

PRODUCT DESCRIPTION

Elyxxon pilot burners have their applications in flare installations, and internal combustion applications. It is used to support the main flame. When the main flame is extinguished the pilot burner must re-ignite it immediately.

Pilot Burner

Main principle of the burner is to create a combustion mixture of air and gas which is ignited by a spark electrode to create naked flame. Through the inlet tube, gas flows to the main gas tube through a nozzle. A small orifice in the nozzle increases the velocity of the gas in tube. Directly after the nozzle a low pressure is created caused by the exit velocity of the gas. Environmental air is aspirated into the **ignition tube** and is mixed with the gas.



Ignition Tube

A major part of this mixture homogenizes as it flows along the tube, and attains a stoichiometric level. A spark electrode ignites this part of the mixture. Naked flame emerges at the tip of the tube.

Electronic Ignition module/ unit

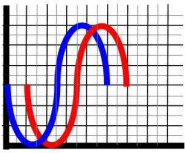
For the working principle of the electronic ignition unit, see drawing attached.

The ignition unit has been installed in an explosion proof housing (Eexx de IIB T5), protection grade IP65. The ignition unit is suitable for a supply voltage of 230VAC. The ignition unit will produce sparks when the main power switch is turned to the on position and the burner control switch(es) turned on.

The diagram shows that the AC voltage is supplied to the primary winding of transformers IGCL1, IGCL2, and IGCL3. A secondary voltage of 10000V is delivered to the electrodes. This high voltage is continuously delivered to the spark electrodes by means of a high tension flame resistant cable assembly.

Flame Detection

For this project, flame detection is by means of a heat sensitive thermocouple device, carefully latched on to the ignition tube located inside the process heater combustion



chamber. The thermocouples relate with temperature controllers in the flame proof control panel to signal an operator when flame is present. Please refer to user manual for details.



Temperature controllers

STORAGE AND TRANSPORTATION

Important

Until the day of delivery, Elyxxon Engineering is responsible for the safety of supplied materials. Damages caused after delivery are not covered by the warranty given by Elyxxon Engineering. If haulage is done by the customer, Elyxxon responsibility ends the moment goods are handed over to the customer.

To minimize the chance of damages to the supplied materials, Elyxxon Engineering advises the customer to observe the following points:

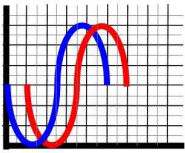
Storage:

- If installation is not to be carried out soon, the materials should be left in their cases and package until installation commences.
- Be sure that in the storage environment, the chances for damages are minimized.
- Ensure that the stored materials do not pose any safety hazards or danger to the environment.

Transportation:

- The packaging protects the materials against shocks or others forms of extreme strains. During transportation of the goods and after removing the packaging please ensure that the goods are kept under good shelter until installation.





Protect the goods against shocks or other extreme forms of strains that could damage them.

- Transport the materials by using mechanical means of conveyance that are designed for them. Manual transportation should be avoided. This increases the chances of injuries to the human body.

INSTALLATION INSTRUCTIONS

Important

Before starting, first read the mounting instructions. Not adhering to these instructions could lead to damages to the product. Damages caused by improper operation are not covered by the guarantee given by Elyxxon Engineering.

Please pay attention to the following:

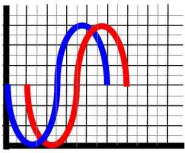
General

- If any obscurity arises please contact the service department of Elyxxon Engineering.
- It is recommended to mount the materials as soon as it is possible. Do not store the products without the packaging for a long times in order to decrease the chances of damages.

Pilot Burner

- Be certain that there is a good support of the burner. Use the mounting flange or suspension brackets.
- During operation, temperature could rise up to 500⁰C and above. Rise in temperature makes metallic materials to expand. During mounting, take this to full account. There must be some clear space for the burner head to expand after mounting. Hindering of this free movement could lead to damages or malfunctioning of the pilot burner.
- Do not expose the pilot burner to external load.
- Ensure correct distance of the pilot burner to the main burner. When the pilot burner is mounted too forward, the heat of the main flame may damage it. When it is mounted too low, it may not ignite the main flame.

Ignition Unit



The electronic ignition unit should be mounted in a horizontally with proper size of cable entry glands. When the cover of the unit is closed and locked properly with the nuts, no special measures need to be taken to prevent the ingress of dust or humidity into the box.



Ignition unit

OPERATION INSTRUCTIONS

Preparation

Before starting up consider the following points:

Check if the combustion chamber is free of cluster of any combustible gases and purge according the method specified in the manual of the Line Heater supplier. Alternatively, use industry standard gas purging procedure.

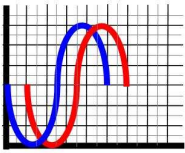
Before starting up the system, it should be ensured that the pilot gas supply lines are free from dirt or rust particles.

Mechanical

- Check if the gas supply connection is mounted correctly.
- Check if the ignition is mounted correctly.
- Check if the burner is mounted correctly.
- Check if the gas pressure is present.
- Check if the gas valves are open (when these aren't opened automatically).

Electrical

- Check if the power is present.
- Check if the ignition cable is mounted correctly.
- Check if the cables aren't damaged.
- Check the earthing of the ignition unit.



START UP PILOT BURNER

Do **NOT** switch on the power supply until all connections have been checked and the boxes have been closed.



Check whether pilot gas and main voltage are available. Set the 'Burner' selector switch (**Burner 1, Burner 2, or Burner 3**, as the case may be) into the position "on". Supply gas to the pilot burners.

The ignition unit will produce a sparks at the electrodes will to ignite the gas/air mixture.

INDICATORS

The skid mounted ignition flame proof control station is provided with one display lamp per burner.

When the lamp glows, it shows that the power supply is available to the electrodes, and that spark is being discharged. Once the pilot gas is ignited by the spark the lamp will begin to blink (glow in a pulsated manner), and a soft beep sound will be heard from the panel.

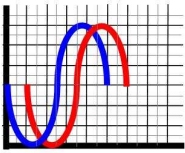
When the gas pressure is correct a stable flame with a core and a cone will appear. As soon as a pilot has been successfully ignited, the pilot flame can be observed through the sight glass, located on the access door of the line heater combustion chamber.

TROUBLE SHOOTING

When the system is malfunctioning then the following checkpoints can be used in order to find the fault. Since the pilot burner is provided with a thermocouple, the temperature controller will activate soft alarm when the flame is present.

Possible faults and causes can be as follows:

Fault:	There is no flame
Cause:	The pilot gas nozzle is clogged.
Result:	The burner doesn't ignite; there is no signal to the flame sensor
Action:	Clean the nozzle



Fault: There is no flame
Cause: The spark electrode is worn out
Result: The burner doesn't ignite; there is no signal to the flame sensor
Action: Replace the electrode

Failure: There is no flame
Cause: Composition of the gas has been changed.
Result: The burner doesn't ignite; there is no signal to the flame sensor
Action: Check the composition of the gas, and if possible, change the composition (by adjusting the pilot gas inlet control valve).

Failure: There is no flame
Cause: There is no gas present.
Result: The burner doesn't ignite; there is no flame.
Action: Check the pipe work for leakage. Check the valves before the pilot burner.

For more details on troubleshooting, see user/ operational manual

If the above mentioned points do not solve the problems, contact Elyxxon Engineering technical support department to advice you.

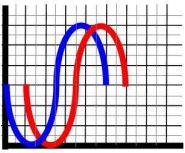
MAINTENANCE

Pilot Burner

It is recommended practice to clean the burner every year and to check if there is any damage, pollution or wear to the parts. During the maintenance the following list can be used.

Mechanical

Burner outer tube	Damage/pollution
Spark electrode	Damages/wear
Nozzle	Clogged
Insulators	Hair cracks/pollution
Flame Sensor	Function/measure insulating resistance
Stabilizer	Pollution/damages/wears
Gas connection	Clogged/pollution/damages



WARNING:

Elyxon ignition systems produce high tension voltage of 10000V. Exposure to high tension could lead to physical injuries. Switch off the circuit breaker in the control panel before commencing any troubleshooting or maintenance. Read the instructions carefully before starting to dismantle the ignition systems.

Instructions for dismantling supply lines and connections:

1. Close all gas valves.
2. Decrease the pressure in the gas supply line. Be aware that after this, gas still remains in the gas supply line!
3. Be certain the power of the ignition unit is off line.
4. Wait for thirty seconds after switching off the power supply before dismantling. After thirty seconds the condensers in the ignition unit will be unloaded.
5. Disconnect the ignition cable.
6. Disconnect the thermocouple cable.
7. Disconnect the gas line of the burner.
8. Uninstall and remove the burner.

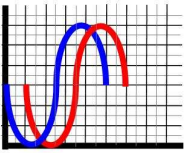
Put the burner on a stable, flat working bench. Dismantle the burner after the following instruction.

Inspection inner work:

1.	Dismantle the burner external pipe by loosening the screws
2.	Remove the burner head/pipe carefully
3.	The inner part is now visible and completely attainable for inspection and maintenance

Replacing the electrode head/ spark gap:

1.	Loosen the nut from the earth rod Pull carefully the burner head, mixing dividing part, venturi-lower part and the air entry venturi forward in order to separate them from the nozzle holder and the thermocouple.
2.	Loosen the nuts binding the ceramic isolators to the spark



	electrode.
3.	The new spark electrode can be placed at the position of the replaced electrode. After this, the ring of the mixing dividing part can be mounted and the nuts can be fastened.
4.	The parts mentioned in number 1 can be pushed over the thermocouple. After this, mounting of these parts on the nozzle holder can be done.

Replacing the nozzle:

1.	By using an open-ended-spanner, it is possible to dismantle the nozzles and to replace it.
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Ignition Unit

WARNING: Switch off the circuit breaker in the control panel before commencing any troubleshooting or maintenance. The ignition unit produces lethal voltages of up to 10KV. Switch off the power supply and wait for about 30 seconds before opening the housing.

The ignition unit is fully electronic.

By visual inspection, check to ensure that all cables and wires are firmly attached.

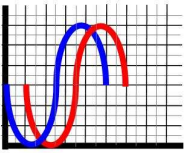
The electronic circuit board can be carefully disconnected for troubleshooting and replacement of faulty electronic component. This circuit board is not user serviceable. Refer maintenance and repairs to qualified electronics technicians or Elyxxon technical support department.

ATTENTION: Before performing any inspection, switch off the power supply.

If it is unavoidable to test the box in open position, then, one should be very careful, since voltages up to 10KV are generated inside the ignition box.

DO NOT TOUCH ANY METALLIC PART INSIDE THE BOX, WHEN ENERGISED!

WARNING:



Do NOT energize the ignition units without the ignition (high tension) cables terminating on the electrodes. This type of ignition system should always be loaded with a cable of at least 6m length and electrode.

ELECTRICAL CIRCUIT DIAGRAM

