DAMLY
ENVIRONMENT TECHNOLOGY

SUNHEATER

OWNER'S MANUAL

Model : DO-66

CONTENTS

CAUTION

For your own safety, please notice the warning sign and read the operation manual carefully before you operate the machine.

Read these instructions carefully

FOR YOUR SAFETY
If You Smell Gas: 1. Open windows 2. Do not touch electrical switches 3. Extinguish any open flames 4. Immediately call your gas supplier

FOR YOUR SAFETY
Do not store or use gasoline or any flammable vapors and liquids in the vicinity of this or any other appliance

The life of this heater and its efficiency will be optimal if its use and maintenance is carried out according to the current norms and instructions.
Before installing the heater, verify that the local gas distribution (type of gas, pressure, regulator, etc.) is compatible with the heater requirements.
The installation, regulation and conversion to another gas, requires the intervention of an authorized technician.
The DAMLY factory must be consulted before substituting parts not listed in this manual.

It is the responsibility of the installer to: verify that the installation is in accordance with the following norms and give the user the current user's manual

notice to user:

- Any modifications to the heater or its installation, even the most minimum modification, change or elimination of security components or pieces that influence the efficiency or the proper combustion, will result in the loss of the certification and the voiding of DAMLY's guarantee.
- It's imperative to perform the cleaning and periodic maintenance.

DAMLY reserves the right to modify the current manual. Only the manual included with each heater can be considered as contractual.

ATTENTION: this heater should not be used in domestic buildings nor in establishments for public use.

ATTENTION: it is necessary to add complementary ventilation depending on the model

I - DESCRIPTION AND OPERATION

The purpose of this heater is the raising of farm animals and heating of agricultural use warehouses.
It is an ON/OFF heater with automatic ignition. It works with LPG or Natural gas depending on the model it could be placed inside or outside the farm buildings. A biogas model is also available.

I.1. Description of the heater:

- AISI 304 Stainless steel chassis or galvanised (depend on the model)
- Distribution fan with fixed flow
- Fan operation is controlled by 1 air flow switch.
- One double gas valve controlled by an electronic circuit card and programmer.
- Electronic ignition is produced by sparking generator
- Flame sensor by ionization
- Thermal protection by overheating thermostat
- The safety control box control the operation cycle of the heater. This programmer is equipped with a remote reset in case of a fault. And it can give information to the user when fault.

I.2. Instructions for Use:

- Maintain this heater in accordance with these instructions.
- Maintenance is necessary after each batch is raised. It is also necessary to regularly verify that there are not any problems in the heater, the combustion chamber and conduits.
- Regularly verify that the air inlet and outlet are not blocked.
- Verify that the hot air can circulate normally inside the farm, that no obstructions are blocking the air outlets, and that the baffles are not closed.

I.3. Operation:

- When the heater is turned on from the farm controller, the fan starts and after 10 seconds, the ignition electrode starts, the gas valve opens and the flame starts on the burner. The hot air, obtained by the combustion is then blown into the farm.
- When the desired temperature is reached, the gas valve closes and the fan stops.

I.4. Security:

- Loss of flame is detected by the ionization probe and the gas electrical valves are immediately closed, this stops the burner and sets it in security mode. During this step the heater try to start again 3 times. If it doesn't succeed to start again, the heater stops totally and a security light on the body of the heater indicate this.
- Thermal protection of the heater is assured by an overheating thermostat.
- Ventilation fan operation is controlled by 1 air flow switch.

Restart after security stop needs a manual reset.

I.5. IGNITION : To turn on the heater, please read the ignition instructions carefully (page 11)

I.6. TURN OFF:

- To stop the heater for a short period of time it is sufficient to turn down the desired temperature from the house controller.
- For a longer stop, turn down the desired temperature from the house controller; wait for the burner and the fan to stop. And then you can close the gas valve and cut the power supply at the on-off switch.

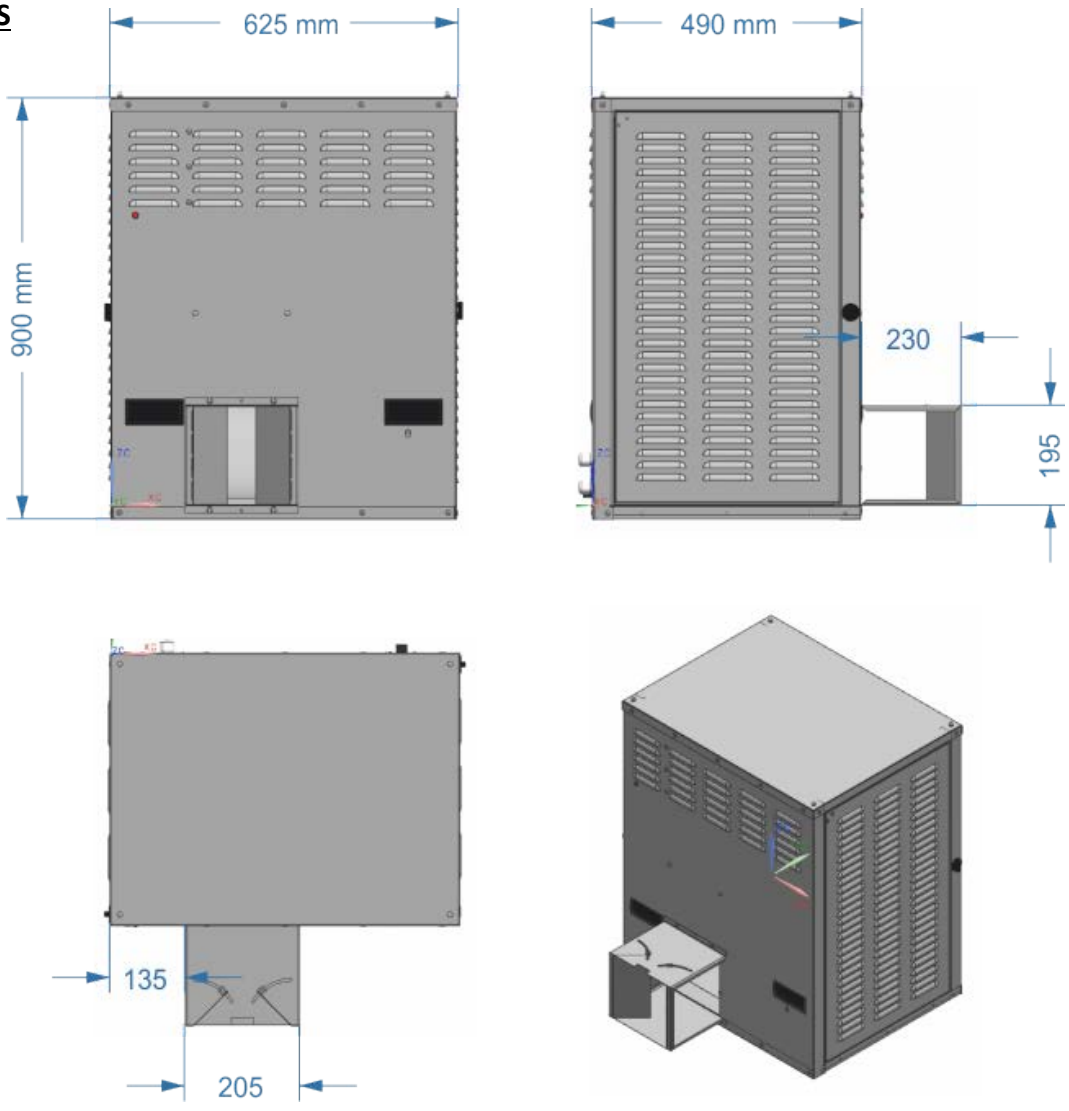
Only cut the gas and electricity in case of emergency or turn off the heater for long period of time.

II – TECHNICAL CHARACTERISTICS

		LPG	NATURAL GAS	BIOGAS
GAS CONNECTION		1/2 ”		
ELECTRIC CONNECTION		230 V – 50/60 Hz		
FUSE (inside control box)	A	4		
NET WEIGHT	Kg.	55	55	55
NOMINAL POWER	KW. PCI	66	66	45
	KW PCS	73	73	49
GAS FLOW	Kg/h	4.8		
GAS FLOW	m3/h		6.2	12
GAS PRESSURE	Mbar	25-55	17-25	20-30
INCREASE OF TEMPERATURE	For 10° C air	120	120	100
NOZZLE REFERENCE		4	7	9
AIR FLOW	m3/h	1700	1700	1700
TOTAL ABSORBED ELEC. POWER	W	370	370	370

Source : Adopted European Standard EN 437

III – DIMENSIONS



IV-RULES

The installation must be in accordance with the current legal and regulatory requirements and must be carried out according to the manufacture's prescriptions and instructions.
It is also the responsibility of the installer to respect the current prescriptions and regulations with reference to the type of farm building.
SUNHEATER Certificate of Compliance number: 0H160826.DETTQ17

V – INSTALLATION

The heater is ready to work inside or outside the pig and poultry buildings and corridors. .

V.1. Heater location:

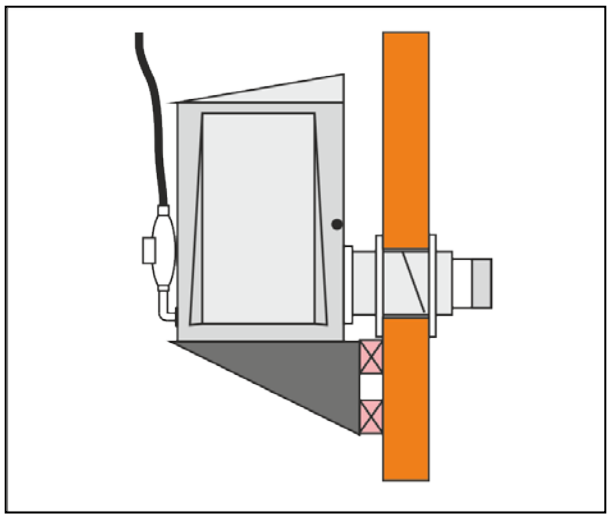
- The heater must be mounted horizontally.
- Keep the air inlet and air outlet free of obstructions.
- It is necessary to have a minimum space around the heater in order to have good air flow and sufficient space for maintenance and repair.

MINIMUM CLEARANCES		
Measured From	Inches	mm
Ceiling	12	305
Wall	12	305
Floor	20	500
Livestock must not be allowed to contact heater or come within 3 meters (10 feet) of hot air discharge		

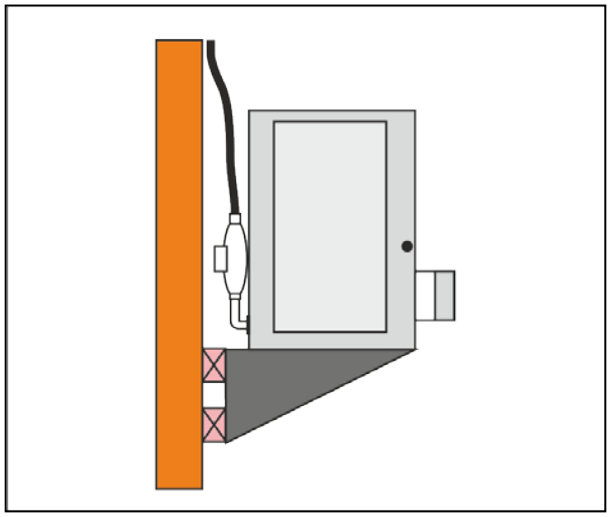
- The model, number and placement of the heaters depend on the size of the farm.

- Installation examples:

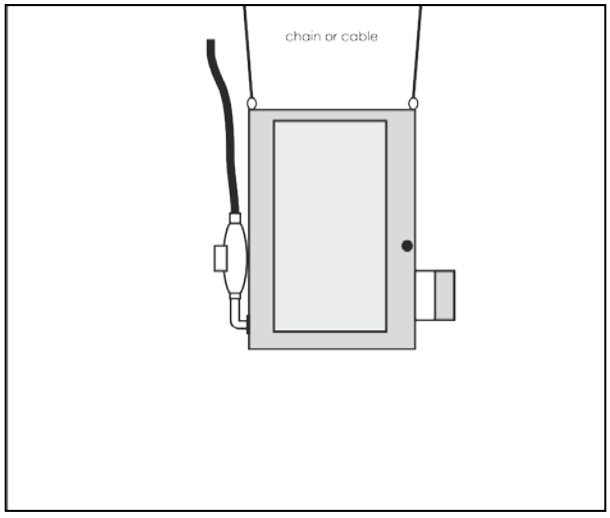
- Outside mount with support and Duct (option) :



- Inside mount with support (option) :



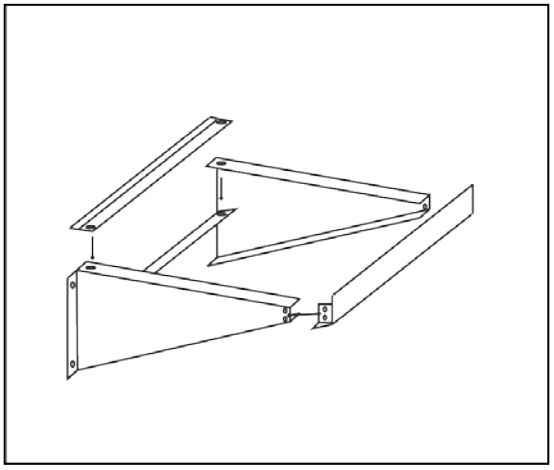
- Inside mount with chain or cable :



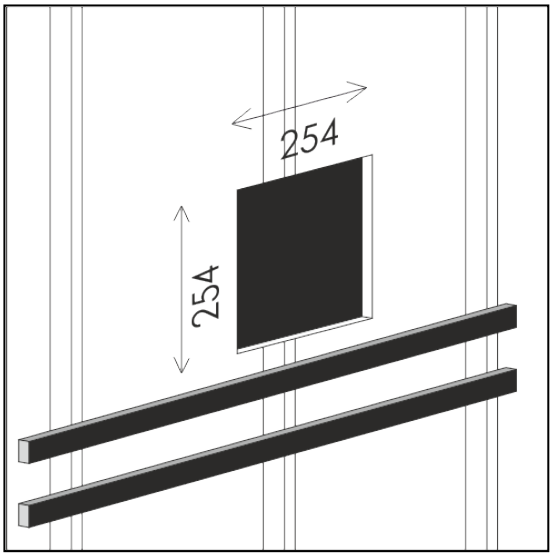
V.2. Installation:

- Verify that the structure of the farm building is strong enough to support the heater and its accessories.
- It is necessary to have a minimum space around the heater in order to have good air flow and sufficient space for maintenance and repair.
- The heater has to be mounted rigidly to avoid tension on the gas and electrical connections.
- If outside installation, we also recommend protecting the heater from rain, snow, ice and humidity with an optional roof and verifying the electrical box is properly closed.

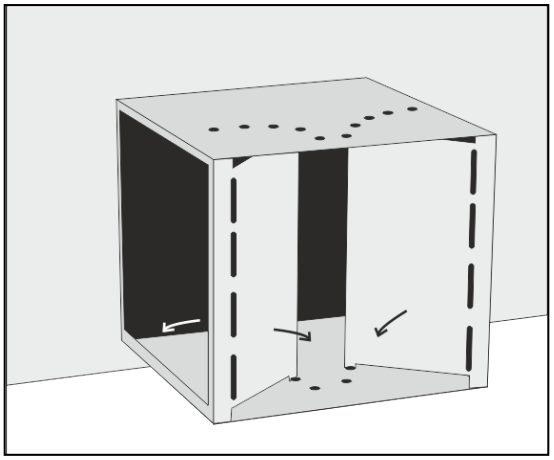
- Mount of the optional support :



- Hole in the wall for outside mount :

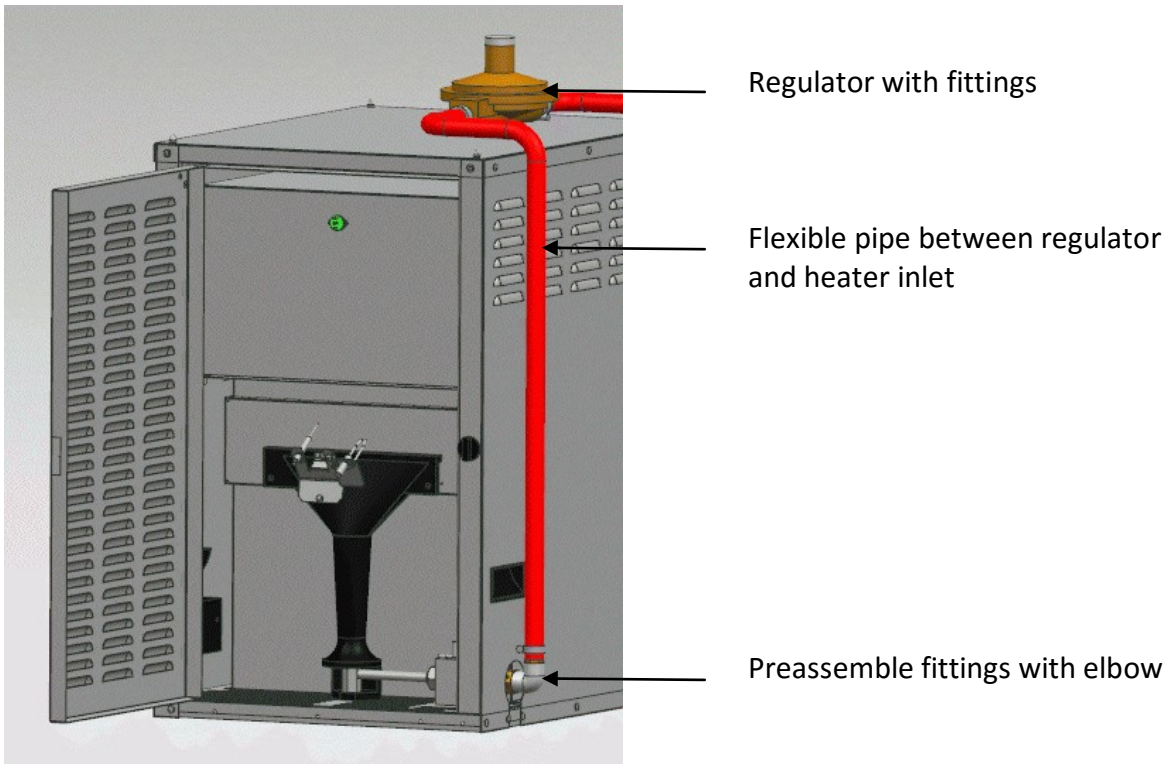


- Adjustment of the flap :



VI – GAS CONNECTIONS

- The gas connection is made with a screw connection 1/2”
- Give the correct kind of gas and correct pressure of gas, according to the identification plate fixed on the heater.
- The heater is delivered with the gas regulator and the pipe.
- Before starting the heater, it is mandatory to test for gas leaks.
-Once the gas connection has been made and before starting the heater for the first time, it is mandatory:
    - to purge the gas conduits
    - to adjust the gas conduit distribution pressure and the heater’s feed pressure.
- It’s recommended to put a gas filter at the beginning of the gas installation.

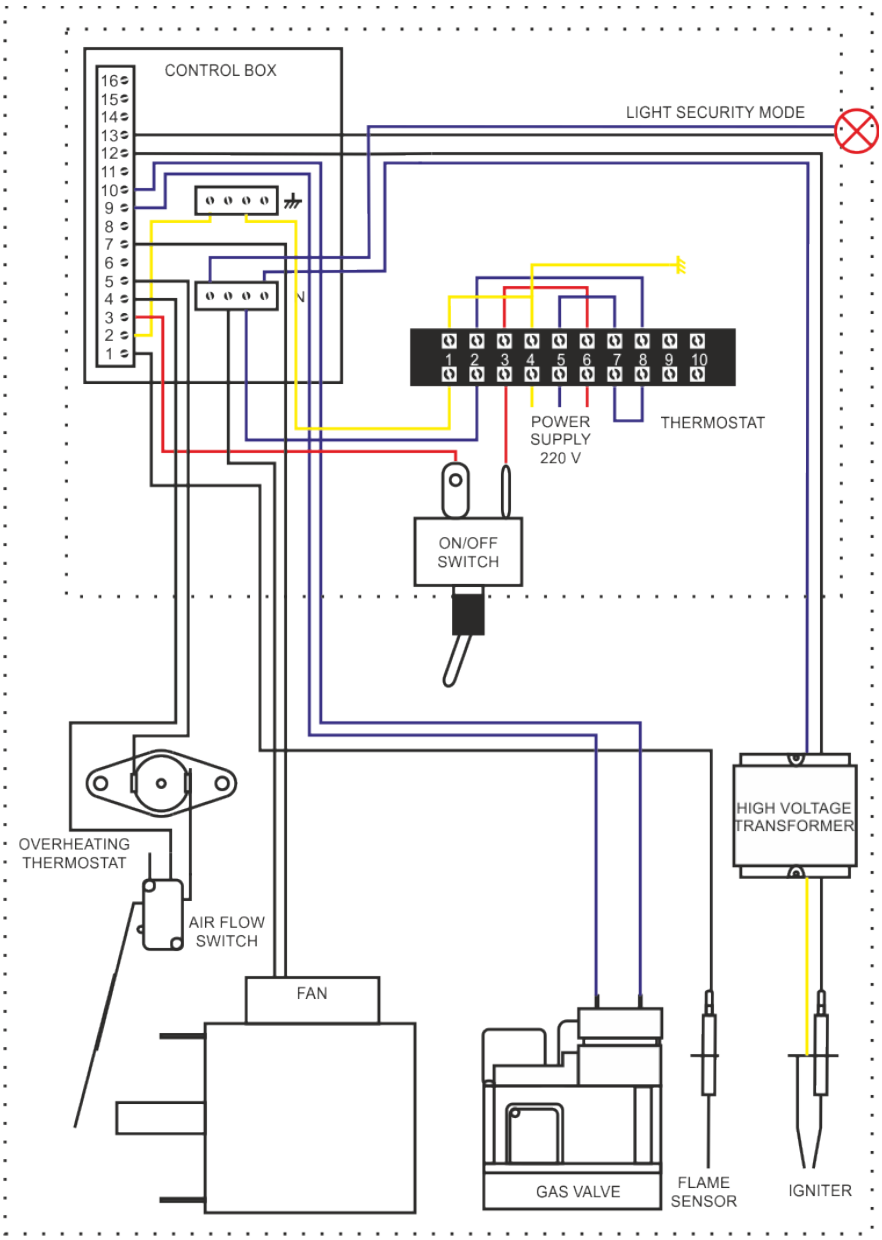


FOR YOU SAFETY
It’s forbidden to lie down and shake the gas bottle when the machine is running. It’s better to use the big gas bottle above 50 kg and good quality gas. It’s essential to check the gas leakage every time when you change the gas bottle. It’s better to separate the oil and the gas of the propane. It’s essential to check the gas leakage before first use and the connectors every time when you move the machine.

VII - ELECTRICAL CONNECTIONS

- The heater is shipped wired according to the electrical diagram down of the page.
- The heater should be connected to a switchboard that has a on/off heating output. You can also connect the heater directly to a thermostat (delivered in option).
- The electrical connection must be made according to the current regulations (diameter of the conductors, earth, etc.) and according to the electrical diagram down of the page. It is not necessary to respect the position of the neutral and the phase.
- The input voltage is single phase 220 V. The installation must be provided with a ground connection as shown on the electrical diagram.
- A red luminous indicator, on the body of the heater, indicates when the heater is in the security mode.
- If remote luminous and/or audible security indicators are necessary, the connections are optionally available.
- If a remote reset is necessary, the connection is also optionally available.

Electrical diagram :



VIII-TURNING ON AND OPERATION

The heater is completely inspected and tested at the factory before shipment. Before turning on, it is mandatory to verify that the installation was carried out in accordance with these instructions.

VIII.1. Ignition:

- Make sure that the hot air outlet deflectors are open, and that the heater is closed.
- Open the gas valve.
- Turn the switch on.
- Set the switchboard for the desired temperature.
- Reset if necessary (when turning on the first time or after long period of inactivity it is sometimes necessary to reset a number of times in order to purge the gas pipes).
- After two minutes the heater will turn on.

VIII.2. Operation

- The switchboard of the farm sends the heater a heating command in form of on/off signal.
- The fan starts and when the air flow switch proves air flow, a 10 second purge time of the combustion chamber is made.
- Ignition is made by an ignition electrode and the gas valves are opened.
- If, after 5 seconds, the burner doesn't start up or if the flame is not correct, the flame sensor puts the heater in security mode after three attempts. The security indicator lights (the luminous indicator at the farm control also lights if installed).This fault can be reset after a few second by pressing the heater reset.

- Once the burner is lit, the Ionisation sensor controls the burner’s flame.
- If the amount of combustion air is insufficient, the burner turns off and a new cycle is started. If the operating conditions are correct the heater starts, if they are not, the heater goes into security mode.
- In case of overheating, an overheating thermostat cuts the gas feed to the burner, an one minute cooling time is necessary before resetting the thermostat.

- When the desired temperature is reached and detected by the switchboard, the switchboard sends a stop signal to the heater.

- To stop the heater for a short period of time it is sufficient to turn down the desired temperature via the switchboard or microprocessor.
- For a longer stop, turn down the desired temperature via the switchboard or microprocessor; wait for the burner and the fan to stop.

You can then close the gas valve and cut the electrical feed at the on-off switch.

- To turn the heater on, follow the ignition instructions.

Only cut the gas and electricity in case of emergency or turn off the heater for long periods of time.

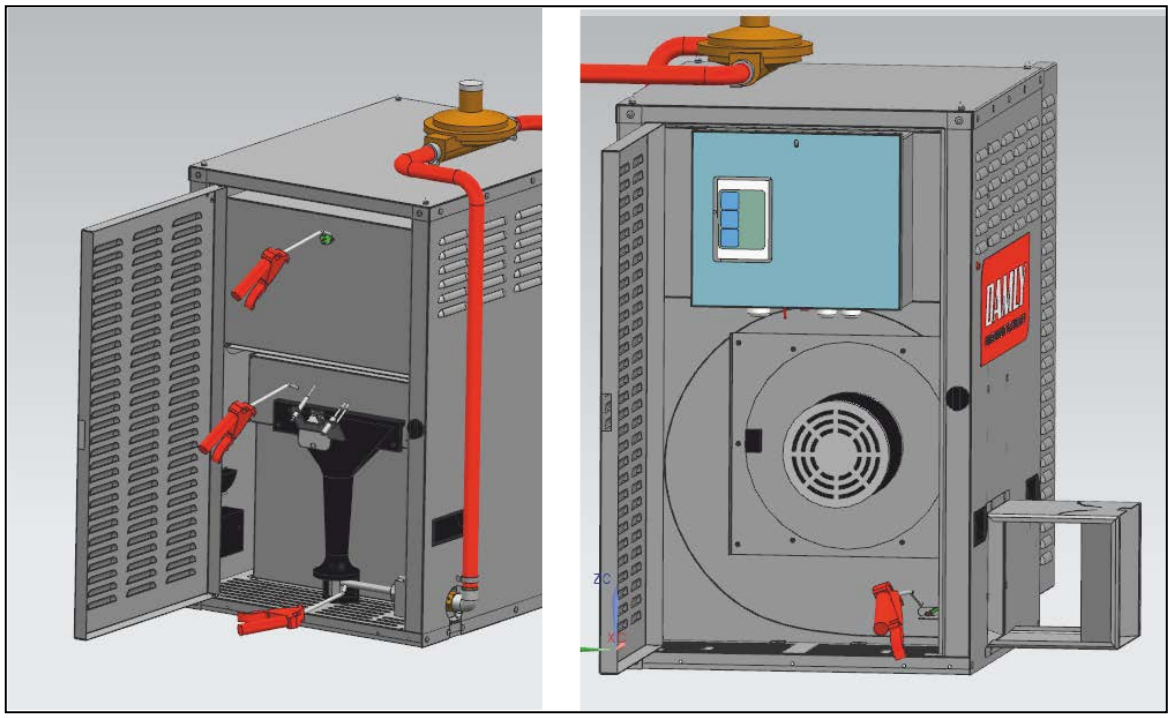
IX - PERMANENT VERIFICATIONS

- Verify that air outlet and inlet are not covered.
- Verify the quality and the strength of the supports.
- Verify that the different fan inlets are clean and functional.
- Verify that the air entrance of the burner is clean and functional.

X - PERIODIC MAINTENANCE

- Before beginning maintenance, cut the gas input and after the dilution fan stops cut the electrical feed.
- Periodic maintenance is necessary after each batch. The frequency of maintenance depends on the environmental conditions of the farm in which the heater is installed (dust in the air, type of animals, vegetation).

1. Open the two doors with the locker
2. Burner side, use high pressure air to clean :
    a. Inside of the burner
    b. Electrodes
    c. Overheating thermostat
3. Fan side, use high pressure air to clean :
    a. The motor of the fan
    b. The air flow switch
    c. The propeller
4. And clean every part around the combustion chamber and all the air inlets.



XI - ANOMALIES OF OPERATION

Fault Diagnostics

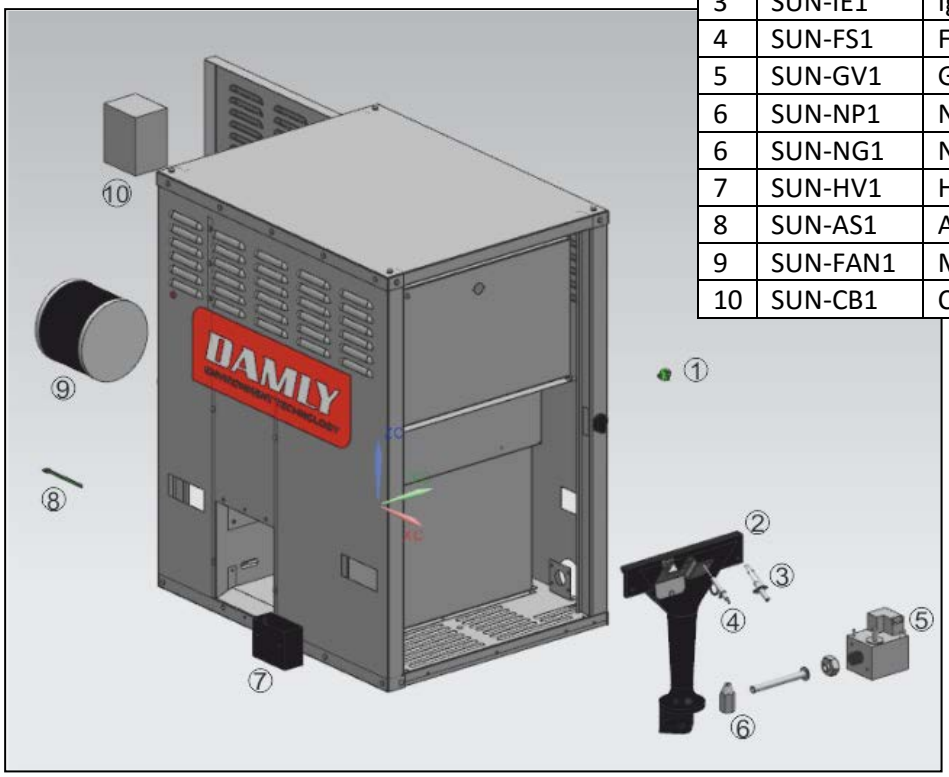
If the control is in Safety Shutdown or Lockout the Fault LED will be illuminated (fast flash for Safety Shutdown, continuously for Lockout).

From the Safety Shutdown or Lockout states the diagnostics mode may be selected by pressing the Reset button for less than 2s. The Fault LED will then begin flashing a fault code to indicate the reason for Lockout. These flashes comprise of a series of between 1 and 6 short flashes followed by a longer delay, repeating until diagnostics mode is cancelled. Diagnostics mode can be cancelled either by cycling the power to the control or pressing the Reset button for less than 2s.

See the table down for details of fault codes:

Number of flashes	Reason for Lockout / Safety Shutdown
1	Gas valve(s) Monitor Fault (Lockout)
2	Flame signal lost (Lockout)
3	Ignition Lockout (Lockout)
4	False flame signal (Safety Shutdown)
5	APS fault (Safety Shutdown)
6	Internal fault (Safety Shutdown)

XII – PARTS LIST



N°	REFERENCE	DESIGNATION
1	SUN-OT1	Overheating thermostat
2	SUN-BU1	Burner
3	SUN-IE1	Ignition electrode
4	SUN-FS1	Flame sensor
5	SUN-GV1	Gas valve
6	SUN-NP1	Nozzle Propane
6	SUN-NG1	Nozzle Natural gas
7	SUN-HV1	High voltage transformer
8	SUN-AS1	Airflow switch
9	SUN-FAN1	Motor of the fan
10	SUN-CB1	Control box