REZNOR

INSTALLATION AND OPERATING MANUAL

SCR-ECO Radiant Plaque

Gas Fired Heater

WARNINGS

Nortek Global HVAC (UK) Limited equipment must be installed and maintained in accordance with the requirements of the Codes of Practice or rules in force. All external wiring MUST comply with the codes of practice or rules in force in the country of installation.

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.

Read instructions before installing or servicing this equipment. Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapours or combustible dust, containing chlorinated or halogenated hydrocarbons, or in applications with airborne silicone substances.

NORTEK GLOBAL HVAC

ErP 2018 ErP Lot 20 Seasonal Efficiency and NOx compliant

Part No. D301037

CE

Any reference made to Laws, Standards, Directives, Codes of Practice or other recommendations governing the application and installation of heating appliances and which may be referred to in Brochures, Specifications, Quotations, and Installation, Operation and Maintenance manuals is done so for information and guidance purposes only and should only be considered valid at the time of the publication.

The Manufacturer cannot be held responsible from any matters arising from the revision to or introduction of new Laws, Standards, Directives, Codes of Practice or other recommendations.

IMPORTANT NOTICE TO INSTALLERS

Installers should satisfy themselves that the gas pipework installation is carried out in accordance with all current legislation, Codes of Practice and recommendations .

Additionally it may be necessary to protect the gas valves which form part of the heater or burner assembly from potential pipe contamination particularly, but not exclusively, where copper gas pipework is used.

In instances where copper pipework is to be used for all or part of a gas pipework installation, including short length final connections then we advise that installers consult with gas supplier or provider and satisfy themselves what additional precautions may be necessary.

Contents Page

1. SCR-ECO luminous radiant heaters characteristics

The SCR-ECO series "standard" heaters are manufactured in full compliance with current applicable standards.

The SCR heater is a luminous radiant heating system that operates on natural gas or LPG.

The entire range is composed of four models with outputs ranging from 7.3–41Kw and built with the following essential parts:

- Burner in mirror-polished stainless steel sheet metal
- Venturi tube made of treated fe steel
- Radiant surface composed of micro-perforated ceramic plates
- Reflector made of mirror-finished stainless steel reflector (standard series) or of enamelled-treated FE steel
- Flame ionisation safety and ignition equipment
- Gas solenoid equipped with dual coil and gas stabilizer

The radiant surface reaches a temperature of approximately 1200°C, thus emitting luminous rays (infrared) required to heat the room.

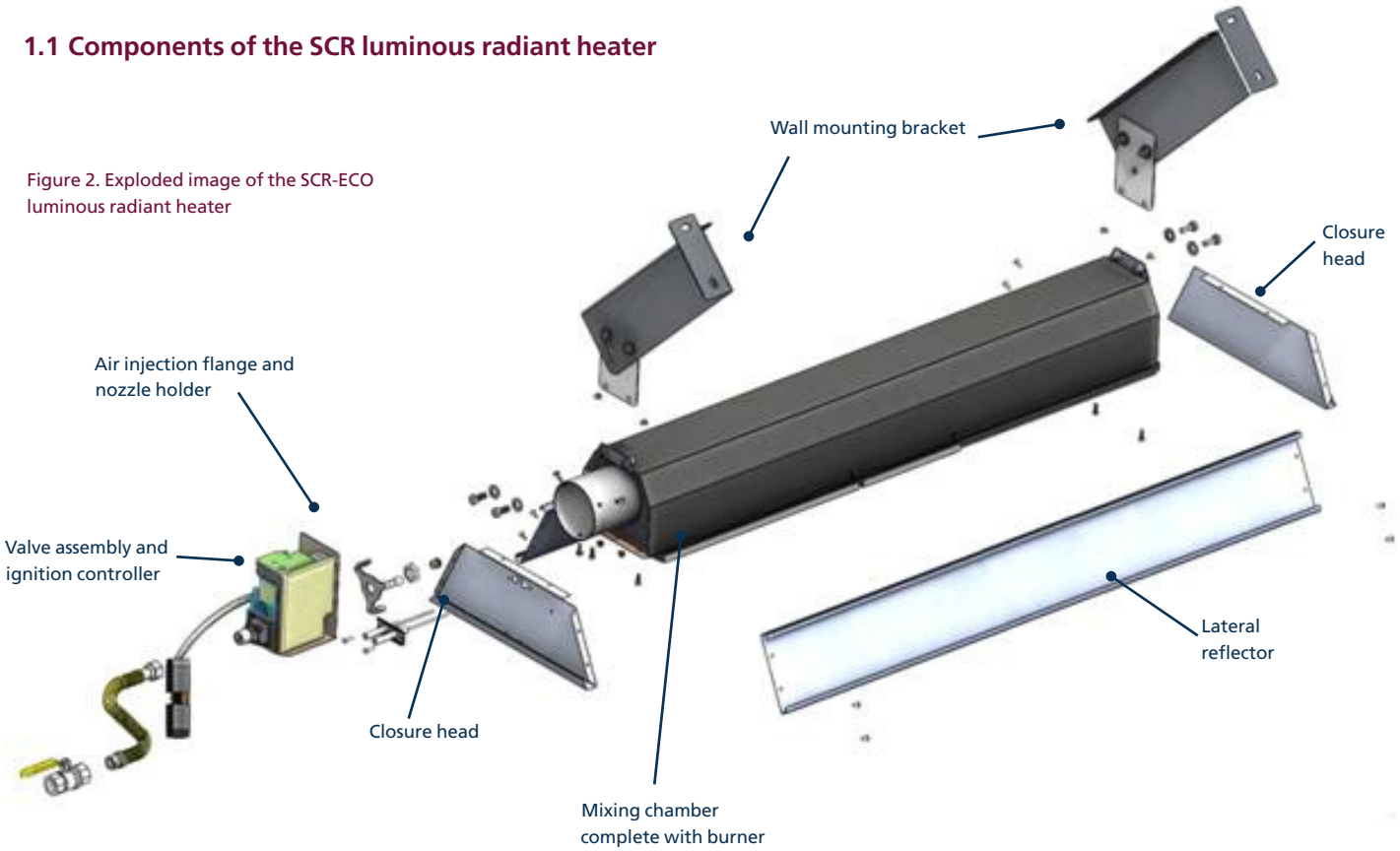
The total radiant surface varies from one model to the next, and is composed of single micro-perforated ceramic plates which are resistant to high temperatures.

The stainless steel parabolic reflectors are positioned around the radiant surfaces, thus allowing to convoy the radiance towards the floor.

Figure 1. Model - SCR-ECO

1.1 Components of the SCR luminous radiant heater

Figure 2. Exploded image of the SCR-ECO luminous radiant heater



1.1.1 Burner with perforated plates

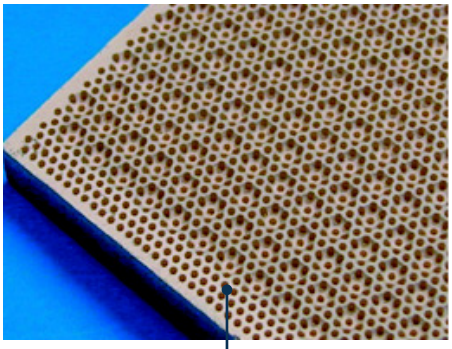
Porous ceramic perforated plates have a variety of applications thanks to their excellent mechanical and thermal characteristics. In particular, they are used as emission surfaces for burners of premixed fuel.

A high energy density and a large range of power allow for high energy efficiency, and compact and economical burner construction.

Also, the flat-surface burners allow for combustion with an especially low level of pollutant emissions.The resistance of the ceramic parts to thermal and mechanical stress and corrosion ensures consistent performance during use and a long life cycle.

The pre-mix combustion takes place at approximately 2 mm below the surface of the ceramic plates, inside minuscule ducts. The heat produced by the combustion immediately heats the ceramic, which in turn transmits the heat by radiance to the area to be heated.

The combustion process allows the external surface of the ceramic plates to reach a temperature of over 1000°c. The internal ceramic plate (the one facing towards the mixing chamber) reaches instead a temperature of approximately 100°c. This temperature difference shows the high insulation factor of the micro-perforated ceramic.



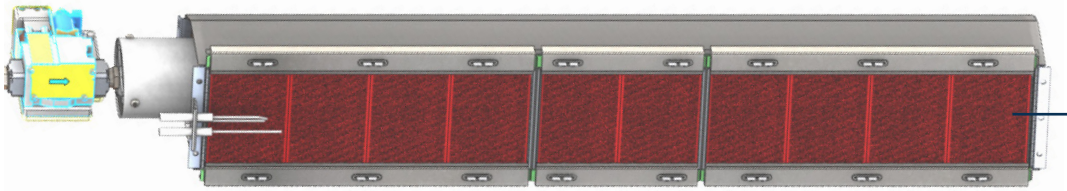


Figure 3. Ceramic Burner

1.1.2 Mixing chamber

The proper pre-mixing of the gas and air which is carried to the ceramic plates is an essential element in increasing the power of the heater. The better the air-gas stoichiometric ratio, the higher the radiant power of the heater will be.

The SCR heater possesses this special feature thanks to a unique mixing chamber. By means of the nozzle and the mixing tube, the correct quantity of gas is injected, which through the venturi effect is mixed with air so as to achieve an optimal gas – air ratio.

1.1.3 Valve assembly and flame control card

Compact valve assembly with direct connection of the flame control card to the valve body.

Other faston-type connectors allow connection of the electrode assembly. Electrical connection to outside the heater is made by means of a single connector.

The valve assembly is complete with a stabilizer that permits adjustment of the gas pressure at the nozzle.

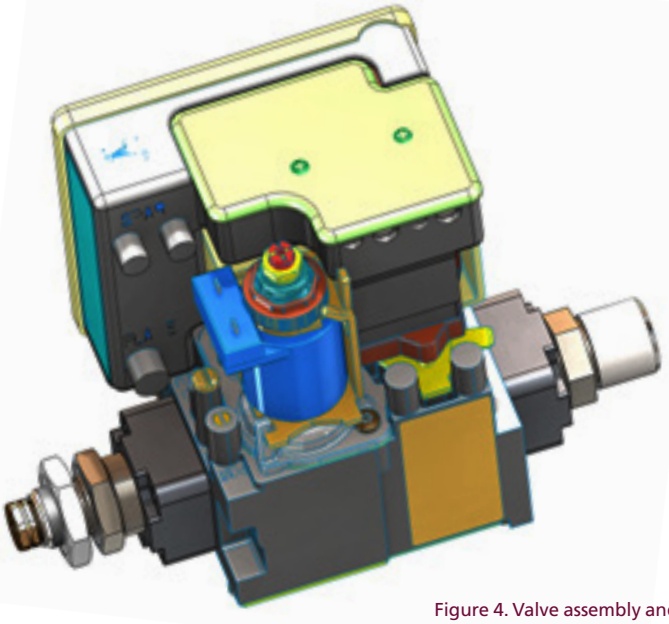


Figure 4. Valve assembly and flame detection control unit

1.1.4 Reflector

Reflectors in mirror-polished stainless steel sheet metal are used for the SCR-ECO versions. The round shape of the reflectors gives to these models a very pleasant aspect without affecting the radiant efficiency.

Figure 5. Heater with reflector version SCR-ECO

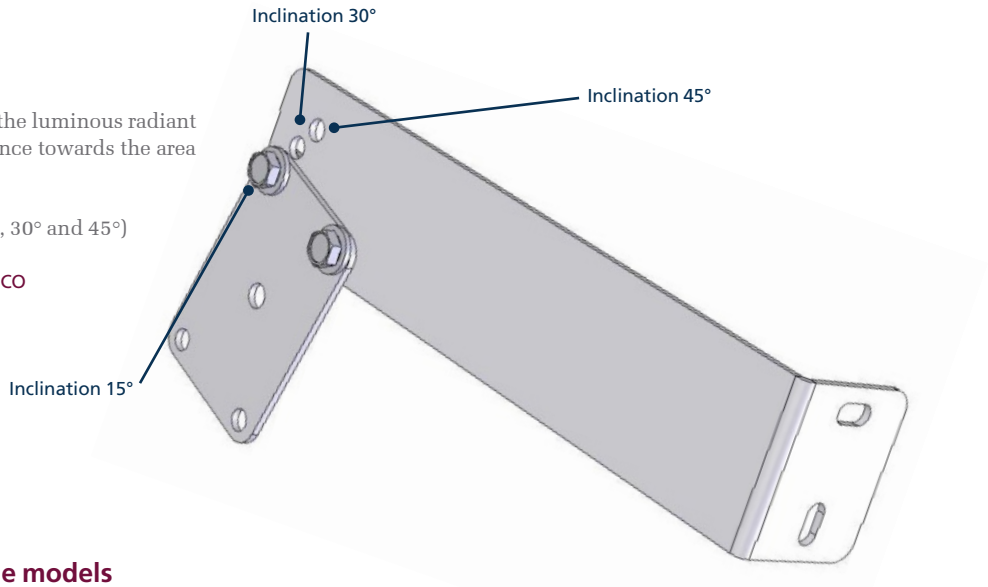
1.1.5 Brackets

The steel brackets are adjustable.

This allows a wide range of flexibility in installing the luminous radiant heaters, guaranteeing the perfect direction of radiance towards the area to be heated.

Possible inclinations to the mounting wall (0°, 15°, 30° and 45°)

Figure 6. Support bracket for wall mounting, model SCR-ECO



1.2 Technical specifications and available models

SCR luminous radiant heaters are classified based on current standards and are certified by category and type of unit:

Unit category: ii2h3+

This category includes radiant modules which are set up to use gases of the second family (group H, natural gas g20) and gases of the third family (group 3+, butane/propane g30/g31).

Type of unit:

A1 - Unit which is not to be connected to a special duct or device for the removal of flue gases to the outside of the room where they are installed. Combustion air is taken directly from the room.

Table 1 – Technical Data

Models		SCR-ECO			
Type		7/4	18/10	29/16	44 12+12
N° of plates		4	10	16	24
Thermal output Hs (1)	kW	8.3	19.4	30.0	45.5
Thermal output Hi (2)	kW	7.5	17.5	27.0	41.0
Combustible		Natural Gas G20			
Ø Nozzle	mm	2.1	3.1	4.0	2 x 3.5
Dynamic press. in the net	mbar	20	20	20	20
Nozzle pressure	mbar	17	17	16	17
Consumption	m3/h	0.79	1.85	2.87	4.34
Combustible		Butane G30 / Propane G31			
Ø Nozzle	mm	1.4	2.1	2.6	2 x 2.3
Dynamic pressure upstream G30/G31	mbar	29/37	29/37	29/37	29/37
Nozzle pressure G30	mbar	27.7	27.7	28.0	27.7
Consumption G30	kg/h	0.6	1.4	2.1	3.3
Nozzle pressure G31	mbar	35.7	35.7	36.0	35.7
Consumption G31	kg/h	0.6	1.3	2.0	3.2

(1) H_s in accordance with EN 437

(2) H_i in accordance with EN 437

Table 1.1 – Dimensions and weights

Model		74	18/10	29/16	44 12+12
Length	mm	630	1205	1770	1390
Width	mm	370	370	370	560
Height	mm	255	255	255	255
Weight	kg	7.0	11.5	16.0	24.0

2. Supply and installation of SCR heaters

The SCR heater is supplied complete with the burner, the upper parabolic reflector based on the requested model (SCR-ECO) and with all material required for the installation of the heater. Including the wall-mounting brackets each package contains one heater.

All SCR heaters are CE approved in accordance with directive 90/396 CEE concerning gas-powered equipment and its components.

Installation of SCR heaters must be carried out by *qualified personnel* who are able to perform the work properly and by the implementation regulation of said law.

The sizes of the heaters vary depending on the models. The choice of models varies depending on the size of the room where they are to be installed and on the design.

The connection to the gas mains, the electrical connection between the heater and the thermostat, and the connection to the electrical mains must be carried out by qualified personnel in compliance with standards which are in effect at the moment of installation of the system.

Before installing SCR, verify that the gas type and the gas pressure are compatible with the settings of the radiant heater.

IMPORTANT NOTICE

Instructions for installation and use are to be kept in a safe place and made available to the user. We recommend carefully reading the warning below.

These appliances can be fitted in any place where the installation of "A" type devices is permitted by the laws in force. The installation premises must have an adequate ventilation as indicated in the standard EN 13410:2003.

Use is not permitted in areas where. Due to working processes or material storage. there is the risk of the formation of gases. Vapours or dusts in such quantities that they may be the cause of fires or explosions. The classification of areas which are to be considered as non-compliant or at risk for the installation of this product must be established by an analysis of the micro-climate of said area.

It is hereby explicitly stated that failure to observe current standards (CE, UNI, CIG, Fire Department) may lead to death, serious injury or substantial material damage for that the Producer is not liable.

The installation or the start-up of the system, as well as any repair and/or maintenance work, must be carried out by qualified, authorized personnel who are responsible for compliance with current standards.

The manufacturer will not be held liable for any damage due to improper installation or due to incorrect and/or improper use of the unit.

The packing material must be disposed of in compliance with current law and in such a way as not to be a source of hazard to third parties.

2.1 Labelling of luminous radiant heaters

Each heater is complete of identification plate, where are indicated all the technical data of the device, the NOx class and protection degree.

2.2 Technical specifications and available models

Table 2 shows the measurements and dimension of the packaging of the luminous radiant heaters.

Table 2 – Dimensions and weight of packaging

Packaging per model		74	18/10
Length	mm	680	1260
Width	mm	550	380
Height	mm	280	300
Weight	kg	9	14

2.3 Places of installation

The SCR heaters are designed to heat industrial buildings and workshops in general. Thermal radiance makes it possible to heat either single areas or entire rooms by locating the heaters in the correct positions.

The heaters *must not be installed* in:

- Bathrooms or bedrooms;
- Rooms with a volume of less than 12 m3

2.4 Wall brackets

The heater can be wall or roof mounted. On request. For wall-mounting installation it is possible to use special brackets that allow aiming the heater in a certain direction (Figure 7).

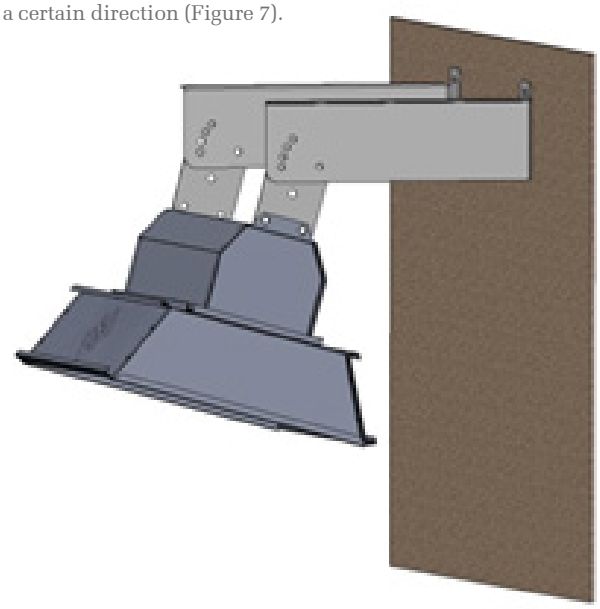


Figure 7. Wall mounted with bracket. Model SCR-ECO.

2.5 Safety distances

It is necessary to observe the minimum distances between the heaters and the adjacent walls if the walls are not protected against radiance or are made of combustible material.

Table 3 shows the minimum distances to be kept between the SCR luminous radiant heaters and the adjacent walls.

IMPORTANT: The surfaces nearby the heaters must be "class 0" fire reaction materials (not combustible and not flammable).

Table 3 – Minimum distances for models SCR-ECO in closed rooms

Model	Ceiling [m]	Floor [m]	Front [m]	Lateral [m]
SCR-ECO 7/4	1.5	4.0	1.0	1.0
SCR-ECO 18/10	1.5	5.0	1.5	1.5
SCR-ECO 29/16	1.5	6.0	2.0	1.5
SCR-ECO 44/12+12	1.5	6.5	2.0	1.5

2.6 Connection to gas mains

The heaters are supplied for use on natural gas. Therefore, before connecting to the gas mains, make sure that the gas supply corresponds to what is shown on the data plate of the heater. Before connecting to the gas mains, ensure that the pipes are clean and realized in compliance with relative current standards. For each heater, provide a gas cut-off valve, and connect the heater to the gas mains with an approved flexible hose in steel.

Before installing SCR, it is recommended to verify that the local supply conditions, the gas type and the gas pressure are compatible with the settings of the radiant heater.

Ensure that the unit operates in the conditions for which it was set up. The connection size for SCR-ECO model is 1/2".

The SCR-ECO models are equipped with a multi-function assembly composed of a double seat solenoid, provided with a pressure stabilizer and integrated flame control. The stabilizer accepts a *maximum pressure of 50 mbar,* but it is strongly recommended to use a maximum operating pressure of 50 mbar at the inlet.

The valve body is equipped with a measuring pressure inlet and outlet connection to perform measurement and control of the pressure.

Make the connection to the gas mains with a flexible stainless steel tube, which meets the requirements of regulation in force (Figure 8).

This work must be carried out by qualified personnel!

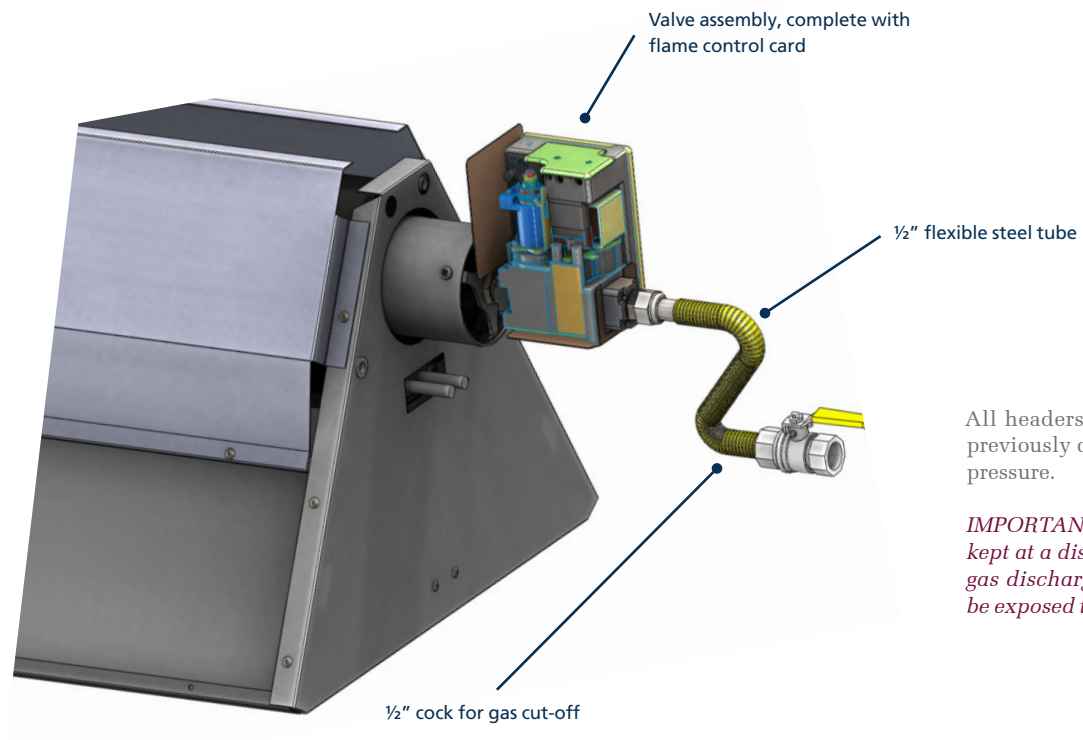


Figure 8. Connection to gas mains

All headers supplied have been tested and previously calibrated to the correct operating pressure.

IMPORTANT: Gas supply pipework must be kept at a distance of at least 1m from the flue gas discharge of the unit and they must not be exposed to direct radiance from the heater.

2.7 Instructions for "SIT" valve assembly mounting

For the mounting of the assembly "gas valve – control flame card" follow the instructions below.

ATTENTION: The assembly must be carried out only by qualified personnel. This work must be done before connecting the assembly to the electrical and gas mains.

Assembling procedure:

- Take out the assembly and the heater from the packaging (for the disposal of the packaging, refer this instructions manual).

ATTENTION: Do not grab the header from the valve or from the nozzle hanger connection.

- Connect the valve to the nozzle-hanger using the union. Tighten the union using two wrenches avoiding the stress of the other components.
- Connect the earth cable (yellow – green wire) to the earth terminal on the heater head. Tighten the nut using a CH10 wrench.
- Connect the electrodes terminals.
- Protect. if necessary. the connection terminals to the electrode with the silicone cap supplied with the header.

For connection to the electrical and gas mains, follow the instructions indicated in this manual.

IMPORTANT: During start-up, verify the tightness of the union using a suitable leak detector spray product.

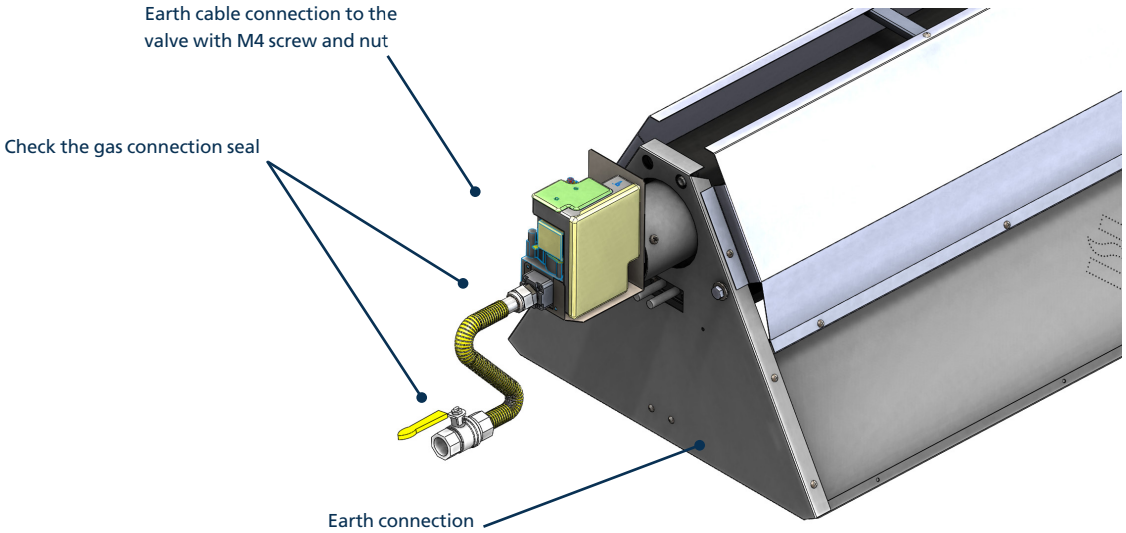


Figure 9. Control before the start-up

2.8 Connection to the electrical mains

The heater must be powered with the voltage at 230Vac/50Hz. The flame control mounted on the gas solenoid is equipped with a plug/socket connection with a safety hook (Figure 9). Place a bi-polar switch up the line from the heater to switch it on and off, so that the unit can be disconnected from the electrical mains to determine the dimensions of the electrical power supply line, use this manual, or refer to the information on the identification plate of the unit.

In any case, use a cable with wire section not lower than 3x1.5 mm. The electrical diagram is shown on the following pages (Figure 13, Figure 14,) of this manual.

The supplied electrical harness, is characterized from a multi-polar cable for high temperatures (cable with isolation in silicon mix) that can stand up to a maximum of 230°C. In case the substitution of the wiring is necessary. This will be available only by our authorized service centres or by Nortek.

For electrical connection, disconnect the socket and unscrew its case. Connect a tri-polar cable in accordance with the instructions on the socket terminals, and specifically:

L1: phase; **N:** neutral; ⏚ Earth wire

IMPORTANT: for proper operation of the heater, it is indispensable to respect the phase/neutral polarity of the mains in accordance with what is indicated on the power supply connector.

For proper operation of the unit, as well as for the safety of the user, it is also indispensable for the power supply system to be equipped with an efficient earth connection, according to the current laws. Under no circumstances, use the gas connection tubes as earth of the heaters.

In case of substitution of the earth cable, this must be 2 centimetres longer than the other cables.

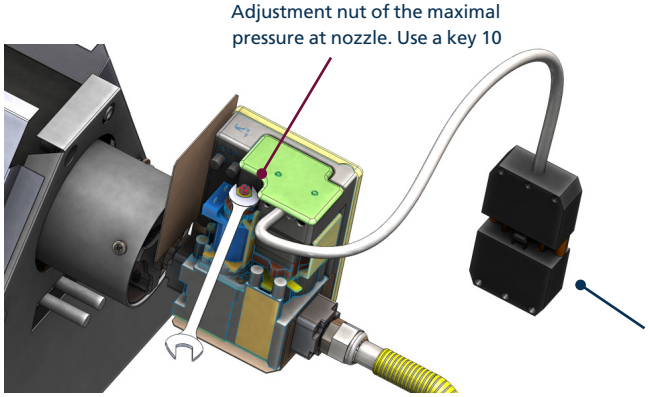


Figure 10. Regulation point of the nozzle pressure and connector for the electrical connection for all the models.

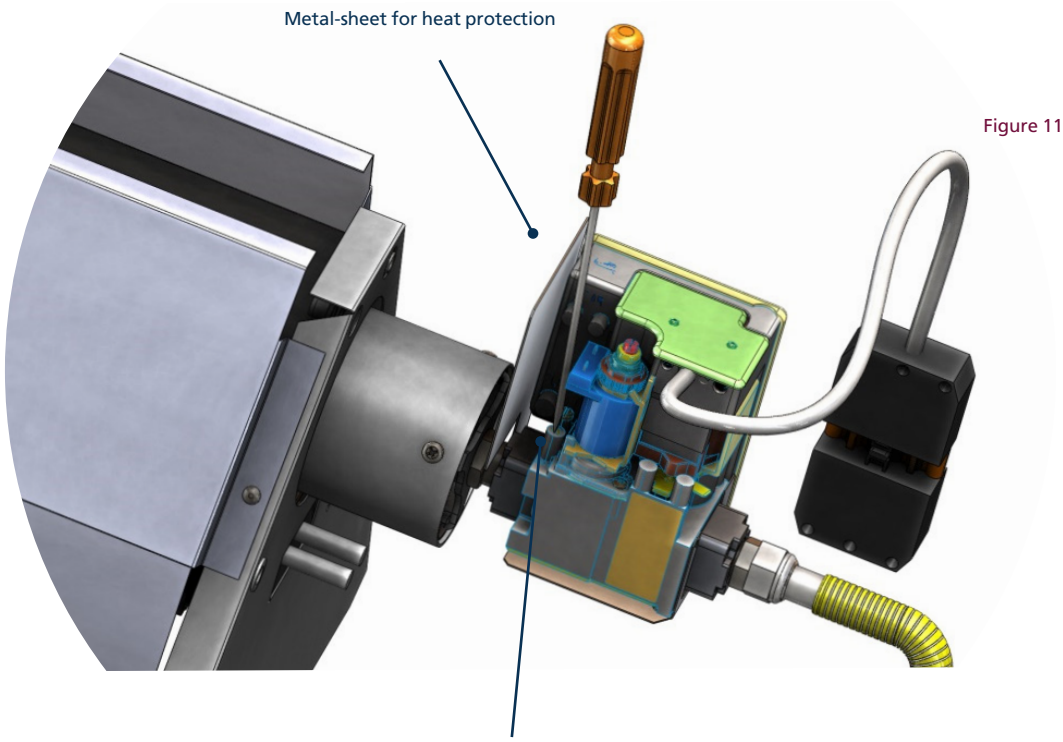


Figure 11. Reading of pressure on nozzle

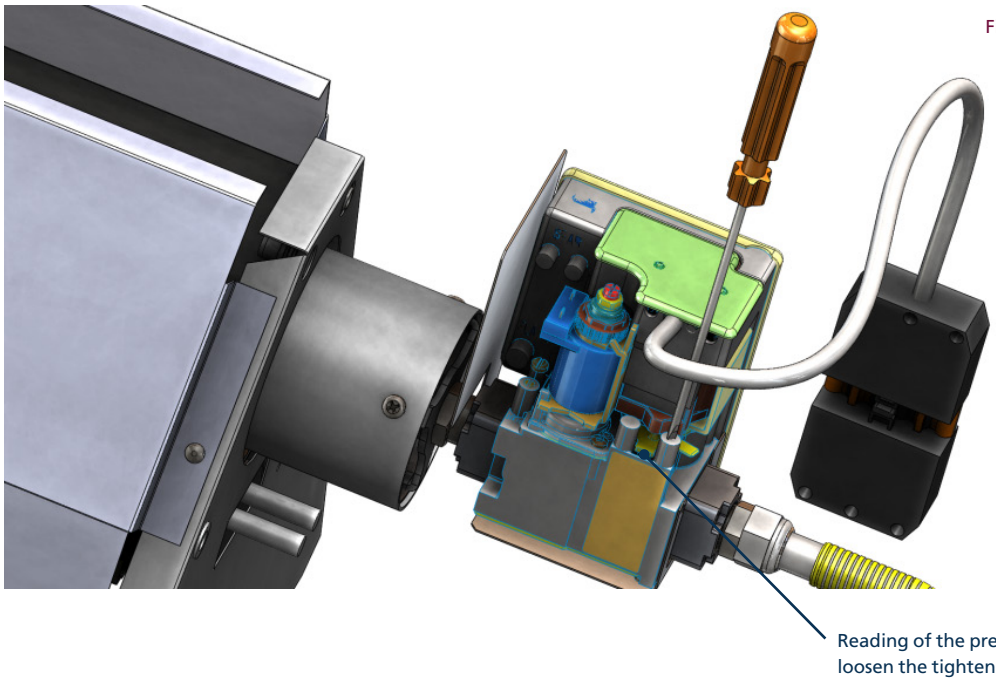
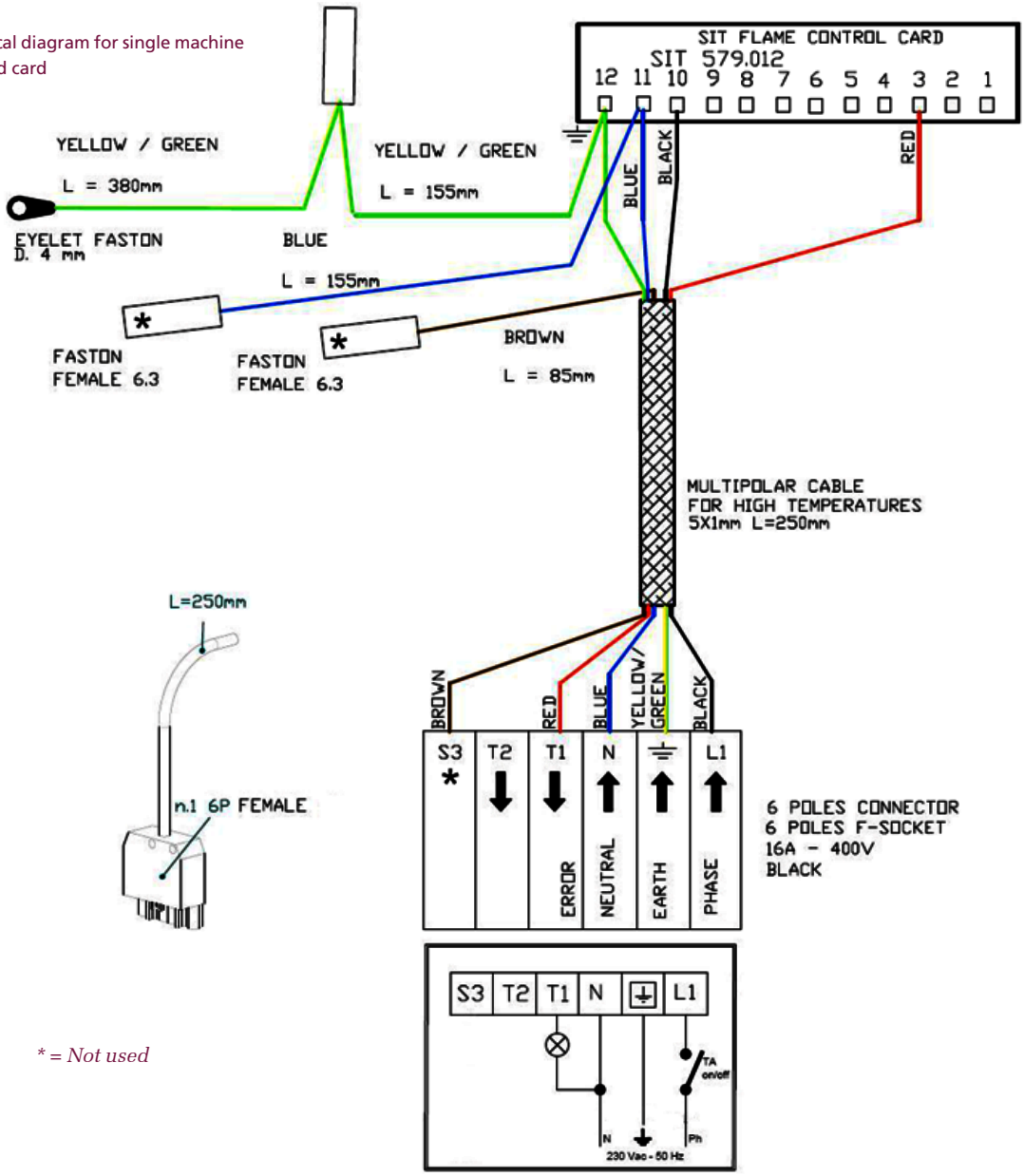


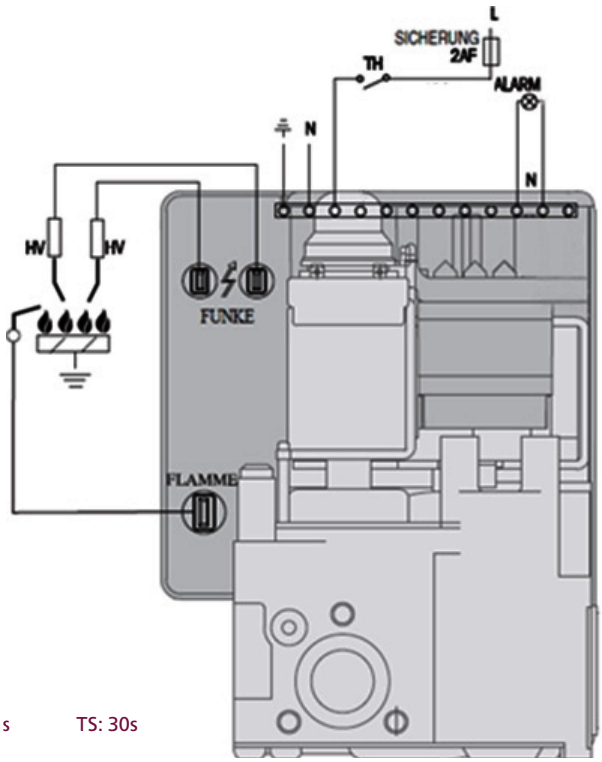
Figure 12. Reading of supplying pressure

Figure 13. Electrical diagram for single machine with **SIT** valve and card



** = Not used*

Figure 14. Electrical scheme of the cables for radiant heaters with control unit and valve **SIT**



WARNING **Electrical installation must be carried out in compliance with current national and/or European standards. At this point the installation of the heater may be considered complete!**

TW: 1.5 s TS: 30s

3. Starting the system, use and maintenance

Start-up, installation and all modifications or maintenance to a gas system. Whether located indoors or outdoors must be carried out by a company that is qualified and authorized to perform this kind of work.

3.1 Starting the system

System start-up is performed by following these steps:

- Verification of the ventilation openings according to EN13410:2003
- Verify that the gas main does not have loss and that is correctly calculated;
- Verify that the feed pressure of the fuel and the type of gas are in accordance with what is indicated on the identification plate, see Table 4;
- Verify the correct monitoring of the multi-functional assembly gas solenoid/flame control card;
- Verify that the electrical main is correctly calculated, that the *heater is wired correctly* and that the *earth cable is connected*;
- Verify that the heater brackets are correctly mounted and that the screws are well-tighten.

The radiant diffusers SCR are pre-calibrated by the producer according to the power required by the costumer and recognizable by the identification plate. This pre-calibration has been made during the manufacturing process with a gas pressure upstream the valve already defined in 20 mbar for the Natural Gas burners and in 37 mbar for the LPG burners.

Therefore, during installing, the radiant diffusers SCR don't require any other calibration.

We remind anyway the obligation of carry on of the operations of start-up, ordinary maintenance and extraordinary maintenance only by qualified and authorized personnel, with the requirements provide for the effective local laws and suitable technical ability. We recommend, in any case, that the ordinary and/or extraordinary maintenance is carried out by qualified people who meet the requirements of the applicable regulations and have the technical skills to realize the work.

It is obligatory to issue a document stating that the work has been properly performed.

Visually check the heater installation. electrical connections and check of the seal of the gas connection.

Check the heater version (Natural Gas / LPG) and the power on the identification plate of the machine.

The calibration of the radiant heater is carried out in the factory, according to the model and the type of gas required.

We recommend to check the calibration before the start-up of the system. In Table 4 there are the indicative values of calibration for each model and type of gas.

In case of replacement of the nozzle, refer to section 3.4.1 of the present manual (Maintenance – Nozzle replacement).

3.1.1 Luminous radiant heater calibration SCR

Power up the unit by connecting the power plug to the socket of the heater as shown in Figure 13 (6-pole connector).

To start the burner. it is necessary to set the room thermostat so that it sends the activation signal to the heater (the phase is carried to the heater by means of a contact of the room thermostat. which is normally open).

Check the wiring between the heater and the control panel. Incorrect wiring may irreparably damage the flame control card.

Table 4 – Calibration values

Models		SCR-ECO			
Type		7/4	18/10	29/16	44 12+12
N° of plates		4	10	16	24
Thermal output Hs (1)	kW	8.3	19.4	30.0	45.5
Thermal output Hi (2)	kW	7.5	17.5	27.0	41.0
Combustible		Natural Gas G20			
Ø Nozzle	mm	2.1	3.1	4.0	2 x 3.5
Dynamic press. in the net	mbar	20	20	20	20
Nozzle pressure	mbar	17	17	16	17
Consumption	m3/h	0.79	1.85	2.87	4.34
Combustible		Butane G30 / Propane G31 (LPG)			
Ø Nozzle	mm	1.4	2.1	2.6	2 x 2.3
Dynamic pressure upstream G30/G31	mbar	29/37	29/37	29/37	29/37
Nozzle pressure G30	mbar	27.7	27.7	28.0	27.7
Consumption G30	kg/h	0.6	1.4	2.1	3.3
Nozzle pressure G31	mbar	35.7	35.7	36.0	35.7
Consumption G31	kg/h	0.6	1.3	2.0	3.2

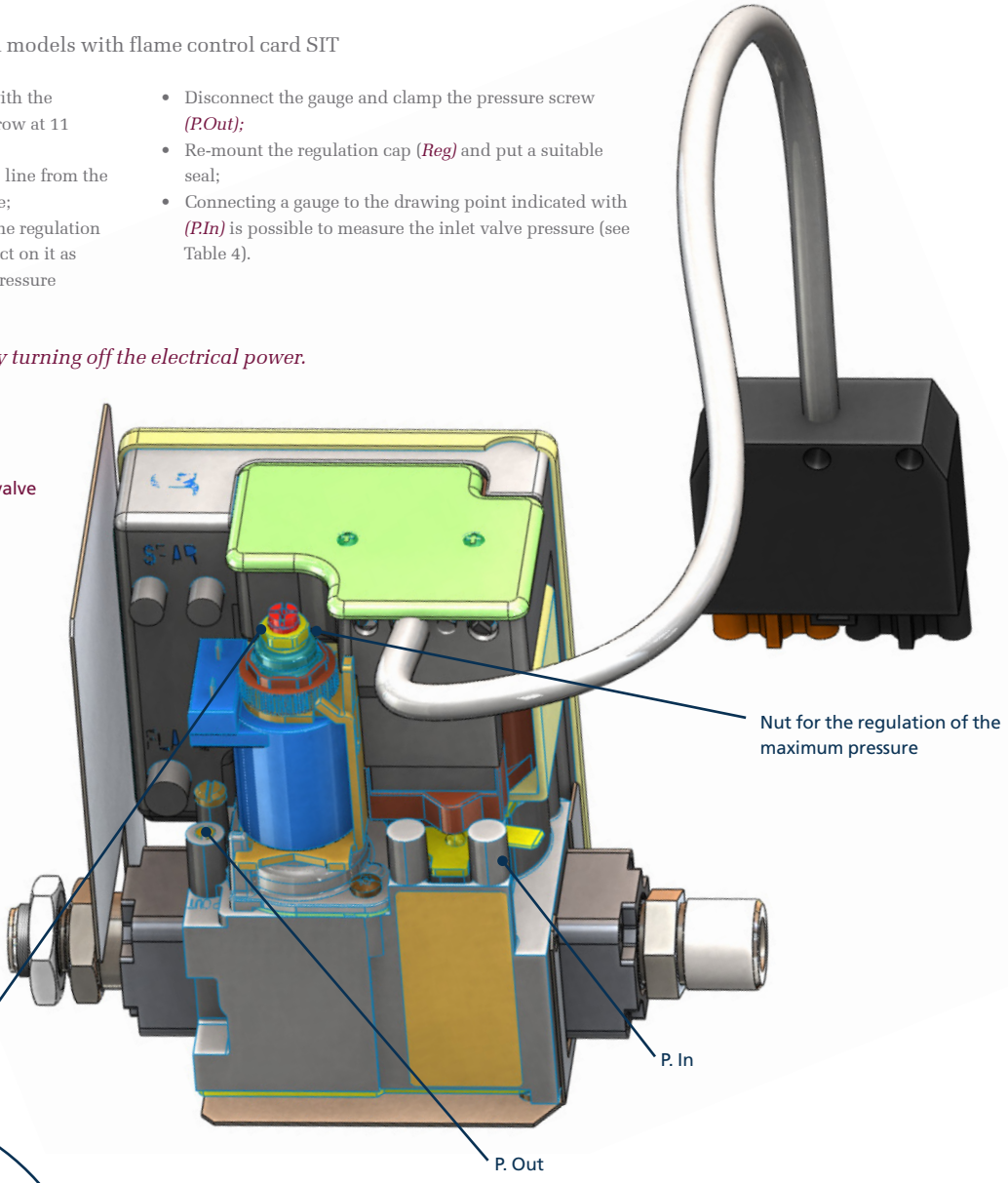
3.2 Adjustment of pressure

Adjustment of operating pressure for all models with flame control card SIT

- Adjust the valve opening speed working with the regulation screw (red screw) setting the arrow at 11 o'clock.
- Unscrew the pressure screw *(P.Out)* up the line from the nozzle and connect a water or digital gauge;
- Remove the cap that blocks the access to the regulation screw *(Reg)* of the pressure regulator and act on it as indicated on Figure 15 until reach of the pressure specified on the identification plate;
- Disconnect the gauge and clamp the pressure screw *(P.Out);*
- Re-mount the regulation cap (*Reg)* and put a suitable seal;
- Connecting a gauge to the drawing point indicated with *(P.In)* is possible to measure the inlet valve pressure (see Table 4).

The debilitation of the heater is made by turning off the electrical power.

Figure 15. Pressure regulation with SIT valve



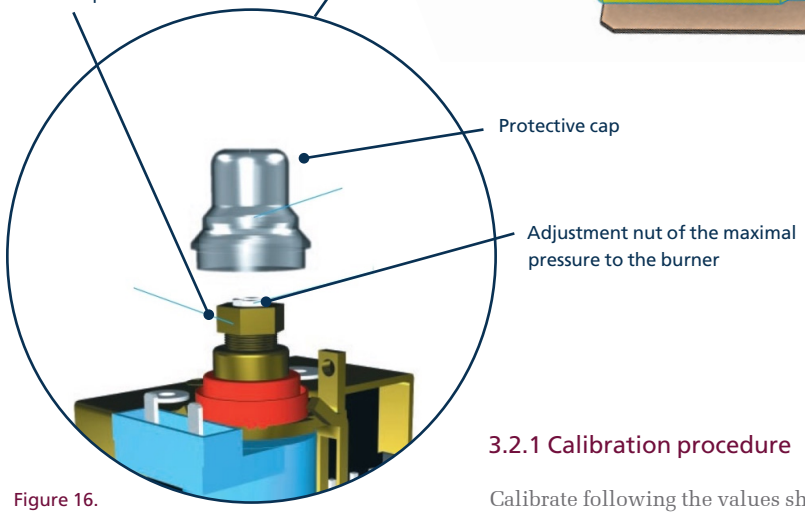


Figure 16. Pressure regulation

3.2.1 Calibration procedure

Calibrate following the values shown in the "Pressure at nozzle" column, by acting exclusively on the regulation nut of the maximal pressure at burner.

ATTENTION: We recommend NOT to use the plastic screw, reserved to the regulation of the minimum pressure at burner, as it modifies the exit pressure!

To obtain a correct regulation of the pressure, we recommend to follow this procedure:

- Connect a manometer at the point for inlet pressure sampling and a manometer at the point for outlet pressure sampling.
- Remove the protective cap.
- Turn the regulation nut of the maximal pressure (by using a key 10) until is reached the pressure indicated in the column "Pressure at nozzle" in the Table 4.
- Pay attention to the type of comburent used.

ATTENTION: After each new adjustment, it is necessary to re-seal the adjustment and measuring screws! Run a working test, verifying that the flame is distributed homogeneously on the ceramic plates.

3.3 Description of operation of the heaters

3.3.1 Models: SCR-ECO 7/4 – SCR-ECO 18/10 – SCR-ECO 29/16

The luminous radiant heaters, in automatic version, with single burner, are equipped with flame ionisation safety and ignition equipment, mounted on the gas solenoid, operating at a voltage of 230Vac/50Hz. These heaters are started by means of a bi-polar switch located on the control panel. The circuit is activated by providing power to the control flame card.

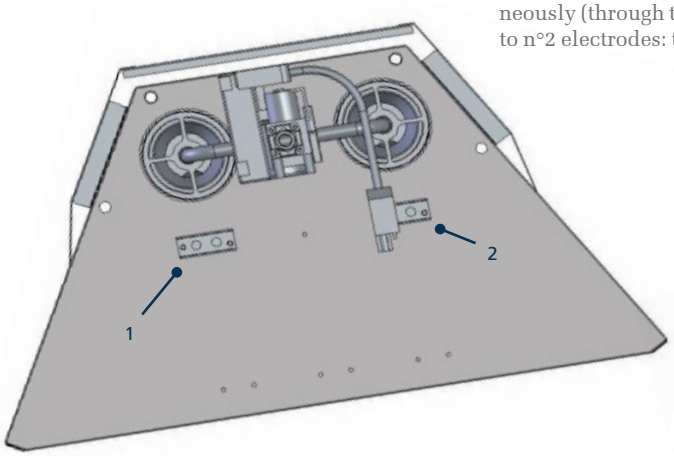
By means of the ignition system, the spark starts and at the same time the solenoid is opened. Flame ignition, detected by a special sensor, stops the spark. Ignition time is roughly 20 seconds. If during this period of time the flame does not light the heater will shut down.

Each time the module shuts down it must be manually reset by means of the electrical power supply switch which shuts off the heater for 20 seconds.

After that time the start-up procedure must be repeated. If the heater continues to shut down refer to the "Maintenance" section of this manual. The unit is shut off by cutting off the electrical power supply to the heater with the switch on the control panel

3.3.1.1 Models: SCR-ECO 44/12+12

This series include also models realized with twin burners. The burners can be managed simultaneously (through the use of a unique valve). The equipment is composed of n°1 valve connected to n°2 electrodes: the first for the ignition and the second one is for the flame detection.



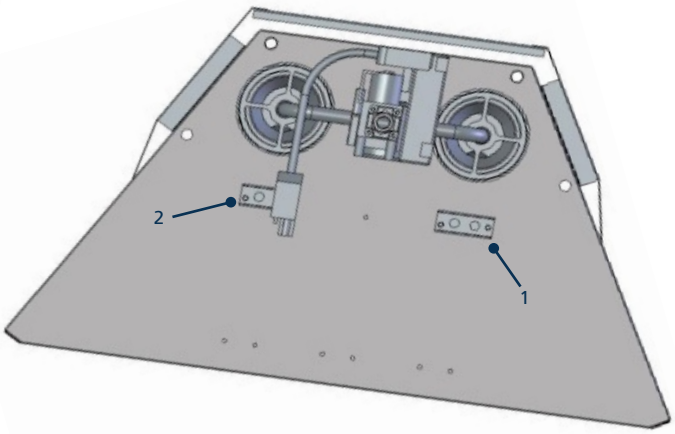


Figure 17.
Twin burner models

IMPORTANT NOTICE

With twin burners models is important to follow the next information!

Before starting installation, define the orientation of the heaters, so that the ignition electrode (1) is always placed in a lower position respect to the flame detection electrode (2). The violation of the above mentioned indication can cause the shut-down of the diffuser generated by the incorrect start of burners. To solve the situation, reverse the electrode with function of ignition with the function of detection.

3.4 Maintenance of SCR heaters

SCR heaters do not normally require any special maintenance. However a few simple tasks will help to ensure improved performance and a longer life cycle. If the unit is installed in dusty environments, after a certain length of time it is advisable to clean the burners by blowing on them with low-pressure compressed air.

If the heater is in operation, shut it off and wait for it to cool off before cleaning. It is advisable at least once a year before the season of use to clean the burners, check all electrical and gas connections and conduct an overall check-up of all of the components of the heater. All work performed during the warranty period must be carried out under the supervision of Nortek.

ATTENTION: This type of work has to be carried out by authorized personnel. Failure to notify of any work carried out on the system during the warranty period, without prior notice of Nortek, will be cause for voidance of said warranty. Before carrying out any maintenance work, make sure that the gas and electrical power supply have been turned off!

3.4.1 Propane Gas (LPG)

If it should be necessary to change the supplied gas for which the heater is set up it is necessary to ask Nortek for the special changeover kit, stating the heater model, the serial number and the new type of gas. The gas convention must be carried out by qualified personnel in compliance with current standards.

- Cut off the voltage to the unit by turning off the main switch and close the gas cut-off cock (1)
- If necessary, also unscrew the flexible tube from the valve group (2)
- Unscrew the three fastening screws (3) of the gas injection device (4) so as to detach it from the heater;
- Using a size 13 wrench, unscrew the nozzle (4);
- Install the suitable nozzle for the type of gas which will be used, tightening it with the same wrench used previously;
- Reassemble the group by following backwards the previous steps.

ATTENTION: After each new adjustment, it is necessary to re-seal all the adjustment components (gas pressure regulation screws on the valve group).

After a gas change, it is necessary to stick the label supply together with the conversion kit.

This label is exclusively provided by Nortek.

Convertion kit to LPG is supplied with each unit as STo.

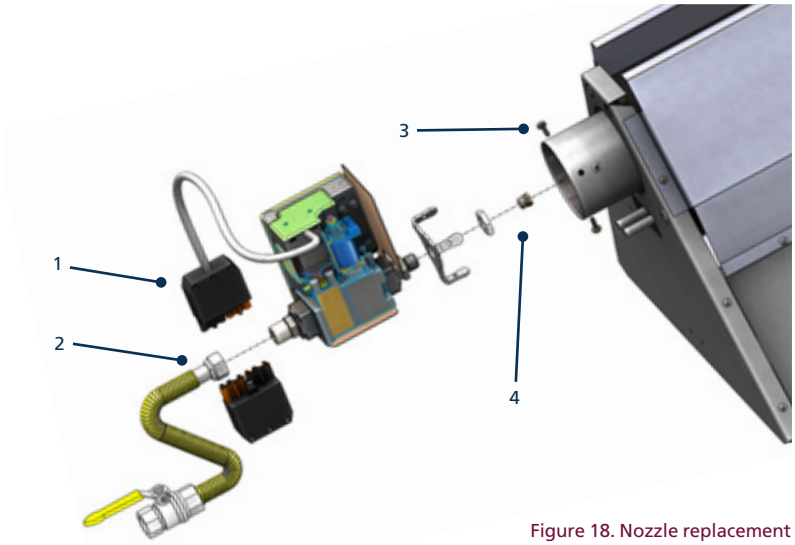


Figure 18. Nozzle replacement

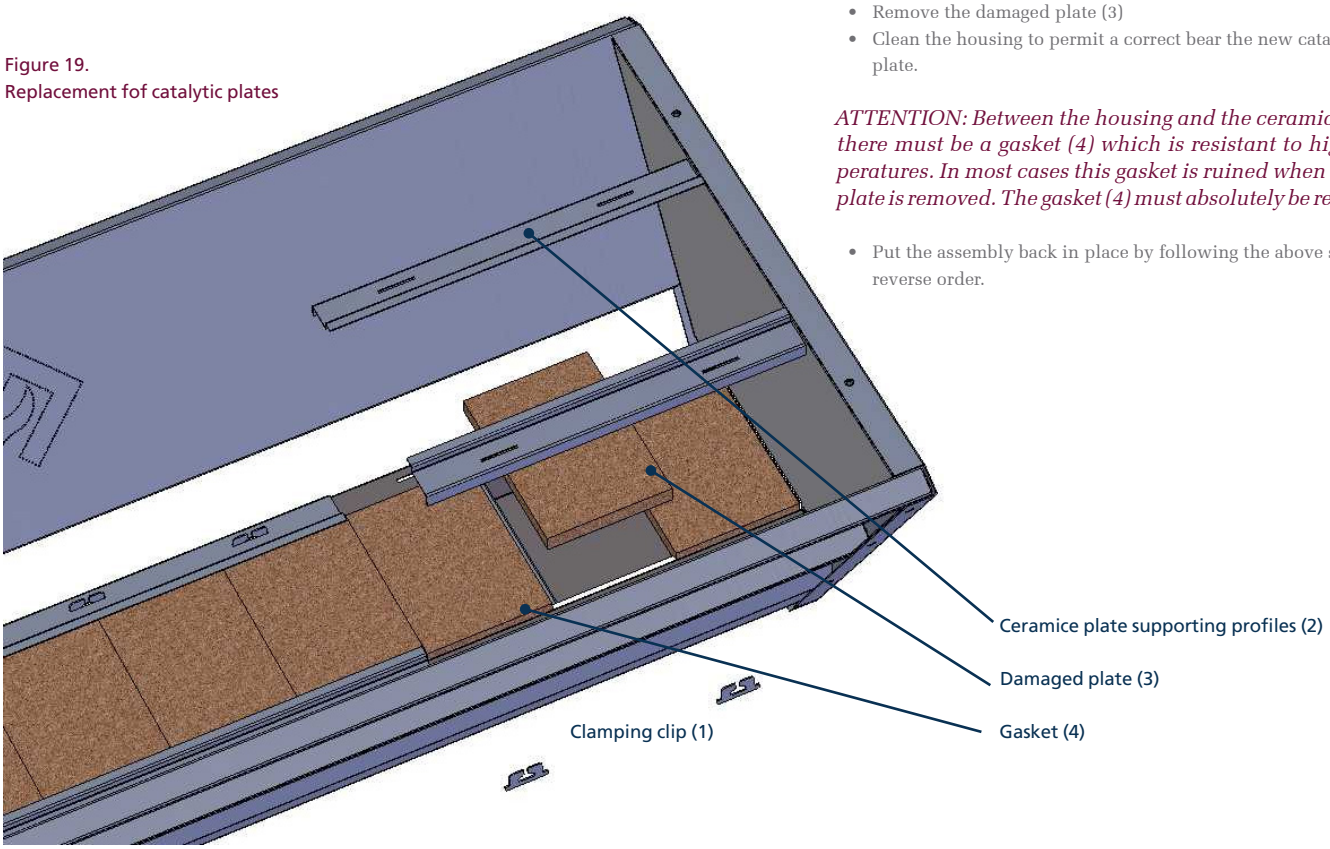
3.4.2 Replacement of catalytic plates

- Cut off the voltage to the unit by turning off the main switch and close the gas cut-off cock
- Remove the fume conveyors and the relating spacers
- Remove the clamping clips (1) using a pliers and remove the profiles (2) that support the damaged ceramic plate
- Remove the damaged plate (3)
- Clean the housing to permit a correct bear the new catalytic plate.

ATTENTION: Between the housing and the ceramic plates there must be a gasket (4) which is resistant to high temperatures. In most cases this gasket is ruined when the old plate is removed. The gasket (4) must absolutely be replaced.

- Put the assembly back in place by following the above steps in reverse order.

Figure 19.
Replacement fof catalytic plates



3.4.3 Troubleshooting

The following points are a troubleshooting guide for problems which may occur during start-up and maintenance of the SCR heater.

For further information and for ordinary/extraordinary maintenance, apply to qualified personnel or contact a Nortek technical service centre.

ATTENTION: Before operating for maintenance, be sure that the gas and the electric feed have been turned off and that the unit has been cooled.

Q. Heater doesn't start.

A. Electrical system interrupted.

Check with a power supply tester (230 Vac on terminals L1 – N).

A. Possible causes:

- Power supply fuse up the line from burner interrupted.
- Room thermostat does not cause activation (contact remains open).
- The room thermostat is operating in automatic mode and has not been properly programmed.
- The room thermostat does not measure the temperature (sensor not connected or defective).
- The difference between the room temperature and the set temperature is not large enough for activation (Δt programmed too high).
- Check electrical operation of the room thermostat (output contact).
- Defective flame control card.
- Perform electrical check of valve assembly (coils).

A. Insufficient space between ignition electrode and ground electrode.

Increase the space between the two electrodes.

Q. The heater comes on but the ignition electrode continues to spark, then it shuts down.

A. The measurement electrode is too far from the ceramic plate surface.

- Check that the measurement electrode is about 10 mm form the radiant surface.
- Check the polarity (Phase / Neutral) and the earth connection..
- Defective flame control card.

Q. The burner (ceramic plate surface) only partially ignites.

A. Insufficient gas flow.

Check that the gas mains have a sufficient flow rate (sum up all the utilities connected to the gas mains).Check the dynamic gas pressure (the minimum pressures are indicated in this manual and on the identification plate of the heater).

Type of gas: Natural Gas
Mains pressure required (dynamic): G20–20 mbar

Type of gas: LPG
Mains pressure required (dynamic): G31–37 mbar

Type of gas: Butane
Mains pressure required (dynamic): G30–29 mbar

Q. The burner (ceramic plate surface) is subject to backfiring.

A. Inlet gas pressure too high.

Check that the gas pressure is correct (see manual and/or data plate).

A. Burner or catalytic plates dirty.

When the burner is cold blow low-pressure air onto the surface of the ceramic plates to clean the micro-perforations. Then clean the entire burner. Check that the gas pressure is correct (see manual and/or data plate)

A. Catalytic plates cracked

Replace the plates.

Q. The ignition electrode does not discharge and the burner shuts down.

A. Incorrect distance between the end of the electrode and the earth.

Place the distance between the earth and the electrode at about 3-4 mm.

A. Defective wiring.

Check connection between flame control card and electrode.

A. Discharge does not occur at the end of the electrode but at another point along the length of the electrode.

Replace the electrode because the ceramic is not insulating properly.

Q. The solenoid opens but the heater does not ignite and shuts down.

A. Air in gas pipes.

Vent the gas network and then repeat the ignition procedure. Between one ignition attempt and the next, wait roughly 20 seconds to avoid gas store inside the mixing chamber.

A. Gas is not supplied.

Check that all gas cut-offs are OPEN. Check the gas supply (LPG cylinder and reducing valve).

Q. The solenoid valve opens but the diffuser doesn't work and the flame detection control unit is shut down.

A. The group-valve doesn't commute.

Check the ohmic continuity of the coils.

Use a tester to check the continuity of the coil windings following the next instructions:

- Coil EV1 = 880 Ω ±10%
- Coil EV2 = 6.7 kΩ ±10%
- Modulation coil = 19.0 kΩ ±10%

Coil of the gas valve SIT 843 Sigma.

A. Other possible failures:

- Defective equipment
- Defective valve assembly

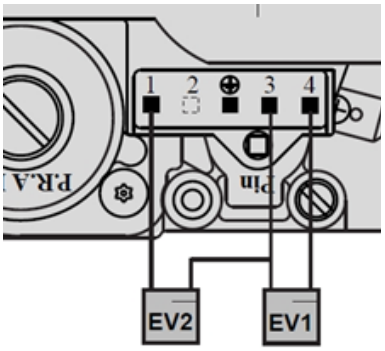


Figure 20. Group valve.

3.4.3.1 Modifications required to carry out a change of fuel

In order to change the type of fuel of the SCR radiant heater, it is necessary to follow the instructions provided hereunder.

Parts to be replaced: Nozzle

Replace (see 3.4.1) based on the power to be installed (see Table 4)

Adjustment of pressure at the nozzle:

Adjust the pressure at the nozzle based on the power to be installed and in accordance with the instruction provided by this manual (see Table 4)

Attention: After each new calibration, all of the parts for adjustment (gas pressure adjustment screws on the valve assembly) must be sealed.

After a change of gas type, the label provided with the changeover kit must be applied. This label is issued exclusively by Nortek.

3.4.4 Annual check-up

The luminous heaters SCR are appliances of type A. Due to the absence of the exhaust flue pipes. it is not possible to perform an analysis of the combustion products and a measurement during installation of the combustion performance.

For the annual inspection, it is therefore suggestable to carry out a functional technical inspection of the device with the checking of the gas pressure set at the nozzle. (See Table 4 of this manual).

ATTENTION: The heater emits the products of combustion in the room where it is used (type A appliance). Is therefore necessary to guarantee the ventilation of the rooms where the diffuser is installed creating proper openings of air intake on the perimeter walls, or installing a forced ventilation system as provided by the EN 13410: 2003 standard.

3.5 General warranty conditions

- The firm Nortek, guarantees SCR heaters installed by qualified personnel authorized by said company for a period of 24 (twenty-four) months from the date of first ignition and completion of the first-start form. The validity of the warranty is contingent upon an annual check-up by an authorized technical service centre and subsequent completion of the annual check form.
- The warranty period does not include material supplied by third parties. Said material is covered by the warranty provided by the supplier.
- The warranty consists exclusively in the supply, free of charge, of those parts which show defects in manufacturing or workmanship.
- The warranty is immediately void if the system is tampered, disassembled or modified without advance authorization of Nortek. If the invoice is not paid by the agreed due date, from that date the warranty will no longer in any way be in effect.
- Not covered by the warranty are problems due to carelessness improper calibration, poor system use or accidents which are unforeseen and in any case not attributable to imperfect manufacturing or defective material. Not covered are also due to disassembly or modification without authorization by Nortek.

3.6 Disposal of packaging, storage, disposal

3.6.1 Disposal of packaging

The packaging that contains the SCR heaters complies with legal standards and can be disposed of in compliance with current standards.

The packaging is composed of the following materials: cardboard expanded polystyrene nylon.

3.6.2 Storage

If it should become necessary to place the machine in storage for a long period, please do the following:

- Disconnect the unit from the electrical mains;
- Close the gas supply ball valve;
- Disconnect the unit from the gas mains;
- Disassemble the unit and keep the heater in a dry location that is protected from dust.

3.6.3 Disposal

If you should decide not to use this unit any longer, it is advisable to:

- Remove all of the electrical parts and dispose of them in accordance with current laws;
- Dispose of the aluminised reflectors in specialized collection centres;
- Dispose of the stainless steel reflectors in specialized collection centres;
- Dispose of the ceramic plates in special collection centres; the remaining material can be disposed of as scrap iron in appropriate collection centres.

All of the above operations must be performed by authorized technicians.

Notes

Notes (continued)

Current Full Part No. Reznor, SCR-ECO, EN, Apr, 18, D301037

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