



TGA Vacuum Control Unit

Installation and Safety Instructions

Introduction

The TGA Vacuum Control Box is intended only for use with thermal analysis equipment in laboratories where the gas cylinders are located outside the laboratory for safety reasons in the event of a fire etc. The TGA Vacuum Control Box is intended to be located inside the laboratory adjacent to the thermal analysis system to provide visual confirmation that gas is being supplied to the analysers. The TGA Vacuum Control Box may be wall-mounted using the wall-mounting feet provided, or it may be attached to a user-provided mounting using the holes provided on the base of the Gas Control Box.



WARNING: Be sure that all instrument operators read and understand the following precautions. It is advisable to post a copy of these precautions on or near the TGA Vacuum Control Box itself.

Installation Environment

The TGA Vacuum Control Box operates under the same environmental conditions specified for your thermal analysis system, and should be installed in a dry location away from dust and oil. Vacuum lines to and from the TGA Vacuum Control Box should be protected from physical damage, and precautions should be taken to prevent the line to the TGA analyser from causing damage to the TGA by inadvertent pulling etc.

Safety with Glassware under Vacuum

The TGA furnace protection tube is made from Pyrex glass. You should note that glassware under vacuum can implode, especially if the glass has been damaged, with possible risk to people nearby. Glassware under vacuum should therefore be screened from users to minimise any risk to them from implosion. You should assess the TGA furnace screening to ensure that it is adequate to protect users in the event of an implosion.



WARNING: Glassware under high vacuum can implode, especially if damaged, with risk to people close by.

TGA Vacuum Control Box

The TGA Vacuum Control Box is only intended to be used with vacuum. It is connected to a vacuum pump at the right side of the panel using a flexible 6mm ID (12mm OD) vacuum hose, and to the TGA using a similar flexible hose. The TGA Vacuum Control unit is not suitable for use with any pressurised gases





WARNING: Only use vacuum devices with the TGA Vacuum Control Unit

Making Gas Pipe Connections

The fittings to which the vacuum lines are connected are standard Swagelok® ¼” connectors or equivalent. A short 25mm length of copper tube is fitted to the inlet and outlet connection points to allow the vacuum hoses to be coupled to the TGA Vacuum Control Box. If necessary, secure the vacuum lines with Jubilee hose clamps.

There is a third connection, the ¼” vacuum release port, on the left side of the panel which is to allow the TGA to be let up to ambient pressure under an inert gas if needed. Under no circumstances must this connection be used to pressurise the TGA, and precautions must be taken to ensure that pressurisation cannot occur.

 **WARNING: Do not allow any pressure more of than 0.5bar to enter the control panel through the vacuum release port.**

 **WARNING: Do not allow dust or dirt to enter through the vacuum release port when releasing the vacuum in the TGA.**

A ¼ inch to 1/8 inch adaptor is included in the kit with the Vacuum Control Panel to assist in making a gas connection to this line.



Connecting to the Vacuum Pump and TGA

Please refer to the vacuum pump operating instructions supplied with the vacuum pump. The recommended unit is a Gast Model DAA-V515A-ED high capacity vacuum pump, which is an oil-less diaphragm pump with a 24L/min capacity capable of pulling vacuums down to .



Vacuum Pump Connection

The connection to the vacuum pump is on the right side of the control unit, and is suitable for the 6mm ID vacuum tubing supplied with the TGA Vacuum Control Unit. The copper tube for the connection is $\frac{1}{4}$ " outside diameter (6.35mm OD) so will provide a good fit with the 6mm ID vacuum hose.



TGA and Vacuum Release Connections

The lower connection labelled "TGA Line" should be connected directly to the TGA using the vacuum hose supplied with the TGA Vacuum Control Unit.

The upper connection is available to be connected to a gas system to allow the vacuum in the TGA to be replaced by an inert gas such as nitrogen or argon. The connection is $\frac{1}{4}$ " outside diameter (6.35 mm OD).

A Swagelok adaptor fitting to convert this $\frac{1}{4}$ inch connection to $\frac{1}{8}$ inch copper or PTFE tubing is included with the TGA Vacuum Control Unit shipping kit.

Connecting to the TGA



The vacuum hose supplied with the TGA Vacuum Control Unit should be connected directly to the TGA Pyrex furnace tube exhaust gas exit.

Do not connect the hose to the exit at the rear of the TGA since the tubing inside the TGA is not suitable for vacuum and will collapse under the vacuum.

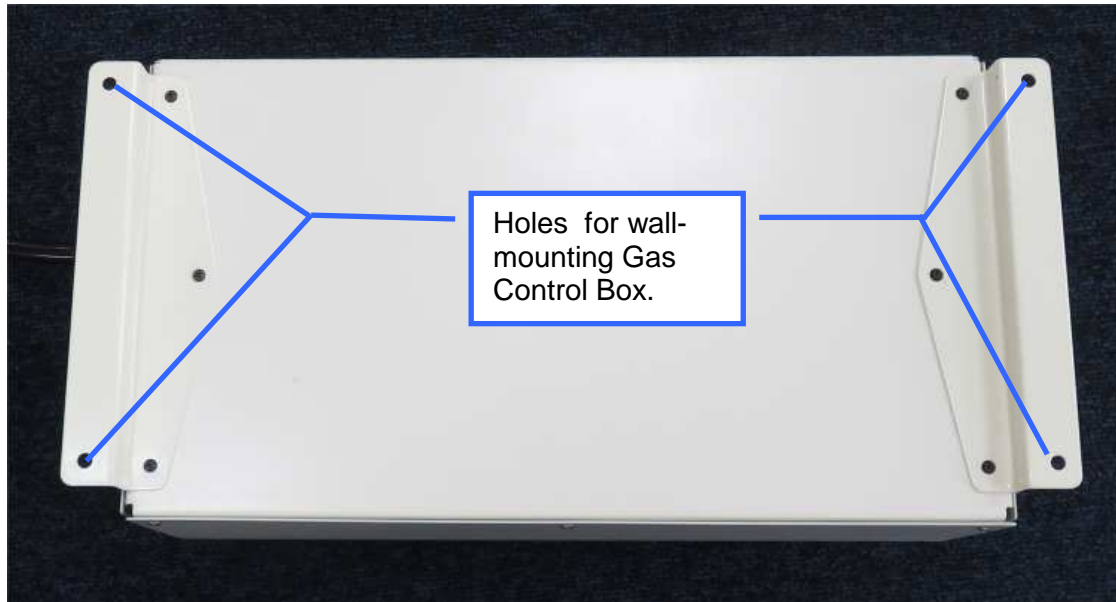
The vacuum tubing to the TGA supplied is 6mm ID and will fit the ¼" copper connection on the control box as well as fitting the TGA Glassware connection.



The picture (left) shows the vacuum hose connected to the purge exit on the TGA furnace protection tube.

Mounting Instructions

The following view shows the rear of the TGA Vacuum Control Unit. The wall on which the unit is mounted should be flat and stable and suitable to support the weight of the unit. Suitable fixings should be supplied by the installer and should use of the four holes provided in the mounting feet.



Alternatively, the TGA Vacuum Control Box can be mounted using the pre-tapped holes in the bottom of the Gas Control Box.

