccordé à la camera.

15 Fit the camera enclosure front over the planks on the enclosure back, making sure to route the inlet tubing **over** or **under** the camera viewer so that nothing interferes with the operation of the gears. Route the tube and cable through the opening on the side of the enclosure front. Secure the enclosure front by installing one button head screw through the top of the enclosure front and one through the bottom. See the figure below.

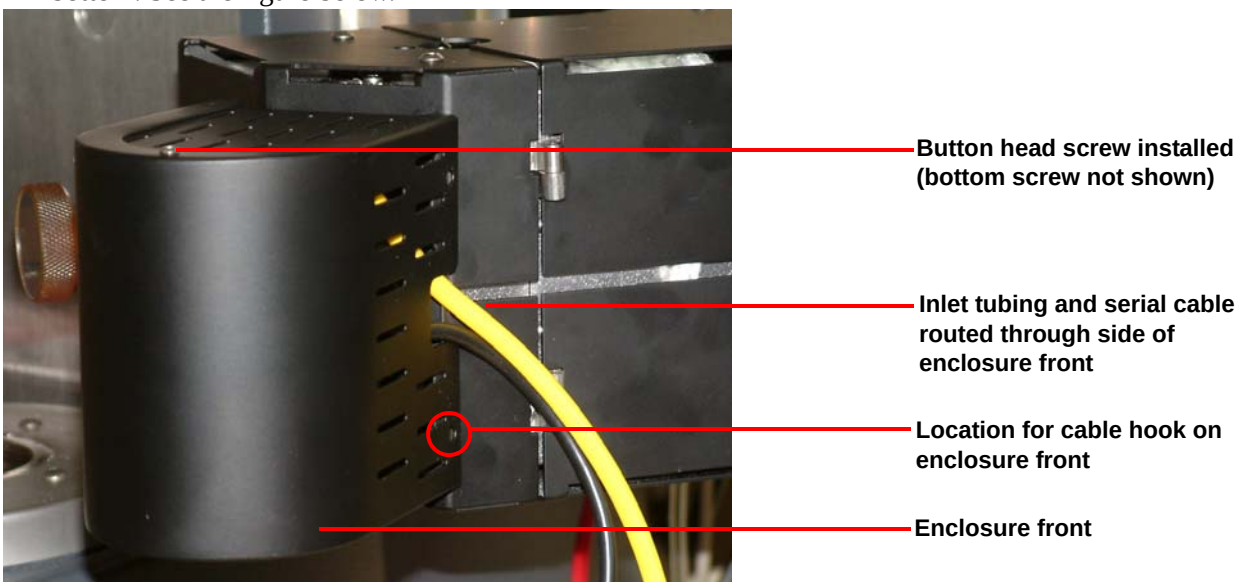

Figure 10 Enclosure front installed; tubing and cable routed through side.

16 Install a cable hook on the enclosure front (below the opening for the cable and tubing). Refer to Figure 10 for the cable hook location. Secure the hook using a belleville (M3) washer and button head screw. Use a wire tie to secure the inlet tubing and serial cable to the cable hook.

17 Finish installing the enclosure front with the remaining three button head screws (two on one side of the enclosure front and one on the cable hook side).

18 Remove the oven assembly screws at the cable hook locations indicated below. Install the two remaining cable hooks into the bottom of the oven assembly by using one belleville (M4) washer and one oven screw for each cable hook (use a 2.5 mm hex key for the oven screws). Position the inlet tubing and serial cable on the cable hooks as shown below.

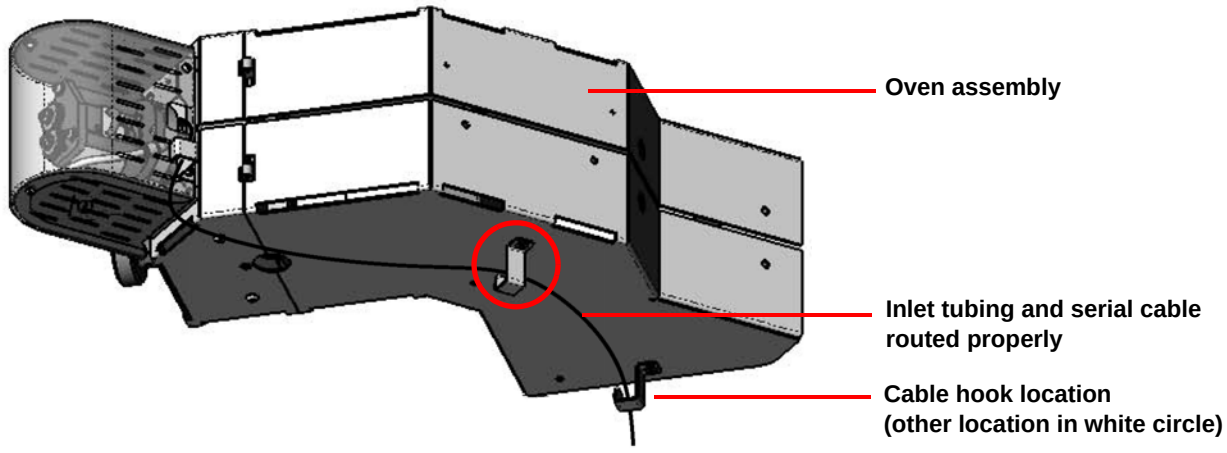

Figure 11 Locations for cable hooks.

19 To avoid melting the serial cable and inlet tubing, use cable ties to secure the cable and tubing to the cable hooks.

Connect the Inlet Tubing and Cables

Connecting the Inlet Tubing

1 Cut a 2 inch piece from the end of the inlet tubing.

2 Insert the inlet tubing coming from the camera viewer into the instant union (1/4-inch diameter).

3 Insert the 2 inch piece of tubing into the other end of the instant union.

4 If necessary, insert the single connector end of the Y-fitting onto the oven purge line. Refer to Figure 12 for correct orientation.

5 Remove the plug from the union “Y” fitting and insert the opposite end of the 2 inch piece of tubing into the union “Y” fitting. Refer to the figure below.

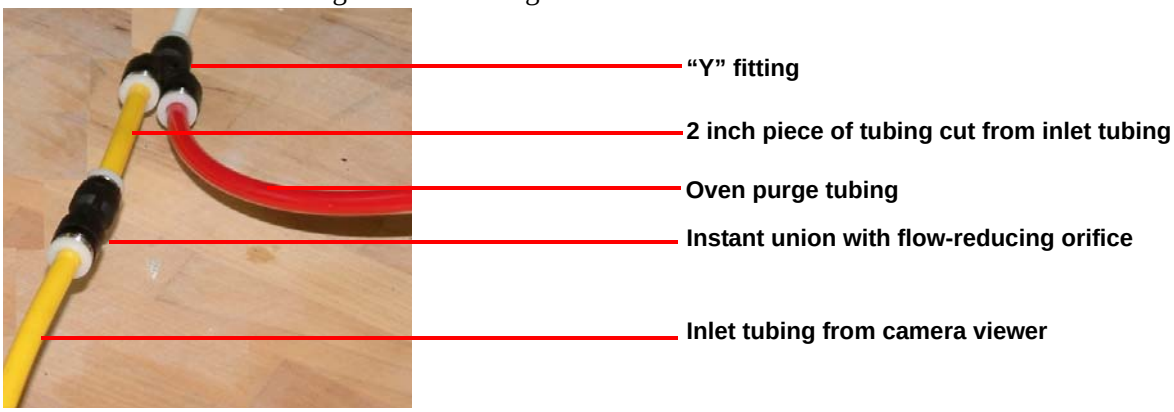

Figure 12 Inlet tubing connection.

CAUTION: To avoid potential damage to the camera, be sure all of the connections above are sufficient.

MISE EN GARDE: Pour éviter des dégâts potentiels à la camera, assurez-vous que tous les raccordements ci-dessus sont suffisants.

Restore the Instrument to Operating Condition

1 Turn on gas supplies and verify correct air pressures.

2 Unlock the transducer and motor.

3 Reinstall any geometries that were removed in “Prepare the Instrument” .

4 Plug in the instrument and power on the instrument.

Install the Camera Video Driver and Connect the Cables

Prior to installing this device, please ensure that your computer has an available USB2.0 port. Also, please ensure that the USB2.0 host driver is updated according to the most modern version available.

NOTE: Refer to www.startech.com for the latest **SVID2USB2** hardware driver before continuing. Download the latest driver if necessary, then follow the instructions below.

Installing the Video Driver

1 Please insert the **Multimedia Installation Kit** CD into your CD or DVD-ROM drive.

2 Locate the folder entitled **Driver**, located in the **GrabBee X + Deluxe** folder on the Driver CD. Double-click on the **Setup.exe** file to launch the InstallShield Wizard. Once this window launches, click **Next>**.

3 The multimedia software will install automatically. Once complete, you will be notified that **Setup has finished installing USB Video/Audio Driver on your computer.** Click **Finish**.

4 To complete the Setup Wizard installation process, please restart your computer. Once the computer reboots, please insert the USB connector provided by **SVID2USB2** into an available USB 2.0 slot on the computer. Windows will then automatically detect the connected device and conclude the necessary software installation.

Connecting the Cables

1 Route the black serial cable to the back of the instrument. Plug the cable into the connector labeled **Camera**.

2 Route one end of the phono (video) cable to the back of the instrument. Attach the cable to the connector labeled **VIDEO OUT**.

3 Plug the other end of the video cable into the yellow connector on the USB video converter.

4 Plug the USB end of the video converter into the USB port of the computer that is connected to the instrument.

Figure 13 Camera video cables.