

TGA Vacuum Control Unit

Operating Instructions

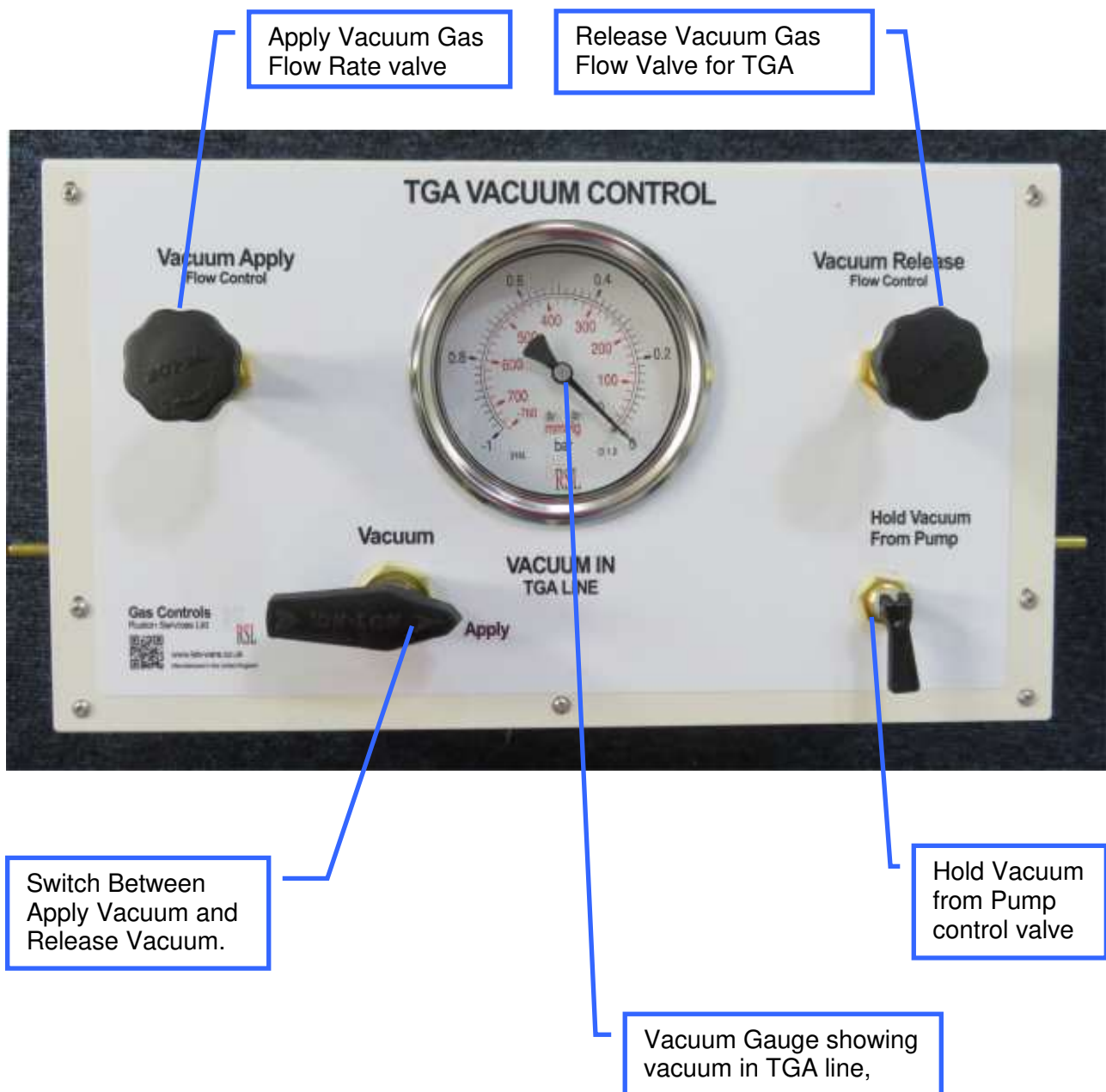
Introduction

These instructions for the TGA Vacuum Control Box are intended to guide users to avoid potential problems with the TGA.



WARNING: Be sure that all instrument operators read and understand the following instructions. It is advisable to have a copy of these operating notes near the TGA Vacuum Control Box itself.

Controls



Operating the Controls and Indicators

Apply Vacuum Gas Flow Rate Valve + Release Vacuum Gas Flow Rate Valve

These controls are both needle valves. Turn fully clockwise to close, and turn anti-clockwise to open. Their purpose is to prevent sudden application or release of the vacuum, which can blow the TGA sample pan and hangdown wires off the balance inside the TGA. In some cases, powder samples can be blown around out of the TGA sample pan and scattered inside the TGA.



WARNING: Do NOT over-tighten the flow control valves – it is only necessary to turn them until they stop. Further tightening pressure may cause damage to the valve seal.

Hold Vacuum from Pump Control

This is an open/close valve which allows the vacuum pump to be isolated from the control box. It should be kept closed when the vacuum pump is not running.

The open position is when the lever is vertical

Switch Between Apply Vacuum and Release Vacuum

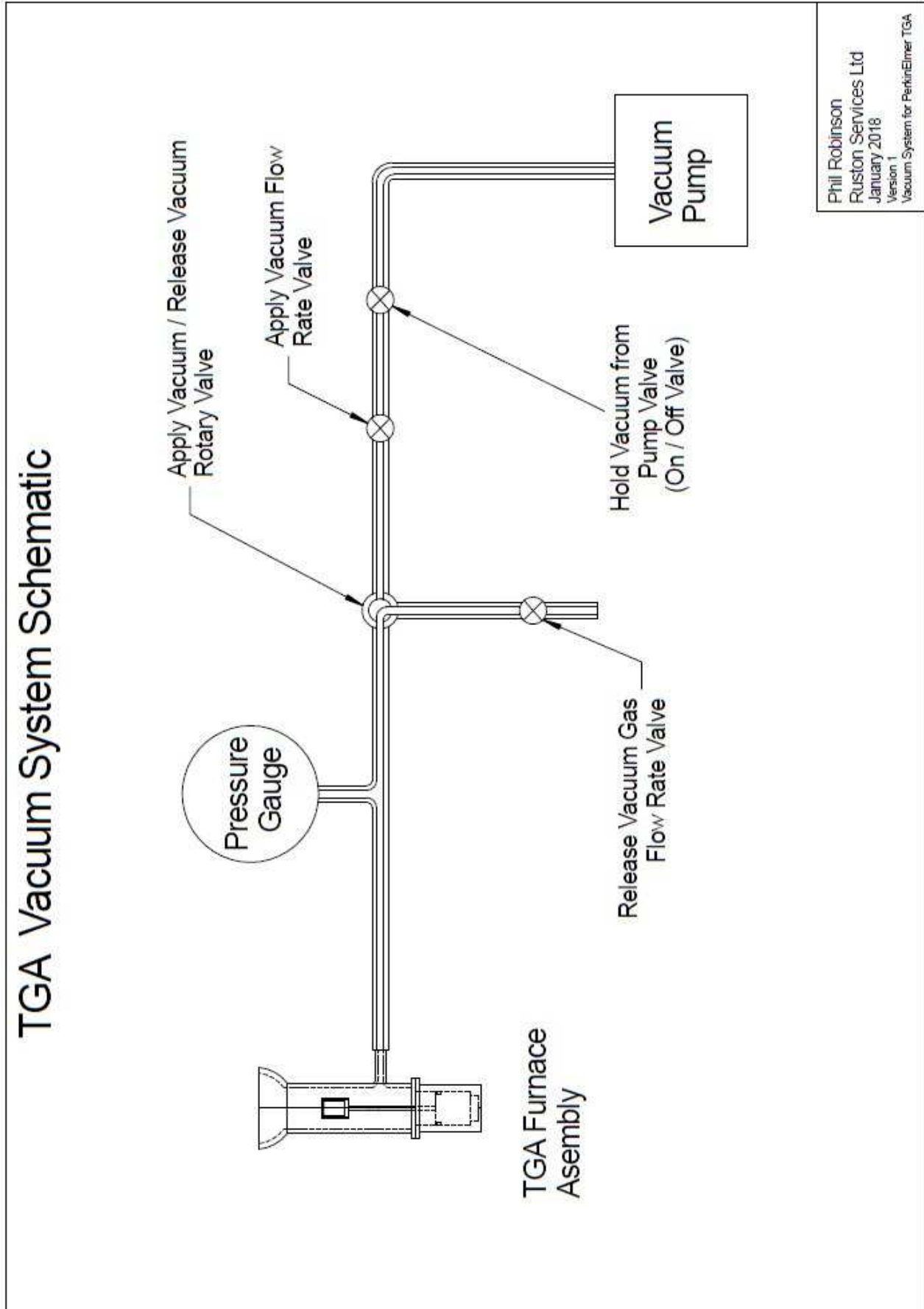
This is a 3-way rotary valve which prevents the vacuum from being released while the pump is running, and isolates the pump while the vacuum is being released.

- Rotate Clockwise to select the “Release Vacuum” position.
- Rotate Anticlockwise to select the “Apply Vacuum” position.

Vacuum Gauge

The vacuum Gauge will always display the pressure in the vacuum line to the TGA regardless of the settings on the other controls on the panel.

Vacuum Panel Schematic Layout



Procedure for Applying the Vacuum to the TGA

Start with the following control settings:-

	Setting
Vacuum Pump	Off
Hold Vacuum from Pump Valve	Closed
Apply Vacuum Gas Flow Rate valve	Closed
Release Vacuum Gas Flow Rate valve	Closed
Switch Between Apply Vacuum and Release Vacuum	Apply Vacuum

The flow control valves should be closed – turn clockwise until they stop. When set-up, the control panel layout should look like this



Then do the following:-

1. Start the vacuum pump running

2. Open the Hold Vacuum from Pump valve by lifting the valve lever to the vertical position



3. Gently open the Apply Vacuum Gas Flow Rate valve.
 - As soon as the vacuum gauge starts to fall, stop opening the valve!

 **WARNING:** Opening the valve too quickly can blow the sample out of the TGA sample pan, or dislodge the TGA hangdown wire or sample pan from the TGA balance.



- When the indicated vacuum falls below 400mm Hg, the Apply Vacuum Gas Flow Rate valve can be slowly opened a little bit more to maintain the speed of evacuation of the TGA.



After 1 - 2 minutes, the TGA will be under the full vacuum.



Procedure for Releasing the Vacuum in the TGA

The assumption here is that the system has been evacuated and the vacuum is to be released back to ambient pressure.

Start with the following control settings:-

	Setting
Vacuum Pump	On
Hold Vacuum from Pump valve	Open
Apply Vacuum Gas Flow Rate valve	Open
Release Vacuum Gas Flow Rate valve	Closed
Switch Between Apply Vacuum and Release Vacuum	Apply Vacuum

The control panel layout should look like this



1. Close the Hold Vacuum From Pump valve by lowering the lever to the horizontal position



2. Check that the Release Vacuum Gas Flow Rate valve is closed



3. Rotate the switch valve between the Apply Vacuum and Release Vacuum position

- Rotate the valve handle clockwise to do this!

The control panel should look like this



There should not be any significant pressure change when the valve is rotated.

4. Gradually Open the Release Vacuum Gas Flow control valve

As soon as the pressure on the gauge starts to rise, stop opening the valve.





WARNING: Opening the valve too quickly can blow the sample out of the TGA sample pan, or dislodge the TGA hangdown wire or sample pan from the TGA balance.

When the vacuum rises above 400mm Hg, the Release Vacuum Gas Flow Rate valve can be opened a little bit more to maintain the speed of vacuum release of the TGA.



After 1 - 2 minutes, the vacuum in the TGA will be fully released and the gauge will read zero



5. Finally, reset the controls ready for the next evacuation

- Close the Release Vacuum Gas Flow Rate valve
 - do not over-tighten the valve in the closed position!
- Rotate the switch valve from the Release Vacuum position to the Apply Vacuum position by rotating it anticlockwise.
- Check that the Apply Vacuum Gas Flow Rate valve is closed

Controlling the Vacuum Level in the TGA using the RSL Vacuum Regulator

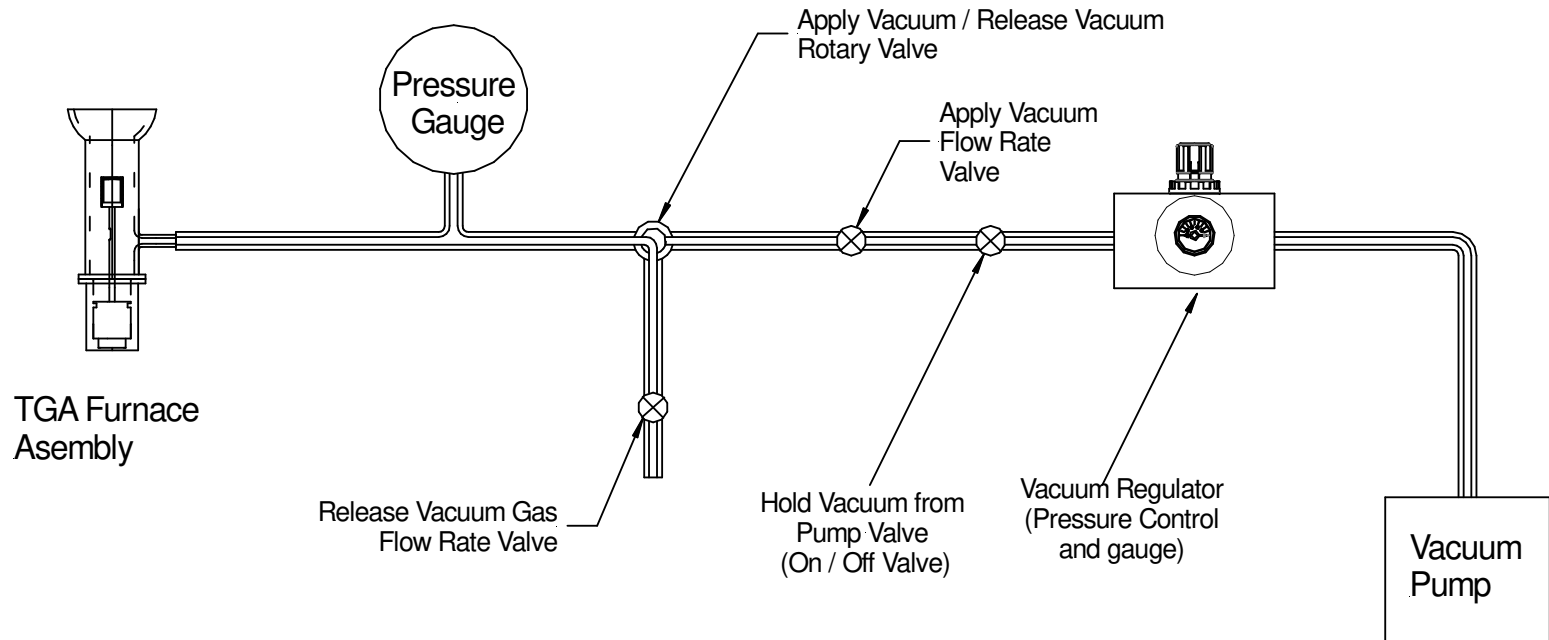
When the RSL Vacuum Regulator is installed between the RSL Vacuum Control Unit and the vacuum pump, the rotary vacuum control on the unit may be used to control the level of vacuum applied to the TGA through the Vacuum control Unit..



The vacuum pump is connected to the right-hand connection, while the left hand connection is for the hose to the RSL Vacuum Control Unit. The control on the top of the regulator will adjust the level of vacuum applied to the TGA through the Vacuum Control Unit. The Vacuum Regulator does not have its own gauge, but the vacuum level setting can be observed by using the large 100mm gauge on the Vacuum control Unit to confirm the vacuum in the TGA. The inlet and outlet to the Vacuum Regulator unit are labelled to ensure correct connection.

The following diagram shows the unit installed with the Vacuum Control Unit.

TGA Vacuum System Schematic with Vacuum Regulator



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Vacuum System for PerkinElmer TGA