


ALGLASS GAS/DUAL BURNER

SAFETY INSTRUCTIONS FOR USE AND

MAINTENANCE




	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

Thank you for the trust you have expressed by purchasing this equipment, which will give you full satisfaction if you follow its instructions for use and maintenance.

The manufacturer will not be held responsible where items not recommended by themselves are associated with this product.


For your safety, there follows a non-restrictive list of recommendations or requirements, many of which appear in the employment code.

Finally, we would ask you kindly to inform your supplier of any error which you may find in this instruction manual.

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

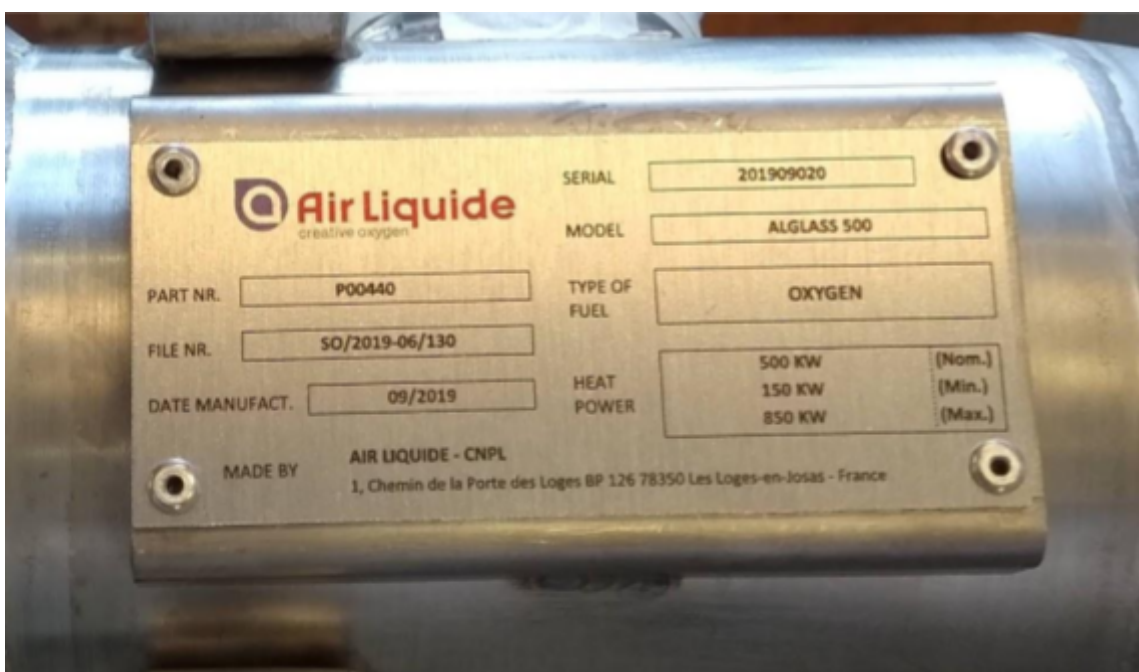
CONTENTS


A . IDENTIFICATION PLATE - EXAMPLE	4
B . SAFETY INSTRUCTIONS	5
C . INTRODUCTION TO ALGLASS BURNERS	6
E . BURNER SPECIFICATIONS	9
F . BURNER CHOICE	12
1) FLAME LENGTH	12
2) COOLING AIR	12
3) BURNER BLOCK	12
G . INSTALLATION AND ASSEMBLY	13
1) INSTALLING THE BURNER ADAPTER	13
2) ASSEMBLY OF A BURNER BODY	14
3) MOUNTING THE GAS LANCE ON THE BURNER	15
4) MOUNTING THE DUAL LANCE ON THE BURNER	16
H . IGNITION AND EXTINCTION PROCEDURE	18
1) IGNITION	18
2) EXTINCTION	18
I . MAINTENANCE OPERATION	19
1) MAINTENANCE CHECK OR REPLACEMENT OF THE GAS/DUAL LANCE	19
2) TAKING THE BURNER OUT OF SERVICE	20
J . BURNER SIZE	21

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

A . IDENTIFICATION PLATE - EXAMPLE

The plate below is fixed on the body of the ALGLASS GAS BURNER unit, it is used to identify it. This is an example of the plate and informations mentioned on it :




	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

B . SAFETY INSTRUCTIONS

The use of oxygen in oxy-combustion imposes safety procedures:

- Never use oil or grease for oxygen piping, or for burner assembly parts
- No carbon steel for high temperature and/or high speed
- Do not use organic materials for sealing purposes
- Always clean all metallic parts before installing them (eliminate all traces of oil and grease)
- Operators training for oxygen use

Failure to follow these instructions may cause ignition in the oxygen circuit and further propagation along the oxygen piping.

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

C . INTRODUCTION TO ALGLASS BURNERS

ALGLASS burners are a new generation burners built to be used on glass furnaces.

On each type of fuel, presently three ranges of nominal power exist:


ALGLASS GAS Version :

- ALGLASS GAS 200
- ALGLASS GAS 500
- ALGLASS GAS 1000

ALGLASS Fuel Oil Version :

- ALGLASS DUAL 200
- ALGLASS DUAL 500
- ALGLASS DUAL 1000

This document describes the procedures for assembling these gas/fuel oil version burners and installing them on a furnace.

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

D . DESCRIPTION OF THE ALGLASS BURNER

Built to operate on various types of glass making furnaces, the material used is especially suited for this purpose.

In general, the metals used offer a good resistance to corrosion for the burner's "cold part", and good resistance to temperature and oxidation for the "hot part".

Generally speaking, all of the metal alloys employed are perfectly compatible with pure oxygen using.

Each burner metal component part bears its production file number.

The burner block is refractory material. This refractory material is chosen to be compatible with the particular glass making process and the type of superstructures.

The gaseous fuel version of the ALGLASS burner comprises six component parts, and the liquid fuel version comprises five parts.

The gas/fuel oil burner consists of the following parts. (Fig.1)

- The burner block made of refractory material.
- The fixation system for mounting the burner body on the block, consisting of two half sections.
- A ceramic packing to be positioned between the burner block and the burner body.
- The burner body with its VITON O-ring, mounted in the flange groove and a closing flange to be mounted back on the body.
- A gas lance with 1, 3 or 5 tubes.
- A dual lance with injector and nozzle

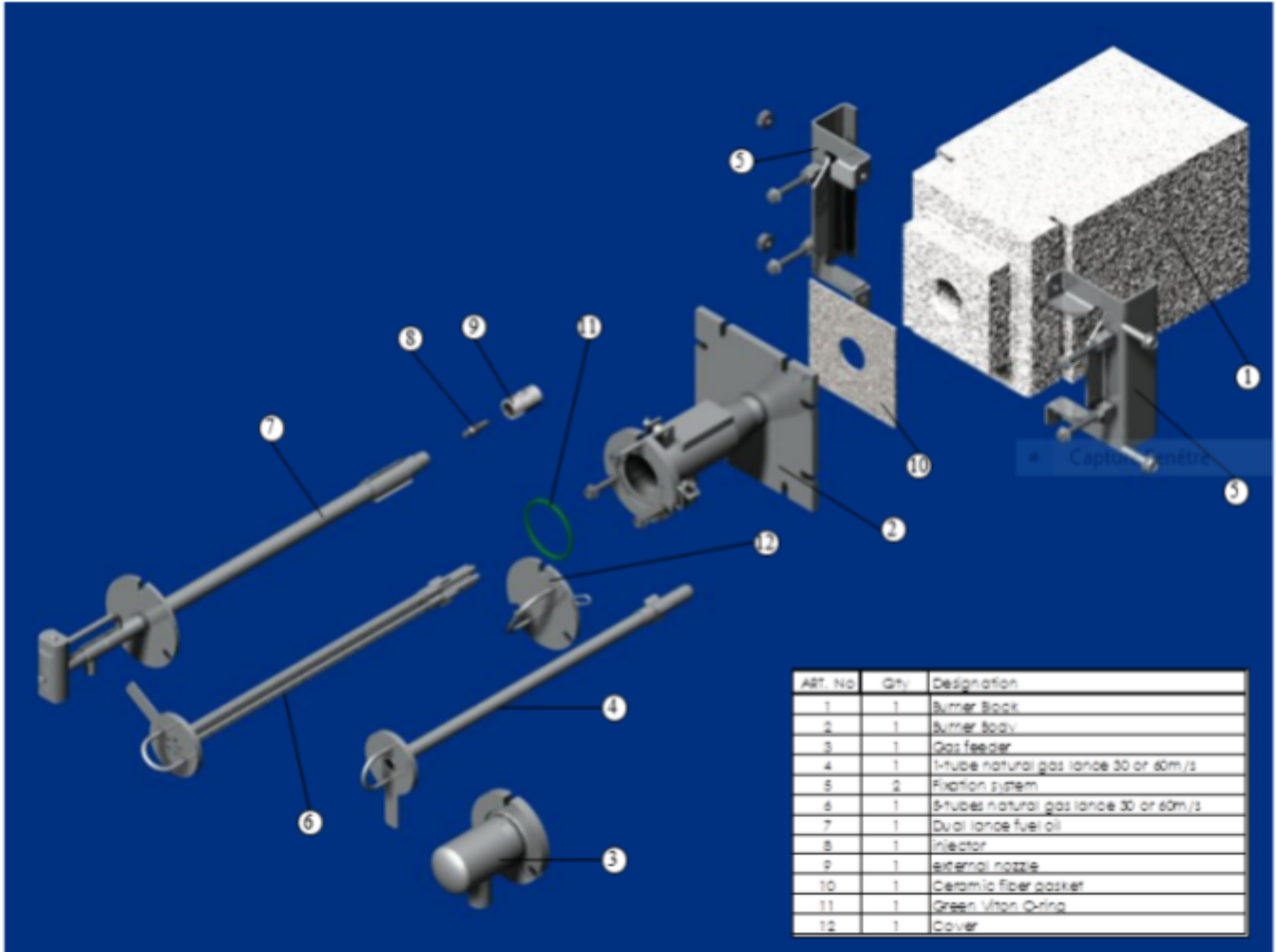




FIGURE 1

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

E . BURNER SPECIFICATIONS

MODEL	ALGLASS GAS/DUAL 200	ALGLASS GAS/DUAL 500
Max. Comb. Cap.	350 kW	850 kW
Nom. Comb. Cap.	200 kW	500 kW
Min. Comb. Cap.	70 kW	150 kW

MODEL	ALGLASS GAS/DUAL 1000
Max. Comb. Cap.	1750 kW
Nom. Comb. Cap.	1000 kW
Min. Comb. Cap.	300 kW


	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

Gas version:

BURNER MODEL	ALGLASS GAS 200	ALGLASS GAS 500	ALGLASS GAS 1000
<i>Min. oxygen temperature (°C) at burnet inlet</i>	10 °C		
<i>Max. oxygen temperature (°C) at burnet inlet</i>	40 °C		
<i>Min. Natural gas temperature (°C) at burnet inlet</i>	10 °C		
<i>Max. Natural gas temperature (°C) at burnet inlet</i>	40 °C		
<i>Min. oxygen supply pressure (mbar g.) at burnet inlet</i>	<i>25 mbar g. (Max. oxygen pressure drop through the burner at the maximum recommended firing rate)</i>		
<i>Min. Natural gas supply pressure (mbar g.) at burnet inlet</i>	<i>100 mbar g. (Max. Natural gas pressure drop through the burner at the maximum recommended firing rate)</i>		
<i>Cooling air flow rate (Nm3/h)</i>	12 Nm3/h	30 Nm3/h	60 Nm3/h

Dual version:

BURNER MODEL	ALGLASS DUAL 200	ALGLASS DUAL 500	ALGLASS DUAL 1000
Min. oxygen temperature (°C) at burner inlet	10 °C		
Max. oxygen temperature (°C) at burner inlet	40 °C		
Min. fuel oil temperature (°C) at burner inlet	100 °C		
Max. fuel oil temperature (°C) at burner inlet	140 °C		
Min. oxygen supply pressure (mbar g.) at burner inlet	25 mbar g. (Max. oxygen pressure drop through the burner at the maximum recommended firing rate)		
Max. oxygen supply pressure (mbar g.) at burner inlet	25 mbar g. (Max. oxygen pressure drop through the burner at the maximum recommended firing rate)		
Min. fuel oil supply pressure (bar g.) at burner inlet	2 bar g.		
Max. fuel oil supply pressure (bar g.) at burner inlet	5 bar g.		
Max. fuel oil viscosity (cst) at burner inlet	40 centistokes		
Nominal fuel oil viscosity (cst) at burner inlet	25 centistokes		
Min. atomizing air pressure (bar g.) at burner inlet	2 bar g.		
Max. atomizing air pressure (bar g.) at burner inlet	5 bar g.		
Atomizing air flow	5 ~ 15 mass % fuel oil		
Cooling air flow rate (Nm ³ /h)	12 Nm ³ /h	30 Nm ³ /h	60 Nm ³ /h

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

F . BURNER CHOICE

1) FLAME LENGTH

Gas version: basically, this burner can adjust flame length changing the gas lance between 1, 3, 5 tubes geometry. More tubes make a shorter flame.

Dual version: basically, this burner can adjust flame length using adjusting atomizing air pressure

Attention : flame shape could be changed with oil viscosity. Please adjust suited viscosity.

2) COOLING AIR

During combustion, the burner body, gas lance and burner block are cooled by the fluid used for combustion.

However, when combustion is off, all parts of burner are heated.

In this case, put into cooling air using oxygen line.

Atomizing air is not only atomizing but also to cool down oil lance.

Never stop the atomizing air while oil lance is located in burner block and hot furnace.

3) BURNER BLOCK

The usual size of the burner block is 220 x 220 mm .The size of the furnace opening should be more than this dimension.

G . INSTALLATION AND ASSEMBLY

The main difference between the Gas and Dual ALGLASS burner version resides in the fuel lance.

Their assembly and installation procedures are therefore practically the same.

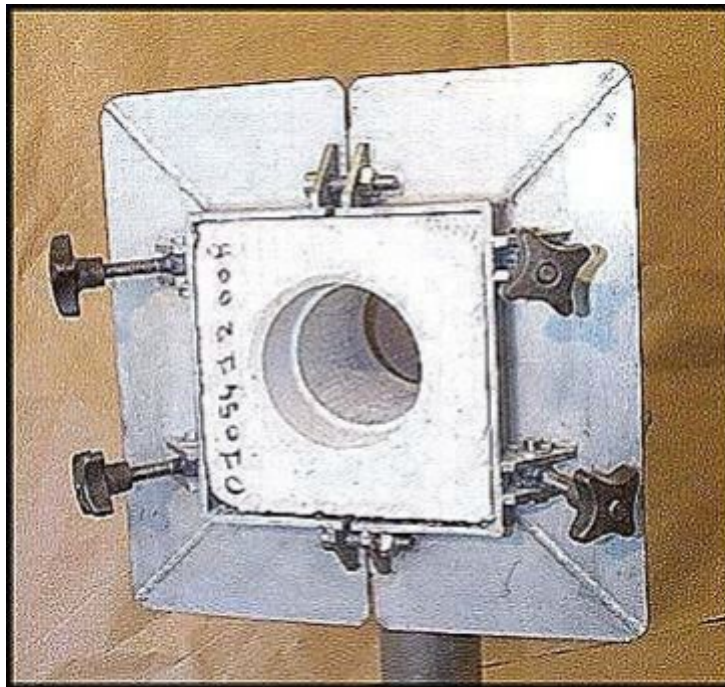
The burner block and adapters must be pre-assembled before installing on the furnace.

On a recently built furnace, burner block will be installed on the furnace before starting heating up.

1) INSTALLING THE BURNER ADAPTER

Before installing the burner block, check that the support of the block is horizontal or inclined a few angle towards the glass level, to be sure that flame are not oriented towards the crown of the furnace.

- Install the two half-sections adapter on the block with the attached bolts and tighten moderately



Setting of the fixation system

- Place the burner block with its adapter in their opening and push them into their final position, tighten the devices for securing the block in place.
- Plug the hole in the block with an alumina wool plug.

2) ASSEMBLY OF A BURNER BODY

First of all, for safety reason it is essential that all traces of grease must be removed from the metal burner parts, before O-ring are installed, to avoid accidental combustion.

Before this burner is run, the burner body will be mounted on the block.

Then, for operating with fuel, the assembly procedure is as follows :

- Please make sure that Viton O-ring is set to the burner body.
- Check the oxygen connection.
- Check the oxygen supply.
- Mount the 3 mm thick, 140 x 140 mm square ceramic packing on the burner body nozzle.
- Mounting the blind flange by using the attached 3 bolts.
- Remove the alumina wool plug from the block and place the burner body nozzle in the hole of the block.



Mounting of the body

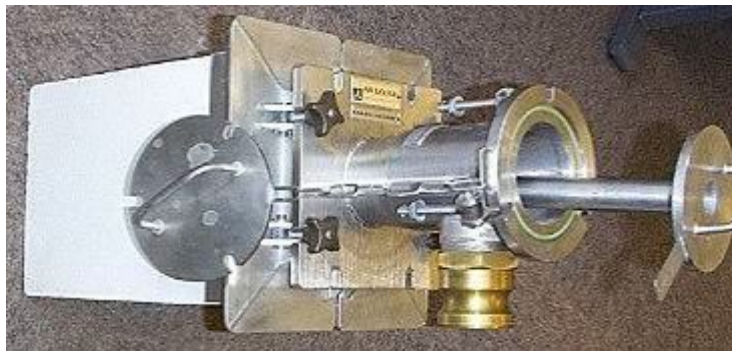
- Place the tie-rods in the burner body plate slots and tighten them to compress the ceramic paper seal.
- Mount oxygen flex tube.
- Put into Cooling Air

3) MOUNTING THE GAS LANCE ON THE BURNER

The gas lance will be assembled to the burner body when ready for igniting the burner.

The assembly procedure is as follows:

- Please make sure that Viton O-ring is set to the gas feeder.
- Don't switch off the cooling air supply until combustion is start.
- Dismount the blind flange while taking precautions to protect yourself from the hot gas that may be expelled due to positive furnace pressure.
- Place the gas lance in the burner body.

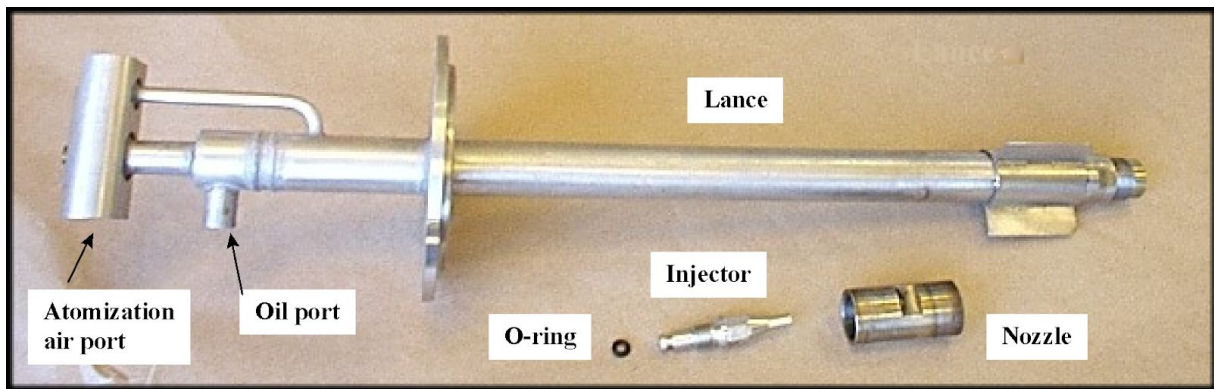


Mounting of the gas lance

- Adjust the gas feeder.
- Place the tie-rods in the flange slots and tighten them to seal the O-ring.
- Connect the gas hose to gas feeder.
- The burner may be ignited, according to the procedure described in the operation manual of combustion control system.

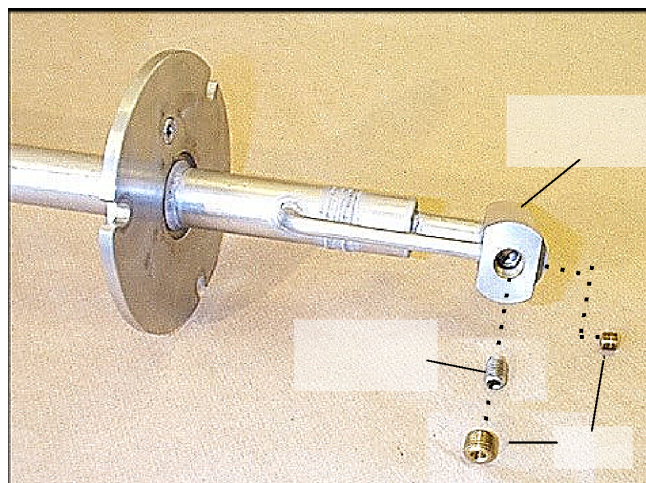
4) MOUNTING THE DUAL LANCE ON THE BURNER

ASSEMBLING THE FUEL OIL LANCE:



Dual lance composition

- Set the couplers and flex hoses to the oil port ($\frac{1}{4}$ ") and atomization air port ($\frac{3}{8}$ ").
- As for the attached coupler, female part has check valve. So please set female parts to lance and male parts to flex hose.
- Insert the O-ring on the fuel oil injector (only available for ALGLASS DUAL 1000).
- Screw the fuel oil injector on the DUAL lance tip and squeeze it to assure the tightness.
- Mount the nozzle on the fuel oil lance tip and squeeze to fix it without any tools.
- Check that the calibrated orifice is in place in the external air circuit.



Atomizing fluid circuit

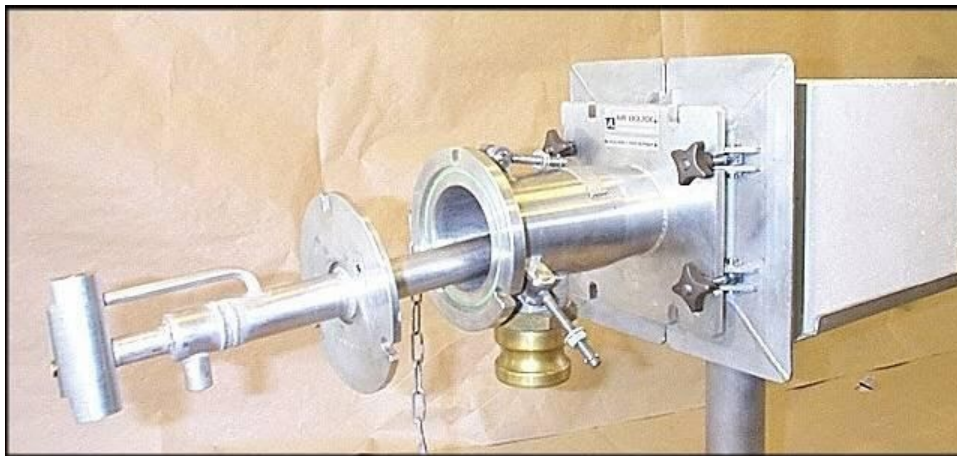
MOUNTING THE DUAL LANCE IN THE BODY:

The fuel oil lance will be assembled to the burner body when ready for igniting the burner.

First, check that the fuel oil lance is correctly assembled.


The assembly procedure is as follows:

- Connect oil and atomizing air flex tubes to each inlet.
- First, put into atomizing air .
- Don't switch off the cooling air supply until combustion is started.
- Dismount the blind flange while taking precautions to protect yourself from the hot gas that may be expelled due to positive furnace pressure.
- Place the fuel oil lance in the burner body. The lance attached angle is changeable.



Mounting of the lance

- Place the tie-rods in the flange slots and tighten them to seal the O-ring.
- The burner may be ignited, according to the procedure described in the operation manual of combustion control system.

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

H . IGNITION AND EXTINCTION PROCEDURE

1) IGNITION

According to the previous section, at this moment, the burner is ready to ignite. There is air cooling flow on the burner and atomizing air if Dual lance is used.


- Check oxygen and gas valves position on piping.
- Flow oxygen in burner at minimum value (30% of nominal) and stoichiometric gas (using manual mode or automatic sequence of PID)
- Check the ignition of the flame
- When oxygen flow exceeds 30% of the rating, close the air cooling valve
- Adjust atomizing fluid pressure depending on the flame length if Dual lance is used

2) EXTINCTION

To stop a burner , decrease the power around 30% of the rating,

When stopping burners, observe the following sequence and fluid flow conditions:

- Decrease the power around 30% of the rating,
- Close the gas valve nearest to the burner
- Check that the burner is off
- Open air cooling valve and check flow
- Close oxygen valve
- if Dual lance is used:
 - Decrease atomizing fluid pressure until 1 bar to purge oil in the lance
 - Just before removing the oil lance, close atomizing air valve
- Remove the gas/Dual lance and plug using blind flange

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

I . MAINTENANCE OPERATION

It may necessary to dismount a burner for the following two main reasons :

- Maintenance check or replacement of the lance
- Decommissioning

The dismounting procedures are complementary for these two situations and are described thereafter.

1) MAINTENANCE CHECK OR REPLACEMENT OF THE GAS/DUAL LANCE

To shut down the burner


Gas version:

- Close the gas valve nearest to the burner
- Check that the burner is off
- Put into Cooling Air
- Remove the lance and plug using blind flange
- Close the oxygen valve
- Check the lance and replace it if necessary
- Install the lance following the procedure described in the G.3.

Dual version:

- Close the fuel oil valve nearest to the burner.
- Check that the burner is off.
- Put into Cooling Air.
- Purge oil in lance.
- Remove the fuel oil lance and plug using blind flange.
- Close the atomizing air valve.
- Close the oxygen valve.
- Check the lance and injector and replace them if necessary.
- Install the fuel oil lance following the procedure described in the G.4.

This maintenance operation must be done every 3 weeks

	ALGLASS GAS/DUAL BURNER SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE	Reference:	CNPL-IOM-001-CNPL-A
		Revision:	1
		Date:	02/04/2020

2) TAKING THE BURNER OUT OF SERVICE

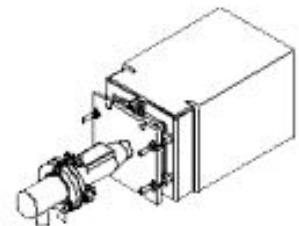
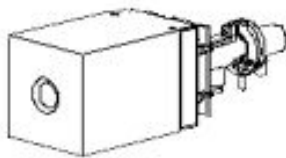
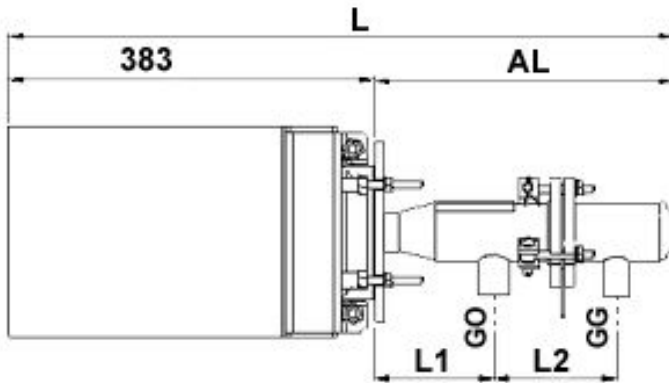
Remove the lance as above mentioned.

- Close all valves nearest to the burner
- Remove the burner body
- Plug the block hole with a refractory material plug

J . BURNER SIZE

Gas version:

ALGLASS BURNER Gas version						
Model	L	AL	GO (Oxygen)	GG (Gas)	L1	L2
200	696	313	1"	3/4"	125	129
500	703.7	320.7	1 1/2"	1"	123	133
1000	723	340	2"	1 1/4"	125	131



Dual version:

ALGLASS BURNER Fuel Oil Version								
Model	L	AL	FO (Oxygen)	Oil	Air	L1	L2	L3
200	746	363	1"	1/4"	3/8"	125	160.5	60
500	746	363	1 1/2"	1/4"	3/8"	123	162.5	60
1000	772.5	389.5	2"	1/4"	3/8"	125	162.5	84.5

