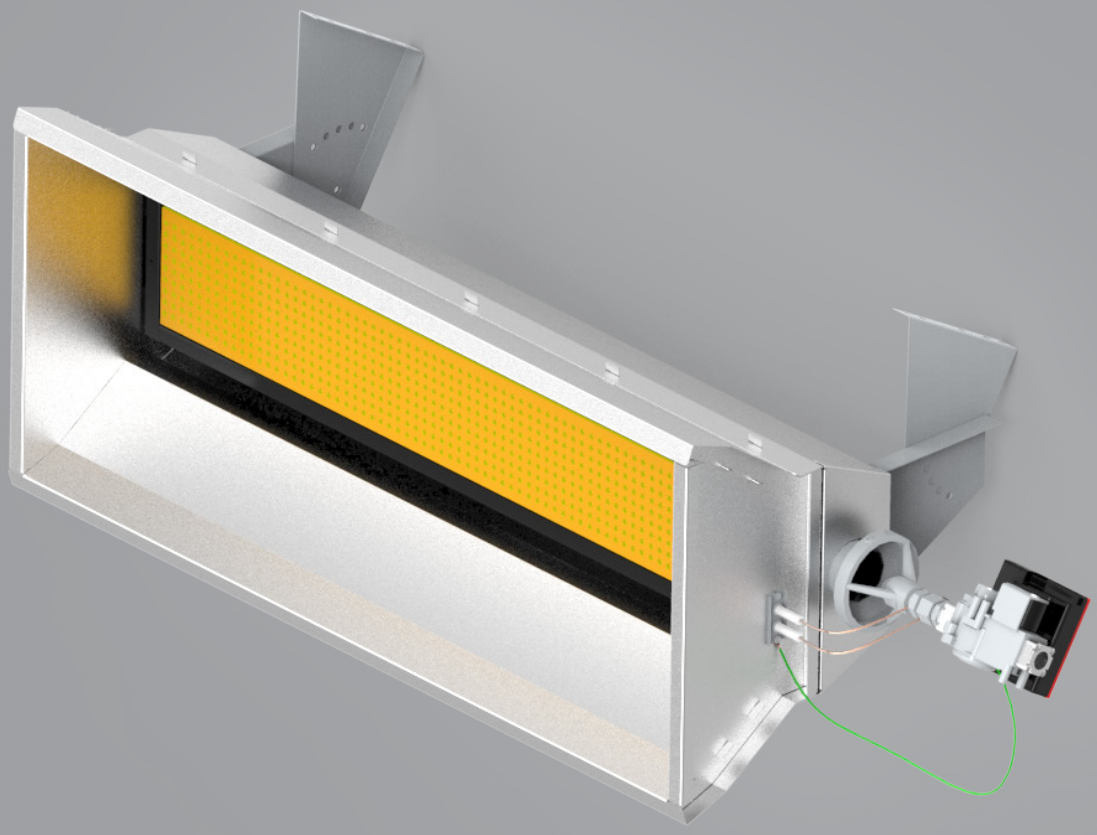
PAKOLE

User's Manual

NATURAL OR PROPANE GAS WORKING INFRARED CERAMIC HEATERS



Appliance types:

GHI ECO-11...36

GHI_ECO_009_023_011_220609_V005_en

EN

www.pakole.com

Contents

1. SAFETY INFORMATION

Read and understand this manual thoroughly before installing starting or servicing this equipment. The improper installation or using can cause serious damages! Keep this manual in a safe place in order to obtain information in case of incidental problems!

GENERAL SAFETY NOTICES
Disregard of instructions and notices of this Manual can cause serious bodily injuries or damages as follows: burning, explosion, suffocation, carbon monoxide poisoning, electric shock and in extreme case death!
This appliance can only be used and serviced by such persons who understood and follow the instructions of this Manual If you need help or information concerning the appliances – for example installation guide or labels etc. – in that case contact with the manufacturer!
This appliance must not be used by children and mentally or sensitively deficient persons! Take care that the children do not handle it and do not play with devices!

ATTENTION! Fire, burning, inhalation and explosion hazard! Keep all flammable objects as follows building materials, papers, or carton unites away from heater according to the instructions! Never use this appliance in such rooms where there are flammable volatile materials or the following materials, which can get into the device: petrol, solvent, thinner, fine grained dusty or unknown chemical materials!

ATTENTION! This appliance can not be used in domestic circumstances or mobile home!

ATTENTION! For your safety, if you smell gas do the followings:
- **Open windows.**
- **Do not try to light any appliance.**
- **Do not use electrical switches.**
- **Do not use any telephone in your building.**
- **Leave the building.**
- **Immediately call your local gas supplier after leaving the building. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the Fire Department.**

The **GHI ECO** type infrared heater appliances have been developed and certified in compliance with EN 419 standard and qualified for heating of industrial rooms! The function of these heater appliances to ensure heating of appointed workplace temporarily or continuously! In case of proper using the appliance guarantees safety and energy-saving operation! The combustion products issued during combustion process leave through the flue system into the open air. In case of further possible questions regarding the applicability please turn to the local Fire Protection Office!

Other standards can give you directions in terms of proper using of natural and propane gas as follows: leading/piping, storing etc.! Concerning the detailed content of these standards the local Bureau of Standards can help.

Carbone-monoxide poisoning: The initial symptoms of carbone-monoxide poisoning are similar to influenza namely headache, dizziness and/or nausea! If these symptoms are observed in that case the appliance probably does not work satisfactorily! First of all go fresh air, ventilate the rooms and have the appliance investigated!

Propane-gas: The propane-gas is odourless! Mercaptan-derivative as scented component is mixed into the gas to be able to observe the possible escape! In spite of the typical smell is not felt the propane gas can be present in the environmental air in case of escaping!

2. GENERAL INSTRUCTION

- Make sure that read and understood all the warnings, correct keeping of which can guarantee the safety and faultless operation!
- During the installation be always circumspect! Follow the valid instructions and recommendations!
- The appliance can be operated by specified voltage and frequency marked on its data board! The electrical connections and groundings are prepared as per EN 60335 standard!
- Electrical grounding specification: present appliance is equipped with three points grounding connection in the interests of your protection!
- It needed to ensure the sufficient quantity of combustion air if the appliance is installed without outside air supply!
- Keep away the device from the following strong effects: wind, high pressure water jet, rain or dropping water!
- The appliance must not be used in the open air!
- The application of device is STRICTLY PROHIBITED in such rooms, which are used for sleep or continuous stay!
- Keep away the flammable materials from the appliance and its near environment as follows: fuels, thinner or other flammable fluids and vapours!
- In the interests of avoiding of dust explosion do not used the device in such rooms where the degree of dust concentration is high if the device is installed without outside air supply!
- Before starting of appliance in every case check it in order to detect the possible damages! Never use damaged equipment!
- In case of Propane-gas operation never install the device in basement or from that lower being rooms! The propane-gas is heavier specific gravity than the air for this reason in case of possible escaping it will spread towards the lower located rooms!
- Only use that kind of flexible gas pipe and pressure regulator, which is offered for the appliance by the manufacturer!
- Before every starting of heater appliance check the condition of connecting gas hose and if it is particularly worn or damaged in that case exchange it for a new one specified by manufacturer!
- Preserve the equipment in genuine condition, do not leave it to grow old!
- Do not use seriously aged equipments any longer!
- Fix the appliance on such stable surface, which during operation despite warming of appliance preserves its stability!

INSTALLER'S RESPONSIBILITIES

- making up of gas and electrical connection in compliance with the specifications (it is proposed to connect with the local Building Supervisory Authority or Fire-service),
- installation of equipment in accordance with the definitions of this manual,
- installation according to the fire prevention rules,
- supply of the necessary materials/components for installation(which are not belong to appliance),
- planing of air duct systems (ventilation/connections)
- service execution,
- placing the copy of present manual at owner's disposal,
- assuring of sufficient air circulation around the appliance,
- determination and assuring of needed air for burning, ventilation and blowing in according to the specifications.

DATA BOARD

The appliance is equipped with data board, which is placed on outside of device's door. On this data board there are information concerning the type of device, gas type, electrical connection and flue types.

Manufacturer PAKOLE Trade Kft. 8000 Székesfehérvár, Börgöndi út 8-10.		Distribute: *PAKOLE Trade Kft.* *8000 Székesfehérvár, Börgöndi út 8-10.*	EAC UA.TR.012•10 CE 2806 20
Electrical protection:	IP20	Type GHI-18 ECO	
Electrical connection:	AC 230V 50Hz	Nominal input:	19,4 kW
Max.current entry:	0,15 A	Pconnecting max.:	60 mbar
Electrical power:	35 W	Jet pressure:	16 mbar
Category:	II2H3P	Pconnecting nom.:	20 mbar
Series number: **110-10248-163**		Gas type:	Naturalgas
		Targeted country:	GB
		NOx: 4	PIN: 1008 CS 3162
			SVGW Nr. 12-001-3 Date/place of production 15.02.2021

1. picture: Data board

CORROSIVE MATERIALS

ATTENTION! Do not use the appliance in such place where corrosive materials can be in the air! If the appliance has to be applied in this circumstances outside air has to be ensured for combustion air!

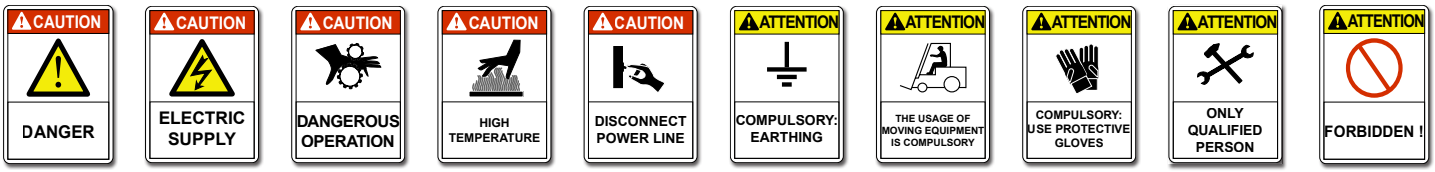
The manufacturer can not assume responsibility for fault of equipment in case the installation is not happened according to the above. This responsibility concerns completely the installer. In order to avoid such eventualities, if it is not certain to fit to the building or activity, ask our colleague for help

Both the owner and the installer have to identify every possible material, which can be present in the building (inflammable materials,corrosive materials, halo hydrocarbons etc.), and with knowledge of these materials must be planed the heater system!

STANDARDS AND LAWS

Every appliance installation must be satisfied the valid laws and standards. These laws refer to the gas and electrical installation respectively the ventilation (special specifications refer to park houses, airplane hangars etc).

SAFETY SIGNS

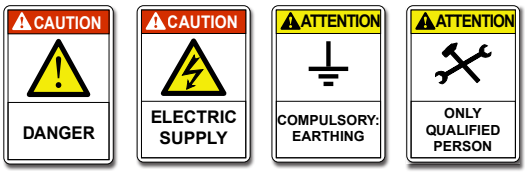


SAFE USAGE

Please observe the following rules during installation, first set-up, usage or maintenance:

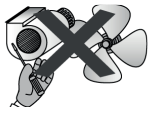
- Installation must be carried out always strictly complying with the current standards of the country where the appliance is going to be used and following, of course, the instructions given by the producer.
- The installation and maintenance operations of the unit can be carried out by qualified and trained personnel only.

Qualified service engineers are those having specific technical experience and/or valid license in the field of heating and cooling installation for home and industry. In any case, call the Manufacturer office or the closest dealer and ask for further informations.

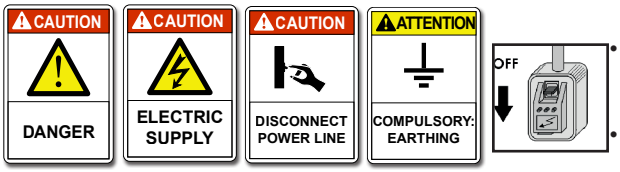


- According to the installation project, install the electric power lines.
- Always make sure that the unit and all its electrical parts have been correctly earthed prior starting up the unit.

- If you have to disassemble the unit, use special protective gloves.
- Beware of sharp edges inside the unit!
- Beware of roof corners of outdoor units!
- Keep suction grids always clear!



- Before cleaning or maintaining the unit, make sure that all electrical parts have been switched off, the appliance gas supply chain is closed and wait until the appliance cools down.



- We recommend to install a safety switch which can be easily reached to cut off the current, near the unit. Before any cleaning and servicing operation, cut off the power line to the unit.
- Before opening the unit, make sure that all electrical parts have been switched off.

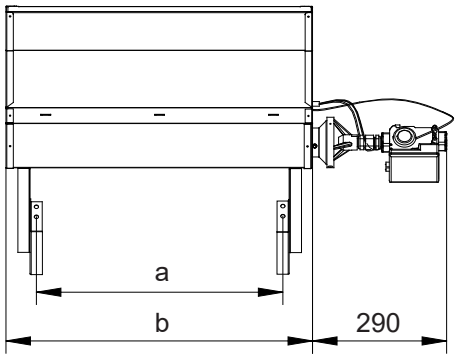
CHECK THE EARTHING !!

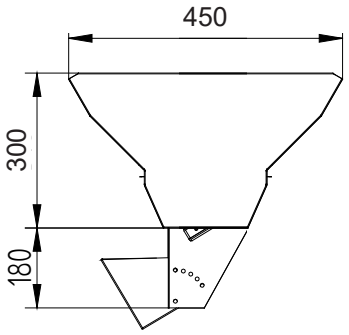
- This unit is designed to be used for heating purposes only. Any different use is not allowed as it may be dangerous.
- Should the unit work in a house where disabled people and/or children live, it must be placed safely away from their reach. Always make sure that the access door to the inside control board stay locked.
- An incorrect installation can cause damages to people, animals and property. In case of erroneous installation, the manufacturer cannot be held responsible for such damages.
- **The manufacturer cannot be held responsible for such damages by improper uses, errate uses, etc.**

- Never use the unit to support other equipment.
- Never leave tools, spare parts, etc. inside the unit.
- Make sure that all inspection panels are closed properly.
- Do no expose the unit to inflammable gases.

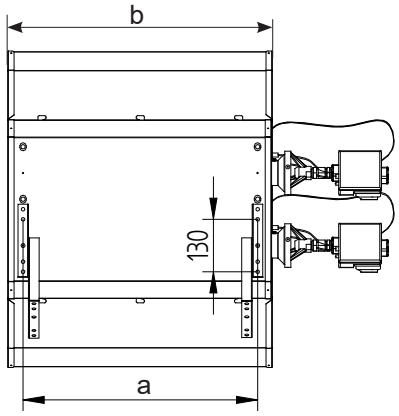
- In case of breakdown or failure: turn unit off, do not try to repair it on your own, call operator.
- If you are going to leave the heater switched off for a long time, first make sure that in no way this could cause harm to anyone in any way.

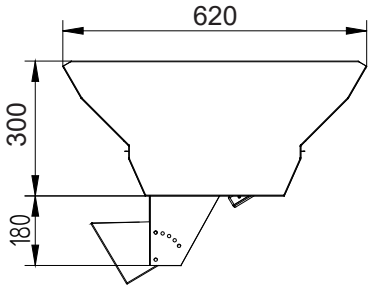
A design





B design



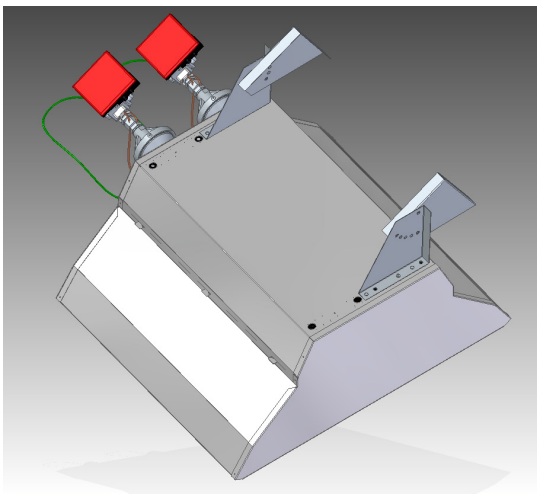


2.picture: Gas working infrared heaters type diagram

Type	Design	a	b	Weight (kg)
GHI ECO-11	One mixing housing	530	650	15
GHI ECO-18	One mixing housing	960	1020	22
GHI ECO-23	Two mixing housing	530	650	25
GHI ECO-36	Two mixing housing	960	1020	35

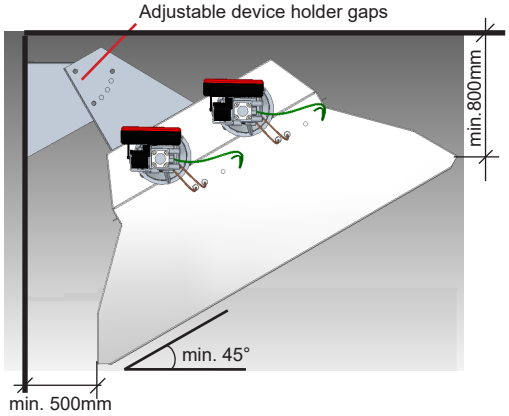
ASSEMBLAGE PROCESS OF THE APPLIANCES

1. The mounting brackets need to be mounted on the unit with M8-screws. **(THE MOUNTING BRACKET IS NOT THE PART OF THE EQUIPMENT)**
2. Please check the quality and the endurance of the wall where You want to install the unit, based ont he indications of the static expert.
3. Please set the right angle of the unit and fix the screws.



3.picture: Assemblage of the reflector

THE INSTALLATION ANGEL OF THE CERAMIC HEATERS TO THE HORIZONTAL PLANE (REFERRED TO THE CERAMIC SURFACE) CAN NOT BE LOWER THAN 45°.



APPLIANCE INSTALLATION

- SOLELY INTERIOR installation is possible.
- The installation must comply with the valid standards.
- For the sake of appropriate efficiency the position and the high of installation has to be carefully defined.
- The appliance has to be placed in that way that its every part be accessible.

GAS CONNECTION

ATTENTION! The appliance can only be operated by gas defined on the data board of appliance !

The nominal values of gas-supply pressure (e.g. in Hungary):
• in case of natural gas: 25 mbar (min. 20 mbar – max. 60 mbar)
• in case of Propan gas: 50 mbar
The allowed maximum pressure of gas-supply: 60 mbar!

ATTENTION! If the pressure of gas-supply is higher than 60 mbar in that case the using of pressure regulator is indispensable because the max. allowed pressure of double-closed solenoid valve is: Pmax = 60mbar

ELECTRICAL CONNECTION

ATTENTION! Both the ignition control needs 230V/50Hz mains voltage.
Before connecting the appliance to the gas pipe line, please disconnect it from the power line and close the gas valve front of the burner. The appliance must be connected to a grounded power supply system! If the above instructions are not followed that can lead to death, heavy injuries or property damages!

PLEASE CHECK THE EARTHING!

- Work out the electrical network system regarding to the diagram was attached to the appliance.

The connection diagram could change anytime: so we recommend to use the diagram which was attached to the appliance.

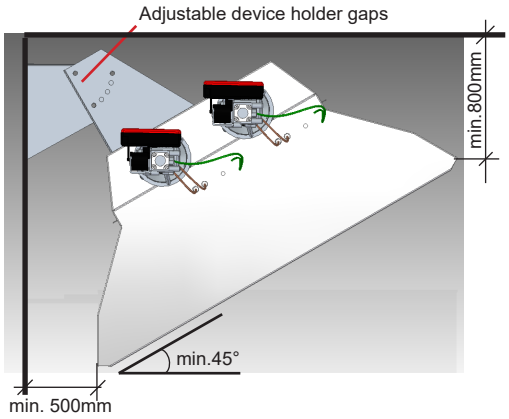
ELECTRICAL CONNECTING SPECIFICATIONS:

- The electrical supply: 230V / 50Hz - grounded
- Approximately 20W electrical performance per appliance
- The appliance must be operated under dry circumstances.
- At electrical installation of appliance the relevant standard must be considered.
- The mains connection can be executed by grounded plug or fixed **properly installed phase-null wires**.
- The appliance is phase-sensitive for this reason the connection always be careful

SUSPENSION

Warning! DO NOT ALLOWED to install he GHI ECO appliances into "A" and "B" specified fire-protection class! The installation must comply with the valid standards!
Disregard of these instructions can result in death, injury or property damage!

Infrared heaters are to be mounted on welded or assembled consoles built in the side wall of the hall to be heated, eventually on the ceiling, and secured with M8 bolts.



9.picture: Installation of the tube Heater, requested minimum safety distances

Tilting angle of heater should be adjusted according to values given in referring plan. Most frequent values: 45° and 60°, which mean the pitch of ceramic surface to the floor. At hanging from the ceiling, at least 45° minimum tilting must be ensured! The minimal tilting what is allowed at the appliances is 45°!

PROTECTIVE DISTANCES TO BE KEPT CONSIDERING FLAMMABLE MATERIALS

The distance of any inflammable materials from the heater must be chosen with ensure, that the surface temperature of these materials could NOT reach 50 °C. In cases when it is not possible, a fireproof heat protection plate must be used.

VENTILATION

The heaters do not possess integral combustion product exhausting system, so must be ventilate the room. Min. 16 max. 24 m³/h air exchange is necessary at every built-in/kW.

6. APPLIANCE OPERATION

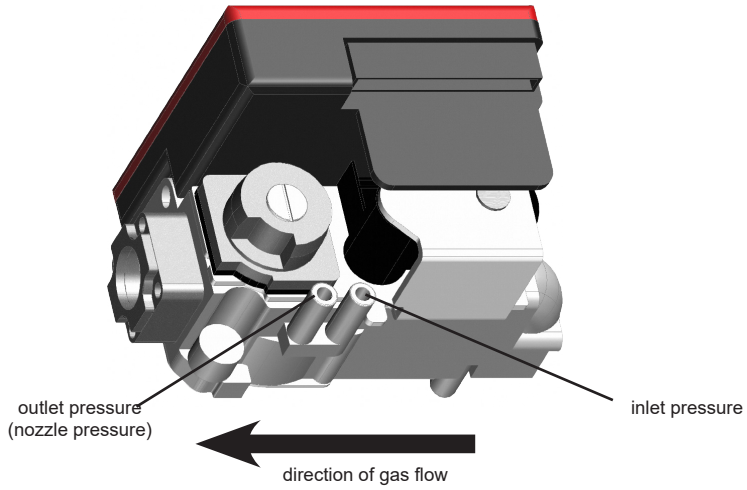
Warning! The installation of appliance must be only executed by qualified service or specialist authorized by retailer.
The 2 years guarantee of appliance can be ensured only in this case.

Before putting operation of appliance the leak-proof/pressure test of gas sup-ply system must be fulfilled. Clean duct system of gas supply from any contamination.

- Check the presence and cleanness of gas filter located before the appliance
- Check the presence and suitability of pressure regulator located centrally or before every appliance.(the pressure regulator is needed if the gas supply pressure is higher than 60 mbar,in this way the capacity of pressure regulator can be max. 60 mbar)
- Make sure of protective ground of appliance.
- Check the proper electrical connection of temperature regulator.
- Open the gas supply valve.
- Check the gas pressure on the inlet side of (magnetic) solenoid valve (the maximum allowed pressure is 60 mbar).
- Connect the mains voltage to the appliance by temperature regulator or central stage main-switch.
- Check the outlet pressure of solenoid valve, whether the set up pressure –nozzle pressure – is suitable for the type of gas.

Adjustment of gas pressure happens only in that case, when device does not operate satisfactorily within the value adjusted by the manufacturer. Device is factory-adjusted, but because of the different positioning circumstances it is practical to adjust it after the on-the-spot installation. The characteristic heat technical data is only expected from well-adjusted devices. A qualified technician should make adjustment of heating device.

The first adjustment of the appliance must be carried out only from a well educated technician! To fulfil this requirement the easiest way if You order this procedure by the producer or by the nearest distributor. If You decide to order the first adjustment procedure by the producer or by the distributor please feel free to contact our colleagues!



10.picture Assemblage of the gas magnetic valve

ATTENTION! At the first start need to check the inlet and outlet gas pressure!

Value of the outlet gas pressure:
Automatic appliances
- Natural gas and S-gas: 16 mbar
- Propane gas and PB gas: 45 mbar

Manual appliances:
- Natural gas and S-gas: 20 mbar
- Propane gas and PB gas: 45 mbar

General informations

The flame control is a self controlling device and it controls only the Burner which it will intervenes and it is not sensitive against other environmental effects such as external heat, light, and so on...

CHECK AT THE BEGINNING OF SEASON

Test system start-up and check the regular operation of device.
Checking the regular operation.

After starting the appliance, let it run for several minutes and close the gas tap. The appliance stops functioning and then after at least 8 seconds reinserts the gas tap, the appliance restarts after the safety time has elapsed.

MAINTENANCES

To ensure the long life of the GHI ECO type infrared devices, it is recommended that the device is examined and maintained at least once a year by a specialist or a specialist.

Attention! Before any maintenance and service process of the appliance, it needs to be disconnected from the power supply and unplug the gas supply!

MAINTENANCE SUPERVISIONS BY THE CUSTOMER

a) Check the statement of reflectors and clean them if it is necessary. Clean them by a soft cloth or a diluted detergent.
b) Check, if catalytic grid made of heat-resistant steel placed in front of ceramic plates touches ceramic plates or not. In case it touches it at some places, then drag it away from ceramics by a thin bent steel wire.
c) Check ceramic plates. Blow them sometimes through by compressed air when it is switched off and cool enough.
d) Check, if ceramic plates are broken or not by a survey. There is a bright line dur-ing glowing position at a broken appliance, which line indicates the place of breaking.
e) Check mountings screw fastenings at fixing frame by survey.

It is advisable to make a maintenance contract for the proper maintenance or call our qualified service department for regular maintenance.

ATTENTION! In case operational circumstances of appliance (atmosphere is contaminated with corrosive substances, dirt etc.) need it, then supervision and cleaning may have done more often! The main reason of this that the settled dirt on the radiant tubes can damage the efficiency of it and load the tubes hereby loading the suspensions of it significantly!

MAINTENANCE SUPERVISIONS BY A QUALIFIED SERVICE DEPARTMENT

all kinds of interventions for which dismantling of device is necessary

a) Supervision of nozzle pressure (at the secondary outlet of solenoid valve)
b) Supervision of electrical connection
c) Supervision of ignition module and spark interval

GAS CHANGE

Attention! By disassembling or modifying the unit please turn to distributor or the authorized Service.

Avoiding to do so may result in death, injury or material damage.

In case you would like to operate your appliance by another type of gas (for example by Natural Gas or Propane instead of butane gas), then turn to the local authorised representative or a qualified service department.

ATTENTION! This operation can be made just the qualified service department or specialist, who is entrusted by the manufacturer!

7. TROUBLESHOOTING

MALFUNCTIONS

SYMPTOMS		POSSIBLE CAUSES	CORRECTIVE ACTIONS
IGNITION AND FLAME SENSING SYSTEM	CERAMIC SURFACE		
There is no spark between electrodes of the igniter		• The electrodes of igniter is polluted • Electrical connection between igniter and automation is broken • Spark interval is too large • Automatic control went wrong • The ceramic on ignition electrode is broken,	• Clean electrodes • Check electrical connection between ignition module and auto • Check spark interval • Please change the ignition and ionization electrode • Replace automatic control
Ignition cycle is finished normally	Appliance does not operate after the first ignition cycle	• The gas supply valve is turned off • Air is not removed sufficiently from as pipe • Nozzle pressure is not suitable	• Turn on the gas supply valve • Remove the air from the pipe • Check the input and output pressure on the solenoid valve
Ignition cycle is finished normally	Appliance does not operate after the first ignition cycle	• Solenoid valve went wrong • Uncertain connection between ignition module and automatic control • Nozzle pressure is not suitable	• Replace the solenoid valve • Replace the differential switch • Check the input and output pressure on the solenoid valve
	The ceramic burner ignites but stops soon	• The phase and null are replaced • Nozzle pressure is not suitable • The ceramic plates are contaminated • The Ignition electrode is touching the catalytic grid	• Check the wires connection points • Check the input and output pressure on the solenoid valve • Please clean all the ceramic plates. (compressed air is required) • Please remove, and keep some distance from the catalytic grid (at least 2 mm)
	The unit is working, but the efficiency, as also the temperature of the ceramic plates are lower as the normal operation condition	• Nozzle pressure is not suitable • The ceramic plates are contaminated	• Please clean all the ceramic plates. (compressed air is required) • Check the input and output pressure on the solenoid valve
	Appliance operates but the combustion is uneven and noisier than it should be	• Nozzle pressure is not suitable	• Check the input and output pressure on the solenoid valve

8. Enclosure

Enclosure 1.: Type and technical data of infrared heater

Type	Design	Useful Capacity Stage 2 (100%) [kW]	Useful Capacity reduced mode	Connecting gas pressure	
				[mbar]	[mbar]
				NG/S-gas	Propane
GHI ECO -11	A**	11,7	9,8 (85%)	20	37 / 50*
GHI ECO -18	A**	19,4	17,8 (85%)	20	37 / 50*
GHI ECO -23	B***	23,5	11,7 (50%)	20	37 / 50*
GHI ECO -36	B***	35,2	19,4 (50%)	20	37 / 50*

* Connecting gas pressure are 30 or 50 mbar in case of Propane gas.
**Execution A is made of one mixing chamber and its 2 stage regulation goes through nozzle pressure regulation.
Max. nozzle pressure (100%) 16 mbar, Min. nozzle pressure (85%) 13,5 mbar.
***Execution B is made of two mixing chamber and its 2 stage regulation goes through switching of one chamber
Max. nozzle pressure (100%) 16 mbar, Min. nozzle pressure (50%) 16 mbar.

Enclosure 2.: gas consumption of GHI ECO heaters

Type	Input power	Gas consumption	
		[m^3/h]	[kg/h]
	[kW]	Natural gas	Propane
GHI ECO -11*	11,7	1,24	0,97
GHI ECO -18	19,4	2,06	1,60
GHI ECO -23**	23,5	2,49	1,94
GHI ECO -36	35,2	3,73	2,90

* At the GHI ECO-11 appliances the net heat input is 10 kW, with propane gas.
** At the GHI ECO-23 appliances the net heat input is 20 kW, with propane gas.

Enclosure 3.: Target countries/gas categories

Target countries	Appliance category	Gas pressure of connection (mbar)	
		2. family	3. family
AT	II2H3P	20	50
BA	I3P	50	50
BE	I3P	37/50	37/50
BG	II2H3P	20	37
BY	II2H3P	20	37/50
CH	II2H3P	20	50
CZ	II2H3P	20	37
DE	I2E; I3P	20	50
DK	I2H; I3P	20	30
EE	I2H	20	20
ES	II2H3P	20	37/50
FI	I2H	20	20
GB	II2H3P	20	37/50
GR	II2H3P	20	37/50
HR	II2H3P	20	37
HU	II2H3P	25	50
IE	II2H3P	20	37
IT	II2H3P	20	37
LT	II2H3P	20	37
LU	I2E	20	20
NL	I3P	20	30/50
NO	I2H	20	20
PL	I2E; I3P	20	37
PT	II2H3P	20	37
RO	II2H3P	20	30
RS	II2H3P	20	37/50
RU	II2H3P	20	37/50
SE	I2H	20	20
SI	II2H3P	20	37
SK	II2H3P	20	37/50
TR	I2H	20	20
UA	II2H3P	20	37/50

Model: **GHI-11-ECO Ceramic radiant heaters with double reflector plated**

Type of heating:		Ceramic radiant heaters				
Fuel:	Gaseous	Type of fuel:	Natural Gas	Propane	Butane	Propane-Butane
Space heating emission (*) NO_X				74	mg/kWh$_{input}$ (GCV)	

Characteristics when operating with the preferred fuel only

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Heat output				**Useful efficiency (GCV) — tube local space heaters only (**)**			
Nominal heat output	P_{nom}	12,98	kW	Useful efficiency at nominal heat output	$\eta_{th,nom}$	85,6	%
Minimum heat output	P_{min}	12,98	kW	Useful efficiency at minimum heat output	$\eta_{th,min}$	85,6	%
Minimum heat output - as percentage of nominal heat output	--	-	%				
Radiant factor				**Envelop losses**			
Radiant factor at nominal heat output	RF_{nom}	63,5	%	Envelope insulation class	U	0,0	W/m^{2}K
Radiant factor at minimum heat output	RF_{min}	63,5	%	Envelope loss factor	F_{env}	0,0	%
According to (EU) 2015/1188				Heat generator to be installed outside the heated area	Yes	No	Possible
Auxiliary electricity consumption				**Heat output control type**			
At Nominal heat output	el_{max}	0,03	kW	- Single stage (ON-OFF)	Yes	No	
At minimum heat output	el_{min}	0,03	kW	- Two stages (100%-60%-OFF)	Yes	No	
In standby mode	el_{sb}	0,0	kW	- Modulating	Yes	No	
Permanent pilot flame power requirement							
Pilot flame power requirement (if applicable)	P_{pilot}	0,0	kW				

Contact details	PAKOLE Trade Kft. H-8000, Székesfehérvár, Börgöndi út, 8-10

(*) NOx= nitrogen-oxides.
(**) For luminous local space-heaters the weighted thermal efficiency is by default 85,6 %.

Model: **GHI-18-ECO Ceramic radiant heaters with insulated reflector**

Type of heating:	Ceramic radiant heaters					
Fuel:	Gaseous	Type of fuel:	Natural Gas	Propane	Butane	Propane-Butane
Space heating emission (*) NO_X				**76**	mg/kWh$_{input}$ (GCV)	

Characteristics when operating with the preferred fuel only

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Heat output				**Useful efficiency (GCV) — tube local space heaters only (**)**			
Nominal heat output	P_{nom}	21,53	kW	Useful efficiency at nominal heat output	$\eta_{th,nom}$	85,6	%
Minimum heat output	P_{min}	21,53	kW	Useful efficiency at minimum heat output	$\eta_{th,min}$	85,6	%
Minimum heat output - as percentage of nominal heat output	--	-	%				
Radiant factor				**Envelop losses**			
Radiant factor at nominal heat output	RF_{nom}	63,7	%	Envelope insulation class	U	0,0	W/m^{2}K
Radiant factor at minimum heat output	RF_{min}	63,7	%	Envelope loss factor	F_{env}	0,0	%
According to (EU) 2015/1188				Heat generator to be installed outside the heated area	Yes	No	Possible
Auxiliary electricity consumption				**Heat output control type**			
At Nominal heat output	el_{max}	0,03	kW	- Single stage (ON-OFF)	Yes	No	
At minimum heat output	el_{min}	0,03	kW	- Two stages (100%-60%-OFF)	Yes	No	
In standby mode	el_{sb}	0,0	kW	- Modulating	Yes	No	
Permanent pilot flame power requirement							
Pilot flame power requirement (if applicable)	P_{pilot}	0,0	kW				

Contact details	PAKOLE Trade Kft. H-8000, Székesfehérvár, Börgöndi út, 8-10

(*) NOx= nitrogen-oxides.
(**) For luminous local space-heaters the weighted thermal efficiency is by default 85,6 %.

Model: **GHI-23-ECO Ceramic radiant heaters with insulated reflector**

Type of heating:	Ceramic radiant heaters					
Fuel:	Gaseous	Type of fuel:	Natural Gas	Propane	Butane	Propane-Butane
Space heating emission (*) NO_X				**73**	mg/kWh$_{input}$ (GCV)	

Characteristics when operating with the preferred fuel only

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Heat output				**Useful efficiency (GCV) — tube local space heaters only (**)**			
Nominal heat output	P_{nom}	26,08	kW	Useful efficiency at nominal heat output	$\eta_{th,nom}$	85,6	%
Minimum heat output	P_{min}	26,08	kW	Useful efficiency at minimum heat output	$\eta_{th,min}$	85,6	%
Minimum heat output - as percentage of nominal heat output	--	100	%				
Radiant factor				**Envelop losses**			
Radiant factor at nominal heat output	RF_{nom}	64,9	%	Envelope insulation class	U	0,0	W/m^{2}K
Radiant factor at minimum heat output	RF_{min}	64,9	%	Envelope loss factor	F_{env}	0,0	%
According to (EU) 2015/1188				Heat generator to be installed outside the heated area	Yes	No	Possible
Auxiliary electricity consumption				**Heat output control type**			
At Nominal heat output	el_{max}	0,05	kW	- Single stage (ON-OFF)	Yes	No	
At minimum heat output	el_{min}	0,05	kW	- Two stages (100%-60%-OFF)	Yes	No	
In standby mode	el_{sb}	0,0	kW	- Modulating	Yes	No	
Permanent pilot flame power requirement							
Pilot flame power requirement (if applicable)	P_{pilot}	0,0	kW				

Contact details	PAKOLE Trade Kft. H-8000, Székesfehérvár, Börgöndi út, 8-10

(*) NOx= nitrogen-oxides.
(**) For luminous local space-heaters the weighted thermal efficiency is by default 85,6 %.

Model: **GHI-36-ECO Ceramic radiant heaters with insulated reflector**

Type of heating:	Ceramic radiant heaters					
Fuel:	Gaseous	Type of fuel:	Natural Gas	Propane	Butane	Propane-Butane
Space heating emission (*) NO_X				**75**	mg/kWh$_{input}$ (GCV)	

Characteristics when operating with the preferred fuel only

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Heat output				**Useful efficiency (GCV) — tube local space heaters only (**)**			
Nominal heat output	P_{nom}	39,06	kW	Useful efficiency at nominal heat output	$\eta_{th,nom}$	85,6	%
Minimum heat output	P_{min}	39,06	kW	Useful efficiency at minimum heat output	$\eta_{th,min}$	85,6	%
Minimum heat output - as percentage of nominal heat output	--	-	%				
Radiant factor				**Envelop losses**			
Radiant factor at nominal heat output	RF_{nom}	65,1	%	Envelope insulation class	U	0,0	W/m^{2}K
Radiant factor at minimum heat output	RF_{min}	65,1	%	Envelope loss factor	F_{env}	0,0	%
According to (EU) 2015/1188				Heat generator to be installed outside the heated area	Yes	No	Possible
Auxiliary electricity consumption				**Heat output control type**			
At Nominal heat output	el_{max}	0,05	kW	- Single stage (ON-OFF)	Yes	No	
At minimum heat output	el_{min}	0,05	kW	- Two stages (100%-60%-OFF)	Yes	No	
In standby mode	el_{sb}	0,0	kW	- Modulating	Yes	No	
Permanent pilot flame power requirement							
Pilot flame power requirement (if applicable)	P_{pilot}	0,0	kW				

Contact details	PAKOLE Trade Kft. H-8000, Székesfehérvár, Börgöndi út, 8-10

(*) NOx= nitrogen-oxides.
(**) For luminous local space-heaters the weighted thermal efficiency is by default 85,6 %.

GUARANTEE AND SERVICES

PRESERVE THIS WARRANTY

Type: _____

Serial no.: _____

Date of purchasing:: _____

LIMITED GUARANTEE *

The manufacturer guarantee the costumer that the product and its parts are free from material and production failures. During normal use the warranty is 2 years. This warranty concerns the first retail customer.

The guarantee concerns the costs of laboratory investigations and the parts, which are needed for proper operation. The delivery and unforeseeable costs belong also to the mending costs and do not contain compensation costs.

Guarantee mending can only be realized by authorized retailer or service centre.
The guarantee does not concerns the following failures, which are caused by: improper using,damaging,neglect,accident,lack of maintenance,normal attrition,
transformation, modification and operation influenceable factor,contaminated fuel, installation of non-suitable part and mending which is done by not authorized retailer or service station.

The regular maintenance is the owner's responsibility.
The manufacturer does not assume the responsibility in case of accidentally happened or directly caused mistake respectively improper using.

***We reserve the right to change of this specification without extra notification. The guarantee can be applied in accordance with above defined.**
Additional guarantee is not accepted.

Guarantee servicing

If your appliance needs guarantee service in that case it can be requested at nearest authorized service station giving in the appliance for repairs.

Mending services

Take the appliance to the nearest authorized service station. If the device is not under guarantee the service cost will be invoiced to the costumer at defined price. The service centres are independent from one another and may have different owners. We reserve the right to change of this specification without extra notification. If you would like to contact us the type and serial number of device always be at hand. In case of other needed information write to the distributor.

PAKOLE

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