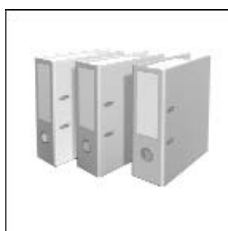


BLU 7000.1 PRE  
BLU 8000.1 PRE  
BLU 10000.1 PRE  
BLU 12000.1 PRE



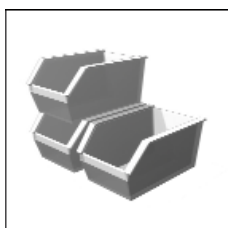
**Technical data**



**Operating instructions**



**Electric diagrams**



**Spare parts list**



**Gas train manual is separate**

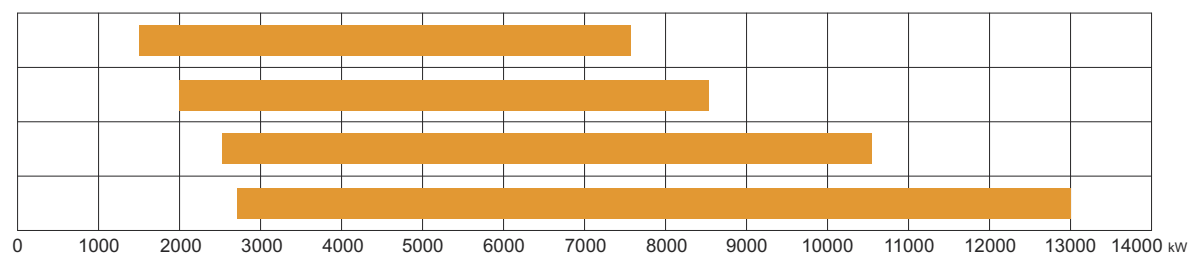


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BLU 7000.1 PRE TC	3145132
BLU 8000.1 PRE TC	3145133
BLU 10000.1 PRE TC	3145134
BLU 12000.1 PRE TC	3145135

## INDEX

**BLU 7000.1 PRE**  
**BLU 8000.1 PRE**  
**BLU 10000.1 PRE**  
**BLU 12000.1 PRE**



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## GENERAL WARNINGS - CONFORMITY DECLARATION

### Important notes

Ecoflam burners have been designed and built in compliance with all current regulations and directives.



**All burners comply to the safety and energy saving operation regulations within the standard of their respective performance range.**



**The burner must not operate outside the working range.**

The quality is guaranteed by a quality and management system certified in accordance with ISO 9001:2008.

BLU burners are designed for the low-pollutant combustion of natural gas and Liquefied Petroleum Gas.



**The burners comply with standard EN676. Assembly and commissioning must be carried out only by authorised specialists and all applicable guidelines and directives must be observed.**

### Burner description

BLU PRE burners are progressive electronic fully automatic monoblock devices. Burner head is designed to get the lowest emissions in terms of NOx and unburnt particles in order to maximize the heat generator efficiency. Emissions can be different respect to the ones recorded in the lab because they depends a lot on the generator on which the burner is fit.

The installer must comply with compulsory rules. Avoid for instance dangerous atmosphere or not ventilated rooms.

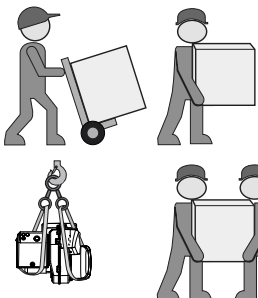
### Packaging and handling

Move the burner still in its packaging using a trolley or forklift, taking care not to drop it and elevating it no more than 20cm from ground level. After having removed the packaging, check that the contents are in good condition and correspond with what was ordered. If in doubt, contact the manufacturer.



**The burner must be installed by a qualified individual.**

If the weight and dimensions do not allow for manual lifting, ask another operator for



help or use a forklift, harness the burner using belts if no eyebolts are available.



Use the accessories provided (flange, gasket, pins and nuts) to install the burner onto the boiler, taking care not to damage the isolating gasket.

**We can accept no warranty liability whatsoever for loss, damage or injury caused by any of the following:**

- Inappropriate use.
- Incorrect assembly or repair by the customer or any third party, including the fitting of non-original parts.
- non authorised modifications made on the burner.

### Provision of the system and the operating instructions

The firing system manufacturer must supply the operator of the system with operating and maintenance instructions on or before final delivery. These instructions should be displayed in a prominent location at the point of installation of the heat generator, and should include the address and telephone number of the nearest customer service centre.

### Notes for the operator

The system should be inspected by a specialist at least once a year. It is advisable to take out a maintenance contract to guarantee regular servicing.

### Gas lines

When installing the gas lines and gas train, the general EN676 directives and guidelines must be observed. Additional accessories and kits shall be installed by the installer in accordance to the local safety regulations and codes of practise.

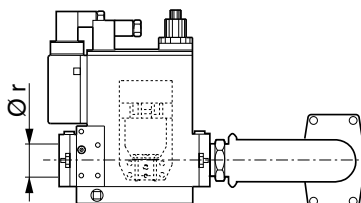
### Installation location

The burner must not be operated in rooms containing aggressive vapours (e.g. spray, perchloroethylene, hydrocarbon tetrachloride, solvent, etc.) or tending to heavy dust formation or high air humidity. Adequate ventilation must be provided at the place of installation of the furnace system to ensure a reliable supply with combustion air.

### Installing the gas train



The gas train is supplied separately, for fitting refer to the instructions in the gas train manual.



### Declaration of conformity for gas burners

We,

**Ecoflam Bruciatori S.p.A.**

declare under our sole responsibility that the gas burners named

**BLU**

conform to the following standards:

<b>EN 676</b>	<b>EN 50156-1</b>
<b>EN 55014-1</b>	<b>EN 55014-2</b>
<b>EN 60335-1</b>	<b>EN 60335-2-102</b>
<b>EN 61000-6-2</b>	<b>EN 61000-6-3</b>

These products bear the CE mark in accordance with the stipulations of the following directives:

**2014/35/UE Low Voltage Directive**  
**2014/30/UE EMC Directive**  
**2006/42/EC Machine directive**  
**2011/65/EU RoHS2 directive**  
**(EU) 2016/426 Gas Appliance Regulation.**

April, 2018 / Mr. Filippo Maltempo

R&D Director

### General regulations applying to the gas connection

- The gas train must only be connected to the gas mains by a recognised specialist.
- The cross-section of the gas line should be of a size designed to guarantee that the gas flow pressure does not drop below the specified level.
- A manual shut-off valve (not supplied) must be fitted upstream of the gas train.



**BURNER SELECTION:** Type of operation and configuration must be done by professional personnel in order to grant correct working of the burner. Installation, start-up and maintenance must be carried out by authorised specialists and all applicable guidelines and regulations (including local safety regulations and codes of practise) must be observed.

## BURNER DESIGNATION

### BLU 8000.1 PRE TC

#### RANGE NAME BY FUEL TYPE

BLU Gas

#### MODEL SIZE

BLU 8000.1 8000 kW

#### EMISSIONS

Standard Class 2 - GAS EN676 (<120 mg/kWh)  
 LN Low NOx Class 3 - GAS EN676 (<80 mg/kWh)

#### OPERATION TYPE

PAB 2 stages soft start  
 PR 2 stages progressive mechanical  
 PRE 2 stages modulating electronic

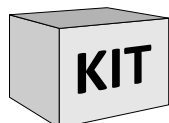
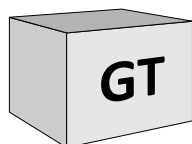
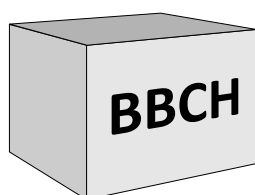
#### HEAD TYPE

TC Short head  
 TL Long head

#### FUEL

Natural gas  
 LPG Liquid gas  
 BIOGAS Biogas

## MODULAR DELIVERY SYSTEM



### Gas burners

All gas burners are delivered in separate set/box, i.e. burner body including combustion head and separate gas train with separate additional kit and accessories that shall complete the gas train or the burner according to the applicable standard. Kit and accessories are delivered separately.

### Gas train - GTCP - KITS - Accessories

All gas and dual fuel burners gas trains are delivered separately in different models and configuration.

Export configuration gas train completion are available but it is mandatory for the local installer in this case to comply to the local safety regulations.

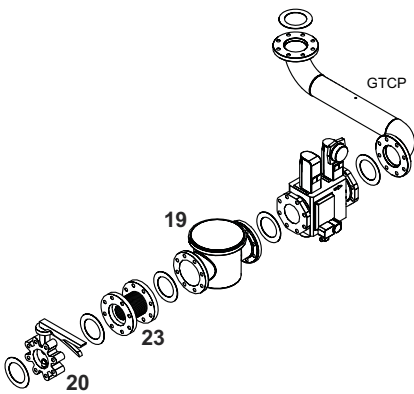
For burners over 1700 kW gas train connection pipe must be ordered.

Kits and accessories are managed and delivered separately.

### Component type

BBCH	Burner Body with Combustion Head (without gas train)
GTCP	Gas Train Connection pipe
GT	Gas Train (delivered separately)

## BURNER DESCRIPTION

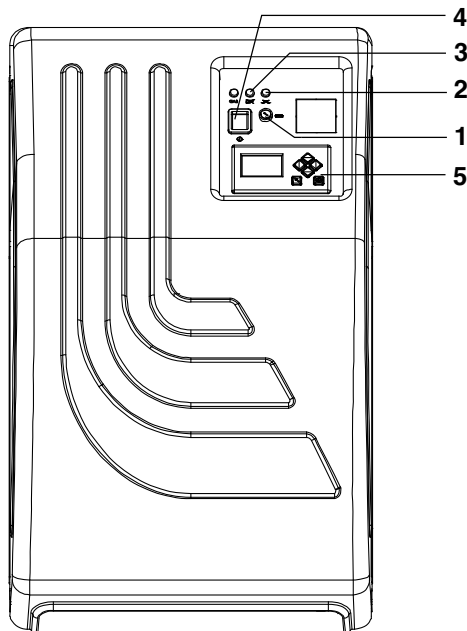


### LEGENDA

- 1. Housing
- 2. Electrical control panel
- 3. Blower motor
- 5. Hinge flange
- 6. Blast tube
- 7. Burner head
- 8. Burner fixing flange
- 9. Air flap regulation
- 12. Lifting eyebolts
- 14. Gas servomotor

- 15. Air servomotor
- 19. Gas filter
- 20. Ball valve
- 23. Antivibration coupling
- GTCP. Gas train connection pipe

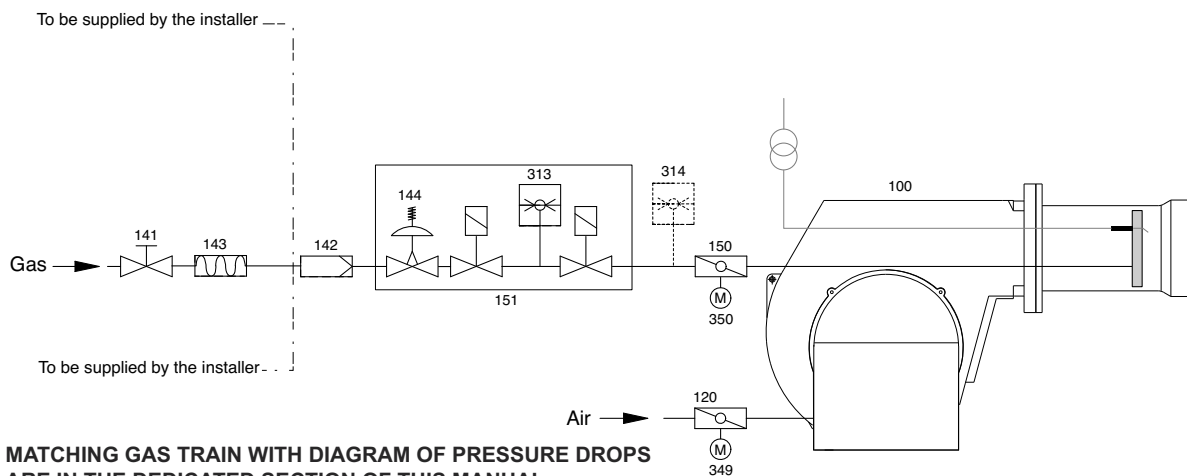
### Control panel



- 1 - Fuse
- 2 - Termal lock-out lamp
- 3 - Working lamp
- 4 - Main switch I / O
- 5 - Display

## BURNER DESCRIPTION

### Gas train - Kit - Accessories: assembly to the burner



**MATCHING GAS TRAIN WITH DIAGRAM OF PRESSURE DROPS ARE IN THE DEDICATED SECTION OF THIS MANUAL**

Ecoflam gas trains are delivered separately for all gas and dual fuel burners and are available in different configurations:  
**Double gas valves with actuators and regulator VGD Siemens and min pressure switch + ACS gas filter**

VGD 20.503 Rp 2" / VGD 40.065 - 40.080 - 40.100 - 40.125				
	1. Main gas pipe			
	2. Ball valve		ACS	
	3. Antivibration coupling		ACS	
	5. Min gas pressure switch	EXPORT	GAS TRAIN	EN676
	6. Safety gas valve + 10. Actuator			
	7. Working gas valve + 11. Actuator			
	8. Gas leakage control	KITTC *		
	9. Gas filter	ACS		
	KIT - MAX Gas pressure switch	KITPRES		
	ACS - Gas train connection pipe	GTCP **		

**!** **GTCP-...\* WARNING:** in order to fit the gas train, the corresponding connection pipe must be ordered (GTCP size and fitting depend on the burner and the gas train selected). Upon the installer responsibility it is mandatory to install additional support(s) in order to not overload the burner body with the dead load of full gas train, accessories, piping and so on.  
 The burner body can stand just the gas valve and the piping between the gas valve and the body.

### HOW TO INSTALL THE GAS TRAIN INTO THE BURNER AND CALCULATE THE OVERALL DIMENSIONS:

refer to the dimension page and the gas train manual for all detailed information

**!** **WARNING:** EN676 compulsory kit and accessories in order to comply to the safety regulations. Additional accessories and kits shall be installed by the installer in accordance to the local safety regulations and codes of practise.

Gas governor / Filter	Modulation Kit	Max Pressure switch	Other accessories
FGDR - FILTER	KITMD-RWF50	KITPRES50	
Compulsory EN676	Probe-...	KITPRES150	

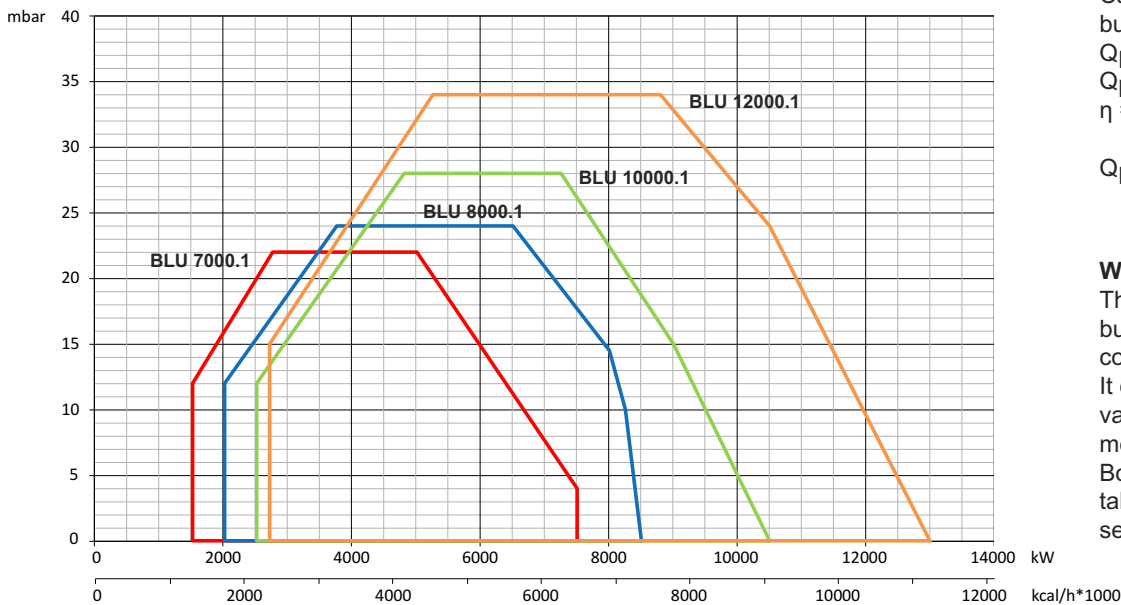
## TECHNICAL DATA

MODEL		BLU 7000.1 PRE	BLU 8000.1 PRE	BLU 10000.1 PRE	BLU 12000.1 PRE
Thermal power max.	kW	7.500	8.500	10.500	13.000
	kcal/h	6.450.000	7.310.000	9.030.000	11.180.000
Thermal power min.	kW	1.500	2.000	2.500	2.700
	kcal/h	1.290.000	1.720.000	2.150.000	2.322.000
Operation mode	Type	Modulating with PID			
Regulation ratio nominal	Type	1+4 GAS			
Fuel	Type	G20 (L.C.V. 8.570 kcal/Nm <sup>3</sup> ), G25 (L.C.V. 7.370 kcal/Nm <sup>3</sup> ) G31 (L.C.V. 22.260 kcal/Nm <sup>3</sup> ), G30 (L.C.V. 29.320 kcal/Nm <sup>3</sup> )			
Emission class	std	Standard Class 2 - GAS EN676 (<120 mg/kWh)			
Control unit	Type	LAMTEC BT320			
Gas train	GT	VGD separate gas train + Filter + Other KIT/ACS			
Gas connection	GTCP	Gas connection range DN65 to DN125 depending on the gas train selected			
NATURAL GAS pressure	mbar	60+500	85+500	115+500	175+500
LPG pressure	mbar	125+500	185+500	110+500	160+500
Air regulation	Type	Air flap	Air flap	Air flap	Air flap
Air flap control with servomotor	Model	LAMTEC			
Air pressure switch	mbar	1...10 mbar			
Flame monitoring	Type	Ionization			
Ignitier	Model	COFI			
Motor	kW	15	18,5	22	37
Rpm	N°	2.800	2.800	2.800	2.800
Voltage	V/Hz	230/400 V - 50 Hz			
Tot. power consumption operation	W	16.500	20.000	23.500	38.500
Weight body BBCH	Kg				
Electrical panel protection level	IP	IP40	IP40	IP40	IP40
Sound pressure level without silencer	dB(A) Lab tests	94,1	94,6	95,6	96,3
Sound pressure level with silencer		86,9	87,8	88,1	88,9
Ambient temperature storage	Min/Max	-20°...+70° C			
Ambient temperature use		-10°...+60° C			

## GAS CATEGORY BY COUNTRY

Gas category	Country																								
	AT	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GB	GR	HU	IE	IS	IT	LT	LU	LV	MT	NL	NO	PL
2,3 Family	PT	RO	SE	SI	SK	AL	HR	MK	TR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

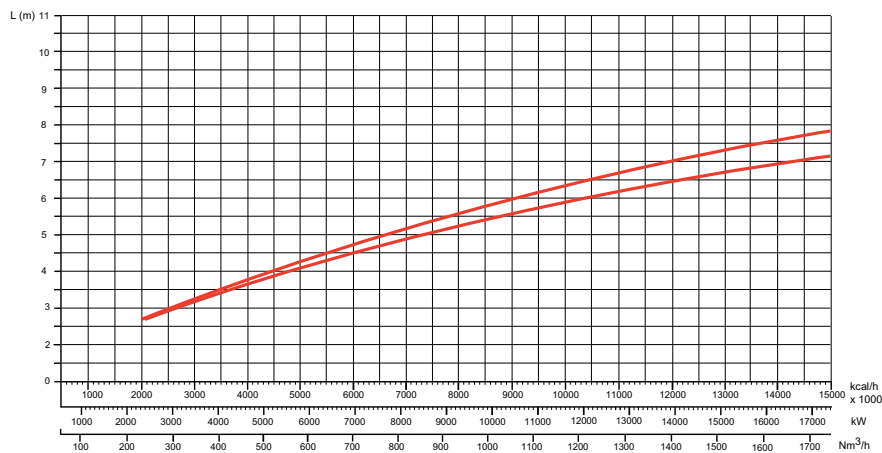
## WORKING DIAGRAMS

**Working diagrams**

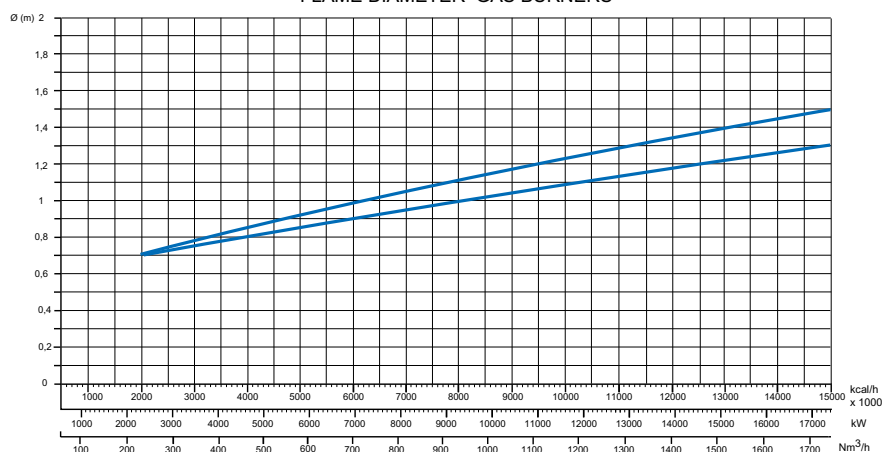
The working diagram shows burner output as a function of combustion chamber pressure. It corresponds to the maximum values specified by EN 676 measured at the test fire tube. Boiler efficiency should be taken into consideration when selecting the burner.

## TEST BOILER - FLAME DIMENSIONS

FLAME LENGTH GAS BURNERS



FLAME DIAMETER GAS BURNERS



The burner/boiler matching does not pose any problems if the boiler is CE type-approved.

If the burner must be combined with a boiler that has not been CE type-approved and/or its combustion chamber dimensions are clearly smaller than those indicated in diagram, consult the manufacturer.

The firing rates were set in relation to special test boilers, according to EN676 - EN267 regulations.

The sizes are indicative and depend on the configuration, to the combustion chamber pressure and to the draught. The values have been taken out from tests executed with flame tubes.

The dimensions of the flame are made in test boiler in laboratory without resistance therefore exists max and min length that take into account the difference in length that comes from the boiler backpressure.

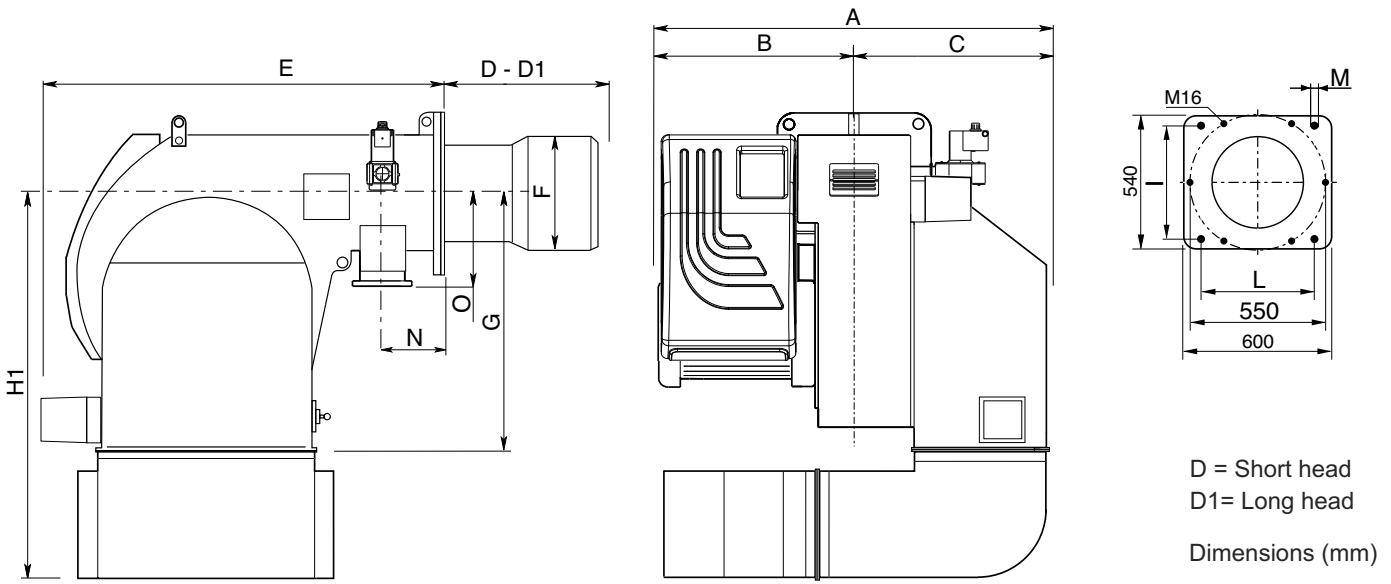
Example:

Burner thermal output = 8000 kW;  
 L flame (m) = 5 m (medium value)  
 D flame (m) = 1 m (medium value)

**WARNING:** Some flame modifications can be done in our FLEXSHOP in the factory in order to shape the flame and adapt it to some special boiler or application.



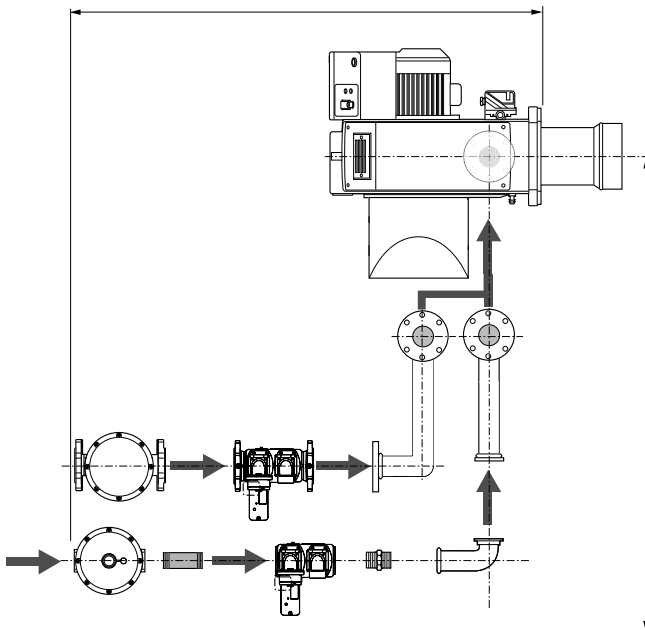
## OVERALL DIMENSIONS



Model	A	B	C	D	D1	E	F	G	H1	I	L	M	N	O
BLU 7000.1 PRE	1210	585	625	470	-	1212	420	775	1270	460	460	M20	195	232
BLU 8000.1 PRE	1280	655	625	470	-	1212	420	775	1270	460	460	M20	195	232
BLU 10000.1 PRE	1310	685	625	470	-	1212	420	775	1270	460	460	M20	195	232
BLU 12000.1 PRE	1420	795	625	470	-	1212	450	775	1270	460	460	M20	195	232

### HOW TO INSTALL THE GAS TRAIN INTO THE BURNER AND CALCULATE THE OVERALL DIMENSIONS:

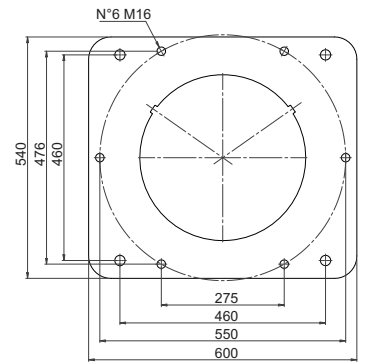
refer to the dimension page and the gas train manual for all detailed information.



### Burner-boiler mounting flange

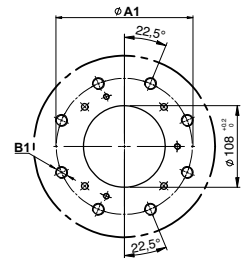
Fixing hole dimensions are "I" and "L" as per dimension table. Boiler hole shall be done according to the blast tube dimension "F" plus 15-25 mm in order to be able to extract it during maintenance.

**WARNING:** Please follow the suggested dimension for the hole on the boiler flange in order to fit the burner. Make sure that between the boiler and the blast tube proper insulation is fitted.



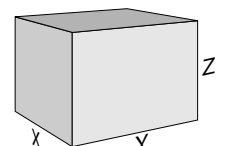
### Burner gas flange

Model	Ø A1	B1
BLU 7-12000	180	8 x M16



### Packaging (only burner)

Model	X	Y	Z	kg
BLU 7000.1	1750	2380	1460	
BLU 8000.1	1750	2380	1460	
BLU 10000.1	1750	2380	1460	
BLU 12000.1	1750	2380	1460	



## GAS OPERATING MODE - GENERAL SAFETY FUNCTIONS

### START-UP MODE

As soon as the furnace system is required to supply heat, the burner control circuit will close and the program flow started. When the program has come to its end, the burner will be turned on. An automatic test is made for the tightness of the gas valves prior to each burner start. The air damper is in its closed position when the burner is out of operation. The electric actuator will open the closed air damper to its full-load position so that the burner will ventilate the furnace and the exhaust hoods with the specified air rate. Shortly after the prevention process has been started the lack-of-air cut-out must change over to operating position within a certain time, i.e. the minimum air pressure setting must be reached and maintained until the burner is turned off. At the end of the specified pre-ventilation time the air damper will be moved into its partial-load position in a linked control concept with the gas damper. The ignition transformer will be started. At the end of the pre-ignition time the gas valves will be opened to allow gas to flow into the burner. The ignition electrodes incorporated in the burner will ignite the ignition gas. The UV cell gives flame signal to control box so that the safety shut-off valves will be opened. The gas will be fed to the gas nozzles via the gas damper while combustion air is supplied by the fan. Gas and air will be intensively mixed in the mixing unit and ignited by the spark. After the safety period has run down the ignition spark will be turned off.

#### Attention:

If there are shut-off dampers in the flue gas tract they must be completely open. Otherwise there will be a high danger of low-speed detonation or explosion!

### GAS OPERATING MODE

After the flame has developed the load regulator will be enabled which brings the burner into its operating position. The load regulator will now control the burner automatically between its partial-load and full-load stages. Depending on the heat demand, the electric actuator of the compound control system will be fed with the OPEN or CLOSE command via the regulator and thus increase or decrease the gas and air flow rates. This compound control system will vary the positions of the gas control valve and air damper and thus regulate the gas flow rate in a linked concept with the air flow rate. The burner can either be controlled by a 2-stage sliding or, if a respective controller is provided, a stepless control concept. The stepless control will allow the burner to be operated at any desired stage between its partial-load and full-load positions. The burner will always be turned off out of its partial-load position. The air damper will be closed when the burner is out of operation and will thus prevent cold air flowing through the burner chamber, heat exchanger and chimney. The interior cooling losses will thus be greatly minimized.

### GAS LEAKAGE CONTROL FOR BURNERS IN PRE VERSION

The relevant function is ACTIVE as a standard. Before commissioning the burner, please check if this feature is "ACTIVATED" (look inside menu on section 5 "Operating Control and Displays" page 64, fig.5-32"). If it is "NOT ACTIVATED" and it is not mandatory to fit the valve proving, a suitable gas train must be fit. Such a gas train must be equipped with a pressure switch upstream of the first gas valve (referring to the picture on page 12, the 313 min. gas pressure switch must be fit after the device 144).

It works as follows:

The valve leakage test checks whether the main gas valves are leak-tight. The supply gas pressure is used for this purpose. Since the valve leakage test line (space between the two main valves) burns empty in the event of a shut-off, this part is normally without pressure when starting (gas pressure > min. = 0). The FA1 checks this. Main gas 1 is then opened shortly and gas flows into the test line (gas pressure > min. changes from 0 to 1). This pressure must then subsist for 30 seconds. The valve leakage test is then deemed to be completed. If the valve leakage test line is not empty at the start (e.g. as a result of a previous fault shut-down), main gas valve 2 opens first. The valve leakage test line is vented (into the combustion chamber or over the roof, depending on the system; for suggested circuit, see Appendix). It is checked, whether the line remains pressureless for 30 seconds. Otherwise the procedure is, as described previously.

### GENERAL SAFETY FUNCTIONS

In case a flame does not develop when starting the burner (fuel release) the burner will shut off at the end of the safety period (shut-off on trouble). A shut-off on trouble will also occur in the case of flame failure during operation, air flow failure during the pre-ventilation phase and pressure failure during the whole period of burner operation. Any failure of the flame signal at the end of the safety period and a flame signal during

the pre-ventilation phase (external light control) will result in a shut-off on trouble with the control box being locked.

The trouble is indicated by the trouble signal lamp lighting up. The control box can be unlocked immediately after a shut-off on trouble by pressing the unlocking key. The program unit will return to its starting position and proceed with the restart of the burner. A voltage failure will result in a regular shut-off of the burner. Upon voltage

recovery there may be an automatic restart unless another interlock is provided, e.g. by the safety system. In any case of trouble the fuel oil supply will be shut off right away. The program unit will stop at the same time causing also the trouble location indicator to stop. The symbols will indicate the kind of trouble.

## INSTALLATION

### Fitting the burner to the boiler

**!** **WARNING:** handling and moving operations must be carried out by specialised personnel. Use the eyebolts to lift the burner in order that it will not overturn and fall down.

To perform the installation of the burner into the boiler drill the boiler plate according to the dimension given on this manual and place the burner towards it by lifting and moving the burner by means of eyebolts.

Place the gasket on the burner flange and install the burner into the boiler by fixing nuts into the bolts.

The space between the blast tube and the boiler lining must be sealed with appropriate insulating material.

#### Burner blast tube insertion depth and brickwork

Unless otherwise specified by the boiler manufacturer, heat generators without a cooled front wall require brickwork or insulation 5 as shown in the illustration. The brickwork must not protrude beyond the leading edge of the blast tube, and should have a minimum conical angle of 60°. Gap 6 must be filled with an elastic, non-combustible insulation material. For boilers with reverse firing, the minimum burner tube insertion depth A as specified in the boiler manufacturer's instructions must be observed.

On boilers the blast tube insertion depth should be observed as per the boiler manufacturer's instructions.

Reverse flame boiler :

A = 50-100 mm.

Three pass boilers :

A1 = 50-100 mm.

#### Exhaust system

To avoid unfavourable noise emissions, right-angled connectors should not be used on the flue gas side of the boiler.

### BURNER LINING

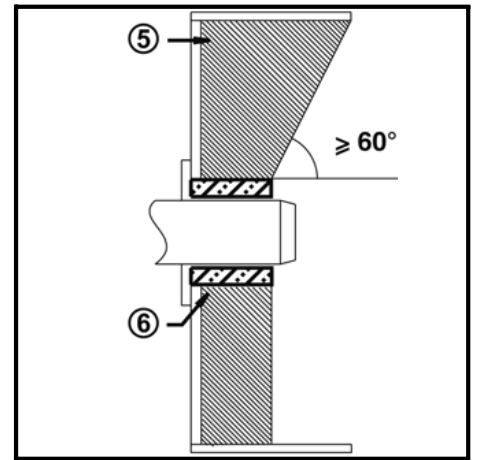
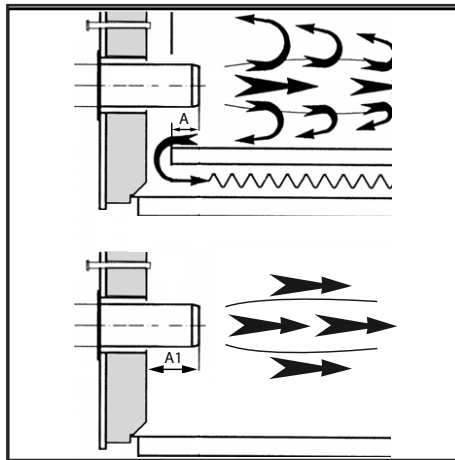
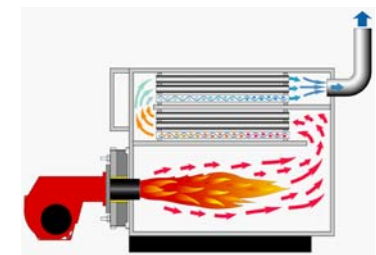
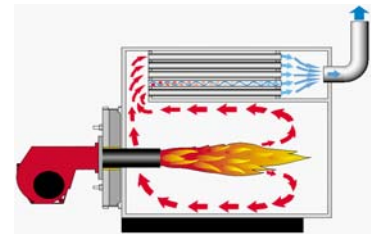
#### Check before burner installation:

1. Depending on the type of boiler (reverse flame or three pass) check the burner blast tube installation depth according to the data specified by the boiler manufacturer or consult the burner producer.

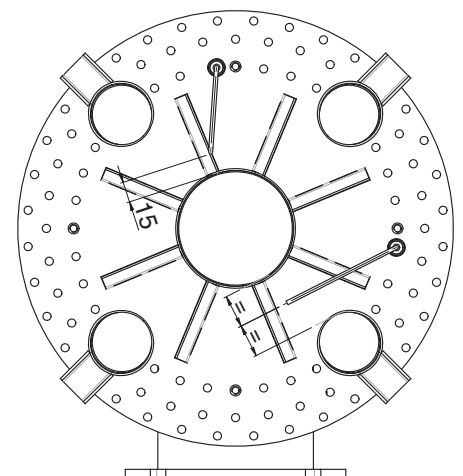
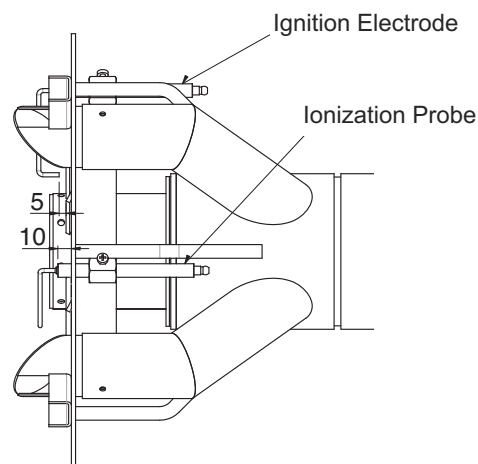
2. Check the ignition electrodes on the burner head as per factory setting (see figures).

The setting of the mixing and ignition unit according to the boiler output will be performed during commissioning procedure.

3. Check that the head is preset at 50%.



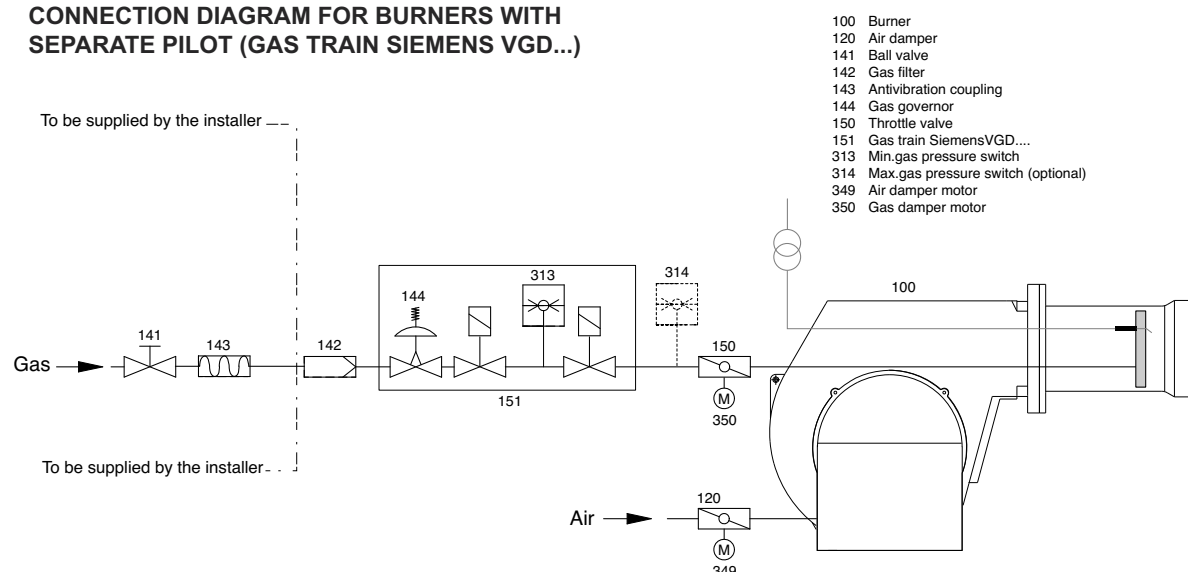
#### Position of the electrodes



## INSTALLATION

### Gas line

#### CONNECTION DIAGRAM FOR BURNERS WITH SEPARATE PILOT (GAS TRAIN SIEMENS VGD...)



#### GAS VALVES AND INSTRUMENTS GROUP

The gas valves and instruments group used with the furnace will be selected according to the specific requirements to be met by a burner system.

The following factors must be taken into account:

- burner output
- furnace back pressure
- gas pressure loss of the burner head
- gas pressure losses of the gas valves and instruments group

**NOTE:** Only gas trains assembled by the burner manufacturer and approved in accordance with the burner test specifications. EN676 compulsory kit and accessories in order to comply to the safety regulations. Additional accessories and kits shall be installed by the installer in accordance to the local safety regulations and codes of practise.

#### GAS CONNECTION PRESSURE

A minimum connection pressure must be available upstream of the burner gas valve to ensure the proper functioning of the burner.

**WARNING:** *the total gas pressure loss must always be smaller than the available gas flow pressure.*

For the installation of the valves and instruments group take care to observe the mounting instructions supplied by their manufacturers (these are packed with the equipment).

The gas line installed to the burner must be dimensioned in accordance with the throughput rate and the available pressure.

For selecting the nominal bore "DN" of the gas valves and instruments group care should be taken to observe the flue resistance of the boiler and the gas pressure loss of the burner and valves and instruments group.

#### GAS VALVES AND INSTRUMENTS GROUP

The gas valves and instruments group can

be connected directly to the gas feed line.

Take care to observe the correct order of installation and direction of flow (arrow on housing).

Check the valves and instruments and connection pieces for absence of dirt particles and foreign matter before installation and initial operation. To provide effective conditions for start-up make sure the distance between the burner and the gas stop valve is as short as possible.

#### LEAK TEST

The gas line upstream of the burner gas valves and instruments group must be installed in accordance with the applicable regulations, checked for absence of leaks, vented and certified accordingly by the gas installation company. The screwed unions and flanged joints must be checked for proper tightness (by making a pressure test). The leak test must be made under pressure using approved foaming agents which do not cause corrosion. For steam boiler furnaces the result of the leak test must be duly certified.

#### VENTING

Prior to taking the burner into operation or after any repair work make sure to vent the complete gas feed line and the gas valves and instruments group into the open atmosphere (e.g. by means of a hose) taking care to avoid any hazards.

In no case should the gas line be vented into the heating or furnace chambers. Make use of a test burner to check the gas-carrying spaces are free from an inflammable gas mixture.

#### SUPPORT

The valves and instruments group must be supported with a telescopic jacking member or similar during and after installation (e.g. on filter and valve).

#### JOINT

It is recommended to provide an easy to disconnect joint (with planar sealing faces) to facilitate repair work on the boiler (furnace) and allow the boiler door to be swivelled out if required.

## INSTALLATION

### Pilot gas train, kit and accessories connection - head loss diagram

#### PILOT GAS TRAIN CONNECTION

The pilot gas train is already installed to the burner and shall be connected to the main gas supply line preferably with flexible pipe. The pilot gas train is composed of n° 2 safety valves and n°1 gas governor and filter. Max inlet pressure 1 bar.  
**WARNING:** Pilot gas train must be connected according to the drawing of the gas line.

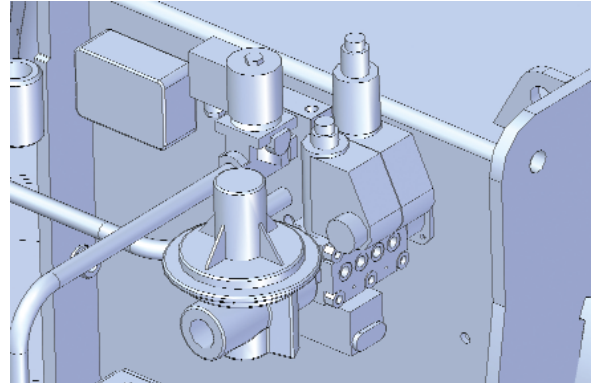
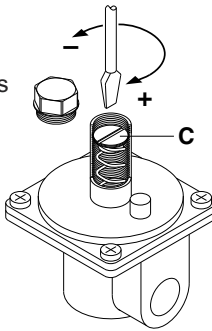
#### GAS VALVES ADJUSTMENT

**Note :** the pilot valves are pre-adjusted in the factory. To increase or reduce the gas flow act on the gas governor.

#### GAS GOVERNOR ADJUSTMENT

The gas governor, with built-in filter, must be installed so as to stabilise the outlet gas pressure and to avoid that eventual impurities reach the gas valve. To increase gas pressure, remove the cover of governor and turn screw C. Unscrew screw C to reduce pressure, then fit the cover.

**Note:** the inlet gas pressure must not be higher than the specified max. gas pressure.





#### KITPRES... Maximum pressure switch assembly

Maximum pressure switch is provided as a kit and shall be assembled into the main gas train according to the instructions of the gas train separate manual.

#### KITMD-RWF50 PID regulator

All progressive burner can be turned modulation with the installation of the PID that regulates the output combined with a probe.

Modulation Kit	Max Pressure switch
KITMD-RWF50	KITPRES50
Probe-...	KITPRES150

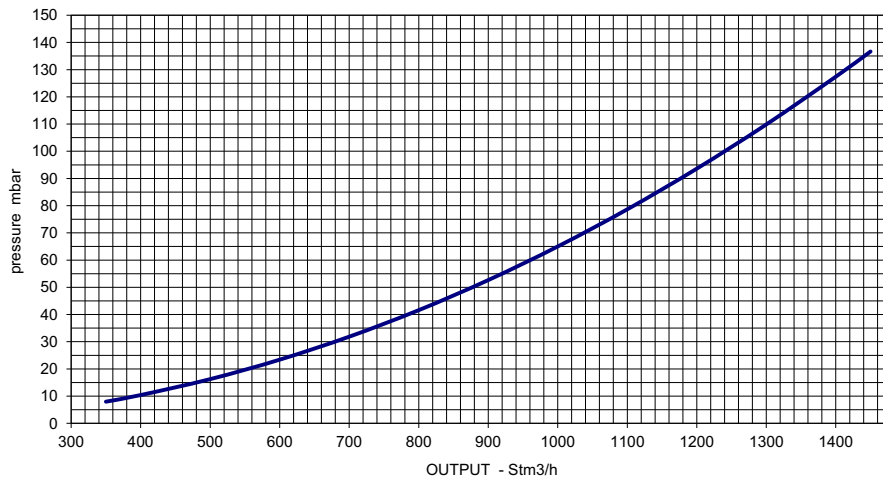



#### GAS PRESSURE LOSS DIAGRAM: combustion head - platform 630

The diagram provides combustion head pressure loss. To have pressure loss combined with the different type of gas train you must refer to the pressure loss diagrams.

#### WARNING:

Note that the head loss diagram is only indicative and does vary depending on the setting of the head.

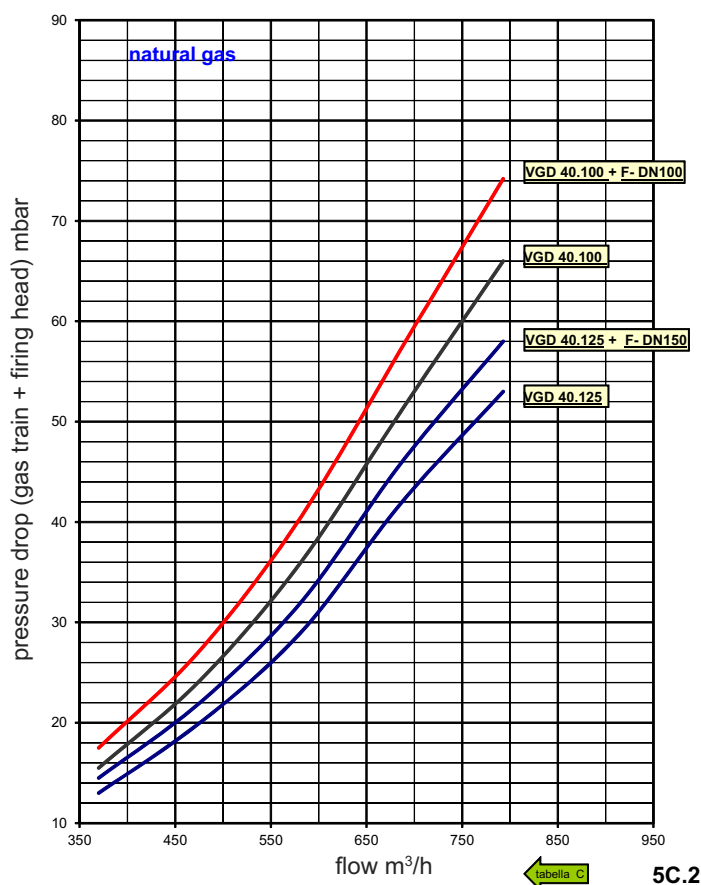
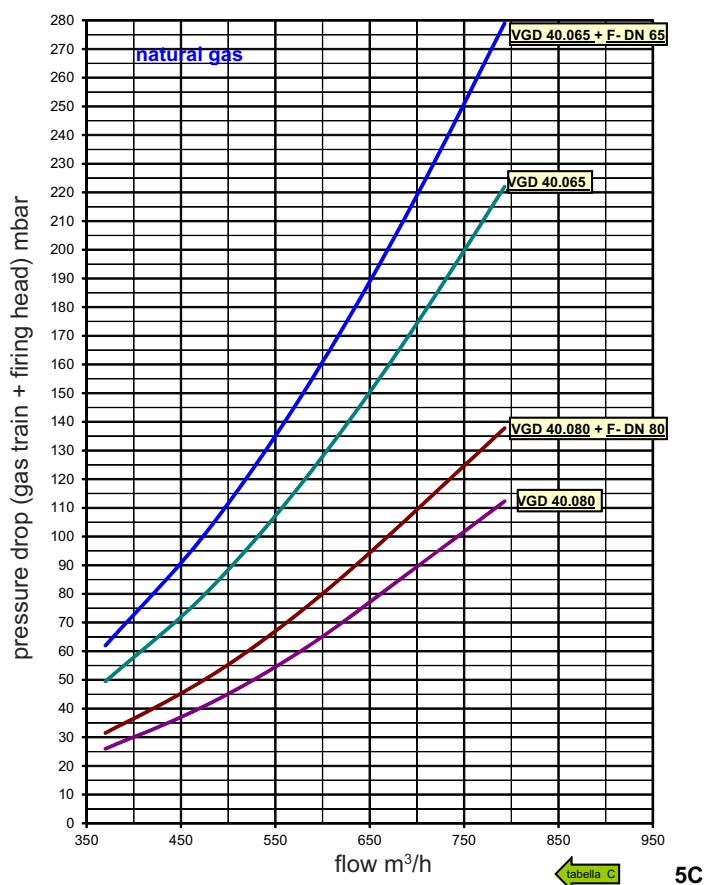


# INSTALLATION

## Gas pressure loss diagrams

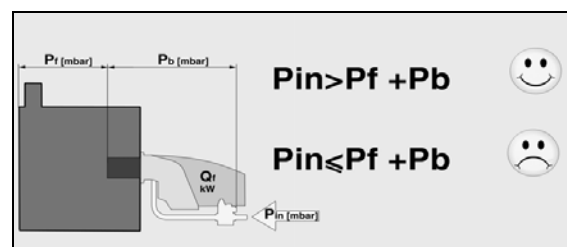
**!** PRESSURE DROP includes: "COMBUSTION HEAD + GAS TRAIN + GAS GOVERNOR & FILTER" as per EN676 Standard. Back pressure of boiler (or other applications) must be added/included in order to have the total min pressure drop.

Burner	Gas train	Advisable gas governor & filter	Spring color	Inlet gas pressure MIN [mbar]	Inlet gas pressure MAX [mbar]	Diagram
BLU 7000.1 PRE MULTICALOR 700.1 MULTIFLAM 700.1	VGD 40.125	no	yellow	55	500	5C
		FILTER DN 125		60		
	VGD 40.100	no	yellow	70	500	
		FILTER DN 100		75		
VGD 40.080	no	yellow	115	500	5C.2	
	FILTER DN 80		140			
VGD 40.065	no	yellow	225	500		
	FILTER DN 65		280			



**LEGENDA**

- Pf: Back pressure of furnace
- Pb: Pressure of burner (combustion head + complete gas train)
- Pin: Minimum inlet pressure

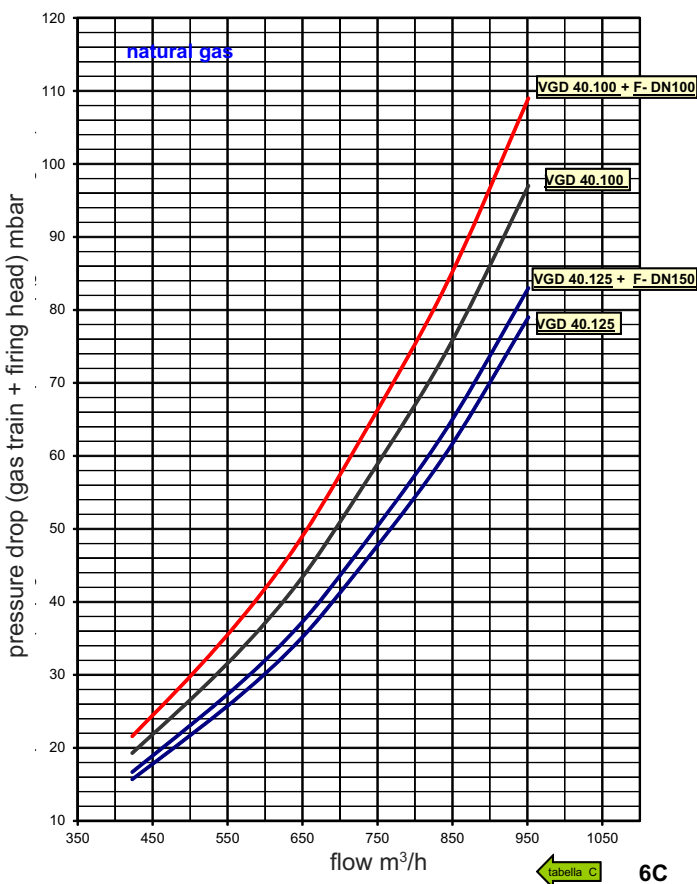


## INSTALLATION

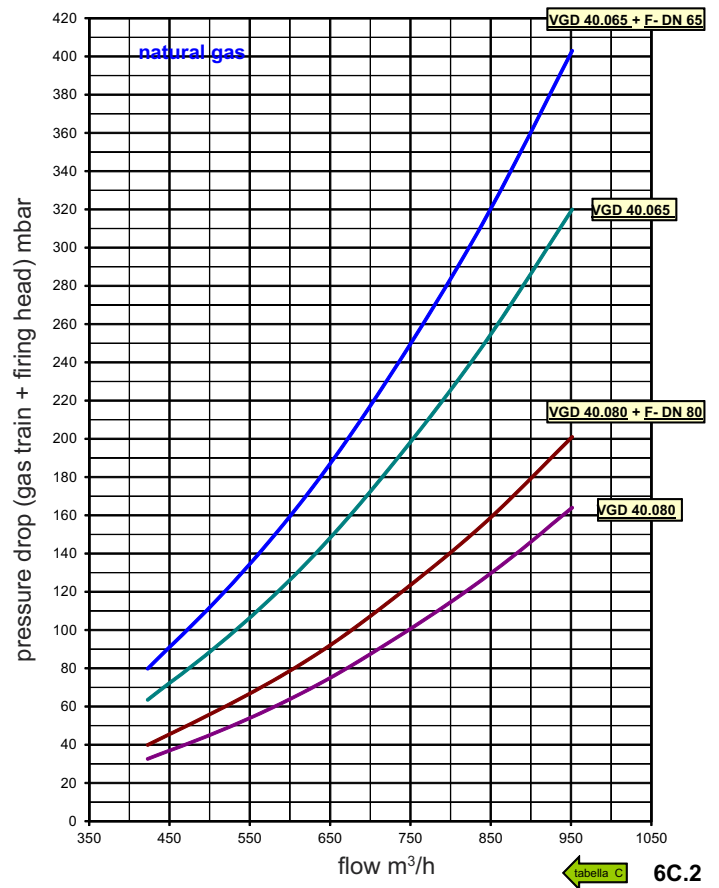
### Gas pressure loss diagrams

**!** PRESSURE DROP includes: "COMBUSTION HEAD + GAS TRAIN + GAS GOVERNOR & FILTER" as per EN676 Standard. Back pressure of boiler (or other applications) must be added/included in order to have the total min pressure drop.

Burner	Gas train	Advisable gas governor & filter	Spring color	Inlet gas pressure MIN [mbar]	Inlet gas pressure MAX [mbar]	Diagram
BLU 8000.1 PRE MULTICALOR 800.1 MULTIFLAM 800.1	VGD 40.125	no	yellow	80	500	6C
		FILTER DN 125		85		
	VGD 40.100	no	yellow	100	500	
		FILTER DN 100		110		
VGD 40.080	no	yellow	170	500	6C.2	
	FILTER DN 80		210			
VGD 40.065	no	yellow	320	500		
	FILTER DN 65		410			



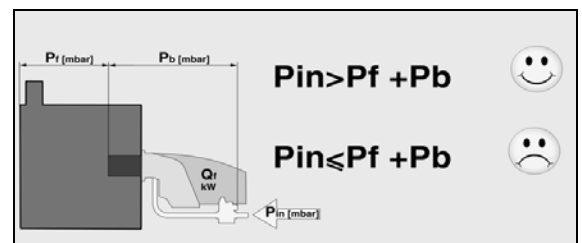
6C



6C.2

#### LEGENDA

- Pf: Back pressure of furnace
- Pb: Pressure of burner (combustion head + complete gas train)
- Pin: Minimum inlet pressure

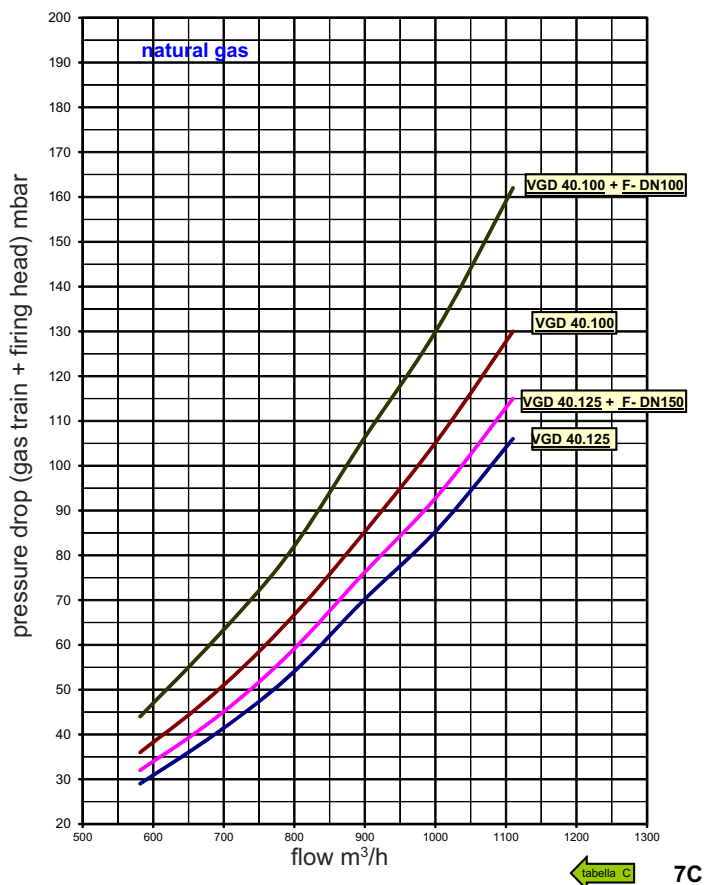


# INSTALLATION

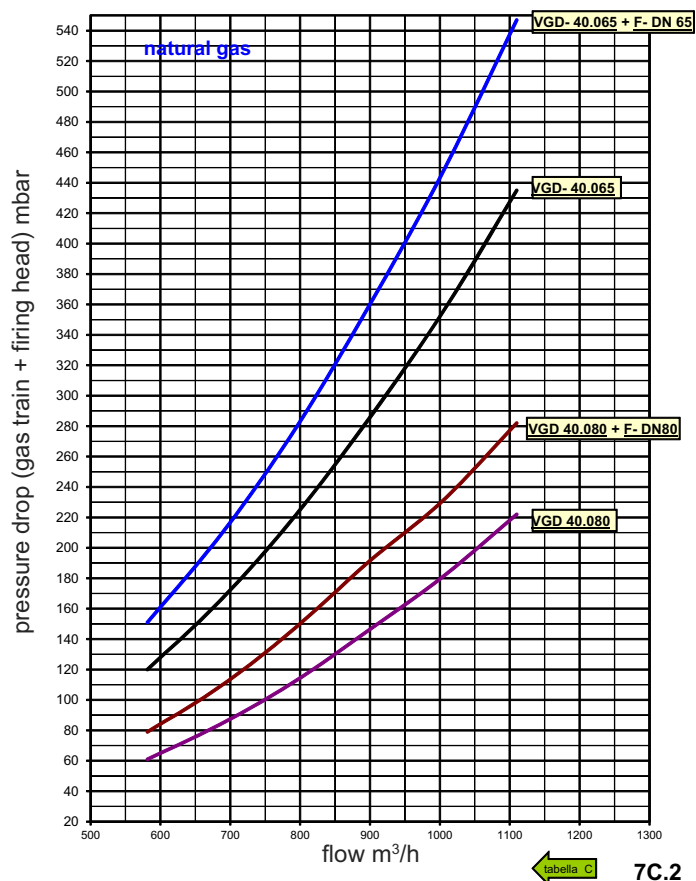
## Gas pressure loss diagrams

**!** PRESSURE DROP includes: "COMBUSTION HEAD + GAS TRAIN + GAS GOVERNOR & FILTER" as per EN676 Standard. Back pressure of boiler (or other applications) must be added/included in order to have the total min pressure drop.

Burner	Gas train	Advisable gas governor & filter	Spring color	Inlet gas pressure MIN [mbar]	Inlet gas pressure MAX [mbar]	Diagram
BLU 10000.1 PRE MULTICALOR 1000.1 MULTIFLAM 1000.1	VGD 40.125	no	yellow	100	500	7C
		FILTER DN 125		115	500	
	VGD 40.100	no	yellow	130	500	
		FILTER DN 100		165	500	
VGD 40.080	no	yellow	230	500	7C.2	
	FILTER DN 80		290	500		
VGD 40.065	no	yellow	440	500		
	FILTER DN 65		550	500		



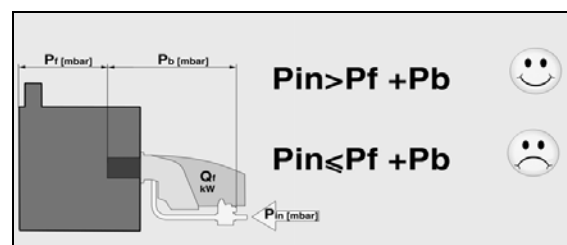
7C



7C.2

**LEGENDA**

- Pf: Back pressure of furnace
- Pb: Pressure of burner (combustion head + complete gas train)
- Pin: Minimum inlet pressure



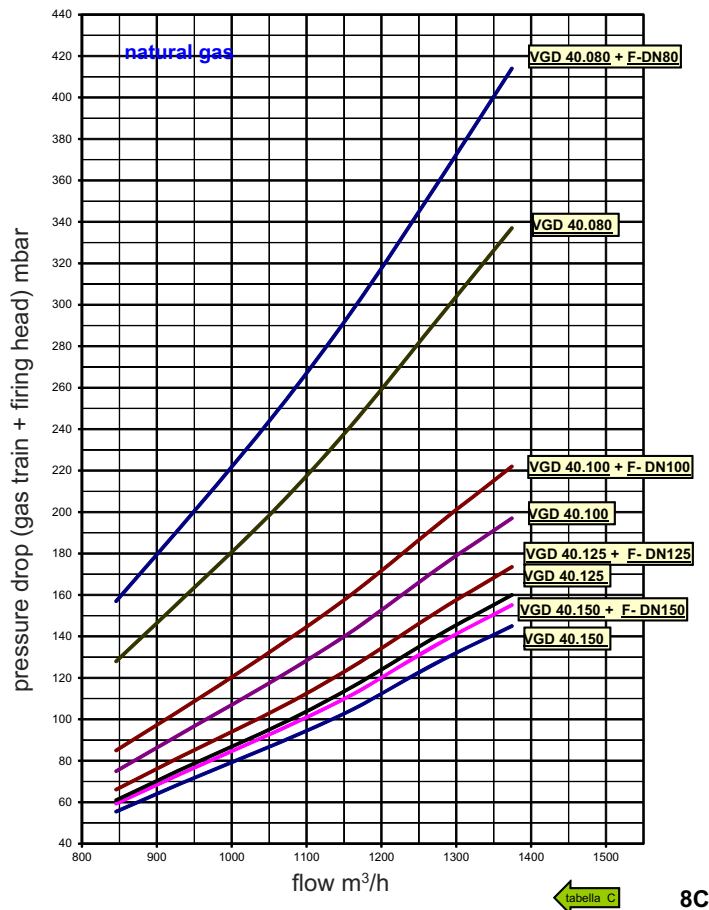


## INSTALLATION

### Gas pressure loss diagrams

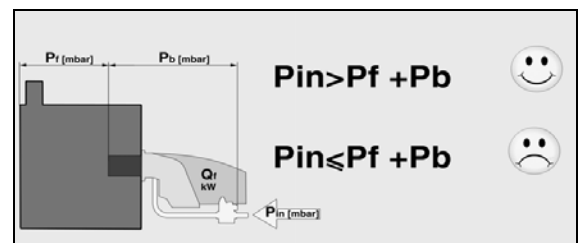
**!** PRESSURE DROP includes: "COMBUSTION HEAD + GAS TRAIN + GAS GOVERNOR & FILTER" as per EN676 Standard. Back pressure of boiler (or other applications) must be added/included in order to have the total min pressure drop.

Burner	Gas train	Advisable gas governor & filter	Spring color	Inlet gas pressure MIN [mbar]	Inlet gas pressure MAX [mbar]	Diagram
BLU 12000.1 PRE MULTICALOR 1200.1 MULTIFLAM 1200.1	VGD 40.150	no	yellow	150	500	8C
		FILTER DN 150		160	500	
	VGD 40.125	no	yellow	160	500	
		FILTER DN 125		175	500	
	VGD 40.100	no	yellow	200	500	
		FILTER DN 100		230	500	
	VGD 40.080	no	yellow	340	500	
		FILTER DN 80		420	500	



#### LEGENDA

Pf: Back pressure of furnace  
 Pb: Pressure of burner (combustion head + complete gas train)  
 Pin: Minimum inlet pressure



## INSTALLATION

### Electrical connections

**!** **WARNING:** Electrical wiring must be carried out with electrical supply disconnected and with burner switch in position OFF. Electrical supply must correspond to the one shown on the burner label.

#### APPLICABLE STANDARD

The electrical connection work comprising all the installation materials, terminals and earth connections must be carried out in accordance with the applicable regulations. For the electrical installation of the burner care must be taken to observe the circuit diagram made out for the furnace system.

The electrical connection of the burner and gas valves and instruments shall be entrusted to authorized specialists only.

**NOTE:** For the installation of the connection cables care must be taken to provide cable loops of sufficient length to allow for the swing-out of the boiler door and burner.

Make sure after the completion of the electrical connection work to check the wiring of the electrical system of the burner. This should include a check of the direction of rotation of the burner motor (fan).

#### GENERAL WARNINGS:

All applicable electrical safety regulations must be followed. Failure to correctly dimension the suitable input power and earth the equipment may cause damages to person and compromise the correct function of the burner therefore the electrical system shall be checked by qualified personnel.

The manufacturer declines all responsibility for modifications or connections different from those shown in the electrical scheme.

Adapters, multiple plugs and extension cables may not be used for the equipment's power supply.

An omnipolar switch in accordance with current safety regulations is required for the mains supply connection.

#### ELECTRICAL CONNECTION

##### 1) of the burner

- Built-in electrical cabinet

Use cable gland in order to secure the required level of protection. All the links, power and control, are connected to the terminal block of the cabinet. Provide cables in sufficient length to secure the rotation of the burner body according to the assembly.

Check and adjust the size of the contactors and thermal relays and the wires section according to the motor and supply voltage specs.

**ATTENTION:** Wiring is not supplied.

##### 2) of the gas train

- Connect the plugs pending to the valve: either on the cabinet, or on the coupling case on the body of the burner.

**The burners are produced with connections suitable for power supply 380-400 V three-phase.**

The burners with electric motors of an output lower or equal to 3 kW can be adapted to 220-230 V (please follow the instructions on the backside); motors with higher output can only work 380-400 V three-phase.

In case of request of burners different from the above mentioned standard, it is recommended to make specific mention in the order.

**Instructions: how to adapt electric motors of an output lower or equal to 3 kW to 220-230 V power supply**

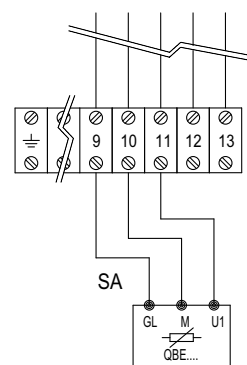
It is possible to change the voltage of the burner by operating as follows:

1. change the connection inside the electric box of the motor, from star to delta (see picture 1);
2. change the setting of the thermal relay, referring to the absorption values indicated in the motor nameplate. If necessary, replace the thermal relay with another one of suitable scale.

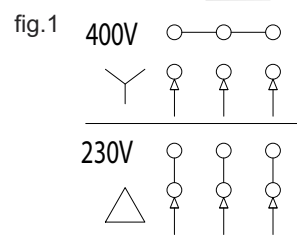
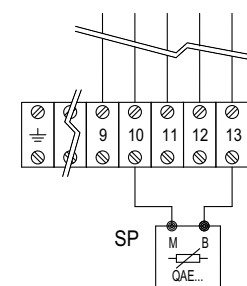
This operation is not possible on motors above 3 kW.

For more information, please contact the Ecoflam staff.

#### PROBES CONNECTION ACTIVE PROBE CONNECTION (FOR MODULATING VERSION)



#### PASSIVE PROBE CONNECTION (FOR MODULATING VERSION)



#### LEGENDA

HLB: lock-out lamp  
STAB: two stages thermostat  
HLF: burner on flame lamp  
STC: boiler thermostat  
STS: safety thermostat  
SA: active probe  
SP: passive probe

## START-UP: CHECKING PROCEDURE, RECORDING COMMISSIONING DATA

### CHECKS BEFORE COMMISSIONING:

- That the burner is assembled in accordance with the instructions given here.
- Setting the combustion components.
- All electrical connections must be correct.
- Check the burner motor for correct direction of rotation.
- The heat generator must be ready for operation, and the operating regulations for the heat generator must be observed.
- The heat generator and heating system must be filled with water and the circulating pumps must be in operation.
- The temperature regulator, pressure regulator, low water detectors and any other safety or limiting devices that might be fitted must be connected and operational.
- The exhaust gas duct must be unobstructed and the secondary air system, if available, must be operational.
- An adequate supply of fresh air must be guaranteed.
- Make a test of the all gas-carrying elements for absence of leaks.
- With burner in starting position check that air damper is in "CLOSED" position.

- Check that control box is unlocked and in its original position.
- A standard-compliant measuring point must be available, the exhaust gas duct up to the measuring point must be free of leaks to prevent anomalies in the measurement results.

### GAS START-UP

- Connect the measuring instruments for the gas head pressure on the test connection downstream of the gas damper and the air pressure on the burner test connection.
- Open the gas shut-off valve before the gas-armatures and test the gas pressure on the pressure gauge
- Set the "Manual-Automatic" selector switch to "Manual".

If the gas valves are tested for absence of leaks, this should be continued until a positive result is obtained. If a valve is found to leak, the program will not step forward to the control box. The burner will start according to the program flow of the control box.

**Prior to the initial fuel feed start make a functional test of the burner program flow:**

### Gas system:

- Shortly open the gas shut-off valve before the gas train until pressure is available and close again.
- Start burner and check program flow for correct start-up sequence:
  1. Fan.
  2. Pre-ventilation damper.
  3. Check air pressure.
  4. Partial-load damper.
  5. Ignition.
  6. Valves open.
  7. Shut-off upon trouble after expiry of safety period (see control box) or shut-off because of gas supply failure.
  7. The burner will either stop as the gas valves open (due to gas pressure decrease) or lock out at the end of the safety time.
- Unlock the control box.



### Recording commissioning data

Test	n°1	n°2	n°3	n°4
Date				
Model				
Type gas				
Gas calorific value				
Gas inlet pressure	mbar			
Adjustment gas pressure				
Volumetric gas flow rate	Nm³/h			
Burner output	min kW			
Burner output	max kW			
Flue gas temperature	C°			
Air temperature	C°			
CO <sub>2</sub>	%			
CO	ppm			
NOx	ppm			
Performance	%			
Corrective action				
Operator name				
Company				

## EXHAUST GAS TEST

To ensure an economically efficient and trouble-free operation of the system it will be necessary to adjust the burner specifically in accordance with the furnace system. This is achieved by means of a fuel-combustion air compound control unit which adjusts the burner to ensure a proper combustion. Exhaust gas tests are required for this purpose.

The percentage CO<sub>2</sub> and O<sub>2</sub> and the exhaust gas temperature will have to be measured to determine the efficiency and combustion quality.

Prior to any measurement make sure to check the boiler and exhaust gas system for absence of leaks.

### Secondary air will falsify the measured results

Check that the exhaust gases have a residual oxygen (O<sub>2</sub>) content as low as possible and a carbon dioxide (CO<sub>2</sub>) content as high as possible.

The carbon monoxide content of the exhaust gases must be below the currently applicable specifications in all load stages. In the fuel oil combustion mode the permissible soot number in the exhaust gas is not allowed to be exceeded

### DETERMINING THE VOLUMETRIC GAS FLOW RATE

The thermal furnace output of a boiler (Q<sub>F</sub>) is the amount of heat supplied with the gas in a unit of time.

When taking the burner into operation the volumetric fuel flow rate should be selected according to the nominal thermal capacity of the boiler.

#### Example:

Nom. thermal output	Q <sub>N</sub>	1000 kW
Boiler efficiency	η <sub>K</sub>	0,88
Calorific value of gas	H <sub>u</sub>	9,1 kWh/m <sup>3</sup>
Gas pressure	p <sub>U</sub>	100 mbar
Barometer reading	p <sub>amb</sub>	980 mbar
Gas temperature relative	t <sub>gas</sub>	15°C
Gas temperature absolute	T	(t <sub>gas</sub> +273)
Standard atmospheric pressure	p <sub>n</sub>	1013 mbar

$$Q_F = \frac{Q_N}{\eta_K} = \frac{1000}{0,88} = 1136 \text{ kW}$$

Volumetric gas flow rate at STP:

$$V_{Bn} = \frac{Q_N}{H_u \cdot \eta_K} = \frac{1000}{9,1 \cdot 0,88} = 125 \text{ m}^3/\text{h}$$

Volumetric gas flow rate in operating condition:

$$V_{BB} = V_{Bn} \frac{T}{273} = \frac{p_n}{p_{amb} + p_u} =$$

$$= 125 \frac{273+15}{273} \frac{1013,25}{980+100} = 123,9 \text{ m}^3/\text{h}$$

### Recommended combustion parameters

Fuel	Recommended (%) CO <sub>2</sub>	Recommended (%) O <sub>2</sub>
Natural gas	10 ÷ 9	3,1 ÷ 4,8
Light oil	13 ÷ 11,5	3,3 ÷ 5,3
Heavy oil	12,5 ÷ 11	4,2 ÷ 6,2

**WARNING:** if the installation is above sea level the output of the burner vary base on the diagram.

The regulation of the burner in this case shall take into account the reduced power of the burner due to the missing air.

Ratio between O<sub>2</sub>- and CO<sub>2</sub>- for natural gas H (CO<sub>2</sub>max = 11,7%)

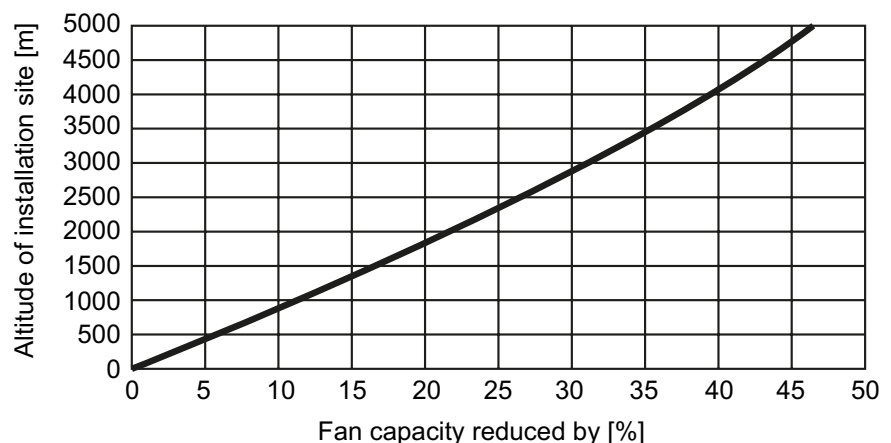
Ratio between O<sub>2</sub>- and CO<sub>2</sub>- for light oil EL (CO<sub>2</sub>max = 15,40%)

Ratio between O<sub>2</sub>- and CO<sub>2</sub>- for heavy oil S (CO<sub>2</sub>max = 15,60%)

$$O_2 = 21 \frac{CO_2\text{max} - CO_2\text{gem}}{CO_2\text{max}} = \%$$

CO<sub>2</sub> gem = % CO<sub>2</sub> measured on dry flue gases

Mean air pressure vs. altitude above sea-level



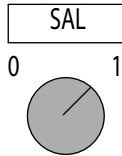
## START-UP

Select the gas operation in order to proceed with start up on the gas side. On the selector put the operation on minimum capacity.

### MAIN SWITCH

0 - OFF

1 - ON



**KMV contactor:** check the air fan motor rotation. If not correct invert the two phases on the power supply.



KMV

### START UP THE BURNER

The control box starts the pre-purge cycle, the fan motor and opens the air flaps in full open position.

At the end of pre-purging, the control box drives the servomotor into the ignition position and starts the ignition transformer.

After a few seconds the control box opens the main valves and the burner goes in the low flame.

In case of faulty ignition, the control box switches the burner into safety condition, in such a case you must rearm the burner.

Gradually increase burner output from the low flame to the high flame and set gas servomotor curve in order to have a stable flame. Refer to LAMTEC manual attached.

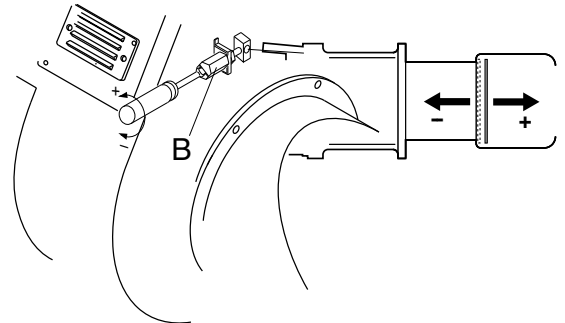
### Adjusting the maximum air flow rate

Air and Gas adjustment are accomplished through LAMTEC parameters setting. Refer to LAMTEC manual attached.

### Firing head setting

The firing head is pre-adjusted at the 50% from the factory. The setting fully open enables to reach the full power of the burner and full close to reach the minimum power of the burner.

The optimal position depends on the output that we need to reach but the default setting shall be modified only when you are not able to reach the suggested combustion value by adjusting the air flow in the maximum flame.



### Servomotor STE... - Air damper motor pre-setting

Air adjustment is accomplished through LAMTEC parameters setting. Refer to LAMTEC manual attached.



## START-UP

### Adjusting the intermediate burner capacity

Gas adjustment is accomplished through LAMTEC parameters setting. Refer to LAMTEC manual attached.

**WARNING:** the variable profile of the cam shall have a normal proportional curvature in order to have good combustion values and reduce its mechanical stress breakdown.

### Pressure switch adjustment

#### AIR PRESSURE SWITCH CALIBRATION

The air pressure switch is provided for monitoring the pressure of the combustion air fan. Unscrew screws A and B and remove cover C.

After the air and gas setting you have to calibrate the air switch with the burner working on the low flame by slowly turning the relative knob clockwise until the burner locks out. Read the value and then decrease it by 15%.

Set the pressure switch to the minimum by turning knob D to position 1.

Start the burner and keep in low flame running, while checking that combustion is correct. Through a small cardboard, progressively obstruct the air intake until to obtain a CO<sub>2</sub> increase of 0,5±0,8% or else, if a pressure gauge is available, connected to pressure port E, until reaching a pressure drop of 1 mbar (10 mm of W.G.).

Slowly increase the adjustment value of the air pressure switch until to have the burner lockout. Remove the obstruction from the air intake, screw on the cover C and start the burner by pressing the control box rearm button.

**WARNING:** the air pressure switch shall prevent the air pressure to go below 80% from the adjustment value in order to prevent the CO in the fumes to exceed 1% (10000 ppm). Using the analyser try to close the air inlet and check that the burner locks out before exceeding CO value of 1% in the fumes.

#### MIN GAS PRESSURE SWITCH

The gas pressure switch has the function to check that the gas pressure before the gas valve does have the minimum pressure to make the burner running correctly.

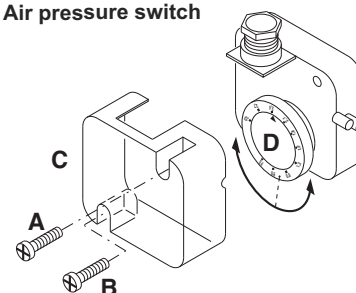
Unscrew off and remove cover M. - Set knob N to a value equal to 60% of gas nominal feed pressure (i.e. for natural gas nom. pressure = 20 mbar, set knob to a value of 12 mbar; for LPG nom. pressure of G30/G31- 30/37 mbar, set knob to a value of 18 mbar).

#### MAX GAS PRESSURE SWITCH (KIT)

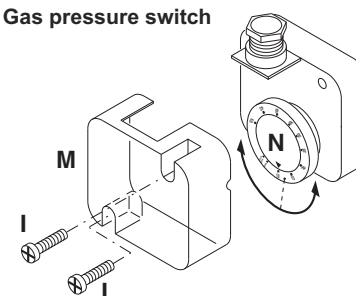
The maximum gas pressure switch has the function to check that the gas pressure after the gas train and before the head does not exceed the pre-set limits.

Max gas pressure switch: it is available as a kit for different pressure.

Air pressure switch



Gas pressure switch



## MAINTENANCE PROGRAM

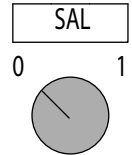
**!** Burner and boiler servicing must only be carried out by authorised and qualified personnel at least once a year. Depending on the type of installation, shorter maintenance intervals may be necessary. The system operator is advised to take out a maintenance contract to guarantee regular servicing.  
**WARNING:** Use original spare parts.

### SAFETY WARNINGS:

1. Turn off the power supply and protect the system from accidental start-up
2. Cut gas supply
3. Make sure there is no residual power in the system and that the actions in points 1 and 2 have been completed.
4. Before opening the burner casing, ensure that the fan motor has stopped completely

### MAIN SWITCH

- 0 - OFF
- 1 - ON



Failure to observe any of these instructions will result in the risk of death or injury!

### WORKS RECOMMENDED AS PART OF ANNUAL BURNER MAINTENANCE:

- Emergency stop button function check
- Check burner start characteristics
- Run burner test and input measurement in the boiler room
- Clean the combustion components and replace defective parts if necessary
- Check the combustion head components and make sure that all components are in good condition otherwise replace them
- Replace ignition electrodes if necessary and check their correct position after any intervention
- Flame monitor and automatic combustion control unit function check
- Clean the fan wheel and the housing and grease rotating parts if necessary
- Perform visual inspection of gas lines in the boiler room and check the gas flow
- Clean the gas filter cartridge with air periodically, replace it if necessary
- After the cleaning of the components of the gas train perform the leakage test
- Make visual inspection of the burner's electrical components and eliminate malfunctions if necessary
- Burner safety devices function check (air pressure/gas pressure switches)
- Commissioning the burner and correct the adjustment values if necessary

**NOTES ON REASSEMBLING:** Perform the described step in reverse order and make sure to refit components as they were originally assembled and the system is free from leaks. Use only original spare parts.

### DRAW UP A MEASUREMENT REPORT ACCORDING TO THE LOCAL REGULATION AND CODES OF PRACTISE OF THE COUNTRY

### EXHAUST GAS LOSS

Exhaust gas loss by way of free heat will occur as a result of the temperature difference between the fuel-air mixture entering the furnace chamber and the gases discharged. Any increase in the excess of air and the resultant higher exhaust gas volume will cause the exhaust gas loss to rise. The exhaust gas loss can be calculated as follows:

$$q_A = (t_A - t_L) \frac{A_1}{CO_2} + B$$

- $q_A$  = exhaust gas loss [%]
- $t_A$  = exhaust gas temperature [°C]
- $t_L$  = combustion air temperature [°C]
- $CO_2$  = volumetric content of carbon dioxide [%]

	Light oil EL	Heavy oil S	Natural gas	Town gas	LPG
A1	0,50	0,490	0,370	0,350	0,420
B	0,007	0,007	0,009	0,011	0,008

### Example

Data measured in natural gas mode:  
 CO<sub>2</sub> content of exhaust gases: 10,8%  
 Exhaust gas temperature: 195°C  
 Air intake temperature: 22°C

The exhaust gas loss can be calculated as follows:

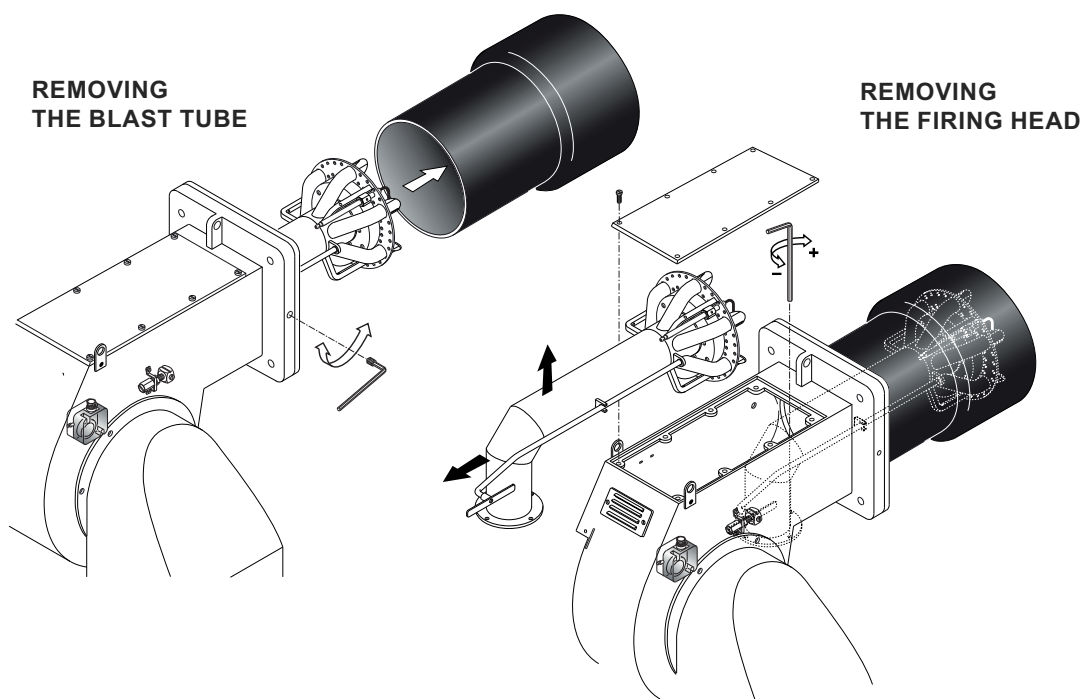
$$q_{Af} = (195-22) \left( \frac{0,37}{10,8} + 0,009 \right) = 7,48\%$$

Data measured in fuel oil mode:  
 CO<sub>2</sub> content of exhaust gases: 12,8%  
 Exhaust gas temperature: 195°C  
 Air intake temperature: 22°C

The exhaust gas loss can be calculated as follows:

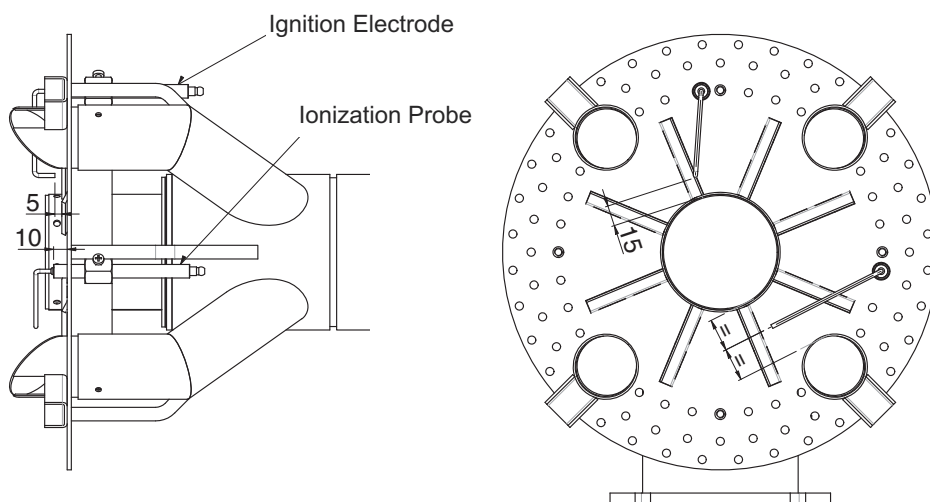
$$q_{Af} = (195-22) \left( \frac{0,49}{12,8} + 0,007 \right) = 7,83\%$$

## MAINTENANCE PROGRAM

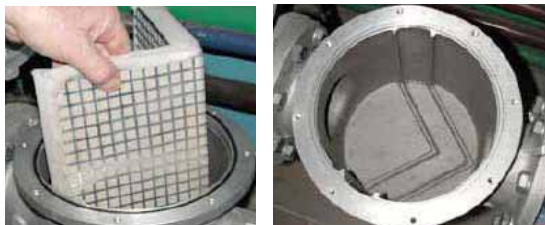


### POSITION OF ELECTRODES

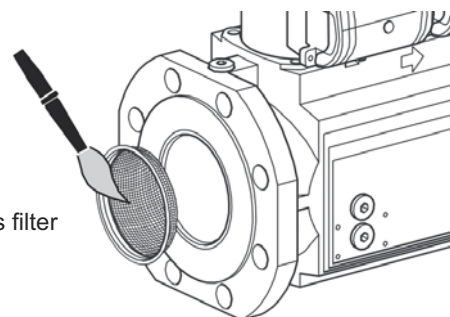
**ATTENTION:** Check the position of the electrodes after any intervention as wrong position could cause ignition troubles.



### GAS FILTER CLEANING - GAS PILOT FILTER CLEANING



Check and clean the gas filter in the pilot gas valve





## TROUBLESHOOTING INSTRUCTIONS

For Setting and Error Lists refer to LAMTEC manual attached.

### OPERATING TROUBLE

In case of operating trouble it should be checked whether the system is in proper working order.

Make a check for the following:

1. Availability of fuel.  
Availability of gas in the line at sufficiently high pressure.  
Availability of fuel oil in the tank (for dual fuel burner).  
Correct position of fuel selector switch.
2. Availability of electric power in the burner system.

3. Proper functional order and setting of all control and safety instruments such as temperature controller, safety limiter, water failure cut-out, electrical limit switches, etc. If the trouble is not found to be due to any of the above-mentioned points it will be necessary to test the burner functions very carefully.

Prevailing conditions:  
The burner will be found to be out of operation and in faulty and interlocked position.

Proceed with searching for the cause of the trouble and eliminate it. Unlock the control box by pressing the fault eliminate key and start the burner.

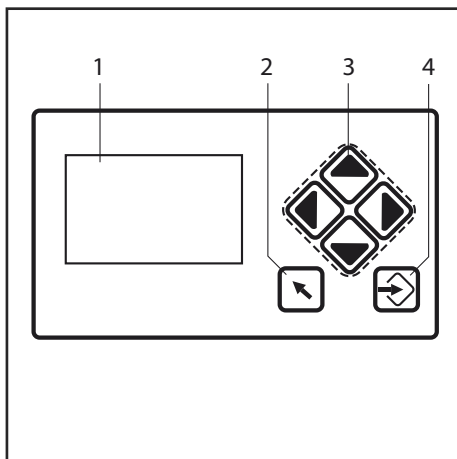
Do not press the fault eliminate key longer than 10 seconds.

The start-up program will be initiated and should be carefully monitored.

The possible cause of the fault may be quickly found by reference to the fault indicator of the control box and watching the start-up and operating program.

## APPENDIX

### Display - Control box - Damper actuators



- 1 Display
- 2 Back key
- 3 Cursor keys
- 4 Enter key

Display  
The display shows in pictogram:  

- the menu structure
- operating status
- parameters
- error messages



Jump to previous window.



You navigate in the menu using cursor keys. You use 'left' and 'right' keys to move step by step in a selected row. At the end of the selected row the cursor jumps down to the next row, if possible. In a multiline menu use 'up' and 'down' keys to switch to other rows. To display parameters, switch between various fields.



Press ENTER to call up a menu on the start screen. Select a sub-menu in the menu window. Transfer setting values by pressing ENTER key in a parameter window. Use a flushing, red ENTER key to release a fault interlocker. If the ENTER key is permanently lit red, a fault with an automatic restart is displayed.



Always switch off the power supply before installing or removing the control unit. Do not attempt to open or carry out repairs on the control unit.



#### Modulate with LCM

Ecoflam burners equipped with LCM are set up to receive the Siemens RWF modulator so they have:

- quick connector for electrical connection of the RWF kit.
- bridge on terminals 22, 23, 24.
- BT 300 set with parameter 0040 to 0 (zero). It means that there is no LCM and, if there is, it is not used as a modulator.

To use LCM as a modulator and not to install the RWF kit accordingly:

- remove bridges on terminals 22, 23, 24.
- connect on 22, 23, 24 a thermoresistance Pt 100 or Pt1000 setting the dip switch 4 accordingly.
- set BT300 with parameter 0040 to 1.

Refer to LAMTEC manual attached.

**APPENDIX**

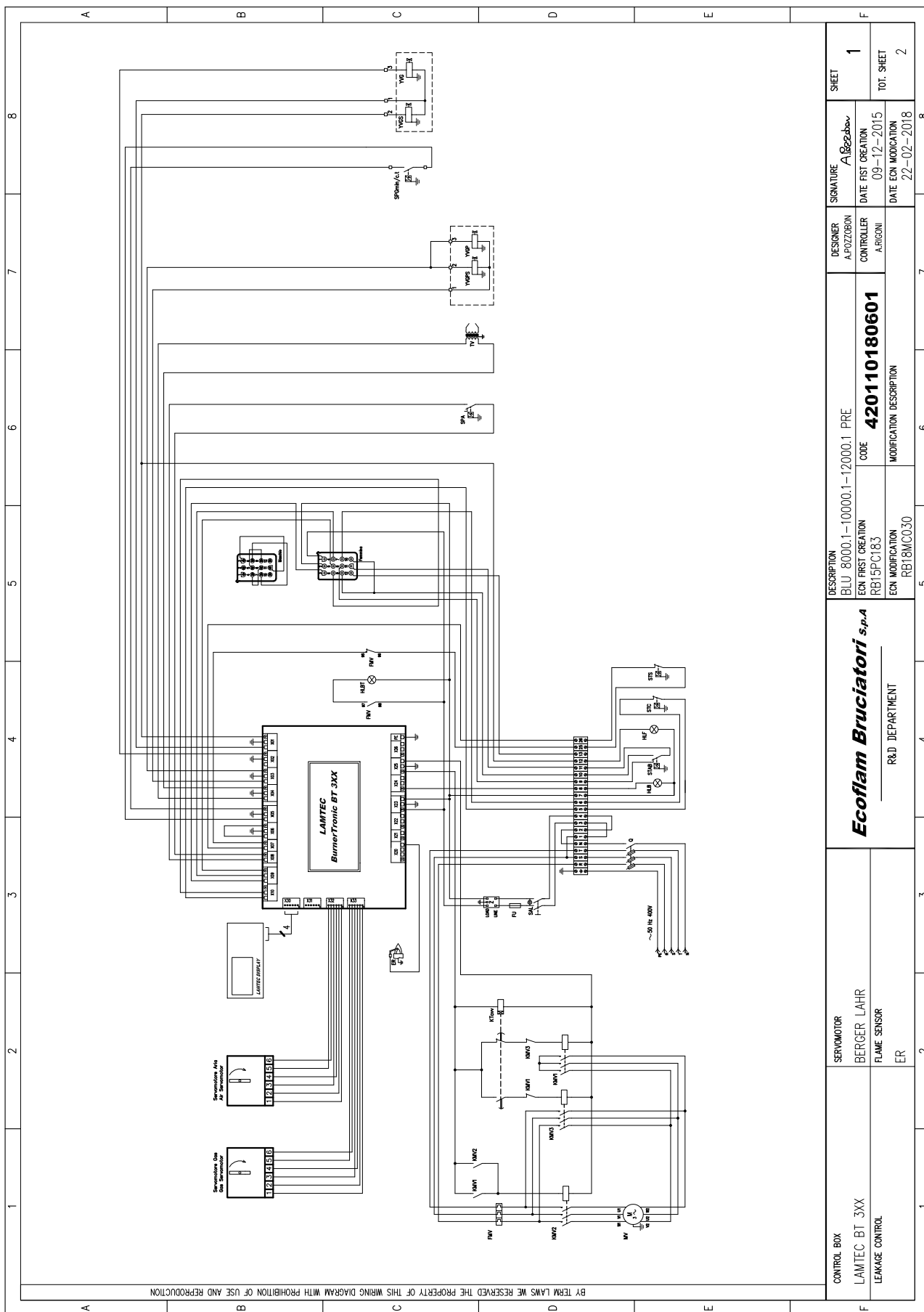
## Electrical diagrams

## APPENDIX

### Electrical diagrams

APPENDIX

Electrical diagrams



BY TERM LAWS WE RESERVE THE PROPERTY OF THIS WIRING DIAGRAM WITH PROHIBITION OF USE AND REPRODUCTION

CONTROL BOX LAMITEC BT 3XX LEAKAGE CONTROL	SERVOMOTOR BERGER LAHR FLAME SENSOR ER	<b>Ecoflam Bruciatori s.p.a</b> R&D DEPARTMENT		DESCRIPTION BLU 8000.1-10000.1-12000.1 PRE ECN FIRST CREATION R815FC183 ECN MODIFICATION RE18MCC30	DESIGNER A.PROZOSIN CONTROLLER A.RIGONI	SIGNATURE A. Gazzabov	SHEET 1
				CODE 420110180601 MODIFICATION DESCRIPTION	DATE FIRST CREATION 09-12-2015 DATE ECN MODIFICATION 22-02-2018		TOT. SHEET 2

## APPENDIX

### Electrical diagrams

1		2		3		4		5		6		7		8	
Q	INTERRUTTORE GENERALE CON FUSIBILE MAIN SWITCH WITH FUSE INTERRUPTEUR GENERAL AVEC FUSIBLE INTERRUPTOR GENERAL CON FUSIBLE	YVGP	ELETTROVALVOLA GAS PILOTA PILOT FLAME SOLENOID GAS VALVE ELECTROVALVULA GAS PILOTE												
Z	FILTRO ANTIDISTURBO ANTI-JAMMING FILTER FILTRE ANTIPARASITES FILTRO DE PROTECCION ANTIDISTURBO	YVG	ELETTROVALVOLA GAS DI PRIMA FIAMMA FIRST STAGE GAS SOLENOID VALVE ELECTROVALVULA GAS DE 1 <sup>re</sup> LLAMA												
FU	FUSIBILE FUSIBLE FUSIBLE	YVGS	ELETTROVALVOLA GAS DI SICUREZZA EXTRA SAFETY GAS SOLENOID VALVE ELECTROVALVULA GAS DE SEGURIDAD												
MV	MOTORE VENTILATORE MOTOR FAN MOTEUR VENTILATEUR MOTOR VENTILADOR	SP0min/ c.t	PRESSOSTATO GAS DI MINIMA GAS PRESSURE SWITCH MIN PRESSTATI GAS DE PRESION MIN PRESSTATO GAS DE MINIMA P0T.												
TV	TRASFORMATORE IGNITION TRANSFORMER TRANSFORMATEUR TRANSFORMADOR	K'tavv.	TEMPORIZZ. ELETR. AVVIAM. STELLA/TRIANG ELECTRONIC IMMER WITH STAR/DELTA STARTER TEMPORIZADOR ELECTRONICO PREPARADO PARA												
ER	ELETTRODO DI RIVELAZIONE IONISATION PROBE ELECTRODO DE IONIZACION	KM1	CONATTORE DI STELLA STAR CONTACTOR CONTACTEUR ETOILE CONVATTORE DI STELLA												
FMV	RELE' TERMICO MOTORE VENTILATORE MOTOR THERMAL RELAY (FAN MOTOR) RELE' THERMIQUE MOTEUR VENTILATEUR RELE' TERMICO MOTOR VENTILADOR	KM2	CONATTORE MOTORE VENTILATORE REMOTE CONTROL SWITCH (FAN MOTOR) CONTACTEUR MOTEUR VENTILATEUR TELEINTERRUPTOR MOTOR VENTILADOR												
HLB	LAMPADA DI BLOCCO LOCK-OUT LAMP LAMPADILLA DE BLOQUEO ESPIA DE BLOQUEO	KM3	CONATTORE DI TRIANGOLO DELTA CONTACTOR CONTACTEUR TRIANGLE CONVATTORE DI TRIANGOLO												
SAL	INTERRUTTORE DI LINEA LINE SWITCH INTERRUPTEUR DE LIGNE INTERRUPTOR DE LIGNE														
SPA	PRESSOSTATO ARIA AIR PRESSURE SWITCH PRESSTATO AIRE PRESSTATO AIRE														
STC	TERMOSTATO CALDAIA BOILER THERMOSTAT THERMOSTAT CHAUDIERE TERMOSTATO CALDERA														
STS	TERMOSTATO DI SICUREZZA SAFETY THERMOSTAT THERMOSTAT DE SECURITE TERMOSTATO DE SEGURIDAD														
HUBT	LAMPADA DI BLOCCO TERMICO THERMAL LOCK-OUT LAMP LAMPADILLA DE BLOQUEO TERMICO ESPIA DE BLOQUEO RELE TERMICO														
STAB	TERMOSTATO DI ALTA/BASSA FIAMMA HIGH/LOW FLAME THERMOSTAT THERMOSTAT GRANDE-PETITE ALLURE TERMOSTATO DE ALTA-BAJA LLAMA														
YVGP5	ELETTROVALVOLA GAS PILOTA DI SICUREZZA EXTRA SAFETY PILOT SOLENOID GAS VALVE ELECTROVALVULA GAS PILOTE DE SECURITE ELECTROVALVULA GAS PILOTE DE SEGURIDAD														

DESCRIPTION		DESIGNER	SIGNATURE	SHEET
BLU 8000.1-10000.1-12000.1 PRE	8000.1-10000.1-12000.1 PRE	A. POZZOSON	A. Pozzoson	2
ECN FIRST CREATION R815FC183	CODE 420110180601	CONTROLLER A. RIGONI	DATE FIRST CREATION 09-12-2015	TOT. SHEET 2
ECN MODIFICATION R818MCC30	MODIFICATION DESCRIPTION		DATE ECN MODIFICATION 22-02-2018	

CONTROL BOX		SERVOMOTOR
LAMTEC BT 3XX	BERGER LAHR	
LEAKAGE CONTROL	FLAME SENSOR	
	ER	

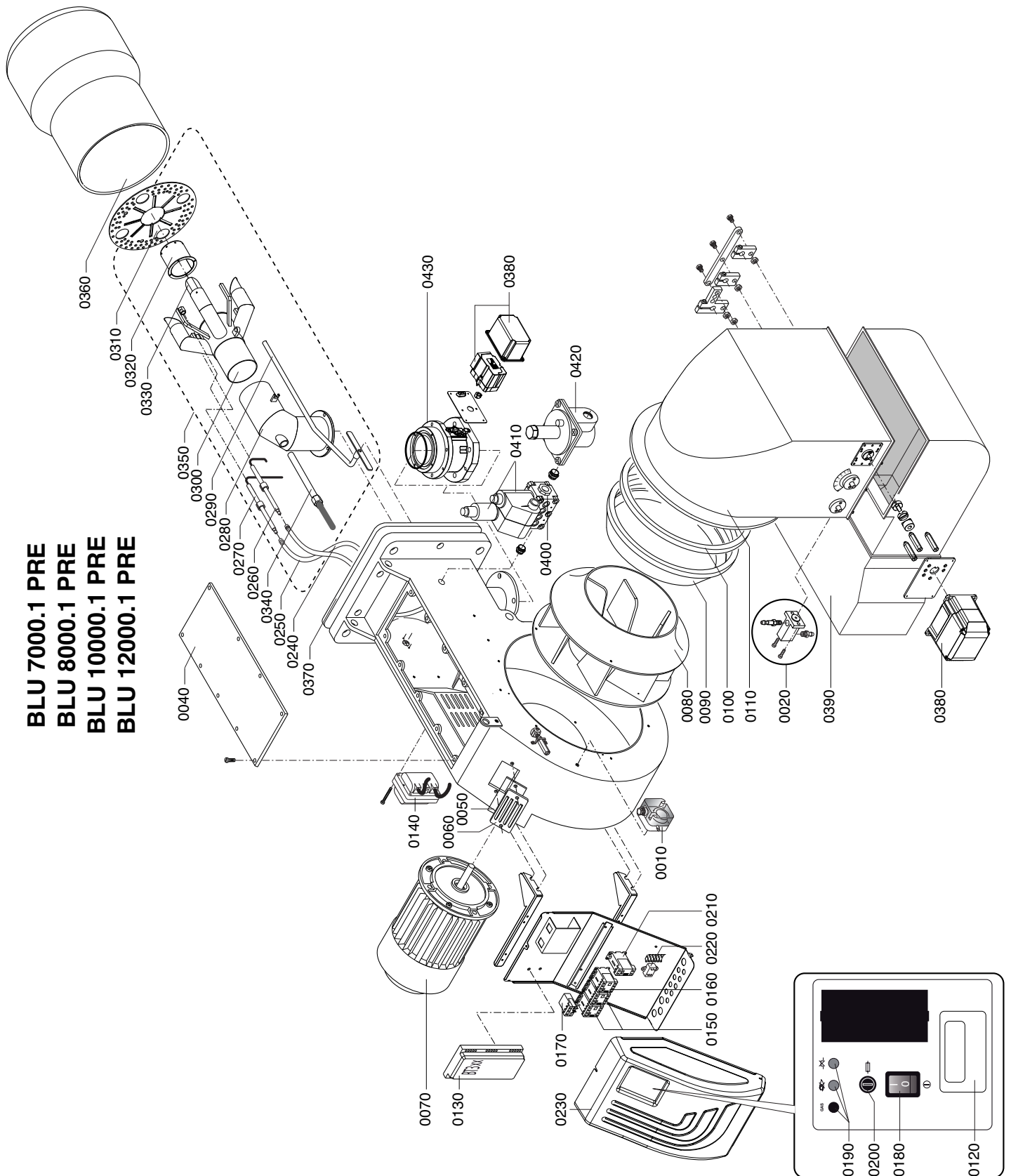
  

<b>Ecoflam Bruciatori s.p.a</b>		R&D DEPARTMENT	
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APPENDIX

Spare parts list

BLU 7000.1 PRE  
 BLU 8000.1 PRE  
 BLU 10000.1 PRE  
 BLU 12000.1 PRE



## APPENDIX

### Spare parts list

N°	DESCRIPTION		BLU 7000.1 PRE	BLU 8000.1 PRE
			code	code
0010	AIR PRESSURE SWITCH	DUNGS LGW10 A4	65323033	65323033
0020	AIR INTAKE SET		65324531	65324531
0030	PLUG		-	-
0040	COVER		65324059	65324059
0050	GLASS		65320487	65320487
0060	PEED WINDOM FRAME		65320488	65320488
0070	MOTOR	15 kW	65326334	-
		18,5 kW	-	65326335
0080	FAN	GF560R Ø530	65325905	-
		RU-560 M.D.42 18,5 kW	-	65325906
0090	AIR CONVEYOR		65320648	65320648
0100	RING		65320646	65320646
0110	AIR INTAKE		840050299901	840050299901
0120	DISPLAY	LAMTEC UI300	65326932	65326932
0130	CONTROL BOX	BT 320 667R1320-1	65326933	65326933
0140	IGNITION TRANSFORMER	COFI 820 PM	65323230	65323230
0150	REMOTE CONTROL SWITCH	BF2510A230	-	65323130
0160	REMOTE CONTROL SWITCH	BF1810A230	-	65073928
0170	MOTOR THERMAL RELAY	RF824200 28-42A BF 40-80	-	740220008600
0180	MAIN SWITCH	cod.4010011509	65323064	65323064
0190	LAMP	Elettrospring EL/N-SC4	65322053	65322053
0200	FUSE SUPPORT	FUSIT FH-B528	65322181	65322181
0210	TIMER	AEG GMETV	-	65324073
0220	ANTI JAMMING FILTER		65323170	65323170
0230	COVER		65326992	65326992
0240	IGNITION CABLE	TC	65320948	65320948
0250	IONIZATION CABLE	TC	65325345	65325345
0260	IGNITION ELECTRODE		65320909	65320909
0270	IONIZATION PROBE		65320899	65320899
0280	PIPE	TC	65321671	65321671
0290	ROD	TC	65320247	65320247
0300	FIRING HEAD		65321670	65321670
0310	DISC		65324074	65324074
0320	FRONT PIPE		65321611	65321611
0330	DIFFUSER		65321672	65321672
0340	IGNITION GAS PIPE		65321673	65321673
0350	INNER ASSEMBLY	TC	65325368	
0360	BLAST TUBE	TC		65324069
0370	GASKET		65321136	65321136
0380	SEVOMOTOR	STE4,5 Q3.51/6 3NM	65311650	65311650
		STE15 Q3.51/6 10Nm	65326211	65326211
0390	SILENCER		65324071	65324071
0400	GAS VALVE	KROMSCH.VCS 125R-LW	65324722	65324722
0410	COIL	KROMSCH.VCS 125R-LW	65324623	65324623
0420	GAS GOVERNOR/FILTER	1/2 FG1B 25	65325214	65325214
0430	THROTTLE GROUP		65327005	65327005

TC = SHORT HEAD TL = LONG HEAD

## APPENDIX

## Spare parts list

N°	DESCRIPTION		BLU 10000.1 PRE code	BLU 12000.1 PRE code
0010	AIR PRESSURE SWITCH	DUNGS LGW10 A4	65323033	65323033
0020	AIR INTAKE SET		65324531	65324531
0030	PLUG		-	-
0040	COVER		65324059	65324059
0050	GLASS		65320487	65320487
0060	PEED WINDOM FRAME		65320488	65320488
0070	MOTOR	22 kW	65326336	-
		37 kW	-	65324062
0080	FAN	RG-630 M.D.48	65321803	-
		RG-630 M.D.55	-	65321804
0090	AIR CONVEYOR		65320647	65324064
0100	RING		65320646	65320646
0110	AIR INTAKE		840050299901	840050299901
0120	DISPLAY	LAMTEC UI300	65326932	65326932
0130	CONTROL BOX	BT 320 667R1320-1	65326933	65326933
0140	IGNITION TRANSFORMER	COFI 820 PM	65323230	65323230
0150	REMOTE CONTROL SWITCH	BF2510A230	740210006700	740210006700
0160	REMOTE CONTROL SWITCH	BF1810A230	65073928	65073928
0170	MOTOR THERMAL RELAY	RF825000 35-50A BF 40-80	740220008400	740220008400
0180	MAIN SWITCH	cod.40100I1509	65323064	65323064
0190	LAMP	Elettrospring EL/N-SC4	65322053	65322053
0200	FUSE SUPPORT	FUSIT FH-B528	65322181	65322181
0210	TIMER	AEG GMETV	65324073	65324073
0220	ANTI JAMMING FILTER		65323170	65323170
0230	COVER		65326992	65326992
0240	IGNITION CABLE	TC	65320948	65320948
0250	IONIZATION CABLE	TC	65325345	65325345
0260	IGNITION ELECTRODE		65320909	65320909
0270	IONIZATION PROBE		65320899	65320899
0280	PIPE	TC	65321671	65321671
0290	ROD	TC	65320247	65320247
0300	FIRING HEAD		65321670	65321670
0310	DISC		65320744	65324074
0320	FRONT PIPE		65321611	65321611
0330	DIFFUSER		65321672	65321672
0340	IGNITION GAS PIPE		65321673	65321673
0350	INNER ASSEMBLY	TC	65325368	65325366
0360	BLAST TUBE	TC	65320460	65324070
0370	GASKET		65321136	65321136
0380	SEVOMOTOR	STE4,5 Q3.51/6 3Nm STE15 Q3.51/6 10Nm	65311650 65326211	65311650 65326211
0390	SILENCER		65324071	65324071
0400	GAS VALVE	KROMSCH.VCS 125R-LW	65324722	65324722
0410	COIL	KROMSCH.VCS 125R-LW	65324623	65324623
0420	GAS GOVERNOR/FILTER	1/2 FG1B 25	65325214	65325214
0430	THROTTLE GROUP		65327005	65327005

TC = SHORT HEAD TL = LONG HEAD





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