

APPLICATION NOTE

**Nitrogen Filling System-
Techtronic Industries**

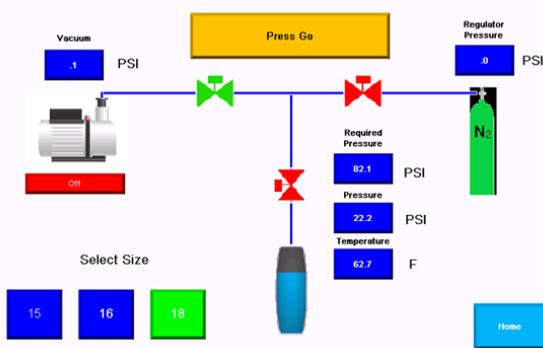
SUMMARY

Techtronic Industries approached KIW for a quick filling system to fill their 600ml cylinders with nitrogen. These cylinders would then be attached to nail guns

System Requirements

How does the System Work?

The empty cylinder is attached using a Schrader valve. The cylinder is then vacuumed, once vacuum is confirmed the valve is toggled and the nitrogen is filled. The pressure and temperature of the gas is monitored to measure the volume of the gas filled. The system fine tunes the pressure to match the desired pressure after which a leak test is performed to prevent escape of gas once the cylinder is disconnected. The filled cylinder can then be removed for use.



System Specifications

Safety

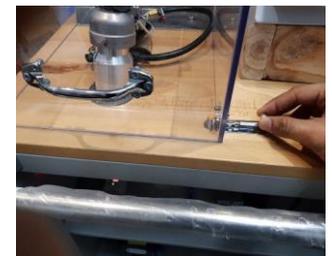
Start-up safety check

Upon starting the machine, a safety check up procedure is embedded. The procedure is as follows:

1. It checks if the cover switch is working properly
2. It checks if gas is connected by going up to 15 psi
3. It then checks if the vacuum is functioning properly by turning it on and monitoring if pressure is reduced.

Cover Interlock

The system is designed such that filling will not commence if the cover has not been locked. The cover will protect the user in case if the hose detaches during filling allowing the user to safely stop the system using the Stop Button.



Pressure Relief Valve

The Pressure – relief Valve has the ability to withstand up to 175 psi and vacuum pressure as well. This will open once the pressure in the system exceeds 175 psi to prevent any damage to the equipment and users.



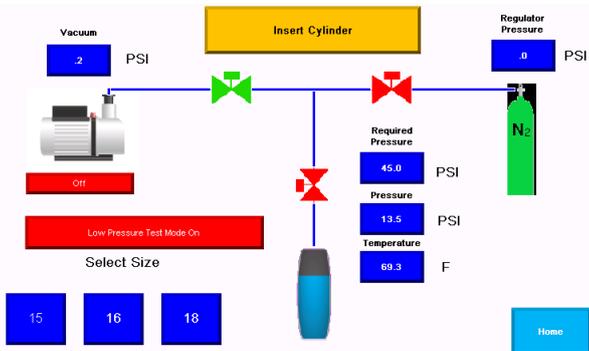
Stop Button

The Stop Button would terminate the process preventing any harm in case of an emergency.

Testing

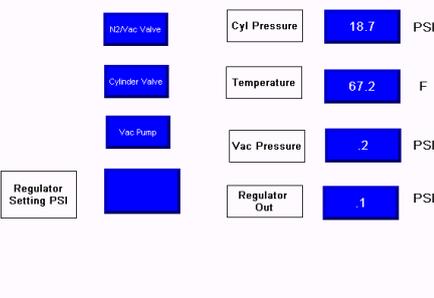
Low- pressure Mode

This mode was developed to perform a running test of the system.



Test-Mode

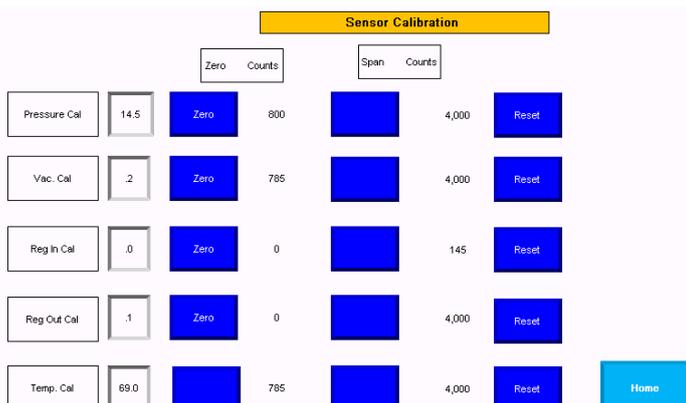
In this mode the user can test the individual components of the system for quicker fault analysis.



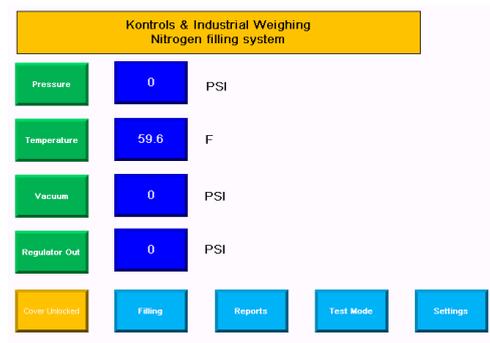
Calibration

Sensor Calibration

This feature allows the user to modify the calibration if there are errors in the system or when sensors are replaced.



- 1) The controller has been programmed to detect errors during the process and to notify the user using error messages displayed on the screen and lights.
- 2) It is User Friendly
- 3) Changes can easily be made to the recipes (if required by customer) and the Recipes can be password protected as well (if required by customer).
- 4) There is room for expansion in the system.
- 5) High quality imported equipment is used to minimize leaks and maintain pressure.
- 6) The system is mounted on a bench-top with wheels, which allows high maneuverability.
- 7) Gas struts are attached to the cover to prevent it from free-falling.
- 8) In case of a Power failure during the filling process, the pressure regulator would turn off thereby stopping the gas flow and the system would vacuum the contents of the partially filled cylinder once the process is reinitiated.



For further information please do not hesitate to visit our website

www.kiw.com.au or contact us on:

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