OPERATING & MAINTENANCE INSTRUCTIONS FOR EXTRACTION SYSTEMS WITH SOLID FUEL COOKING

Location Name:
xx

BWF Ref: xx

IMPORTANT SAFETY NOTICE

POWER TO THE FANS AND CONTROL PANEL SHOULD NEVER BE SWITCHED OFF. THEY MUST BE ABLE TO OPERATE AT ANY TIME IN RESPONSE TO CONSTANTLY MONITORED CO2 AND CO LEVELS

THE FANS WILL AUTOMATICALLY RUN ON FOR 3 HOURS WHEN THE SYSTEM STOP IS ACTIVATED. THIS IMPORTANT SAFETY CYCLE MUST NOT BE INTERUPTED

EXTRACTION SYSTEMS OPERATION AND MAINTENANCE

See table 1 (below) for cleaning frequencies.

1) EXTRACTION CANOPY CLEANING

Generally the extraction canopy will be manufactured from Dull Buff Stainless Steel

To clean the stainless steel, we recommend a mild detergent with vinegar, which will remove light grease marks etc. ***Do not use any caustic materials as this may damage the stainless steel.***

The grease collection trays at the bottom of the extraction plenum will collect any excess grease/oil. These cups will collect any waste material over a long period and should be checked at regular intervals (see table 1).

2) BAFFLE TYPE GREASE FILTERS.

All grease filters should be cleaned at regular intervals according to use (see table 1).

The filters will fit into a Commercial Dishwash Machine or alternatively can be placed in very hot water with a detergent overnight and washed out under a tap to clear grease. ***Do not use any caustic materials as this may damage the filters.***

3) FANS AND CONTROLS

BWF's drawing as per reference number in title page shows the location and technical details for the fans installed.

Each extract / fresh air system fan is selected at design stage depending on the size of the canopy, the length and size of ductwork, the type of filtration system, and the type of cooking equipment being used.

There is very little maintenance to fans and controllers required but fans should be checked periodically for cleanliness and heavy grease deposits which could, in time, increase system resistance and cause fans to fail. It is not possible to service a fan as they are sealed units but cleaning by a professional company if grease deposits build up will prolong fan life.

4) EXTRACT DUCTWORK

BWF's drawing as per reference number in title page shows the location and duct layout as installed.

It is not possible to provide a general rule for the frequency of ductwork cleaning required because of the variation in hours of usage and level of contamination in the system. We recommend that a regular inspection is made and a risk assessment is made to determine the ongoing cleaning frequency (See Table 1 below). Further guidance is available in TR/19: Guide to Good Practice – Internal Cleanliness of Ventilation Systems published by the HVCA (www.hvca.org.uk).

5) SUPPLY AIR DUCTWORK AND INLET FILTERS

BWF's drawing as per reference number in title page shows the location and duct layout as installed and technical details for the supply air inlet filters.

Dust filters are installed above the supply air ceiling outlets. These should be inspected and cleaned or removed and replaced as necessary as per the recommended cleaning frequency table in this document.

6) WALL CLADDING.

BWF's drawing as per reference number overleaf shows the extent of any stainless wall cladding fitted.

Made from 430-Grade stainless steel to customer's specific requirements. No maintenance is required apart from the need to keep clean by wiping over using a solution of hot water with a little mild detergent. ***Do not use any caustic solutions.***

7) HEATER BATTERY – ELECTRIC

Fig 3 – Typical Heater Battery and Control Panel

BWF's drawing as per reference number in title page will show the location and type of any heater battery fitted.

Heater batteries are used to temper supply air into a kitchen, and will turn on and off as required automatically when the supply air fan is running. The temperature of the incoming air can be adjusted using the temperature set point of the front of the control panel.

The heater battery must be switched off at least two minutes before switching off the supply air fan to allow time to dissipate residual heat in the element. Clear signage is fixed to the controls to remind the user to do this.

An automatic safety cut out is fitted to the heater to protect the installation from overheating. There is no system tell-tale but if the supply air system unexpectedly starts to deliver cold air, it is possible that the cut out has been activated.

Reset is very simple. With reference to the right hand side photograph above, a small black screw cap is located on the top of the control unit housing. This cap unscrews to reveal a small back button underneath which should be pressed and a small click will be felt as the heater reset.

If any problems persist beyond temperature adjustment or reset, a suitably qualified electrical engineer should be instructed. Technical Information regarding this panel can be gained by contacting B W fabrications Ltd. on 01179 963 4492.

8) HEATER BATTERY – LOW PRESSURE HOT WATER (LPHW)

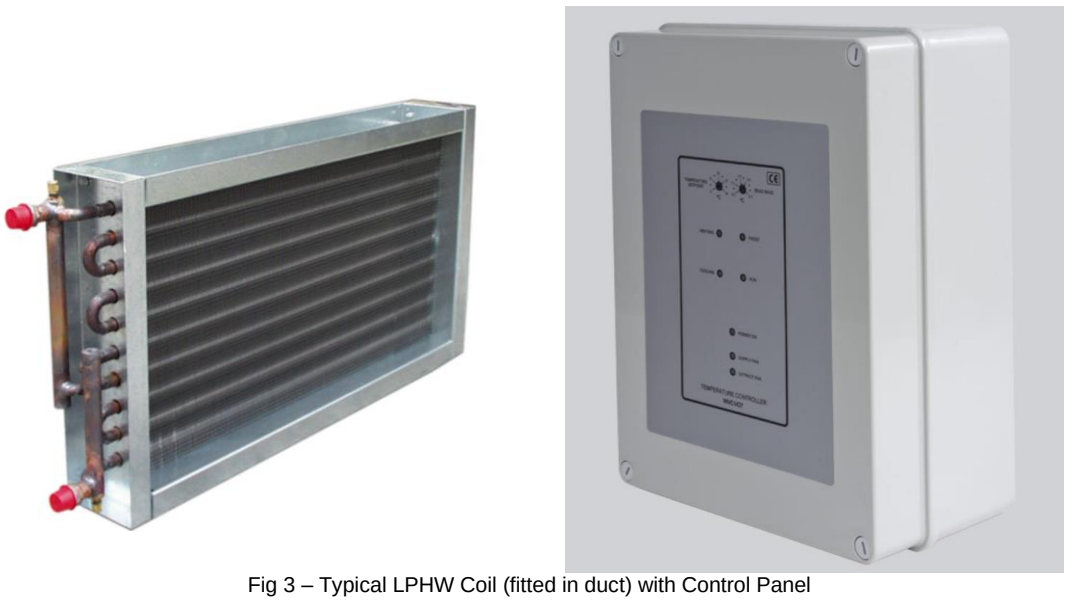

Fig 3 – Typical LPHW Coil (fitted in duct) with Control Panel

BWF's drawing as per reference number in title page will show the location and type of any heater battery fitted.

The controller shown is used with a room/exhaust duct air temperature sensor. The set-point temperature and operating range settings are on the face. A proportional signal output to a 3 port valve motor controls the low pressure hot water heat exchanger. 24v output is provided as the valve motor power supply. Fused fan outputs are also available.

9) ODOUR CONTRL – ELECTROSTATIC PRECIPITATOR ESP

BWF's drawing as per reference number in title page will show the location and type of any odour control measures fitted.

BWF's odour control installations are designed to be compliant with DEFRA 2005 and 2018 best practice guidance.

As per the photo below, in an ESP unit, air is passed across cells of closely stacked electrostatically charged plates which attract contaminants out of the air stream. A maintenance contract should be arranged with the manufacturer as per details below. They will advise on cleaning frequencies however a general guide is included later in this document.

BWF use two different ESP manufacturers depending on the requirements of the particular project. The manufacturers name is clearly displayed on the unit.

purifiedair since 1934

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plasmaclean Odour and Infection Control

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Fig 3 – Typical Heater Battery and Control Panel

10) ODOUR CONTRL – OZONE

BWF's drawing as per reference number in title page will show the location and type of any odour control measures fitted.

BWF's odour control installations are designed to be compliant with DEFRA 2005 and 2018 best practice guidance.

As per the photo below, an ozone unit is fitted outside of the airstream so that clean air is drawn across the internal Uv lights to generate ozone which is then drawn into the extract ductwork.

BWF use two different ESP manufacturers depending on the requirements of the particular project. The manufacturers name is clearly displayed on the unit.

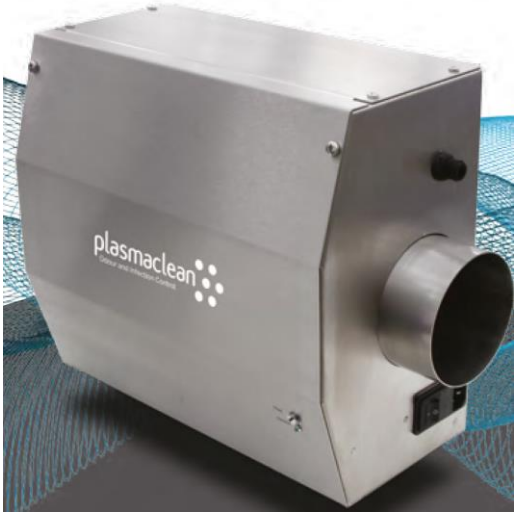

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Fig 3 – Typical Heater Battery and Control Panel

11) ODOUR CONTRL – CARBON FILTERS

BWF's drawing as per reference number in title page will show the location and type of any odour control measures fitted.

BWF's odour control installations are designed to be compliant with DEFRA 2005 and 2018 best practice guidance.

The simplest form of odour control comprises of activated carbon filters located in the extract airstream.

Any specialist cleaning company will be able to change the filters as part of the general system cleaning cycle as per guid below.

12) FREQUENCY OF CLEANING.

The need for specialist cleaning of extraction systems will depend on the level of usage of the cooking equipment, types and quantity of cooking and other risk factors such as vulnerability of the system to ignition and of the building and its occupant / users to system fire, hygiene, vermin and mechanical hazards. Typical cleaning intervals are shown below. A suitable filter changing record document is also included. This should be used to maintain an accurate record of all filter changes in line with the frequencies required.

Table 1: Typical Cleaning Frequencies for Extraction System Components at Different Usage Levels

SYSTEM COMPONENT	LIGHT USAGE 2-6 Hours/day	MEDIUM USAGE 6-12 Hours / day	HEAVY USAGE 12-16 Hours / day
CANOPY (clean accessible internal and external surfaces, check collection trays)	Every 2-3 weeks	Weekly	Twice weekly
GREASE FILTERS (clean)	Weekly	Twice Weekly	Daily
ODOUR CONTROL SYSTEMS ESP / UV units (specialist cleaning as per manufacturer's instructions attached where relevant)	Minimum 12 monthly specialist clean	6 monthly	3 monthly recommended
ODOUR CONTROL SYSTEMS Activated Carbon Filters	Minimum 12 monthly specialist clean	6 monthly	3 monthly recommended
FANS (check and clean as necessary)	12 monthly	6 monthly	3 Monthly
FRESH AIR FILTERS (check and clean as necessary)	6 monthly	4 monthly	3 Monthly
EXTRACT DUCTWORK (check and clean as necessary)	12 monthly	8 monthly	6 Monthly

* Refer to manufacturers' guidance for UV/ESP/Ozone Systems
*B W Fabrications can procure replacement filters, offering a supply and installation, as well as a supply only service. Please contact B W fabrications on the details below.

Systems with heavy usage of chargrills, salamander grills and chinese cookers may need to be cleaned even more frequently. Please refer to TR/19: Guide to Good Practice – Internal Cleanliness of Ventilation Systems (HVCA www.hvca.org.uk) for more information.

13) APPENDIX 1 – TRENT CATERSENSE SYSTEM

CaterSense V2

MULTI FUNCTION SOLUTIONS
With GAS SUPPLY CONTROL (where fitted)

OPERATOR'S MANUAL

Product Overview

The CaterSense system is based on a range of products and ancillary equipment designed to meet the ever changing requirements of the catering industry and associated regulations.

The system comes in four basic modes, you have selected

CaterSense V2 Multi Function intelligent controller *with fan speed control*

Contents

1. How does my CaterSense unit work?

Your CaterSense unit is designed to ensure that your kitchen ventilation system is operational and maintaining the design system air flow rates for your kitchen, before your gas supply (where fitted) is enabled to your cooking appliances.

The CaterSense is operated via an easy wipe clean touch pad and LED indicator arrangement as indicated in section 7. Also if rising levels of CO or CO2 are detected the system will automatically start the fans and increase the speed if required.

2. How do I start my CaterSense?

Press the START pad on the CaterSense unit. The CaterSense will start your ventilation system, and carry out a number of system checks. If all checks are clear the gas valve output will switch on after 1 minute and open the gas valve and supply to your cooking appliances.

On certain models, the speeds of the fans can be adjusted using the UP and DOWN pads on the facia. Both fans will go up and down together at a pre-determined ratio.

If during the start up sequence the CaterSense goes into an alarm mode, please refer to section 5.

3. How do I stop my CaterSense?

Press the STOP pad on the CaterSense unit. The gas valve output will switch off and the gas valve will close, isolating the gas supply to your appliances.

NOTE: Always ensure that all appliances have been switched off and taps closed.

4. What do I do if my CaterSense does not operate?

If when you press the START pad your CaterSense does not operate,

1 Ensure that your kitchen canopy ventilation system is operational.
2 Ensure you have power to the unit; is the power on LED lit?
3 If not, have your supply to the unit checked by an electrician.
4 If power is on to the unit, refer to section 1.08 of this manual for further instructions.

5. What do I do if my CaterSense goes into an alarm?

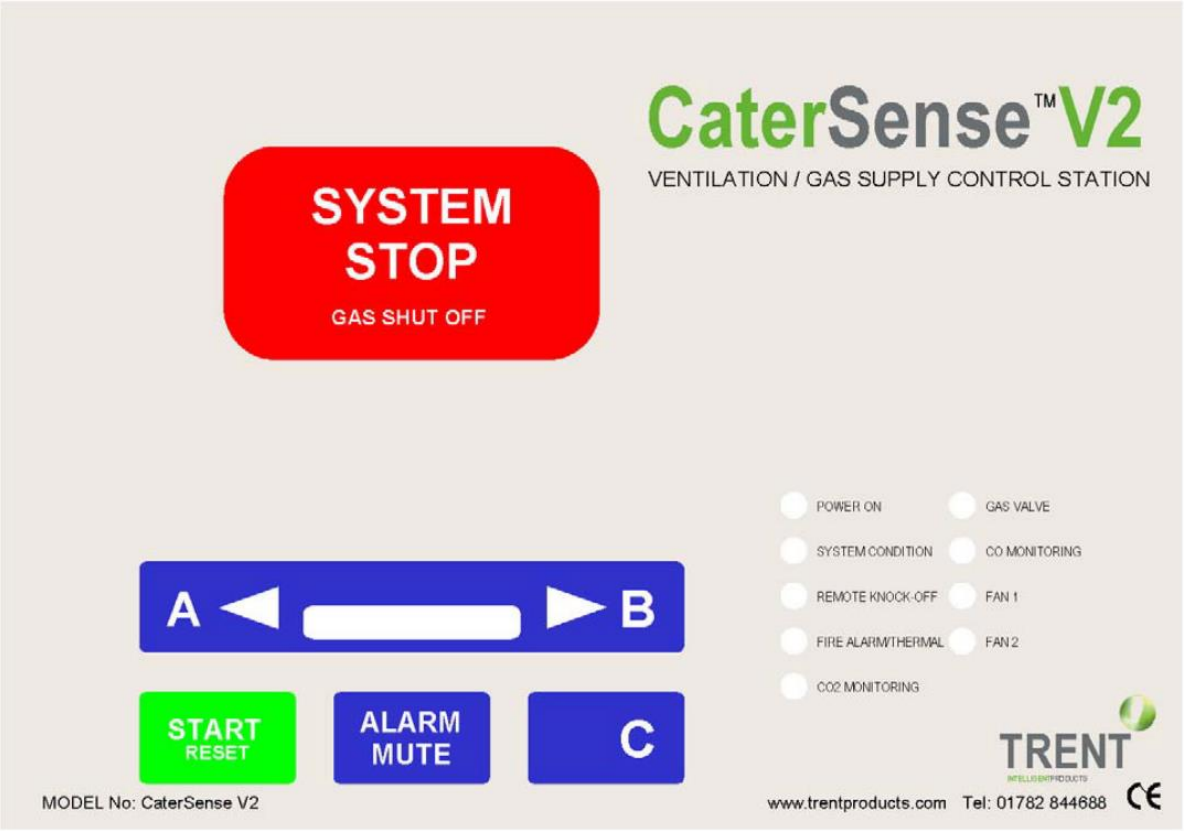
If when you press the START pad or during its operation, the CaterSense goes into an alarm mode and the audible alarm buzzer sounds.

1 Press the ALARM MUTE pad and the audible alarm will stop. *(Note: 1.1)*
2 Identify the LEDs which are flashing and refer to section 9 of this manual for further instructions.

6. Do I have any form of override?

Following the latest instructions from GAS SAFE **NO** form of operator override can be provided.

7. CaterSense facia details



***Notes**: 1.1 Alarm Mute, if the cause of the alarm is not cleared or the alarm has not been responded to, the audible alarm will re-sound.*

8. Fault finding and Alarm Codes

In the event that your CaterSense has not operated or has gone into an alarm mode, the following has been designed to help you identify your problem and offer a course of action for you to take.

Fault finding Only to be carried out by a qualified engineer

Fault		Possible cause	Action
No Power On LED	a.	No power to the unit	Check power supply to unit is switched on. Contact a qualified electrician.
Gas valve output LED is red and gas valve is closed	a.	The unit is in an alarm mode	Check for any flashing LEDs and look-up in alarm codes in section 8.
	b.	Start pad has not been pressed	Press SYSTEM STOP pad and press START pad again.
	c.	None of the above	Call for further assistance
Gas valve output LED is green and gas valve is closed	a.	No power to gas valve	Contact a qualified electrician.
	b.	Gas valve not operational	Contact a qualified electrician.
Gas valve open but no gas at appliance	a.	Gas supply has been isolated or is blocked	Responsible person to check gas isolation valves.
	b.	No gas pressure	Contact a GAS SAFE engineer to check gas supply.
CO2 levels within the catering environment	a.	 CO2 MONITORING The CO2 level has reached between 2800 - 3799PPM	Warning Stage: In this stage attempt to reduce the CO2 level by – increasing the fan speed, opening windows etc.
	b.	 CO2 MONITORING The CO2 level has reached between 3800 - 4799PPM	Alarm Stage: Ensure the catering area is well ventilated by opening all windows and doors. It also be necessary to reduce the cooking load and introduce portable fans.
	c.	 CO2 MONITORING The CO2 level has reached between 4800 - 4949 PPM	Shutdown Stage: The CO2 level has now reached the maximum safe levels and gas supply to the appliances has will be closed after 5 minutes.
	d.	 CO2 MONITORING The CO2 level has reached between +4950 PPM	Instant shutdown Stage: The CO2 level has now surpassed the maximum safe levels and gas supply to the appliances has been closed.

9. Alarm Codes and System Display

9.1 - SYSTEM STOPPED

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
●	REMOTE KNOCK OFF	○	FAN 1
●	FIRE ALARM / THERMAL	○	FAN 2
○	CO2 MONITORING		

Cause: - The system has been stopped
Solution: - Press "Start" key to begin startup sequence

9.2 - FIRE ALARM

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
●	REMOTE KNOCK OFF	○	FAN 1
✹	FIRE ALARM / THERMAL	○	FAN 2
○	CO2 MONITORING		

Cause: - The link between terminals 9 and 10 has been broken by either the fire alarm being activated. If using a LPHW heater battery the capillary fan hold off stat has been activated or a fan thermal cut out has been activated. The fan and gas valve outputs will be deactivated.
Solution: - Ensure fire alarm is not activated. Check wiring to fire alarm Interface panel. The system must be reset by pressing "STOP" before it can be restarted.

9.3 - KNOCK OFF BUTTON

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
✹	REMOTE KNOCK OFF	●	FAN 1
●	FIRE ALARM / THERMAL	●	FAN 2
○	CO2 MONITORING		

Cause: - The link between terminals 11 and 12 has been broken (knock off pressed). The gas valve output will be deactivated.
Solution: - Ensure remote knock off button has been released. Check wiring to remote knock-off button. The system must be reset by pressing "STOP" before it can be restarted.

9.4 - FAN UNDERCURRENT

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
●	REMOTE KNOCK OFF	●	FAN 1 *or* FAN 2
●	FIRE ALARM / THERMAL		
○	CO2 MONITORING		

Cause: - The indicated fan is drawing less current than the minimum current established during commissioning.

Solution: - Ensure fan is working correctly. Check running current with an ammeter. Use the diagnosis mode to establish any problems with set-up. The system must be reset by pressing "STOP" before it can be restarted.

9.5 - FAN OVERCURRENT

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
●	REMOTE KNOCK OFF	✹	FAN 1 or FAN 2
●	FIRE ALARM / THERMAL		
○	CO2 MONITORING		

Cause: - The indicated fan is drawing more current than the maximum current established during commissioning.

Solution: - Ensure fan is working correctly. Check running current with an ammeter. Check filters are clean. Use the diagnosis mode to establish any problems with set-up. The system must be reset by pressing "STOP" before it can be restarted.

9.6 - MEMORY ERROR

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	○	CO MONITORING
●	REMOTE KNOCK OFF	○	FAN 1
●	FIRE ALARM / THERMAL	○	FAN 2
○	CO2 MONITORING		

Cause: - The system has failed the test of its internal memory (tested at power on).

Solution: - The system must be recommissioned to store new values into the memory. Please contact a competent person and consult your installation manual.

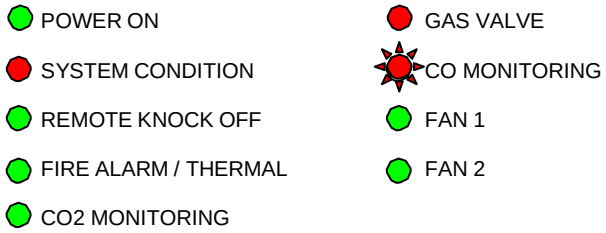
9.7 - HIGH LEVELS OF CO2

●	POWER ON	●	GAS VALVE
●	SYSTEM CONDITION	●	CO MONITORING
●	REMOTE KNOCK OFF	●	FAN 1
●	FIRE ALARM / THERMAL	●	FAN 2
✹	CO2 MONITORING		

Cause: - The system has detected that the CO2 levels within the kitchen environment are too high.

Solutions: - Please see page 4 for further information.

9.8 - HIGH LEVELS OF CO



Cause: - The system has detected that the CO levels within the kitchen environment are too high.

Solutions: - Please see page 4 for further information.

If the above does not solve your problem, contact Trent Products.

9. CO2 AND CO MONITORING

CO_2 monitoring

The high limit for CO_2 monitoring is pre-set to a maximum of

4950PPM. There are four stages of CO2 monitoring:

1) Warning Stage:

If a CO_2 level of 2800-3799 PPM is detected during normal operation, the system condition light will flash from green to amber. - CO2 MONITORING (ALARM BEEPS EVERY 3 SECONDS)

2) Initial Alarm Stage:

If a CO_2 level of 3800-4799 PPM is detected during normal operation, the system condition light will flash from green to red. Once this occurs the fan speed will automatically increase to maximum. - CO2 MONITORING (ALARM BEEPS EVERY SECOND)

3) High Alarm Stage:

If a CO_2 level of 4800-4949 PPM is detected during normal operation, the system condition light will flash from amber to red. After 10 seconds, the control will alarm continually (this can be muted, however it will resound after 1 minute) and the fan speed will automatically increase to maximum.

If after 5 minutes the CO_2 level is still too high during normal operation or start-up, the gas valve (if fitted) will be shut off and the fans will continue to run until CO_2 reaches an acceptable level.

4) Instant Shutdown Stage:

If a CO2 level of 4950+ PPM is detected during normal operation, the system will instantly close the gas solenoid valve if fitted and alarm.

CO monitoring

The high limit for CO monitoring is pre-set to a maximum of 40PPM. There are four stages of CO monitoring:

1) Warning Stage:

If a CO level of 20-29 PPM is detected during normal operation, the system condition light will flash from green to amber. - CO MONITORING (FLASHES RAPIDLY)

2) Initial Alarm Stage:

If a CO level of 30-69 PPM is detected during normal operation, the system condition light will flash from green to red. Once this occurs the fan speed will automatically increase to maximum. - CO MONITORING (FLASHES RAPIDLY)

3) High Alarm Stage:

If a CO level of 70-89 PPM is detected during normal operation, the system condition light will flash from amber to red. After 10 seconds, the control will alarm (this can be muted, however it will resound after 1 minute) and the fan speed will automatically increase to maximum.

If after 5 minutes the CO level is still too high during normal operation or start-up, the gas will be shut off (if fitted) and the fans will continue to run until CO reaches an acceptable level. - CO MONITORING (FLASHES RAPIDLY)

4) Instant Shutdown Stage:

If a CO level of 90+ PPM is detected during normal operation, the system will instantly close the gas solenoid valve (if fitted) and alarm.

FOR FURTHER TECHNICAL ASSISTANCE, PLEASE CONTACT US BY

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