



A short introduction of PACKMAN modular gas burners

RGB-M Series or RAADMAN mono-block modular gas burners, covering a firing range from 190 to 25000 kW, are designed for a wide range of domestic and industrial applications. All RAADMAN modular burners are equipped with AUTOFLAME, 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. 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-1750 (2200-17000 kW)

RGB-M-1750 is an electronic gas fuel burner with 1:8 turn down ratio, which is appropriate of different 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. It also has the optional ability of running with FGR, in order to get the III class of NOx, lower than 80 mg/kWh. Compact design, silent operation due to injected absorbing material, backward fan wheel and independent actuators are the most considerable advantages for this burner.



Figure 1 – RGB-M-1750 with Autoflame controller



Burner Certificate

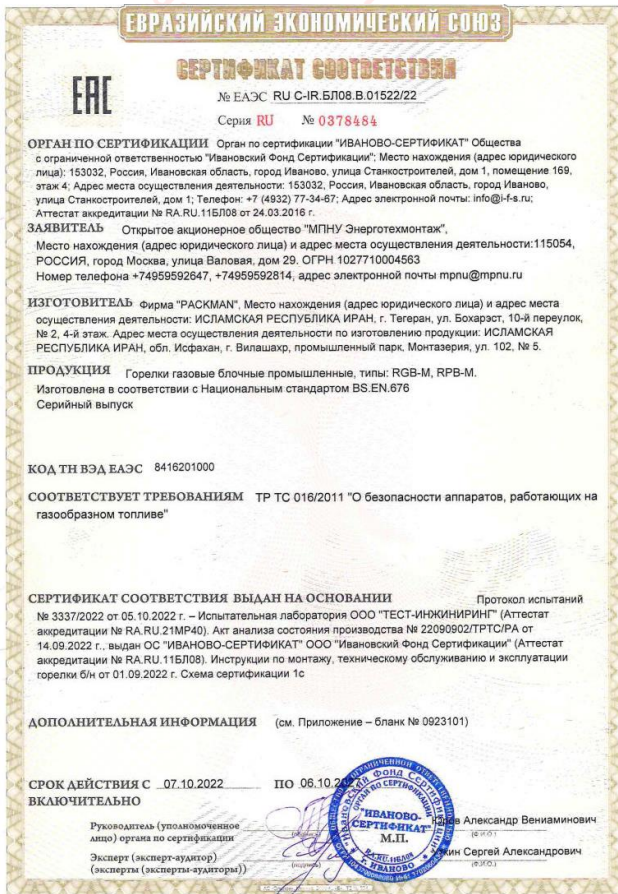


Figure 2 - Burner certification based on the Eurasian Conformity (EAC), Equal to the BS-EN 676 international standard.



Figure 3 - Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard.

General Dimension

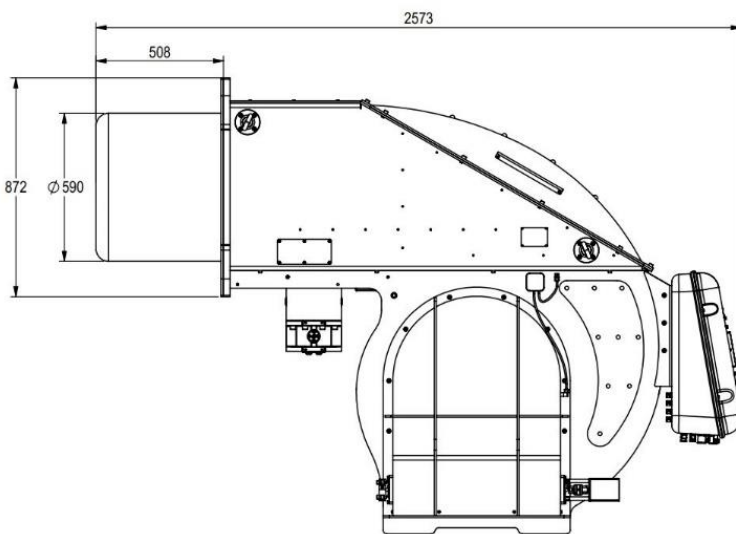
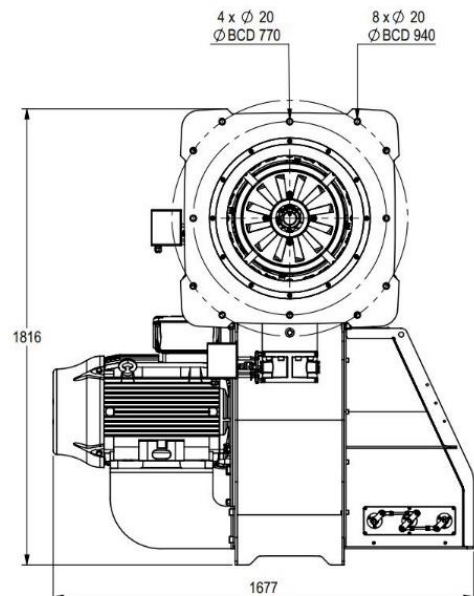


Figure 4 - Burner Dimensions



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

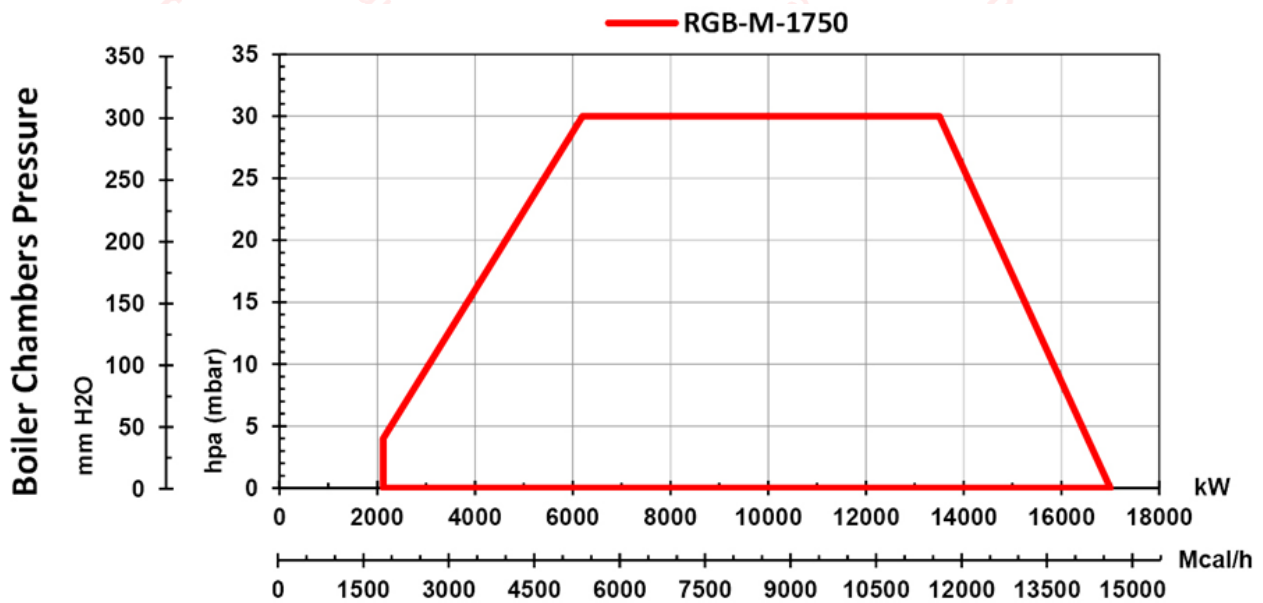


Figure 5 - Burner Firing Diagram




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-1750 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 ISIRI-7595 and EAC- (BS-EN 676)
- 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-1750 Combustion Specification

Item	Description
Fuels	Natural Gas
Gas Capacity *	2200-17000 kW
Gas operation	Electrical Modular System
Gas Pollution	II class of NOx according to BS-EN 676
Certificates Certificates No.	ISIRI 7595, EAC 6374915975, 0378484
Other abilities	<div style="text-align: right;">  </div> <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 DTI. - 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. - Including valve proving system. - Use of a third actuator for movement of mechanical head for better combustion especially in lower capacities. - High turn down ratio for avoiding any shut down in low required loads. - 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) <p><u>Options**</u>:</p> <ul style="list-style-type: none"> - Ability to install a variable speed drive for avoiding any impact in startup - Ability of running with O₂, CO, CO₂, NO and SO₂ sensors. - Ability of working with FGR for further reduction in the NOx level. - Ability of working with LPG with LPG kit.

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

** Kindly note that the options are not included in the routine offers and they need to be ordered by the customers. Please contact us for further information or assistance.



Table 2 - Burner Equipment and Accessories

Power System with Soft Starter		
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
Power System with Inverter (Optional features**, replacement of soft starter)		
Item	Specification	Brand*
Main motor	45 kW, 3 Phase, B35, 380-400 Volt, 50 Hz, 2900 rpm	ELECTROGEN
Variable speed drive	ABB ACS580-01-088A-4 45KW	ABB
Minotaur Circuit Breaker	NSX 100F-LV429740	SCHNEIDER
Selector switches	XB4 BD21, XB4 BD33	SCHNEIDER

* 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.

** In regular configurations, RGB-M-2250 get assembled with soft starter. Regarding the capacity, it is quite recommended to use VSD instead of soft starter. Kindly note that VSD set is an optional item and can be easily ordered while placing the order of burner.

Burner Management System		
Item	Specification	Brand*
Mini Mk8 M.M. Module (Main controller)	4 Channel with Burner Management Control, 7" full color touch screen	AUTOFLAME
Air actuator	Large Servo Motor, 230V 50/60Hz, Metal Housing (Head actuator) 25Nm, 18ft lbs - Supplied with 2off PG11 Glands	AUTOFLAME
Head actuator	Large Servo Motor, 230V 50/60Hz, Metal Housing (Head actuator) 25Nm, 18ft lbs - Supplied with 2off PG11 Glands	AUTOFLAME
Fuel actuator	Large Servo Motor, 230V 50/60Hz, Metal Housing (Head actuator) 25Nm, 18ft lbs - Supplied with 2off PG11 Glands	AUTOFLAME
Flame scanner	MM80004/HS High Sensitivity, End/Side View UV Scanner	AUTOFLAME
Ignition System		
Item	Specification	Brand*
Transformer	FIDA Ignition Transformer 1 Wire	FIDA
Gas pilot	Appropriate for 1750 series	PACKMAN CO
Other Components		
Item	Specification	Brand*
Air pressure switch (Min switch)	LGW 50 A2, 5-50 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.



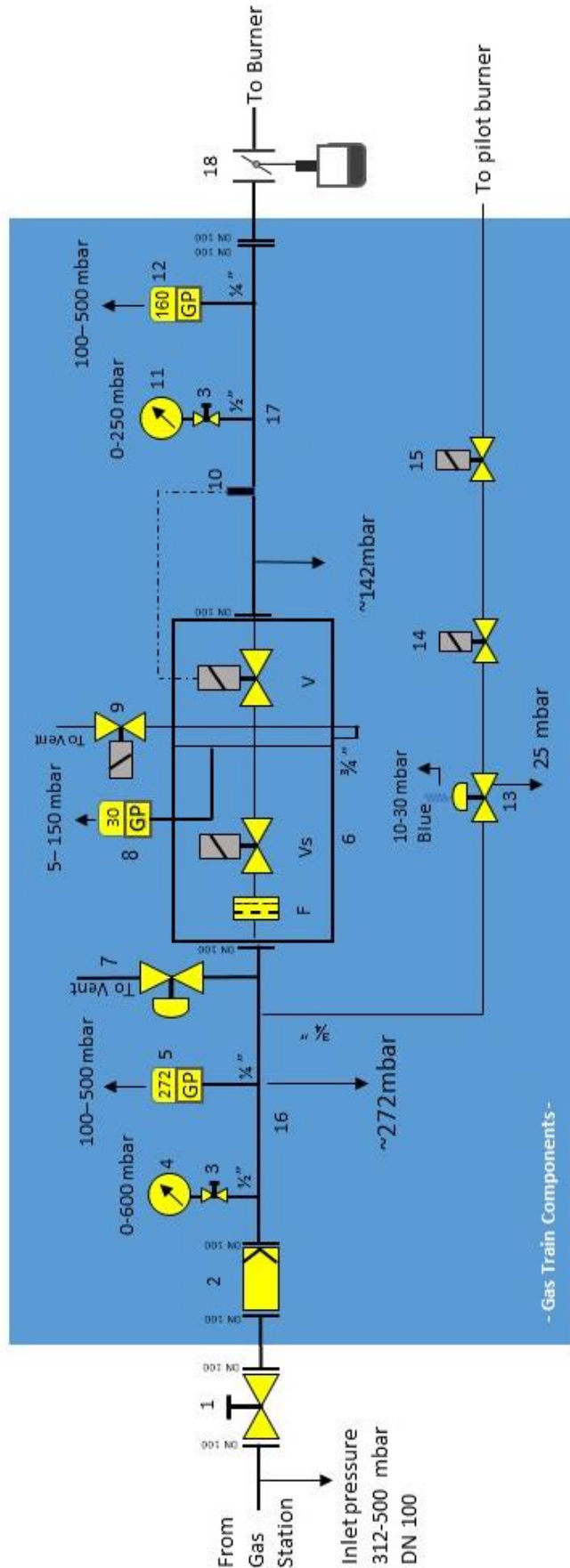
Table 3 - Recommended Gas Train

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 6100/6	1	Gas Filter, Max operating pressure = 6 bar, DN 100	DUNGS
MVSP/1 compact	1	Relief valve Setting spring MO-2160 (50-450 mbar) Max operating pressure=1 bar, DN25	MADAS
MVDLE 207/5 (Main pilot valve)	1	Solenoid valve, Single stage gas valve, Slow opening fast closing, Max operating pressure = 360 mbar, Rp ¾	DUNGS
FRS 507	1	Pressure regulator with spring P max=500 mbar, Rp ¾	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	DUNGS
Pressure indicator	1	Range: 0-600 mbar, Rp ½	
Pressure indicator	1	Range: 0-250 mbar, Rp ½	
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.



Burner code: RGB-M-1750 - Output : 2200 – 17000 kW
 Gas consumption(G20) : 1700 m³/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: Relief valve
- 8: Leak Test gas pressure switch
- 9: Vent solenoid valve
- 10: Pressure transmitter (PS-50/200)
- 11: Pressure Gauge/(0-250 mbar)
- 12: Max gas pressure switch
- 13: Pilot regulator
- 14: Pilot valve 1
- 15: Pilot valve 2
- 16: Collector 1
- 17: Collector 2
- 18: Butterfly valve(Out of scope)

Figure 6 - Gas train diagram, DN100, 500mbar