



## **Ventam 85 Installation & Commissioning Instructions**

### **1 General**

The Ventam 85 is a combined Gas Proving and Ventilation Interlock Panel, to enable compliance with BS 6173.

Current Electrical and Gas Regulations must be adhered to at all times and all Gas Proving & Interlock Systems must only be installed and/or maintained by competent and approved persons. Attention is drawn in particular to Regulations relating to isolation and de-isolation of Gas and Electrical Systems. All these instructions should be read before installation. Refer to wiring diagrams provided as required.

### **2 Principle of operation**

The Ventam 85 Interlock & Gas Proving System is comprised of three units:

- A Ventam 85 Control Panel.
- B Fan Air Flow pressure switch(es).
- C Gas Isolation and weep by-pass valve assembly.

The Ventam 85 Panel is mounted in the kitchen where it is accessible and visible to the user.

The Ventam 85 System prevents the gas proving system being operated UNTIL the fans are operating. Only then can Gas Proving commence. IF there are gas leaks or if valves have been left open at the appliances the main gas valve WILL NOT OPEN.

Once the main gas isolation valve has opened, if the gas pressure subsequently falls below a pre-set level (60% of line pressure) or a fan is turned off, the main gas valve will close.

Each time a fan is turned off OR an emergency stop is depressed OR the line gas pressure falls too low the system MUST BE GAS PROVED AGAIN.

### **3 Ventam 85 Interlock Panel Location**

Install the Ventam 85 Interlock Panel adjacent to the emergency exit and at an elevation suitable for the users to reach the panel controls.

The panel must not be located where access to it may be obstructed – e.g. by placing it behind an opening door or where it may be obstructed by mobile trolleys, hanging clothing or similar. It should not be located where the shut-off button could be operated accidentally. Mount the panel on a flat level surface.

The Interlock panel must not be located adjacent to or above sources of heat, vapour or steam, e.g. beside or above a cooking range or cooking or washing appliances.

The panel location must allow 600mm clearance to the front and 150mm clearance on all sides for access and maintenance.

### **4 Panel power Supply**

The panel must be supplied by a 240Vac five Amp single-phase earthed supply, via a fused spur or suitable isolator.

## 5 Additional Emergency Stop Buttons

Where there is more than one emergency exit, a normally closed emergency stop button should be located at each exit. Additional emergency stop buttons are wired in series to terminals 11 and 12. This is a 12VDC circuit.

## 6 Gas Isolation Valve

The Gas Isolation Valve must only be powered from the Ventam 85 Interlock Panel, as per supplied wiring diagrams and in accordance with Electrical and Gas Regulations.

The main gas valve is rated at 240 VAC.

The main gas valve must be fitted in an accessible location for future maintenance.

The main Gas Isolation Valve must be fitted in the **kitchen equipment** gas supply pipe work.

The valve is connected to the Ventam 85 Control Panel via three off THREE core cables. (These are all Live, Neutral and Earth).

The gas isolation valve is heavy. Ensure that the gas pipe-work it is adequately supported.

## 7 Fan Pressure switch(es).

The Fan Pressure switch is mounted adjacent to and above the Fan.

The Fan Pressure switch is connected to the Panel by a two-core cable (12VDC).

The Fan Pressure switch is connected to the Fan ductwork by a flexible tube which is supplied with the switch.

The Fan Pressure switch senses the airflow and sends a "Fans On" signal to the Control Panel. The Fan pressure switch unit must be mounted vertically with tube connections at the bottom or the side and usually within one metre of the fan and in a dry, accessible location.

The pressure switch should be located immediately above the fan. Where this is not possible, the pressure switch must be mounted as high as practicable to allow the pressure switch tubing to slope down from the pressure switch unit to the ductwork connector.

Pressure switch tubing must slope down continuously from the pressure switch to the ductwork to allow condensate to naturally drain from the pipe work to prevent blockages occurring.

Twists, loops and kinks are not permitted in the pressure switch tubing.

The pressure switch unit location must allow 600mm clearance to the front and 150mm below for access and maintenance.

DO NOT mount the pressure switch on the ductwork or transmitted vibrations may cause unreliability and reduce the operating life of the unit.

## 8 Fan Pressure switch location

Consider the best location for mounting the unit AND for connecting the pipes from the pressure switch to the ductwork

Mount the pressure switch(es). unit following above guide-lines.

- The suction side of the fan is at a negative pressure. Connect this side to the – ve pressure connection on the pressure switch. The switch will detect a differential pressure between the ductwork negative pressure and the atmospheric pressure. This differential pressure will close the switch.
- At the pressure switch, the tube is connected to the push-fit connector on the bottom of the pressure switch. This connector is identified with a "—"
- At the ductwork, the tube is connected onto the push-fit ductwork connector supplied with the pressure switch. Cut the tubing to the required length.
- The pressure switch connection should be as close as possible to the fan.
- Use a digital pressure meter in the range of 0-2mbar to check the system pressure while the fan is running at full speed and rotate the duct connector whilst measuring the recorded negative pressure.
- The arrow direction on the duct connector should oppose the airflow direction when fitted to the duct. This normally provides the best pressure reading possible.
- Pressure switch tubing must be protected and secured to prevent damage.

- The pressure switch and pipe work must be replaced at 24-month intervals. Blocked or dirty filters will adversely affect airflow and pressure switch operation.

When the ductwork is cleaned, the pressure switch tubing must be disconnected first to prevent contamination of the pressure switch and tube blockages affecting operation.

## 9 Panel interface terminals

Terminals 5,6 and 7 are volt-free change-over contacts that mimic the fan(s) on/ off status.

Terminals 8,9 and 10 are volt-free change-over contacts that mimic the emergency stop status.

### 10.0 Pre Commissioning

The Ventam 85 Interlock Panel is supplied fitted with links in various terminals. Do not remove these links until pre-commissioning is completed.

**Do not connect the valve or pressure switch(es)s until pre-commissioning is completed.**

Refer to the supplied schematic wiring diagrams in conjunction with these instructions.

Isolate and make safe all Gas and Electrical services including the fan power supply and make known to others that works are commencing.

Install the Interlock Panel, the Gas Isolation Valve and the Fan Pressure switch(es). Unit(s).

Install the electrical supply to the Control Panel via an un-switched fused spur.

Install 1.5 mm<sup>2</sup> two-core flex between the fan Pressure switch(es). Unit(s) and the Control Panel.

Install cables (to suit the valve size) between the Ventam 85 Control Panel and the Gas Valve.

Re-set the Emergency Stop on the Control Panel by turning the button in the direction of the arrows on the button. Ensure it is safe to start fan(s).

Check all panel terminations are secure. Use the correct tool and do not over-tighten.

Ensure that the following factory installed terminal links are fitted (if not fit them now) - Link between terminals 1 and 2, link between terminals 3 and 4, link between terminals 11 and 12.

**10.1** Connect the panel power supply to terminals L1, N1 and E1 and power up the panel.

- Panel should indicate "Power On" and "Fan(s) On"- Terminal 20 (Valve supply terminal) should be at 240Vac.

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**10.3 Remove link from terminal one.**

- Panel should indicate "Fan(s) Off"- Terminal 20 (Valve supply terminal) should be at zero Volts. Replace link in terminal one.
- Note that the short time delay between switching off the fan and the panel actually sensing that the Fan is off is due to the time taken for the fan to stop rotating.

**10.4 Check Terminal 20 is at 240Vac** (If not, re-set Emergency Stop Button on front of panel).

- Press Emergency Stop Button on the front of panel - Terminal 20 should read Zero Volts.
- Re-set Emergency Stop Button on front of panel - Terminal 20 should read 240Vac.

**10.5** Isolate power to the panel and connect the site cabling for the valve and pressure switch(es).(s)as per supplied wiring diagrams. If pressure switch(es).s are fitted in terminals 1 & 2 AND 3 & 4, remove the Panel links from these terminals.

## **11.0 System Commissioning**

**11.1 Confirm that the cables to the gas proving valve are terminated correctly. Incorrect terminations will cause system and valve damage.**

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**11.3 Ensure all emergency stop buttons are reset.**

**11.4 Turn on all interlocked fan(s)** Increase fan speeds until panel indicates "Fan(s) On".

- Panel should indicate "Fan(s) on".

**11.5 Switch power off and then back on again to each interlocked fan in turn**

- Panel should indicate "Fan(s) off" and then "Fan(s) on" for each fan in turn.  
Note that it will take up to thirty seconds for the Fan(s) off light to come on due to the time it takes for the fan to stop turning!

**11.6 Ensure fan(s) are on** and increase fan speed to the level required to indicate "Fan(s) On".

- Depress emergency stop button on the front of panel – panel will indicate "Emergency Stop".
- Re-set emergency stop button on the front of panel.

**11.7 Testing additional emergency Stop buttons.**

- Ensure fan(s) are on and increase fan speed to the level required to indicate "Fan(s) On".
- Depress additional emergency stop button – panel will indicate "Emergency Stop".
- Re-set additional emergency stop button on the front of panel.
- Repeat step 11.7 for each additional emergency stop button fitted.

**12.0 Gas Proving – check that gas cannot come on if fans are off**

Turn off one of the fans - "Fan(s) off" lamp and "Gas Off" lamp will be lit.

Operate the "Gas Power Switch" by switching it to the right..

Depress the "Start Gas Proving" button and keep button depressed for thirty seconds.

**THE GAS ON PANEL LIGHT SHOULD NOT COME ON WHILE ANY FAN IS OFF.**

**13.0 Gas Proving**

- Ensure Fan(s) On light is on.
- **Ensure gas supply to valve is turned on.**
- Ensure all gas appliances are isolated.
- Operate the "Gas Power Switch" by switching it to the right.
- Depress the "Start Gas Proving" button and keep button depressed until the "Gas On" panel light comes on.

**NOTE – IF IT TAKES LONGER THAN ONE MINUTE FOR THE "GAS ON" LIGHT TO COME ON,CHECK THAT ALL VALVES ARE CLOSED AND THAT PIPE-WORK IS FREE FROM LEAKS.**

- When "Gas On" light is lit purge air from the system and commission appliances.
- Turn off all gas appliances and close all appliance isolation valves.

**14.1 Gas Proving**

- "Gas On" light should still be lit.
- **Turn off all gas appliances.**
- Turn off one of the fans – "Fans Off" AND "Gas Off" light should be lit on panel.

- Turn fan back on – “Fans On” light should be lit on panel.
- Repeat section 13.0 - Gas Proving part one – “Gas On” panel light will come on.
- Repeat step 14.1 for each interlocked fan

#### **14.2 Gas Proving**

- “Gas On” light should still be lit.
- **Turn off all gas appliances.**
- Depress emergency stop button on the front of panel – panel will indicate “Emergency Stop” AND “Gas Off”.
- Re-set the emergency stop button on the front of the panel, repeat step 13.0 – “Gas On” panel light will come on.
- Repeat step 14.2 for each additional emergency stop button fitted.

#### **14.3 Fan pressure switch Adjustments**

- Fan pressure switches can be adjusted to trip the gas valve at the required air flow rate. As a guide, the fans should trip the valve if the fans are reduced to below 50% of full speed, but the ventilation system specifications for minimum flow rates must be followed.
- Typically, if the speed controller minimum is to be set at 50% of max fan speed, then the Fan pressure switch should be set to turn off the gas at 45%.
- Allow a tolerance for the ventilation system to settle down and for the filters to become partially blocked etc. If the speed controller is fitted with a minimum speed adjustment pot (on the rear of the speed controller board), ALWAYS set this to set the minimum speed that the fan will run and this will prevent user problems and premature fan failure.
- A typical installation requires that the fresh air supply flow is at 85% of the extraction air flow, and this can be allowed for in fan pressure switch adjustments to control minimum.

#### **14.4 Using a current monitor to monitor the fan(s)**

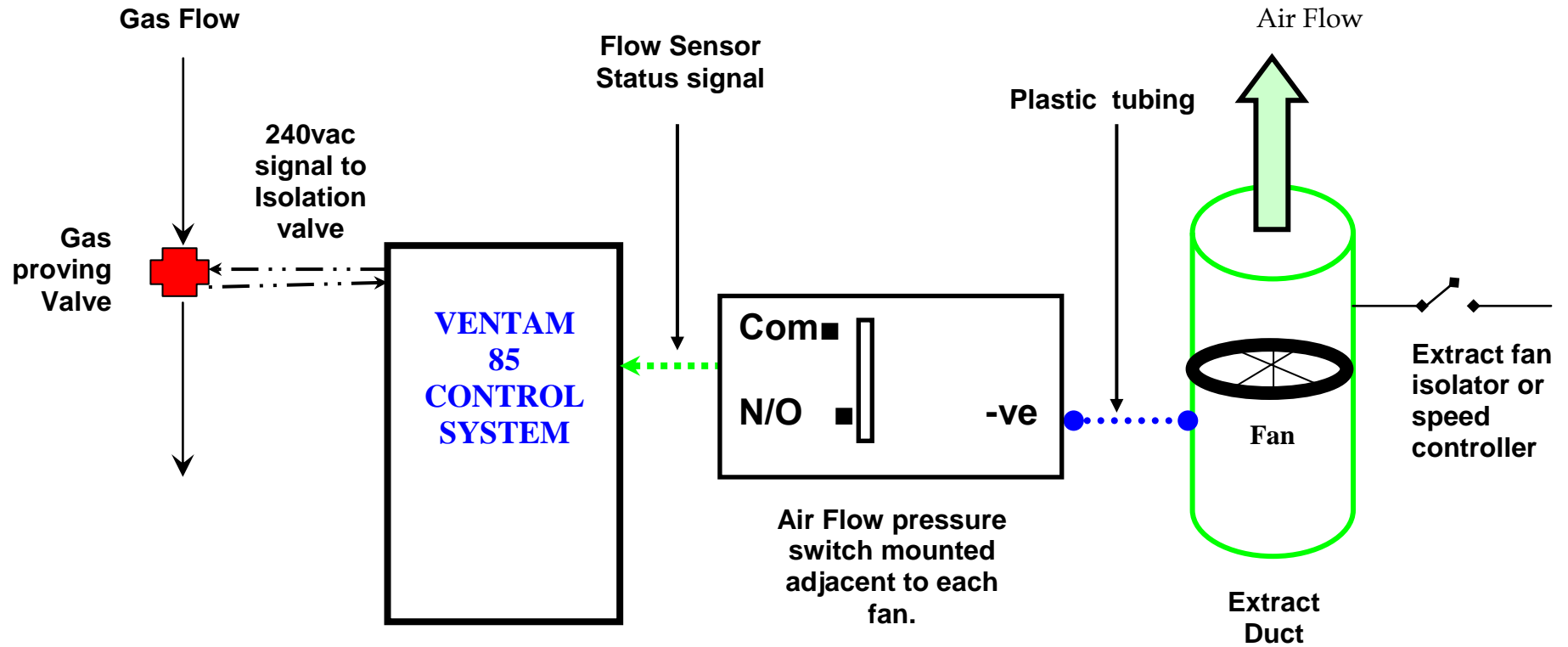
- A current monitor may be used instead of a fan pressure switch to check that the fan is operating. The current monitor must be set up to ensure that the gas turns off if the fan is turned down too low or turned off. Adjust the current monitor so that this happens and test it. As a guide, the fans should trip the valve if the fans are reduced to below 50% of full speed, but the ventilation system specifications for minimum flow rates must be followed.
- A typical installation requires that the fresh air supply flow is at 85% of the extraction air flow, and this can be allowed for in current monitor adjustments to control minimum.
- The current monitor should be installed so that the volt free current monitor contact is CLOSED when the fan is running. This contact must be connected into panel terminals 1+2 OR 3+4.

#### **14.3 Instruct site staff in correct system operation and instruct staff to clean filters regularly .**

**Advise site staff NOT to decrease fan(s) speed or gas valve will NOT OPERATE!!!!**  
**Ask the user to start the fans, increase the fan speed etc to ensure the user is familiar with and understands system operation and that the system is installed for their safety.**



## Control Schematic





# Ventam 85 Gas Proving & Interlock wiring schematic 1

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## Panel Terminals

