Type and technical data of “GH” Gas Infrared Heaters

After unpacking, you possess the followings:

- one of these types given in chart according to the data sheet placed at device

Type	Version	Useful Capacity (kW)	Connecting gas pressure		a	b	c	Weight (kg)
			G20, G25.1 (mbar)	G30, G31 (mbar)				
GH-7/K	K	6	20 or 25	50	245	600	796	9
GH-7	A	7	20 or 25	50	245	600	830	9
GH-11	A	11 *	20 or 25	50	414	789	1040	12,1
GH-18	A	18,2	20 or 25	50	800	1156	1430	16,1
GH-23	B	22 **	20 or 25	50	414	789	1140	19
GH-36	B	36,4	20 or 25	50	800	1156	1540	28,2

* At the GH-11 appliances the net heat input is 10 kW, with propane gas (G31).

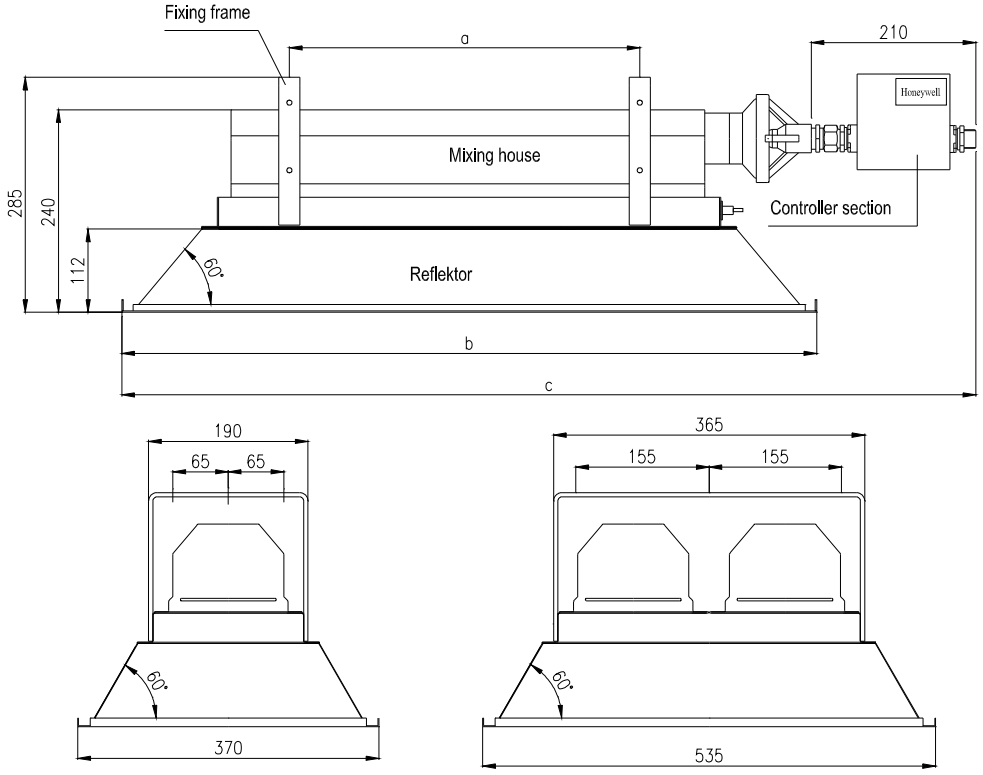
** At the GH-23 appliances the net heat input is 20 kW, with propane gas (G31).

- Controller section containing gas solenoid valve and control electronics.
- 4 pieces of aluminium-coated screen with fixing heat-resistant screws M5.
- This description and a quality certificate

“A” = version with one piece of mixing house

“B” = version with two pieces of mixing houses

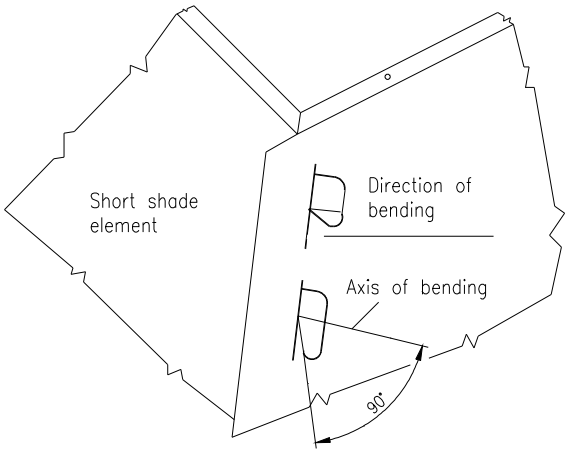
Outline drawing and main dimensions of gas infrared Heaters



Steps of assembling

1. Connect control section to venturi in such a tilting angle, that issued from the tilting angle of device, it should be positioned vertically at future operation. Finish the exact adjustment and total securing of Hollander screw after mounting of device.
2. Assemble the aluminium-coated screen comes as follows: put the 3 appendages of matching end of shorter shade element into the 3 gaps of longer screen element placed at its end and bend appendages with narrow pliers by 90°C degrees. Then, it is practical to finish matching and securing of the other short screen, then to finish with the last long screen element and finish assembling at all.

   In case connecting was well done, it results as a turtle shape. Take care of not let them burst at bending of appendages. Carefully positioned pliers could prevent this, so catch only that part of appendage, which is hanging out above split.

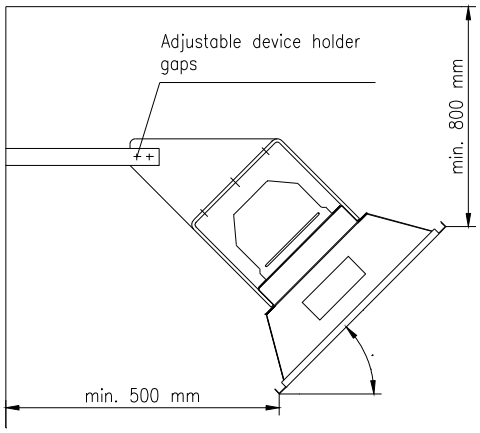


3. Place the shade onto fixing frame so, that data sheet should be positioned from the direction of control section and fit them with packed “M5” screws - applying at the top the plain washer with larger diameter, at the bottom the plain and safety washer - together. Try to secure screws step by step, continuously, to help voltages be equalised.

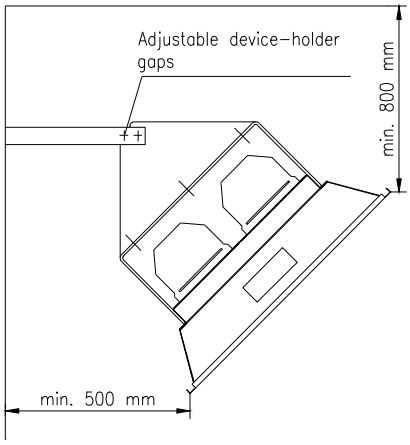
   Use only the enclosed, heat-resistant screws for connecting!
4. Turn heater into such a position, that stirrups of device could be reached. In case connecting plates for the angle adjustment of device were bought from the manufacturer, screw them on stirrups.

Installation of gas infrared heaters and Safety instructions

"A" Version



"B" Version



Mounting instructions:

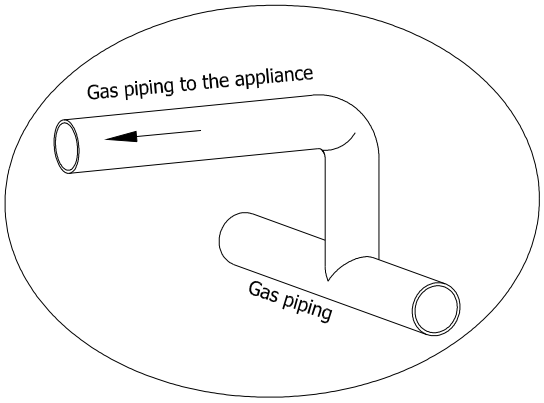
- Infrared heaters are to be mounted on welded or assembled consoles built in the side wall of the hall to be heated, eventually on the ceiling, and secured with M8 bolts.
- Tilting angle of heater should be adjusted according to values given in referring plan. Most frequent values: 30°, 45° and 60°, which mean the pitch of ceramic flat to the floor. At hanging from the ceiling, at least 15° minimum tilting must be ensured! The minimal tilting what is allowed at GH-23 and GH-36 appliances is 30°!
- The distance of any inflammable materials from the heater must be choosen with ensure, that the surface temperature of these materials could nor reach 50 ^{o}C. In cases when it is not possible, a fireproof heat protection plate must be used.
- The use of the heaters in 'A' and 'B' fire-protection class rooms is prohibited!
- The heaters do not possess integral burning product exhausting system, so must be ventilate the room.

GAS CONNECTION

Only gas types given in data chart could operate GH infrared heater.

In case the pressure of gas supply is higher than 60 mbar, then usage of pressure regulator is mandatory. The pressure regulator could be fitted to each appliance or 1 fitted centrally.

Absolutely necessary to build in a gas-filter front of the pressure regulator if you use pressure regulator front of at each appliance, but at centrally regulator usage you must built in a gas-filter front of the central regulator and directly front of each appliance, to avoid blockage in the regulator and in the gas solenoid valve of appliance that could be caused by possible deposits in the gas-pipe (even if the gas piping had been blown trough).



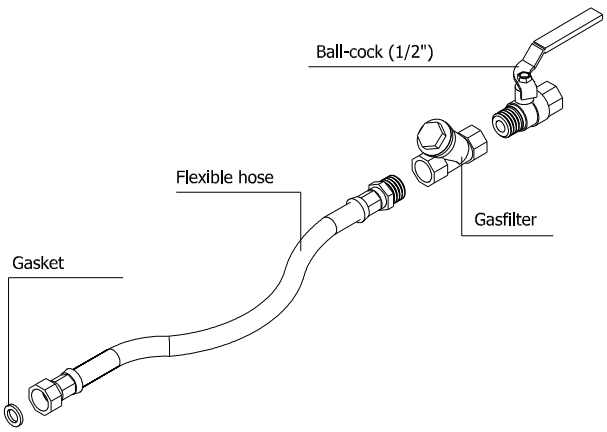
The execution of the branch off from main gas piping!

Gas filter usage is obligatory!

The connecting to the main of gas must from above or from the side, because if you connecting from below that will be collector place of pollutants.

Thermal expansion of appliance must be considered during connection, this is why a flexible hose should make connection.

At connection, use the flexible hose belonging to burner so that it should render a 100 mm free enlargement possible. Assemble hose without turning.



Its connection should be directly to the 1/2″ external threaded burner inlet pipe. If use gas pressure regulator before the burner you can install between the gas filter and the flexible hose.

It is necessary to an isolating valve to the flexible hose.

Usage of the gas connecting set recommended! (flexible hose, gas filter, ½" ball-cock)

Distributor: ***PAKOLE*** Kft.

OPERATIONS TO BE MADE

CLEANING OF GAS PIPING

Before connecting appliance to gas piping, it is important to clean gas piping totally and thoroughly.

CHECKING THE GAS LEAKAGE

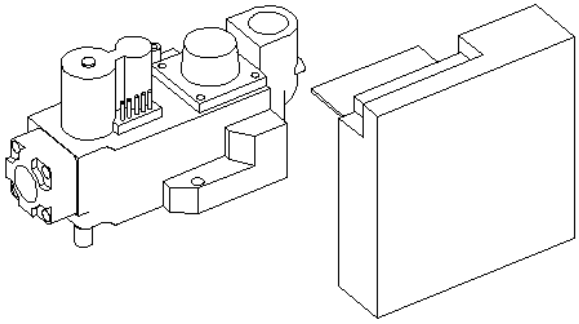
After connecting appliance, make sure of the soundness of several gas connections. This should be done on the assembled system, by 1,5 times of the maximal pressure value (60 mbar) prescribed to appliance, that is 90 mbar. This operation must be made after all assembly and disassembly.

ELECTRICAL CONNECTION

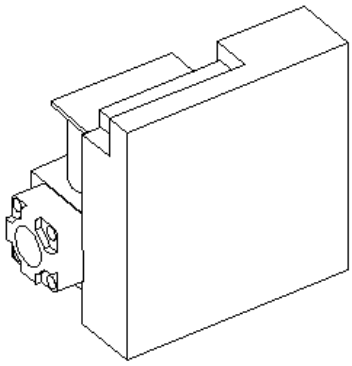
Conditions of electrical connection:

- 230 V, 50 Hz supply voltage
- Protective earth-line
- Approximately 20W electrical performance per appliance

Process of assembling of the Honeywell types auto ignition controller and a gas solenoid valve:

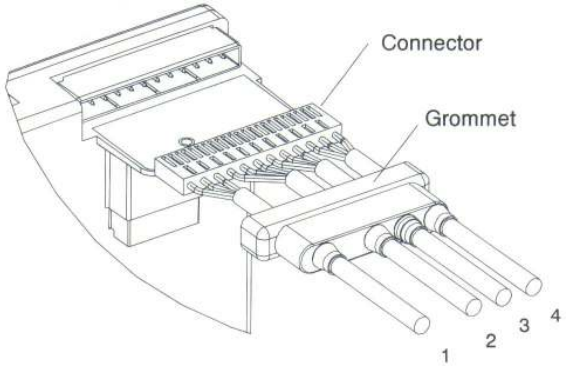


1. Independently from one another



2. Assembling together

Electrical connection to the automatics



Electrical connecting:

S 4565R automation

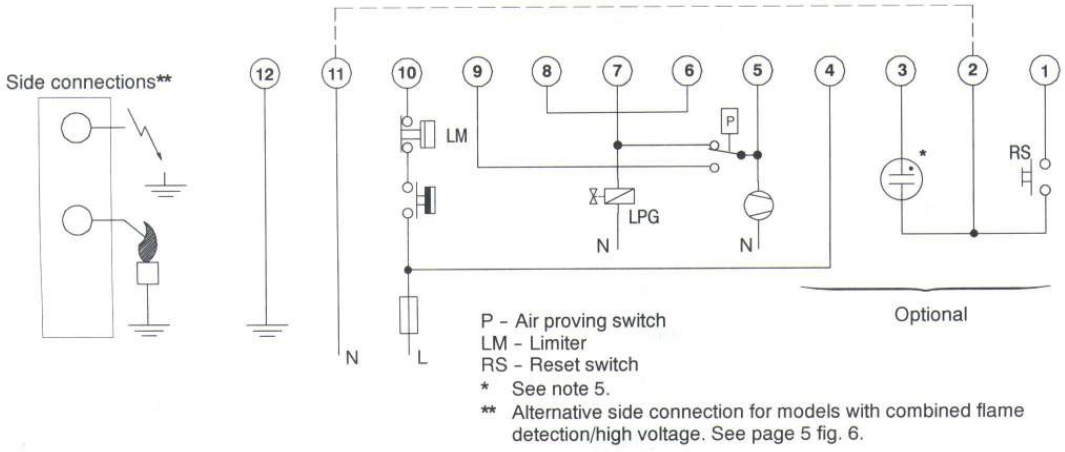
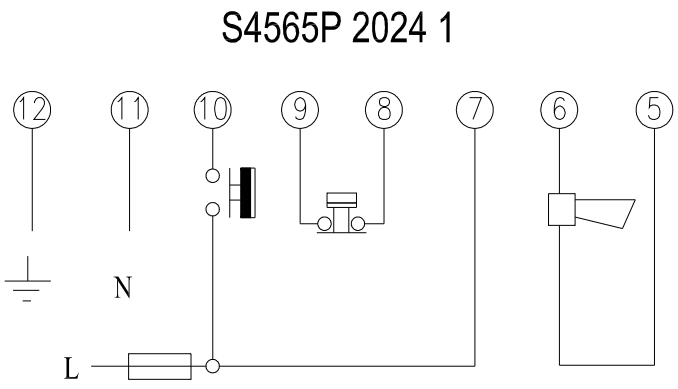


Fig. 5. Connection diagram S4565C, D, R, T

Because the appliance has not possess differential pressure switch, for this reason must be short-circuit the 9 and 7 points. - The manufacturer makes it.

S 4565P automation



Ts = 25s
220 / 240 V - 50Hz (±5%)

It must be short-circuit the 8-9 and 7-10 points on the connector of automatics. - The manufacturer makes it.

If you change the automation from S4565R to S4565P than you can take out the short-circuit from the 7-9points and take in two pieces short-circuit between the 8-9 and 7-10 points.

Take into consideration the safety time (depend from automation: at S4565R is 10sec, at S4565P is just 1sec) at starting of spark plug electronics, since the high voltage arc formation and opening of solenoid valve happen followed this. In case you have reached this point concerning the assembling, installation and connection of heater, it is practical to survey, whether external damages have occurred as a result of previously finished operations. Check the followings: burning surface of ceramics, fittings and connections of control section, expanded plate and head of spark plug. At the latter one - in case it is necessary - adjust again the desired approx. 4mm long spark distance, furthermore, electrodes must not be closer than 10 mm to the expanded plate and must not touch the surface of ceramics.

Warning: the apparatus is phase-sensitive! The Black colour wire is the phase, the blue is the Null and the Green/yellow is the earth (protective ground).

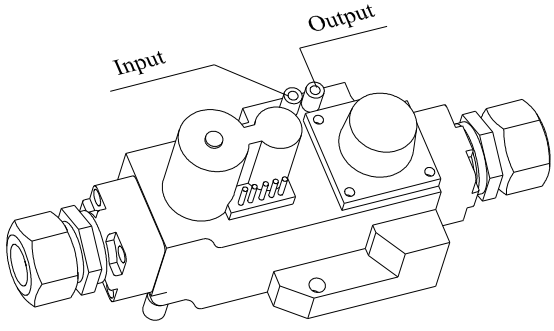
Operation of gas infrared heaters

Before testing operation, pressure and leakage of gas piping should be tested first of all. Solenoid valve of regulator is an excluded element from pressure test, this time the ball valve of branch is in closed position. At testing leakage ball valve is opened, solenoid valve is in closed position while spark plug electronics are free from voltage.

After a successful pressure and leakage test comes the starting test of heater(s). Since during the manufacturing quality process the proper adjustment to the necessary value of gas pressure before nozzle had happened, testing operation of heater consists only of opening the ball valve of gas piping and turning the electrical switch on. In case survey and adjustment of gas pressure would be necessary at device, then follow these instructions.

Combined gas solenoid valve

Pressure adjustment and survey at Honeywell gas solenoid valve built into the control section of device is possible at the indicated points of diagram. Adjustment of gas sure 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.

In case consumer decides to order adjustment from the manufacturer, then we will be gladly at his/her disposal.

Attention!

Outlet pressure must be checked at every operation, the value of it in case:

G20 and G25.1: 16 mbar, manual ignition: 25 mbar.

G30 and G31: 48,5-49 mbar, manual ignition: 50 mbar.

Inquires at the beginning of season

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

Checking the regular operation

a.) At automatic appliance: Switch on device, let it operate some minutes, then push the gas control knob to the OFF position. Burner stops operating. Wait for 6-8 minutes then turn the gas control knob to the ON position and appliance will start to operate after 0-25s again.

b.) At manually ignited appliance (GH-7 G20/K, GH-7 G30/K, GH-7 G31/K): When pushing thermo-valve down gas flow starts across the nozzle then the Venturi and finally reaches mixing nozzle. Matches, etc. could light gas coming out of bores of ceramic plate. After gas catches fire push button must be pushed for approx. 30 s. After all, thermo-element should ensure keeping the valve in opened position.

Maintenance

Besides supervision and clearing of ceramic plates and reflector (see: Maintenance supervisions by the customer), GH infrared heater does not need a separate maintenance, but to keep its SAFETY OPERATION and LONG LIFETIME, it is recommended to check appliance once a year by a qualified technician.

Maintenance supervisions must include the followings:

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 during glowing position at a broken appliance, which line indicates the place of breaking.
e.) Check mountings screw fastenings at fixing frame by survey.

In case operational circumstances of appliance (atmosphere is contaminated with corrosive substances, dirt) need it, then supervision and cleaning may have done more often! The main reason of this that dirt placed on ceramic plates and reflector may damage efficiency of appliance.

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
d.) Supervision of thermo-element and thermo-valve at manually ignited appliance

Gas exchange

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.

Trouble shooting: diagnosis & testing

SYMPTOM		POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Ignition checkout and flame sensing control	Gas burner		
There is no spark between electrodes of ignition module		Ignition module is polluted Electrical connection between ignition module and automation was interrupted Spark interval is too large The ceramic that insulates ignition module is split Automation went wrong	Clean electrodes of ignition module Check electrical connection between ignition module and automation Check spark interval between electrodes of ignition module Replace automation
Ignition cycle finishes normally	Device does not operate after the first ignition cycle	Gas control knob is closed Air was not removed enough from gas piping Pressure of nozzle is not suitable	Open gas control knob Remove air Check in- and output pressure at solenoid valve
Ignition cycle finishes normally	Device does not operate after several ignition cycles	Solenoid valve went wrong Unstable electrical connection between ignition module and automation Pressure of nozzle is not suitable	Replace solenoid valve Check electrical connection Check in- and output pressure at solenoid valve
	Gas burner ignites but shuts down soon	Phase and null are inverted Pressure of nozzle is not suitable Ceramic plates are polluted Ignition module touches catalytic grid	Check phase fitting Check in- and output pressure at solenoid valve Clean ceramic plates Drag ignition module away the grid
	Device operates but with low efficiency and temperature of ceramic plates is lower than operation temperature	Ceramic plates are polluted Pressure of nozzle is not suitable	Clean ceramics Check in- and output pressure at solenoid valve
	Device operates, but burning is uneven and noisier than it should be	Pressure of nozzle is not suitable	Check in- and output pressure at solenoid valve
After igniting, thermo-valve does not stay opened at manually ignited appliance		Thermo-element went wrong Thermo-element became dirty	Replace thermo-element Disassemble and clean thermo-valve

AT AN INTERVENTION THAT NEEDS APPLIANCE TO BE DISASSEMBLED, TURN TO A QUALIFIED SERVICE DEPARTMENT CHARGED BY THE AUTHORISED REPRESENTATIVE!

Guarantee

It is offered a specific and limited 12-months guarantee covering GH infrared heaters in case of proper use. In case you had not inquired factory adjustment then it begins at the point of purchasing, in case it is factory-adjusted, then time of guarantee begins followed the adjustment.

Guarantee loses its validity in the following cases:

- Inexpert use
- In case the necessary air exchange of heated building is not reached. Min. 16 max. 24 m^3/h air exchange is necessary at every built-in kW.
- Running the appliance(s) with intake combustion air drawn from an atmosphere that is contaminated with (even to a lesser degree) aggressive, force or other corrosive substances, which would have adverse effect on the material of radiant heater.