



A short Introduction of PACKMAN Modular Gas Burners

RGB-M Series or RAADMAN electronic modular gas burners, covering a firing range from 160 to 17000 kW, are designed for a wide range of domestic and industrial applications. All RAADMAN modular burners are equipped with LAMTEC, SIEMENS or AUTOFLAME electronic control system with capability of full air/gas ratio control throughout entire burner operating range. These burners have been tested and evaluated based on Iran national standard ISIRI-7595 (BS-EN 676). According to performed experiments, the values of CO even in low excess air operation is lower than 30 mg/kWh (In some cases, values close to zero have also been reported). The precise design of combustion head results a full gas-air mixture that guarantees high efficiency levels in all various applications. Burner superior design accompanied by high quality electronic devices have also resulted a further improvement in boiler's performance in order to decrease fuel cost and emissions.

RGB-M-950 (1000-9000 kW)

RGB-M-950 is an electronic modular gas burner with high turn down ratio (1:9*) designed for high-capacity industrial applications. The values of CO and NOx during burner operation are lower than 30 and 120 mg/kWh, respectively. Therefore, the burner's NOx class of II is reported and approved. Compacting design, mono-block- with Al casing, silent operation due to injected sound proofing material, backward fan wheel and considerable turn down ratio are the most important advantages of this burner.

Burner Certificate

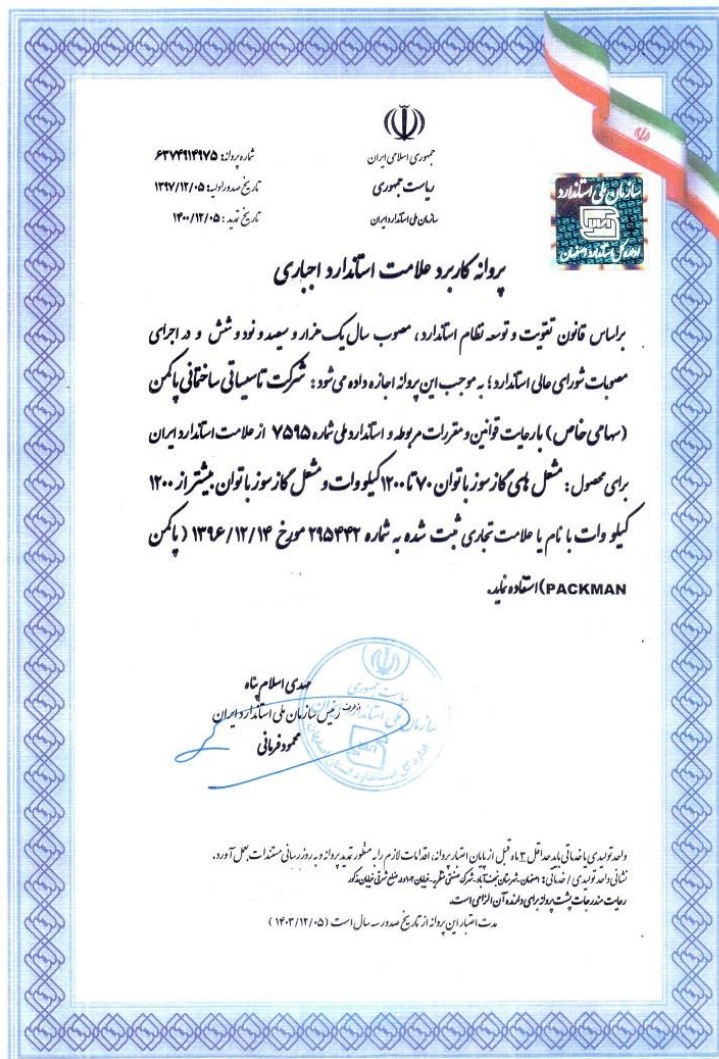


Figure 1 - Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard



General Dimension

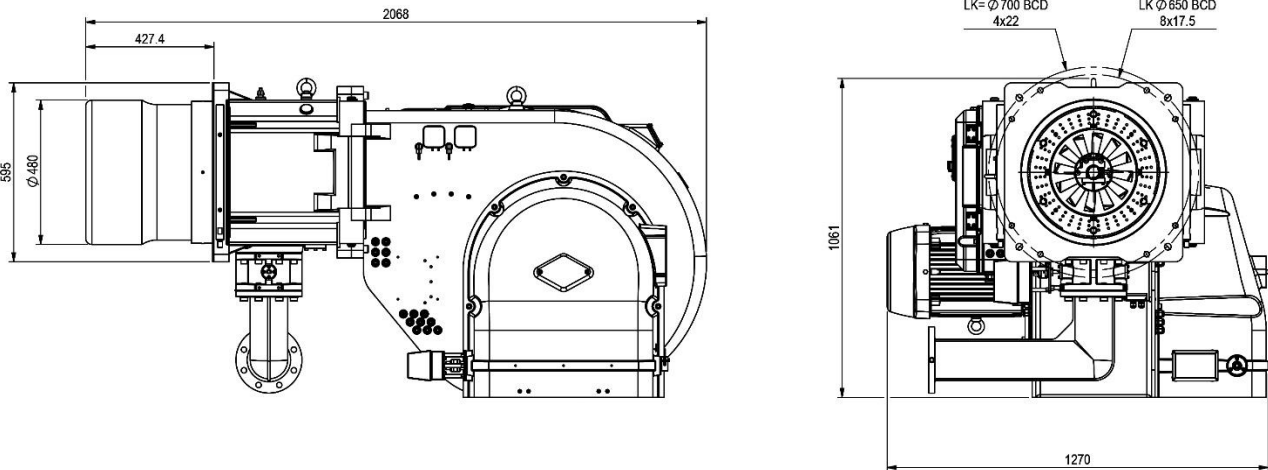


Figure 2 - Burner Dimensions

Notice: Any illegal copy or any kind of partial reversed engineering could be followed by the owner; and this company has the authority to track it by LAW.

Firing Rate

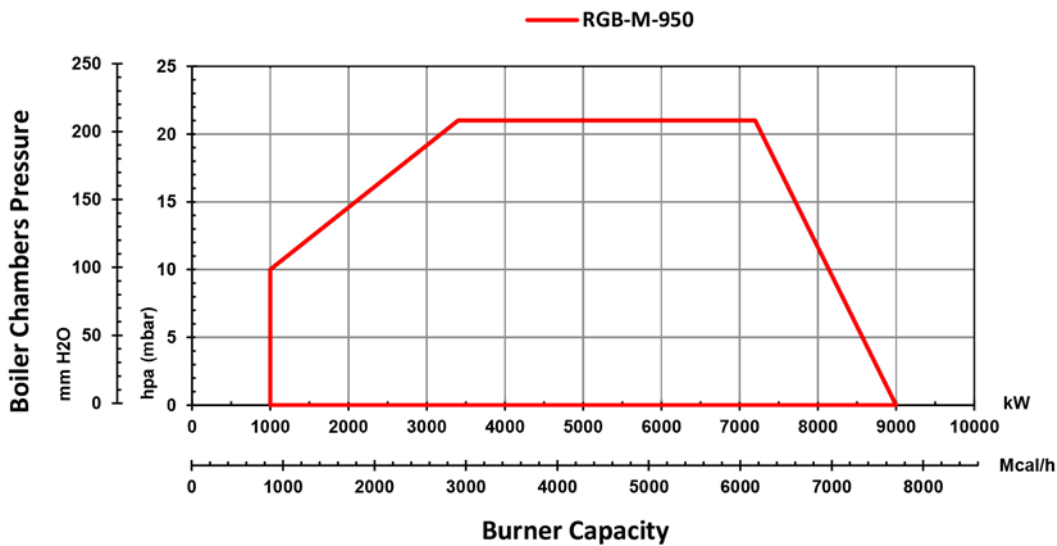


Figure 3 - Burner Firing Diagram

The firing rate diagram has been obtained considering ambient temperature of 20°C and atmospheric pressure of 1013 mbar (Sea level condition) according to the BS-EN 267 & BS-EN 676.

*Turn-down ratio higher than (1:8, 1:9, 1:10, etc.) are accessible for the burner with the head actuator. Otherwise, without a head actuator, the max turn-down ratio is 1:6.

RGB-M-950 Technical and Functional Features

- Highly efficient gas burners for domestic and industrial applications.
- Light weight and optimized geometry.
- Compatible with all types of combustion chambers according to EN303 standard.
- Simple Installation, adjustment and maintenance.
- Modular operation.
- Ability to work based on Air-Fuel control curve.
- Easy access to internal components.
- Engineered for maximize efficiency and fuel cost savings.
- Designed in accordance with 7595 Iran national standard (BS-EN676).



- Suitable for firetube, firebox and water tube boilers.
- Equipped with high quality and reliable electronic devices.

Table 1 - RGB-M-950 Combustion Specification

Item	Description
Fuels:	Natural Gas
Gas capacity**:	1000-9000 kW
operation:	Electronic modular system
Gas pollution:	II class of NOx according to BS-EN 676
Certificates:	ISIRI 7595
Certificate No:	6374914975
Other abilities:	<ul style="list-style-type: none"> -Low excess air operation. -Ability to run according to the Air/fuel ratio curve. -Ability of Communication with external systems via Bus. -Independent ignition point position for safe burner starts. -Adjustable pre-purge and post purge time. -Absence of joint clearance using linkage less actuators avoiding mechanical hysteresis. -Easy commissioning using modular human interface. -Parameter's indication. -History of errors. -Mono-bloc configuration. -Silent operation. (Due to the injected sound abortion material) -Including valve proving system. -High turn down ratio for avoiding any shut down in low required loads. -Ability of hinged opening of burner housing in both directions -Economical price using central burner controllers (With improved technology and ease of use, combustion plant is becoming even more economical as: NO additional burner controller is required, Less installation work with less errors, NO additional cost for valve proving, Taking less time for commissioning and service work) -Optional ability to install a variable speed drive for avoiding any impact in startup. -Optional ability of running with O2 and CO sensors. -Optional ability of running with FGR in order to further reduction in NOx level.

** Reference conditions: Ambient temperature 20°C - Gas temperature 15°C - Barometric pressure 1013 mbar - Altitude 0 m



Table 2 - Recommended Gas Train

Standard Gas Train: Separated items, DN 100, 4 bar			
Item	QTY	Specification	Brand*
MVD 2100/5 (Safety valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure= 200 mbar, DN 100	DUNGS
MVDLE 2100/5 (Main valve)	1	Solenoid valve, Single stage gas valve, Slow opening fast closing, Max operating pressure= 200 mbar, DN 100	DUNGS
RG/2MBZ DN80 FL	1	Gas regulator, DN 80 with shut off valve	MADAS
GF 60100/4	1	Gas Filter, Max operating pressure = 6 bar, DN 100	DUNGS
FRSBV DN25 (Relief Valve)	1	Safety pressure relief, Max operating pressure =1 bar, DN 25	DUNGS
MVD 207/5 (Safety pilot valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=360 mbar, Rp $\frac{3}{4}$	DUNGS
MVDLE 207/5 (Main pilot valve)	1	Solenoid valve, Single stage gas valve, Slow opening fast closing, Max operating pressure = 360 mbar, Rp $\frac{3}{4}$	DUNGS
FRS 507	1	Pressure regulator with spring P max=500 mbar, Rp $\frac{3}{4}$	DUNGS
GW 500 A6	1	Gas pressure switch, Range: 100-500 mbar - with plug	DUNGS
GW 150 A6	1	Gas pressure switch, Range: 5-150 mbar - with plug	
Pressure indicator	1	Range: 0-6 bar, Rp $\frac{1}{2}$	
Pressure indicator	1	Range: 0-250 mbar, Rp $\frac{1}{2}$	
Collector 1	1	DN 100 - DN 80	
Collector 2	1	DN 80 - DN 100	



Table 3 - Burner Equipment and Accessories

Power System		
Item	Specification	Brand*
Main motor	22 kW, 3 Phase, B5, 380-400 Volt, 50 Hz, 2900 rpm	WEG, ITALMOTORS, ABB
Bi-metal	LRD340	SCHNEIDER
Contactora	LC1D50, LC1D40	SCHNEIDER
Selector switches	XB4 BD21	SCHNEIDER
Star-Delta Timing Relay	RE22R1QCMU	SCHNEIDER
Burner Management System		
Item	Specification	Brand*
ETAMATIC-OEM (Main controller)	With 4 tree-stat-step-output	LAMTEC
Manual interface	Customer's interface including LSB connection	LAMTEC
Fuel actuator	Servomotor 6 N.M transmit time 60 sec. at 90°, 2 end switched IP65 with metal cover	LAMTEC
Air actuator	Servomotor 20 N.M transmit time 60 sec. at 90°, 2 end switched and 2 additional switches. IP65 with metal cover	LAMTEC
Flame scanner	Type IR-1/ IR-special range 1.200 – 2.800 nm With 3 connecting cable IP67	LAMTEC



There is no priority in choosing the control system and it is possible to change the control system based on the inventory and customer request.

Ignition System		
Item	Specification	Brand*
Gas Transformer	Fida Ignition Transformer 1 Wire	FIDA
Gas pilot	Appropriate for 950 series	PACKMAN CO.
Other Components		
Item	Specification	Brand*
Air pressure switch	LGW 10 A2, 1-10 mbar	DUNGS
Boiler chamber pressure switch (Max switch)	LGW 50 A2, 2.5-50 mbar	DUNGS

* Though these brands are common in this type of burner, they would may change based on available components in the market or according to the policy of Packman Co.



Burner code: RGB-M-950 : Output : 1000 – 9000 kW
Gas consumption: 900 m³/h - General Pipe size : DN 100 - Pilot pipe size : Rp 3/4

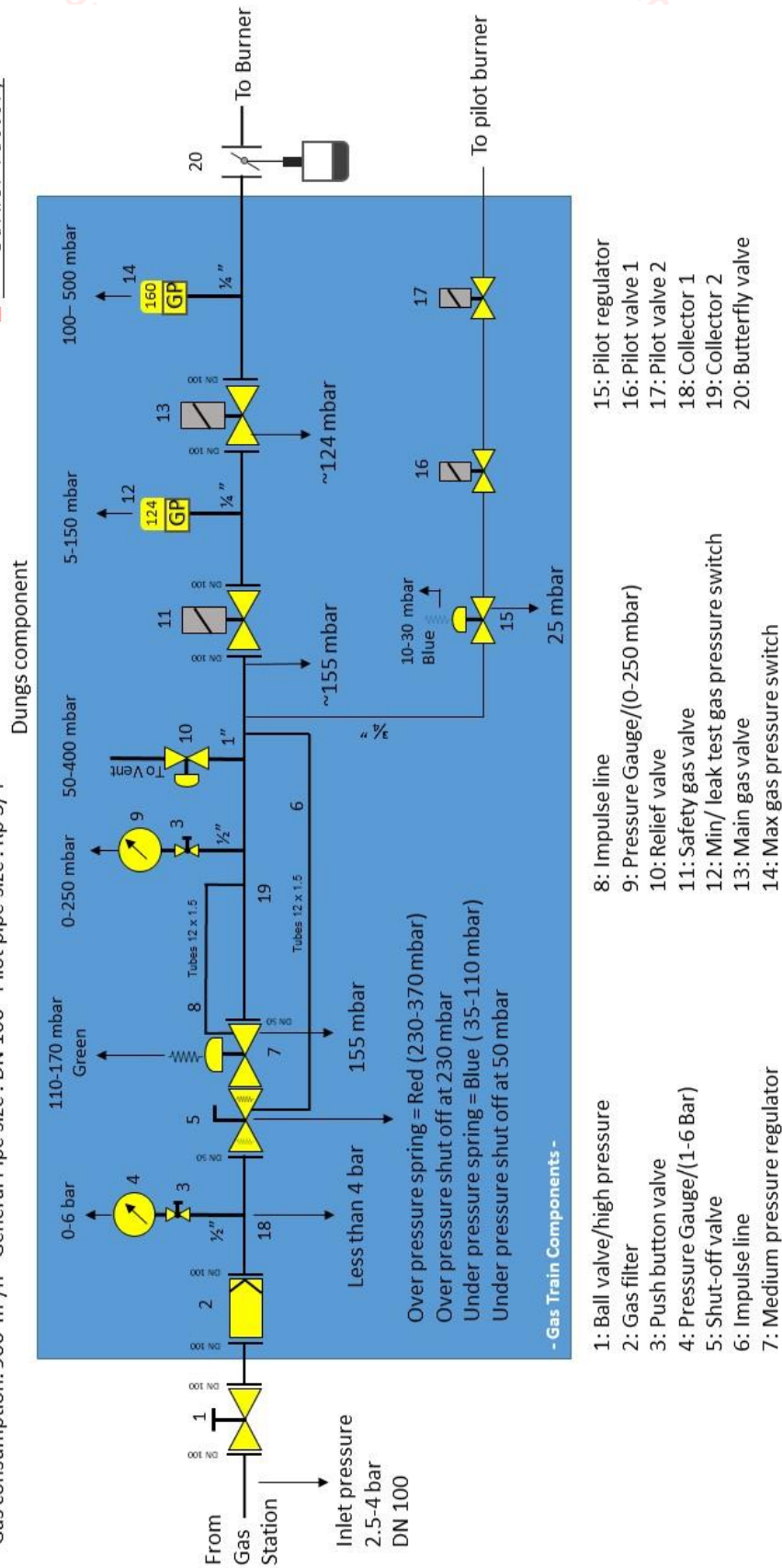


Figure 4- Standard Gas Train, DN 100, 2.5-4 bar