USER MANUAL

Soot cleaning and treatment machines

AH 200
AH 250
Clinear 250

ETC GROUP S.r.l.
Abbattitori
di fuliggine e fumi

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MANUALE D'USO E MANUTENZIONE

USE AND MAINTENANCE MANUAL

MINI 200

Cod.501020

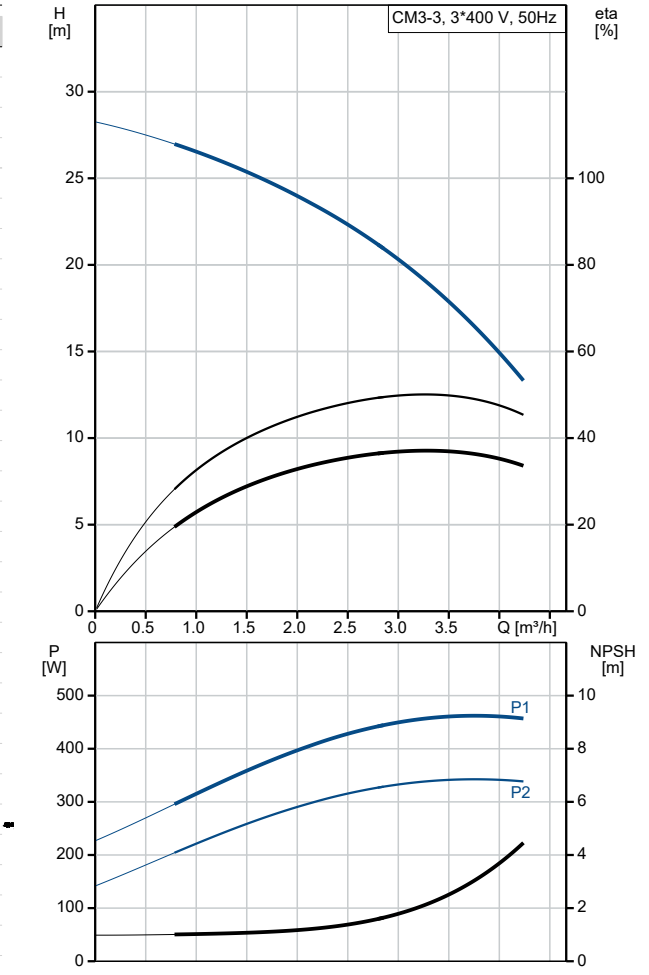
Summary

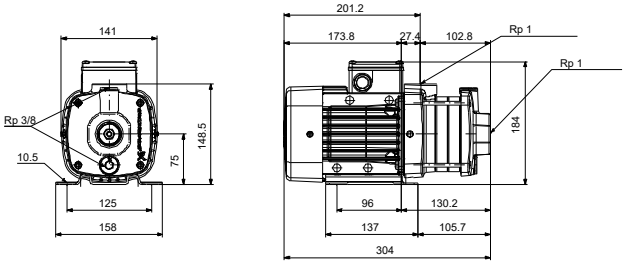
1. Technical data
2. Intended use of the machine
3. Operating principle
4. Description of the machine
5. Installation
6. Aspirator
7. operations
8. Maintenance
9. Transportation

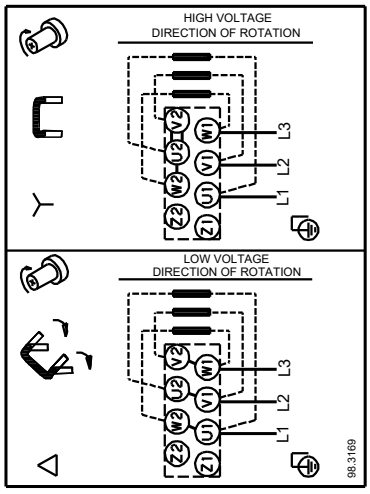
1. Technical Data of AH 200 MACHINE

MACHINE TYPE AND DESTINATION OF USE	Water soot abatement for pizza ovens, grills and stoves; good for purifying volatile odorous organic substances and soluble in water (eg roasted coffee fumes); ideal product for charcoal or wood grills max air flow 200 m^3/h
DIMENSIONS AND WEIGHTS	Case dimensions: 750 x 360 x 600 mm; Overall measurements: 750 x 610 600 mm; Empty weight: 50 kg Water content: 60 kg Operating weight: 110 kg
GENERAL CHARACTERISTICS	304 stainless steel case 1.5 mm; Input 1 x Ø200 female attacks; Exit 1 x Ø200 female attacks; top inspection; double washing array with 4 + 3 spiral nozzles.
WATER CONTENT	About 60 liters, to be changed at each work cycle; float for automatic water reloading and water management level.
PUMP TYPE	Grundfos Cm 3-3; 0.5 kw; 220 V, 3A. 2 m^3/h with 25 m h2o of prevalence
TREATMENT	95% of total suspended powders
NOISE	The A-weighted noise emission level, measured at 1m from the surface of the machine and 1.6 meters above the ground, does not exceed 70 dB (A).
ASSEMBLY	If installed outside, the machine necessarily requires an insulated roof. If installed inside it does not need a cover.

Description	Value
General information:	
Product name:	CM3-3 A-R-A-E-AQQE
Product No:	On request
EAN number:	On request
Technical:	
Rated flow:	3.1 m³/h
Rated head:	20.6 m
Impellers:	3
Primary shaft seal:	AQQE
Approvals on nameplate:	CE,WRAS,ACS,TR,EAC
Curve tolerance:	ISO9906:2012 3B
Pump version:	A
Model:	A
Materials:	
Pump housing:	Cast iron
	EN-JL1030
	ASTM 30 B
Impeller:	Stainless steel
	DIN W.-Nr. 1.4301
	AISI 304
Material code:	A
Rubber:	EPDM
Code for rubber:	E
Installation:	
Maximum ambient temperature:	55 °C
Maximum operating pressure:	10 bar
Max pressure at stated temp:	10 bar / 90 °C
Flange standard:	WHITWORTH THREAD RP
Pump inlet:	Rp 1
Pump outlet:	Rp 1
Connect code:	R
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-20 .. 90 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Motor type:	71A
Rated power - P2:	0.46 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 220-240D/380-415Y V
Service factor:	1
Rated current:	2,0-2,2/1,0-1,2 A
Starting current:	490-530 %
Rated speed:	2770-2820 rpm
Enclosure class (IEC 34-5):	IP55
Insulation class (IEC 85):	F
Motor protec:	NO
Others:	
Minimum efficiency index, MEI ≥:	0.7
Net weight:	11.3 kg
Gross weight:	13.8 kg







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MANUALE D'USO E MANUTENZIONE

USE AND MAINTENANCE MANUAL

AH 250

Cod.501012

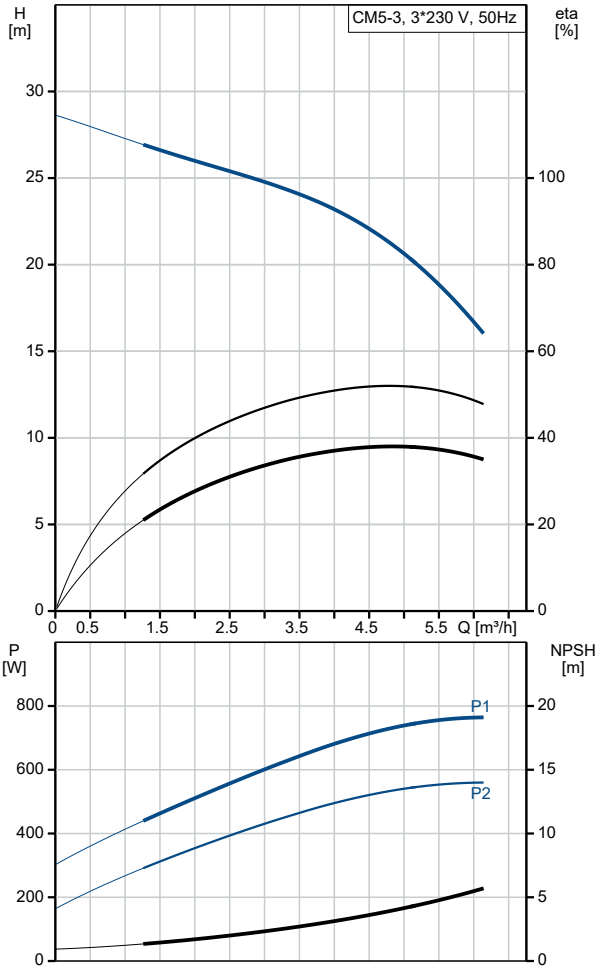
Summary

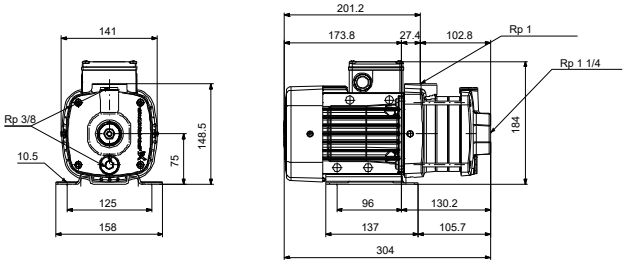
1. Technical data
2. Intended use of the machine
3. Operating principle
4. Description of the machine
5. Installation
6. Aspirator
7. operations
8. Maintenance
9. Transportation

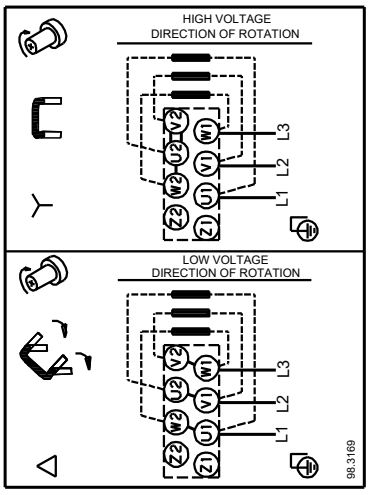
1. Technical Data of AH 250 MACHINE

MACHINE TYPE AND DESTINATION OF USE	Water soot abatement for pizza ovens, grills and stoves; good for purifying volatile odorous organic substances and soluble in water (eg roasted coffee fumes); ideal product for charcoal or wood grills max air flow 350 m^3/h
DIMENSIONS AND WEIGHTS	Case dimensions: 940 x 420 x 600 mm; Overall measurements: 940 x 670 650 mm; Empty weight: 70 kg Water content: 75 kg Operating weight: 145 kg
GENERAL CHARACTERISTICS	304 stainless steel case 1.5 mm; Input 1 x Ø250 female attacks; Exit 1 x Ø250 female attacks top inspection; double washing array with 4 + 3 spiral nozzles.
WATER CONTENT	About 75 liters, to be changed at each work cycle; float for automatic water reloading and water management level.
PUMP TYPE	Grundfos Cm 5-3; 0.5 kw; 220 V, 3A. 3.1 m^3/h with 34 m h2o of prevalence
TREATMENT	95% of total suspended powders
NOISE	The A-weighted noise emission level, measured at 1m from the surface of the machine and 1.6 meters above the ground, does not exceed 70 dB (A).
ASSEMBLY	If installed outside, the machine necessarily requires an insulated roof. If installed inside it does not need a cover.

Description	Value
General information:	
Product name:	CM5-3 A-R-A-E-AVBE
Product No:	96806817
EAN number:	5700310917641
Technical:	
Speed for pump data:	2900 rpm
Rated flow:	4.7 m³/h
Rated head:	22.8 m
Impellers:	3
Primary shaft seal:	AVBE
Approvals on nameplate:	CE,WRAS,ACS,TR,EAC
Curve tolerance:	ISO9906:2012 3B
Pump version:	A
Model:	A
Materials:	
Pump housing:	Cast iron
	EN-JL1030
	ASTM 30 B
Impeller:	Stainless steel
	DIN W.-Nr. 1.4301
	AISI 304
Material code:	A
Rubber:	EPDM
Code for rubber:	E
Installation:	
Maximum ambient temperature:	55 °C
Maximum operating pressure:	10 bar
Max pressure at stated temp:	6 bar / 90 °C
	10 bar / 40 °C
Flange standard:	WHITWORTH THREAD RP
Connect code:	R
Pump inlet:	Rp 1 1/4
Pump outlet:	Rp 1
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-20 .. 90 °C
Liquid temperature during operation:	20 °C
Density:	998.2 kg/m³
Electrical data:	
Motor type:	71B
Rated power - P2:	0.65 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 220-240D/380-415Y V
Service factor:	1
Rated current:	2,8-3,1/1,6-1,8 A
Starting current:	580-620 %
Rated speed:	2770-2820 rpm
Enclosure class (IEC 34-5):	IP55
Insulation class (IEC 85):	F
Motor protec:	NO
Others:	
Minimum efficiency index, MEI ≥:	0,7
Net weight:	11.9 kg
Gross weight:	14.4 kg







Model used on
AH 250
AH 250L

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MANUALE D'USO E MANUTENZIONE

USE AND MAINTENANCE MANUAL

CLINEAR 250 L

Cod.501017

Summary

1. Technical data
2. Intended use of the machine
3. Operating principle
4. Description of the machine
5. Installation
6. Aspirator
7. operations
8. Maintenance
9. Transportation

1. Technical Data of AH 250L MACHINE

MACHINE TYPE AND DESTINATION OF USE	Water soot abatement for pizza ovens, grills and stoves; good for purifying volatile odorous organic substances and soluble in water (eg roasted coffee fumes); ideal product for charcoal or wood grills max air flow 350 m^3/h
DIMENSIONS AND WEIGHTS	Case dimensions: 1000 x 550 x 600 mm; Overall measurements: 1100 x 700 630 mm; Empty weight: 60 kg Water content: 90 kg Operating weight: 150 kg
GENERAL CHARACTERISTICS	304 stainless steel case 1.5 mm; Input 1 x Ø250 female attacks; Exit 1 x Ø250 female attacks top inspection; double washing array with 4 + 4 spiral nozzles.
WATER CONTENT	About 90 liters, to be changed at each work cycle; float for automatic water reloading and water management level.
PUMP TYPE	Grundfos Cm 5-3; 0.5 kw; 220 V, 3A. 3.1 m^3/h with 34 m h2o of prevalence
TREATMENT	95% of total suspended powders
NOISE	The A-weighted noise emission level, measured at 1m from the surface of the machine and 1.6 meters above the ground, does not exceed 70 dB (A).
ASSEMBLY	If installed outside, the machine necessarily requires an insulated roof. If installed inside it does not need a cover.

2. Intended use of the machine

The AH200; AH 250 and Clinear 250L machines are built to eliminate carbonaceous particulate (soot) and impurities of various kinds from the combustion fumes. It's used where it is necessary to purify the exhaust fumes from non-toxic waste before introducing them into the environment; find main application in the treatment of the fumes of small charcoal grills and above all coffee roasting and other combustors with carbon residues and particulates. It can support the washing of several machines at the same time; these applications require a forced draft from a fan, located downstream of the blast chiller (chapter 6).

The described model has a double wash system. The washing water can be disposed of in settling tanks, collection tanks or sewerage network. Steam-saturated air comes out of the machine, at a temperature of about 50 degrees, free of carbon particles and suspended impurities (95% reduction of the total micro-particulate). The treatment also reduces the CO2 by 60%, for standard models only with water.

CAUTION

The machine is not designed to treat impurities or toxic fumes, corrosive or harmful to the environment; its intended use is the treatment of suspended dust and impurities, generally generated by combustion, and water-soluble organic substances.

The operating fluid can and should only be water; the use of different substances and/or additives such as salt, antifreeze, alcohol, etc. are not envisaged
Installation requires watertight 304 stainless steel ducts, with no cover elements (Chinese hats, etc.). Masonry chimneys can be corrupted by the humidity released in the operation of the blast chiller.

The blast chiller must be installed on a flat, non-slippery surface and able to withstand the weight of the operating machine and the operators/maintenance personnel involved. If the machine is placed on a mezzanine, it must be fixed to the wall and/or with chains to the ceiling, and the machine must be fixed to the mezzanine itself; Each support must be sufficiently rigid not to create or amplify oscillations.

The machine can be adapted, after consultation with the technicians of the manufacturing company, to chimneys of different diameters from the entrance-exit of the machine itself; read about this, and for every question concerning the connection with the chimney, chapter 5.

Special treatment requirements may require filters that increase the machine's power to treat odours or limit the emission of steam. Read the final part of chapter 6 in this regard.

3. Operating principle

Smoke is passed through pipes from the combustion source to the machine.
The fumes speed slows down due to the enlargement of the section, and the atomised water inside the system incorporates the impurities and knocks them down.

Another factor cleaning is given by the surface tension of the water present on the bottom, which attracts the lighter particles when the smoke current is forced to pass close to it.

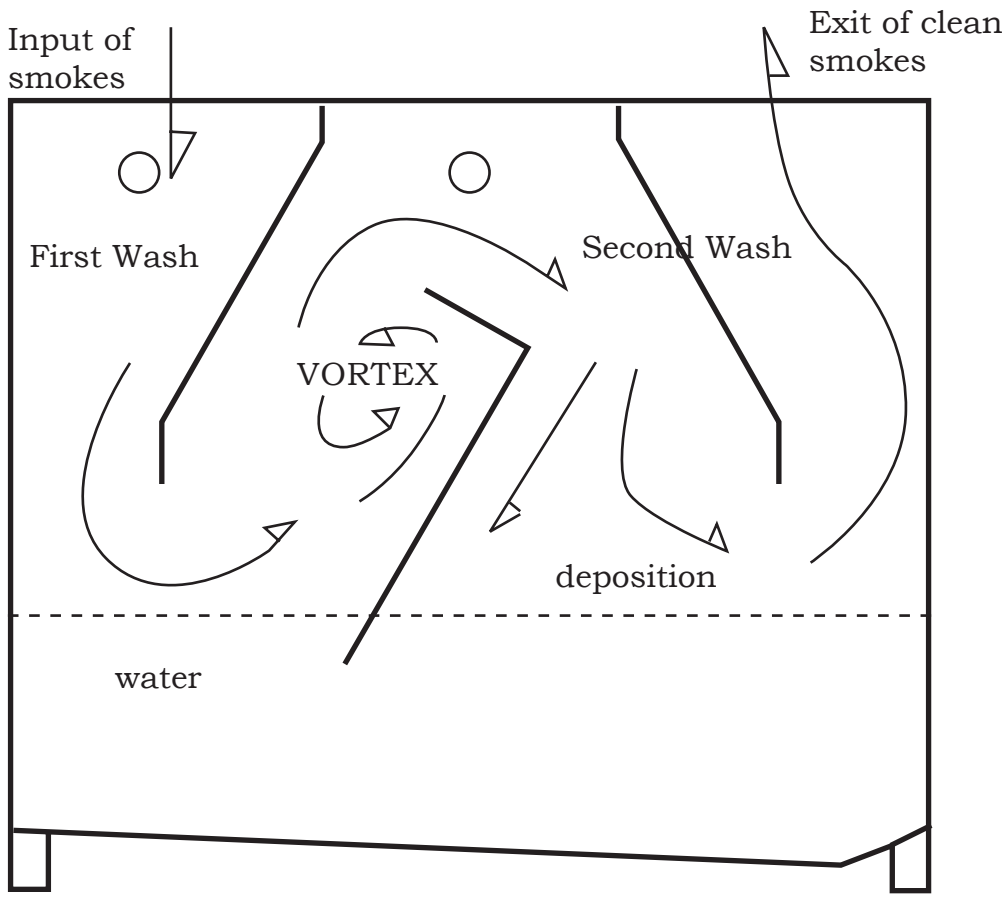
The position and shape of the internal bulkheads are designed to create vortices that help to trap the wet particles and make them conglomerate together.

The sections of the machine through which the fumes are cleaned are essentially two:
- the entrance, equipped with six nozzles;
- the machine centre, where there is another triplet of nozzles.

After the second row of nozzles, there is a section of pipes, which, once wet, represents a support surface for the lighter powders.

Thanks to the energy released in the pumping of water, the plant can count on an autonomous draft up to 200 m³/h for AH200; up to 350 m³/h for AH250 and Clinear 250L (outflow speed in the static test, 1.76 m/s for AH200 on outlet d. 200 mm; 1.98 m/s for AH250 on outlet d. 250 mm and 2.26 m/s for Clinear 250L on outlet d. 250 mm).

Internal fluid dynamics



4. Description of the machine

The plant consists of three main parts:

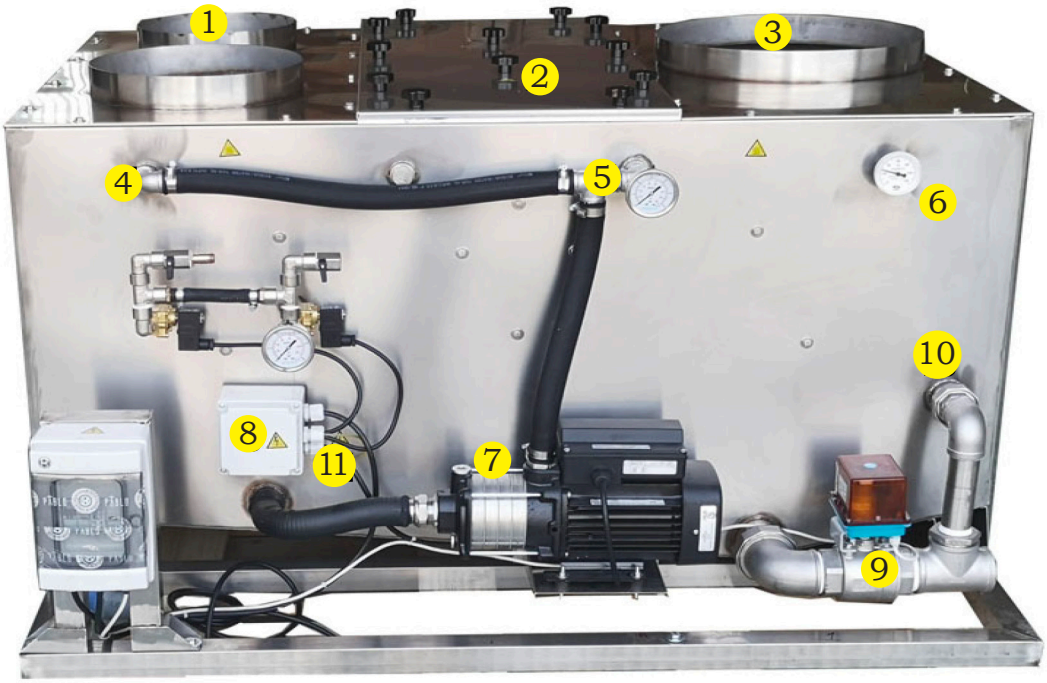
- The stainless steel casing, closed by welding, to which the inlet tube, the internal bulkheads and the flanges are fixed;
- The electric pump, the water dispensers, equipped with nozzles, and the hydraulic pipes that connect them to the pump;
- The float and solenoid valve system that regulates the supply of mains water.

There are also:
- A drain pipe with a valve, which also includes the overflow; at the customer's discretion.

The valve can be manual or remote control;
- A pressure gauge for inlet water and one for controlling the pressure generated by the pump;
- A brass bar is acting as a sacrificial anode, connected to the ground.

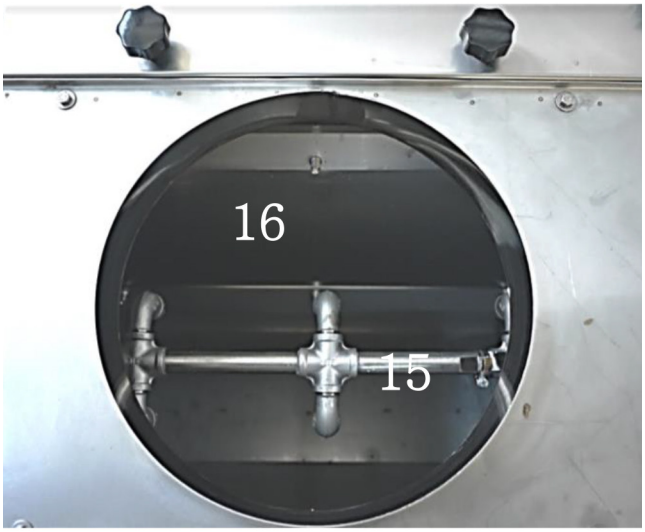
The machine parts

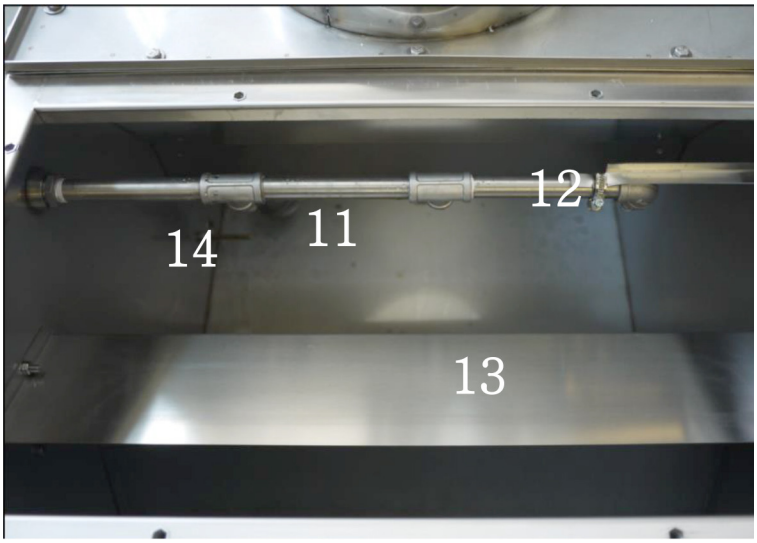
NOTE: the photo shows a right-inlet model.



1: Inlet plate (right-side inlet)
2: Inspection hatch
3: Output of smokes (right-side inlet)
4: Water pipe for the first water nozzles
5: Water pipe for the central water nozzles
6: Thermometer
7: Pump
8: Electrical box float
9: Solenoid load water
10: Overflow drain
11: first row of nozzles
12: Float ball
13: Middle bulkhead
14: second row of nozzles
15: tubes (removable)

NOTE: the five tubes present after the second wash can be removed if the draft is insufficient. Usually, they are used to increase the treatment in installations with fan, which applications on charcoal grills, large boilers or combinations of furnaces, but their removal does not represent a substantial reduction of the treatment.

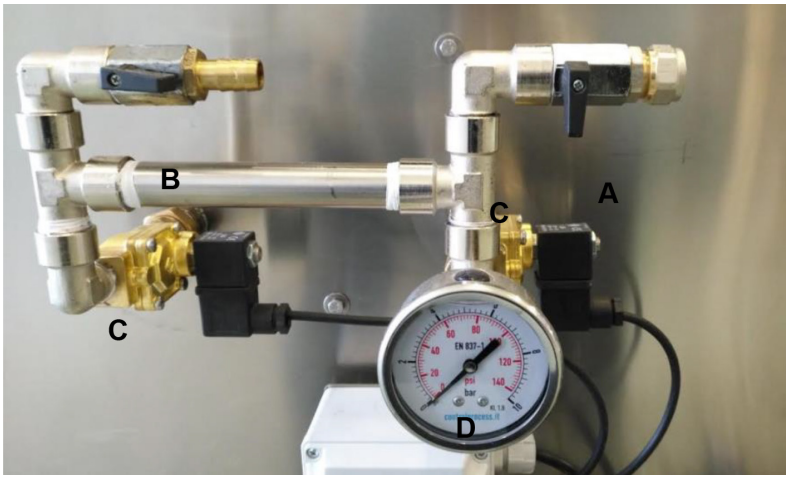




4.A Load solenoid

The smoke filter receives water from load solenoid valve (brass, with ff ½ "brand ODE attacks), which opens once it gets current. It receives current through the float, which determines the activation according to the needs of the smoke filter water.
The water is then fed inside the smoke filter in the direction of the float, to clean it at each of water reloading.

Below are shown the pieces (1/2") of the load group; the pressure gauge measuring from 0 to 10 bar and indicates the pressure in the water net: at the time of the load, it marks 0, while when the machine has reached the level, it marks the value of the water pressure.

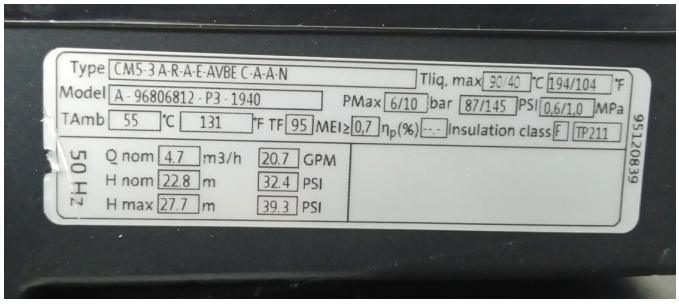


For the two ball valves to be connected to the connection multilayer pipe with the water network and the rubber tube for internal cleaning the smoke filter.

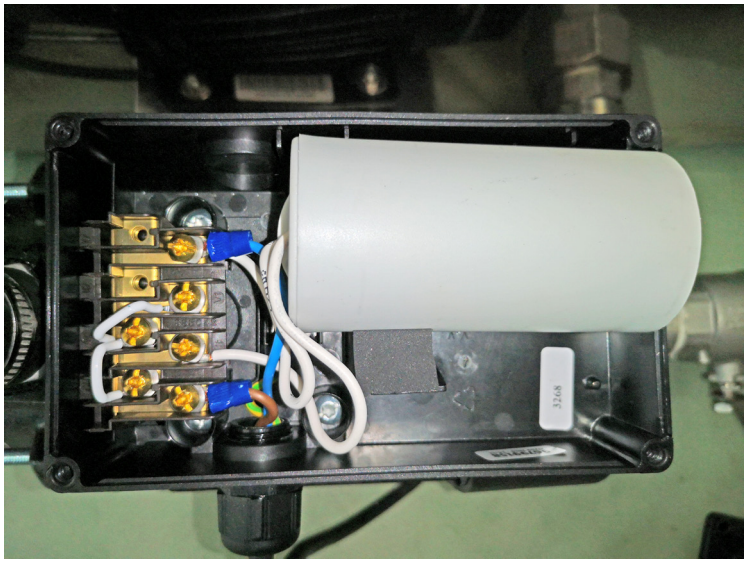
4.B Electric connection of pump

The standard pump is a Grundfos 3-3 or Grundfos 5-3 CM

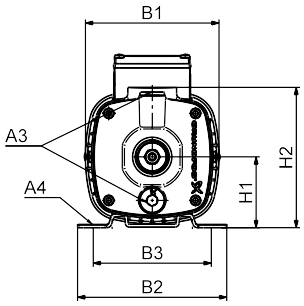
It is designed to process water, but not of high density substances, with coarse grainy suspensions or highly corrosive liquids.
It is recommended, because it always to best functions and can not become blocked, to change the water within the smoke filter bath at each work cycle, typically once a day.

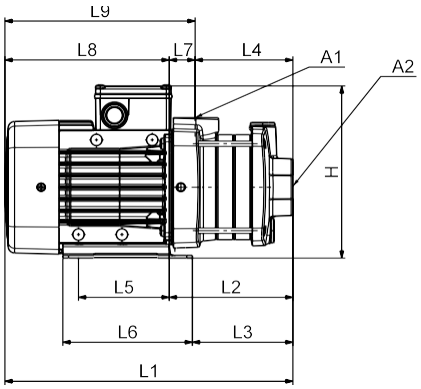


In the picture below, it shows the correct connection of the pump; it is fed to 220 v, and the connection with the float starts once you reach a minimum water level.



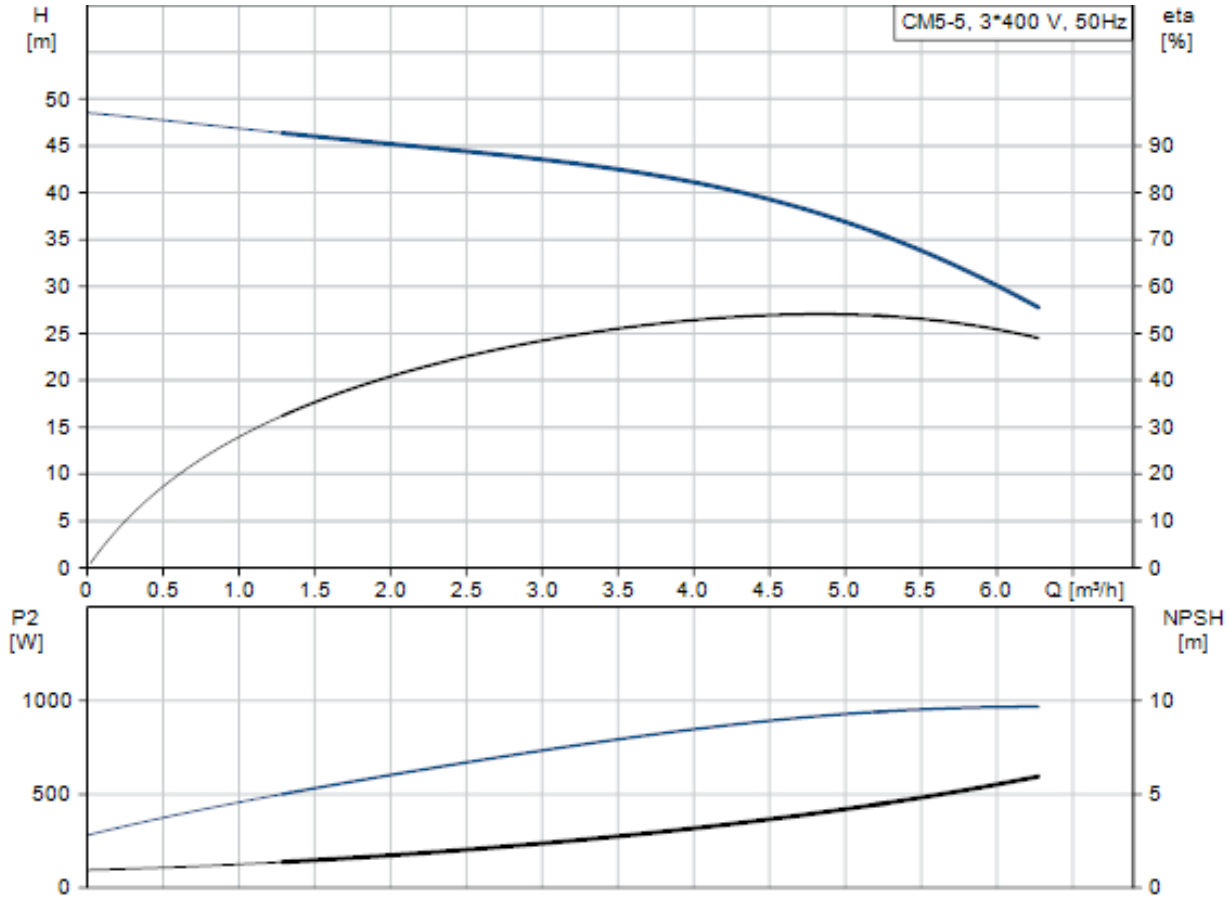
Dati tecnici pompe CM



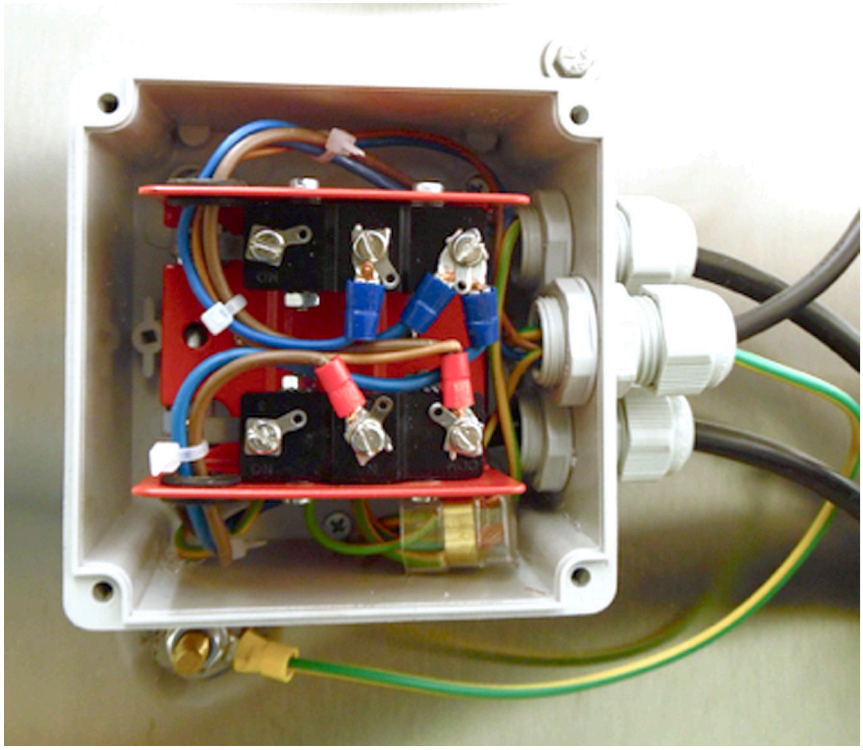


3 x 220-240 V / 380-415 V 50 Hz

			Dimensioni [mm]																		
Modello	Motore	P2[kW]	A1	A2	A3	A4	B1	B2	B3	H	H1	H2	L1	L2	L3	L4	L5	L6	L7	L8	L9
CM 5-2	71	0.46	1 "	1 1/4 "	3/8 "	10	142	158	125	184	75	149	288	114	89	86	96	137	28	174	202
CM 5-3	71	0.65	1 "	1 1/4 "	3/8 "	10	142	158	125	184	75	149	306	132	107	104	96	137	28	174	202
CM 5-4	80	0.84	1 "	1 1/4 "	3/8 "	10	142	158	125	184	75	149	364	150	125	122	96	137	28	214	242
CM 5-5	80	1.20	1 "	1 1/4 "	3/8 "	10	142	158	125	184	75	149	382	168	143	140	96	137	28	214	242
CM 5-6	80	1.20	1 "	1 1/4 "	3/8 "	10	142	158	125	184	75	149	400	186	161	158	96	137	28	214	242
CM 5-7	90	1.58	1 "	1 1/4 "	3/8 "	10	178	178	140	200	90	201	469	245	230	163	125	155	82	224	306
CM 5-8	90	1.58	1 "	1 1/4 "	3/8 "	10	178	178	140	200	90	201	487	263	248	181	125	155	82	224	306



4.C Electric connecions of float;



Blue top center; neutral loading solenoid valve (5).
Cables blue side right at the top; neutral pump and power
Brown bottom center: stage pump
Brown wires in the lower right: phase power supply and the load solenoid valve.

The float determines the ignition of the pump once reached a minimum water level, and blocks the flow of mains water once the level reaches the maximum set. You can intervene on the setting of the float with the two screws on the side.

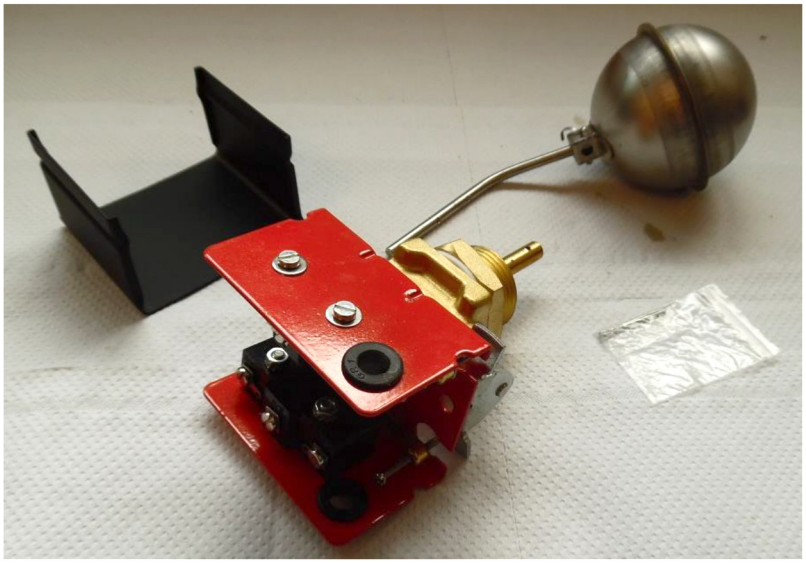
CAUTION

The calibration of the float is such as to optimize the operation of the machine, while guaranteeing sufficient water reserve. Do not intervene on the setting without consulting the manufacturer.

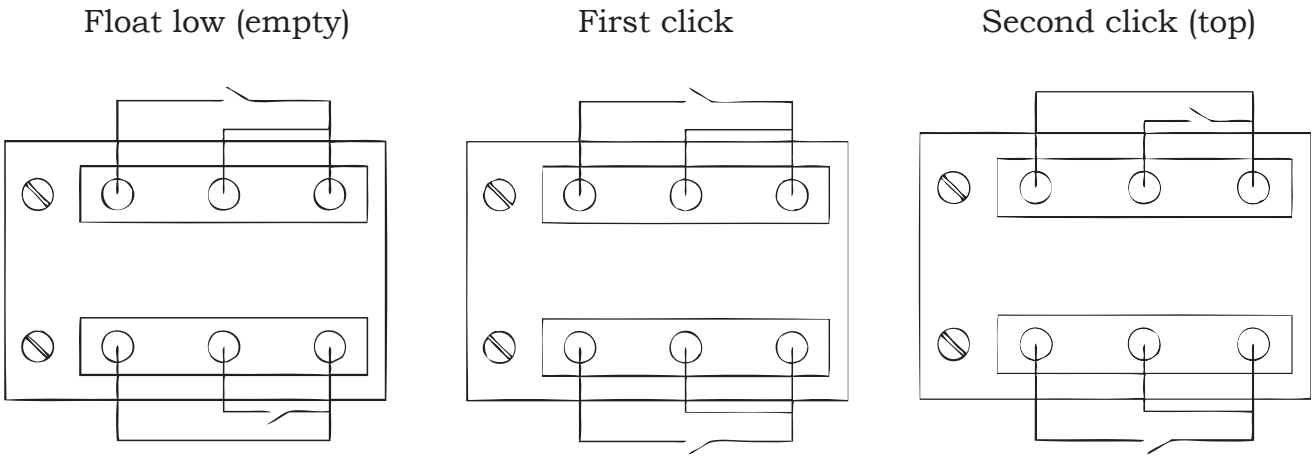
4.D Electric float description

Fluid	water
Build	brass body stainless steel ball Bar: PTFE Frame: Steel Contacts: Cu, Ag.
Electrics data	15A, 220V Wire to use: 6.3x0.8
Life	Electric parts: 50.000 impulses Mechanical parts: 10.000.000 cycles
Temperature max.	220° c
Weight	0.77 kg
Settings	90,110,130mm arm lenght

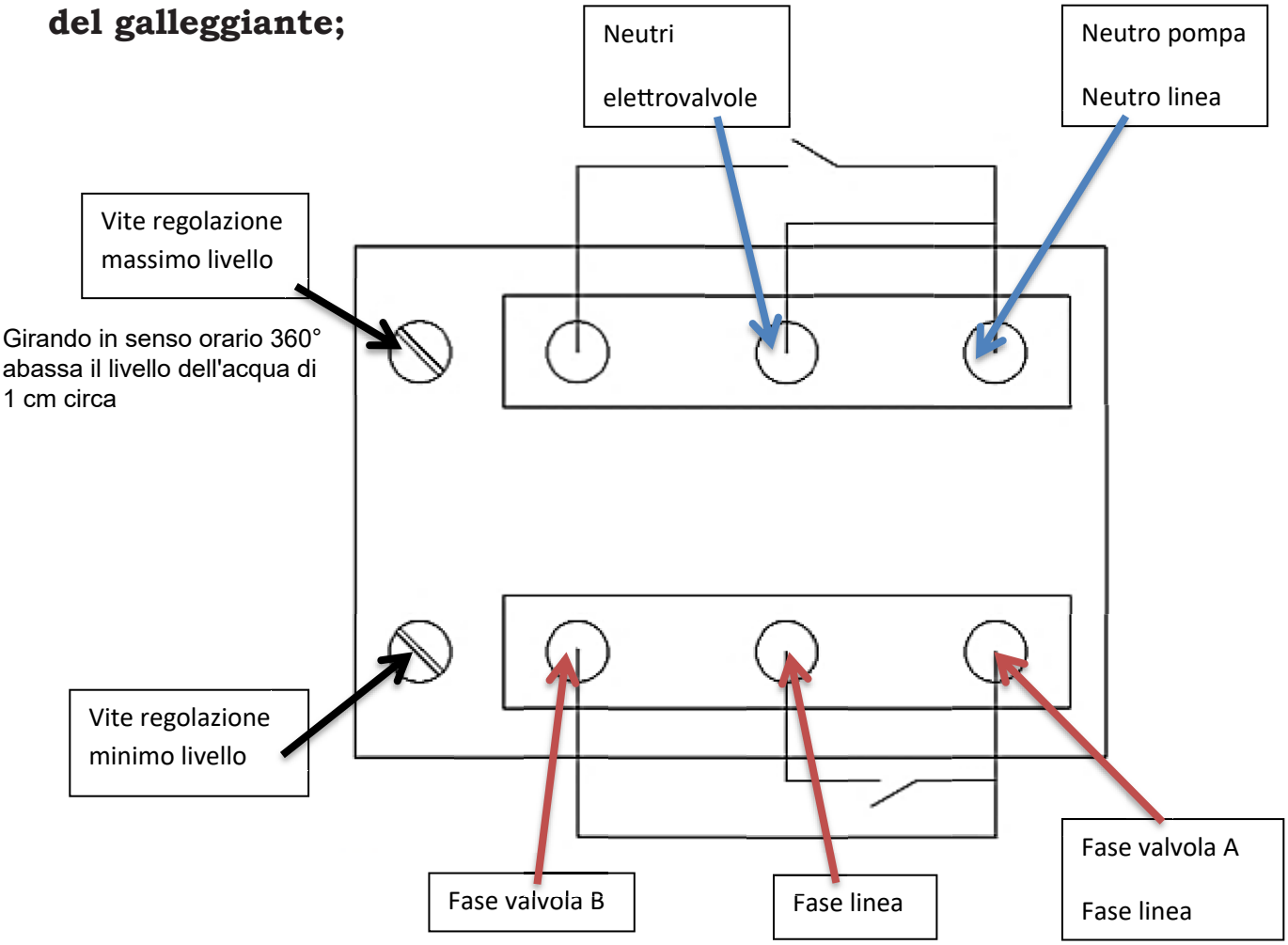
Screw connection 1”
possible adjustment with a displacement of two small screws inside the base, which adjusts the position of the instant of contact.



4.E Float contacts



Collegamento elettrico del galleggiante;



NOTE: the action of the float is of vital importance for the operation of machinery. Although it is served as a self-cleaning system, it is recommended to check the status and freedom of movement to every weekly cleaning.

4.F Diagram of the remote-controlled drain

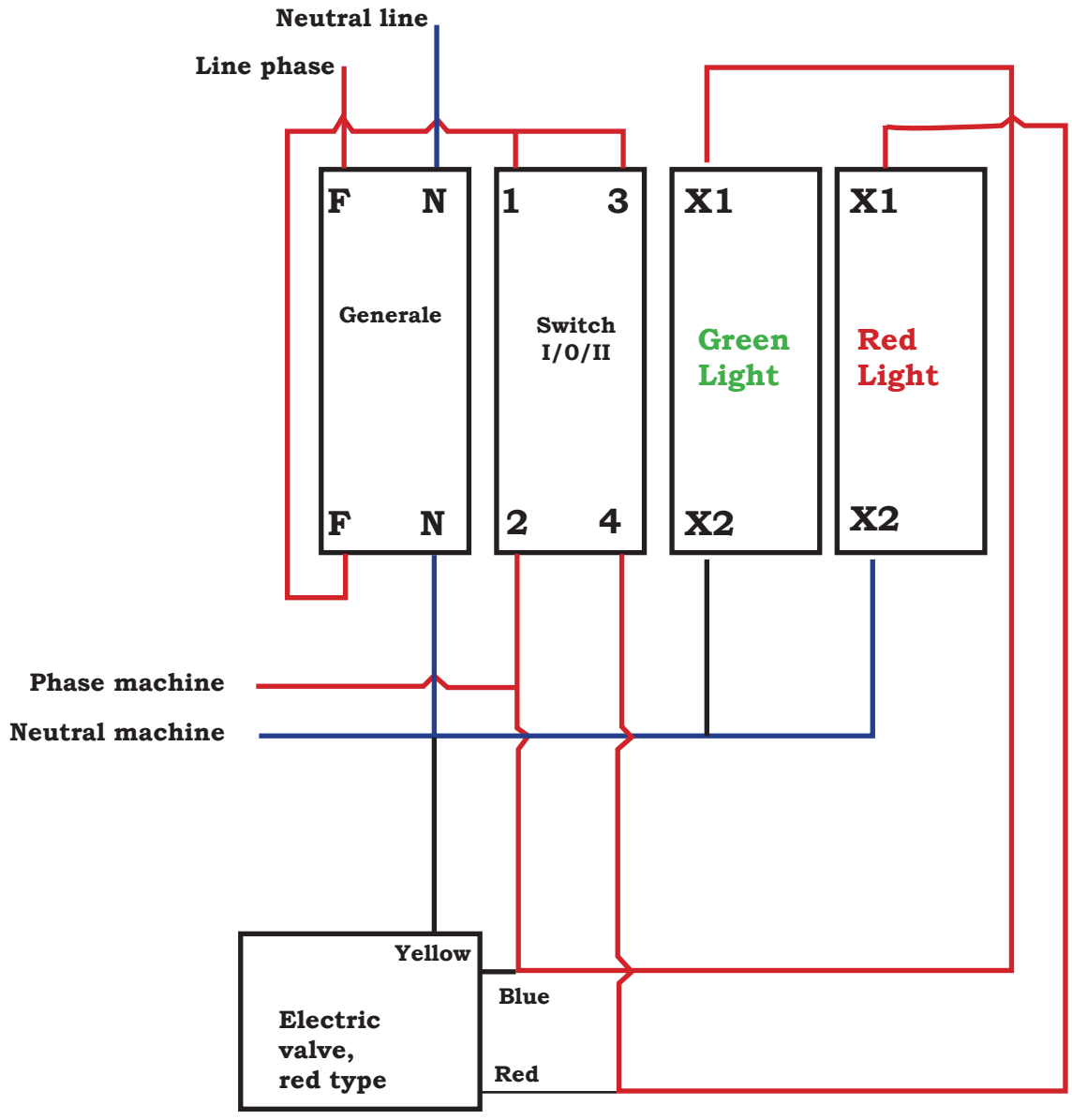
It shows the wiring diagram of this circuit in the control box, for models equipped with motorized valve remote-controlled drain.

OPERATION

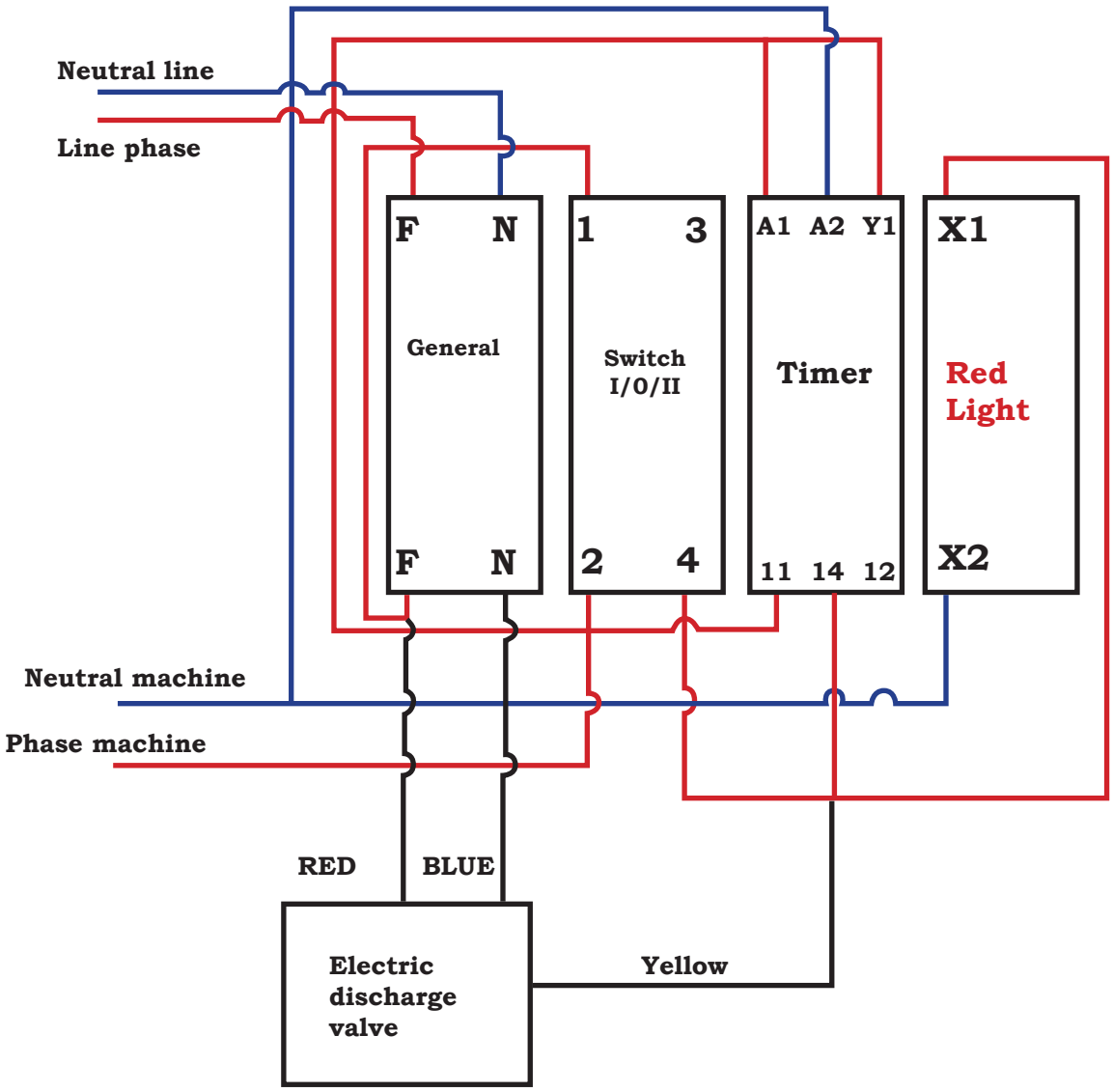
Position I: closed discharge valve, the machine in operation.
Fume smoke filters, green light.
II position: solenoid open drain, the machine switched off. Water discharge, red light.

CAUTION
To install and connect the facility, it must be used by qualified personnel. There is a danger of electrocution.
Observe the color scheme and the connections to the machine.
The dotted lines indicate that the power of the picture goes to the machine.
If in doubt in the link, contact the manufacturer.
If in doubt in the link, please contact the manufacturer.

ELECTRICAL DIAGRAM WITHOUT TIMER



ELECTRICAL DIAGRAM WITH TIMER



NOTE: can be mounted other types of the electrical panel, e.g. fitted with timer for continuous replacement of the water, that ensure operability of the machine 24 h.

NOTE: the use of remote-controlled drains, or automation with timer, does not make the self-cleaning machine. It must ensure that the water is unloaded and reciprocated, and at least once a week to provide for an accurate indoor cleaning machine.

5. Installation

The machine should be installed in a location covered and protected from the weather: in the case of outdoor installation, is supplied by the manufacturer in a metal cover.

The environment in which the machine operates must remain between 5 and 50 degrees of temperature. They must be guaranteed conditions such that the water to freeze or exceed 80 degrees.

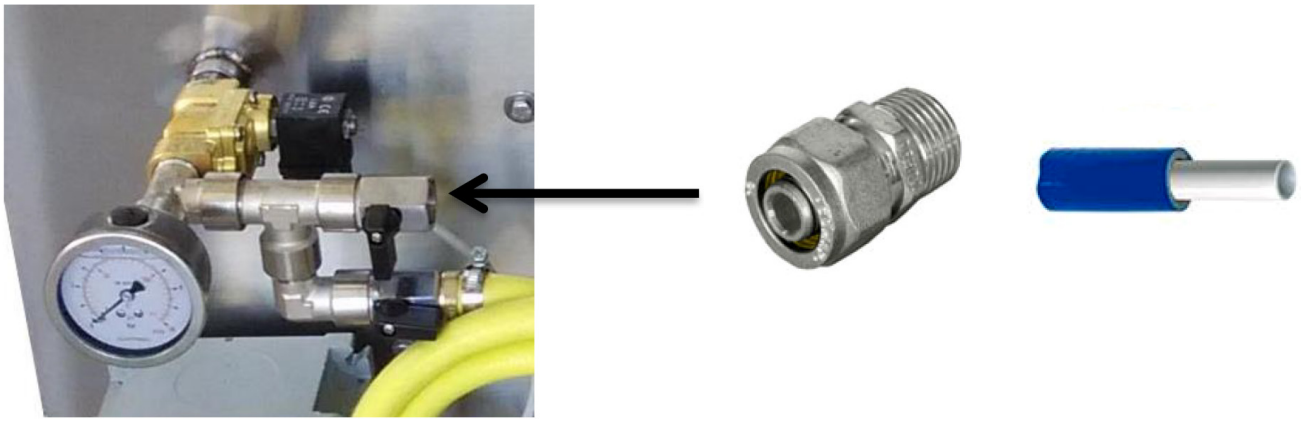
The location of the system should not take place in areas with the presence of dust atmosphere, potentially harmful, toxic or explosive.

The installation of the machine requires:

- a flat surface and not slippery, in degrees to bear the full weight of the machine and operator; for machines placed on a mezzanine, this must be fixed to the wall, and the machine must be fixed to mezzanine; each accommodation must be reached by the operators.
- a electrical connection of 230 V;
- a attack water network;
- one drains.
- attach of pipe input (from the oven) and out (the chimney).

PLUMBING Connect with rigid pipe attack free at point 10 (group input with solenoid valve) to the water supply. WARNING: We recommend using pipe fittings such as those represented in the images, and doing the job by a competent plumber.

Make sure that the system pressure does not exceed 8 bar.



SEWER CONNECTION: Connect permanently and so the pond to the existing sewer system, using tube diameters between 40 and 68mm. The sewer connection must be made through a siphon, to avoid the release of fumes from the exhaust of the overflow.

WARNING:

If particular local laws require it, you may have to build a settling tank. Usually, you can download directly into the sewer, but you should inquire ASL of competence. It 'should be used in PVC plumbing pipes such as those shown in FIG.

ELECTRICITY:

Connect the machine to the power supply 230 V, and the ground, as CE regulations.
In the case of a machine with an exhaust solenoid valve, follow the following schematic diagram for the installation, taking into account the colours of the wires of the solenoid.

If the machine is fitted with a vacuum cleaner, it is planned a three-phase socket. Through the inverter supplied with the vacuum cleaner will ensure the control of the speed of the motor itself.

The inverter is supplied with the directions of the connections to be made to the engine, for correct rotation. Follow the indications expressed by the colour of the wires.

CAUTION:

There are residual risks involved in working with the electricity near water flow and heat sources. To avoid the possibility of leaks, use extreme care in the perfection of the connections, not to leave copper discovered and do not run cables next to sources of heat. Should be installed to all units (inverter and automated valve) in locations not affected by heat, dirt and water. Use purpose electrical boxes closed.

The electrical motor, the inverter and the solenoid valve must be carried out by a competent electrician.

CONNECTION TO THE CHIMNEY

The connection must be made using stainless steel tubes and watertight; It is not allowed to use the machine on reeds unsealed or masonry, as the humidity output would corrupt the masonry itself.
Below are shown the tubes suitable for the purpose.

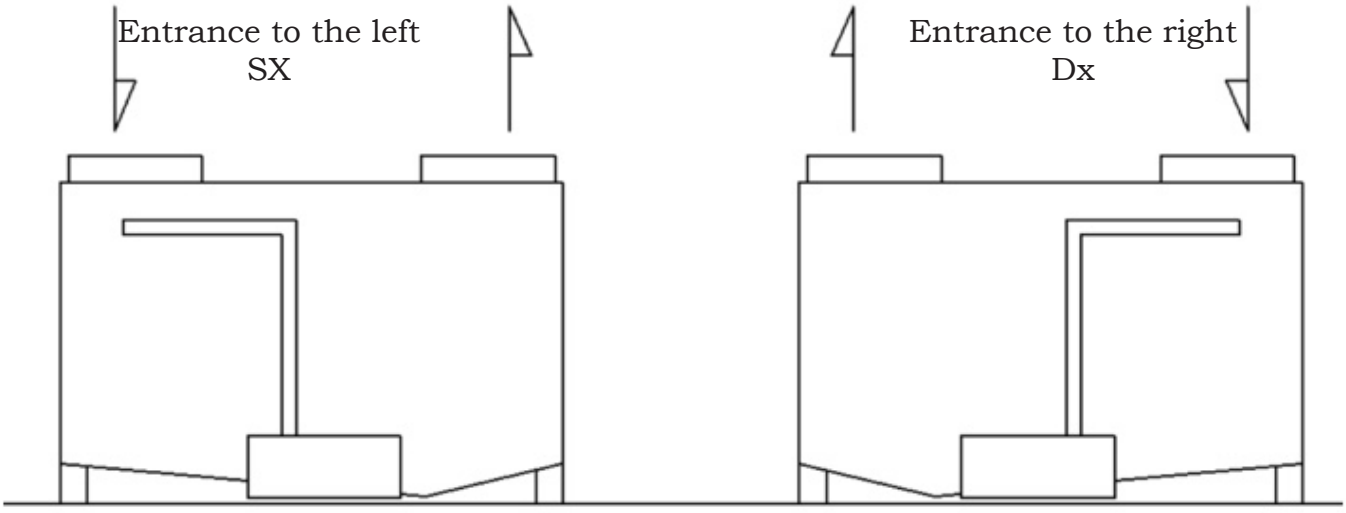
Downstream of the machine the pipes must be installed with the female side higher, to avoid condensate deposits in the joints.

It should be carefully avoided any sudden or descending curve that can trap moisture and should be kept a minimum upward angle of 5 degrees.

At the top of the chimney must not be put Chinese hats, hats, wind or wind, to avoid creating barriers to the dispersal of the condensate. Allowed only conical terminal

5.A Samples of installation

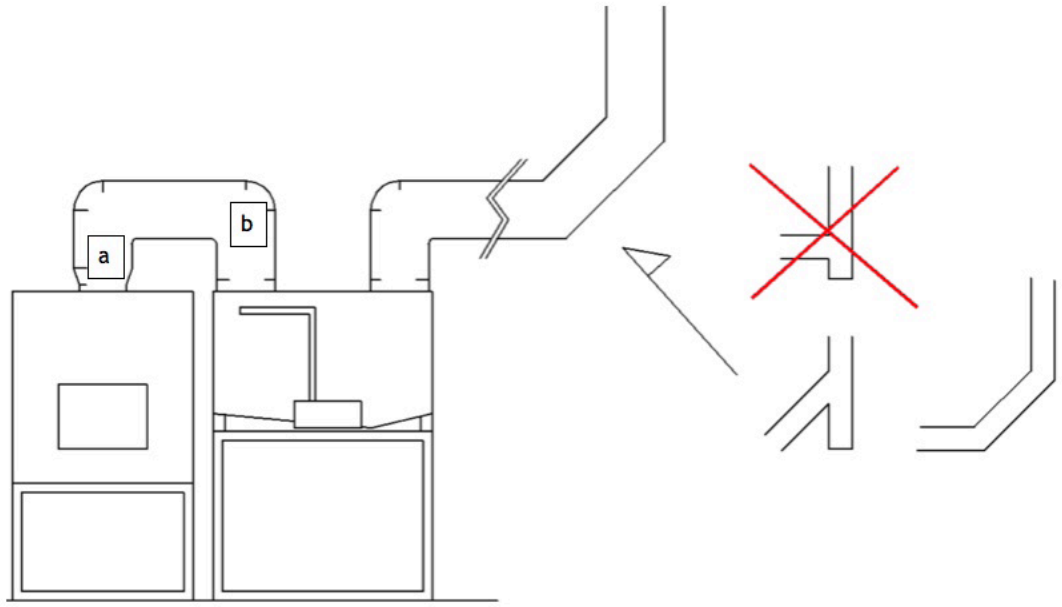
Preliminarily, it should be made to the smoke filter chosen because of its use and its configuration side. It is noted in the figure below as these machines can have the input side to the right or left, according to the assembly carried out.
With an exchange of graphical data and planimetric local and system, the choice will be made in consultation with the manufacturer.



This step is essential to facilitate the implementation and minimize the number of curves necessary; as will be seen, this is of fundamental importance for the plant draft.
Consider in this regard as follows:
1) highest number of curves = less suction;
2) greater horizontal stretch = less suction;
3) Small diameter pipes = less suction;
4) Poor chimney height = less suction.

Although the blast can count on a limited self-suction, it can not compensate for an installation with a lot of curves or a long narrow chimney.
It is recommended for applications on pizza ovens, use a d. 250 anywhere you can.
For the same reason, the folding hoses are to be avoided, which often create a more convoluted result of rigid ones; in addition, they are often corrugated inside, which increases the resistance and creates obstacles to the flow.

It shows a possible setup with smoke filter connected with a connection to the chimney.
The chimney may have a condensate drain; in the case of a direct connection, however, the condensate is discharged into the smoke filter.



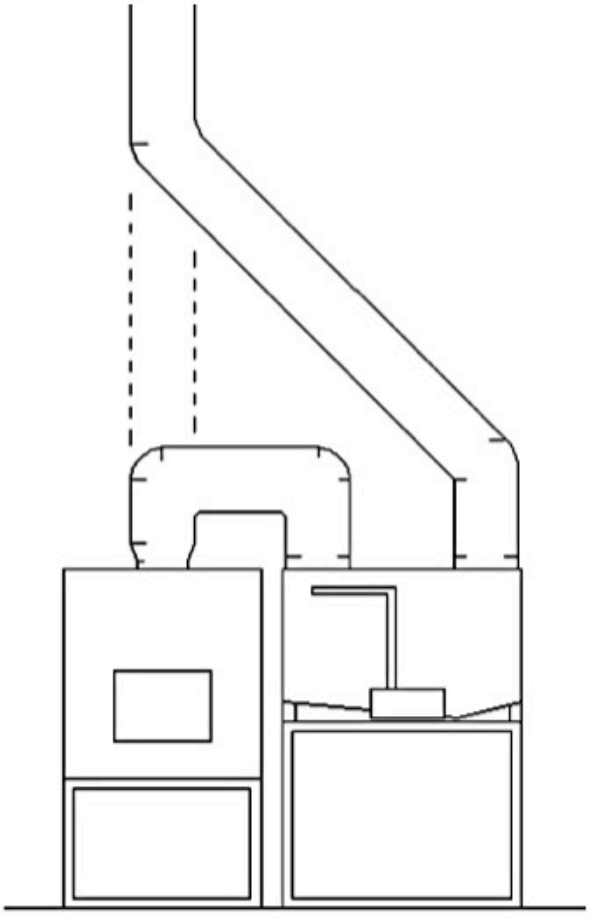
Usually, the connection to the barrel does not require that it is kept a drain condensate, as it can collect the same in the blast.
Also, the connection with the vertical section should NOT be made with a T-fitting, but with a Y, to limit the resistance to the passage of smoke;
This especially if the smoke filter has to be, for various reasons, served by a fan.
If the oven has a smaller diameter than the connection to the smoke filter (e.g. 200 against 250), it is better to immediately enlarge the diameter with a funnel-processing (a) and use of large diameter curves, to minimise the resistance.

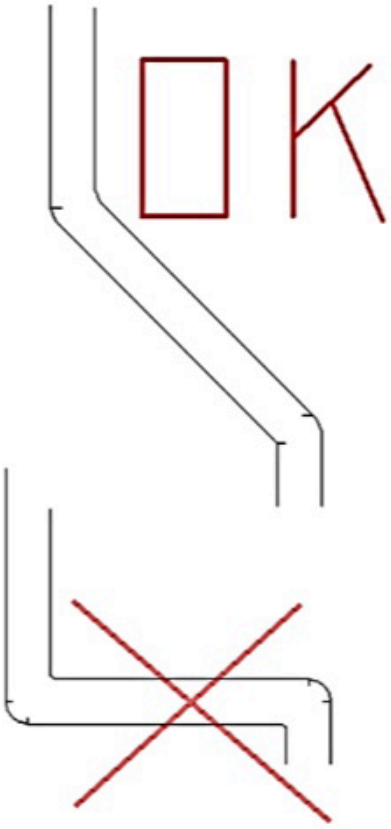
It is also known as the machine is raised, to minimise the stretch of flue descent to the blast chiller input (b).

A downhill section offers a remarkable resistance since the smoke naturally tends to go high.

in the picture: a funnel-connection

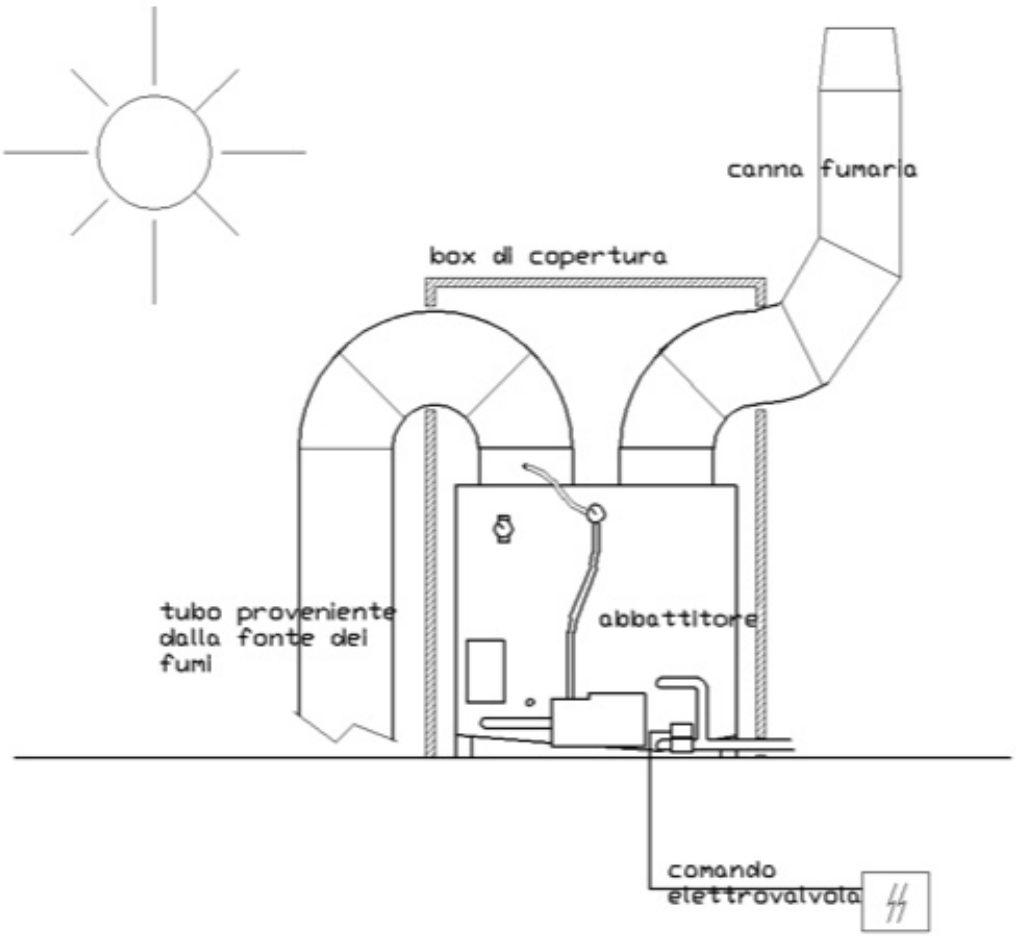
The figure below suggests the case of having to intercept a chimney which, from the oven, go directly to vertically roof. In this case the connection should be made going up with the more vertical slope possible, without traits to S 90 + 90 degrees; is used in the figure are curves of 45 degrees, while leaving about ½ of vertical meter in the output from shock, and still using the 250mm diameter.
Again, rather than meandering glue the chimney, it is advisable to make a suitable hole in the ceiling.





It 'below shows a solution with a smoke filter on the terrace, covered with a rain shelter, and served for unloading from a remote control.
Usually, this solution is not optimal, since it does not maintain clean the flue, and generates a significant emission of steam; the ideal placement of the machine is immediately after the combustor.
In the following image, an installation similar but in an outdoor location, with a box cover and remote control of water exchange.

The external setup, make sure that in the protective box temperatures drop below 5 degrees and is not greater than 80. In the case, contact the manufacturer.

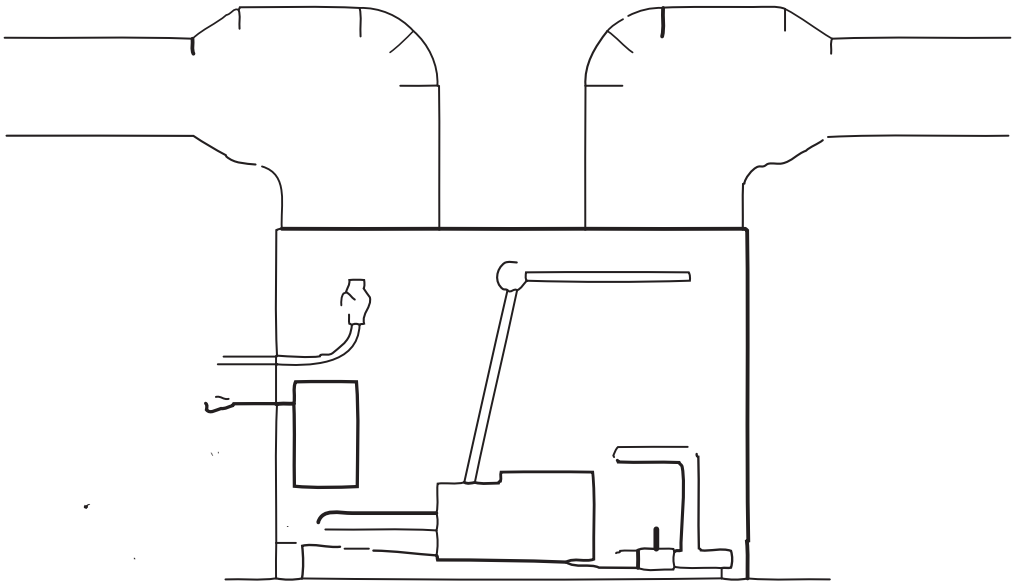


Note how in the drawing is provided for a wind hat or Chinese at the top of the chimney, but a conical hat. This is to facilitate the evacuation of the steam. If you issue the fall of leaves or material inside the chimney, you can use a 'slice of salami' terminal, provided of the net on the inclined side.

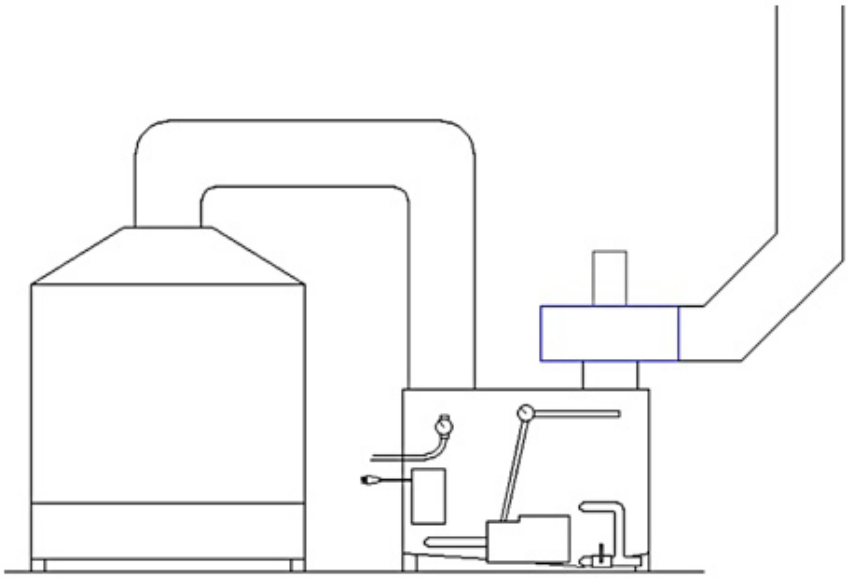
Conic hat and inclined-net hat

The following figure shows a smoke filter installed on a horizontal section of the flue (the oven towards the vertical). Note how, also, in this case, the descending portion is limited only to the input curve. This result is obtained by placing the smoke filter on a support structure, as in the picture.

If the flue already present has a smaller diameter than the smoke filter, the connection curves to it must nevertheless be made with the same diameter of the smoke filter attacks, using their upstream of funnel elements.



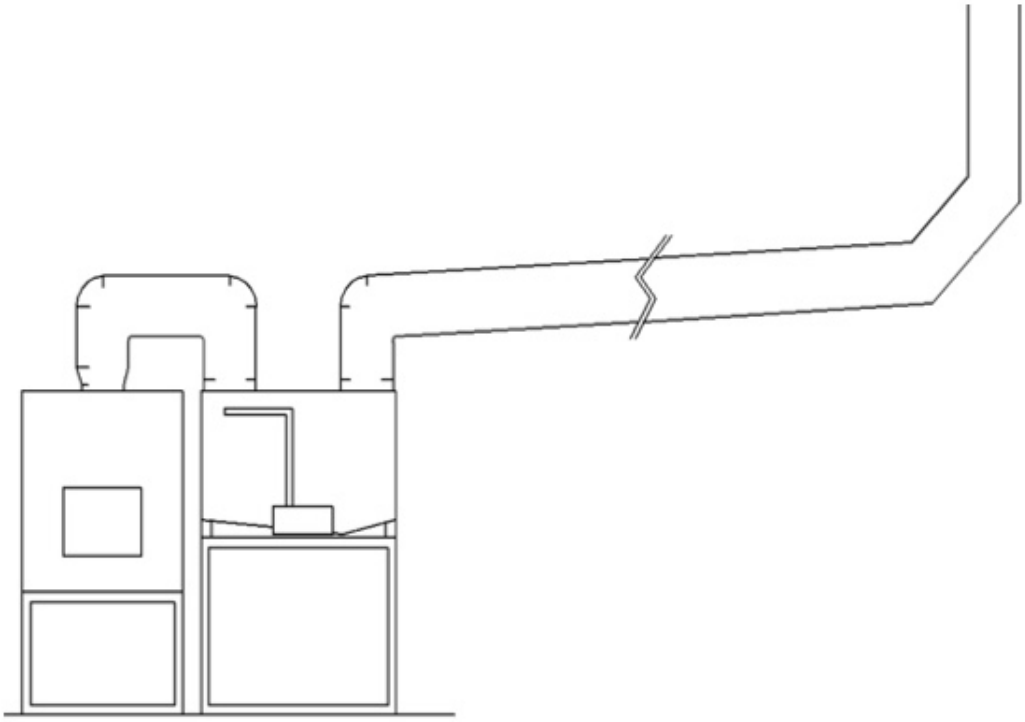
Installations of large combustors or narrow chimneys require a vacuum cleaner. In this case that there is not it is not strictly necessary we descenders, but it is always desirable that they are not exaggerated, and that there are no sections with an “S” or tortuous particularly along the way of the pipe.



In any case, to prevent load losses, it is appropriate not to use too many curves in plant construction. In any case, use curves by 90 degrees only where strictly necessary.

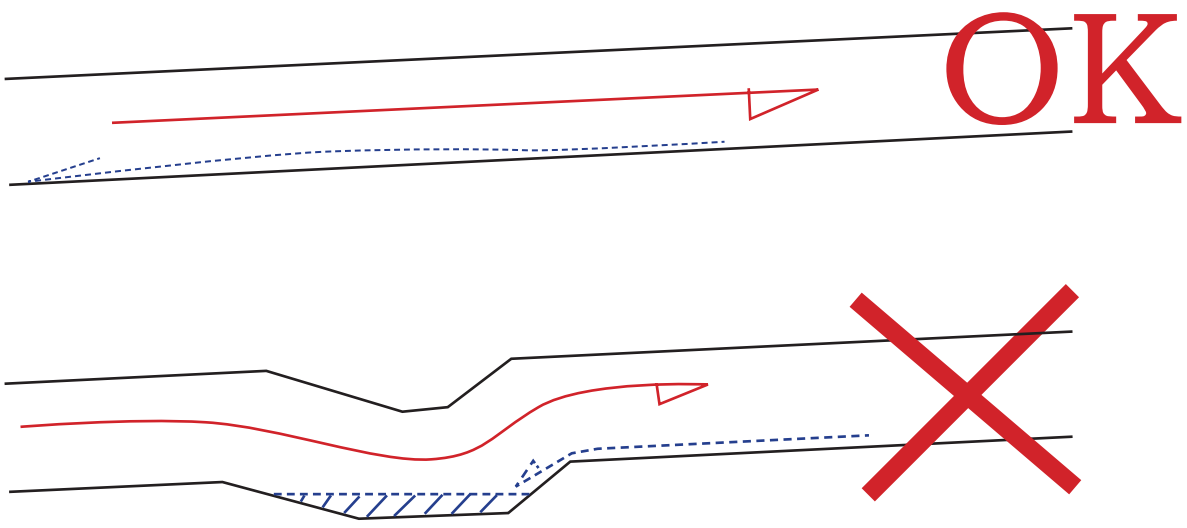
If the installation should necessarily provide for the adoption of more than 3-4 bends, or the chimney is of small diameter, contact the manufacturer.

The section of the horizontal flue must be maintained with a slight slope to climb.



They should be avoided or downhill sections that form 'wells'; condensation that naturally creates in the ducts, must be able to go down to the smoke filter or the condensate discharge.

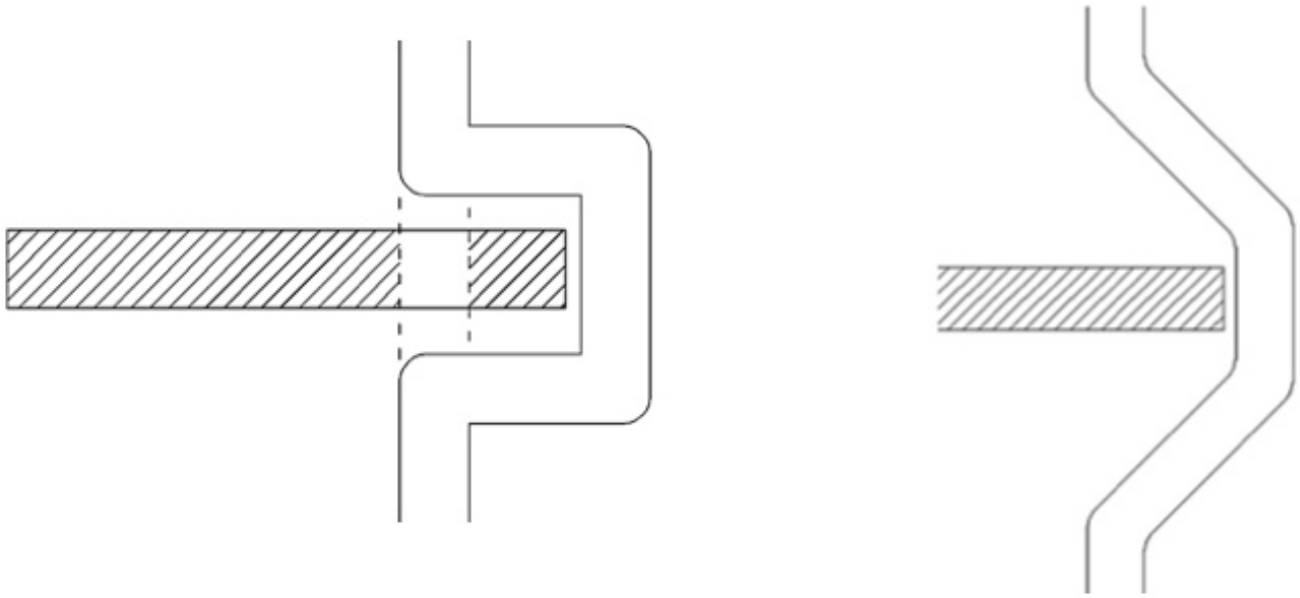
Place a downhill section would create a condensate collection area, resulting in a possible reduction in dripping and useful part of the flue. Furthermore, as already said, a downhill stretch is harmful to draw of the rod.



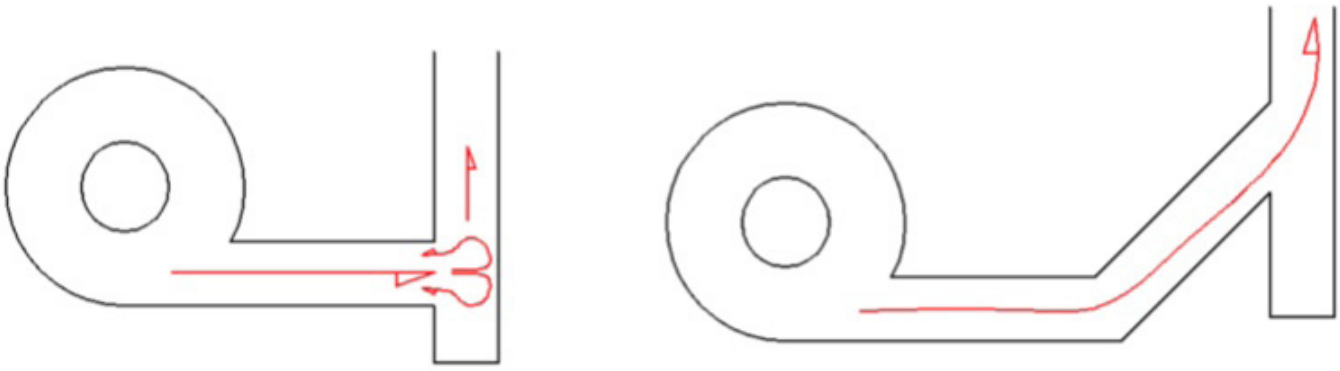
This error can be done, for example, trying to work around a ceiling obstacle; We aim to keep instead of the chimney as straight as possible, and always uphill.

A corollary of the above: physics involved in the draft of the chimney requires absolutely avoid contacts free of winding; in the figure below it assumes a double “S” section to work around a fixed obstacle: similar traits can challenge even a fan, if it works in thrust (ie, if it is installed upstream of the winding stretch) or has low power.

Better will pierce the obstacle (eg. Wall), or at least use curves by 45 or 30 degrees and not more than 90 (e.g. To circumvent a cornice or a support column).



Similarly, a trait T may create difficulties draw, also on an installation with fan, because the inertia of the airflow can create a sort of ‘return wave’ that increases in intensity as the speed increases of fan; It is, therefore, to use connections Y or direct curves 45 + 45 degrees, as already explained previously.



This issue poses a much lesser extent if the fan is located after the connection (suction fan); However, a stretch “Y” is always preferable.

Similarly, in the event of severe restrictions, they must be done on straight stretches, and the section change must take place gradually.

A too sudden section change requires a considerable acceleration of the flow, with consequent energy dissipation (subtracted from the draft) or obstacle for a fan placed upstream of the bottleneck (similar to the T and the S sections). Even worse, if the shrinkage occurs near a curve, which already in itself represents, as already seen, an obstacle.

These conditions are greatly aggravated as air flows increase.
It will be better, therefore, to adopt very long section changes (funnels) (in some cases it is better to make custom-made pieces), or to adopt a gradual change, which develops in several meters, using more funnel reductions, more and more small, interspersed with straight sections.

This will give the airflow more time to increase speed; the lower acceleration will generate less energy dissipation and will allow to keep the draft, or to exploit and/or hinder the fanless.

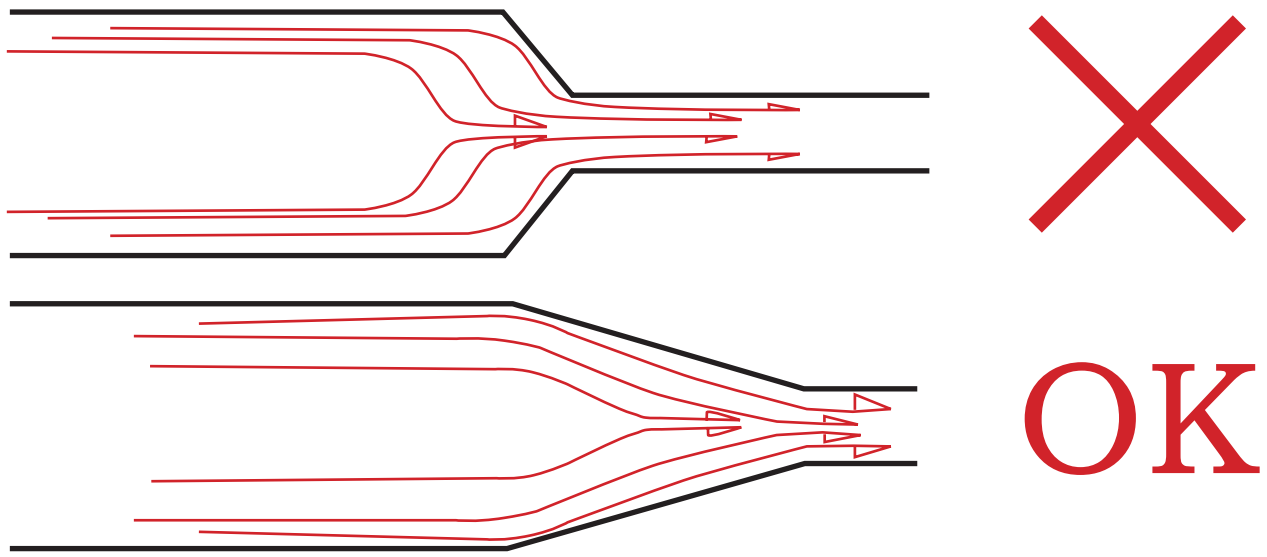
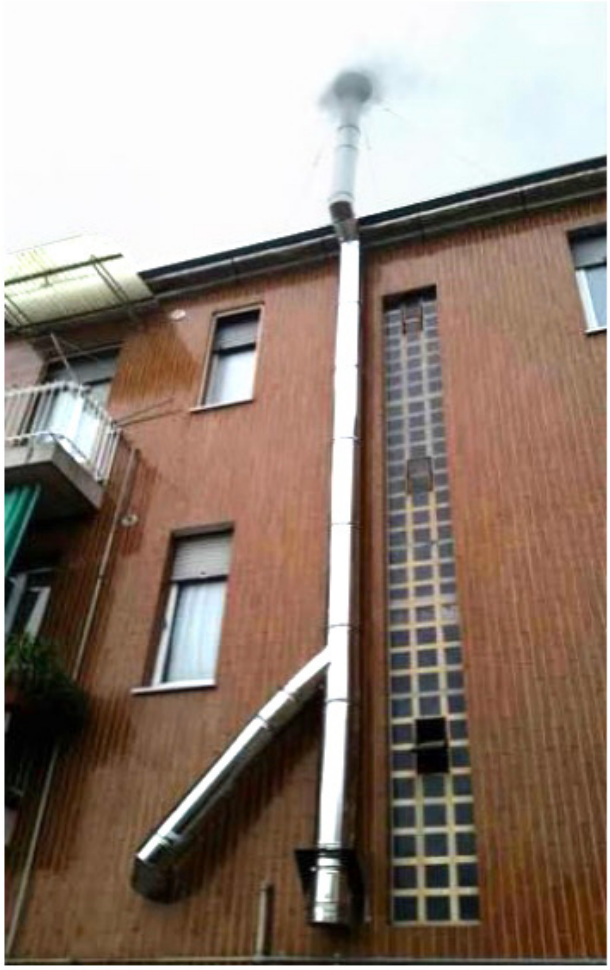


Figure: Flue pipe with Y-connection and bypassing the cornice with 45 degrees.



SAFETY NOTES

In principle, in the smoke filter downstream there are no problems of fire, once the same smoke filter is in operation; However, in the stretch from the combustor to the machine, you need to use double-walled tubes.
The stretch between the combustor and the blast is subject to get dirty and should be periodically cleaned to avoid draft losses or residual risk of fire. It is therefore recommended to install the nearest car to the combustor can.
The installation of a flue or a section of it isn't a trivial task and should be performed by trained and equipped personnel, able to run it without risk and then release a labour certification to perfection.
The work to make the work must be performed by qualified and experienced personnel. Any doubts should be clarified with a direct interview with the technicians of the manufacturer.
Some Authority of Control may require, for the disposal of wastewater the smoke filter water, a settling tank. Inquire at the outset. In any case, to avoid that a little 'smoke can traverse the exhaust pipes and exit if not appropriate (eg. Sinks) is recommended to connect with a sudden U (siphon). To execute the work of a plumber. And 'it presents a residual risk of electric shock due to the presence of water and electricity in the same apparatus. Cure grounding and NOT perform any action without rhyme unplugging the power to the machine.
The machine is guaranteed for the intended use indicated by the manufacturer, and for installation compatible with its characteristics. If the need arises to change anything in the installation or in the volume of gases to be treated, consult the manufacturer before acting.

The hydraulic systems, electrical and electro is designed specifically for the intended use of the machine; any change would affect the performance, reliability and security that are guaranteed to deliver.
In this case, the manufacturer declines any responsibility for damage or malfunction.

The car reaches temperatures of 50-60 degrees once it is operational. Be careful not to burn yourself.
Do not enter with the head in the blast; the sooty debris inside exhibit toxicity.
Be careful when cleaning inside: use gloves and protect skin and eyes. In addition, the plates can have sharp edges, and the nozzles are ledges where you can injure yourself.

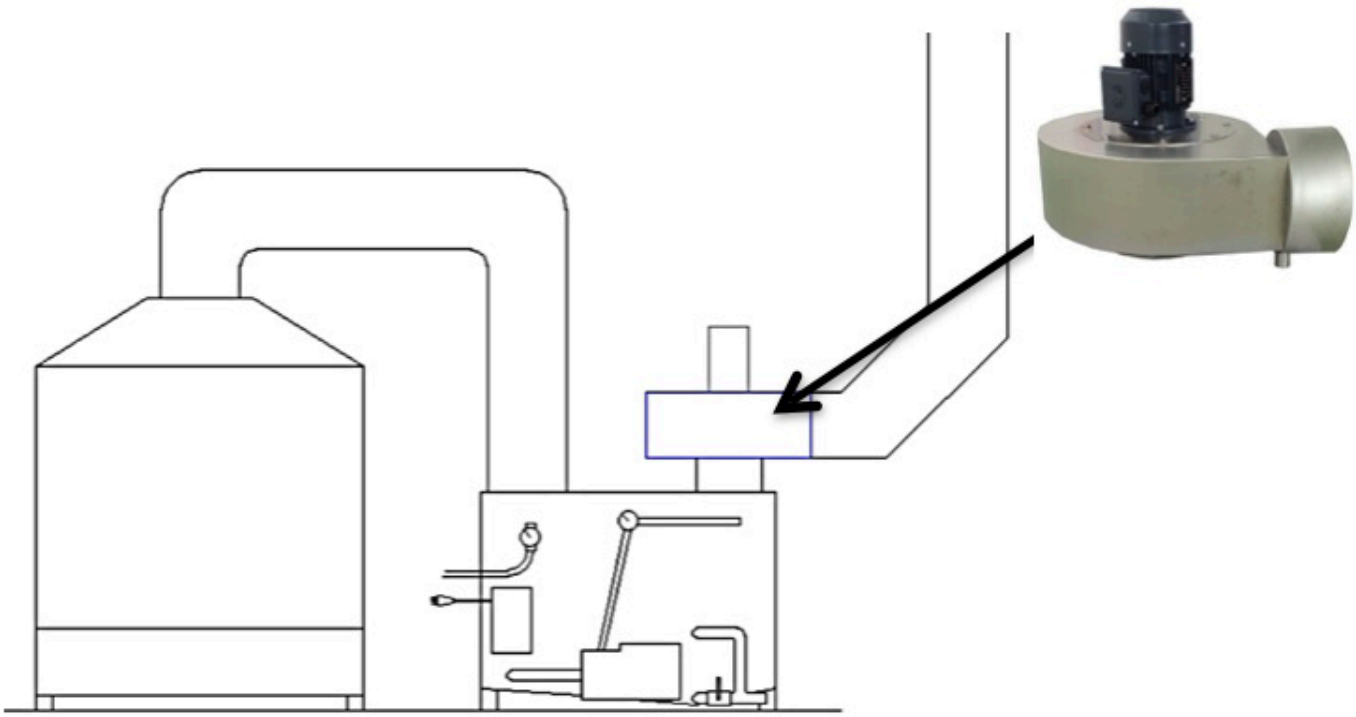
6. The Fan

The machine does not have its own aspiration, but once in operation, it does not obstruct the chimney draft. In special cases (production of a lot of smoke, multiple users, numerous curves) we recommend or require the installation of a Fan.
The manufacturer is able to supply an aspirator if required aspiration.

As a warning, if you proceed independently, keep in mind that:
- The machine manufacturer uses Fans similar to the one in the figure, made of stainless steel, positioning it downstream of the machine. The aspirators, if they are not constructed with a spiral block, must be siliconized.
- The company does not use boxed fans, or with the motor exposed to the flow of incoming combustion gas, or purified air, full of humidity, in the outgoing part.
In these machines, the fan is mounted above the smoke outlet.

NOTE: THE FAN IS NOT INSTALLED DIRECTLY ON THE MACHINE BUT MUST BE INSTALLED ON SPECIAL BRACKETS.

- The Fan has its own socket, 230 or 380 V, and the respective Inverter for regulation, independent of that of the machine.
The type of vacuum cleaner significantly affects the quality of the machine.
Therefore we recommend (even if the choice of the aspirator is independent of the customer), to consult the manufacturer first.

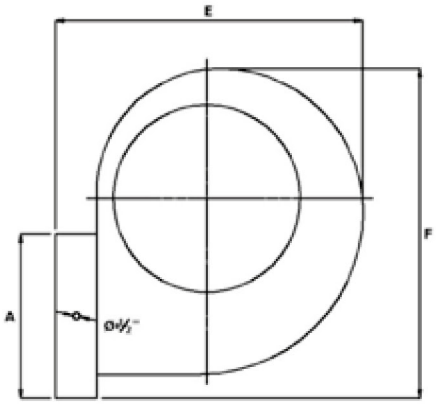


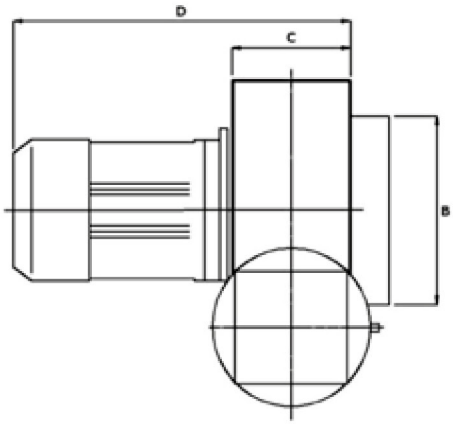
For AH 200 model is recommended **ETCRL 250 Fan**
For AH 250 model is recommended **ETCRL 250 Fan**
For Clinear 250 model is recommended **ETCRL 250 Fan**

Technical datasheet snail fan ETCRL 250

Charateristics

Description	Fan spiral welded 304 stainless steel body; built specifically for use with moist air, it is with waterproof case block and condensate drain output. It should be used with the engine at the top, on a special fixture.
Diameters inlet/ outlet	Input d. 250 male; output d. 200 female. Condensate drain ½ “
Power	0.37 kW; three-phase motor, for use with inverters. Ability to configure the fan delta (220v) or star (380v).
Dimensions	Spiral diameter: 50 cm Height: about 50 cm





MODEL	A	B	C	D	E	F
INOX 4 EBR250	**224 mm**	**248 mm**	**150 mm**	**420mm**	**534 mm**	**485 mm**
INOX 4 EBR280	**305 mm**	**295 mm**	**215 mm**	**500 mm**	**503 mm**	**640 mm**

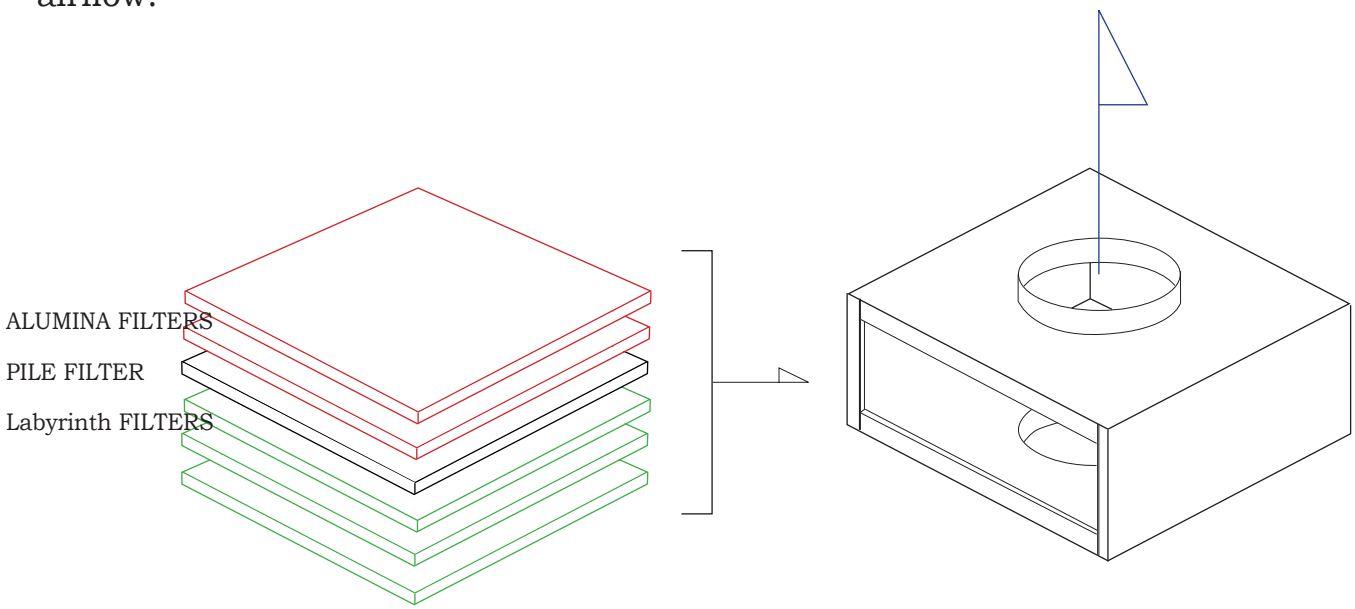
6b. Post-filtration equipment

If you want to eliminate the smells, or you want to mitigate the spread of steam coming out of the machine, or, in the case of fumes for which required additional treatments, a post-treatment machine is available which uses various filtering devices type, applicable at the machine outlet. This apparatus, due to its resistance, must necessarily be equipped with a fan.

The Filterpack 500 is a filter box with four grooves for supporting the filters themselves. It rests directly on the machine, using the same interface holes as the exit cover. Above all, the fan is placed, necessary for the draft to overcome the resistance of the filters.
It is advisable to place the fan on a fixed support (e.g. with suitable wall brackets).

• **The "AH 200-filterpack 500"** complex is capable of handling air volumes of the order of 500 m^3/h,
• **The complex "AH-250 FilterPack 500"**, is able to treat air volumes of the order of 500 m^3/h.
At the most, a puff of steam will come out, little or no odour at all, destined to dissolve in a few meters at most. The complex works better if placed in a cool place, where there is less evaporation of the process water.
In order to eliminate as much steam as possible, on the rear side of the box there is a slot, which can be closed with a special panel. From it can enter a quantity of air, destined to refresh the current of damp fumes that invests the filters, and favour condensation, in order to limit the outflow of steam.
This type of apparatus can be used to minimize emissions (odorous and visual) from wood-fired ovens, grills or biomass stoves if the venting of smoke is not far from other homes.

There is no guarantee of full treatment: a puff of white vapour or the dragging of very thin, light or volatile substances is always possible, so it is recommended to let the fumes flow into the flue or not directly to other houses or places of gathering or passing people.
A drawing of the apparatus is shown. The blue arrow shows the direction of the airflow.



OPERATING CYCLE

The performed operations for a correct machine operation are listed below.

ZERO POINT:
empty machine, connected to the water network and not powered by the current; drain valve closed.

POWER ON
To turn on the machine, it is sufficient to power it; the float, acting as a switch, will control the water load and, upon reaching the minimum level, it will activate the pump; upon reaching the maximum level, the water inlet will cease.

Turn on the machine 5-10 minutes before turning on the oven/combustor; this will enable the machine to work with clean water, purging any remaining soot left in the circuit or pump.

OPERATION'
The machine will remain active until it receives water and electricity. The water lost by evaporation will be reintegrated thanks to the action of the float.

IF TIMED AUTOMATED AUTOMATION ARE NOT PRESENT, THE MACHINE CAN OPERATE IN THESE CONDITIONS FOR ABOUT 8-10 HOURS.

SHUTDOWN AND DISCHARGE

After the combustor is switched off, power can be removed from the machine and, at that point, open the drain valve to drain the dirty water inside.
Once the drain valve is closed again, the machine returns to the "zero point" situation at the beginning.

NOTE:
At least, weekly, it is necessary to provide for rinsing of the inside of the machine. To eliminate the coarse dirt that can remain inside it and check that there are no foreign bodies (e.g. compact soot blocks fallen from the chimney, foliage, dead animals, etc.).

7. MAINTENANCE

PRE-MAINTENANCE OPERATIONS

- Unplug the blast chiller from the mains, making sure that it is impossible for third parties to restore the connection without the maintenance operator's knowledge.
- Turn off the fireplace entirely and make sure there are no residues in it that continue to burn.

ORDINARY MAINTENANCE.

Change the water of the machine every day, or even several times a day;

- clean the inside every seven days of the residues deposited, using the jet of clean water, and check the absence of foreign bodies;
- check the cleaning of the flue section from the combustion source to the machine every 15 days;
- check weekly the absence of dusty residues in the pump motor, and that it has the possibility to cool down;
- check the integrity of the rubber hoses and the absence of leaks from the hydraulic connections.
- check the state of the electric power supply cable, the earthing and, monthly, the electrical connections in the float box.
- check the integrity of the pipes and the absence of leaks from the flue.
- Through the removable door, check the state of the zinc bar that acts as a sacrificial anode, the state of the float and the fact that it is free to move.
- In case of external installation, check that the temperature never drops below zero and does not exceed 50 degrees; furthermore, in case of rain, the blast chiller must not receive water.

If the machine is equipped with a vacuum cleaner:

- check the condition of the nut, the absence of leaks and the tightness of the joints;
- visually check the status of the electrical connections and power cables.

ATTENTION

If even one of the parts shows itself to be incomplete, worn or inefficient, contact the manufacturer for spare parts and technical assistance.
Internal cleaning of the machine must only be done with water. In principle, and unless otherwise specified by the manufacturer, different additives (detergent, soap, acid, ammonia, etc.) must not be used or introduced.

Note to user attention:

The manufacturer of the machine declines all responsibility deriving from the incorrect, inadequate or approximate installation of the machine or use for the hydraulic/electrical connections of unsuitable materials, or unqualified labour.

We also disclaim any liability for damage or malfunctions resulting from failed or negligent maintenance and cleaning, or arbitrary modification of the machine. Coupling of the same to unsuitable or damaged systems or its use outside the parameters expressed in this instruction booklet.

Any intervention requested and not due involves payment of travel expenses, labour and materials used to restore the machine and its correct functioning.

It is therefore recommended, in the face of any doubt, to contact the manufacturer without hesitation.

7b. troubleshooting common problems

Even with proper installation, you may have, at a distance of time, some problems arising from wear of the machinery or by accidental causes. although it is always advisable to notify the manufacturer and consult with a technical ETC for any doubt, they expose below the most common cases of malfunction.

1. Suddenly decline of suction;

a) Clogging of the nozzles, or of a tube on the water distribution line, or a malfunction of the pump. The draw of the machine is given by the airflow created by pumping water through the nozzles; if they do not spray for any reason, the machine can only rely on the chimney draft.

b) Excessive water level, due to interlocking or immobility or breakage of the float; an excessive internal layer of water limits the space of air efflux between the internal plates, limiting the draw.

c) Clogged chimney, upstream the smoke filter (fillings sooty) or downstream, due to nests or foreign matter accidentally fell in the chimney.

d) Poor Ventilation: for example, if you install a hood fitted with a fan in the same room of the combustor, this will suck air market away from the combustor draw itself; In the same way, it may be a drop in the draw if you occlude the natural air vents of the room. It must be, in the worst case, to force air into the room with a replenishment system.

2. Poor washing

If smoke comes out of the chimney gray, the causes can be:

a) Poor replacement water: operating with dirty water, the treatment is affected obviously. Empty the machine, wash it and operate by changing the water at least once a day. Larger amounts of airborne dust production may require more changes daily.

b) Blockages: the washing machine by spraying water into the stream of flue gas. If there is atomization, the machine can not adequately wash the fumes. Check for clogging in the pipes and more cure the parts of water, and cleaning. This problem also causes draw declines.

3) The machine does not load water.

a) This problem may be due to a malfunction of the fill solenoid valve. In the case, it can be seen that the 0/10 pressure gauge never goes to zero, and obviously that the machine, never filling up, never starts. It is necessary to remove the 4 screws of the valve body and remove any limescale residues present, or even check the electrical connections; in the extreme case, the piece can be changed.

b) The machine may not load water even if the float malfunctions, for example, if it remains locked in the maximum position. Check the condition and cleanliness of the float and connection hole.

4) Water leaks from the pipes

The pipes must be tinned and be installed as recommended in step 5. If there is water leakage, the cause may be:

a) Downhill sections in pipes, or water stagnation areas; in that case it is necessary to modify the installation, repositioning the pipes on a slope to rise.

b) Wrong male-female connection. For obvious reasons related to the flow of condensate, the connections must be with the female downstream of the male, so that the water flows downwards without the possibility of leaving the pipes.

5) Smoke coming out of the sinks

It may happen that, from the overflow of the exhaust, smoke comes out which then, going through the exhaust pipe, come out of the sinks. This is obvious by installing a siphon on the drain line.

6) Continuous output of water from overflow:

Often this is due to the floating of the float: tighten the screw one turn higher. If the float is blocked, release it.

8. Transport

The machine must be inevitably transported to the installation site. This operation must be carried out according to the following basic rules, in order to avoid damages and accidents:

1) working clothes, safety shoes and gloves;

2) Fix the machine on pallets, by means of 4 wood screws through the holes at the four ends of the legs;

3) Although the machine can be transported on sight once fixed on pallets, it is advisable to wrap it with bubble wrap and fix it with a thick cardboard box. This packaging must be secured to the pallet with straps.

4) The machine must be lifted so packed and moved by forklift or other mechanical device adapted to lift; each shift not secured by mechanical parts must be performed by 2 persons, or more if it is difficult lifting.

5) The machine may be lift with crane; the chains or chords must be passed into the base structures below machine (see chapter 4, number 11 on list)

NOTE: the pallet must be consistency and robustness designed to withstand the loads and stress handling. It is recommended using pallets and packaging that leave few cm all around the machine, so you can take shockproof packaging (bubble wrap, polystyrene, etc.) between the blast and the box.
Similarly, the machine should be raised and positioned at the installation site with the same precautions (1) and (4) for said transport.

N. IMQ 297 Rev. 0

ATTESTATO DI ESAME DI TIPO

Visto l'esito delle verifiche condotte in conformità con:
On the basis of our verifications carried out according to;

Requisiti essenziali della Direttiva 2006/42/CE
Essential Requirements of the Directive 2006/42/EC

Si dichiara che il prodotto:
We declare that the product:

ABBATTITORE DI FULIGGINE E FUMI CON SISTEMA DI NEBULIZZAZIONE MULTIPLA
Soot and smoke filter with multi-layer water nebulization system

Marca / *Trade Mark* **ETC**

Modello / *Model* **AH 250; AH 300; AH 300; AH 350; AH 400; AH 500; AH 600; CLINEAR 250L; CLINEAR 300L; CLINEAR 400L; X/1**

Fabbricato da:
Manufactured by:

ETC Group S.r.l.
STRADA DELLE CAMPAGNE, 10 - 61010 TAVULLIA (PU)

Soddisfa le disposizioni della:
Meets the requirements of the:

Direttiva 2006/42/CE
Directive 2006/42/EC

Norma di riferimento:
Reference standard:

===

RIferimento pratica IMQ
IMQ assessment file

50AR00040

2018-07-16	2023-07-15	cosign
Data emissione *Issue date*	Data di scadenza *Expiry date*	**IMQ**

1/1

Mod. 707/8

ETC GROUP Srl

DICHIARAZIONE CE DI CONFORMITA'

EC DECLARATION OF CONFORMITY

Il fabbricante
The manufacturer

ETC Group SRL
Strada Campagne 10 - Tavullia (PU) - Italy
Tel. +39 0721 1839937
e-mail: informazioni.eco@gmail.com

dichiara sotto la propria responsabilità che
hereby declares, under his own responsibility, that

la macchina
the machine

Abbattitore di fuliggine e fumi con sistema di nebulizzazione in multistrato
Water filter for suspended powers and smoke soot

tipo
type

_____

numero di serie
serial number

_____

anno di costruzione
year of construction

_____

è conforme alle seguenti Direttive
complies with the following Directives

2006/42/CE Direttiva Macchine
Machine Directive

2014/30/UE Direttiva Compatibilità elettromagnetica
Electromagnetic Compatibility Directive

Persona autorizzata a fornire il fascicolo tecnico
Person authorized to compile the technical file

ETC Group SRL
Strada Campagne 10 - Tavullia (PU) - Italy

Nome e cognome
Name and surname

Artur Cokaj

Posizione
Position

Amministratore delegato
Chief executive officer

Luogo e data:
Place and date:

Tavullia, _____

Firma
Signature

WARRANTY

The guarantee of the blast AH 200 /AH 250 / Clinear 250 is one year, as state law for machinery and equipment sold to entities with VAT;

The year begins on the date of DDT. Within one year from that date, the customer can make a warranty claim by calling the service center.

For the defective parts, the cost of shipment and installation will be charged to the customer. The members declared by the customer do not work will be invoiced if the same parts will not be sent to ETC GRUOP SRL within 15 days from the date the customer receives the pieces in place. Service is free only to manufacturing defects of the components that make up the blast.

The warranty does not cover however cases where the failure or malfunction of the blast is caused by wear and tear, installation and / or mishandling, not follow instructions, or accidents, mistreatment, blows, breakage, improper disassembly of machinery, accidents or damage produced by any cause not attributable to manufacturing, misuse of equipment, failure or improper maintenance (maintenance should be performed every 30 days by qualified personnel). It also states that the frequency of maintenance depends on the type of use and therefore is almost 'impossible to establish the exact timing. The service engineer's visit ETC GRUOP SRL and 'sole jurisdiction to determine which pieces need to be replaced. Defective parts replaced during the warranty period will remain the property of the ETC GRUOP SRL

In the event that a faulty product by the customer had not really such a fault or defect was caused by improper installation, location or conjugation wrong product, the service center will charge all costs of repair, verification and transportation to the customer. The customer must specify in detail by fax, the problems related to equipment not working. All components under warranty will be paid by the customer prior to shipment only after the assessment of the service center of the ETC GRUOP SRL of the existence of the manufacturing defect the customer will be refunded.

IN WITNESS WHEREOF

Artur Cokaj

MODULO DI RICHIESTA D'INTERVENTO

ETC Group s.r.l.
zona industriale Pirano Strada Delle Campagne 10,
61010 Tavullia PU Italy
CF. P.Iva 04083110405
numero REA PS - 196574
etcgroupsrl@gmail.com
Tel. +39 0541955062 / Fax +39 0541641257 cell. +39 3737555779

RAGIONE SOCIALE e P. IVA _____

INDIRIZZO SEDE LEGALE _____

_____

INDIRIZZO SEDE INTERVENTO _____

_____

REFERENTE E SUOI RECAPITI _____

_____

Descrizione del problema / Intervento richiesto

_____

_____

_____

Si dichiara di accettare le condizioni di intervento compreso i prezzi dell'intervento in garanzia www.etcgroupsrl.com. Si prega di inviare il seguente modulo, compilato in ogni sua parte per fax o posta elettronica.

IL PAGAMENTO PER LE RIPARAZIONI E LE SPESE RELATIVE ALLA TRASFERTA/USCITA DOVRA' ESSERE FATTO ALLA CONSEGNA DEI LAVORI.

Entro 24 ore sarà inviata la conferma d'intervento e specificate le modalità dello stesso.

FIRMA DEL CLIENTE _____

LUOGO E DATA _____

ETC GROUP S.r.l.
Abbattitori di fuliggine e fumi

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