



Installation, use and maintenance manual

TS 2000

individual natural gas/LPG natural draught gas-fired
convectors



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I INTRODUCTION



Installation, use and maintenance manual

This Manual is an integral part of the TS 2000 appliance and must be handed to the end user together with the appliance.

I.1 RECIPIENTS

This Manual is intended for:

- ▶ End user, for appropriate and safe use of the appliance.
- ▶ Qualified installer, for correct appliance installation.
- ▶ Planner, for specific information on the appliance.

II SYMBOLS AND DEFINITIONS

II.1 KEY TO SYMBOLS



DANGER



WARNING



NOTE



PROCEDURE



REFERENCE (to other document)

II.2 TERMS AND DEFINITIONS

Appliance/Unit = equivalent terms, both used to refer to the independent direct exchange gas-fired convector.

TAC = Technical Assistance Centre authorised by Robur.

First start-up = appliance commissioning operation which may only and exclusively be carried out by a TAC.

III WARNINGS

III.1 GENERAL AND SAFETY WARNINGS



Installer's qualifications

Installation must exclusively be performed by a qualified firm and by skilled personnel, with specific knowledge on heating, electrical systems and gas appliances, in compliance with the laws in force in the Country of installation.



Declaration of conformity

Upon completing installation, the installing firm shall issue to the owner/client the appliance's workmanlike conformity declaration, according to national/local regulations in force and the manufacturer's instructions/provisions.



Misuse

The appliance must only be used for the purposes for which it has been designed. Any other use is deemed hazardous. Incorrect use may affect operation, duration and safety of the appliance. Adhere to the manufacturer's instructions.



Use of the appliance by children

The appliance can be used by children over 8 years

old, and by people with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, only if they are under surveillance or after they have received instructions regarding safe use of the appliance and understanding the dangers inherent in it. Children should not play with the appliance.



Hazardous situations

- Do not start the appliance in hazardous conditions, such as: gas smell, problems with the electrical/gas system, parts of the appliance under water or damaged, malfunctioning, disabling or bypassing control and safety devices.
- In case of danger, request intervention by qualified personnel.
- In case of danger, switch off the electrical power and gas supplies only if this can be done in total safety.
- Do not entrust children, persons with physical, sensory or mental disabilities or persons with poor knowledge and experience with use of the appliance.



Gas component tightness

- Before performing any operation on gas ducting components, close the gas valve.
- Upon completing any procedure, perform the

tightness test according to regulations in force.



Gas smell

If you smell gas:

- Do not use electrical devices such as telephones, multimeters or other equipment that may cause sparks next to the appliance.
- Shut off the gas supply by turning the valve off.
- Open immediately doors and windows to create a cross-current of air to ventilate the room.
- Switch off the power supply via the external disconnect switch in the power supply electrical panel.
- Use a telephone away from the appliance to ask for intervention from qualified personnel.



Poisoning

- Ensure the flue gas ducts are tight and compliant with the regulations in force.
- Upon completing any procedure, ensure the tightness of the components.



Burn hazard

The appliance contains very hot parts.

- Do not open the appliance and do not touch internal components before the appliance has cooled down.
- Do not touch the flue gas exhaust before it has cooled down.



Air flow

Do not obstruct the air intake or the warm air outlet.



Distance from combustible or flammable materials

- Do not deposit flammable materials (paper, diluents, paints, etc.) near the appliance.
- Comply with current regulations.



Aggressive substances in the air

The air of the installation site must be free from aggressive substances.



In the event of failure

Operations on internal components and repairs may exclusively be carried out by a TAC, using only original spare parts.

- In the event of failure of the appliance and/or breakage of any component, do not attempt to repair and/or restore and immediately contact the TAC.



Routine maintenance

Proper maintenance assures the efficiency and good operation of the appliance over time.

- Maintenance must be performed according to the manufacturer's instructions (see Chapter 6 p. 16) and in compliance with current regulations.
- Appliance maintenance and repairs may only be entrusted to firms legally authorised to work on gas appliances and systems.
- Enter into a maintenance contract with an authorised specialised firm for routine maintenance and for servicing in case of need.
- Use only original parts.



Keep the Manual

This Installation, use and maintenance manual must always accompany the appliance and must be handed to the new owner or installer in the event of sale or removal.

III.2 COMPLIANCE

EU directives and standards

The TS 2000 series gas-fired convectors are certified in accordance with European regulation GAR 426/2016/EU and meet the essential requirements of the following Directives:

- ▶ 2016/426/EU "Gas Appliances Regulation" as amended and added.

Furthermore, they comply with the requirements of the following standards:

- ▶ EN 613 Independent gas-fired convection heaters

Other applicable provisions and standards

The design, installation, operation and maintenance of the systems shall be carried out in compliance with current applicable regulations, depending on the Country and location, and in accordance with the manufacturer's instructions. In particular, regulations regarding the following shall be complied with:

- ▶ Gas systems and equipment.
- ▶ Heating systems.
- ▶ Environmental protection and combustion products exhaust.
- ▶ Fire safety and prevention.
- ▶ Any other applicable law, standard and regulation.

III.3 EXCLUSIONS OF LIABILITY AND WARRANTY



Any contractual or extra-contractual liability of the manufacturer for any damage caused by incorrect installation and/or improper use and/or failure to comply with regulations and with the manufacturer's directions/instructions shall be disclaimed.



In particular, the warranty on the appliance may be rendered void by the following conditions:

- Incorrect installation.
- Misuse.
- Failure to comply with the manufacturer's indications on installation, use and maintenance.
- Alteration or modification of the product or any part thereof.
- Extreme operational conditions or however outside of the operational ranges set forth by the manufacturer.
- Damages caused by external agents such as salts, chlorine, sulphur or other chemical substances present in the air of the installation site.
- Abnormal actions transmitted to the appliance by the system or installation (mechanical stresses, pressure, vibrations, thermal expansion, electrical surges...).
- Accidental damages or due to force majeure.

1 FEATURES AND TECHNICAL DATA

1.1 FEATURES

1.1.1 Operation

The TS 2000 gas-fired convector is an independent heating appliance with sealed combustion chamber and natural draught with balanced flow.

It has been designed to be installed inside the room to be heated.

It can operate either with natural gas (G20) and LPG (G30/G31) (gas-fired convector belonging to category II_{2H3+} according to EN 613).

The combustion air intake and the flue gas outlet take place outside the installation room by means of two coaxial pipes. Therefore the appliance must be positioned on an external perimeter wall.

The dual function of air intake and flue gas exhaust performed by the coaxial duct does not allow for connection to traditional flues.

The operation principle of the TS 2000 gas-fired convector is based on a convective motion of room air that passes through the gas-fired convector from bottom to top, is heated and diffused into the room through the upper grille.



For this reason it is important not to obstruct the air outlet by placing clothing or any other objects over the outlet grille; always keep curtains, chairs or any other furniture at least 30 cm away from the heater.

The operation of the appliance, which is very simple in

itself, is made completely automatic by the thermostatic regulation: in fact, the user only requires the preliminary ignition operation and the choice of the desired temperature (set on the thermostatic control knob).

The sealed combustion chamber is the best guarantee of safety for the environment in which the gas-fired convector is installed: there is no possibility of the products of combustion leak, nor is the oxygen necessary for combustion taken from the environment. The appliance, once installed in accordance with the installation standards, does not require any ventilation openings in the room.

A flame detection device using a thermocouple interrupts the gas supply in the event of an accidental shutdown.

1.1.2 Mechanical components

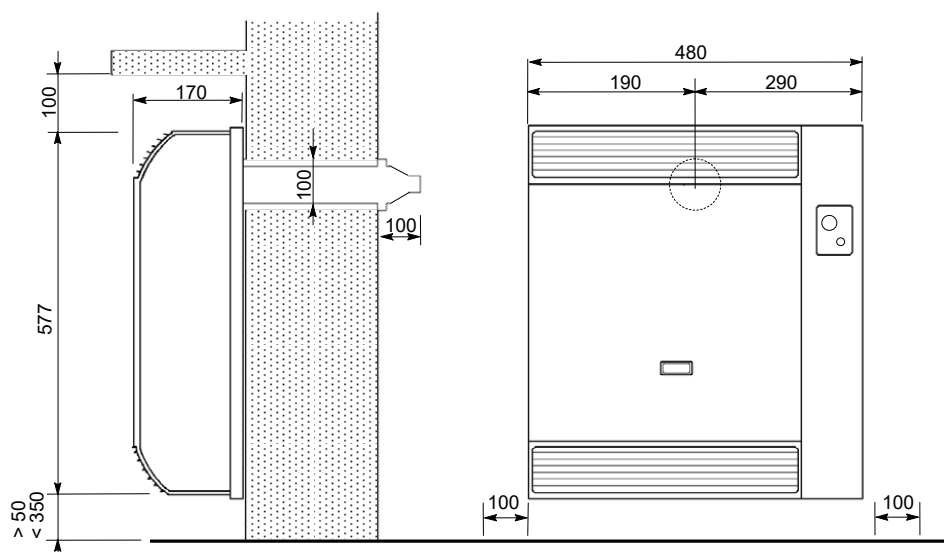
- Sealed combustion chamber.
- High-efficiency aluminium alloy heat exchanger.
- Ø 100/60 mm coaxial combustion air intake and flue gas exhaust pipes.
- External flue gas terminal in aluminium alloy.
- Casing in epoxy powder-coated sheet metal.
- Support bracket for wall mounting.

1.1.3 Control and safety devices

- Gas valve providing the following functions:
 - burner ignition
 - flame monitoring
 - heat exchanger temperature probe control
- Heat exchanger temperature control probe
- Piezoelectric ignition button
- Thermostatic control knob

1.2 DIMENSIONS

Figure 1.1 Dimensions



1.3 TECHNICAL DATA

Table 1.1 *Technical data*

			TS 2000
Heating mode			
Heat input	nominal (1013 mbar - 15 °C) (1)	kW	2,0
Heat output	nominal	kW	1,7
Efficiency	nominal heat input	%	85,8
Installation data			
Gas consumption	G20 natural gas (nominal)	m ³ /h	0,20
	G30 (nominal)	kg/h	0,15
	G31 (nominal)	kg/h	0,15
Gas connection	thread	"	3/8
Flue gas exhaust	type of installation	-	C11
	diameter (Ø)	mm	60/100 (2)
	residual head	Pa	0 (3)
Dimensions	width	mm	480
	height	mm	577
	depth	mm	170
Weight	in operation	kg	17

(1) Relative to NCV (net calorific value).

(2) Coaxial pipe: flue gas exhaust Ø 60 mm, air intake Ø 100 mm.

(3) It is not possible to use coaxial pipes other than the one supplied. The minimum wall thickness must be 150 mm, the maximum 500 mm.

2 TRANSPORT AND POSITIONING

2.1 WARNINGS



Damage from transport or installation

The manufacturer shall not be liable for any damage during appliance transport and installation.



On-site inspection

- Upon arrival at the site, ensure there is no transport damage on packing.
- After removing the packing materials, ensure the appliance is intact and complete.



Packing

- Only remove the packing after placing the appliance on site.
- Do not leave parts of the packing within the reach of children (plastic, polystyrene, nails...) since they are potentially dangerous.



Weight

- The lifting equipment must be suitable for the load.
- Lift up the appliance and secure it to its support bracket.

- Comply with safety regulations at the installation site.

2.3 APPLIANCE POSITIONING

The appliance must be installed in the room to be heated.

2.3.1 Where to install the appliance

- The gas-fired convector must be installed on an external perimeter wall, respecting the distances indicated in Figure 1.1 p. 7.
- Avoid placement on walls or combustible materials without a suitable heat shield.
- Do not install the gas-fired convector over electrical boxes/switches or distribution cabinets that require periodic inspection.



Installation must not be made on walls with poor strength that do not guarantee adequate resistance to the stresses produced by the appliance. The manufacturer assumes no responsibility if the appliance is installed on surfaces or walls that are not suitable to support its weight.



The appliance's flue gas exhaust must not be immediately close to openings or air intakes of buildings, and must comply with safety and environmental regulations.



The flue gas exhaust terminal is accident-preventing and requires no protection.

2.2 HANDLING

2.2.1 Handling and lifting

- Always handle the appliance in its packing, as delivered by the factory.

2.4 MINIMUM CLEARANCE DISTANCES

2.4.1 Distances from combustible or flammable materials

- Keep the appliance away from combustible or flammable materials or components, in compliance with applicable regulations.

2.4.2 Clearances around the appliance



The minimum clearance distances are required for safety, operation and maintenance.

- The minimum recommended distance from the gas-fired convector to the floor is 5 cm (Figure 1.1 p. 7) and possibly not more than 35 cm, as higher heights would result in uneven heat distribution in the heated room.
- Keep a minimum clearance of 10 cm from the sides of the gas-fired convector to any obstacles to allow for removal and refitting of the casing.
- If a shelf is to be installed above the gas-fired convector, leave a minimum clearance of 10 cm. No cover of any type may be installed over the appliance.

3 HEATING ENGINEER

3.1 WARNINGS

3.1.1 General warnings



Read the warnings in Chapter III.1 p. 4, providing important information on regulations and on safety.



Compliance with installation standards

Installation must comply with applicable regulations in force, based on the installation Country and site, in matters of safety, design, implementation and maintenance of:

- heating systems
- gas systems
- flue gas exhaust



Installation must also comply with the manufacturer's provisions.

using a rigid copper or steel pipe and fittings; alternatively, a flexible stainless steel pipe conforming to the regulations in force may also be used.



The connection to the gas pipe must be properly sealed to ensure tightness using a sealant that complies with EN 751-1 and EN 751-2. The connection must be made in such a way that no strain is produced in the pipe or gas-fired convector components.

3.2 SUPPLIED MATERIAL

- Installation jig in cardboard.
- Wall support bracket.
- Air duct Ø 100 mm, length 500 mm.
- Flue gas duct Ø 60 mm, length 500 mm.
- External flue gas terminal in aluminium alloy.
- Round gasket for combustion air.
- Screws and wall plugs.
- Documentation.

3.3 FUEL GAS SUPPLY

3.3.1 Gas connection

- 3/8" on the right, at the bottom.
- Install an anti-vibration connection between the appliance and the gas piping.



The connection to the gas mains must be made

3.3.2 Mandatory shut-off valve

- Provide a gas shut-off valve (manual) on the gas supply line, next to the appliance, to isolate it when required.
- Provide a three-piece pipe union.
- Perform connection in compliance with applicable regulations.

3.3.3 Gas pipes sizing

The gas pipes must not cause excessive pressure drops and, consequently, insufficient gas pressure for the appliance.

3.3.4 Supply gas pressure



This appliance is equipped for a maximum gas supply pressure of 50 mbar.

The appliance's gas supply pressure, both static and dynamic, must comply with Table 3.1 p. 10, with tolerance $\pm 15\%$.



Non compliant gas pressure (Table 3.1 p. 10) may damage the appliance and be hazardous.

Table 3.1 Network gas pressure

Product category	Countries of destination	Gas supply pressure [mbar]			
		G20	G30	G31	G30 ↔ G31
II _{2H3B/P}	CH, CZ, DK, EE, FI, GR, IT, LT, NO, RO, SE, SI, SK	20	30		
	AT	20	50		
II _{2H3P}	CH, CZ, ES, GR, HR, IE, IT, LT, PT, SI, SK	20		37	
II _{2H3+}	CH, CY, CZ, ES, GB, GR, IE, IT, LT, PT, SI, SK, TR	20			28-30 ↔ 37

The appliance gas supply pressure, both static and dynamic, must comply with the values in the Table, with a tolerance of $\pm 15\%$.

3.3.5 Vertical pipes and condensate

- Vertical gas pipes must be fitted with siphon and discharge of the condensate that may form inside the pipe.
- If needed, insulate the piping.

3.3.6 LPG pressure reducers

With LPG the following must be installed:

- A first stage pressure reducer, close to the liquid gas tank.
- A second stage pressure reducer, close to the appliance.



Pressure reducers must always be installed outside the building.

3.4 COMBUSTION PRODUCTS EXHAUST



Compliance with standards

The appliance is approved for connection to a combustion products exhaust duct for the types shown in Table 1.1 p. 8.

3.4.1 Flue gas exhaust and combustion air intake connection

- Ø 60/100 mm on the rear (Figure 1.1 p. 8)

3.4.2 Installation types

The flue gas exhaust/air intake of the TS 2000 gas-fired convectors must be carried out, using the supplied coaxial pipes, on the installation wall (maximum pipe length 50 cm).



Warnings

- The installation of coaxial pipes with a vertical downward outlet is prohibited (leads to recirculation of flue gas with lock-out of the appliance).
- It is forbidden to install coaxial pipes with a vertical outlet upwards (due to rain, water, objects infiltration, with consequent lock-out of the appliance).

3.5 INSTALLATION PROCEDURE

In accordance with the installation project, prepare the gas supply line and make the holes for the flue and combustion air intake pipes.

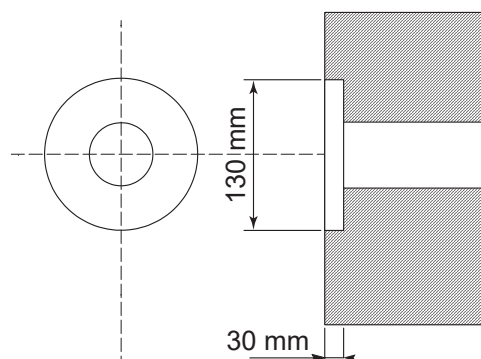
3.5.1 Install the gas-fired convector on the wall

1. Check the packaging for visible signs of damage, otherwise, notify the carrier immediately.
2. Remove the gas-fired convector from its packaging by first removing the air intake and flue gas exhaust pipes. Do not damage or discard the cardboard jig with the drilling template required for installing the gas-fired convector.
3. Fix the jig to the wall where the gas-fired convector is to be installed, making sure it is perpendicular to the floor.
4. Mark on the wall the holes for the air intake and flue gas exhaust duct and for the two wall plugs that will hold the support bracket.
5. Drill the hole (Ø 100 mm) to house the coaxial pipe and holes to fix the support bracket (drill 6 mm holes to insert the provided wall plugs). The Ø 100 mm hole for the duct can be made with a suitable core drill or by means of a succession of smaller holes made with a simple drill on the perimeter to be removed.



If the appliance is to be installed on a wall covered with flammable material, such as wallpaper, matchboarding, etc., part of this must be removed to a Ø 130 mm around the flue outlet hole to reach the bare wall. If it is not possible to remove only the flammable layer (e.g. all-wood walls) it will be necessary to drill a hole 30 mm deep around the pipe (see Figure 3.1 p. 10).

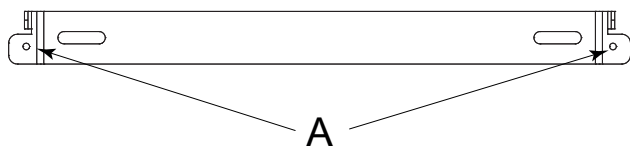
Figure 3.1 Ø 130 hole drilling



6. Use the supplied plugs to fix the support bracket to the wall, making sure that the holes at the ends of the bracket are at the bottom (see Figure 3.2 p. 11). It is recommended, even at this stage, to check that the bracket is parallel to the floor.

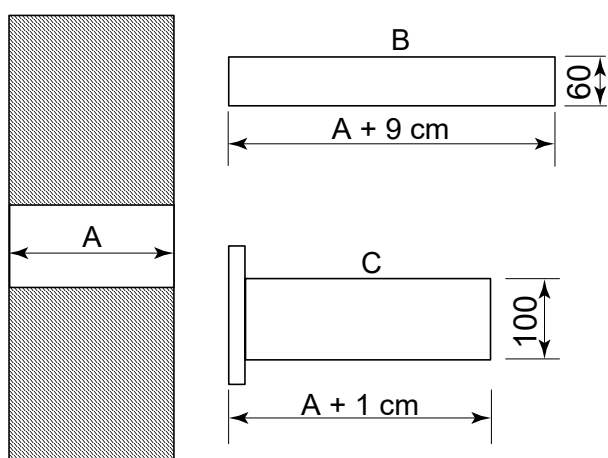
7. Adjust the length of the pipes (intake and exhaust) to the effective wall thickness, cutting the tract in excess: for the exact length determination, see Figure 3.3 p. 11.

Figure 3.2 Correct positioning of the support bracket



A Holes for securing the support bracket to the wall

Figure 3.3 Length of intake and exhaust pipes



A Wall thickness
B Flue gas exhaust pipe
C Air pipe

8. Remove the casing from the heating body by unscrewing the screws at the top and bottom (see figure 3.4 p. 11).
9. Insert the flue gas exhaust pipe B in the combustion chamber. Fit the air pipe C and then fix it to the appliance with the screws provided, inserting the sealing gasket D (see Figure 3.5 p. 11).
10. Place the gas-fired convector on the wall by introducing the intake/exhaust pipe into the hole previously made and hooking the gas-fired convector to the support bracket by means of the specific holes G on the back of the gas-fired convector (see Figure 3.5 p. 11).
11. Secure the heating body to the wall by tightening the two locking screws on the support bracket. Further minor adjustments to the position can be made at this stage.
12. Connect the gas network as described in Paragraph 3.3 p. 9.
13. Fit the casing and tighten the locking screws (see Figure 3.4 p. 11).

Figure 3.4 Remove the casing by unscrewing the screws

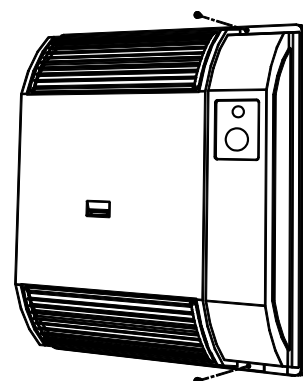
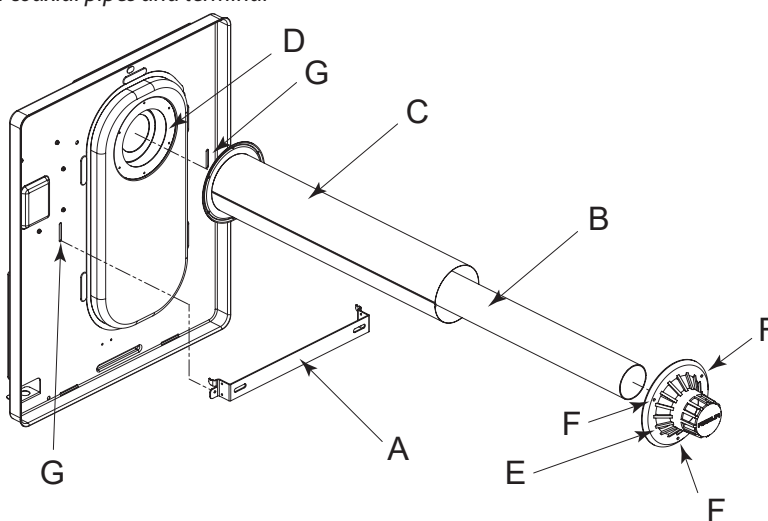


Figure 3.5 Installation of coaxial pipes and terminal



A Support bracket
B Flue gas exhaust pipe
C Air pipe
D Gasket
E External windproof terminal
F Holes for fixing the terminal
G Support bracket fixing holes

3.5.2 Install the windproof terminal

1. Apply the aluminium windproof terminal to the external wall so that it engages with the end of the coaxial pipe and mark the position of the three holes F for the expansion plugs (see Figure 3.5 p. 11).
2. Remove the terminal and drill the fixing holes (Ø 6 mm for the supplied wall plugs).
3. Reassemble the terminal and secure it with the screws using the relevant plugs.

4 FIRST START-UP



First start-up entails checking/setting up the combustion parameters and may exclusively be carried out by a Robur TAC. NEITHER the user NOR the installation technician is authorised to perform such operations, under penalty of voiding the warranty.

The installer is obliged to carry out preliminary checks described in Paragraph 4.1 p. 12.

4.1 PRELIMINARY CHECKS



Paragraph dedicated to the installer.

4.1.1 Preliminary checks for first start-up

Upon completing installation, before contacting the TAC the installer must check:

- ▶ Gas system suitable for the required capacities and equipped with all safety and control devices required by the regulations in force.
- ▶ Absence of leaks in the gas system.
- ▶ Type of gas for which the appliance is designed (natural gas, LPG or other gas).
- ▶ Supply gas pressure complying with the values of Table 3.1 p. 10, with max tolerance $\pm 15\%$.
- ▶ Correct operation of the flue exhaust duct.
- ▶ Combustion air intake and flue gas exhaust correctly carried out according to the regulations in force.
- ▶ Appliance correctly installed, according to the manufacturer's provisions.
- ▶ System installed in a workmanlike manner, according to national and local regulations.

4.1.2 Abnormal or hazardous installation situations

Should any abnormal or hazardous installation situations be found, the TAC shall not perform first start-up and the appliance shall not be commissioned.

These situations may be:

- ▶ Failed compliance with minimum clearances.
- ▶ Insufficient distance from combustible materials.
- ▶ Conditions that do not warrant access and maintenance in safety.
- ▶ Appliance defects or faults caused during transport or installation.
- ▶ Gas smell.
- ▶ Non-compliant mains gas pressure.
- ▶ Non-compliant flue gas exhaust.
- ▶ All situations that may involve operation abnormalities or are potentially hazardous.

4.1.3 Non-compliant system and corrective actions

Should the TAC find any non conformities, the user/installer is bound to perform any corrective procedures required by the TAC.

After performing the remedial actions (the installer's responsibility), if the TAC deems that safety and conformity conditions are in place, first start-up may be effected.

4.2 CHECKING BURNER GAS PRESSURE



Paragraph reserved exclusively to TACs.



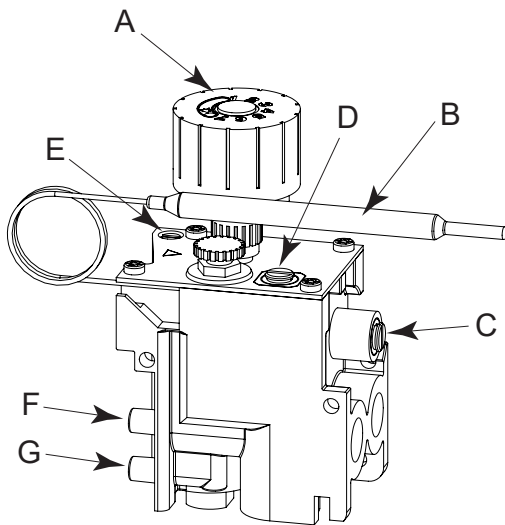
The gas supply circuit is equipped with a gas valve with pressure regulator (Figure 4.1 p. 13) to control the gas flow. All models are factory-set to operate with natural gas and can be converted to LPG (see Paragraph 4.3.1 p. 14). Each gas-fired convector is calibrated during factory testing for operation with natural gas. After installation, check that the gas pressure at the burner complies with indications in Paragraph 4.2 p. 12.



All adjustments must be made with the appliance switched on and after removing the casing.




After completion of the gas pressure check at the burner, the valve adjustment screws must be sealed.

Figure 4.1 Gas valve

- A Control knob
- B Temperature-sensitive bulb
- C Gas regulator at maximum heat input
- D Gas regulator at minimum heat input
- E Pilot flame regulator
- F Outlet pressure intake
- G Inlet pressure intake

4.2.1 Natural gas supply

4.2.1.1 Pressure adjustment at maximum heat input

 Pressure adjustment to the maximum heat input should be carried out with the appliance operating at a room temperature of no more than 20° C.

If the installation is carried out at room temperatures above 20 °C, immerse the sensor bulb in cold water after having removed it from its supports.


 Figure 4.1 p. 13.

1. Connect a pressure gauge to the outlet pressure socket F on the gas valve.
2. Switch on the appliance (Paragraph 5.3.1 p. 15).
3. Set control knob A to maximum value (position 7).
4. Adjust the gas pressure at the maximum heat input to the required value (Table 4.1 p. 13) by means of the pressure regulator D. By turning clockwise the pressure increases, counterclockwise it decreases.
5. Check the pressure value after removing the screwdriver from the adjustment screw.

Table 4.1 Burner gas pressure

				TS 2000
Installation data				
Burner gas pressure	Nominal heat input	G20	mbar	16,2
		G30	mbar	29,0
		G31	mbar	37,0
	Minimal heat input	G20	mbar	6,2
		G30	mbar	15,0
		G31	mbar	18,0

4.2.1.2 Pressure adjustment at minimum heat input


 Figure 4.1 p. 13.

1. With the pressure gauge in place and the appliance running, slowly turn knob A to the position as close as possible to the position where the appliance is switched off.
2. Adjust the gas pressure at the minimum heat input to the required value (Table 4.1 p. 13) by means of the pressure regulator D. By turning counterclockwise the pressure increases, clockwise it decreases.
3. Check the pressure value after removing the screwdriver from the adjustment screw.

4.2.2 LPG supply


For LPG supply, the gas-fired convector must be converted from natural gas to LPG by using the supplied gas change kit and following the instructions in Paragraph 4.3.1 p. 14.

When operating with LPG gas, the maximum operating pressure depends only on the network pressure, which must be as indicated in Table 3.1 p. 10.

 The reduction of the pressure in the network is possible following the instructions in Paragraph 3.3.6 p. 10.

To adjust the gas-fired convector for operation with LPG, proceed as described below.

4.2.2.1 Pressure adjustment at maximum heat input

 Pressure adjustment to the maximum heat input should be carried out with the appliance operating at a room temperature of no more than 20° C.

If the installation is carried out at room temperatures above 20 °C, immerse the sensor bulb in cold water after having removed it from its supports.

 Figure 4.1 p. 13.

1. Connect a pressure gauge to the outlet pressure socket F on the gas valve.
2. Switch on the appliance (Paragraph 5.3.1 p. 15).
3. Set control knob A to maximum value (position 7).
4. Adjust the maximum gas pressure at the burner by excluding the pressure regulator C, screwing the screw in completely.
5. Check the pressure value after removing the screwdriver from the adjustment screw.

4.2.2.2 Pressure adjustment at minimum heat input

 Figure 4.1 p. 13.

1. With the pressure gauge in place and the appliance running, slowly turn knob A to the position as close as possible to the position where the appliance is switched off.
2. Adjust the gas pressure at the minimum heat input to the required value (Table 4.1 p. 13) by means of the

pressure regulator D. By turning counterclockwise the pressure increases, clockwise it decreases.

3. Check the pressure value after removing the screwdriver from the adjustment screw.

4.3 GAS CHANGEOVER



Paragraph reserved exclusively to TACs.



After the gas changeover, check the combustion parameters as described in Paragraph 4.2 p. 12.



Check that the gas supply line is suitable for the new fuel type used to supply the unit.

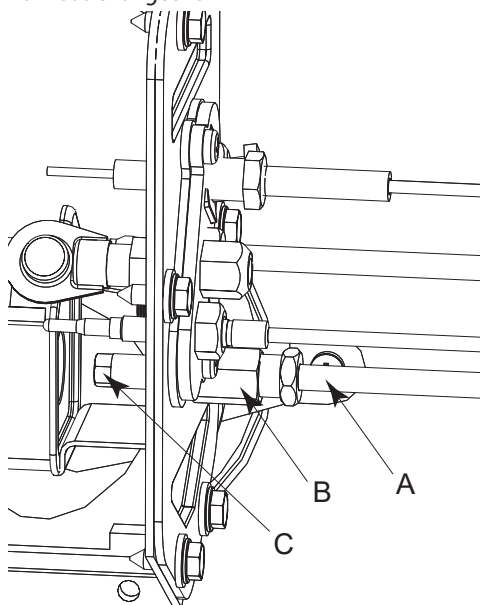
4.3.1 Conversion from natural gas to LPG



Figure 4.2 p. 14.

1. Cut off gas supply.
2. Remove the casing from the frame.
3. Disconnect gas pipe A.
4. Unscrew the nozzle holder B.
5. Unscrew the nozzle and replace it (Table 4.2 p. 14).
6. Screw the nozzle support and nozzle assembly back on to the burner.
7. Connect gas pipe A.
8. Check the gas pressure at the burner as described in Paragraph 4.2.2 p. 13.
9. Remove the "NATURAL GAS" adhesive label and replace it with the "LPG" adhesive label.
10. Replace the casing.

Figure 4.2 Gas changeover



- A Gas pipe
B Nozzle holder.
C Nozzle

Table 4.2 Gaz nozzles

				TS 2000
Installation data				
Nozzle	Diameter (Ø)	G20	mm	3.00/1,20 (1)
		G30	mm	3.00/0,70 (1)
		G31	mm	3.00/0,70 (1)
Code		G20	-	268
		G30	-	269
		G31	-	269

(1) Main burner nozzle. Pilot burner nozzle: 0,30 mm.

4.3.2 Conversion from LPG to natural gas



Figure 4.2 p. 14.

1. Cut off gas supply.
2. Remove the casing from the frame.
3. Disconnect gas pipe A.
4. Unscrew the nozzle holder B.
5. Unscrew the nozzle and replace it (Table 4.2 p. 14).
6. Screw the nozzle support and nozzle assembly back on to the burner.
7. Connect gas pipe A.
8. Check the gas pressure at the burner as described in Paragraph 4.2.1 p. 13.
9. Remove the "LPG" adhesive label and replace it with the "NATURAL GAS" adhesive label.
10. Replace the casing.

5 NORMAL OPERATION



This section is for the end user.

The operation of the TS 2000 gas-fired convectors is controlled by the control knob on the appliance.

5.1 WARNINGS



General warnings

Prior to using the appliance carefully read the warnings in Chapter III.1 p. 4, providing important information on regulations and on safety.



First startup by TAC

First start-up may exclusively be carried out by a Robur TAC (Chapter 6 p. 16).




Do not obstruct the lower grille or the upper air outlet grille.



During operation of the appliance, pay attention to the upper grille, which is hot.



Do not obstruct the air intake and flue gas exhaust ducts located outside the room.

1. Open the gas valve.
2. Turn the control knob to position .
3. Press the knob fully.
4. While keeping the knob pressed down, press button A on the piezo igniter of the pilot flame.
5. Wait a few seconds then release the knob. The pilot flame will remain lit.



The first ignition can be difficult due to the air contained in the gas supply pipe.

6. Turn the control knob counterclockwise to increase the room temperature and clockwise to decrease it.
7. Position 7 corresponds to the highest achievable room temperature, position 1 corresponds to the lowest room temperature.



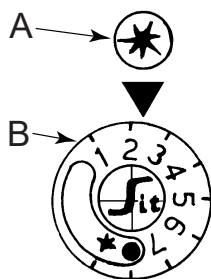
The indication on the thermostat knob is purely indicative. The value of the set temperature depends on the type of room in which the appliance is installed. A relationship between the thermostat position and the actual room temperature can be obtained by measuring the room temperature at a given thermostat setting.





In case of accidental or intentional switch-off wait about 3 minutes before a new ignition attempt so that unburnt gas can escape from the combustion chamber.

5.2 CONTROL KNOB

Figure 5.1 Control knob





- A Piezoelectric ignition button
- B Control knob
- 1 Minimum temperature
- 7 Maximum temperature
-  Position for ignition (pilot flame)
-  Position for switching off

5.3.2 Switching off



Figure 5.1 p. 15.

1. To switch off the appliance, turn the knob to the  position. In this way only the pilot flame will remain lit.
2. In case of prolonged periods of inactivity (e.g. at the end of the heating season), turn the knob to the  position. Then close the gas valve.

5.3 SWITCH ON AND OFF

5.3.1 Switching on



Figure 5.1 p. 15.

6 MAINTENANCE

6.1 WARNINGS



Correct maintenance prevents problems, assures efficiency and keeps running costs low.



Any operation on internal components may exclusively be performed by the TAC.



Before performing any operation, switch off the appliance by means of the control device and wait for the end of the shutdown cycle, then disconnect the gas supply, by closing the gas valve.



The efficiency checks and every other "check and maintenance operation" must be performed with a frequency according to current regulations or, if more restrictive, according to the provisions set forth by the manufacturer, installer or TAC.



Responsibility for efficiency checks, to be carried out for the aims of restricting energy consumption, lies with the system manager.

6.2 CLEANING AND MAINTENANCE

The only operation required by this kind of gas-fired convector is the cleaning of the outer casing (which must always be carried out with the appliance cold and without the use of solvents) and the periodic removal of any dust that may accumulate on the heat exchanger.

It is recommended to have a periodic (annual) check and cleaning of the gas-fired convector by contacting a TAC.

With regard to periodic maintenance of the gas-fired convector, follow the regulations in force.

6.3 ANY MALFUNCTIONS OF OPERATION

Before taking any particular measures, always check that:

- The gas is supplied.
- The supply pressure at the burner is within the specified tolerance range.

Only at this point proceed with the specific troubleshooting.

6.3.1 Case 1: No ignition spark

- A. There is no adequate gas flow to the gas-fired convector. Check that no taps or manual valves are closed. If the appliance has not been used for a long period of time there may be air in the pipes. Therefore, try the ignition several times.
- B. Check the connection of the ignition cable and the relative electrode.
- C. Check the functionality of the piezoelectric device and its contact with the structure.

6.3.2 Case 2: Pilot burner does not ignite

- A. There is air in the gas pipe; hold down the control knob and press the ignition button repeatedly.
- B. Check the ignition through the sight glass.

6.3.3 Case 3: Pilot burner ignites but does not stay lit

- A. Check the thermocouple connections making sure that they are tight enough.
- B. Also check that the thermocouple bulb is hit by the flame.

6.3.4 Case 4: the gas-fired convector does not provide the desired room comfort

- A. Check that the room is not disproportionately large in relation to the heat output of the appliance (in which case comfort is lacking even though the gas-fired convector is operating at full power).
- B. Check that the temperature control bulb is not displaced from its position on the bracket inside the appliance.

7 APPENDICES

7.1 ERP TECHNICAL SHEET

Figure 7.1

Table 1 COMMISSION REGULATION (EU) 2015/1188 Information requirements for gaseous/liquid fuel local space heaters								
Model identifier(s):						TS 2000		
Indirect heating functionality: [yes/no]						no		
Direct heat output: (kW)						1,7		
Indirect heat output: (kW)								
Fuel					Space heating emissions (*)			
					NO _x			
Select fuel type [gaseous/liquid]				gaseous	129,6	[mg/kWh _{input}] (GCV)		
Item	Simbol	Value	Unit		Item	Simbol	Value	Unit
Heat output					Useful efficiency (NCV)			
Nominal heat output	P _{nom}	1,69	kW		Useful efficiency at nominal heat output	η _{th, nom}	85,8	%
Minimum heat output (indicative)	P _{min}	1,20	kW		Useful efficiency at minimum heat output (indicative)	η _{th, min}	85,8	%
Auxiliary electricity consumption					Type of heat output/room temperature control (select one)			
At nominal heat output	el _{max}	0,000	kW		single stage heat output, no room temperature control			no
At minimum heat output	el _{min}	0,000	kW		two or more manual stages, no room temperature control			no
In standby mode	el _{sb}	0,000	kW		with mechanic thermostat room temperature control			yes
					with electronic room temperature control			no
					with electronic room temperature control plus day timer			no
					with electronic room temperature control plus week timer			no
					Other control options (multiple selections possible)			
					room temperature control, with presence detection			no
					room temperature control, with open window detection			no
					with distance control option			no
					with adaptive start control			no
					with working time limitation			no
					with black bulb sensor			no
Permanent pilot flame power requirement								
Pilot flame power requirement (if applicable)	P _{pilot}	0,200	kW					
Contact details	Robur SPA, Via Parigi 4/6, I-24040 Zingonia (BG)							
(*) NO _x = nitrogen oxides								

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Robur is dedicated to dynamic progression
in research, development and promotion
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