K 190/M-EL - K 250/M-EL

Dual fuel burners gas/light oil with electronic control box. Two stages progressive or modulating operation(ifequipped withadditionof optional modulation kit PID and probe; to guarantee an ideal proportionality of the power supplied to the thermal load).
Composed by: fan at high pressurisation and combustion head with adjustment at high efficiency and high flame stability.
Compact overall dimensions and disposition rationalized of the components with accessibility facilitated for the operations of setting and maintenance.
Available in the versions METHANE (natural gas) or L.P.G. (to specify at the order) on demand specific versions for town gas, coal gas or biogas.
Gas train completely assembled and tested; composed by: working valve class A - safety valve class A - minimum gaspressure switch - gas valve proving pressure switch - filter

Supplied with nozzle, fuel selection switch, flange and gasket for installation on boiler, flexible hoses, line filter.

The servomotors are indipendent and managed directly from the electronic control box of the burner: one servomotor for the gas modulator, one servomotor for the air shutter and one servomotor fo the light-oil modulator.

The burners are equipped with a display that allows to:

- adjust the operating parameters of the burner
- visualize the flame intensity
- adjust the operating curve of the burner (air / fuel ratio)

With the addition of optional accessories (probes) thanks to the most advanced systems for automatic modulation in mechanical or electronic version, the burner constantly ensures the proper gas / air ratio. The maximum efficiency of the returns in each combustion point derived from the punctual adaptation of the thermal load to the heat requirements of the burner at any instant of operation.
In the version with the electronic cam the fuel / combustion air curve, more extended, is fully exploited, guaranteeing excellent performance in terms of accuracy and speed, even during the calibration phase.
A microprocessor monitors the different stages of the process and allows the correct repetition of the sequences of operation.
Optional accessories: PID power modulator kit, probe, PC interface, VSD, O2 control, O2 + CO control, field bus (profibus, modbus, profinet), Touchscreen HMI panel.

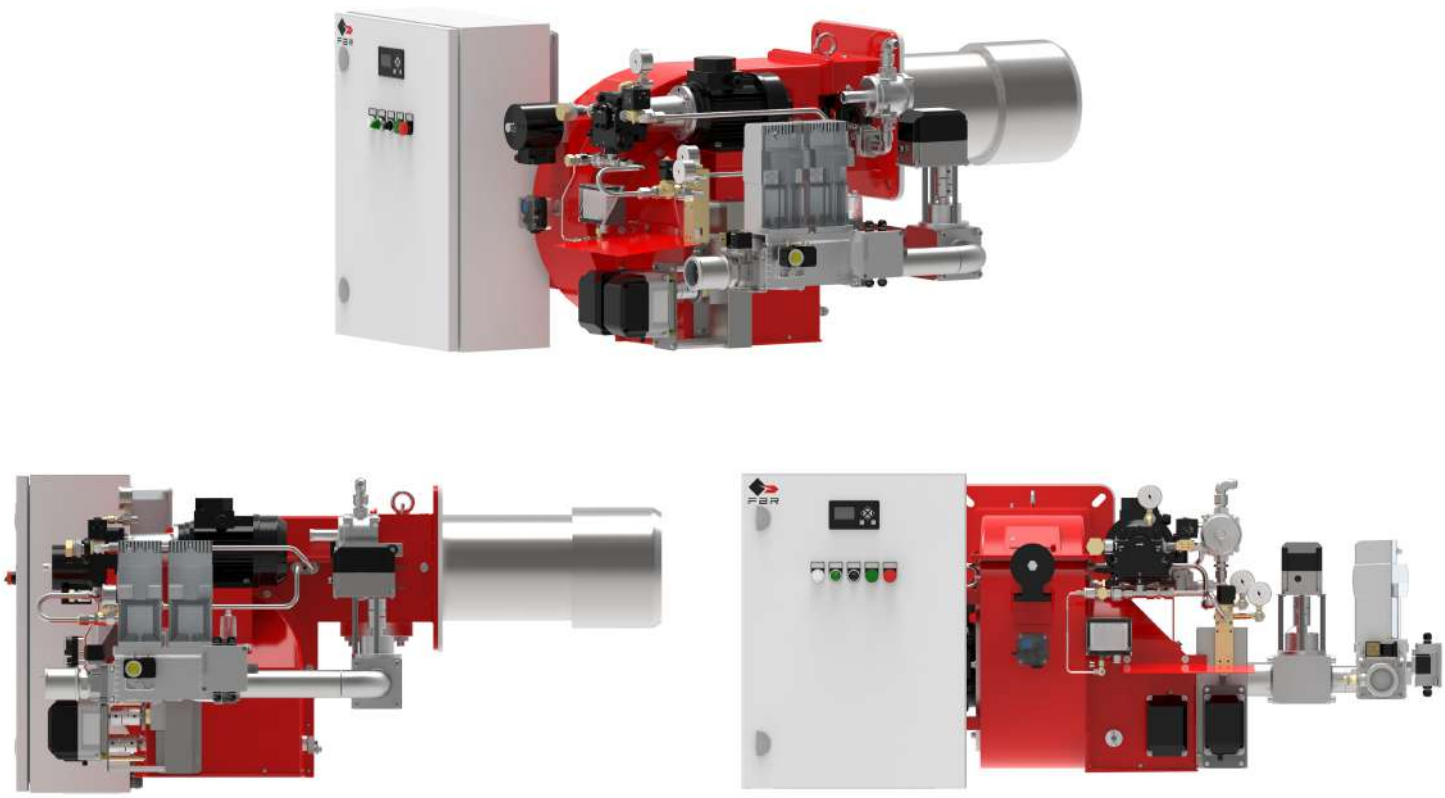

Fig. 1 K 250/M-EL

TECHNICAL DATA AND OPERATING RANGE DIAGRAM K 190/M-EL - K 250/M-EL

MODEL		K 190/M-EL	K 250/M-EL
Thermal power min. 1°st. / min. 2°st. - max. 2°st. *	[Mcal/h]	300/900-2060	400/1000-2500
Thermal power min. 1°st. / min. 2°st. - max. 2°st. *	[kW]	349/1046-2395	465/1163-2907
Gas flow G20 (NATURAL GAS) min. 1°st. / min. 2°st. - max. 2°st. *	[Nm³/h]	35/105-241	47/117-292
Gas flow G31 (L.P.G.) min. 1°st. / min. 2°st. - max. 2°st. *	[Nm³/h]	14/41-93	18/45-113
Fuel: NATURAL GAS (second family) - L.P.G. (third family)			
Fuel category:	I2R,I2H,I2L,I2E,I2E+,I2Er,I2ELL, I2E(R)B/I3B/P,I3+,I3P,I3B,I3R		
Intermitted working operation (min. 1 stop every 24 hours) two stage progressive or modulating			
Environmental conditions operation / storage:	-15...+40°C / -20...+70°C, rel. humidity max. 80%		
Max. temperature combustion air	[°C]	60	60
Minimum pressure gas train D2" FS50 NATURAL GAS/L.P.G. **	[mbar]	152/76	226/110
Minimum pressure gas train DN65 FS65 NATURAL GAS/L.P.G. **	[mbar]	79/47	110/66
Minimum pressure gas train DN80 FS80 NATURAL GAS/L.P.G. **	[mbar]	65/41	90/58
Minimum pressure gas train DN100 FS100 NAT. GAS/L.P.G. **	[mbar]	49/35	69/50
Maximum pressure at the entry of valves (Pe. max)	[mbar]	360-500	360-500
LIGHT-OIL flow min. 1°st. / min. 2°st. - max. 2°st. *	[kg/h]	30/90-206	40/100-250
Fuel: light-oil 1.5°E at 20°C = 6.2 cSt = 35sec Redwood N°1			
Nominal electric power	[kW]	7	9
Fan motor	[kW]	5.5	7.5
Pump motor	[kW]	1.1	1.1
Nominal absorption powers	[A]	14	16
Nominal absorption auxiliary	[A]	0.5	0.7
Power supply:	3~400V, 1N~230V - 50Hz		
Electric protection degree:		IP40	IP40
Noisiness *** min. - max.	[dB(A)]	81-82	82-86
Burner weight	[kg]	140	152

* Reference conditions: Environment temperature 20°C - Barometric pressure 1013 mbars - Altitude 0 metre (sea level).
** Minimal feeding-gas pressure to the gas train to get the maximum power of the burner, considering counter-pressure in combustion chamber of value 0 (zero).
*** Measured sonorous pressure in the laboratory combustion, with functional burner on beta boiler to 1 metre of distance (UNI EN ISO 3746 law).

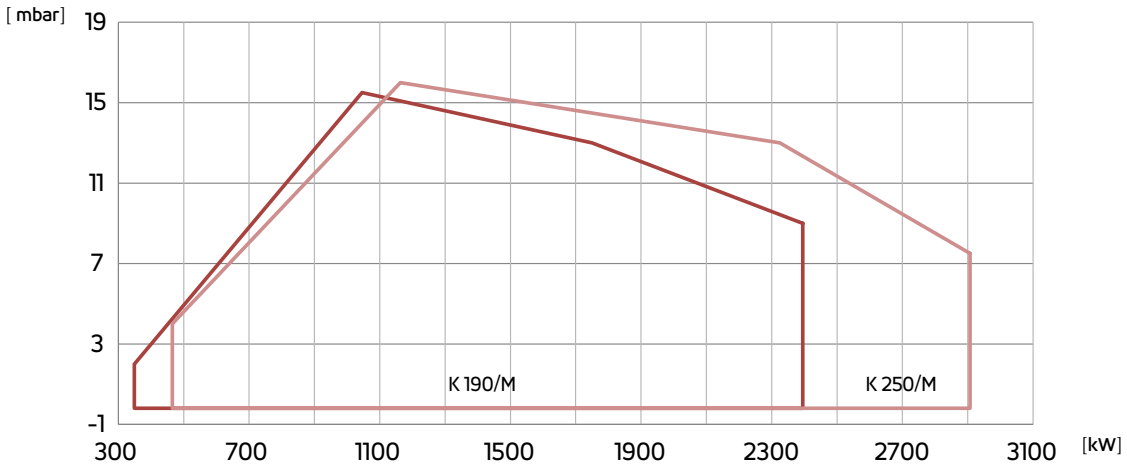

Fig. 2 X = Thermal power Y = pressure in combustion chamber

The firing rates has been obtained based on test boilers in accordance with EN676 standards and are indicative of matching the burner to the boiler. For the correct operation of the burner, combustion chamber dimensions must be in accordance with current regulation. In case of non-compliance, contact the manufacturer.

DIMENSIONS [MM]

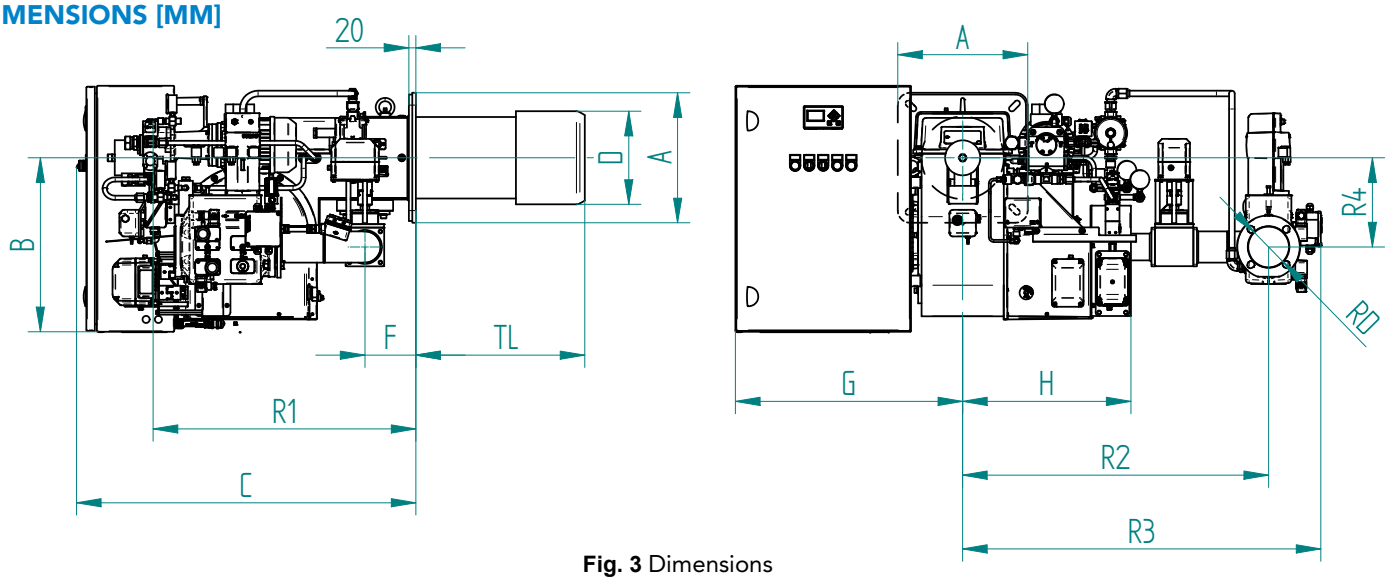

Fig. 3 Dimensions

MODEL	A	B	C	D	F	G	H	R1	R2	R3	R4	RD
K 190/M-EL - D2"	370	495	966	265	145	647	479	870	777	912	254	Rp 2
K 190/M-EL - DN65	370	495	966	265	145	647	479	688	871	1020	254	DN65
K 190/M-EL - DN80	370	495	966	265	145	647	479	708	811	1005	254	DN80
K 190/M-EL - DN100	370	495	966	265	145	647	479	748	811	991	254	DN100
K 250/M-EL - D2"	370	495	966	265	145	647	479	870	777	912	254	Rp 2
K 250/M-EL - DN65	370	495	966	265	145	647	479	688	871	1020	254	DN65
K 250/M-EL - DN80	370	495	966	265	145	647	479	708	811	1005	254	DN80
K 250/M-EL - DN100	370	495	966	265	145	647	479	748	811	991	254	DN100

BOILER PLATE

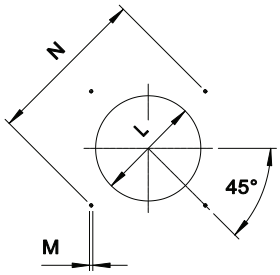

Fig. 4 Boiler plate

MODEL		L min	L *	L max	M	N min	N *	N max
K 190/M-EL	mm	280	280	320	M14	396	424	438
K 250/M-EL	mm	280	280	320	M14	396	424	438

* The dimensions of the boiler plate (threaded holes or studs) must be as indicated in the drawing.

FLAME TUBE LENGTH

Flame tube length must be selected based on the specifications supplied by boiler manufacturer and, in any case, it must be greater than the thickness of the boiler door included its insulation. In case of boilers with flame inversion or front flue combustion chambers, it is necessary to insulate the area between the flame tube and front door with refractory material. This protection material must not impede flame tube extraction.

MODEL		TL **
K 190/M-EL	mm	481
K 250/M-EL	mm	481

** For different flame lengths, please contact our Technical-Sales Department.

PRODUCT SPECIFICATION

SHORT DESCRIPTION

Dual fuel burners for gas and light-oil two stages progressive (hi-low flame) or modulating (PID fully modulating) if equipped with addition of optional modulation kit and probe.

DETAILED SPECIFICATION

Gas and Light-oil burner two stages progressive (hi-low flame) or modulating (PID fully modulating) if equipped with addition of optional modulation kit and probe; composed by:

- Fan at high pressurisation;
- Combustion head with adjustment at high performance and elevated flame stability equipped with steel blast tube and steel flame disc;
- Flange and insulating gasket for fixing at boiler;
- Three-phase power supply;
- Safety air pressure switch to stop the burner in lock-out in case of failed or anomalous fan operation;
- Gas train completely assembled and tested; complete of: working valve class A - safety valve class A - minimum gas pressure switch - gas valve proving pressure switch - filter;
- UV probe for the flame detection;
- IP 40 electric protection level;
- Spherical gas valve servo-controlled with dedicated servomotor; progressive start and free way passage with total opening;
- Light-oil pressure regulator servo-controlled with dedicated servomotor;
- Servomotor for air shutter;
- Moving shutter with total closure when idle in order to reduce at the least energy losses related to boiler cooling down;
- Easy extraction of combustion head without get off the burners by bolier;
- Maximum gas pressure switch to stop the burner in lock-out in case of the gas pressure is higher then the set point value;
- Maximum light-oil pressure switch to stop the burner in case of the light-oil pressure on the return is higher then the set point value;
- Dedicated motor for the activation of the light-oil pump;
- Manual switch for the fuel selection "OIL - GAS";
- Pilot ignition (only for GAS fuel);
- Set up for the additional specific kit that transforms burner operation as modulating i.e. the modulating kit allows to supply any power between the minimun and the maximum value based on instantaneous loading request.
- Direct fan motor start;
- Burner terminal strip with terminal dedicated for 3ph/1ph power supply and for the connections to thermostats/boiler in-out signals;

CONFORMING TO:

- CE rules;
- 2014/30/UE Directive E.M.C.;
- 2014/35/UE Directive L.V.;
- 2006/42/CE - 2006/42/EG - 2006/42/EC Directive M.D.;
- 2014/68/EU Directive P.E.D. (Art. 4, par. 3);
- Reference rules: EN676 (gas) - EN267 (liquid fuel) - EN746-2 (industrial thermoprocessing equipment).

STANDARD EQUIPMENT

- Flexible hoses for connection;
- Line filter;
- Isomart gasket;
- Nozzle;
- Flange with insulating gasket;
- Burner nameplate;
- Warranty;
- Instruction handbook for installation, use and maintenance.

OPTIONAL

- Power modulating kits for temperatures;
- Power modulating kits for pressures;
- Kit for input 4-20mA / 0-10Vdc;
- Temperature probe 0°C-400°C (PT 100 a 0° C);
- Temperature probe 0°C-350°C (J probe);
- Temperature probe 0°C-1200°C (K probe);
- Pressure probe 0-3 bar, 0-6 bar. 0-16 bar, 0-20 bar, 0-30 bar;
- Sensors and system for O2 control (is suggest to add the VSD);
- Sensors and system for CO control (is suggest to add the VSD);
- Sensors and system for O2-CO control (is suggest to add the VSD);
- Modules for field BUS (modbus - profibus - profinet);
- HMI Touchscreen panel (7", 10", 15");
- Noise protection;
- Antivibration couplings;
- Handle gas taps.