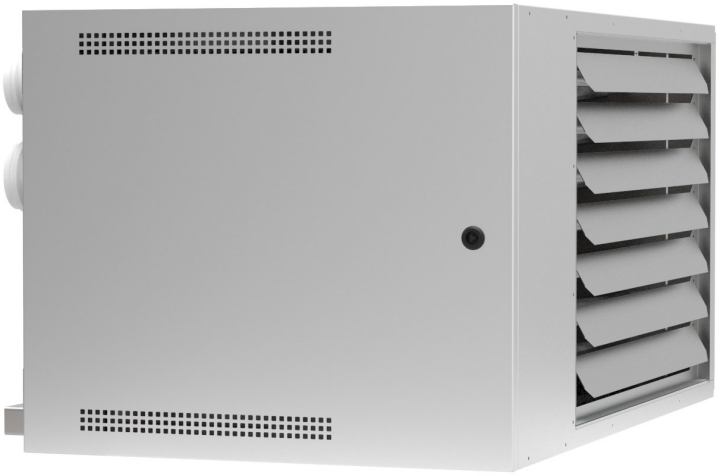
TECHNICAL DOCUMENTATION

HIGH EFFICIENCY GAS HEATER

FHATX25/35/45/60/80

CE 1312DL6489

ERP
Energy related product
2021



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IMPORTANT INFORMATION

CE Marking

This equipment complies with the essential requirements of Regulation (UE) 2016/426 « Gas devices ». It is registered under the No.1312DL6489 on the 19th of February 2021, standards EN17082:2019.
The devices in this manual comply also with following directives:
- Low voltage 2014/35/UE,
- Electromagnetic compatibility 2014/30/UE,
- Ecodesign 2009/125/CE, according the requirements of regulation (UE) 2016/2281-2282-2283 of the 30th of November 2016.

Liability

This equipment must be used expressly for the purpose for which **Flexiheat** has supplied it for. Any contractual liability of **Flexiheat** is therefore excluded in case of damage undergone by persons, animals or goods, following errors in installation, settings, maintenance and inappropriate use.

The devices must be equipped exclusively with genuine accessories. **Flexiheat** will not be held responsible for any damage whatsoever arising from the use of an accessory which is inappropriate to the device.

The devices must be installed by qualified professional workers, respecting the regulations and decrees in force, and in accordance with the instructions shown in this instruction manual. The installer is required to establish installation conformity certificates produced by the ministries responsible for the construction and safety of gas. References to standards, rules and directives mentioned in this manual are given for information purposes and are only valid at the date of printing this manual.

Flexiheat is responsible for the conformity of the device to the rules, directives and standards of construction in force at the time of marketing. The knowledge and compliance with the legal provisions and standards inherent to the location, installation, commissioning and maintenance are the sole responsibility of the design office, the installer or user.

Receipt and storage

The appliance is delivered on a wooden pallet protected by a cardboard packing and a plastic film. It is essential to check the condition of the delivered equipment (even if the packaging is intact) and its conformity with the order.

In case of damage or missing parts, you must report the observations on the transport company's receipt form in the most precise way possible, "subject to unpacking" has no legal value, and then you must confirm those reservations by registered letter within 48h to the transport company. We remind you that it is the responsibility of the buyer to check the delivered merchandise, no recourse will be possible if this procedure is not respected.

Store the equipment in a clean and dry room, away from shocks, vibration, divergences in temperature and in an ambient environment with a rate of hygrometry lower than 90%.

Recycling and end of product service life

This device is mainly built using materials that can be recycled, at the end of its service life, it is important to pay particular attention to its destruction. Some components, such as electric equipment, are subject to special legislation, applicable national regulations must be respected when disposing of them.

1- For the disposal of the product and parts, use public or private waste disposal contractors.

2- For further information on the proper disposal of the product, contact the local authorities, the refuse collection and processing department or the point of sale where the product was purchased.

Appliances or equipment bearing this symbol must not be disposed of with household waste, but must be collected separately.

Proper recycling helps to prevent environmental damage and health risks.

1.5 Guarantee

The appliance is covered by a contractual warranty for any manufacturing defect. Refer to the General terms and conditions of sales for the duration of the warranty.

Our liability as a manufacturer cannot be committed when incorrect use of a device has occurred, where there is a defect or of an insufficiency in the maintenance of that device, or an incorrect installation of the device. Only defects in manufacture or raw materials are concerned.
It is your responsibility to make sure that it is carried out by a qualified professional. In particular, we cannot be held liable for material damage, intangible damage or personal accidents
resulting from an installation that is not compliant:
- with legal and regulatory provisions or those imposed by local authorities,
- with national, even local and specific provisions governing the installation,
- with our installation manuals and instructions, in particular the regular maintenance of the appliances,
- with standard industry practices.

Our warranty is limited to the exchange or repair of only those parts recognised as defective by our technical services, excluding labour, travel and transport costs.

Our warranty does not cover the replacement or repair of parts due to normal wear and tear, misuse, unqualified third party intervention, lack of or inadequate monitoring or maintenance, non-compliant power supply and the use of inappropriate or poor quality fuel.

Sub-assemblies, such as motors, pumps, electric valves, etc., are only guaranteed if they have never been dismantled.

Any replacement which takes place during the guarantee period, even if it necessitates the immobilisation of the equipment, cannot in any circumstances extend the duration of the guarantee. No damages or interest can be claimed for direct or indirect prejudice.

The devices must only be equipped with the original smoke system and air intake.
In case of use of accessories other than those proposed by our company, check that they are indeed compatible with the devices.

PLEASE READ CAREFULLY BEFORE CONTINUING

This technical manual must be kept in good condition inside the appliance.

The features, illustrations and descriptions contained in this document are, to our knowledge, accurate at the time of their approval for printing. We reserve the right to modify, to no longer offer certain features or to stop the production of a model without notice and does not constitute any commitment on our part.

Security rules

- It is forbidden to plug and / or reduce the ventilation openings in the installation room or appliance.
- Never obstruct the smoke outlet and fresh air intake.
- Never make changes to the settings made by the qualified professional.
- Never spray water on the heater, or touch the appliance with wet and / or bare body parts.
- Never touch the hot parts of the heater, and / or moving parts.
- Do not put or hang anything on the device.
- Any intervention on the appliance is forbidden before disconnecting it from the mains and cutting off the gas supply.
- Do not change the type of gas used, the device settings, the safety or control systems, as this could create dangerous situations.

Notify the service technician in the event of a gas change, gas pressure, or change in supply voltage.

In case of a long period of non-operation, disconnect the power supply from the device. When returning to operation, it is advisable to use qualified personnel. In general, any repair or maintenance work must be carried out exclusively by authorized and qualified personnel.

Subscription to a maintenance contract is highly recommended, "see with your installer".

Caution

Electrical components, drive mechanisms and fuel gas can cause injury. To protect against these inherent risks during installation or maintenance, the power supply must be disconnected and the gas supply valve must be closed. All persons involved in the installation or maintenance of this equipment must comply with occupational health and safety standards.

What should be done if you smell gas ?

-Close the external gas valve and the electrical supply then warn the maintenance technician.

-Do not try to turn on the device again

-Do not operate the electrical switch, do not use a telephone located inside the building.

-Call your gas supplier from another phone. Follow the instructions provided for your provider.

-If you can not contact them, call your fire department.

1-GENERAL INFORMATIONS

1.1 General recommandations

The appliance can only be installed in rooms which are sufficiently ventilated, except if it has a sealed connection.
The proper functioning of the gas heater depends on correct installation and commissioning.
Installation and maintenance must be carried out by qualified personnel in conformity with the regulatory texts and the rules in force.
The non-compliance with such rules entails the rejection of all responsibility from the manufacturer.

DO NOT INSTALL GAS HEATERS IN :

- Rooms which have a risk of explosion,
- Rooms containing chlorinated combination steam,
- Rooms with a high content of combustible dust,
- Rooms which are excessively humid (electrical danger),
- Domestic premises

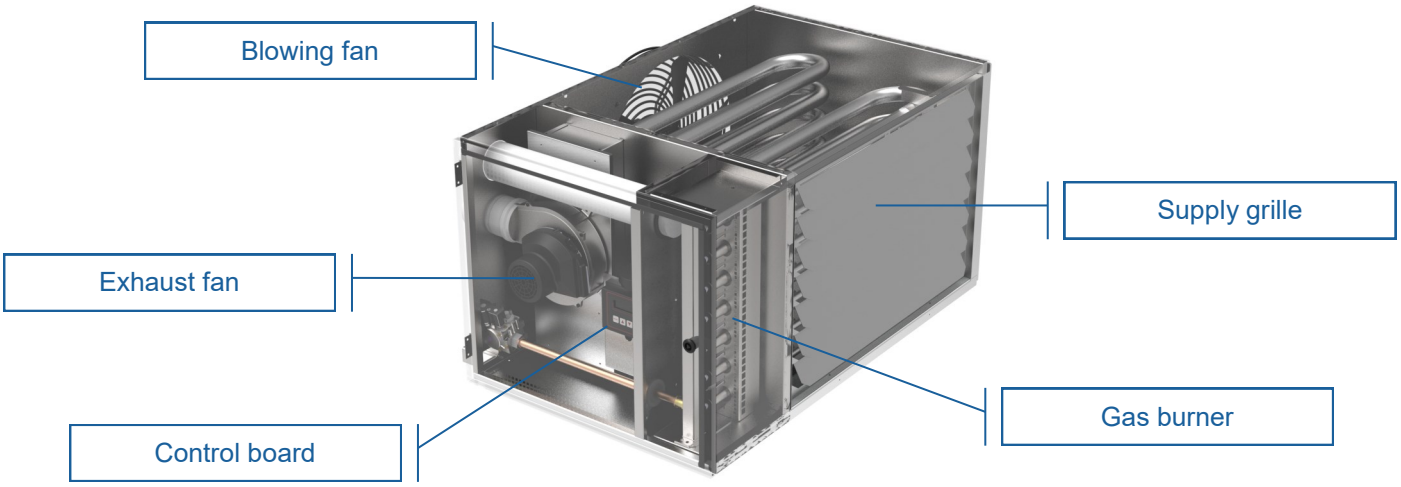
It is the responsibility of the installer, after having checked that the installation complies with the requirements of this manual.

1- To inform users :
That they cannot make any alterations to the appliance design and installation; The slightest alteration (exchange, removal, etc.) of safety components or parts affecting the performance of the appliance or combustion hygiene systematically results in the removal of the CE marking for the appliance.
It is essential to have the prescribed cleaning and maintenance operations carried out. A preventive yearly maintenance operation is mandatory.

2– Document to be given to the user :
This manual is an integral part of the appliance and must therefore be kept and always accompany the appliance, even if it is transferred to another owner or user.
As we are committed to our product quality, we are constantly seeking to improve them. We therefore reserve the right to modify the specifications indicated in this document at all times.

1.2 Description of the gas heater

The gas heater FHATX is an independent hot air generator, running on natural gas and on propane.
It constitutes a "direct" heating gas system ; it is a device for the production and the emission of heat without an intermediate vehicular fluid. For the whole range described in these instructions, the combustion products are evacuated out of the room by an extractor. The combustible air is taken from the ambient environment or from outside. Those units can be connected with vertical or horizontal concentric kit or single flue kit. The gas heaters of the FHATX range work with different gas indicated on the identification plate in conformity with the European directive.



1.3 Instructions for use

- Please read the instructions in this manual carefully for the operation and maintenance of this device.
- Carry out maintenance at least once a year by qualified personnel. The frequency of the maintenance operations depends on the environment in which the device is installed. More regular inspection must be carried out in dusty locations.
- Regularly check that device, the chimney or the gas pipe are not damaged.
- Regularly check that air openings in the building and around the device are not obstructed.
- Check that hot air circulates normally in the room, and therefore that there is no obstacle on the suction side (fan side), and in front of the blowing side of the unit (check that the grille is well opened).
- The control box must have a cut off electricity each 24 hours.

1.4 Operation

When heat is required (ambient temperature under thermostat setting temperature), the exhaust fan starts. To avoid any gas into the combustion chamber, the exhaust fan ventilates during few seconds, then the burner is igniting by the ignition sensor. When the heat exchanger is hot enough, the blowing fan starts. The hot air is blown into the room.
When the setting temperature is reached, the burner is turned off. The fan continues to turn for about one minute, until it has cooled the heat exchanger.

1.5 Safety

- If there is no flame, this is detected by an ionisation sensor and the gas vales are immediately closed. This default can be reset remotely or on the appliance.
- The thermal protection of the heat exchanger is ensured by two thermostats. The first, which is automatically reset, protects against insufficient air flow (obstructions, fan failure). The second, which has to be manually reset, is set to a higher threshold than the first one. It protects the device against high excess heating due to an operating problem or unsuitable use.
If the operation shows any difficulty whatsoever, please contact us.
Make sure that the device can be supplied normally with combustion air at atmospheric pressure (any modification of the building after the installation of the device must be carried out taking this into account). Excessively low pressure inside the room can harm the correct functioning of the device by depriving it of the air necessary for combustion.

1.6 Cut-off

- To cut off the appliance during a short period, it is necessary only to cut off the thermostatic line (this means turning the thermostat to a minimum setting point or turning off the thermostat switch) .
- For a prolonged stoppage, switch off the thermostatic line, close the gas valve and cut off the electrical supply, taking care to wait for **the fan to stop running.**
- Gas and electricity must only be turn off in case of emergency or for long stoppage periods.

IMPORTANT : Never cut off the power supply while the gas heater is running or when the heat exchanger is cold down. The non-compliance with these instructions may cause damage to the heat exchanger and cause the loss of the warranty.

1.7 Control board

The appliance is equipped with an integrated control board for smart operating management. In case of any unit failure, the board indicates the source of the problem and support the technician for troubleshooting.

2– TECHNICAL CHARACTERISTICS

2.1 Performances of high efficiency gas heaters

FHATX Gas heater are equipped with axial or centrifugal fan and 2-stages gas burner.

FHATXH heaters are available in 5 models from 25 to 80kW and are intended for horizontal mounting and direct blowing.

FHATXV heaters are available in 4 models from 35 to 80kW and are intended for vertical mounting and direct blowing.

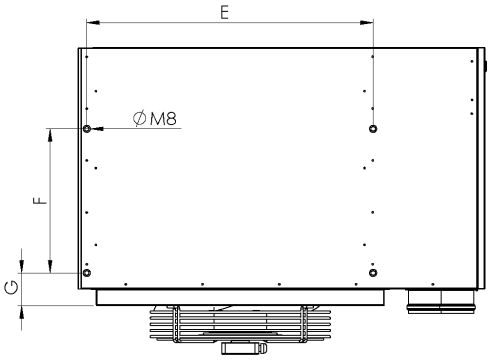
FHATXC heaters are available in 4 models from 35 to 80kW and are intended for horizontal mounting and duct network blowing.

MODELES		FHATX25	FHATX35	FHATX45	FHATX60	FHATX80
Heat input HHV	kW	29.14	40.38	51.40	67.83	88.58
Heat input LCV	kW	26.25	36.38	46.31	61.11	79.80
Nominal output (Prated,h)	kW	24.18	33.54	42.69	55.98	72.94
Minimal power (Pmin)	kW	13.80	19.13	24.43	32.27	42.14
Efficiency at nominal heat output (ηnom)	%	92.1	92.2	92.2	91.6	91.4
Efficiency at minimal power (ηpl)	%	94.8	94.8	95.1	95.2	95.2
Gas flow at 15°C Natural G20 Groningen G25 Propane G31	 m^3/h m^3/h Kg/h	 2.50 2.68 2.05	 3.47 3.73 2.84	 4.41 4.74 3.61	 5.82 6.25 4.77	 7.60 8.17 6.23
NOx with 0% O2	mg/kW	< 69				
CO Value in ppm	ppm	< 120				
Seasonal energy efficiency (ηs,h)	%	78.7	78.1	78.5	78.6	78.5
Supply voltage		Single –phase 230 V 50 Hz				
Nominal current (axial version)	A	1.05	1.75	2	3.25	3.95
Maximum electrical power with fan	W	220	450	470	740	880
Maximum electrical power with fan	W	-	785	1 550	1 560	2 280
Consumption at P Maxi without fan	elmax	18 W	32W	47 W	58 W	77 W
Consumption at P Mini without fan	elmin	10 W	18 W	22 W	24 W	30 W
Standby consumption	elsb	3 W	3 W	3 W	3 W	3 W
Air flow at 15 °C	m3/h	3 580	4 250	5 800	7 700	10 000
Model of fan		ATE803S	ATE804S	ATE804S	ATE808S	ATE808S4P
Air temperature increase at maximum power	°C	19.9	23.2	21.6	21.4	21.5
Air temperature increase at minimum power	°C	11.3	13.2	12.4	12.3	12.4
Acoustic power - Lw (+/- 4 dB)	dBa	71.2	79.5	77.5	86.7	83.4
Sound pressure level - Lp (+/- 4 dB)	dBa	49.2	57.5	55.5	64.7	61.4
Fumes mass flow at 8% O2	Kg/h	49	68	86	113	148
Available pressure loss air / fumes	Pa	120	200	250	300	240
Maximum condensation produced	l/h	No condensate				

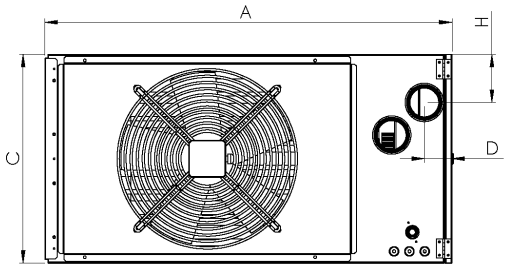
* Only available for FHATXH

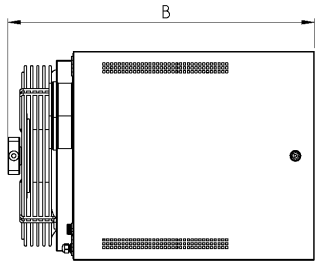
2.2 Dimensions of FHATXH and FHATXV

Top view



Back view



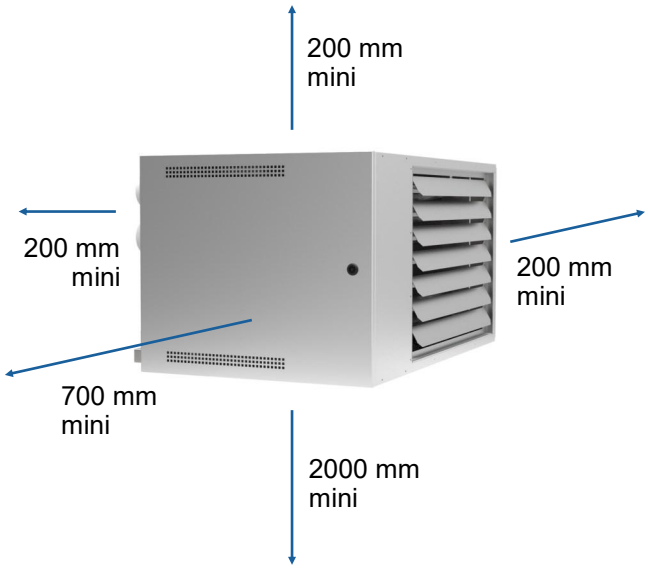


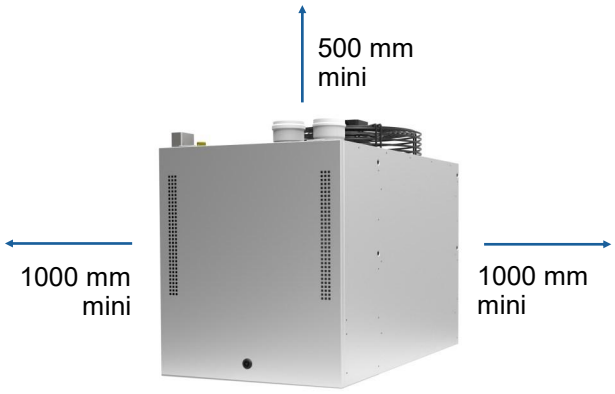
Lateral view

TYPES		FHATX25	FHATX35	FHATX45	FHATX60	FHATX80
A	mm	1 060	1 060	1 060	1 060	1 060
B	mm	800	800	815	875	875
C	mm	495	545	600	710	912
D	mm	72	72	72	72	82
E	mm	746	746	746	746	746
F	mm	250	250	250	250	250
G	mm	170	170	170	249	249
H	mm	100	125	153	208	273
Ø Fumes	mm	80	80	80	80	100
Ø Air		80	80	80	80	100
Ø Gas	‘’	3/4	3/4	3/4	3/4	3/4
Weight	kg	85	97	102	135	164

* Only available for ATXH

2.3 RECOMMEDATIONS OF FHATX AND FHATXV INSTALLATION





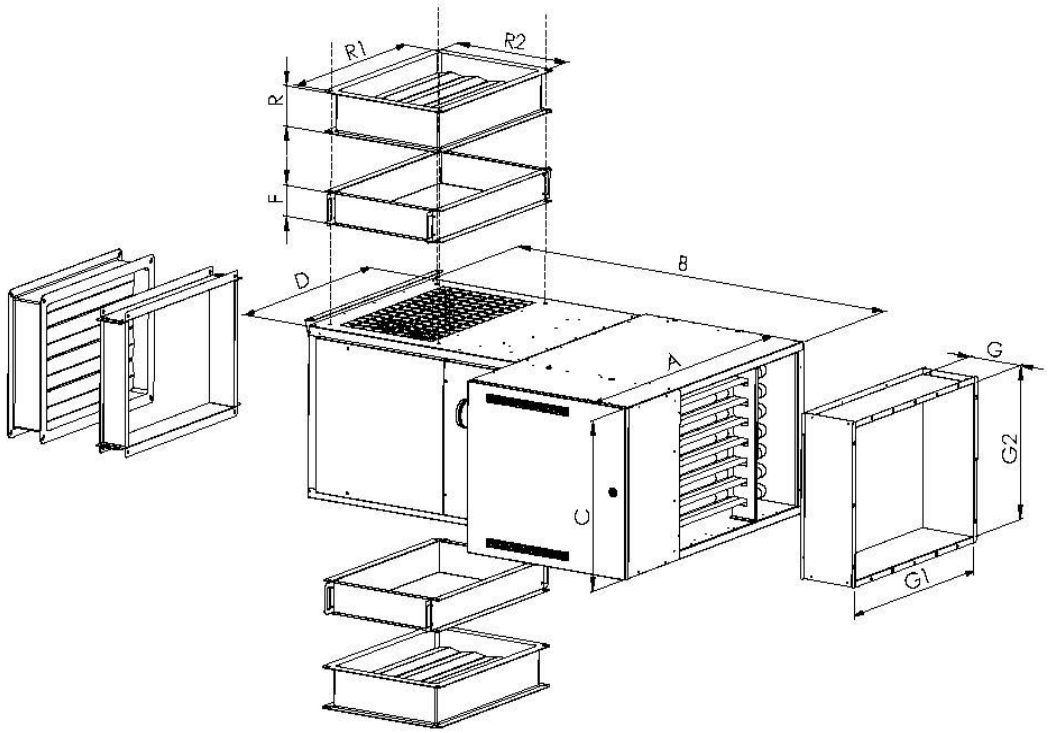
Hauteur d’installation

TYPES	FHATX35V	FHATX45V	FHATX60V	FHATX80V
Mini/Maxi	4/6 m	5/8 m	6/10 m	6/10 m

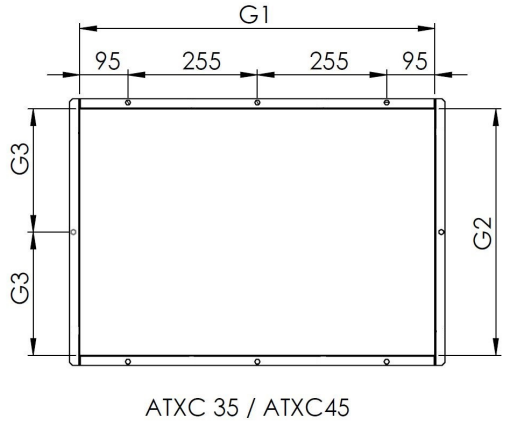
2-4 Specific performance of FHATXC model

TYPES		FHATX35C	FHATX45C	FHATX60C	FHATX80C
Model of the fan		AT10-10	AT10-10	AT12-12	AT15-15
Supply voltage		Single phase 230 V 50 Hz			
Air flow at 15 °C	m3/h	4 250	5 250	7 000	9 000
Air temperature increase at maximum	°C	23.2 °C	23.9 °C	23.5 °C	23.9 °C
Air temperature increase at minimum	°C	13.2 °C	13.7 °C	13.6 °C	13.8 °C

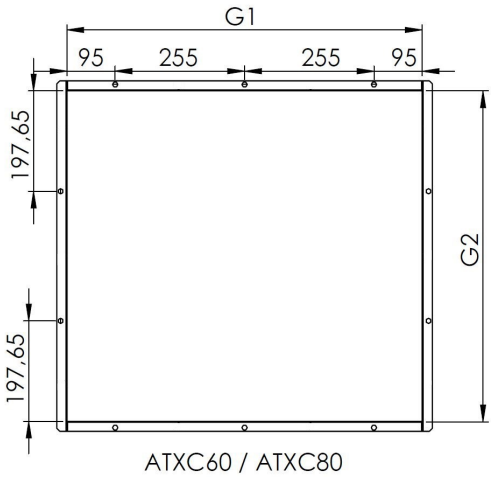
2.4 Dimensions of FHATXC and accessories



Duct network frame:



ATXC 35 / ATXC45



ATXC60 / ATXC80

TYPES		FHATX35C	FHATX45C	FHATX60C	FHATX80C
A	mm	1 060	1 060	1 060	1 060
B	mm	1460	1460	1530	1590
C	mm	545	600	710	912
D	mm	787	787	787	815
F	mm	100	100	95	95
G	mm	205	205	205	205
G1	mm	700	700	700	700
G2	mm	485	540	650	853
G3	mm	242.5	270	-	-
R	mm	130	130	130	130
R1	mm	630	630	630	630
R2	mm	430	430	530	530
Ø Fumes	mm	80	80	80	100
Ø Air		80	80	80	100
Ø Gas	‘’	3/4	3/4	3/4	3/4
Weight	kg	150	173	200	252

2.4 Curves pressure/airflow for FHATXC

FHATX35C Heater

It is equipped with a belt driven centrifugal fans AT10-10 (transmission of 90/118) with three-phase motor of 750 W (Rotation : 1140 rpm). The motor is connected to a frequency converter single-phase 230V IN and three-phase 230V OUT. The frequency converter allows the protection and the control of motor speed to reach the requested performances.

Blowing unit performances:

Airflow	Available pressure	Delta T	Motor power	dBa (LwoA)
4500	190	22	770	82.0
4250	**211**	**23**	**720**	**80.9**
4000	226	25	670	80.0
3750	241	26	600	79.0
3500	250	28	540	78.2
3250	259	30	485	77.5
3000	267	33	475	76.8
2750	270	36	400	75.8
2500	271	39	350	75.0
2250	275	44	300	74.4

FHATX45C Heater

It is equipped with a belt driven centrifugal fans AT10-10 (transmission of 112/140) with three-phase motor of 1500 W (Rotation : 1140 rpm). The motor is connected to a frequency converter single-phase 230V IN and three-phase 230V OUT. The frequency converter allows the protection and the control of motor speed to reach the requested performances.

Blowing unit performances:

Airflow	Available pressure	Delta T	Motor power	dBa (LwoA)
6000	180	21	1400	87.0
5750	208	22	1330	86.4
5500	226	23	1250	85.8
5250	**253**	**24**	**1200**	**84.8**
5000	273	25	1050	84.1
4750	289	26	980	83.3
4500	304	28	880	82.2
4250	312	30	820	81.4
4000	326	31	780	80.4
3750	332	33	700	79.4

FHATX60C Heater

It is equipped with a belt driven centrifugal fans AT12-12 (transmission of 112/170) with three-phase motor of 1500 W (Rotation : 940 rpm). The motor is connected to a frequency converter single-phase 230V IN and three-phase 230V OUT. The frequency converter allows the protection and the control of motor speed to reach the requested performances.
Caution: over 7 250 m3/h of airflow, the high airflow option with 2.2 kW frequency converter should be provided. Please consult us.

Blowing unit performances:

Airflow	Available pressure	Delta T	Motor power	dBa (LwoA)
8000	175	21	1800	87.0
7750	206	21	1700	86.7
7500	222	22	1600	85.8
7250	238	23	1500	85.0
7000	**253**	**24**	**1420**	**84.7**
6750	264	24	1340	84.0
6500	274	25	1275	83.5
6250	284	26	1220	82.7
6000	294	27	1140	82.1
5750	298	29	1070	81.6

FHATX80C Heater

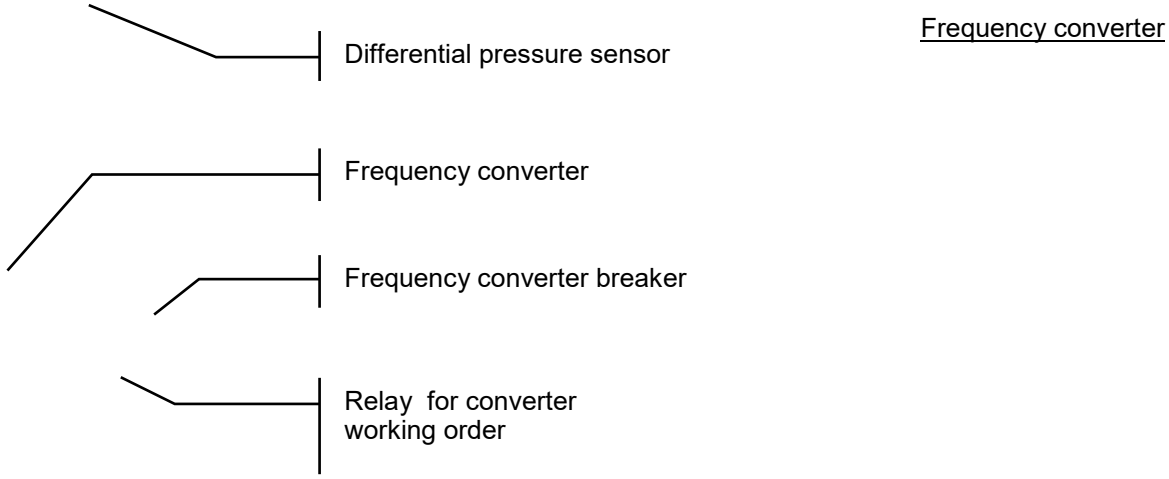
It is equipped with a belt driven centrifugal fans AT15-15 (transmission of 118/224) with three-phase motor of 2200 W (Rotation : 745 rpm). The motor is connected to a frequency converter single-phase 230V IN and three-phase 230V OUT. The frequency converter allows the protection and the control of motor speed to reach the requested performances.

Blowing unit performances:

Airflow	Available pressure	Delta T	Motor power	dBa (LwoA)
10500	180	20	2150	88.0
10000	209	21	1950	86.9
9500	228	23	1800	86.0
9000	**247**	**24**	**1650**	**85.0**
8500	264	25	1500	83.8
8000	277	27	1400	82.9
7500	289	29	1280	81.7
7000	296	31	1150	80.8
6500	302	33	1050	79.8
6000	307	36	900	79.0

2.7 Frequency converter

The centrifugal gas heater are equipped with a frequency converter in series to protect the motor and to adapt the speed of the fan according to the pressure losses of the duct network. The differential pressure sensor control the ΔP inside the ventilation box to adapt instantly the converter and to get a better airflow stability.



Groupe	Sub Groupe	Description	Functions example
P00	P00.00 – P00.18	Basic parameters	Run command type, Max frequency, ramp times
P01	P01.00 – P01.25	Start/Stop control	DC injection braking, coast to stop, delay start, auto restart
P02	P02.00 – P02.26	Motor 1 settings	Motor ratings, kW, Current, speed
P09	P09.00 – P09.16	PID control settings	PID, SV and feedback source settings
P11	P11.00 - P11.15	Protective functions	Set protective function trip/output levels

Factory settings

The frequency converter is configured with factory setting in order to deliver the nominal air flow given in the technical specifications.

Code	Functions	FHATX35C	FHATX45C	FHATX60C	FHATX80C
Basic parameters					
P00,01	Run command channel	1	1	1	1
P00,06	Frequency command selection	7	7	7	7
P00,11	Accelaration time	60s	60s	60s	60s
P00,12	Deceleration time	60s	60s	60s	60s
Start/Stop control					
P01,01	Starting frequency of start-up	30,00 Hz	30,00 Hz	30,00 Hz	30,00 Hz
P01,18	Terminal running protection on power-up	1	1	1	1
Motor 1 settings					
P02,01	Rated power of motor	0,7 kW	1,5 kW	1,5 kW	2,2 kW
P02,02	Rated frequency of motor	50,00 Hz	50,00 Hz	50,00 Hz	50,00 Hz
P02,03	Rated speed of motor	1445 rpm	1445 rpm	1445 rpm	1445 rpm
P02,04	Rated voltage of motor	220 V	220 V	220 V	220 V
P02,05	Rated current of motor	2,8 A	5,6 A	5,6 A	8,2 A
PID control settings					
P09,00	PID reference source	0	0	0	0
P09,01	Keypad PID preset P17,20 = 0,50	32	36	34	20
P09,01	Keypad PID preset P17,20 = 0,40	31	35	33	19
P09,02	PID feedback source	1	1	1	1
P09,03	PID output feature	0	0	0	0
P09,04	Proportional gain	30,00%	30,00%	30,00%	30,00%
P09,05	Integral time	5s	5s	5s	5s
P09,06	Differential time	0s	0s	0s	0s
P09,07	Sampling cycle	0,1s	0,1s	0,1s	0,1s
P09,08	PID control deviation limit	0,6%	0,6%	0,6%	0,6%
P09,09	Output upper limit of PID	100,0%	100,0%	100,0%	100,0%
P09,10	Output lower limit of PID	60,0%	60,0%	60,0%	60,0%
P09,11	Feedback offline detection value	0,0%	0,0%	0,0%	0,0%
P09,12	Feedback offline	0s	0s	0s	0s
Protective functions					
P11,06	Automatic current limit level	69,0%	74,0%	74,0%	82%

Caution:
The heaters are set for an optimal functioning. Changing the factory setting may cause malfunction, or damage the unit. For example, an increase of 15% of the nominal air flow can lead to condensation inside the heat excahnger and damage it over time.

3– INSTALLATION

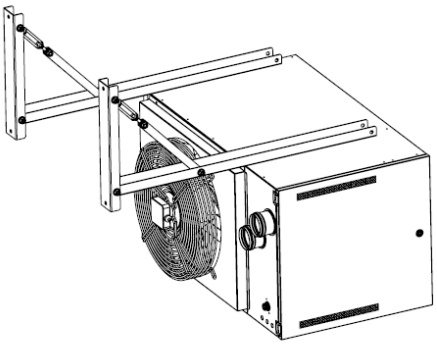
3.1 Mounting brackets

The appliances can be fixed on the wall or on the building's structural framework. Before fixing the unit, make sure of the strength of the support/bracket. It is possible to design its own bracket but preliminary studies must be realized to ensure the resistance of the structure.

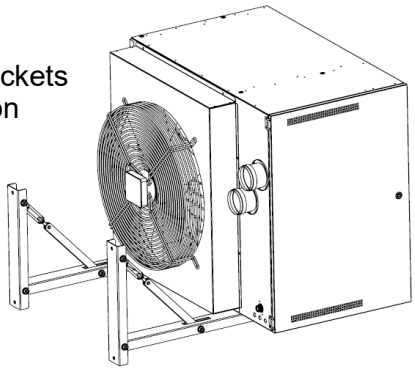
To use the manufacturer brackets, always refer to the notice supplied with the product.

FHATXH - AXIAL HEATER:

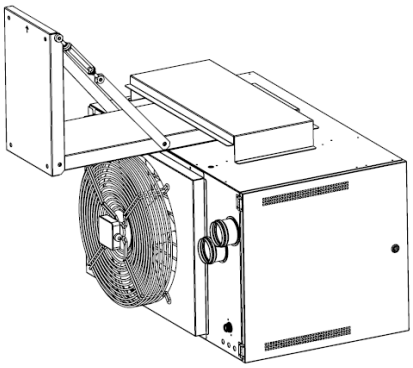
Wall mounting bracket
Upper position
FHATX25H to
FHATX60H



Standard brackets
Lower position
FHATX80H

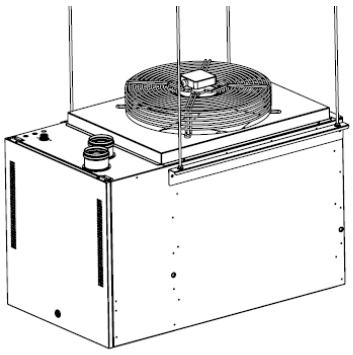


Directional wall-mounted bracket
Upper position only
FHATX25H and FHATX60H



FHATXV—Vertical heater :

Vertical wall-mounted bracket
FHATX25V to FHATX60V



3.2 Flue pipe connection

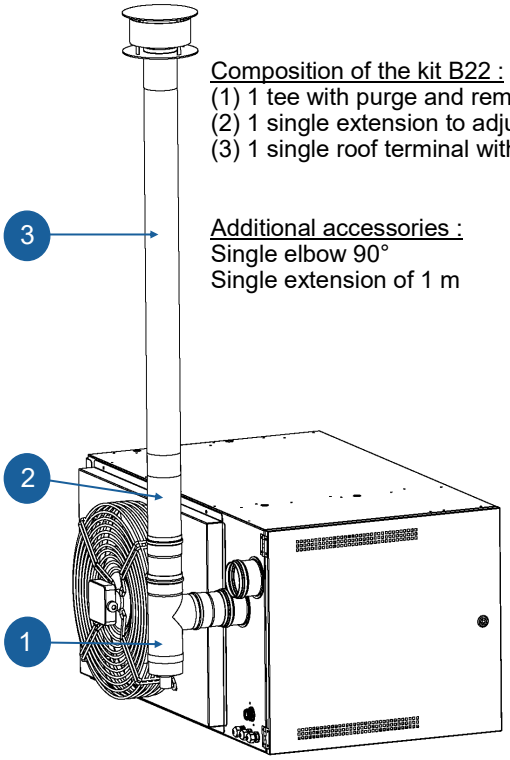
Connection of single roof flue kit B22

The combustion air is taken directly into the room and the smoke exhaust is done to the exterior thanks to a single flue kit through the roof.
The use of roof chimney implies the to take the air combustion from the room where the heater is installed.

Caution : Foresee a sufficient ventilation into the room. The required fresh air for combustion must be at least of 2 times the power of the unit. Example for a heater of 80 kW/h = 80 x 2 = 160 m3/h.
The tee located on the lower part of the kit allows for possible condensate recovery into the flue pipe and an access for chimney sweeping.

The flue pipe must be solidly fixed to be stable. The flue pipe cannot solely be held by the unit in any case.

Axial gas heater :



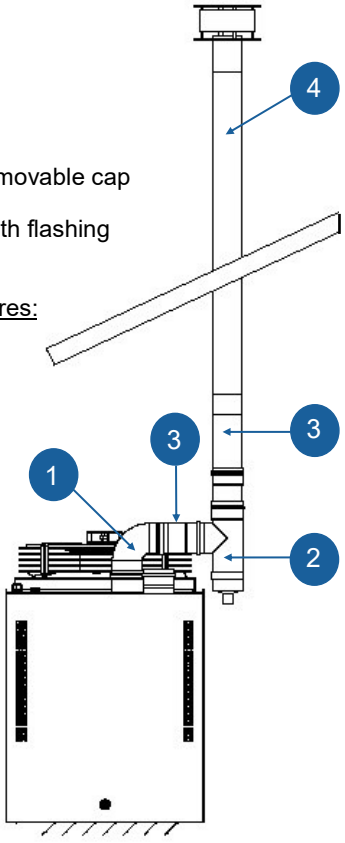
Composition of the kit B22 :
(1) 1 tee with purge and removable cap
(2) 1 single extension to adjust
(3) 1 single roof terminal with flashing

Additional accessories :
Single elbow 90°
Single extension of 1 m

Vertical gas heater :

Composition d'un kit B22 :
(1) 1 single elbow 90°
(2) 1 tee with purge and removable cap
(3) 2 single extensions
(4) 1 single roof terminal with flashing

Accessoires complémentaires:
Coude monotube
Longueur d'un mètre



Model of the heater	FHATX25*	FHATX35	FHATX45	FHATX60	FHATX80
Diameter of flue pipes	80 mm	80 mm	80 mm	80 mm	100 mm
Fumes mass flow 8 % O2	49 Kg/h	68 Kg/h	86 Kg/h	113 Kg/h	148 Kg/h
Available losses of fumes	**120 Pa**	**200 Pa**	**250 Pa**	**300 Pa**	**240 Pa**
Losses of Kit B22	30 Pa	50 Pa	80 Pa	135 Pa	50 Pa
Losses for additional single extension of 1 meter	2 Pa	4 Pa	7 Pa	12 Pa	5 Pa
Losses for additional 90° single elbow	2 Pa	4 Pa	7 Pa	12 Pa	15 Pa

* Only available for ATXH

CAUTION

Accumulated losses cannot exceed available losses.
The given losses are made with the accessories we sale or recommend with our range of heaters.

Connection of concentric roof flue kit C32

The combustion air is taken directly into the room and the smoke exhaust is done to the exterior thanks to a concentric flue kit through the roof.
The use of roof chimney implies the to take the air combustion from the room where the heater is installed.

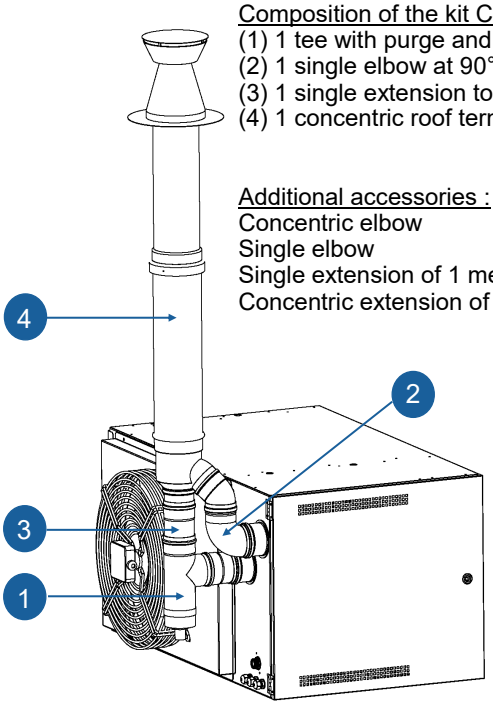
Caution : The flue pipe must be solidly fixed to be stable. The flue pipe cannot solely be held by the unit in any case.

It is possible to extend or divert the concentric kit with approved accessories.
The use of flues involves a parfait sealing. To facilitate the installation, it is necessary to use a lubricant, non -aggressive for the gasket, example: soapy water.

Axial gas heater :

Composition of the kit C32 :
(1) 1 tee with purge and removable cap
(2) 1 single elbow at 90°
(3) 1 single extension to adjust
(4) 1 concentric roof terminal with flashing

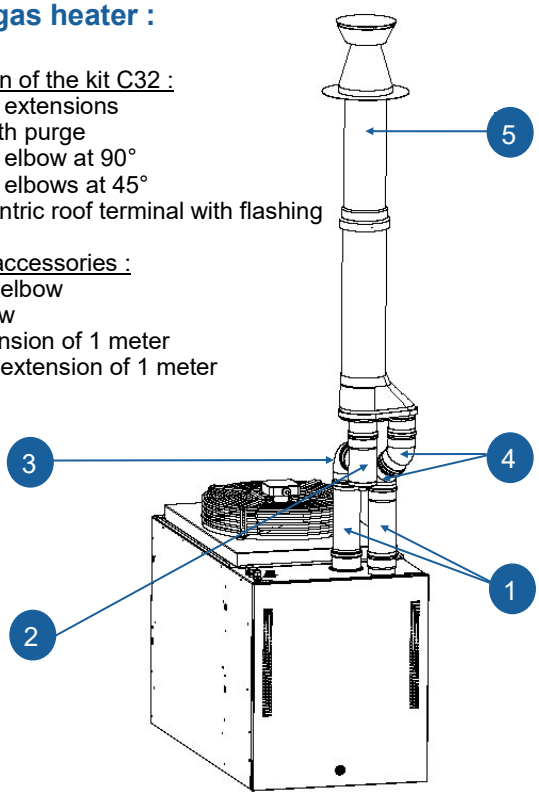
Additional accessories :
Concentric elbow
Single elbow
Single extension of 1 meter
Concentric extension of 1 meter



Vertical gas heater :

Composition of the kit C32 :
(1) 2 single extensions
(2) 1 tee with purge
(3) 1 single elbow at 90°
(4) 2 single elbows at 45°
(5) 1 concentric roof terminal with flashing

Additional accessories :
Concentric elbow
Single elbow
Single extension of 1 meter
Concentric extension of 1 meter



Model of the heater	FHATX25*	FHATX35	FHATX45	FHATX60	FHATX80
Diameter of flue pipes	80 mm	80 mm	80 mm	80 mm	100 mm
Fumes mass flow 8 % O2	49 Kg/h	68 Kg/h	86 Kg/h	113 Kg/h	148 Kg/h
Available losses of air / fumes	**120 Pa**	**200 Pa**	**250 Pa**	**300 Pa**	**240 Pa**
Losses of Kit C32	30 Pa	50 Pa	80 Pa	135 Pa	60 Pa
Losses for additional single extension of 1m	2 Pa	4 Pa	7 Pa	12 Pa	5 Pa
Losses for additional concentric extension of 1m	4 Pa	6 Pa	9 Pa	15 Pa	10 Pa
Losses for additional 90° single elbow	8 Pa	15 Pa	25 Pa	40 Pa	15 Pa
Losses for additional 90° concentric elbow	10 Pa	18 Pa	33 Pa	50 Pa	25 Pa

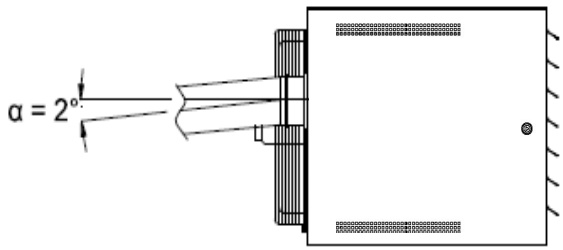
* Only available for FHATXH

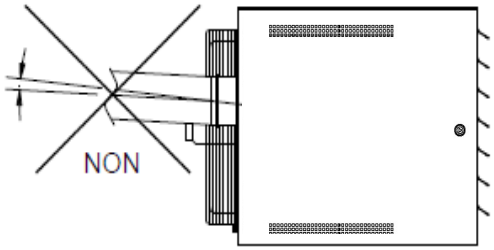
CAUTION

Accumulated losses cannot exceed available losses.
The given losses are made with the accessories we sale or recommend with our range of heaters.
With concentric pipes, accumulate the losses of air combustion intake and smoke exhaust.
The C12 & C32 types are certified with SIT or GROPPALLI flue systems and the heaters must be installed with these products. For the C6 type, refer to the table above.

Connection of concentric wall flue kit C12

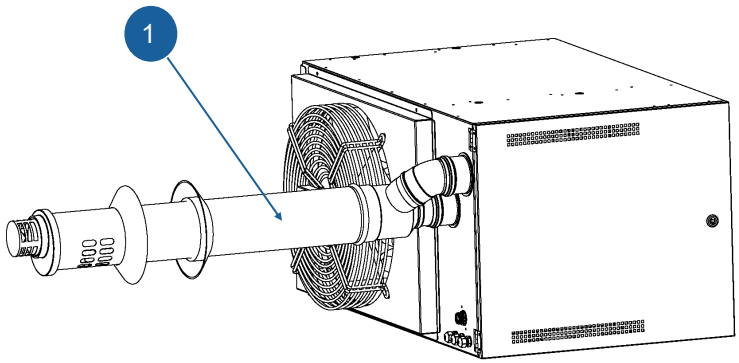
The connection for combustion air intake and smoke exhaust is made horizontally towards the outside of the room.
CAUTION : it is necessary to realized a slope of 2 degrees towards the outside to allow the possible evacuation of condensate.





For direct concentric wall connection, the installation must be realized with an opposite slope at the unit of 2° minimum.

Axial gas heater :



Composition of the kit C12 :

(1) - 1 concentric wall terminal

Additional accessories :

Concentric elbow
Single elbow
Single extension of 1 meter
Concentric extension of 1 meter

Caution : It is possible to extend or divert the concentric kit with approved accessories.
The use of flues involves a parfait sealing. To facilitate the installation, it is necessary to use a lubricant, non-aggressive for the gasket, example: soapy water.

Model of the heater	FHATX25	FHATX35	FHATX45	FHATX60	FHATX80
Diameter of flue pipes	80 mm	80 mm	80 mm	80 mm	100 mm
Fumes mass flow 8 % O2	49 Kg/h	68 Kg/h	86 Kg/h	113 Kg/h	148 Kg/h
Available losses of air / fumes	**120 Pa**	**200 Pa**	**250 Pa**	**300 Pa**	**240 Pa**
Losses of Kit C32	30 Pa	50 Pa	80 Pa	135 Pa	20 Pa
Losses for additional single extension of 1m	2 Pa	4 Pa	7 Pa	12 Pa	5 Pa
Losses for additional concentric extension of 1m	4 Pa	6 Pa	9 Pa	15 Pa	10 Pa
Losses for additional 90° single elbow	8 Pa	15 Pa	25 Pa	40 Pa	15 Pa
Losses for additional 90° concentric elbow	10 Pa	18 Pa	33 Pa	50 Pa	25 Pa

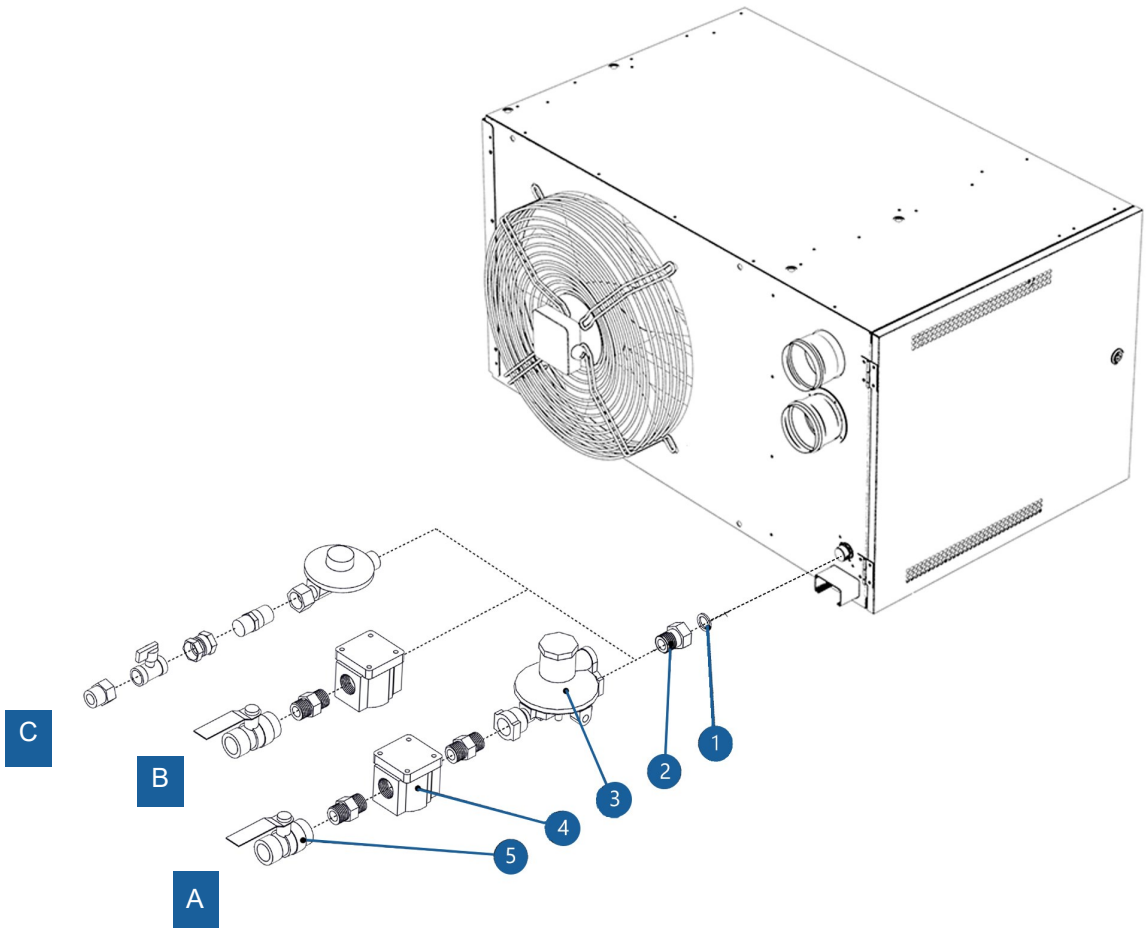
CAUTION

Accumulated losses cannot exceed available losses.
The given losses are made with the accessories we sale or recommend with our range of heaters.
With concentric pipes, accumulate the losses of air combustion intake and smoke exhaust.
The C12 & C32 types are certified with SIT or GROPPALLI flue systems and the heaters must be installed with these products. For the C6 type, refer to the table above.

3.3 Gas connection

First of all it is necessary to check that the device is in conformity with the type of gas distributed. For this purpose, you must refer to the indications shown on the identification plate.
The gas supply must be appropriated to the power of the heater and be equipped with all the security and inspection devices required by current standards.
A precise study must be carried out on the diameters of the piping depending on the type and the flow of gas and the length of the piping. It is necessary to make sure that pressure drops in the piping do not exceed 5 % of the supply pressure.
The gas connections must be made in conformity with the recommendations for indoor installations whatever the type of gas, by qualified personnel holder of necessary approvals.

Check the tightness of gas fittings after each maintenance operation till the gas valve of the heater



Gas connection type:

A- Over 50 mbar natural gas supply
B- Under 50 mbar natural gas supply
C- LPG supply

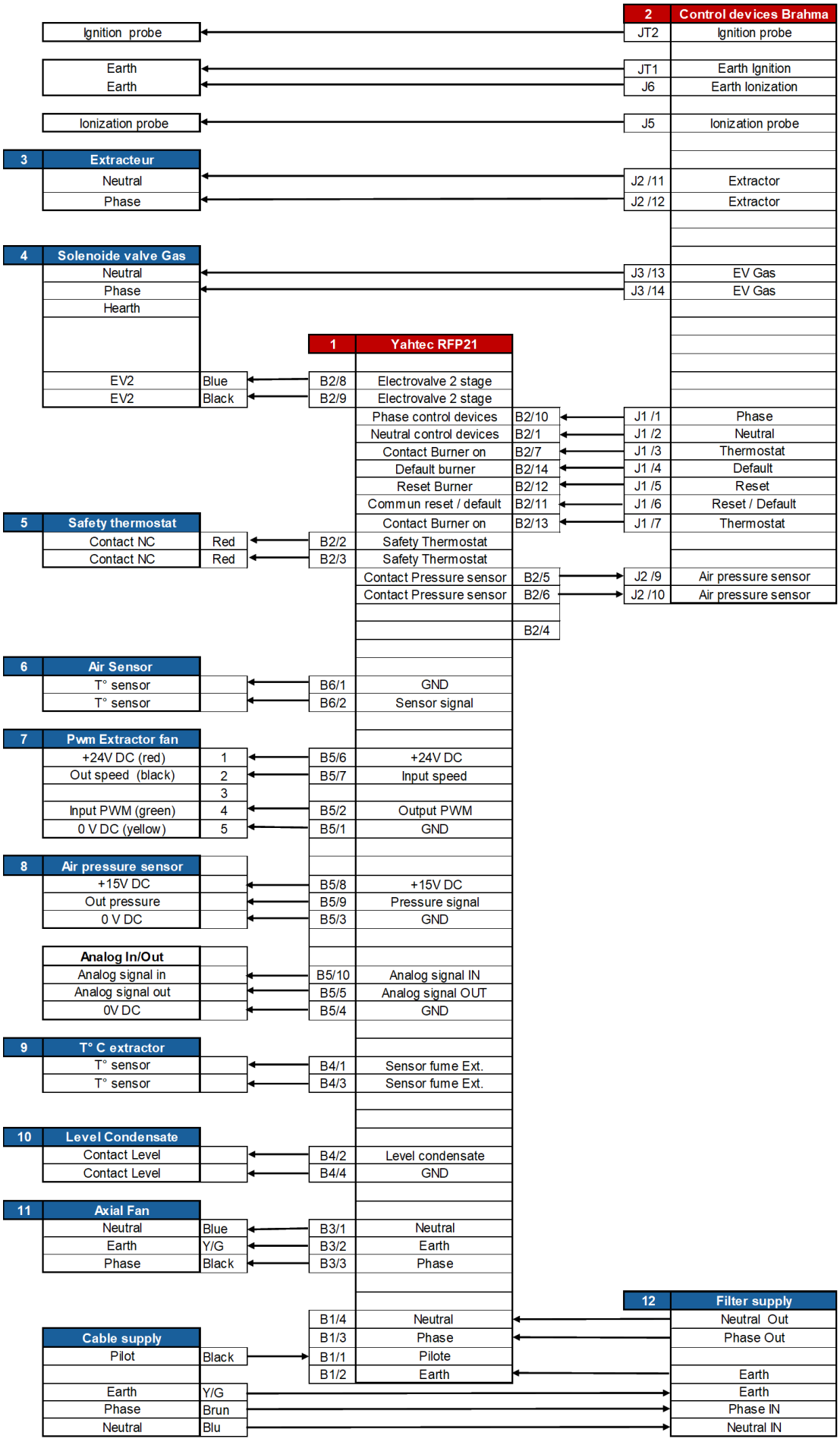
Composition of heater gas kit*

1– Gas seal (supplied with the heater)
2– Gas connection 3/4-1/2 (supplied with the unit till 45 kW)
3– Gas regulator
4– Gas filter
5– 1/4 turn gas valve

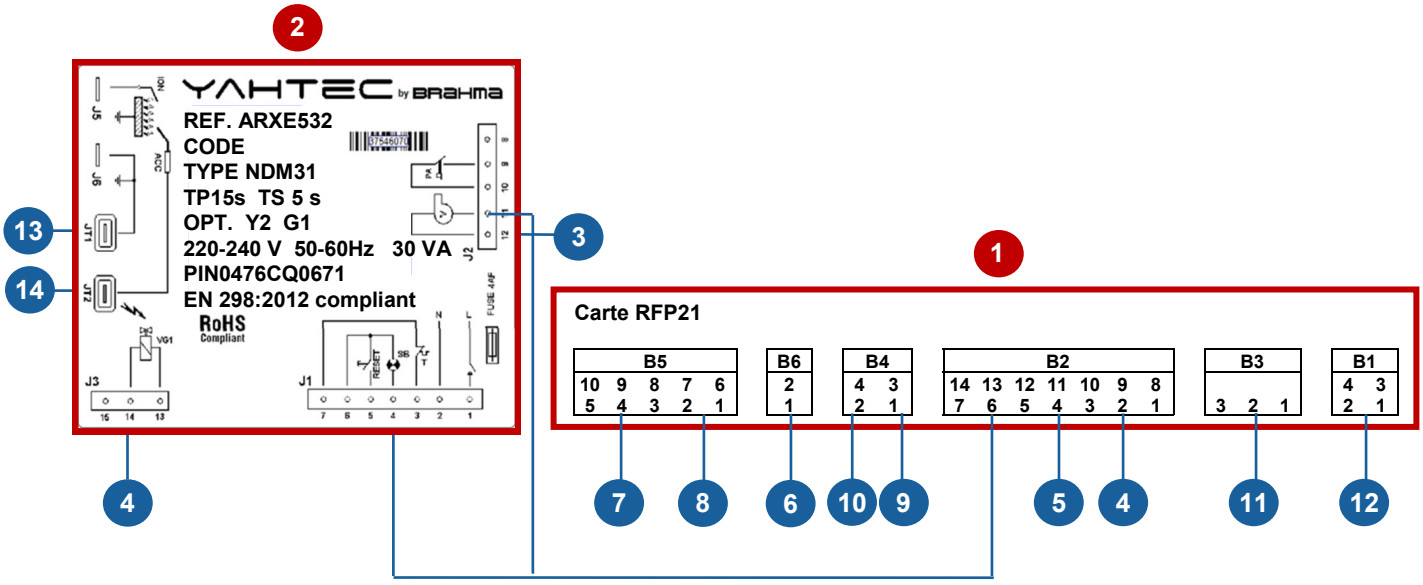
*For more information about component details, refer to the notice given with the gas kit connection.

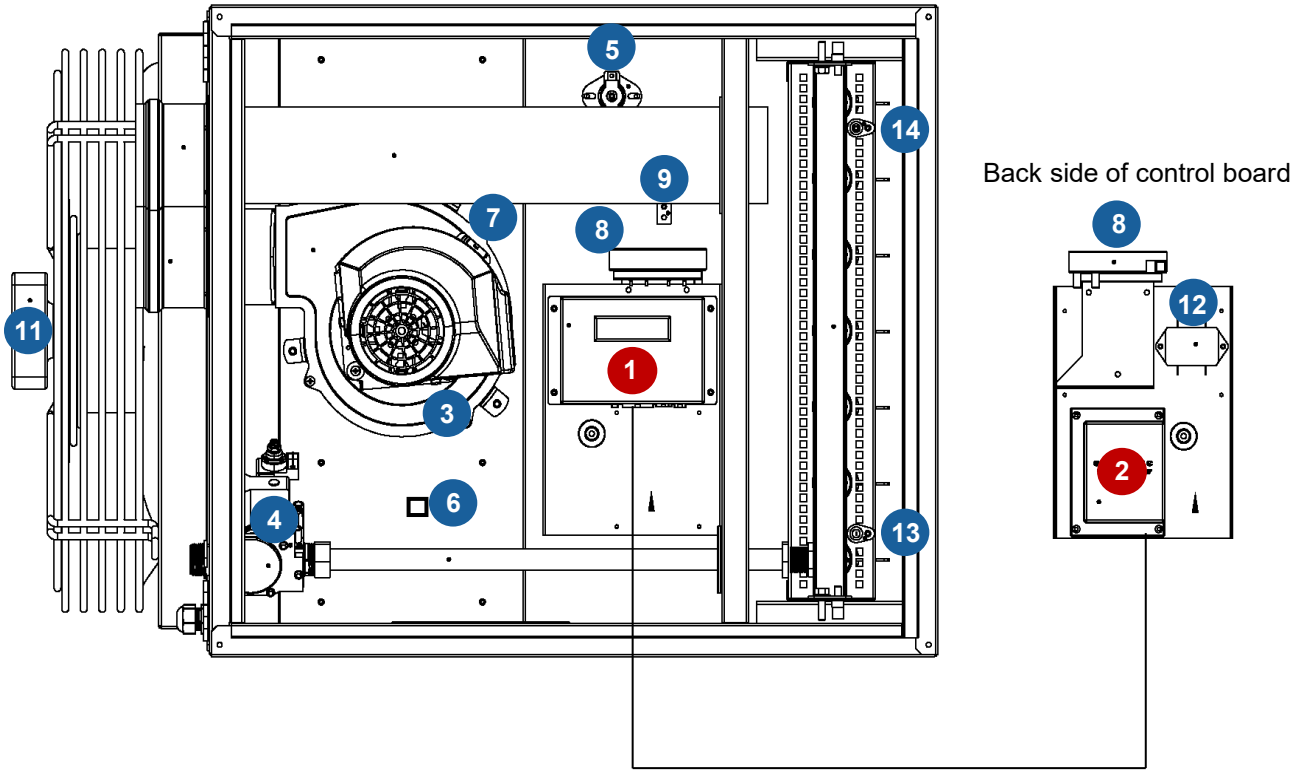
4– ELECTRICAL WIRING

4.1 Electrical schematics of FHATX :

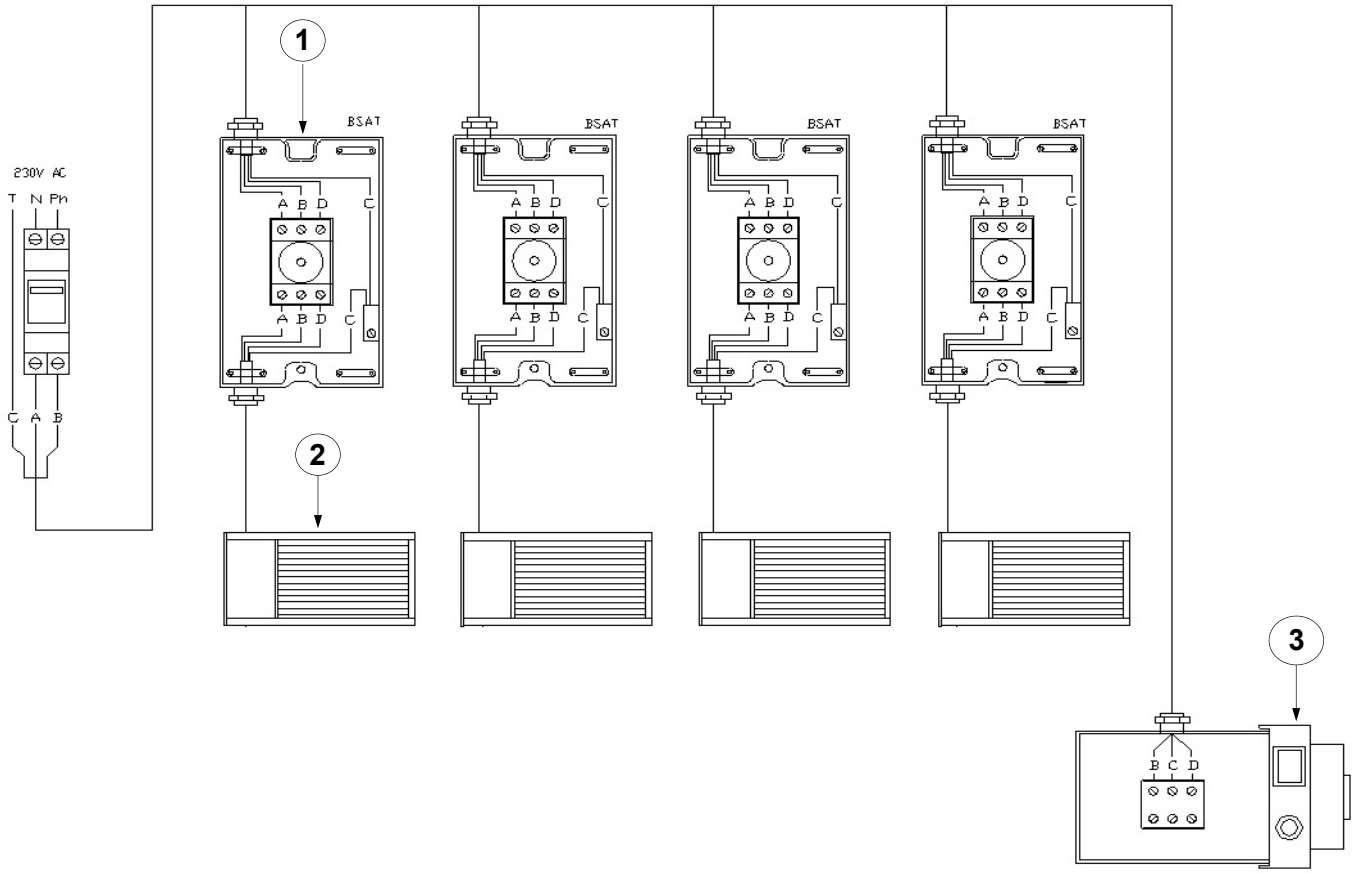


4.2 Electrical connections between heater's components :





4.3 Basic connection schematic with pilot wire thermostats:



Heater's connection :
A : Neutral (blue or grey) - B: Phase (brown) - D: pilot wire (black) - C: Earth (green/yellow)

1 - Switch disconnector

2 - Unit heaters

3 – Thermostat

BSAT4P2

TFP1ET85P2

TFP2TS

TFP3TS

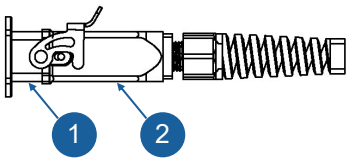
- The ATX gas heater is equipped as standard with a receiver for pilot wire, which enables using a single conductor to carry the functions of the ambient thermostat, the forced ventilation and remote resetting.
- Several models of thermostat (3) are available. The use of these thermostats will provide you with supplementary functions such as remote resetting and forced ventilation.

The electrical connection of the devices must be in conformity with the regulations in force in the country concerned.

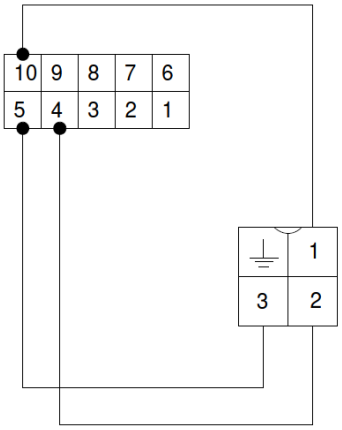
Caution : 8 gas heaters maximum per 1 thermostat

4.4. Connection principle for 0-10 Volts option

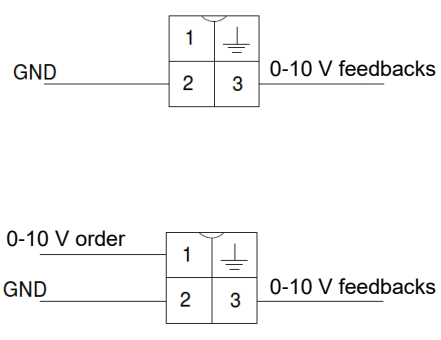
With the option 0-10 Volts, the unit is delivered with a specific connector. Depending on the selected control mode, refer to the diagram below :



1 Female plug
RFP21 card
B5 connector



2 Male plug



The unit can receive the following informations via IN signal 0-10V
(The reading must be activated more than 1 second)

Volage (Volts)	**Order (IN 0-10 V)**
0 à 1.5	Stop the heater (OFF)
1.5 à 2.5	Reset the burner
2.5 à 3.5	Ventilation only
3.5 à 5.5	Burner ON : Maximum power if blowing temperature < 55°C Minimum power if blowing temperature > 55°C
5.5 à 6	Burner ON : Maximum power if blowing temperature < 60°C Minimum power if blowing temperature > 60°C
6 à 6.5	Burner ON : Maximum power if blowing temperature < 65°C Minimum power if blowing temperature > 65°C
6.5 à 7	Burner ON : Maximum power if blowing temperature < 70°C Minimum power if blowing temperature > 70°C
7 à 7.5	Burner ON : Maximum power if blowing temperature < 75°C Minimum power if blowing temperature > 75°C

The unit can communicate the following informations via OUT signal 0-10V,

Voltage (Volts)	**Feedbacks (OUT 0-10 V)**
0 à 0.9V	Stop the heater (OFF)
1 à 1.9V	Ventilation only
2 à 2.9V	Burner ON, fan OFF and minimum power
3 à 3.9V	Burner ON, fan OFF and maximum power
4 à 4.9V	Burner ON, ventilateur ON et minimum power
5 à 5.9V	Burner ON, ventilateur ON et maximum power
6 à 6.9V	Burner fault
7 à 7.9V	Sensors fault
8 à 8.9V	Overheating fault
9 à 9.9V	Reset

5-COMBUSTION SETTINGS

Be careful, these interventions must be carried out by a qualified professional person

5.1 Changing gas

The heaters are equipped of burners with nozzles allowing the use of natural gas G20/G25 and LPG G31. The hole of the nozzle are studied to ensure a good combustion and flame stability.

1 - Disconnect the electrical supply connector and shut off the gas supply.

2 - Disconnect the ignition and ionization cables.

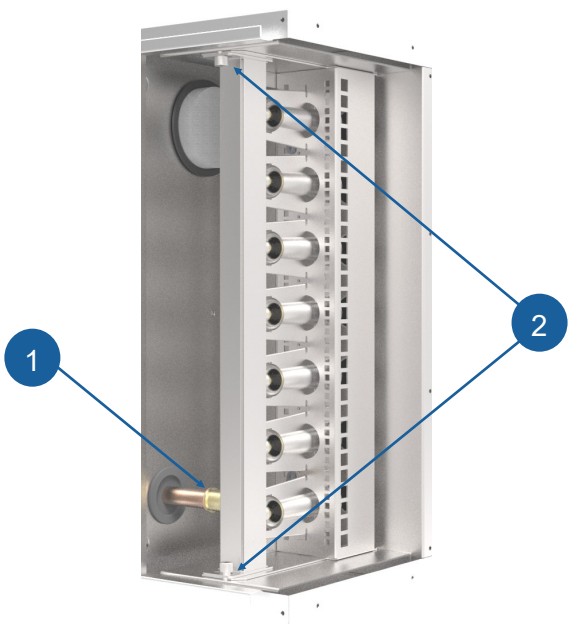
3 - Unscrew the fixing nut of the gas line (1) and the screws (2) which fix the gas ramp.

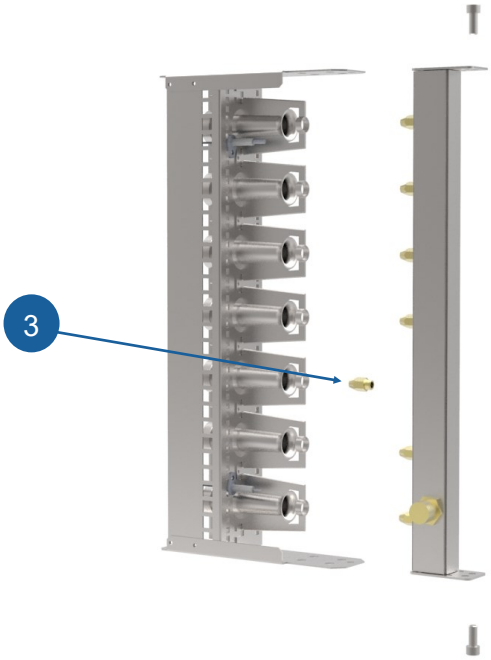
4 - Replace the nozzles according the using gas (refer to the setting tables below5 - Screw the new nozzles (3) without sealing with tightening torque of 20 Nm.

6 - Reassemble the gas ramp fixed by the 2 screws (2) then the nut of the gas line.

7 - Reconnect the ignition and ionization cables

Be careful to do not damage the gas sealing. Replace it if necessary and check the sealing.





5.2 Selection table for nozzles and gas pressure :

Types	Adjustment for G20 and G25					Adjustment G31		
	Gas nozzle	Gas pressure for G20		Gas pressure for G25		Gas nozzle	Gas pressure for G31	
		Minimum power	Maximum power	Minimum power	Maximum power		Minimum power	Maximum power
FHATX25	5 x AL 1.9	4.0 mb	13.0 mb	6.5 mb	17.0 mb	5 x AL 1.3	10.0 mb	25.0 mb
FHATX35	7 x AL 1.9	4.0 mb	13.0 mb	6.5 mb	17.0 mb	7 x AL 1.3	10.0 mb	25.0 mb
FHATX45	9 x AL 1.9	4.0 mb	13.0 mb	6.5 mb	17.0 mb	9 x AL 1.3	10.0 mb	25.0 mb
FHATX60	12 x AL 1.9	4.0 mb	13.0 mb	6.5 mb	17.0 mb	12 x AL 1.3	10.0 mb	25.0 mb
FHATX80	16 x AL 1.9	4.0 mb	13.0 mb	6.5 mb	17.0 mb	16 x AL 1.3	10.0 mb	25.0 mb

5.3 Burner combustion settings

These interventions must be carried out by a qualified professional person

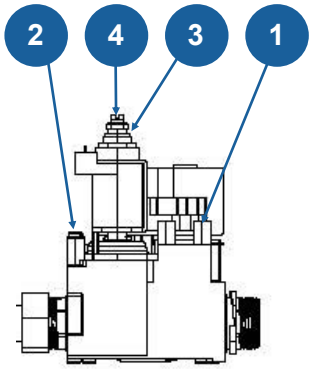
To realize this setting, it is necessary to have the following tools :

1– Calibrated flue gas analyser which reads O2 or CO2, CO, fumes temperature, ambient temperature.

2– One cross-headed screwdriver PZ2 and an hexagon key of 10.

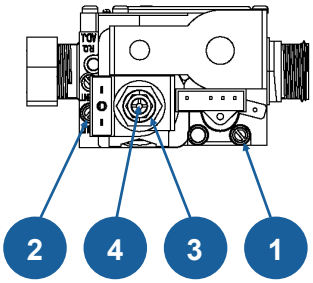
3– One calibrated gas manometer with a scale from 0 to 60mb.

For combustion settings, you can adjust the following :
1 - Pressure screw on the gas valve according to the type of gas and its stage (Min P. & Max P.)
2 - Air pressure settup on the heater control board (Max P. and Min P).



Solenoid valve side view

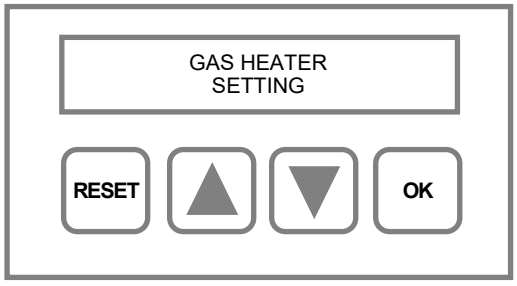
Top view of solenoid valve



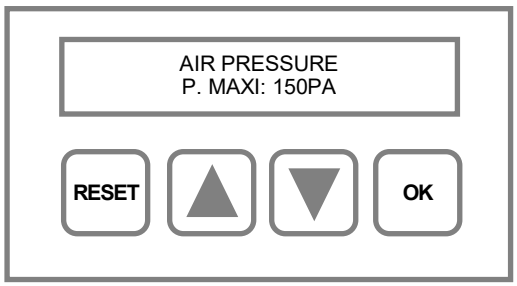
1) Gas pressure tap for gas valve inlet
2) Gas pressure tap for gas valve outlet
3) Setting screw Max P (Screw for more pressure)
4) Setting screw Min P (Screw for more pressure)

For pressure settings, connect the gas manometer on the gas pressure tap on the gas valve outlet (2)
Adjust the pressure on the adequate screw: Max P. (screw 3) and Min P. (screw 4)

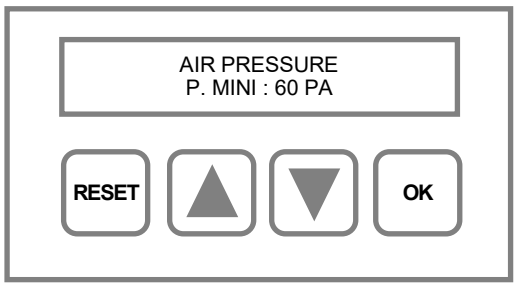
Be careful to re-screw the screws of pressure tap



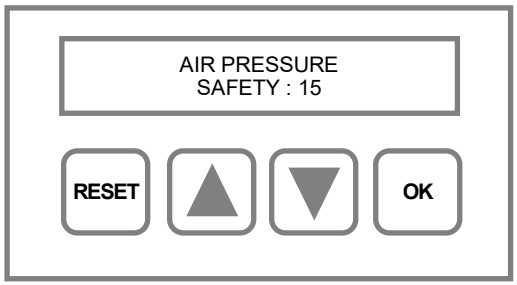
Once the burner starts (thanks to ambient thermostat or manual mode on control board), move on the display «Heater settings». Press 5 seconds on « OK » and go to the display « Air pressure Max P».



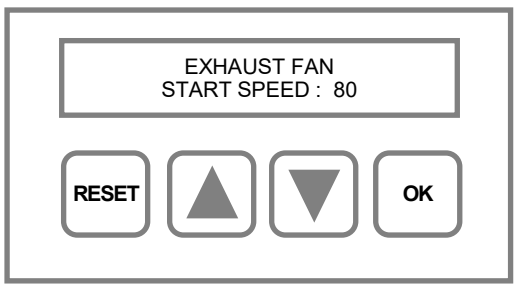
On the display « Air Pressure P. MAXI » press « OK ». The exhaust fan increases the speed to stabilize the air pressure to the displayed set point. After a P. max pressure check on the gas valve outlet, adjust the O2 and fumes values with ▼ and ▲ then validate on « OK » when the setting is correct.
The O2 value must be between 7.5% and 10 %.



Move to the display «Air pressure P. MINI.» then press on « OK ». The exhaust fan reduces its speed to stabilize the air pressure to the displayed set point. After a Min P pressure check on the gas valve outlet, adjust the O2 and fumes values with ▼ et ▲ then validate on « OK » when the setting is correct.
The O2 value must be between 7.5% and 10 %.



Move to the display «Air pressure safety» to define the minimum pressure which the control box must cut off because of air combustion lack. Press « OK » and adjust the value with ▼ and ▲ then validate on « OK ».
More the value is high more the cut off will be low.
If «Air pressure P. MINI» = 60 and «Air safety» = 15
The air lack cut-off will be at 60-15 % = 51 Pa



Move to the display «Exhaust fan start speed» to define the speed of the extractor/exhaust fan at the start up. The factory setting is 80 %. This value can be adjusted in precise cases, check with the manufacturer if necessary.

6-COMMISSIONING AND SETTINGS

6.1 Checks before commissioning

1- Before starting the commissioning and powering the device, check the following things :

- The connection of air combustion and fumes must be perfectly sealed.
- Ensure the perfect tightness of the gas circuit till the heater.
- The section of gas pipe line is correct according the gas type and pressure.
- The nature of gas and the pressure supplied according the heater settings.
- The ground connection of the heater, the phase-neutral polarity and the pilot wire connection.
- The protective film on the heater has been removed.
- The distances around the heater have been respected.

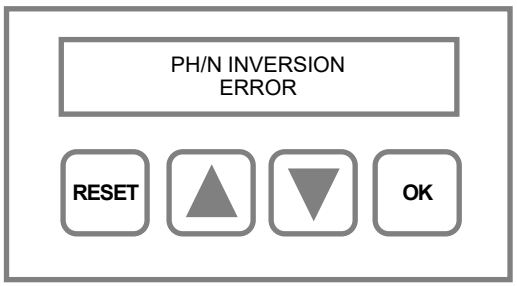
2- Check the electricity supply, between 210V et 230V.

Be careful with the phase-neutral polarity. In case of reversal, the mistake is displayed on the control board of the heater. (in that case, reverse blue and brown wires on the power supply.
If the neutral is impedance earthed (more than 20 volts between neutral and ground), provide a non-polarized control panel or a isolating transformer on the heater.

3– Check that the type of gas and the pressure supply match with the heater.
The maximum inlet pressure from gas valve cannot exceed 50 mbar. Refer to the chapter « GAS CONNECTION ».

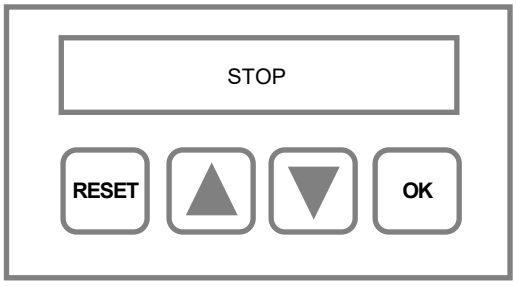
6.2 Commissioning

The first commissioning must be realized by a qualified technician.
To commission the heater, raise the set point temperature of the ambient thermostat.
The heaters are setup and tested in factory. They do not required any adjustment for altitudes located between the sea level and 500 meters. It is still necessary to realize combustion analysis at the commissioning.



A polarity reversal is indicated by the display.

It is necessary to cut-off the power supply of the heater and reverse the phase and neutral of the main power supply of the heater. When the operation is complete, the message on the display will disappear.

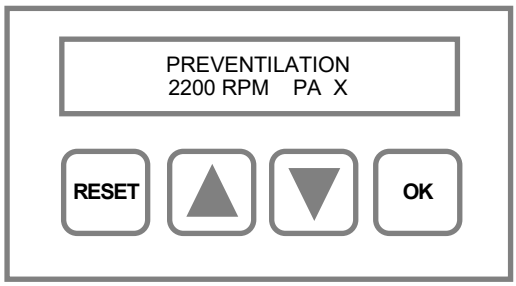


When the heater is power up, the display shows the heater state. The messages are the following:

STOP
VENTILATION
PRE-VENTILATION
BURNER ON - MNI POWER
BURNER ON - MAXI POWER
ERROR XXX
In case of default, refer to the chapter « Troubleshooting »

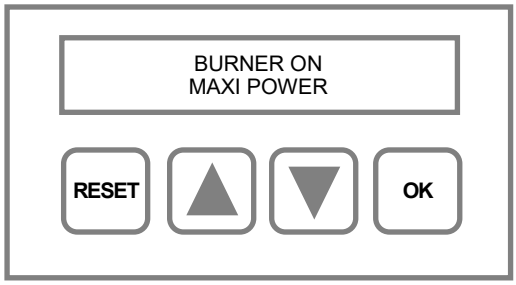
6.3 Control board use

The gas heaters are equipped with a control board allowing to control the state of the units and configure them.



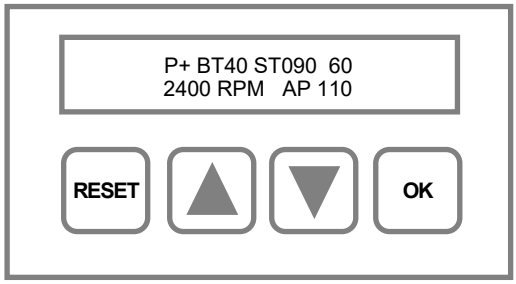
The display shows that the burner is on pre-ventilation.
The second line indicates the speed of the extractor/exhaust fan and PA the state of the air pressure switch.

PS must displays « X » when the extractor is OFF and « OK » the pressure switch detects airflow.



When the burner lights up, the display shows that the burner is "ON" and if the power is MAXI or MINI.

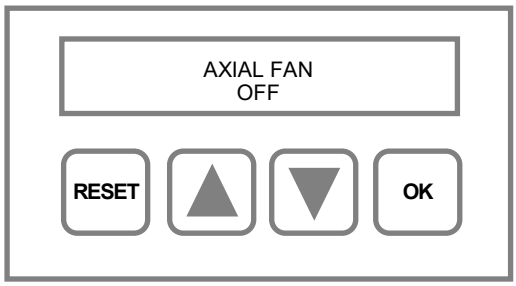
To change the display, press ▲



The display shows 6 information allowing the diagnostic :

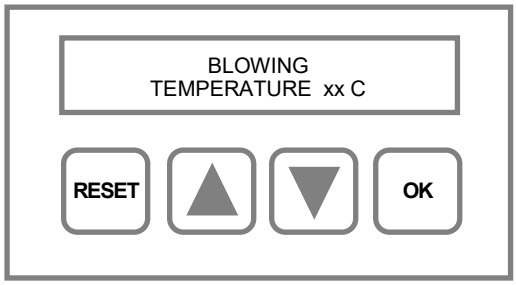
1 - Burner state : P+ = Maxi power or P- =Mini power
2 - The blowing temperature BT in °C = 40 (example)
3 - The fumes/smoke temperature ST in °C = 90 (example)
4 - The value in % of exhaust fan PWM = 60 (example)
5 - The speed of exhaust fan in RPM = 2400 (example)
6 - The air depression of exhaust fan in PA = 110 (example)

To change the display, press ▲

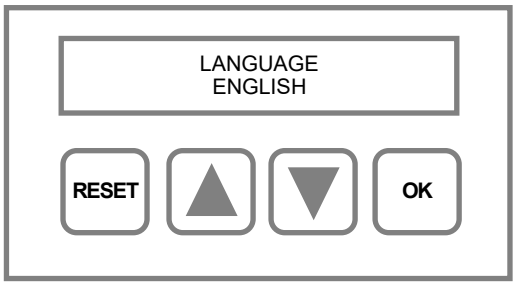


The display shows the axial fan state (OFF or ON). The fan operation is operated in two simultaneous ways:
- According to a starting blowing temperature setup in factory at 45 °C.
- According a temporization when burner starts whatever the blowing temperature.
When burner stops, only the temperature can maintain or restart the fan if its value is higher that set point temperature (for setup, refer to the chapter « control board setup »)

To change the display, press ▲



The display shows the average blowing temperature.

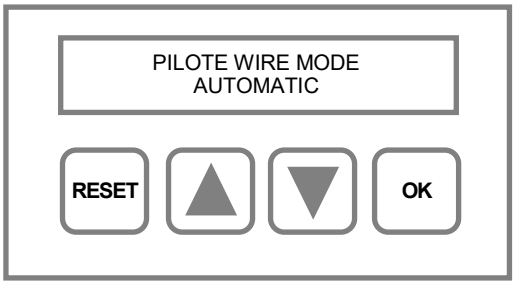


The display shows the language of the display.

Several languages are available such as :
Français, English, Deutsche , Espanol.

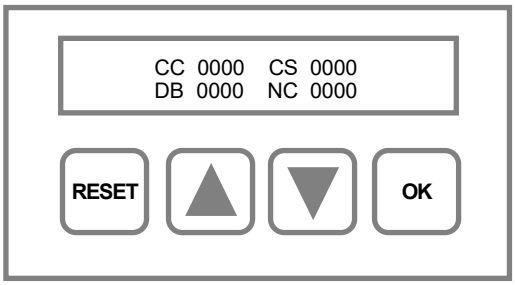
To change the language, press 3 seconds « OK », select the new language with ▼ and ▲ then validate with « OK ».

To change the display, press ▲



The display shows the working mode of the heater.
For tests or checks, it is possible to simulate the functions : ON, OFF, ventilation of the ambient thermostat, without acting on thermostat. To select the mode, press 3 seconds on « OK » then move with ▼ and ▲ then validate on « OK ». The system will go back to the automatic mode after 5 minutes if the manual mode is not used.

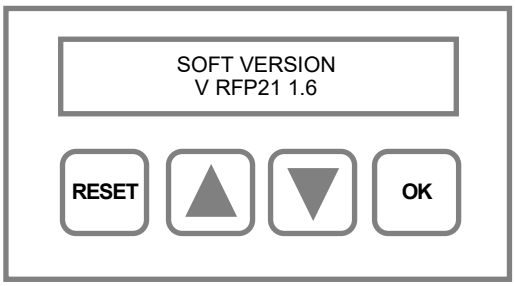
To change the display, press ▲



The control board diagnose the latest events on the heater:

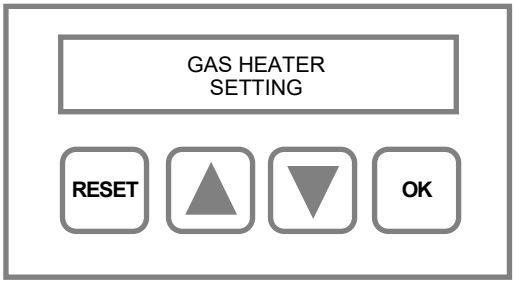
CC - Number of Short cycles (Commissioning < to 3 minutes)
CS - Number of power failures
DB - Number of burner defaults
NC - Number of ignition cycles

To change the display, press ▲



The display shows the version of the software used.

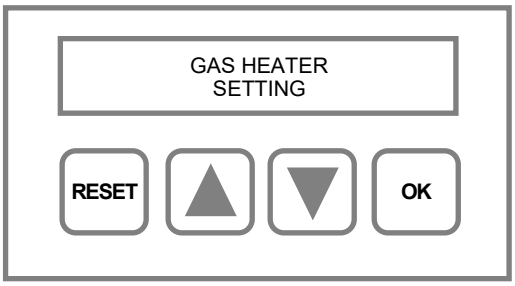
To change the display, press ▲



The displays allows gas heater settings. This part of the program is strictly reserved to qualified person, trained to the product specifications and qualified in gas combustion. For any settings, refer to the chapter « Control board settings »

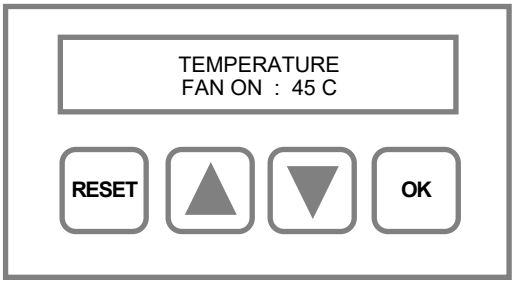
6.4 Control board settings

The following settings must be realised by a qualified person, trained to the product specifications.
Be careful, if you change the factory settings may lead to a malfunction.



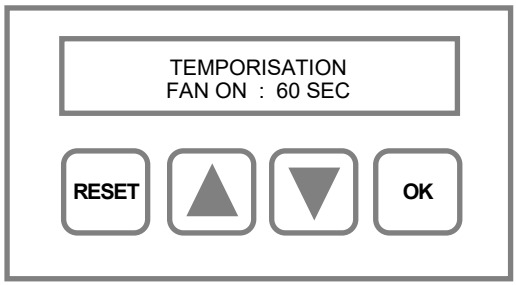
From the display « Gas heater setting», press 5 seconds on « OK » to access to the different settings screens.

To change the display, press ▲



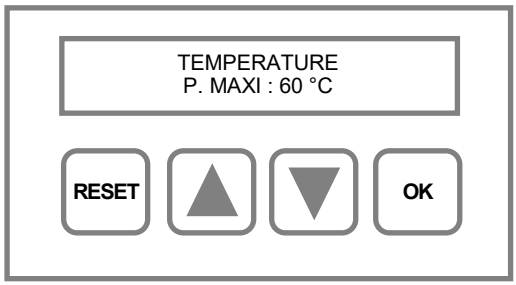
The display shows the temperature when fan starts. Press « OK » and adjust the requested set point value with ▼ and ▲ and press « OK ». The factory setting value is 45 °C.
From 45 °C the axial fan starts and stops when the blowing temperature will be lower to the setting –3°C (ON 45 °C / OFF 42 °C for factory settings).

To change the display, press ▲



The display shows the delay time when the fan starts. Press « OK » and adjust the requested set point value with ▼ and ▲ and press « OK ». The factory setting value is 60 seconds. The axial fan starts 60 seconds after the burner ignites and stops when the burner stops except if the blowing temperature is over the set value : Temperature FAN ON (previous setting).

To change the display, press ▲



The display shows the blowing temperature at maximum power. Press « OK » and adjust the requested set point value with ▼ et ▲ then validate with « OK ». The burner goes to P MINI when the blowing temperature is over the setting value and in P. MAXI when the blowing temperature is lower than the setting - 5 °C). The factory setting value is 60°C

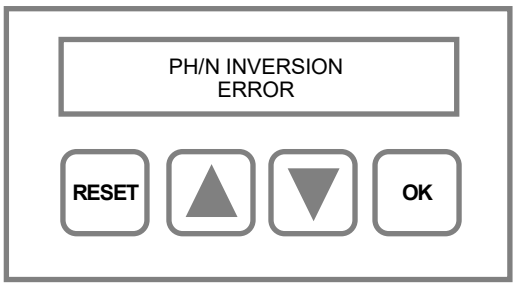
To change the display, press ▲

To set up the displays “Exhaust fan start speed”, “Air pressure P. Maxi”, “Air pressure P. Mini” and “air pressure safety”, refer to the chapter 5.3 Burner combustion setting.

7– TROUBLESHOUTING

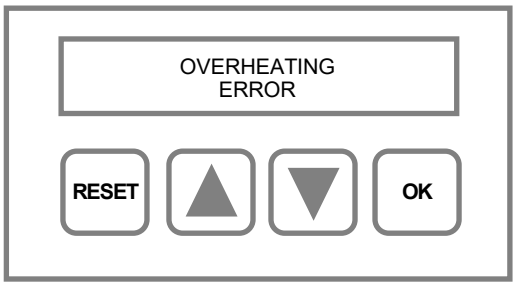
WARNING : The power supply and gas supply must be cut before any intervention on the heater.

7.1 List of defect and solutions to problems



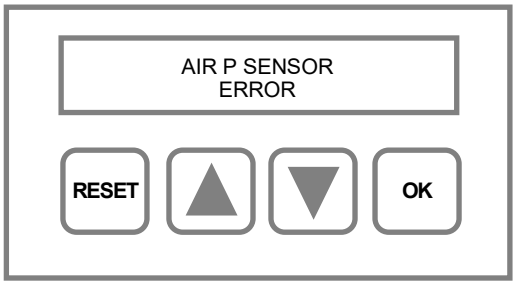
The display show a polarity reversal.

It is necessary to cut-off the power supply of the heater and reverse the phase and neutral of the main power supply of the heater. When the operation is complete, the message on the display will disappear.



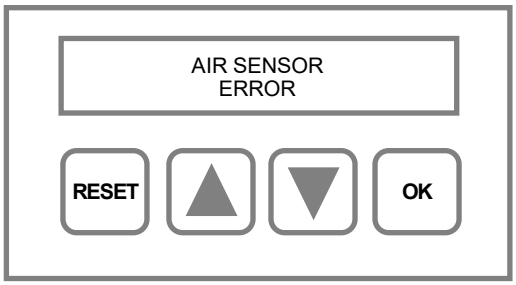
The display shows that the safety thermostat with manual reset is in default. Press the button of the thermostat.

The error can come from a power failure whereas the heater was operating or because of a fan short-circuit. The default can also come from a faulty components: fan condenser, thermostat with manual reset, control board.



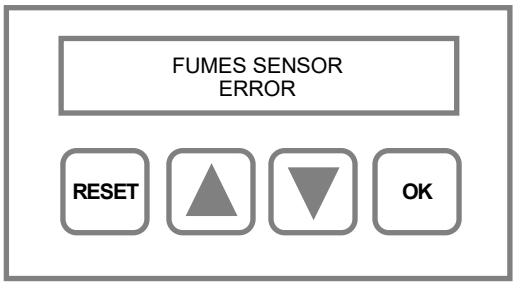
The display shows that the differential pressure sensor is disconnected or defective.

Check the connection or replace the pressure sensor.



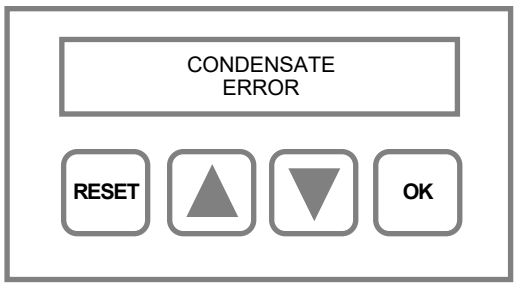
The display shows that the blowing air temperature sensor is disconnected or defective.

Check the connection or replace the air temperature sensor.



The display shows that the fumes sensor is disconnected or defective.

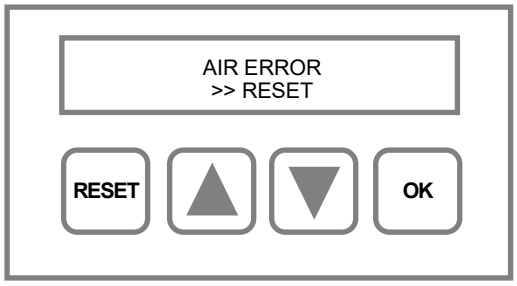
Check the connection or replace the fumes sensor located under the exhaust fan.



The display does not concern ATX range.

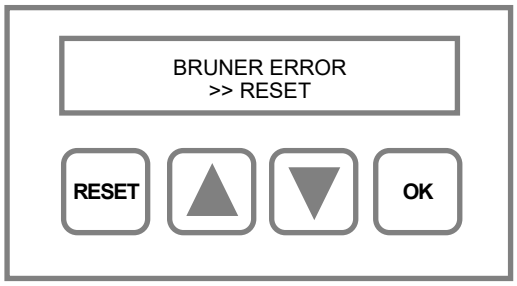
If this message is displayed on ATX model, check the connector shunt of condensate level sensor, because this model does not have float.

To reset the error, press RESET

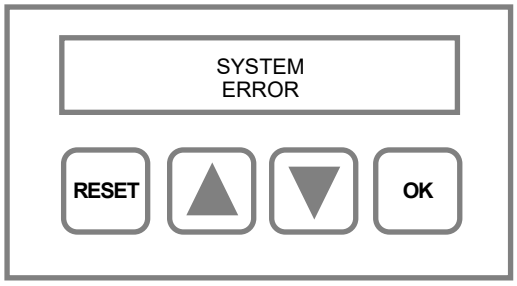


The display shows a lack of air when the unit starts up, during the pre-ventilation process.
This error can appear if the tubes of pressure switch are disconnected or obstructed or if the connection of air combustion or fumes is obstructed. The error can also appear if the exhaust fan or differential pressure sensor is defective.

To reset the error, press RESET

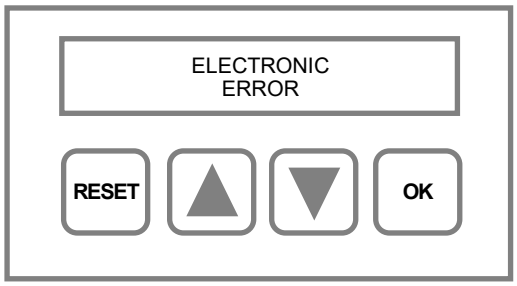


The display shows a default on the burner control device which is located on the rear side of the control board plate.
The error can be linked to different problems.



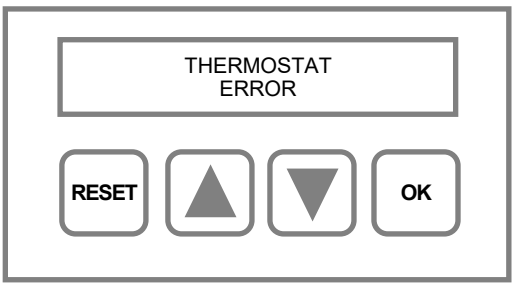
The display shows a system default on the control board.

Replace and configure the new control board.



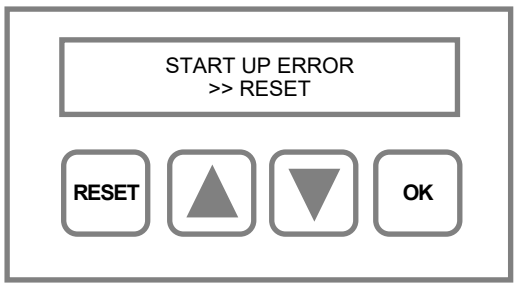
The display shows a default on the control board.

Replace and configure the new control board.



The display shows a default with the thermostat.

This error can appear if the electrical cable between the heater and the thermostat is too long or it can come from an interfering current from others electrical cables.



The display shows that the heater cannot start up.
It means that the unit tried 3 times to ignite without success.

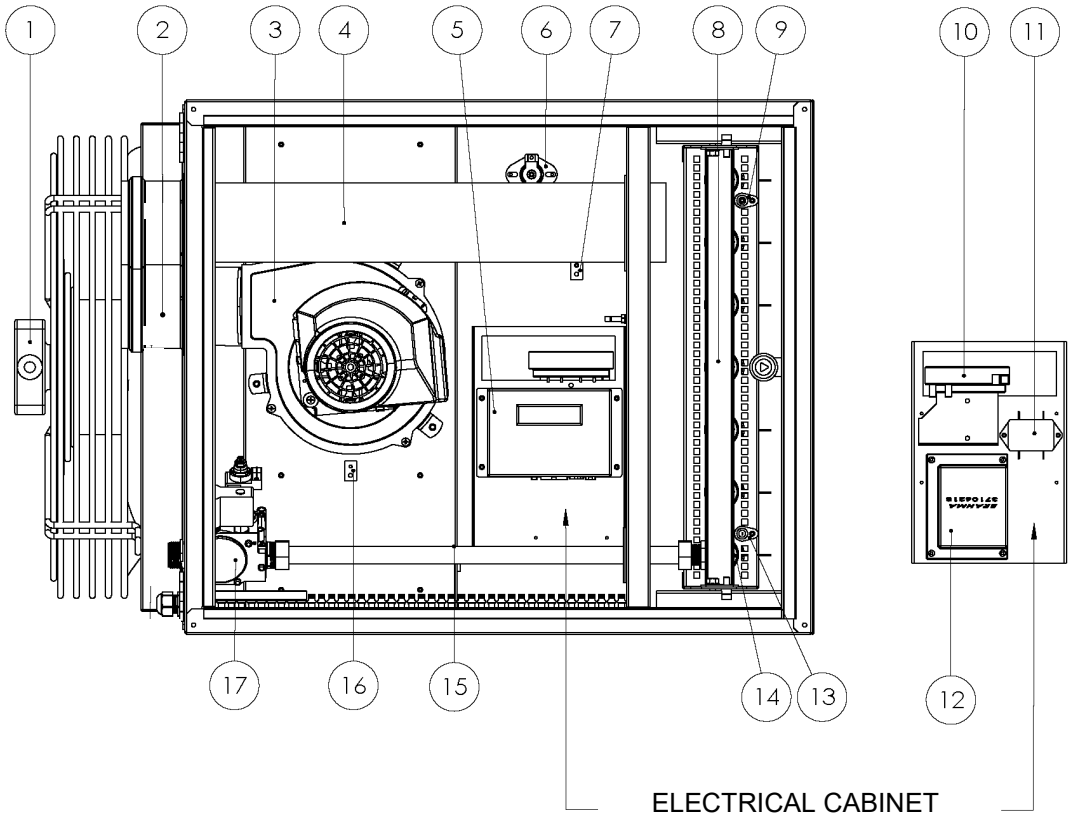
This error can come from gas supply issue.
Check the gas pressure.

To reset the error, press RESET

7.2 Summary table of factory settings :

Settings list	Factory values
Air pressure at maximum Power	150 PA
Air pressure at minimum Power	60 PA
Air pressure safety	15%
Exhaust fan start speed	80%
Temperature blowing fan on	45°C
Delay blowing fan on	60 secondes
Temperature at maximum power	60°C

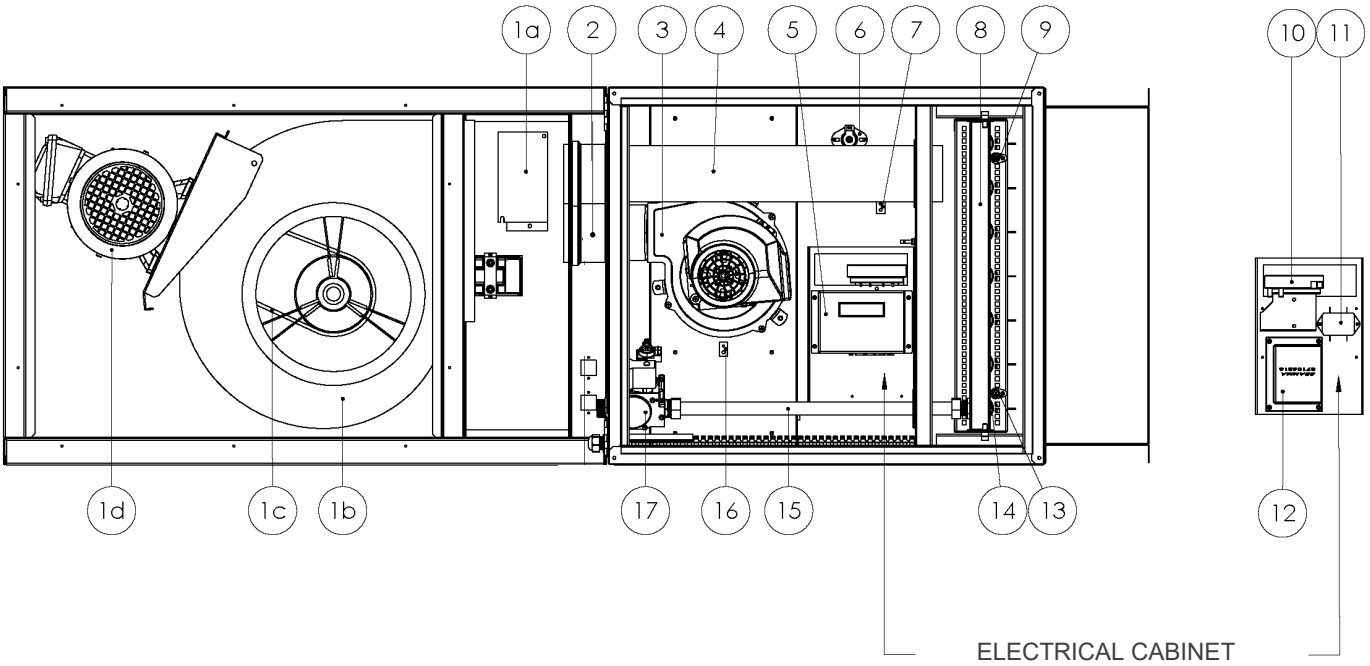
7-3 Component parts for FHATXH and FHATXV



No.	Description	Spare parts reference				
		FHATX25*	FHATX35	FHATX45	FHATX60	FHATX80
1	Axial fan	ATE803S	ATE804S	ATE804S	ATE808S	ATE808S4P
2	Fumes connector	ATE082	LE080M	LE080M	LE080M	ATE004
3	EC exhaust fan	ATE0102	ATE0101	ATE0101	ATE0101	ATE0101
4	Air connector	LE80050	LE80050	LE80050	LE80050	LE100050
5	Control board RFP21	ARXE521B				
6	Safety thermostat	THE148				
7	Air blowing temperature	HB0087				
8	Gas ramp	SERGARX25	SERGARX35	SERGARX45	SERGARX60	SERGARX80
9	Ionization sensor + Ionisation cable	ARXE022 + ARXE023	ARXE022 + ARXE023	ARXE022 + ARXE023	ARXE022 + ATE025-BLANC	ARXE022 + ATE025-BLANC
10	Differential pressure sensor	ATE463				
11	Supply filter	ARXE522				
12	Safety control box	ARX531				
13	Ignition electrode + Ignition cable	ARXE021 + ARXE020				
14	Catalyser NOx	5xARX0517	7xARX0517	9xARX0517	12xARX0517	16xARX0517
15	Gas pipe	GAZ0120				
16	Fumes temperature sensor	UTC0625				
17	2-stage gas valve	GAZ0014				

* Only available for ATXH

7-4 Component parts for FHARXC

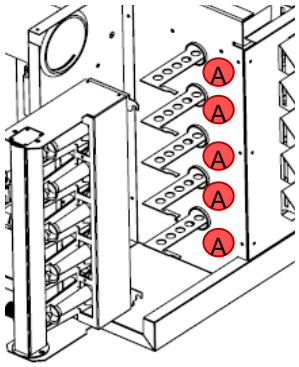


No	Description	Spare parts reference			
		FHATX35	FHATX45	FHATX60	FHATX80
1a	Variable speed driver	VVE009	VVE010	VVE010	VVE006
1b	Centrifugal fan	VE0017	VE0017	VE0034	VE0035
1c	Transmission belt	VE0044	VE0050	VE0047	VE0089
1d	Fan motor	MOT001	MOT002	MOT002	MOT003
2	Fumes connector	LE080M	LE080M	LE080M	ATE004
3	EC exhaust fan	ATE0101	ATE0101	ATE0101	ATE0101
4	Air connector	LE80050	LE80050	LE80050	LE100050
5	Pilot wire card RFP21	ARXE521B			
6	Safety thermostat	THE148			
7	Air temperature sensor	HB0087			
8	Gas ramp	SERGARX35	SERGARX45	SERGARX60	SERGARX80
9	Ionization sensor + Ionisation cable	ARXE022 + ARXE023	ARXE022 + ARXE023	ARXE022 + ATE025	ARXE022 + ATE025
10	Differential pressure sensor	ATE463			
11	Supply filter	ARXE522			
12	Safety control box	ARX531			
13	Ignition electrode + Ignition cable	ARXE021 + ARXE020			
14	Catalyser NOx	7x ARX0517	9xARX0517	12xARX0517	16xARX0517
15	Gas pipe	GAZ0120			
16	Fumes temperature sensor	UTC0625			
17	2-stage gas valve	GAZ0014			

8– MAINTENANCE

Correct and regular use and maintenance of the unit heater allows an efficient operation, a minimum consumption, as well as a long life.
The maintenance must be done with the device cold, with the gas and electricity supplies cut off.

<u>These interventions must be realised by a qualified person.</u>

Components	Maintenance operations
Gas heater	Check the correct functioning of all the safety devices and verify that all the screws are correctly tightened.
Main heat exchanger	From the outside, remove the blower grid and check the condition of the exchanger. Access to the exchanger by removing the burner, the NOx catalyser, the smoke box and the smoke baffles, and clean it. Check the condition of the smoke baffles every two years, replace if necessary.
Catalyser NOx (A)	Check their condition regularly and replace them every two years. If their condition requires it, change them more often. 
Burner jet	Disassemble the burner ramp, check their condition and clean them.
Nozzles	Clean the gas injectors
Exhaust fan and venturi	Clean the extractor & the venturi, and check its condition and its rotation.
Ionization sensor and ignition electrode	Check their condition, change them if necessary.
Fan	Clean with compressed air
Flue pipe	Check the sealing. Sweep it out
Body, supply grille, louvers	Clean with a duster
Gas filter	Disassemble the dirty cartridge and clean it with compressed air
Combustion	Make sure to realize an annual combustion check

9– USER RECOMMENDATIONS

9-1 Safety rules

- It is forbidden to obstruct and/or reduce the ventilation opening of the room where the heater is installed.

- Never obstruct the fumes evacuation or the air combustion inlet.

- Never make any modifications to the adjustments which have been carried out by the qualified person.

- Never spray any water onto the gas heater , or never touch the heater with wet part of the body or/and naked feet.

- Never touch the hot parts of the heater, and/or parts in movement.

- Do not put or hang anything on the heater.

- Any intervention on the heater is forbidden before cutting-off the main power supply and gas supply connection.

- Do not modify the type of gas used, the heater settings, the safety systems or controls because it can be dangerous.

- Warn the after-sales technician when there is a change of gas, of gas pressure or a modification of the power supply voltage. In case of long period of non working, disconnect the power supply of the heater. To put back the heater into service, it is recommended to call a qualified technician. Generally speaking, for any reparation or maintenance, it must be realized by qualified and authorized person.

You are strongly recommended to take out a maintenance contract: "see with your installer".

9-2 What should be done in case of problems?

PROBLEMS	SOLUTIONS
Smell of gas	Close the external gas valve and the electrical supply then warn the maintenance technician.
The burner is on safety position	- Reset the burner from the control board - If the problem persists, contact the after-sales technician.