



User Manual and Installation Instruction

Gas Burner



Dear user, it is mandatory to observe and implement the provisions of this manual.

Please read and follow it carefully.

Otherwise, KOOLAK GOSTAR YAZD Company will not be responsible for possible accidents.


We appreciate your purchase

We are confident that you will be satisfied with your acquisition from **KGY**.



Gas Fuel Burner

With the confirmation certificate of the European Union and four international standards, we affirm that the design and modeling of this equipment have been completed in our company. It possesses the quality and safety features authorized by the European Union.

	<p>In order to be sure about the machine’s proper, effective and permanent performance and to ensure your safety we sincerely ask you read this installation pamphlet carefully and completely and pay attention to warnings and safety instructions before installation and for reparation and maintenance of the machine.</p> <p>The consequences of not reading the latest version of the manual are the responsibility of the customer.</p> <p>You can always download the latest version of the user manual on www.kgy.ir</p>
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	<p>The contents of this manual may change without prior notice.</p> <p>If you come across any errors or incorrect information, we will be happy to let us know about them.</p> <p>All photos, logos, and writings in this booklet belong to KGY Company and copying them without mentioning the name of the company is illegal.</p>
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Table of contents

1 INTRODUCTION4

1-1 TARGET GROUPS4

2 GENERAL INFORMATION5

1-2 SIGNS5

2-2 SPECIAL SAFETY INSTRUCTIONS5

2-3 GENERAL SAFETY INSTRUCTIONS5

2-4 ELECTRICAL EQUIPMENT6

2-5 MAINTENANCE6

2-6 SPARE PARTS ORDERING6

2-7 RESPONSIBILITY7

2-8 WARRANTY7

2-9 POWER OUTAGE7

2-10 CALL INFORMATION7

3 INTRODUCTION8

3-1 TECHNICAL FEATURES8

3-1-1 Technical information8

3-2 SYSTEM PARTS9

3-3 BURNER’S EQUIPMENT11

3-3-1 Gas pressure switch11

3-3-2 Air pressure switch11

3-3-3 Electrical gas valve (solenoid valve)11

3-3-4 Ionization bar12

3-3-5 Spark transformer12

3-3-6 Relay12

3-3-7 Fan system12

3-3-8 Air moderator (damper)13

3-4 TECHNICAL POINTS, INSTALLATION AND BURNER INITIATION13

3-4-1 Controls before installation13

3-4-2 Safety points14

3-4-3 Flame adjustment14

3-4-4 Air ignition provision way installation16

3-4-5 Burner to furnace connection17

3-4-6 Air damper adjustment17

3-4-7 Using a gas analyzer17

3-4-8 Electrode adjustment18

3-5 THE GAS BURNER CONNECTION TO THE GAS PIPELINE18

3-6 THE PARTS AND COMBUSTION LINE MAP:19

3-7 POWER SYSTEM20

3-8 REPARATION AND MAINTENANCE21



1 Introduction

This instruction has been compiled to guide you, dear consumer, not only in learning how to turn on this burner but also in understanding the general details of its maintenance and gaining the ability to troubleshoot your system. Always keep a copy of this manual next to the heater so that the operator can comprehend the safety tips, especially if they are not familiar with the burner. Share the following tips with anyone working with the burner to prevent problems and potential injuries:

- **How to turn on and adjust the burner**
- **How to troubleshoot the burner**

Ensure the burner is serviced by a technician once a year to guarantee its correct performance. Consult an expert to address any issues with the electric motor or burner.

1-1 Target groups

These instructions are intended for:

- Installers tasked with the assembly (if applicable) and/or mechanical installation of this burner.
- Electricians tasked with the electrical installation of this burner.
- Operators tasked with the operation of this burner.
- Maintenance technicians tasked with maintenance and troubleshooting of this burner.




Target group requirements:

- Installers must have sufficient relevant experience or training in the installation of this type of Burners.
- Electricians must be qualified electricians.
- Operators must have sufficient relevant experience or training in operating this type of burners.
- Maintenance technicians must have sufficient relevant experience or training in maintaining and troubleshooting this type of burners.



2 General information

2-1 Signs

While reading this manual you'll face these signs:

	General Hazard Warning
	Electrical Hazard Warning
	Protective Glove Use

2-2 Special Safety Instructions

	Caution	This sign indicates a possible hazard or unsafe practice that could injure you or damage the burner.
	Attention	Next to this sign, you will find information on how to use the burner properly and efficiently and how to create an ideal ambient condition.

2-3 General Safety Instructions

This burner is designed for use in industrial halls, poultry farms, and greenhouses. Its use in other locations is only acceptable if approved by the company's consultants and technical experts. The producer is not liable for the consequences resulting from improper use, and the user bears full responsibility for potential incidents and damages.

- The presence of a factory-authorized serviceman is mandatory for the initiation, maintenance, and installation of the burner.
- Compliance with obligatory regulations for incident prevention, along with adherence to all other formal regulations such as occupational medicine and safety, is required.


Caution: This manual does not address the general hazards of fire. Call your local fire department for guidance and information.



2-4 Electrical Equipment


- All the matters related to the maintenance and repair of the burner must be handled by experts.
- Before initiating maintenance and repair procedures ensure the heater is unplugged.
- Prior to starting the heater, inspect all electrical wiring and make sure they are undamaged.
- Before activating the heater, have electricians identify and replace any damaged wires and components within the system.
- Covering the electro-motors may elevate the temperature and potentially leading to damage the heater and, in extreme cases, causing a fire.

2-5 Maintenance

	<p>Before performing maintenance and repairs ensure that the heater is unplugged.</p>
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Caution: For maintenance procedures on the heater, refer to the manual. Any repairs must be carried out exclusively by the authorized servicemen of the company, and they should be entrusted with the task.

Caution: Maintenance, repairs, and cleanliness of the heater should be conducted when the heater is turned off, and the electro-motor has been stopped. This aspect should be taken into consideration even when addressing partial deficiencies during repairs

	<p>If there is a possibility of hand injury, use the protective gloves.</p>
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After the repair process, the customer should be satisfied with the results. Do not restart equipment before implementing all safety considerations.

The exact technical features of spare parts must be provided, ensuring they possess the necessary quality features. This requirement ensures the originality of the parts.

2-6 Spare Parts Ordering

when ordering the spare parts, consider the following points:

- Intended piece code with its description
- Bill's code of initial purchase
- Electrical features, such as 380Volt,3phase, 50 hertz

2-7 Responsibility

Any change applied to the heater without the supervision of company representatives absolve our responsibility for potential damages.

The consequences of unstandardized adjustment of the flame formation system rest on the customer; hence, it is recommended that all matters related to installation, initiation, service, repair and adjustment of the injection system and flame formation should be handled by factory-authorized servicemen or individual trained and confirmed by KOOLAK GOSTAR YAZD.

2-8 Warranty

Always keep the warranty card with you to avail yourself of the warranty and after-sales service for KOOLAK GOSTAR YAZD products. The product specification plate, located on the heater, must not be removed under any circumstances. This plate contains crucial electrical, mechanical, and identification information.

Each Burner is assigned a unique serial number, which is indicated on its respective plate. Retain the serial number for future reference.

2-9 Power outage

It is recommended to install warning systems on your equipment to protect your assets, animals and plants.

In the event of power outage, an emergency power system with a voltage stabilizer regulator must be immediately activated. Contact your insurance company for more information.

2-10 Call Information

Factory Address: Iman Street – Hossein Abad Rismani – Yazd – Iran

Telephone number: 035-38369990-9 / 035-38369560-1

Website: www.kgy.ir

Fax: 035-38369505

Email: info@kgy.ir



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3 Introduction

Burners are among the most practical industrial equipment, finding applications in the heating of buildings, petrochemical factories, and more. Given our country's abundant gas and petroleum resources, manufacturers of this product must consistently focus on developing precise plans to increase ignition efficiency and control environmental pollution resulting from fossil fuel combustion.

The allure of the high heating value of fossil fuels is undeniable, prompting extensive research in this field to address environmental challenges.

KGY company stands out as a pioneer in effective ventilation, cooling, and heating solutions for buildings. The company has introduced its special burners, known as KG burners. A key distinguishing feature of these burners, in comparison to available products, is the incorporation of a spiral into the fan system.

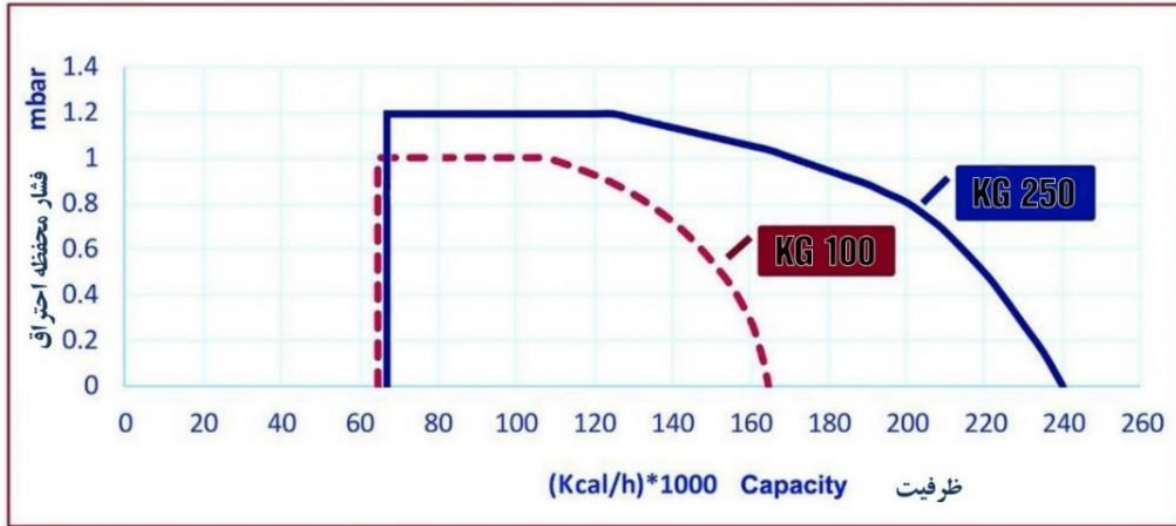
The use of the spiral not only directs air efficiently into the combustion path but also assists the fan in maintaining balanced pressure, minimizing axial forces on the shaft to the lowest possible extent.

The fundamental changes in the combustion system implemented by KGY company result in increased combustion efficiency in these burners. For more detailed information, refer to the remaining sections of this manual.

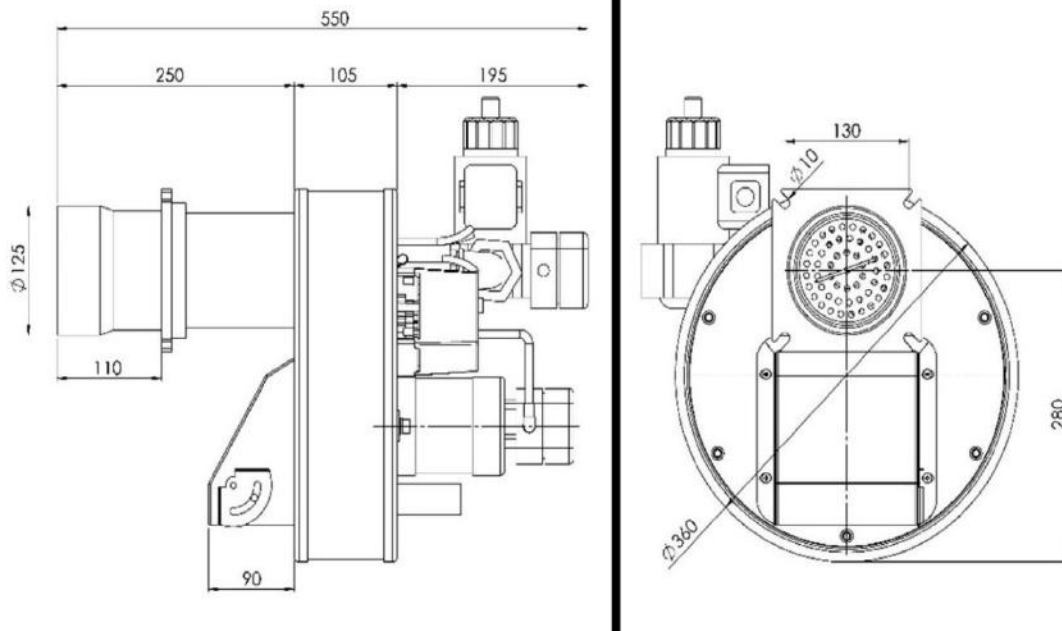
3-1 Technical features

3-1-1 Technical information

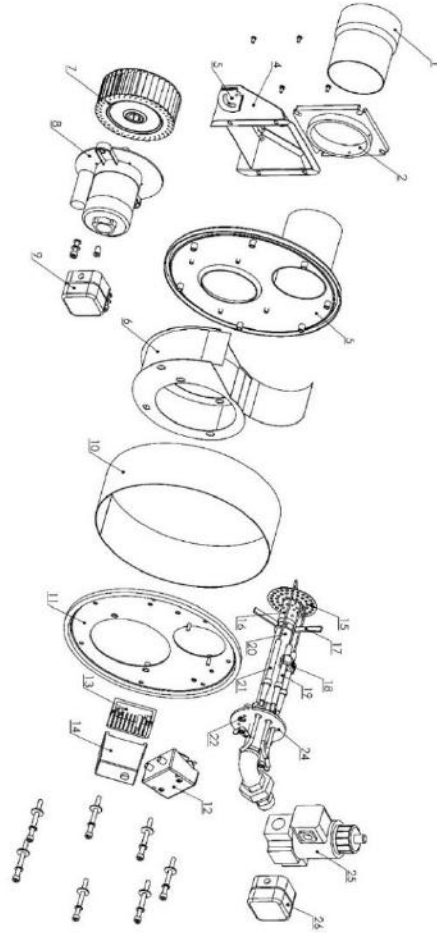
Technical Features	KG45	KG25	KG10
Power Supply (Ph-V-Hz)	1-220-50	1-220-50	1-220-50
Gas Pressure (mbar)	18-25	18-25	18-25
Gas Consumption (m ³ /h)	27-52	15-21	10-17
Capacity (Kcal/h)	450000	250000	100000
Control Unit	G790	G790	G790
Electric Valve	1 $\frac{1}{2}$ "	1"	$\frac{3}{4}$ "
Electric Motor (W-RPM)	450-2700	250-2700	100-2700



3-2 System parts



Number	Name of the part
1	Hat
2	Burner connection flange
3	Inlet air vent
4	Inlet air adjustment
5	Front body
6	Snail-like
7	Fan
8	Burner motor
9	Gasoil pump
10	Middle body
11	Back body
12	Spark transformer
13	Relay stand
14	Relay
15	Flame distributor
16	Nozzle
17	Flame distributor stand
18	Ignition electrode holder
19	Ignition electrode
20	Gasoil tube
21	Photocell
22	View aperture
23	Bend
24	Flange
25	Electric valve
26	Gas pressure



3-3 Burner's Equipment

3-3-1 Gas pressure switch

This switch monitors the gas pressure before the gas valve. If, for any reason, the gas pressure in the line drops below the adjusted level, the switch will cut off until troubleshooting is done. The pressure range of this switch is between 25 to 50 mbar, and it should be set to 50% of the pressure at the inlet of the gas valve.



3-3-2 Air pressure switch

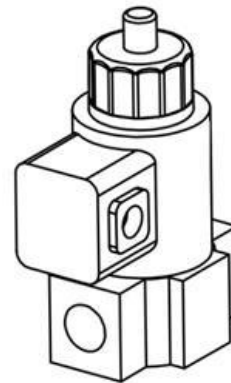
This switch monitors the air pressure of the blower. If the motor does not reach the rated speed or if the necessary air pressure is not provided for other reasons, it stops the program. Set the proper air pressure when the burner is operating correctly.



3-3-3 Electrical gas valve (solenoid valve)

These electric valves control the gas flow. The output flow rate of this electric valve, based on the output power of the selected burner, creates a pressure volt according to the size of the orifice and the flow rate consumed along the way.

- Pay attention to the following when installing the gas valve:
- Ensure the flow direction is the same as the direction of the arrow on the gas valve.
- Place the gas valve completely vertically.
- Never use the gas valve as a crowbar.



3-3-4 Ionization bar

The ionization bar is responsible for flame control. This unit is set in front of the burning system and connects to the relay stand by a wire. When the gas is ignited, due to the high heat it generates, part of the air around the flame is ionized. Thus, the air particles around the flame become charged, generating a very weak electric current between the ionization rod and the ground connection rod. This weak current, reaching the relay via a wire, signals the presence of a flame in the burner. If the flame disappears for any reason, the relay turns off the burner.

3-3-5 Spark transformer

An electric transformer takes control of the relay at the proper time and ignites the fuel and air mixture by creating a spark. This transformer includes the following specifications:

Initial voltage 220 volts

Secondary voltage 15k volts

Initial circuit 2.3 A

Secondary circuit 40m A

3-3-6 Relay

The relay consists of a series of electrical processor and commander circuits that process the commands received from switches and the ionization electrode. It commands the execution pieces, such as blocking the gas flow through the magnetic valve or stopping the electromotor's electrical circuit, resulting in the burner turning off.



3-3-7 Fan system

Oxygen is needed to create a flame, which is supplied naturally or artificially. Since the oxygen in the space cannot supply the required thermal capacity, it must be forcibly supplied with high pressure and blown towards the flame, done by a fan.

The fan, driven by the electric motor, supplies the required oxygen with high pressure to the flame. The fan should be of a metal type that does not deform easily in possible flame blowbacks.



3-3-8 Air moderator (damper)

The damper is a blade installed on the burner body and acts as an air moderator valve. The amount of air that gets into the flame is crucial. If the amount of oxygen is low, the flame burns incompletely, and if the amount of oxygen is more than required, the flame will extinguish.

3-4 Technical points, installation and burner initiation

The burner is attached to the furnace through a flange directly, and for attaching the flange insulation to the body, an asbestos sheet is used. To install the burner, place it laterally in front of the furnace, ensuring the flame exhaust tube is inside the furnace. Position the flange on the furnace's body and secure it with screws tightly.

- Ensure there is gas in the piping and air the pipes if there is a possibility of air in the piping. Make sure that the gas does not spread in the engine room.
- Check the connections related to the gas line of the burner with foam and soap and ensure there are no leaks in the connections.
- Verify the electrical circuit and ensure the presence of phase, null, and earth in the panel.
- Confirm that the thermostat is installed correctly and its temperature is set.
- The air pressure and gas pressure controllers are installed for the correct operation of the burner and to increase the safety of the burner. Please do not remove them from the circuit.
- The electric valve is set in the factory, and its adjustment by non-experts in the matter of installations is dangerous and may cause an explosion.
- If you need to change the settings of the gas electric valve, be sure to pay attention to the adjustment guide stated after this section and use experienced servicemen for this task. The factory is not responsible for any failure or malfunction of the burner due to incorrect settings of the electric valve. In each case, read the description carefully. Use any electric valve model according to the manufacturer's instructions.

Note: According to the national standard, every gas burner must have a safety electric valve. As a result, the gas line will include two electric valves, and unfortunately, most customers do not want to buy complete equipment due to the higher price, so the safety valve is purchased as an option. It will be added.

3-4-1 Controls before installation

- Ensure the flue and furnace clear spot and the windproof cap's existence on the tube's outlet.
- The installation spot must be clear and have the inlet for fresh air.
- Ensure proper water level in the boiler and flow in tubes.
- Equipment that is out of the burner should be installed by an experienced person hired by the consumer.
- Connect the phase wire after the thermostat's connection to R1 and the null wire to MP-N

3-4-2 Safety points

- Fuse and thermostat's installation are necessary.
- Gas flow valve must be without leakage.
- In the gas inlet to the burner, install a one-way valve.
- The earth wire of the burner must be installed in the earth connection terminal spot.
- The gas burner must have a proper filter in the gas way inlet.
- It must work without fume and smell, and every burner must have a flue.
- Do not put combustibile materials near the burner.
- In case of smelling fume, avoid making any spark near the switches, electrical connections, and any other instrument, and close the main gas valve.

3-4-3 Flame adjustment

After installation, adjust the flame spreader according to the length of the combustion chamber. Ensure the flame length does not exceed 3/4 of the combustion chamber's length to prevent burning the opposite wall, walls, and the roof of the combustion chamber.

The air adjustment vent in the inlet section should be open enough to see the blue flame. A yellow flame in gas burners indicates a lack of air, requiring the air inlet valve to be opened further.

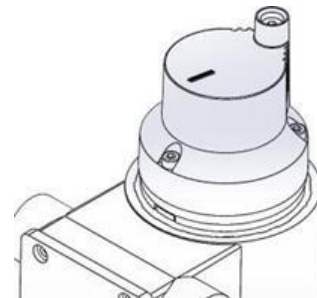
The air adjustment valve must be open so that you can see the flame's blue color. A yellow flame shows a lack of air in gas burners. In this case, the air inlet valve should be more open.

Therefore, to create the desired flame, the amount of gas must be proportional to the amount of inlet air. Since the magnetic valve is set at the factory, follow these steps to reset it:

- 1- Adjust the burner start gas
- 2- Adjust the main gas

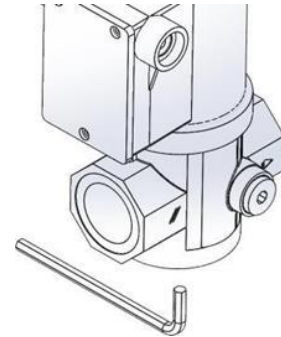
A) The gas chrome electric valve adjustment

Electric valves can adjust the final volume of passing gas and the jump value of the valve diaphragm at the first moment of opening.



B) The electrical valve rate adjustment

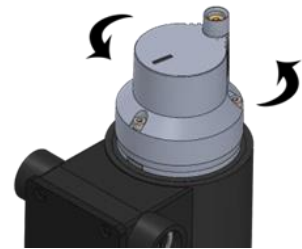
Adjust the amount of gas passing through the valve using an Allen key. Clockwise reduces gas flow, counterclockwise increases it.



C) the course adjustment for the first leap:

The electric valve can open up to a certain point at the first moment of receiving the command. To adjust the initial jump, turn clockwise to decrease and counterclockwise to increase

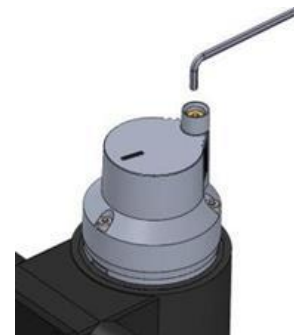
By turning it clockwise, the amount of initial jump decreases and by turning it anti-clockwise, this value increases. To see the effect of this setting, look at the figure below



D) The electric valve opening speed adjustment

Please note that this screw is adjusted and varnished at the factory and rarely needs to be changed. Excessive loosening or tightening of the screw will cause irreparable damage to the gradual operation of the valve. Therefore, avoid manipulating it without a valid reason.

By turning the screw clockwise, the opening speed of the valve decreases, and by turning the screw counterclockwise, the opening speed increases.

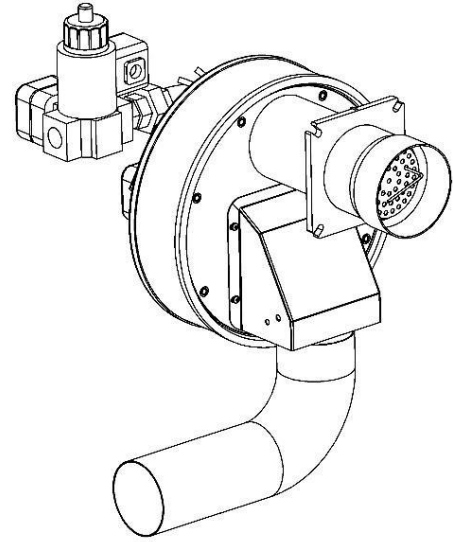


3-4-4 Air ignition provision way installation

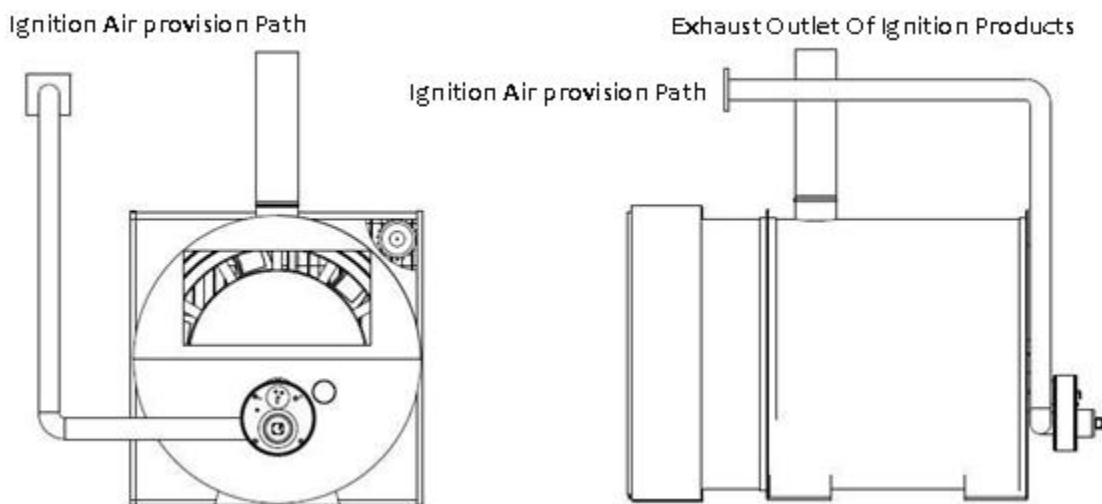
One way to increase efficiency and safety in burners is to use outside air for combustion. Install a pipe to the air inlet of the burner and transfer it to the outside of the hall. This supplies combustion air from an environment other than the working environment of the burner, increasing safety.

Place a pipe with a suitable diameter in the air inlet of the burner and move the other end of the pipe to the outside.

- When installing the air inlet pipe, ensure there are no twists and turns in its path.
- The maximum length of the pipe is 30 meters.
- For every 45-degree bend, reduce 1.5 meters of pipe length.
- For each 90-degree bend, reduce 3 meters of pipe length.

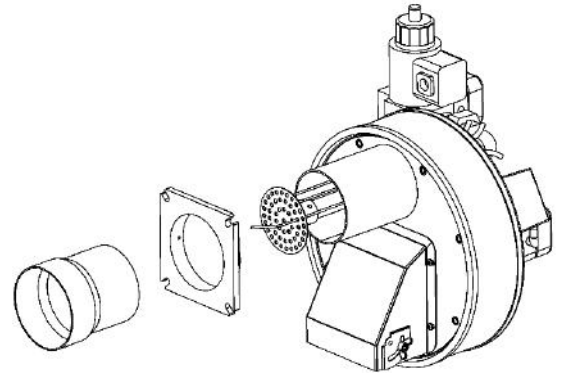


Finally, you can see the general schematic of installing the burner to the furnace and the exhaust and combustion air pipes in the figure below.



3-4-5 Burner to furnace connection

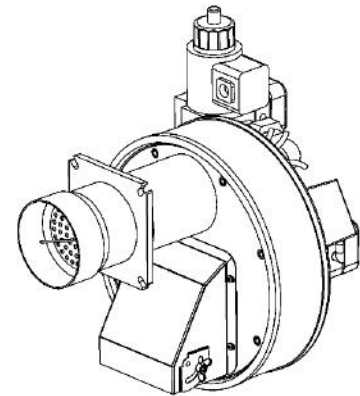
To install the burner in the furnace, fix the burner's flange onto the furnace using 4 screws. Prior to that, if you intend to open the flange from the burner, first open the conical tube of the burner head. Remove the flange by loosening the 3 screws numbered 6. The conical tube is connected to the burner tube by a screw.



3-4-6 Air damper adjustment

Burners may exhibit different performances in various combustion chambers, depending on the furnace's shape and size. The pressure in the combustion chamber changes, and the burner's air must be adjusted to ensure complete ignition and a stable flame temperature. Therefore, adjusting the air damper of the burner is crucial for effective performance.

Note: Consult an expert for adjusting the burner's air damper.

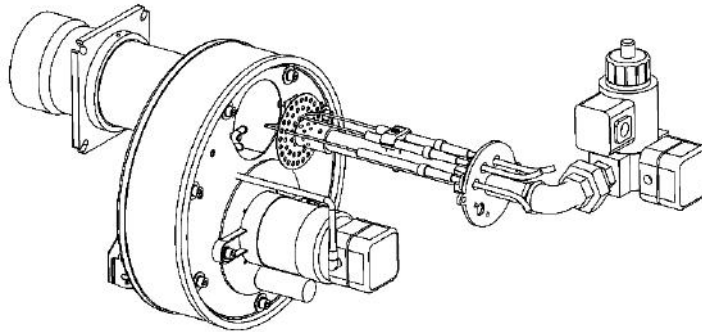


3-4-7 Using a gas analyzer

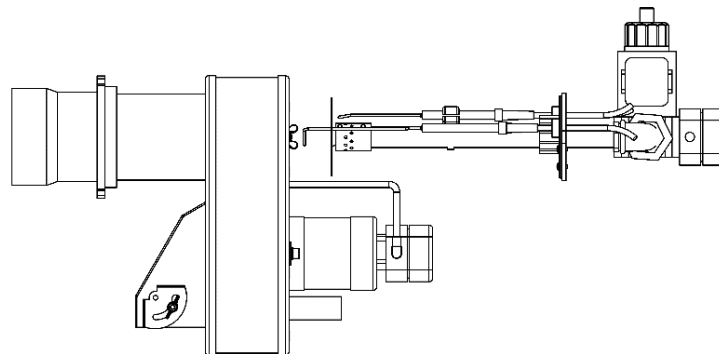
A gas analyzer is a device for adjusting the fuel-air ratio and checking the combustion process. Place the probe in the exhaust of the combustion chamber, observe the combustion products and efficiency on the digital screen, and achieve the burner's maximum performance by adjusting the air amount.

3-4-8 Electrode adjustment

Adjusting the electrode is a fundamental step for optimal combustion. The electrodes are pre-adjusted and tested in the company. If an electrode breaks or needs replacement, adjust the electrodes according to the provided figure.



To access the combustion system, open the connections attached to the aluminum flange behind the burner, including wires, a gas pipe, and an ionization rod. Then, open the two screws of the flange to release the combustion system.



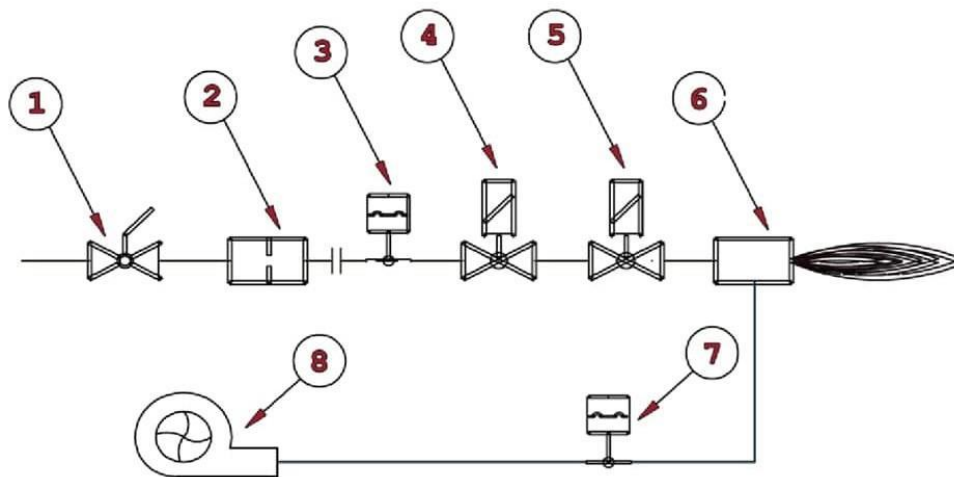
3-5 the gas burner connection to the gas pipeline

- 1- make sure that the pipe plumbing is done standardly and should be placed at the proper distance from the boiler.
- 2- The installation spot of the gas valve should not be far from the burner and could be connected the burner and gas pipe by a 1-1.5 hose meter.
- 3- For the protection of the burner against the impurity it is mandatory to install the filter gas after the gas filter. The used filter in the path of the gas is non-metal and you can wash it.
- 4- After doing the mentioned steps, enter the gas into the pipe system and with the help of the soap insulate all parts of it.

3-6 The parts and combustion line map:

The burner combustion line Equipment	
Number	Part name
1	Manual Gas Valve
2	Gas Filter
3	Gas Pressure Control
4	Safety Valve
5	Gas Electrical Valve
6	Gas Fueling
7	Gas Pressure Control
8	Fan Airflow
The buyer commitment	

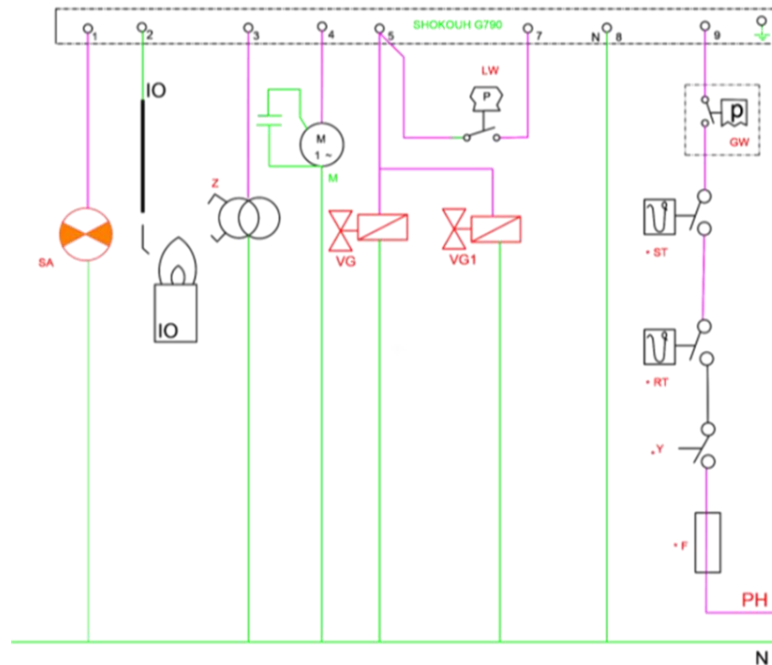
According to the standard, a safety valve should be placed in the gas line of the burner. This issue and related costs are applied after coordination with the customer.



3-7 Power system

Wiring inside the burner is completed in the factory, and it's necessary to install the phase, null, and earth wires according to the plan into the specified terminals on the relay base as per the map. Refer to the wiring diagram and control box operation sequence for additional details.

Definition	Specific sign
The ignition transformer	Z
The electromotor fan airflow	M
The air pressure control switch	LM
The gas electrical valve 1,2	V ₁ . V ₂
The error emerging	SA
The main power switch	HS
The gas pressure control switch	GW
Thermostat	ST
Safety thermostat	RT
The ignition emerger	IS





3-8 Repairation and maintenance

The combustion system of the burner should undergo an annual check, requiring the presence of a company representative or an experienced individual.

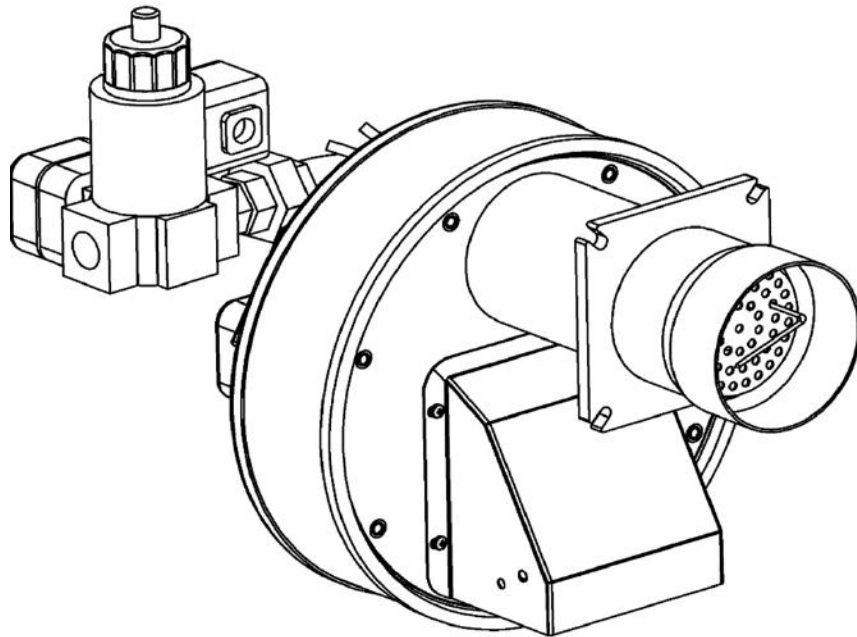
<p>Burner does not work</p>	<ul style="list-style-type: none"> • The electric current does not reach the burner control unit, and the thermostat or mano stat does not function correctly. • The fuse in the power supply circuit to the control unit is disconnected. • The burner control unit is broken
<p>After a short period of operation, the burner turns off without forming a flame</p>	<ul style="list-style-type: none"> • Defects in the ignition circuit. • The distance between spark electrodes is not adjusted. • The porcelain electrode has cracks, or the heads of the electrodes are dirty; the ignition transformer cable or the ignition electrode is damaged; the ignition transformer is defective. • The air pressure control switch does not work properly. • The air pressure is low, or the fan is loose. • Control key setting is not done correctly.
<p>Incomplete combustion</p>	<ul style="list-style-type: none"> • The air valve is not adjusted (too closed). • The amount of gas is not suitable for combustion air. • Connection contacts on the burner control unit are damaged (or dirty). • The amount of carbon dioxide in the exhaust gases from the chimney is low, and the amount of gas flow is not enough (it is not suitable for combustion air, which, in this case, is reduced by the amount of fuel flow or the amount of air entering the combustion chamber is increased).
<p>The burner lights up, but it turns on and off in short intervals</p>	<ul style="list-style-type: none"> • The burner is too big for the selected furnace. • The thermostat setting is not appropriate. • The relay is not placed correctly on the relay base.
<p>The burner turns on but continues to work without turning off</p>	<ul style="list-style-type: none"> • The power of the burner control circuit has not been cut off due to incorrect setting or failure of the control device.
<p>The flame backfires when the burner is working</p>	<ul style="list-style-type: none"> • The supply gas pressure is low. • The gas filter is dirty.

Attention:

To ensure the burner's accurate performance, examine the ignition fumes in the exhaust to confirm that the burner operates in the proper spot.



KOOLAK GOSTAR YAZD
USER MANUAL
AND
INSTALLATION INSTRUCTIONS





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