



### A short introduction of PACKMAN modular Gas burners

RGB-M Series or RAADMAN Modular gas burners, covering a firing range from 190 to 17000 kW, are designed for a wide range of domestic and industrial applications. All RAADMAN modular burners are equipped with LAMTEC or SIEMENS 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-1550 (1900-15000 kW)

RGB-M-1550 is an electronic modular gas burner which is basically designed for high-capacity industrial applications. The values of CO and NOx during burner operation are much lower than 30 and 120 mg/kWh, respectively. Compact design, 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

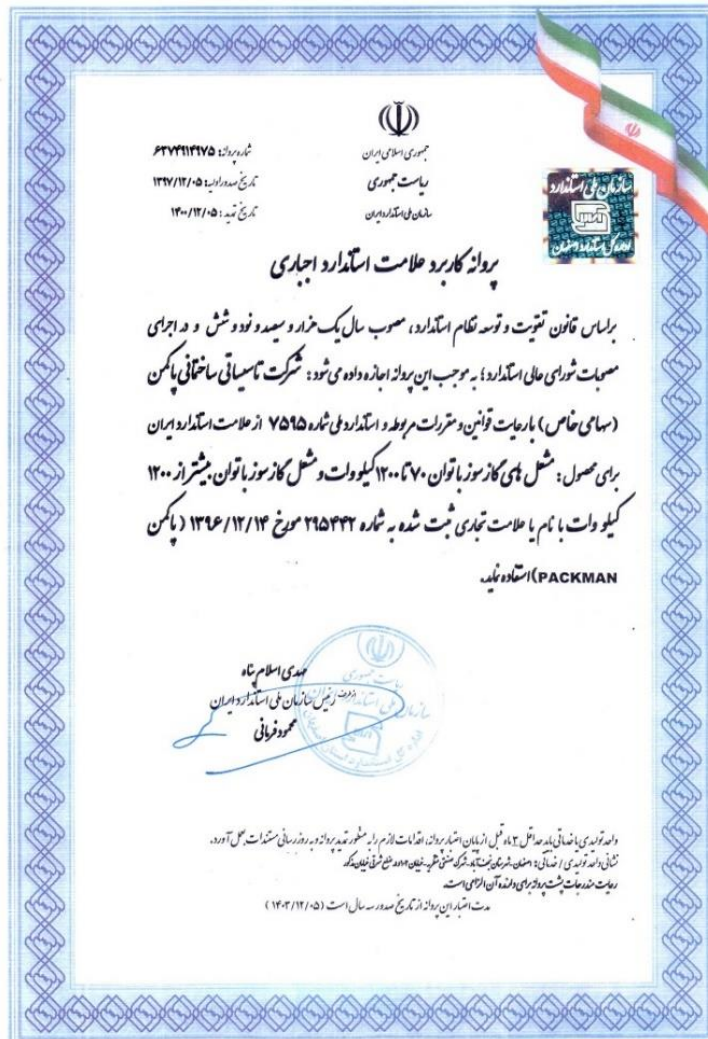


Figure 1- Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard



### General Dimension

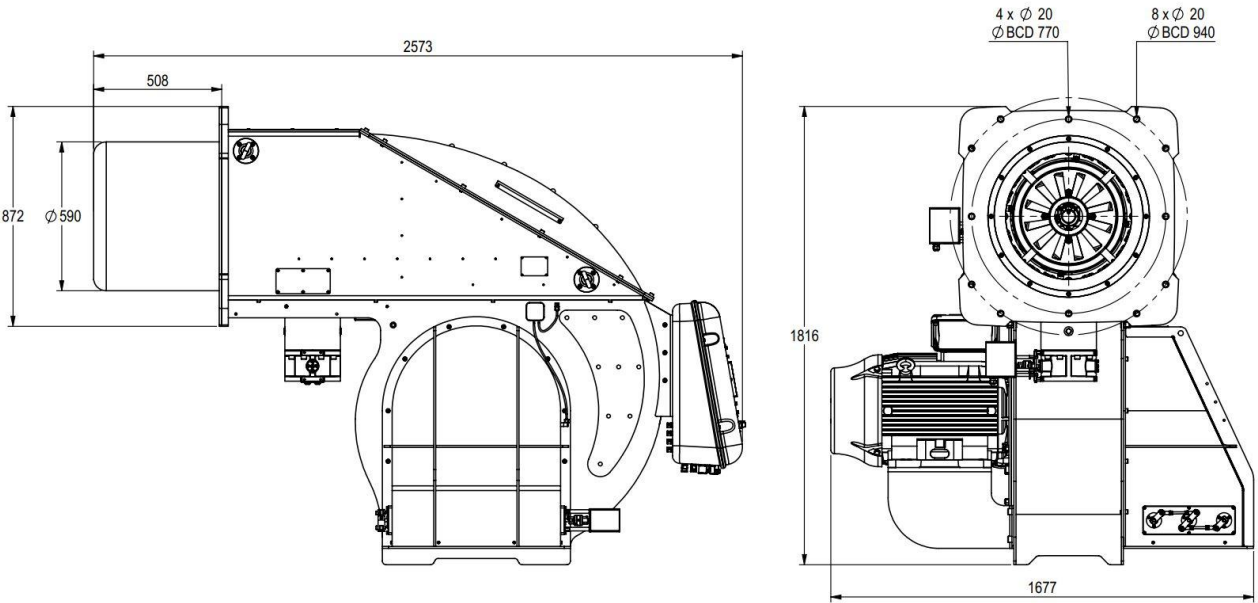


Figure 2 - Burner Dimensions

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

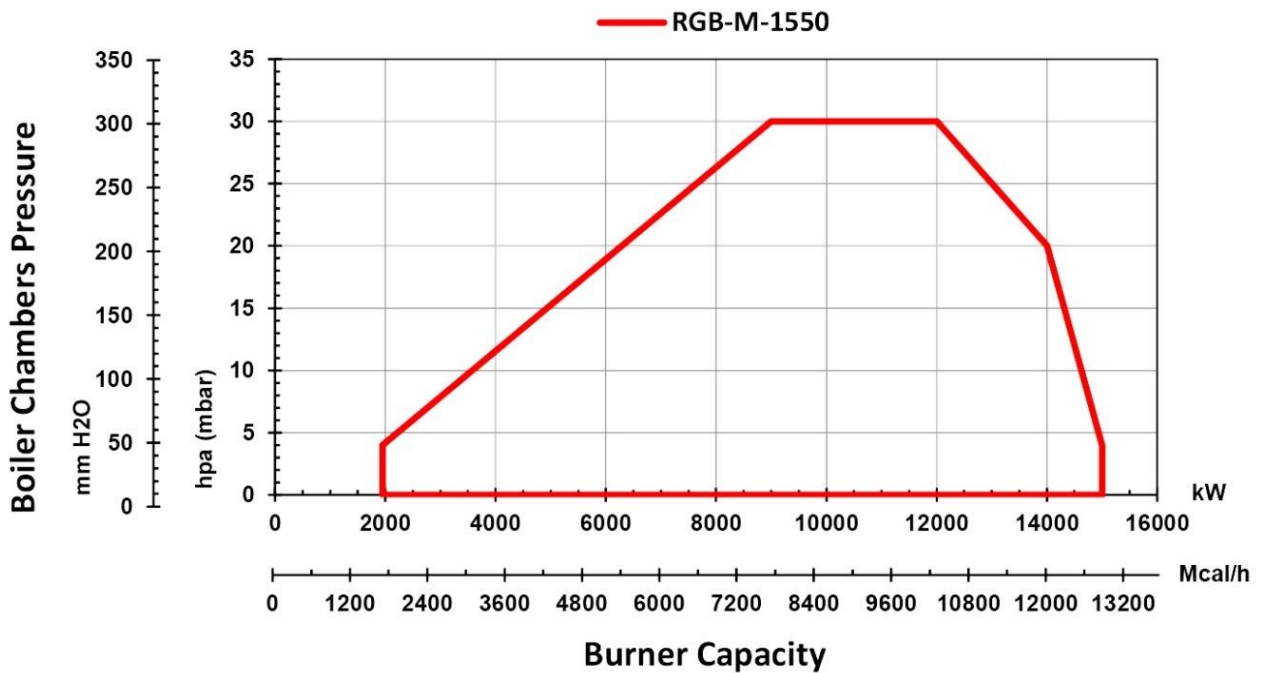


Figure 3 - Burner Firing Diagram

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.



## RGB-M-1550 Technical and Functional Features

- Highly efficient gas burner for industrial applications.
- Light weight and optimized geometry.
- Compatible with all types of combustion chambers according to EN303 standard.
- Simple Installation, adjustment and inexpensive maintenance.
- Modular operation.
- Ability to work based on Air-Fuel control curve.
- Large housing cover for optimal accessibility to the internal components.
- Rail system for ergonomic servicing of the mixing assembly.
- Engineered for maximize efficiency and fuel cost savings.
- Designed in accordance with 7595 Iran national standard (BS-EN676)
- Suitable for single/double hot water/steam boilers plus high capacity multi burner water tube boilers.
- Equipped with high quality and reliable electronic devices.

Table1 - RGB-M-1550 Combustion Specification

Item	Description
Fuels	Natural Gas
Gas Capacity **	1900-15000 kW
Gas operation	Electrical Modular System
Gas Pollution	II class of NOx according to BS-EN 676
Certificates	ISIRI 7595
Certificates No.	6374914975
Other abilities	<ul style="list-style-type: none"> <li>-Low excess air operation</li> <li>-Ability to run according to the Air/fuel ratio curve</li> <li>Ability of Communication with external systems via Bus.</li> <li>-Independent ignition point position for safe burner start</li> <li>-Adjustable pre-purge and post purge time</li> <li>-Absence of joint clearance using linkage-less actuators avoiding mechanical hysteresis</li> <li>-Easy commissioning using modular human interface</li> <li>-Parameter's indication</li> <li>-History of errors</li> <li>-Mono-bloc configuration</li> <li>-Including valve proving system</li> <li>-Use of a third actuator for movement of mechanical head for better combustion especially in lower capacities</li> <li>-High turn down ratio for avoiding any shut down in low required loads</li> <li>-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)</li> <li>-<u>Optional</u> ability to install a variable speed drive for avoiding any impact in startup</li> <li>-<u>Optional</u> ability of running with O2 and CO sensors.</li> <li>-<u>Optional</u> ability of running with FGR in order to further reduction in NOx level</li> </ul>

\*\* 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, 500 mbar			
Item	QTY	Specification	Brand*
Multi-block Solenoid Valve	1	MBE-VB-100, Working Pressure, 700 mbar Valve Drive VD-V-AC, Valve Drive VD-R-AC DN100	DUNGS
Pressure transmitter	1	PS-50/200	DUNGS
GF 4100/6	1	Gas Filter, Max operating pressure = 6 bar, DN 100	DUNGS
FRSBV DN25	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	2	Gas pressure switch, Range: 100-500 mbar - with plug	DUNGS
GW 50 A6	1	Gas pressure switch, Range: 5-50 mbar - with plug	
Pressure indicator	1	Range: 0-600 mbar, Rp $\frac{1}{2}$	
Pressure indicator	1	Range: 0-250 mbar, Rp $\frac{1}{2}$	
Collector 1	1	DN 100 - DN 100	
Collector 2	1	DN 100 - DN 100	

\* Though these brands are common in this type of burner, they would may change based on available components in the market (such as MADAS, SIEMENS, etc.) or according to the policy of Packman Co.





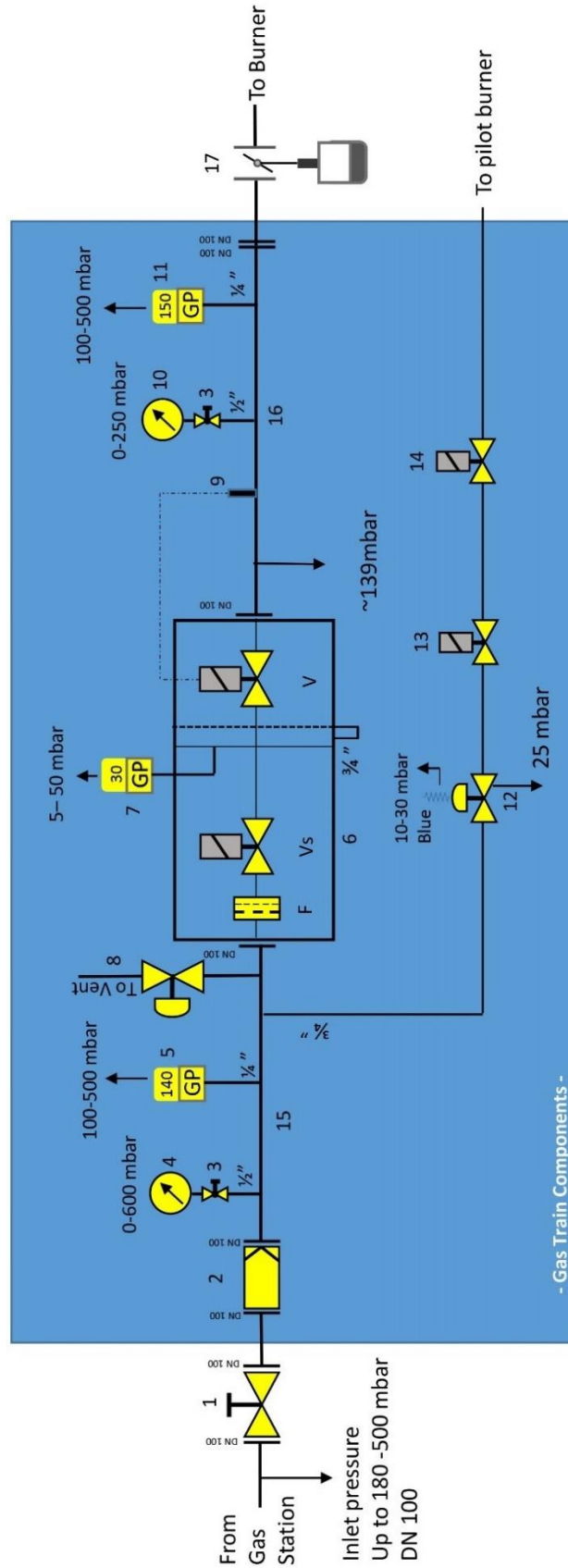
Table 3 - Burner Equipment and Accessories

Power System		
Item	Specification	Brand*
Main motor	45 kW, 3 Phase, B35, 380-400 Volt, 50 Hz, 2900 rpm	ELECTROGEN
Soft Starter	PSTX85-600-70	ABB, SANTENO
Minotaur Circuit Breaker	LB429740	SCHNEIDER
Selector switches	XB4 BD21, XB4 BD33	SCHNEIDER
Burner Management System		
Item	Specification	Brand*
ETAMATIC-OEM (Main controller)	With 4 tree-state-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	FFS08, type IR-1/ IR-special range 1.200 – 2.800 nm with 3 connecting cable IP67	LAMTEC
Ignition System		
Item	Specification	Brand*
Transformer	Tra.f.an- Single wire	TRAFO
Gas pilot	Appropriate for 1550 series	PACKMAN CO
Other Components		
Item	Specification	Brand*
Air pressure switch (Min switch)	LGW 10 A2, 1-10 mbar	DUNGS
Boiler chamber pressure switch (Max switch)	LGW 150 A2, 5-150 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: RRGB-M/M-1550** - Output : 1900 – 15000 kW - Gas consumption: 1500 m<sup>3</sup>/h  
General Pipe size : DN 100 - Pilot pipe size : Rp 3/4



- 1: Ball valve(Out of scope)
- 2: Gas filter
- 3: Push button valve
- 4: Pressure Gauge/(0-600 mbar)
- 5:Min gas pressure switch
- 6:Multi-block solenoid valve (MBE-VB-100)
- 7:Leak Test gas pressure switch
- 8: Relief valve
- 9: Pressure transmitter (PS-50/200)
- 10: Pressure Gauge/(0-250 mbar)
- 11: Max gas pressure switch
- 12: Pilot regulator
- 13: Pilot valve 1
- 14: Pilot valve 2
- 15: Collector 1
- 16: Collector 2
- 17: Butterfly valve(Out of scope)

Figure 4 - Gas train diagram, DN100, 500mbar