gaSteam 45/90/180 HD003
45/90/180 HD103

hardware

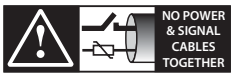


ITA Manuale d'uso

ENG User manual

LEGGI E CONSERVA QUESTE ISTRUZIONI

READ AND SAVE THESE INSTRUCTIONS



READ CAREFULLY IN THE TEXT!

High Efficiency Solutions

IMPORTANT WARNINGS

The CAREL humidifiers are advanced products, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com. Each CAREL product, in relation to its advanced level of technology, requires setup/configuration/programming/commissioning to be able to operate in the best possible way for the specific application. The failure to complete such operations, which are required/indicated in the user manual, may cause the final product to malfunction; CAREL accepts no liability in such cases.
The customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific final installation and/or equipment. CAREL may, based on specific agreements, acts as a consultant for the installation/commissioning/use of the unit, however in no case does it accept liability for the correct operation of the humidifier and the final installation if the warnings or suggestions provided in this manual or in other product technical documents are not heeded. In addition to observing the above warnings and suggestions, the following warnings must be heeded for the correct use of the product:

DANGER OF ELECTRIC SHOCK
The humidifier contains live electrical components. Disconnect the mains power supply before accessing inside parts or during maintenance and installation;
DANGER OF WATER LEAKS
The humidifier automatically and constantly fills/drains certain quantities of water. Malfunctions in the connections or in the humidifier may cause leaks;
DANGER OF BURNS
The humidifier contains high temperature components and delivers steam at 100°C/212°F.

In the event where there is no demand for steam production for a period exceeding 24 hours, the unit will automatically empty the cylinder, so as to avoid stagnation of the water inside. It is recommended to manually empty the cylinder before switching off the unit at the main switch.
The conditions of the environment, the fuel and the power supply voltage must comply with the specified values.
All other uses and modifications made to the appliance that are not authorised by the manufacturer are considered incorrect.
Liability for injury or damage caused by the incorrect use of the appliance lies exclusively with the user.
Please note that the appliance is connected to the gas mains, contains live electrical devices and hot surfaces.

All service and/or maintenance operations must be performed by specialist and qualified personnel who are aware of the necessary precautions and are capable of performing the operations correctly and in accordance with the safety standards and legislation in force, with specific reference to:
1. Italian law 1083/71: "Safety standards relating to the use of gaseous fuel";
2. Italian Law no. 46/90: "Safety standards relating to systems in buildings";
3. Italian Presidential Decree no. 447, December 6, 1991: "Regulations for the enforcement of law no. 46, dated March 5, 1990, on safety relating to systems in buildings";
4. Italian Law 10/91: "Regulations for the enforcement of the national plan for energy savings and the development of renewable sources of energy".

The setting of all units (according to UL - 998 standard) for Natural Gas operation (factory setting) Gas GPL to be made exclusively by Carel or Service personnel. Disconnect the appliance from the mains power supply before accessing any internal parts. The local safety standards in force must be applied in all cases.

Warning:

The installation of the product must include an earth connection, using the special yellow-green terminal available in the humidifier.

The environmental and power supply conditions must conform to the values specified on the product rating labels.
The product is designed exclusively to humidify rooms either directly or through distribution systems (ducts).
Only qualified personnel who are aware of the necessary precautions and able to perform the required operations correctly may install, operate or carry out technical service on the product.
Only water with the characteristics indicated in this manual must be used for steam production.
All operations on the product must be carried out according to the instructions provided in this manual and on the labels applied to the product. Any uses or modifications that are not authorised by the manufacturer are considered improper. CAREL declines all liability for any such unauthorised use. Do not attempt to open the humidifier in ways other than those specified in the manual.
Observe the standards in force in the place where the humidifier is installed.
The appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
Do not install and use the product near objects that may be damaged when in contact with water (or condensate). CAREL declines all liability for direct or indirect damage following water leaks from the humidifier.
Do not use corrosive chemicals, solvents or aggressive detergents to clean the inside and outside parts of the humidifier, unless specifically indicated in the user manual.
Do not drop, hit or shake the humidifier, as the inside parts and the linings may be irreparably damaged.

CAREL adopts a policy of continual development. Consequently, CAREL reserves the right to make changes and improvements to any product described in this document without prior warning. The technical specifications shown in the manual may be changed without prior warning.
The liability of CAREL in relation to its products is specified in the CAREL general contract conditions, available on the website www.carel.com and/or by specific agreements with customers; specifically to the extent where allowed by applicable legislation, in no case will CAREL, its employees or subsidiaries be liable for any lost earnings or sales, losses of data and information, costs of replacement goods or services, damage to things or people, downtime or any direct, indirect, incidental, actual, punitive, exemplary, special or consequential damage of any kind whatsoever, whether contractual, extra-contractual or due to negligence, or any other liabilities deriving from the installation, use or impossibility to use the product, even if CAREL or its subsidiaries are warned of the possibility of such damage.

DISPOSAL

The humidifier is made up of metal parts and plastic parts. In reference to European Union directive 2002/96/EC issued on 27 January 2003 and the related national legislation, please note that:
1. WEEE cannot be disposed of as municipal waste and such waste must be collected and disposed of separately;
2. the public or private waste collection systems defined by local legislation must be used. In addition, the equipment can be returned to the distributor at the end of its working life when buying new equipment;
3. the equipment may contain hazardous substances: the improper use or incorrect disposal of such may have negative effects on human health and on the environment;
4. the symbol (crossed-out wheeled bin) shown on the product or on the packaging and on the instruction sheet indicates that the equipment has been introduced onto the market after 13 August 2005 and that it must be disposed of separately;
5. in the event of illegal disposal of electrical and electronic waste, the penalties are specified by local waste disposal legislation.

Warranty on the materials: 2 years (from the date of production, excluding consumables).

Approval: the quality and safety of CAREL products are guaranteed by the ISO 9001 certified design and production system, as well as by the CE and cETLus mark.

Content

1. MODELS AND DESCRIPTION OF THE COMPONENTS 7

1.1 Models 7
1.2 Description of the components 7

2. ASSEMBLY 8

2.1 Receipt and storage 8
2.2 Positioning and dimensions 8
2.3 Removal and reassembly of the front cover 8

3. WATER CONNECTIONS 9

3.1 Characteristics of the supply water 9
3.2 Characteristics of the drain water 9
3.3 Pipe connections 9
3.4 Diagram of water connections 9
3.5 Air inlet and flue connections 10
3.6 Checks 11
3.7 Gas connections 12
3.8 Venting Requirements for CAREL gaSteam units 12

4. STEAM DISTRIBUTION 14

4.1 Steam distribution in ducts - linear distributors 14
4.2 Positioning the linear distributors in the air ducts 14
4.3 Installation of the steam hose 15
4.4 Installation of the condensate drain pipe 15
4.5 Checks 15
5.4 Connection diagram, UG45-90 16
5.5 Connection diagram, UG180 17
5.6 Adjusting the humidifier to different types of gas 18

6. MAINTENANCE 20

6.1 Boiler maintenance 20
6.2 Cleaning the burner 21
6.3 Operating anomalies - checking the ionisation current 21
6.4 Flue gas temperature sensor 21
6.5 Water temperature sensor 21
6.6 Fuses 21
6.7 Cooling fan 21

7. OPERATING PRINCIPLE AND OTHER FUNCTIONS 22

7.1 Operating principle 22

8. TECHNICAL SPECIFICATIONS 23

8.1 Thermal-gas supply characteristics 23
8.2 Flue gas values according to the heat input 23
8.3 Dimensions 24
8.4 Weights 24
8.5 Rating plate 25

1. MODELS AND DESCRIPTION OF THE COMPONENTS

1.1 Models

The code that marks the model of humidifier is made up of 10 characters (Fig. 1.a).

Example: the code UG180HD003 identifies a gas-fired humidifier (UG) with:
- rated steam production 180 kg/h (180);
- modulating control (H);
- 230 Vac single-phase power supply (D).

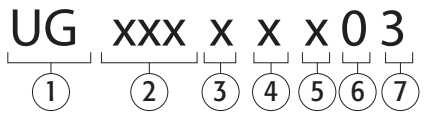


Fig. 1.a

1	family prefix
2	rated instant steam production in kg/h: 045; 090 and 180
3	type of control: H= modulating*
4	type: power supply voltage: D= 230 - 1~N
5	options: 0= 50 Hz version; 1= 60 Hz version
6	not used
7	internal updating use

*= includes the following types of operation: ON-OFF, proportional, humidity and temperature.

1.2 Description of the components

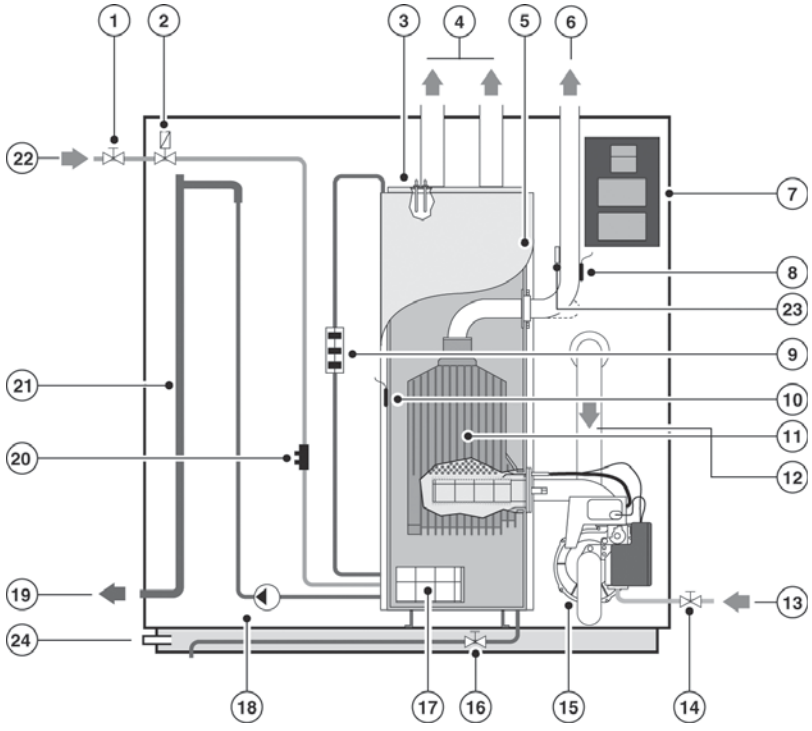


Fig. 1.b

1	water on-off tap
2	fill solenoid valve
3	foam detection electrode
4	steam outlets
5	boiler
6	flue gas
7	electrical panel
8	flue gas temperature sensor (2 ea. for UG180)
9	level sensor
10	preheating temperature sensor
11	heat exchanger (2 ea. for UG180)
12	air inlet
13	gas line
14	gas on-off tap
15	gas burner (2 ea. for UG180)
16	drain and pre-fill valve
17	filter
18	drain pump
19	drain network
20	conductivity meter
21	drain pipe
22	water line
23	safety thermostat
24	botton tank drain pipe

2. ASSEMBLY

2.1 Receipt and storage

- Check that the humidifier is intact upon delivery and immediately notify the carrier, in writing, of any damage that may be due to careless or improper transport;
- Move the humidifier to the site of installation before removing it from the packaging, holding the neck only from below the base;
- Open the cardboard box and pull out the humidifier, remove the layer of protective material and move the humidifier from the pallet to the support surface, keeping it vertical at all times; only remove the protective bag when installing the unit.

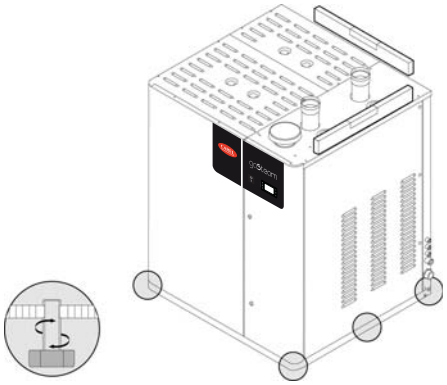


Fig. 2.a

2.2 Positioning and dimensions

- For installation choose the most suitable position for the steam distribution, that is, the position that minimises the length of the steam outlet pipe (see STEAM DISTRIBUTION). The unit has been designed for installation on a floor that must be able to support the weight of the unit in normal operating conditions (see DIMENSIONS AND WEIGHTS).
- The metal casing of the humidifier heats up during operation, and the top may reach temperatures of over 50°C (122 °F); check that this does not cause any problems.
- Make sure the humidifier is level, and that the minimum spaces are respected as indicated in Fig. 2.b, to allow room for maintenance operations.

WARNING: make sure that the cooling fan outlet grill is not blocked or covered.

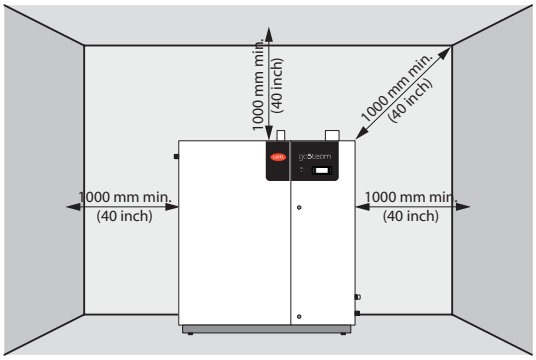


Fig. 2.b

2.3 Removal and reassembly of the front cover

To remove the front cover of the humidifier, proceed as follows (Fig. 2.c):

1. open the side door A;
2. remove the screws (part V) using a screwdriver;
3. hold cover B by the sides, tilt it until it is released from the side supports, lift it around 2 centimetres and remove it from the hooks on the side supports;
4. remove the cover.

To close the appliance, proceed as follows (Fig. 2.c):

1. slightly tilt cover B, slide it onto the hooks on the side supports at the base of the panel;
2. tilt the cover back to vertical, and lightly press it into the side supports;
3. fasten the locking screws using a screwdriver (part V);
4. close door **A**.

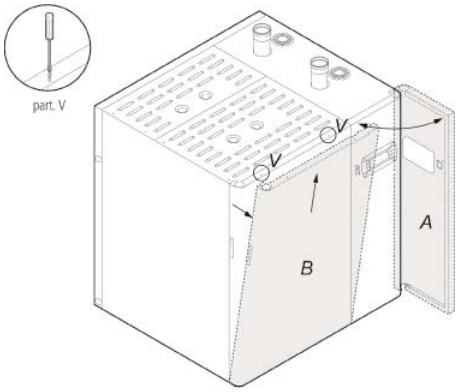


Fig. 2.c

3. WATER CONNECTIONS

Before making the connections, ensure that the unit is disconnected from the mains power supply.

3.1 Characteristics of the supply water

The water used to supply the humidifier must be legal-standard drinking water, as the steam produced is used to humidify air that is breathed.
For the optimum operation of the unit, the use of demineralised water is recommended, and specifically the use of a reverse osmosis demineralisation system.

In general, and if not treated and subsequently analysed, the characteristics of the supply water must not exceed the limits listed in the Table 3.a.

IMPORTANT WARNING: water treatment using softeners or polyphosphate metering devices does not reduce the quantity of dissolved salts and may lead to foam forming, potentially shutting down operation and causing corrosion of the heating elements.
If such water cannot be avoided, it should be diluted with mains water in such a proportion as to reduce hardness to a minimum of 40% of the initial value, and no less than 5°f. In addition, follow the instructions provided in paragraph 5.1.1 of the control manual - (cod. +030220930).
Water treatment by reverse osmosis demineralisation is allowed; in this case, follow the procedure described in paragraph 5.1.1. of the control manual - (cod. +030220930).

It is NOT allowed:

1. the use of well water, industrial water or water from cooling circuits and, in general, any potentially chemically or bacteriologically contaminated water;
2. the addition to the water of disinfectants or corrosion inhibiters, as these are potential irritants.

Warning:

- no reliable relationship exists between the hardness and the conductivity of the water;
- if the water supply comes from an external reverse osmosis system, the installation must guarantee an instant flow-rate of 20 l/min (5,28 Gal/min).

Hydrogen ions	pH		da 6.5 a 8.5	
Specific conductivity at 20°C	σ R,20 °C	-	µS/cm	1500
Total hardness	TH	-	mg/l $CaCO_3$	500
Iron + Manganese		-	mg/l Fe+Mn	0,2
Chlorides		-	Mg/l Cl-	50
Silica		-	mg/l SiO_2	20
Residual chlorine		-	mg/l Cl_2	0,2
Calcium sulphate		-	mg/l $CaSO_4$	100

Tab. 3.a

A G3/4 male fitting is used.

3.2 Characteristics of the drain water

Inside the humidifier the water boils and is transformed into steam, without the addition of any substances.
The drain water, as a result, contains the same substances that are dissolved in the supply water, yet in greater quantities, depending on the concentration in the supply water and the set draining cycles, and **may reach temperatures of 100°C (212 °F) and an instant flow-rate of 32 l/min. (6,60 Gal/min)**; not being toxic, it can be drained into the sewage system.

3.3 Pipe connections

The installation of the humidifier requires connection to the gas supply, water supply and drain pipes.
Fig. 3.a shows the side views of the unit.
The supply water may be connected using a pipe or hose with a minimum recommended inside diameter of 6 mm. This must be fitted with a shut-off tap to allow the appliance to be disconnected during maintenance operations.
It is recommended to use Carel hoses (code FWH3415000).
A mechanical filter should be installed to trap any solid impurities.
The drain water is connected using a section of non-conductive plastic pipe (preferably) resistant to 100°C (212 °F), with a recommended outside diameter of 50 mm.
The connection to the gas supply is made using a metal hose (with vibration-damping joint) supplied, connected to a tap (manual shut-off valve), with a 1"G fitting for the gaSteam 45 and 90, and a 1" 1/4G fitting for the gaSteam 180.
In the USA, use the installation kit code UGKINST*.

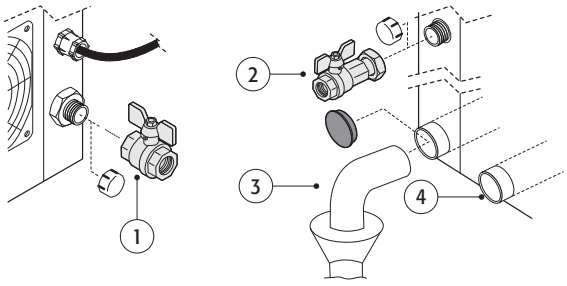


Fig. 3.a

1	gas tap
2	water inlet tap
3	drain fitting
4	drain connection Ø = 20mm

Note: **for North American and Canadian Market, see paragraph 3.7.**

3.4 Diagram of water connections

IMPORTANT WARNING: the drain pipe must be free, without backpressure and with a drain trap immediately downstream of the connection to the humidifier.

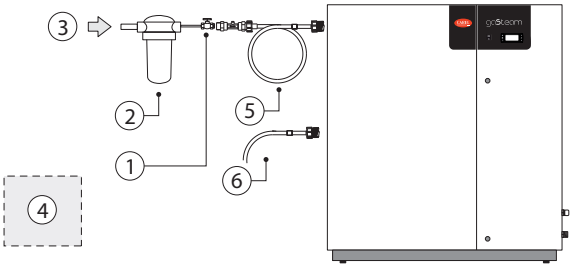


Fig. 3.b

1	tap
2	filter
3	supply
4	reverse osmosis water treatment system, if used
5	hoses (code FWH3415000) NOT SUPPLIED
6	hoses Ø 3/4 not supplied (drain tempering option)

3.5 Air inlet and flue connections

The gaSteam humidifier is an approved type C appliance (room-sealed appliance).
The air intake pipes / flues should be connected according to the diagrams below.
For further requirements, see the flue accessories available on the market.
The air intake pipes and flues must be installed and positioned in compliance with the corresponding legislation and standards in force, as well as with any national or local provisions (for example, in Italy, the UNI-CIG 7129, UNI-CIG 7131 standards and their subsequent amendments), and therefore the validity of the diagrams below should always be checked.
The maximum lengths indicated in the following installations have been calculated using CAREL ducting.

3 openings are available for the air intake and flue gas outlet (6 on the UG180):
- 2 on the top of the humidifier (4 on the UG180);
- 1 at the rear (2 on the UG180).

The humidifier is factory-fitted as follows:
- flue gas outlet from the top of the humidifier;
- air intake from the rear;
- supplied with an inspection section (2 for the UG180), 135 mm long;
- condensate suction 135 mm long.

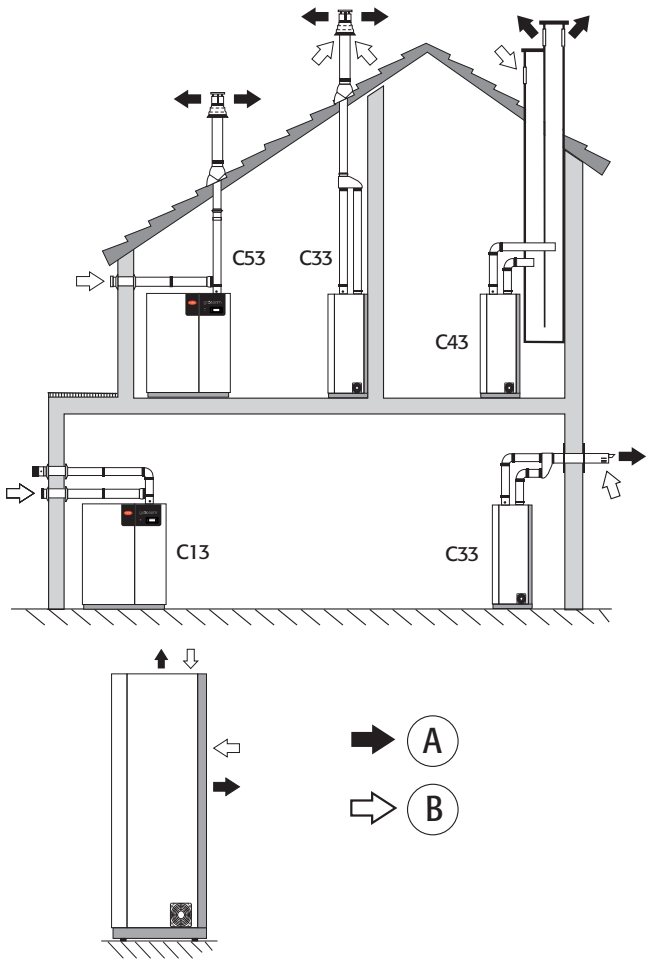
The condensate section supplied must be assembled and the lateral hole must be connected to a pipe that acts as a condensate drain, so as to prevent condensate from causing the burner to malfunction.

Both the flue gas outlet and the air intake can be moved according to the installation requirements.

		dia. of connection (in aluminium or stainless steel)		
Gasteam 45	**DP**	**d=80mm**	**d=100mm**	**d=120mm**
section of linear pipe l= 1m	Pa	2,5	0,85	0,4
90° bend ø80 mm r/d=0,5	Pa	5,6	2,2	1,0
90° bend ø80 mm r/d=1	Pa	2,2	0,9	0,4
45° bend ø80 mm r/d=0,5	Pa	3,3	1,3	0,6
flue terminal ø80 mm	Pa	6,6	2,6	1,2
condensate T collection	Pa	6,6	2,6	1,2
Expansion of the section	Pa	6,6	2,6	1,2
		dia. of connection (in aluminium or stainless steel)		
Gasteam 90	**DP**	**d=80mm**	**d=100mm**	**d=120mm**
section of linear pipe l= 1m	Pa	7,7	2,5	1,0
90° bend ø80 mm r/d=0,5	Pa	19,1	7,6	3,6
90° bend ø80 mm r/d=1	Pa	7,4	2,9	1,4
45° bend ø80 mm r/d=0,5	Pa	11,2	4,5	2,1
flue terminal ø80 mm	Pa	22,5	8,9	4,2
condensate T collection	Pa	22,5	8,9	4,2
Expansion of the section	Pa	22,5	8,9	4,2
		dia. of connection (stainless steel)		
Gasteam 180	**DP**		**d=120mm**	**d=150mm**
section of linear pipe l= 1m	Pa		3,2	1,1
90° bend ø80 mm r/d=0,5	Pa		14,3	5,6
90° bend ø80 mm r/d=0,5	Pa		8,4	3,3
45° bend ø80 mm r/d=1	Pa		5,6	2,2
flue terminal ø80 mm	Pa		16,8	6,6
condensate T collection	Pa		16,8	6,6
Expansion of the section	Pa		16,8	6,6

Tab. 3.b

Fig.3.c.a



⇦ air

➡ fumes

---- alternative air inlet/fumes outlet

X min. 100 mm with back side suction

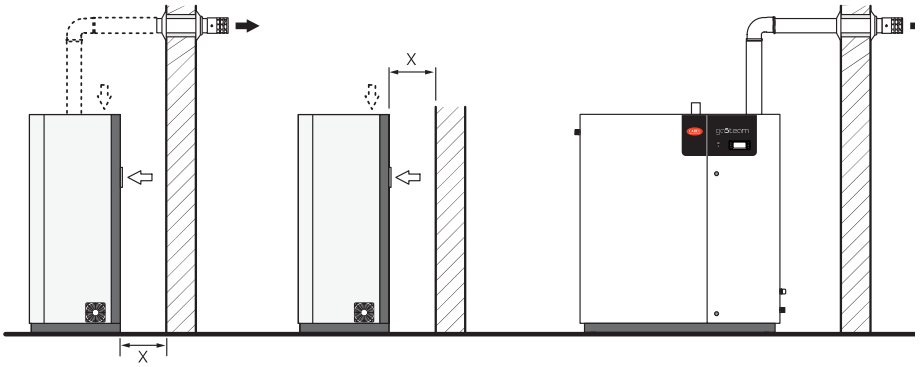


Fig.3.c.b

Flue accessories available from CAREL:

Ref.	Description	Code
1	Stainless steel flue gas outlet grill, Ø80 mm	EXHZ080000
2a	1000 mm extension Ø80 mm	EXHP080100
2b	500 mm extension, Ø80 mm	EXHP080500
3	90° bend Ø80 mm	EXHC080080
4	Stainless steel intake grill, Ø80 mm	EXHX080000
5	Inside/Outside gasket Ø80 mm	EXHQ080000
6	Tile for sloped roof Ø80 mm	EXHNI00125
7	Flat tile Ø80 mm	EXHN080000
8	Condensate collection section Ø80 mm L= 135mm	EXHS0A0011
9	T connection, Ø80 mm	EXHD080000
10	Plug	EXHG000000
11	Condensate drain trap with pipe	EXHDS00000
12	Silicon gasket for flue gas Ø=80mm	EXHW000080
13	Flanged section Ø 80 mm, L= 57 mm	EXHL080056
14	Flanged section Ø 80 mm, L= 120 mm	EXHT080120
15	Inspection section Ø 80 mm, L = 135 mm	EXHI080025
16	Flanged section Ø 80 mm, L= 100 mm	EXHT080100

Tab. 3.c

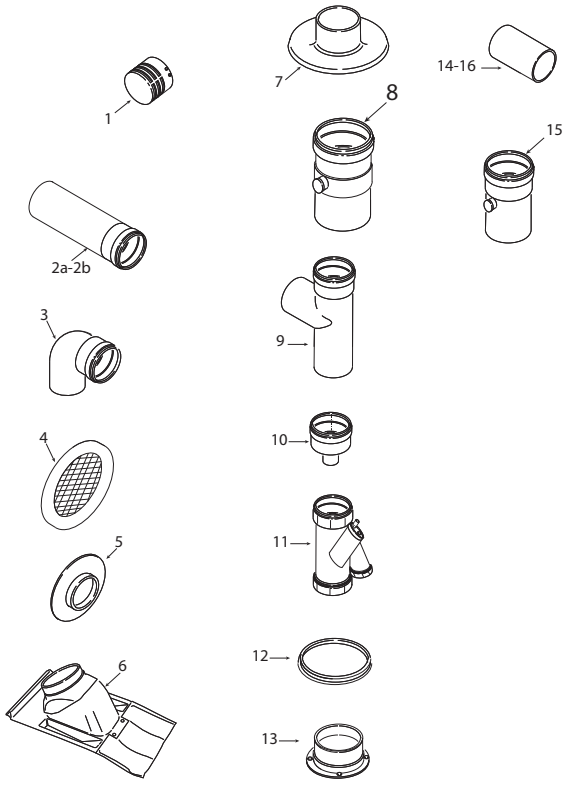


Fig. 3.d

3.5.1 Installation of the appliance with air intake from the room (type B)

The gaSteam humidifiers may be also installed as type B appliances, that is, with the air intake from the room where the appliance is installed, as long as this complies with the legislation and standards in force.
The maximum pressure drop allowed along the 80 mm diam. air intake pipes/flues is:
- for the gaSteam 45: -50…90 Pa (-0,50…0,90 mbar / -0.007…0.013 PSI);
- for the gaSteam 90: -50…82 Pa (-0,50…0,82 mbar / -0.007…0.012 PSI);
- for the gaSteam 180: -50…95 Pa (-0,50…0,95 mbar / -0.007…0.012 PSI).

To calculate the maximum possible length of the pipes, refer to the values in Table 3.b.

IMPORTANT WARNING: a condensate collection section (part 6) or an appropriate drain (part 9) must be installed in flues longer than 2 m.

3.5.2 Pressure switch (UG180)

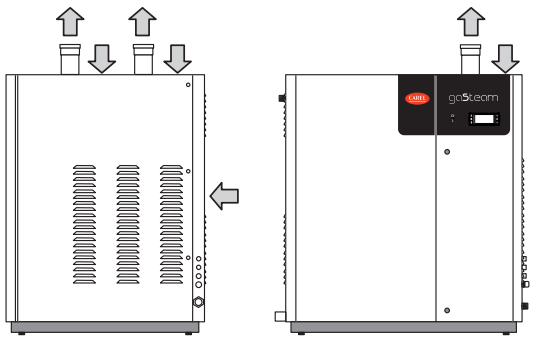
the pressure switch is used to check that there is no flue gas return when using a shared chimney (see "outlet with flue manifold").

3.6 Checks

The following conditions represent correct water connections:
- installation of a shut-off tap in the supply water line;
- presence of a mechanical filter in the supply water line;
- water temperature and pressure within the allowed values;
- drain hose resistant to operating temperatures of 100°C (212 °F);
- minimum inside diameter of the drain hose 40 mm (1 1/2 inch);
- minimum slope of the drain hose greater than or equal to 5°;
- adding the inspection section with condensate drain connection.

IMPORTANT WARNING: when installation is completed, flush the supply pipe for around 30 minutes by piping the water directly into the drain without sending it into the humidifier. This will eliminate any scale or processing residues that may cause foam when boiling.

independent outlets UG180



independent outlets UG45-90

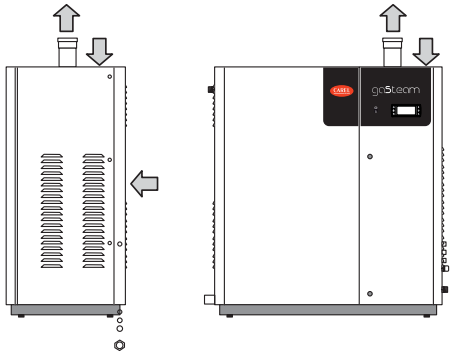


Fig. 3.e

IMPORTANT: FOR NORTH AMERICAN and CANADIAN MARKET

3.7 Gas connections

Installation piping must be in accordance with local codes, and ANSI Z233.1, "National Fuel Gas Code", in the United States or CAN/ CGA-B149 Installation Codes in Canada.
Should overheating occur, or the gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply.

The gas inlet pipe sizes are as follows: UG045, UG090 – 1" Male Gas thread, UG180 - 1" 1/4 Male Gas thread.

The gas connection may either be made by piping directly to the gas inlet, or by using the supplied flexible, vibration dampening pipe.

The appliance must be isolated from the gas supply piping system by closing its individual manual shut-off valve during any pressure testing of the gas supply system at test pressures equal to or greater than 14" w.c. (½ psig,3.5 kPa).
Provide an adequate size gas supply line.

A 1/8-inch NPT plugged tapping, accessible for test gage connection, must be installed immediately upstream of the gas supply connection to the appliance.

When specified by codes, a sediment trap must be located ahead of the humidifier gas controls.

The external shut-off gas valve, supplied with the unit, must be installed outside of the unit.

NOTE: You must provide support to the gas connection during hookup to avoid loosening internal connections of the gas line!

WARNING: Never use an open flame to check for gas leaks. If a leak does exist, a fire or explosion could occur, resulting in damage, injury or death. The appliance and its individual shut-off valve must be disconnected from the gas supply piping system during any pressure testing of that system.
Dissipate test pressure from the gas supply line before reconnecting the humidifier and its manual shut off valve to the gas supply line.

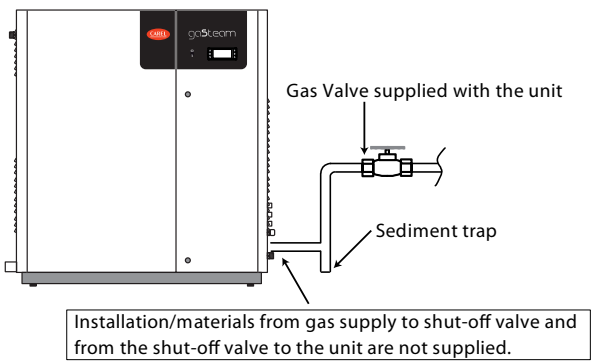


Fig. 3.f

3.8 Venting Requirements for CAREL gaSteam units

CAUTION: The humidifier shall not be connected to a chimney flue serving any other appliance.
The unit has 4 holes for the air intake and gas vent outlet (8 for the UG180):
• 2 on the top of the humidifier (4 on the UG180).
• 2 at the back of the unit (4 on the UG180).
The humidifier is configured from the factory as follows:
• exhaust vent through to the top of the humidifier;
• air intake from the back;
Note: Both the exhaust vent and air intake can be moved, according to the installation requirements.

Note: Fit the exhaust vent pipe so that the section with the inspection hole is always the first section.
When installing the exhaust or intake pipes in the rear of the unit, a rear clearance of 12" must be maintained. If the included exhaust vent pipe does not have a pre-installed "test plug/inspection hole", the provided one must be installed to applicable standards.

IMPORTANT: Vent materials must be approved for use for Category IV gas-burning appliances.
These materials are designed to be both air and watertight. You cannot use PVC for the exhaust because the gas temperatures are too high. However, the air intake may be safely run in PVC or any other approved conduit, as long as the ID of the tubing is at least 3".

The maximum distance the vent and intake can be run is 120 equivalent combined feet or a maximum pressure drop of 90 Pa (0.36" w.c.), whichever is more restrictive.
Use the National Fuel Gas Code and the vent pipe manufacturer's technical data to determine the venting length.
The vent pipe must be drained of condensate if it is run longer than 6 feet in any direction. When using a condensate drain, a standard loop or p-trap must be used to prevent exhaust gases from venting into the drain. Prior to using the appliance, ensure that the trap is filled with water and that the drain terminates in accordance with local or national plumbing codes.

The vent adapter provided with the humidifier is designed to interface with standard 3", single wall stainless steel exhaust pipe.
Caution: The air intake must never be blocked or obstructed in any way.
The vent system must be installed and terminate so that proper clearances are maintained as cited in local codes or the latest edition of the National Fuel Gas Code, whichever is more restrictive.

The following are possible parts for outside vent terminations:
- 7390TEE Heat-Fab Inc.
- 02SVSTTX03 Z-Flex Inc.
- SRTT-03 Flex-L International Inc.

Example of air intake for the outside

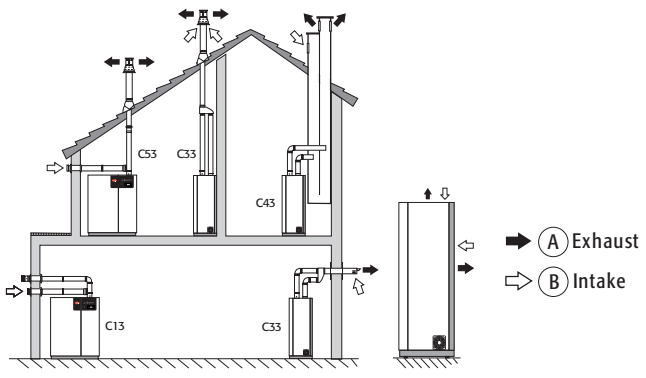
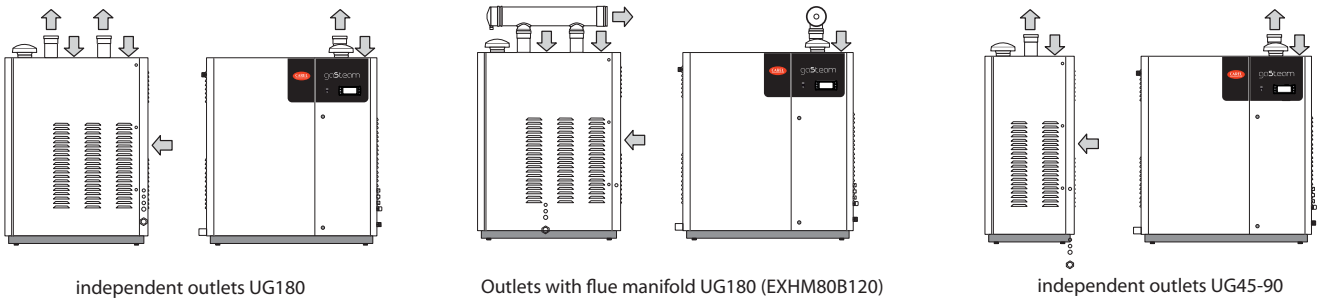


Fig. 3.g

gaSteam exhaust and intake configurations



independent outlets UG180 | Outlets with flue manifold UG180 (EXHM80B120) | independent outlets UG45-90

Fig. 3.h

Metric Exhaust/Intake Adapters (only for units: UG*HD103):**
For 80mm to 3":
EXHR08030I – Item shown below. This item is included in the UGKINST090



Gas connections kit for UG045 and UG090



Gas connections kit for UG180



4. STEAM DISTRIBUTION

To achieve optimal humidifier efficiency, the steam produced must be introduced into the room uniformly, in order to prevent the spraying of drops and notable condensation. This is best achieved using steam blowers or linear distributors. The right steam distributor must be chosen according to the place where the steam is to be introduced.

4.1 Steam distribution in ducts - linear distributors

For steam distribution into air ducts, the steam distributor must be sized according to the output of the humidifier and the cross-section of the ducting. Figure 4.a provides the dimensions of the CAREL linear steel distributors. Table 4.a specifies the minimum number and the model of the distributors recommended for the type of humidifier used.

Humidifier fitting dia. mm				2x40	2x40	4x40
Humidifier capacity kg/h (lbs/h)				45 (100)	90 (200)	180 (400)
Distributor f itting	Max. distributor capacity kg/h	Length mm	Code	UG045	UG090	UG180
40	25	834	DP085D40R0	2		
40	35	1015	DP105D40R0	2	(4)**	
40	45	1222	DP125D40R0	2	2	4
40	45	1636	DP165D40R0	2	2	4
40	45	2025	DP205D40R0	2	2	4

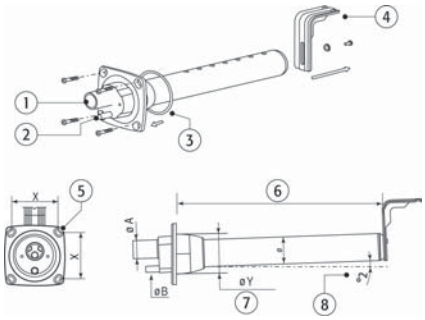
Tab. 4.a

**: 40x40x40 "Y" kit for branching the steam hose available from 01/01/2005.

N.B.: if the duct is not wide enough for the distributor, two shorter distributors can be used (numbers in brackets), by branching off the steam hose.

Assembly of the linear distributors (see Fig. 4.a):

- make a series of holes in the wall of the duct according to the drilling template indicated in Fig. 4.a;
- insert the distributor with the steam holes facing upwards;
- fasten the flange of the distributor using 4 screws. i.



dimensions mm:

Ø A	Ø B	Ø Y	Ø	X
40	10	89	60	99

Fig. 4.a - assembly distributor

To allow the return of condensate using the drain connection (see Installation of the condensate drain pipe), mount the distributor (Fig. 4.a) with the inlet connection closer than the closed end, which, for this reason, must be adequately supported (the support surface already has the right slope).

1	steam inlet
2	condensate drain
3	flange gasket
4	fasten the support where required
5	max. screw diameter "M5"
6	L (see Table 4.a)
7	hole on the wall
8	use the fastening support supplied so as to ensure the slope determined by the shape of the flange

Tab. 4.b

As allowed by the dimensions of the air duct, the distributor must be as long as possible and located away from curves, branches, changes in cross-section, grills, filters and fans.

The minimum recommended distance between the steam distributor and the nearest obstacle is around 1-1.5 metres, yet this greatly depends on the operating conditions; this distance it in fact increases with:

- an increase in the air speed in the duct;
- an increase in the relative humidity of the air before and, above all, after humidification;
- a decrease in turbulence.

4.2 Positioning the linear distributors in the air ducts

Follow the indications and the distances between the distributor and the walls of the ducting and/or between two distributors, as indicated in the figures below (distances in mm).

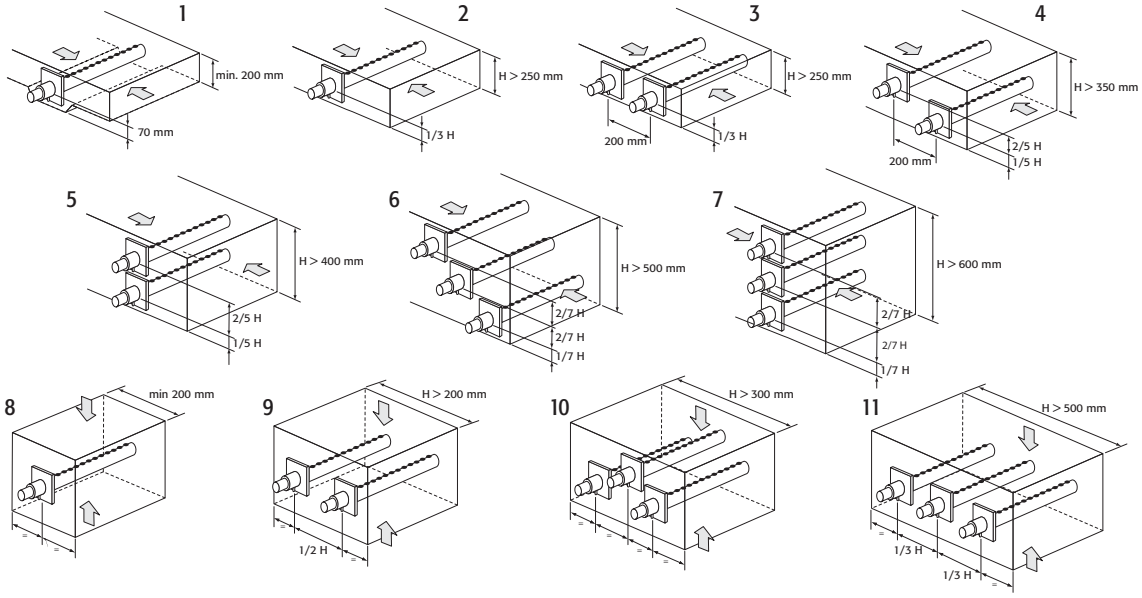


Fig. 4.b

4.3 Installation of the steam hose

- The humidifier must be connected to the distributor using a hose suitable for this purpose, such as the CAREL flexible hose.
- The use of unsuitable pipes or hoses may cause weakening and cracking and consequently steam leaks.
- The layout of the hose must be such as to avoid the accumulation of condensate, with consequent noise (gurgling) and reduction in efficiency; the path of the hose must exploit gravity to drain the condensed steam back to the boiler or to the distributor.
- Pockets or traps must thus be avoided, in that the condensate may be trapped; attention should also be paid to avoid choking the hose due to sharp bends or twisting (see Fig. 4.c).
- Using screw clamps, tightly fasten the ends of the hose to the humidifier and steam distributor fittings, so that they do not slide off due to the effect of the temperature
- According to the position of the steam distributor, one of two following solutions may be adopted for the path of the hose:
  1. rise upwards with a vertical section of at least 300 mm (12 inch), followed by a curve with a minimum radius of 300 mm (12 inch) and finally a downwards section with a constant slope of no less than 5° (see Fig. 4.d);
  2. for short paths (less than 2 m (80 inch)), curves with a minimum radius of 300 mm (12 inch), followed by a rising section with a slope of no less than 20° (see Fig. 4.e).

IMPORTANT WARNING: the backpressure exerted by the steam hose should not exceed half of the maximum allowable for the humidifier. Generally this means a hose with a length of around 4 metres; for special applications, contact CAREL.

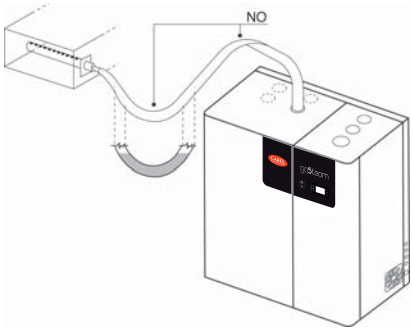


Fig. 4.c

4.4 Installation of the condensate drain pipe

• Due to the re-condensation of the steam produced, condensate forms inside the steam hose and the distributor that must be removed to avoid gurgling and a reduction in efficiency.
• The condensate is drained by gravity using a hose that is suitable for the purpose. The use of unsuitable tubing may cause weakening and cracking with consequent steam leaks.
• To avoid the release of non-condensed steam from the condensate hose, a drain trap must be made by looping part of the drain hose.
• The end of the condensate hose can be connected to the nearest drain pipe, with a minimum slope of 5° to assist correct downflow (see Fig.4.d/ 4.e).

WARNING: for the unit to operate correctly, the drain trap must be filled with water before starting the humidifier.
As per the UNI11071 standard.

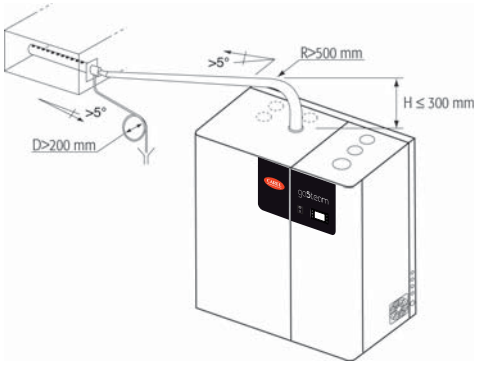


Fig. 4.d

4.5 Checks

The following conditions represent correct installation of the steam hose:
• the position of the steam distributor complies with the instructions provided in this chapter, the steam outlet hoses are aimed upwards and the distributor has an upwards slope of at least 2°;
• the ends of the hoses are fastened to the fittings using metal hose clamps with fastening screws;
• the curves in the hoses are sufficiently wide (radius > 300 mm (12 inch)) so as to not cause bending or choking;
• the steam hose has no pockets or traps for condensate to form;
• the paths of the steam and condensate hoses comply with the instructions provided in this chapter;
• the length of the steam hose should not exceed 4 m; for special applications, contact CAREL;
• the slope of the steam hose is sufficient to allow correct dragging of the condensate (> 20° for the upward sections, > 5° for the downward sections);
• the slope of the condensate hose is at least 5° at every point;
• the condensate hose always follows a downward path and features a drain trap (filled with water before starting operation) to prevent steam being released.

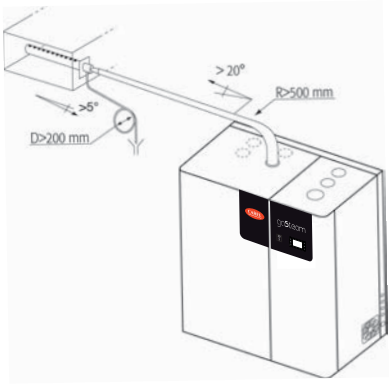
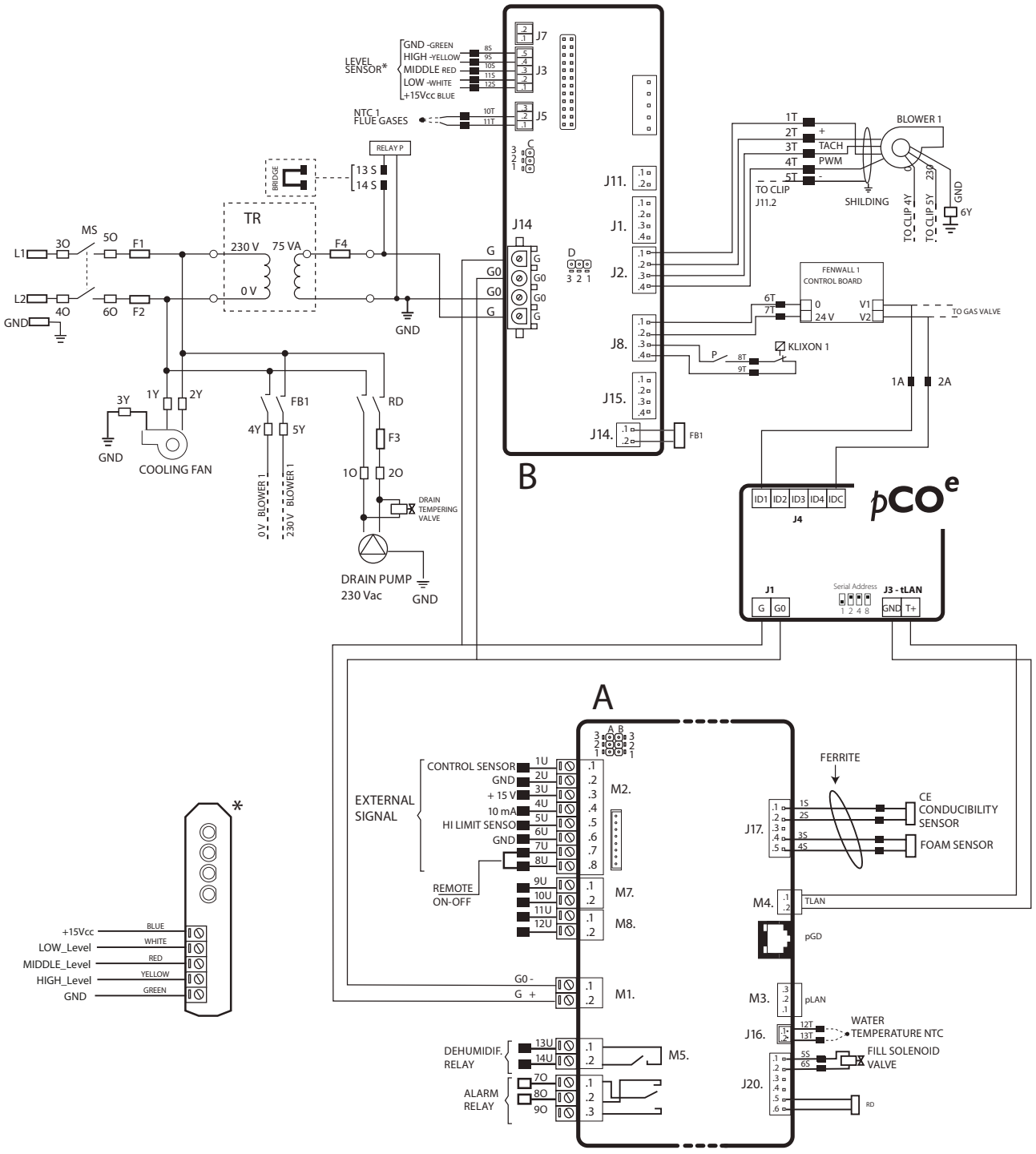


Fig. 4.e

5.4 Connection diagram, UG45-90



LEGENDA

G = 24 Vac

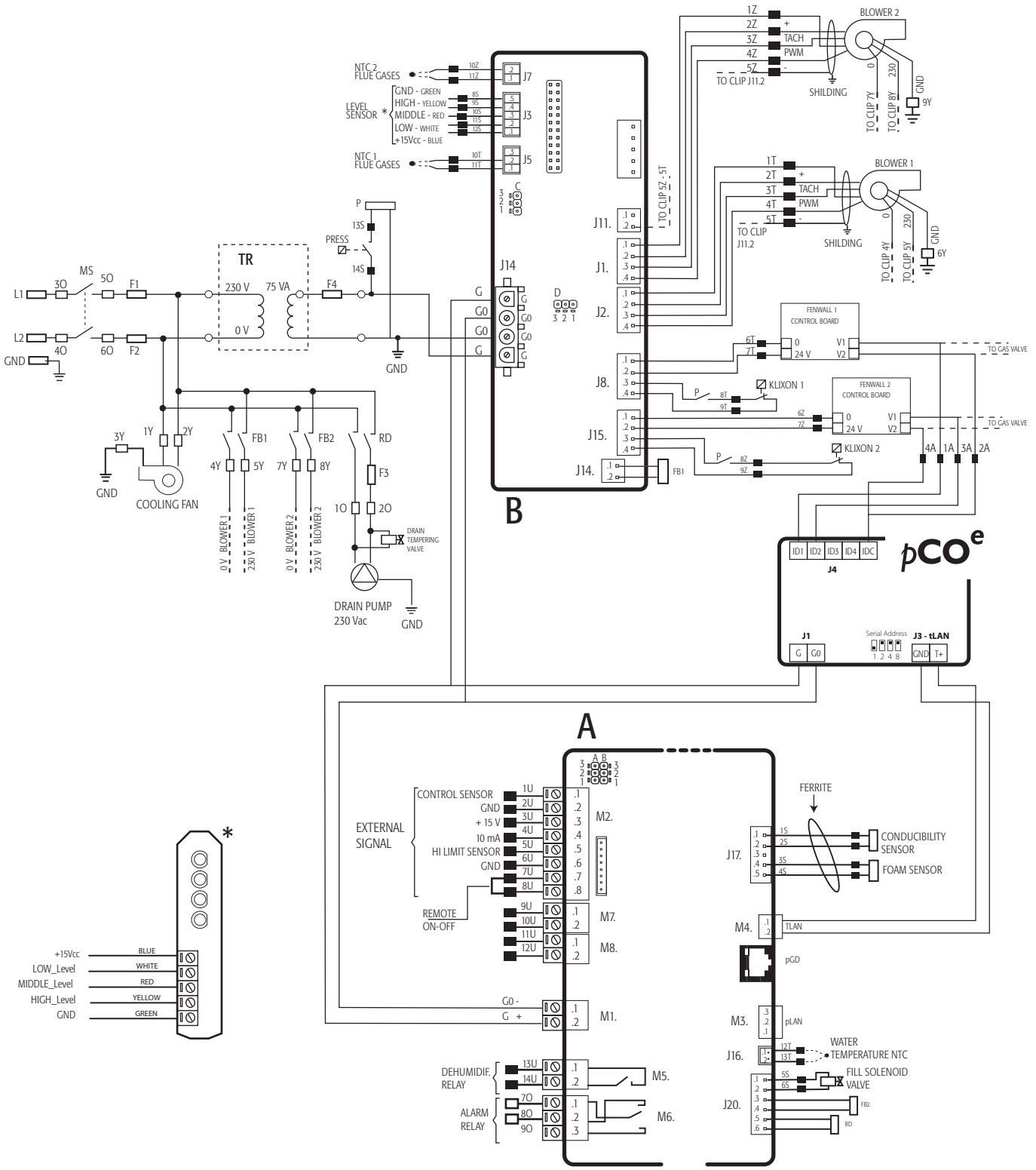
G0 = 0 V

■ MORSETTI AUSILIARI

□ MORSETTI DI POTENZA

Fig. 5.b

5.5 Connection diagram, UG180



LEGENDA

G = 24 Vac

G0 = 0 V

■ MORSETTI AUSILIARI

□ MORSETTI DI POTENZA

Fig. 5.c

5.6 Adjusting the humidifier to different types of gas

Important: The appliances are delivered calibrated and tested to operate on natural gas
The humidifier can be supplied with the following types of gas:
• Natural gas (G20-G25 natural gas - factory default);
• Propane-butane (GPL G30-G31).

A number of parameters on the electronic controller need to be set for correct operation (see the controller manual - cod. +030220930) and combustion adjusted by checking the CO2 (%vol) and CO (ppm) values in the flue gas:

NATURAL GAS CALIBRATION

	UG45		UG90		UG180	
n. giri	**min**	**max**	**min**	**max**	**min**	**max**
G20-G25	1450	4700	1700	5050	2000	5300

Tab. 5.b

Important note: the humidifier is factory-fitted for a maximum production equal to the 70% of the rated output. To change the maximum production see the controller manual - cod. +030220930.

5.6.1 Calibrating the gas burner

The burner is pre-calibrated in the testing phase by the manufacturer for natural gas utilized; nonetheless, combustion should be checked and adjusted if necessary.

5.6.2 Preparing for analysis of the combustion

If the flue is positioned horizontally or vertically:
1. remove the T cap from the flue inspection section on the humidifier (see Fig. 5.d);
2. insert the flue gas analysis probe;
3. analyse the flue gas.

When analysis is completed, replace the T cap on the inspection section.

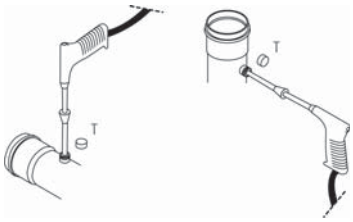


Fig. 5.d

5.6.3 Types of calibration

Two types of burner calibration are available:
A. Guided
B. Manual

The step-by-step Guided procedure automatically provides the user all the information needed to complete calibration.
For the manual procedure, on the other hand, see the instructions below.
(For further info see the controller manual P/N +030220930)

5.6.4 Calibrating the burner at maximum output

Operate the burner at maximum output as shown in Table 5.b, setting the fan speed to the maximum level, and check by analysing the flue gas that the CO_2 value is 9.1% ±0.5%;

If the values measured are different, proceed as follows:
1. open the front door;
2. adjust the gas flow regulator B (see Fig. 5.e) using a flat blade screwdriver or a 4 mm Allen key: turn anticlockwise to increase the CO_2 value, clockwise to decrease it;
3. wait for the correct CO_2 value to stabilise; if necessary, repeat the operations.



Fig. 5.e

5.6.5 Calibrating the burner at minimum output

Operate the burner at the minimum output setting the fan speed to the minimum level, as described previously, and check by analysing the flue gas that the CO_2 value is 8.4% ±0.5%.

If the values measured are different, proceed as follows:
1. open the front door;
2. remove the cap from the gas valve pressure regulator and adjust the pressure regulator A (see Fig. 5.e) using a no. 40 Torx key: turn clockwise to increase the CO_2 value, anticlockwise to decrease it (make small adjustments, as the screw is very sensitive);
3. wait until the value of CO_2 correct is stable, if necessary, repeat the operations.
4. replace the cap on the regulator.

WARNING: Once the calibration at MINIMUM output has been performed, check the MAXIMUM calibration again, as it may have been affected by the MINIMUM calibration; if necessary, repeat the operations described in Calibrating at MAXIMUM output. Then restart the automatic operation of the burner.
To check the correct position of the burner electrodes, see "Cleaning the burner".

IMPORTANT: make sure that the CO values in steady operation do not exceed 100 ppm.

PROPANE/ BUTANE/LPG CALIBRATION

IMPORTANT: Do not start the burner (delivered with default calibration for natural gas!) supplied on propane or LPG until having turned the maximum gas flow control screw (B) around 2.5-3 turns clockwise.
The heat value of propane in fact is around three times higher than natural gas, therefore the maximum gas flow must be reduced before igniting the burner.
After having reduced the gas flow as above, ignite the burner and then calibrate the gas flow by analysing the flue gas, as described in paragraphs 5.6.5 – 5.6.6.

	UG45		UG90		UG180	
n. giri	**min**	**max**	**min**	**max**	**min**	**max**
G30-G31	1650	4200	1850	4450	2000	5150

Tab. 5.c

5.6.6 Calibrating the burner at maximum output

Operate the burner at maximum output as shown in Table 5.c, setting the fan speed to the maximum level, and check by analysing the flue gas that the CO2 value is10.5% ±0.5%.

If the values measured are different, proceed as follows:
1. open the front door;
2. adjust the gas flow regulator B (see Fig. 5.e) using a flat blade screwdriver or a 4 mm Allen key: turn anticlockwise to increase the CO2 value, to decrease it;
3. wait for the correct CO2 value to stabilise; if necessary, repeat the operations.

5.6.7 Calibrating the burner at minimum output

Operate the burner at minimum output, setting the fan speed to the minimum level, and check by analysing the flue gas that the CO_2 value is 9.9% ±0.5%.

If the values measured are different, proceed as follows:
1. open the front door;
2. remove the cap from the gas valve pressure regulator and adjust the pressure regulator A (see Fig. 5.e) using a no. 40 Torx key: turn clockwise to increase the CO_2 value, anticlockwise to decrease it (Important: make small adjustments, as the screw is very sensitive);
3. wait for the correct CO_2 value to stabilise; if necessary, repeat the operations.
4. replace the cap on the regulator;

WARNING: Once the calibration at minimum output has been performed, check the MAXIMUM calibration again, as it may have been affected by the MINIMUM calibration; if necessary, repeat the operations described in Calibrating at maximum output. Then restart automatic operation of the burner.
To check the correct position of the burner electrodes, see "Cleaning the burner".

IMPORTANT: make sure that the CO values in steady operation do not exceed 100 ppm.

5.6.8 Shutdown

During seasonal shutdown or shutdown for maintenance of the electrical parts and/or the water circuit, the humidifier should be placed out-of-service (see the controller manual - cod. +030220930).

6. MAINTENANCE

BEFORE ALL OPERATIONS:
- disconnect the appliance from the mains power supply;
- close the mains water and gas taps;
- drain the water circuit using the manual electric pump function, or drain. it is necessary to connect a pipe to drain out the water to avoid internal flooding.

IMPORTANT WARNINGS:
- do not use detergents or solvents to clean the plastic components.
- descaling can be performed using a 20% acetic acid solution, then rinsing with plenty of water.

6.1 Boiler maintenance

Access the boiler as described in "Removing and reassembling the front cover".
Remove panels A, B and C as follows (Fig. 6.a):
- remove the boiler steam hose, T;
- undo screws V and V1;
- undo the inside and outside screws that secure panel B;
- remove panels A, B and C.

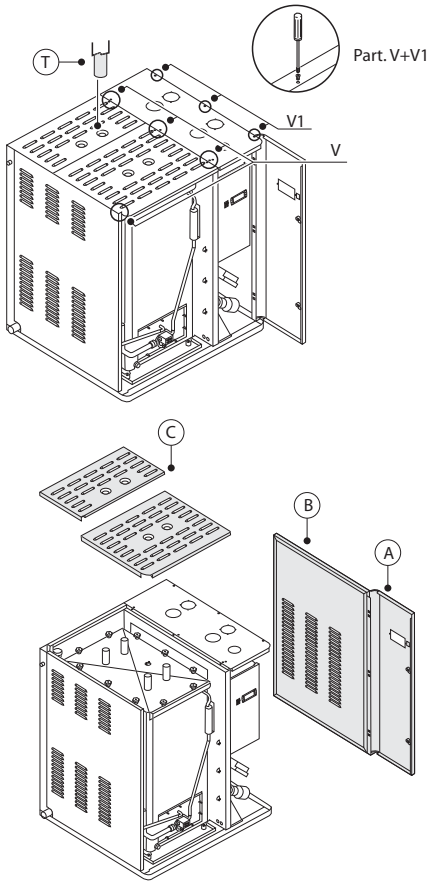


Fig. 6.a

To remove the exchanger, proceed as follows (Figs. 6.a and 6.b):
- disconnect the cables from the burner electrodes (the detection electrode should be disconnected from the burner control board, Fig. 6.c position "A");
- remove the fan manifold by undoing the screws B (Fig. 6.c) and remove the burner combustion head (Fig. 6.d);
- disconnect the cables from the foam detection electrode **F** (Fig. 6.b);
- unscrew and remove the fastening nuts **G**;
- remove the boiler cover;
- undo the nuts **E** from the side of the burner;
- remove the heat exchanger **H** and clean it using a 20% acetic acid solution, removing any deposits using implements that do not scratch the lining on the exchanger (e.g. wood or plastic material). At the end of this activity rinse out copiously.
- disconnect the power cable and all the pipes connected to the electric pump and the panel **O**;
- undo the panel fastening nuts and remove the panel, making sure not to damage the gasket **L**;
- unscrew screws **M** to free the steel filter **N** and clean it using a 20% acetic acid solution;
- using a wooden or plastic scraper, scrape the inside of the vaporiser chamber and clean it using a 20% acetic acid solution.

IMPORTANT WARNING: after having replaced or checked the parts in the water circuit, make sure that the connections have been completed correctly and are tight. Start the unit again and run a number of fill and drain cycles (2 to 4), after which, applying the safety procedure, check for any water leaks.

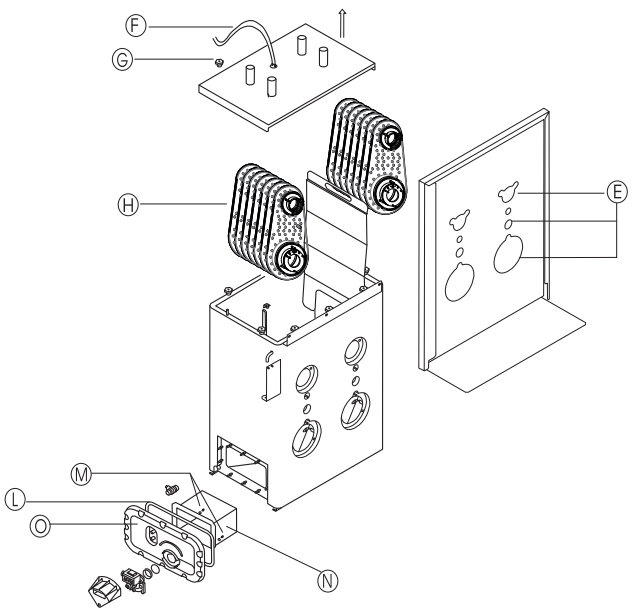


Fig. 6.b

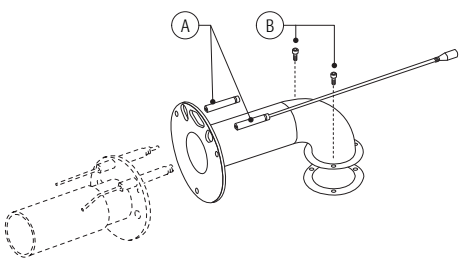


Fig. 6.c

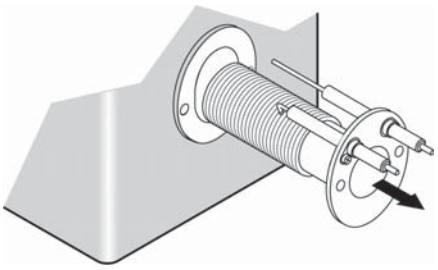


Fig. 6.d

6.2 Cleaning the burner

The burner must be checked by authorised and qualified personnel once or twice a year, according to use.

Before performing any maintenance on the burner, check its general condition, carrying out the operations listed below:

- remove the burner head as described previously;
- using a brush, clean the inside of the burner head; make sure not to crush the metal mesh (Fig. 6.e);
- remove all gas and electrical connections from the burner assembly;
- check for dust deposits on the fan and if necessary remove the parts required to clean it (Fig. 6.f).
- clean the fan using a brush (Fig. 6.g).

WARNING: to avoid damaging the fan, never use a jet of compressed air when cleaning it.

When reassembling the parts, check:

- the condition of the gaskets (replace if necessary);
- that the position of the electrodes corresponds to Fig. 6.c.

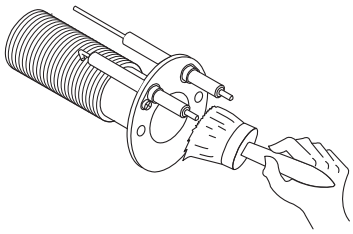


Fig. 6.e

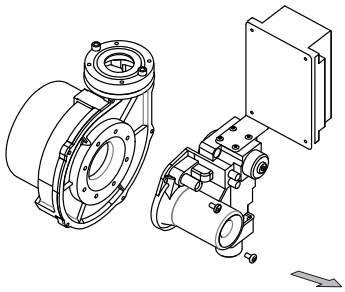


Fig. 6.f

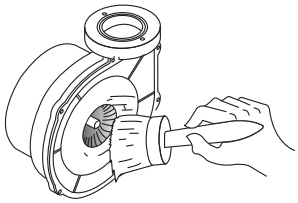


Fig. 6.g

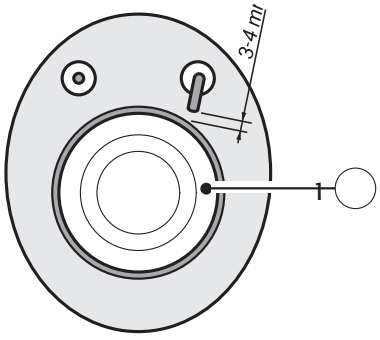
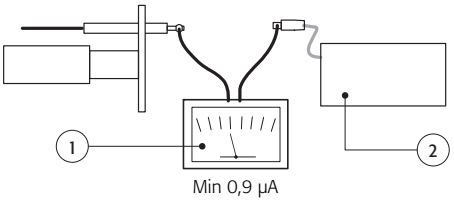


Fig. 6.h

6.3 Operating anomalies - checking the ionisation current

The ionisation current is checked by placing a microammeter set to 10 µA full scale (direct current) in series with the flame detection electrode. The wrong positioning of the electrode may lead to a decrease in the ionisation current and shut the burner down due to incorrect flame detection. In this case, check the correct position and condition of the electrode, its electrical connections, and the earth connection of the burner. The ionisation current is normally 5 µA.

For details of the spare parts, see the SPARE PARTS manual.



1	microammeter with 10 µA full scale
2	test equipment

Fig. 6.i

6.4 Flue gas temperature sensor

The flue gas temperature sensor is located in the flue and does not require periodical maintenance.

If the sensor needs to be replaced due to a fault, proceed as follows:

- stop the humidifier by moving the rocker switch on the control panel to 0 and then checking that the display is off;
- open the electrical compartment to access to the panel;
- loosen terminals 10T and 11T (or 10Z and 11Z) (see the wiring diagram) on the terminal block in the bottom of the electrical panel and the probe holder nut on the adapter joint (see the spare parts manual) and then remove the probe and the electrical cable.

Then replace the sensor by following the same procedure in reverse.

6.5 Water temperature sensor

This does not require periodical maintenance.

To replace the sensor, proceed as follows:

- stop the humidifier by moving the rocker switch on the control panel to 0 and then checking that the display is off;
- open the panels to access the water circuit (Fig. 6.a);
- remove the sensor to the inox support inside the level sensor in the forntal part;
- loosen terminals 12T and 13T (see the wiring diagram) on the terminal block in the bottom and remove the probe.

Then replace the sensor by following the same procedure in reverse.

6.6 Fuses

Fuses 1, 2, 3 measure 10.3x38 mm and are contained inside the fuse carrier; while fuse 4 measures 6.3x20 mm; to check the fuses, test continuity using a tester.

Use fuses with the ratings indicated in Table 7.a.

model	**UG045, UG090, UG180**
fuses 1 and 2	Slow-blow, 2 A
fuse 3	Fast-blow, 1A
fuse 4	Slow-blow, 3.15A

Table 6.a

6.7 Cooling fan

The cooling fan starts when the unit is switched on, and is used to keep the operating temperature of the electrical panel and the electronics within the designed limits.

If the fan is faulty, after to have removed pannel B - Fig. 6.a:

- disconnect the electrical connections;
- replace the fan after having unscrewed the fastening screws.

N.B: being thermally protected, the fan may switch off temporarily if it overheats, and then will start again after having cooled down.

7. OPERATING PRINCIPLE AND OTHER FUNCTIONS

7.1 Operating principle

In a gas humidifier the production of steam is obtained inside a boiler containing water that is heated to and then held at boiling temperature. The heat required to boil the water is provided by a heat exchanger, heated by a type C pre-mix modulating room-sealed gas burner (standards compliant), which takes in air for combustion and discharges the flue gas to the outside through suitable piping.
This unit is therefore suitable for environments where there is not sufficient fresh air.

The operation of the burner is completely automatic and does not use a pilot flame.

All the operating phases of the burner are controlled by an electronic board, which also constantly checks the presence of the flame by ionisation. The output of the burner continuously responds to the request for heat, according to an ample modulation ratio (1:4).

The variable speed fan (managed by the control board), together with the proportional gas valve, allows the output to be modulated (the flow-rate of gas is proportional to that of the air required for combustion).

The water that evaporates over time is automatically replaced with water from the mains supply.

In stable operating conditions, the level of production required is automatically controlled by adjusting the thermal output of the burner.

The salts introduced by the automatic refilling of the water are partly deposited as lime scale inside the boiler, contributing to the progressive depletion of the cylinder, and partly remain dissolved in the water. To avoid excessive accumulation of salts, a quantity of water is periodically and automatically drained and then replaced with renewal water.

For further information on operation, see the controller manual - cod. +030220930.

8. TECHNICAL SPECIFICATIONS

models	UG045	UG090	UG180
rated power supply voltage (Vac)	230 50 Hz (*003 version) / 230 60 Hz (*103 version)		
steam connection (dia. mm)	2x40		4x40
steam outlet pressure limits (Pa)	0…2000 (0…0.30 PSI)		
supply water			
connection	3/4" G		
temperature limits °C (°F)	1…40 (33.8....104)		
pressure limits (MPa)	0,1…0,8 (1…8 bar) (14,5÷166 PSI)		
instant flow-rate (l/min) carico	18 (4.76 gall US/min)		
drain water			
connection dia. mm (in)	50 (1.97)		
typical temperature °C (°F)	≤100 (212)		
instant flow-rate (l/min) acqua drenaggio	32 (6,60 gall/min)		
operating conditions	1T40 °C (33T104 °F); 10...90% rH non condensing		
storage conditions	-10T70 °C (14T158 °F), 5…95% rH		
index of protection	IP20		
auxiliary voltage/frequency (V - Hz)	24 / 50…60		
maximum auxiliary power (VA)	25		
instant steam production (1) kg/h (lbs/h)	45 (100)	90 (200)	180 (400)
power input at rated voltage (W)	110	140	190

(1) the average steam production is affected by factors such as: room temperature, water quality, the steam distribution system.

Tab. 8.a

8.1 Thermal-gas supply characteristics

			UG045	UG090	UG180
heat output	rated	Kw (BTU/h)	33,02 (112,763)	62,5 (213,449)	125,0 (426,897)
	minimum		7,82 (26,705)	14,7 (50,203)	14,7 (50,203)
heat input	rated		34,76 (118,712)	65,0 (221,987)	130,0 (443,973)
	minimum		8,69 (29,678)	16,25 (55,497)	16,25 (55,497)
steam production	rated	kg/h (lbs/h)	45 (100)	90 (200)	180 (400)
	minimum		11,25 (25)	22,5 (50)	22,5 (50)
maximum steam temperature		° C (°F)	105 (221)	105 (221)	105 (221)
water content in stable operation		l	120	120	198
NOx emissions		classe	5(<70 mg/Kw/h	5(<70 mg/Kw/h)	4 (< 100 mg/kWh)
CO2	natural gas (G20)	% vol	9,4	9,4	9,4
	natural gas (G25)		9,3	9,3	9,3
	propane (G31)		11,2	11,4	11,2
	butane (G30)		11,6	11,6	12,0
CO		mg/kWh	* <25	* <60	* <60
flue diameter ***		mm	80 (3")	80 (3")	2xØ80 (3")
air intake duct diameter ***			80 (3")	80 (3")	2xØ80 (3")
steam hose diameter			2x Ø40	2x Ø40	4xØ40
natural gas flow-rate (G20)	rated	m3St/h **	3,68	6,87	13,4
	minimum		0,90	1,75	1,67
natural gas flow-rate (G25)	rated		4,2	8,7	17,5
	minimum		1,02	1,98	1,98
propane flow-rate (G31)	rated		1,43	2,68	5,36
	minimum		0,48	0,68	0,68
butane flow-rate (G30)	rated		1,10	2,06	4,12
	minimum		0,37	0,545	0,545
gas supply pressure	natural gas (G20)	Pa/mbar/PSI	2000/20/0.9	2000/20/0.9	2000/20/0.9
	natural gas (G25)		2000/20/0.9	2000/20/0.9	2000/20/0.9
	propane (G31)		3000/30/0.44	3000/30/0.44	3000/30/0.44
	butane (G30)		3000/30/0.44	3000/30/0.44	3000/30/0.44
max pressure drop allowed in the air intake duct and flue		Pa/mbar/PSI	90/0.90/0.013	82/0.82/0.012	95/0.95/0.014

Tab. 8.b

* value referred to combustion with natural gas (G20);
** m^3St = dry gas at 15°C and an atmospheric pressure of 1013.25 mbar;
*** using the specific KITINSTALL for USA.

8.2 Flue gas values according to the heat input

type of fuel	natural gas (G20)			natural gas (G25)			propane (G31)			Butane (G30)		
	UG045	UG090	UG180	UG045	UG090	UG180	UG045	UG090	UG180	UG045	UG090	UG180
rated heat output (kW/h/BTU)	34,76/ 118,712	65,00/ 221,987	130,0/ 443,973	34,76/ 118,712	65,00/ 221,987	130,0/ 443,973	34,76/ 118,712	65,00/ 221,987	130,0/ 443,973	34,76/ 118,712	65,00/ 221,987	130,0/ 443,973
flue gas flow-rate (kg/s)	0,0163	0,0303	0,0606	0,0167	0,03115	0,0623	0,0154	0,0283	0,0566	0.0147	0,0276	0,0551
flue gas temperature °C (°F)	135 (253)	170 (338)	165 (329)	123 (253)	175 (347)	163 (325)	123 (253)	175 (347)	165 (329)	123 (253)	175 (347)	163 (325)
percentage of CO_2 in the flue gas (%)	9,4	9,4	9,4	9,3	9,3	9,3	11,2	11,4	11,2	11,6	11,6	12,0

Tab. 8.c

8.3 Dimensions

Diemnsions in mm (inch): UG045-090

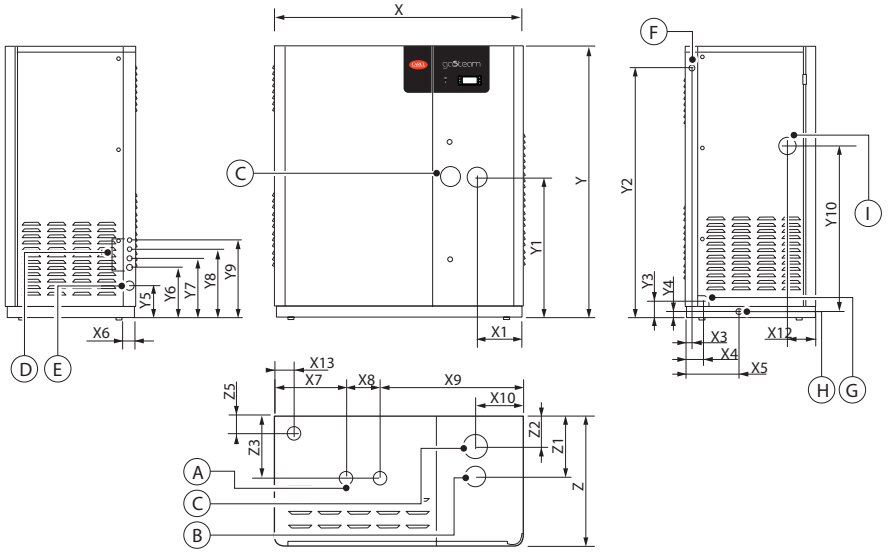


Fig. 8.a

Dimensions mm (inch): UG180

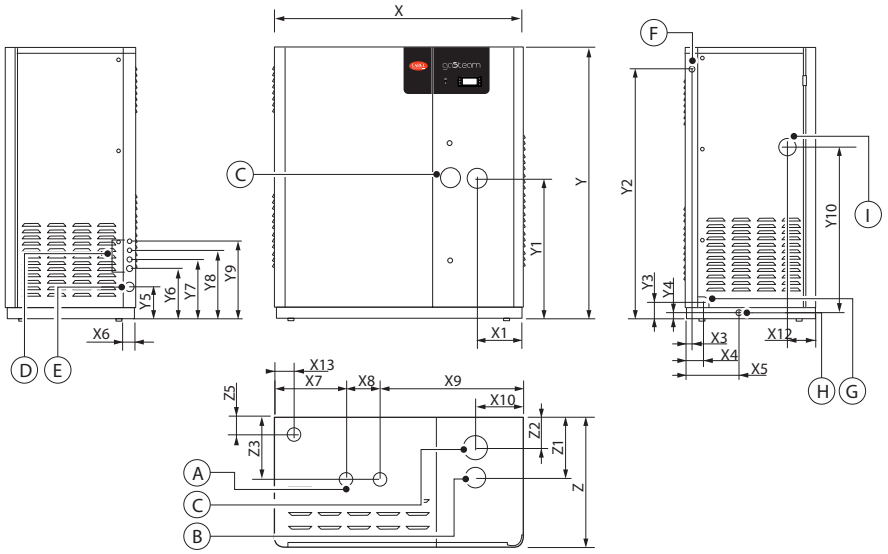


Fig. 8.b

	description	UG045-090	UG180
A	steam outlet	40 (1.574)	
B	flue	80 (3.150)	
C	air intake	80 (3.150)	
D	electrical cable glands	PG 11	PG 11
E	gas fitting	1″	1 1/4″
F	water fitting	3/4″	3/4″
G	drain	50 (1.97)	
H	bottom tank discharge	20 (0.787)	
I	inlet drain tempering hose	45 (1.7)	

Tab. 8.d

	UG045-090	UG180
X	1020 (40.157)	
X1	204 (8.031)	168 (6.614)
X2	---	273 (10.748)
X3	30 (1.181)	
X4	85 (3.346)	
X5	280 (11.024)	
X6	30 (1.181)	
X7	286 (11.260)	288 (11.338)
X8	150 (5.905)	
X9	582 (22.913)	580 (22.835)
X10	207 (8.149)	120 (4.724)
X11		86 (3.386)
X12	100 (3.937)	
X13	72,5 (2.854)	

	UG045-090	UG180
Y	1200 (47.244)	
Y1	658 (25.905)	629 (24.764)
Y1a	778 (30.630)	---
Y2	1100 (43.307)	1101(43.346)
Y3	65 (2.559)	66 (2.598)
Y4	19,5 (0.768)	21 (0.827)
Y5	117,5 (4.626)	136 (5.354)
Y6	216 (8.504)	
Y7	256 (10.079)	
Y8	296 (11.653)	
Y9	336 (13.228)	
Y10	950 (37.401)	

	UG045-090	UG180
Z	570 (22.441)	930 (36.614)
Z1	246 (9.685)	340 (13.385)
Z2	126 (4.960)	280,5 (11.043)
Z3	248 (9.764)	362 (14.252)
Z4	---	266 (10.472)
Z5	97,6 (3.842)	

Tab. 8.e

8.4 Weights

		UG045	UG090	UG180
weight kg (pounds)	packaged	186 (410)		295 (650.3)
	empty	170 (374.8)		280 (617.3)
	installed (in normal operating conditions, filled with water	263,5 (579.8)		485 (1069)

Tab. 8.f

8.5 Rating plate

Label applied on the appliance describing the certified types of gas and the corresponding supply pressures for various European countries (classification in accordance with EN437).

62C725A030 R0

	IT II2H3P		GB II2H3P		CH II2H3P		DK II2H3P	
Gas	G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
mbar	20	28-30/37	20	28-30/37	20	28-30/50	20	28-30/37
	FI II2H3P		SE II2H3P		IE II2H3P		ES II2H3P	
Gas	G20	G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
mbar	20	28-30/37	20	28-30/50	20	28-30/37	20	28-30/37
	NO II2E3P		LU I2Er I3P		AT II2H3P		DE II2ELL3P	
Gas		G30/G31	G20	G30/G31	G20	G30/G31	G20	G30/G31
mbar		50	20	50	20	50	20	50
	FR II2Er I3P		BE I2EsP		NL II2L3P		GR II2H3P	
Gas	G20/G25	G30/G31	G20/G25	G30/G31	G25	G30/G31	G20	G30/G31
mbar	20/25	28-30/37	20/25	28-30/37	25	30	20	30
2H G20 20mbar		2E G20 20mbar		2L G25 25mbar		2ELL G20-G25 20mbar		
2Esi G20/G25 20/25mbar						T B23 C13 C33 C43 C53		
PMW 0,8 MPa		Tmax 95°C		D 1,5 l/min		C 120 l		

MOD.	GAS FIRE HUMIDIFIER
P kW	7,83 min / 33,02 max
Q kW	8,69 min / 34,76 max
G20 Sm ^{3}/h	0,90 min / 3,60 max
G25 Sm ^{3}/h	1,03 min / 4,10 max
Vac	230
Hz	50
PH	1
kW	0,11
Kg / h	45
IP	20
NOx cl	5
Date	mm/dd/yyyy
CODE	UG 045 HD003

SERIAL N° **M001000**

REV. **X.XXX**

CE 0085
0085BM0395

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Fig. 8.c - UG045

MOD.	GAS FIRE HUMIDIFIER
P kW	14,70 min / 125,00 max
Q kW	16,25 min / 130,00 max
G20 Sm ^{3}/h	1,75 min / 13,70 max
G25 Sm ^{3}/h	1,98 min / 16,60 max
Vac	230
Hz	50
PH	1
kW	0,19
Kg / h	180
IP	20
NOx cl	4
Date	mm/dd/yyyy
CODE	UG 180 HD003

SERIAL N° **M001000**

REV. **X.XXX**

CE 0085
0085BM0395

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Fig. 8.e - UG180

MOD.	GAS FIRE HUMIDIFIER
P kW	14,70 min / 62,50 max
Q kW	16,25 min / 65,00 max
G20 Sm ^{3}/h	1,75 min / 6,87 max
G25 Sm ^{3}/h	1,98 min / 8,29 max
Vac	230
Hz	50
PH	1
kW	0,14
Kg / h	90
IP	20
NOx cl	5
Date	mm/dd/yyyy
CODE	UG 090 HD003

SERIAL N° **M001000**

REV. **X.XXX**

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Fig. 8.d - UG090

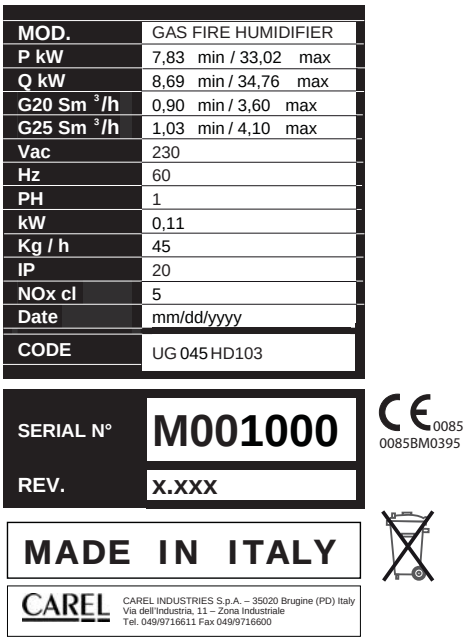


Fig. 8.f - UG045

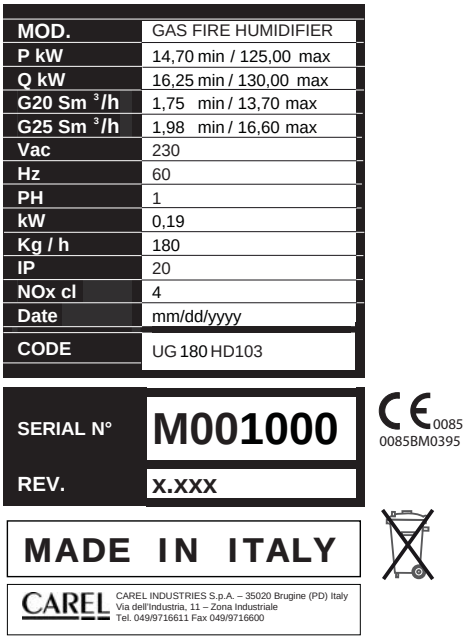


Fig. 8.h - UG180



Fig. 8.g - UG090

CAREL reserves the right to modify the features of its products without prior notice.

CAREL

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"gaSteam HARDWARE" +030220940 - rel. 1.7 - 25.02.2016