



A short introduction of PACKMAN Dual fuel mechanical modular burners:

RGB-MS series of burners cover a firing range from 1000 to 6200 kW, and they are manufactured with high-quality electro/mechanical accessories with easy installation and commissioning. They are mechanically resistant and are economically designed for city or industrial applications such as three-pass hot water boilers, steam boilers, hot air generators, etc RGB-MS series burners guarantee high-efficiency levels in all the various applications, thus reducing fuel consumption and running costs. Optimization of sound emissions is guaranteed by the special design of the air suction circuit and the use of soundproofing material. The exclusive design ensures reduced dimensions, simple use, and maintenance. A wide range of accessories guarantees elevated working flexibility. These burners have been tested and evaluated based on Iran's national standard ISIRI-7595 (DIN-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 the combustion head results from a full gas-air mixture that guarantees high-efficiency levels in all various applications.

RGB-MS-145 (400-1480 kW)

RGB-MS-110 is a mechanical staging gas burner, designed for a wide range of domestic and 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. Compact design, silent operation due to injected sound absorption material already installed on burner and high aspect ratio are important advantage of this burner.

Burner Certificate

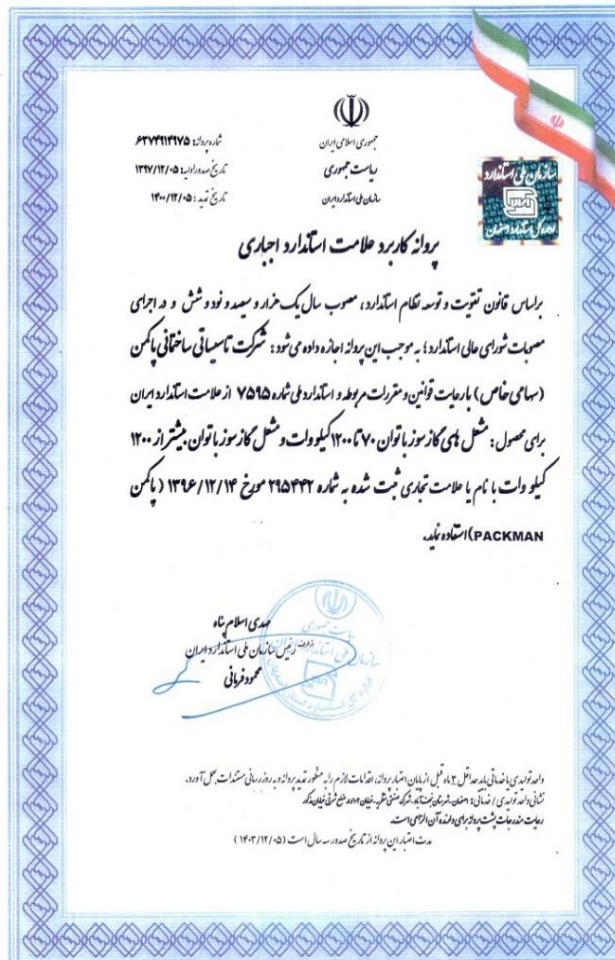


Figure 1 -Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard



General Dimension

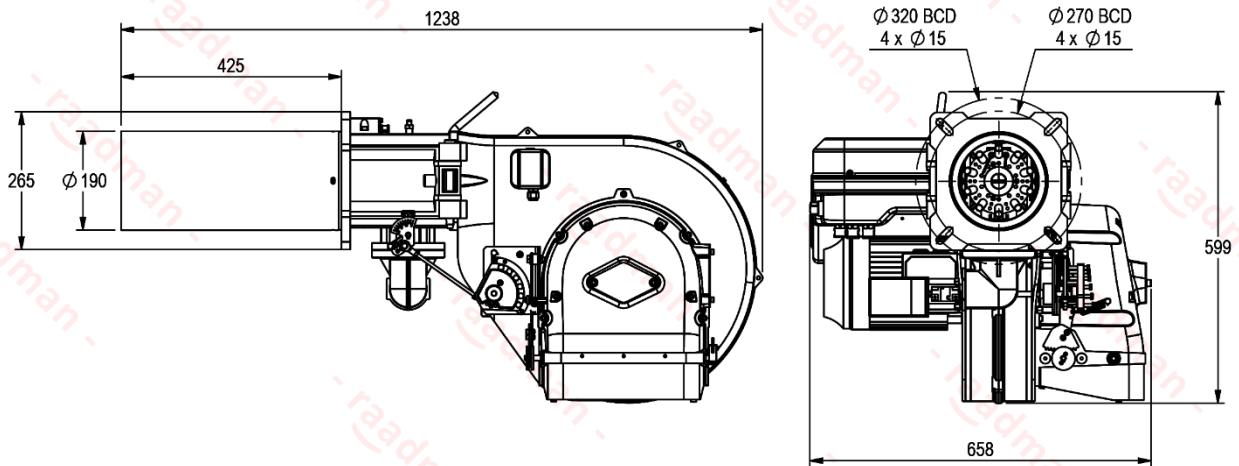


Figure 2 - Burner Dimensions

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

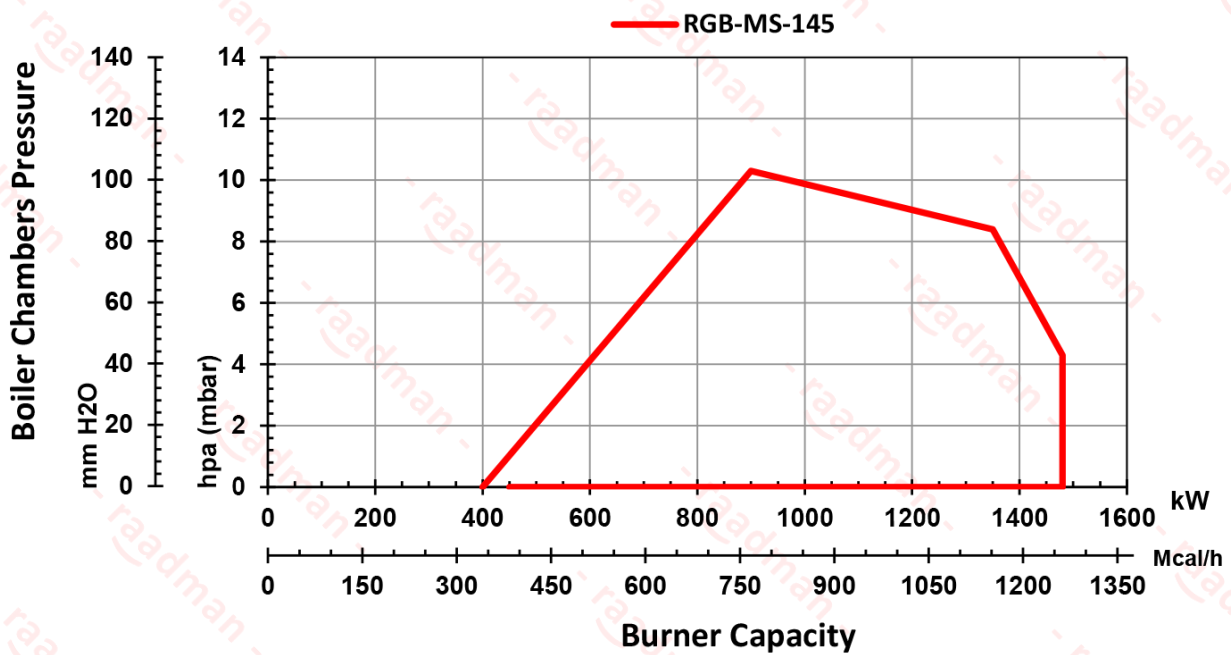



Figure 3 - Burner Firing Diagram

 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 676.



RGB-MS-145 Technical and Functional Features

- Highly efficient gas burners for domestic and industrial applications.
- Light weight and optimized geometry.
- Mono-block design and fully enclosed aluminum air housing.
- Compatible with all types of combustion chambers according to EN303 standard.
- Simple Installation, adjustment and maintenance.
- Mechanical Staging operation.
- Easy access to internal components.
- Engineered for maximize efficiency and fuel cost savings.
- Designed in accordance with 7595 Iran national standard (EN676)
- Suitable for firetube, firebox and water tube boilers.
- Equipped with high quality and reliable electronic devices.

Table 1 RGB-MS-145 Combustion Specification

Item	Description
Fuels	Natural Gas
Gas Capacity *	400-1480 kW
Gas operation	Mechanical Staging
Gas Pollution	II class of NOx according to BS-EN 676
Certificates Certificates No.	ISIRI 7595 6374914975
Other abilities	Low excess air operation -Mono-bloc configuration -Silent operation (Due to the injected sound abortion material) -Ability of hinged opening of burner housing in both directions -High turn down ratio for avoiding any shut down in low required loads.

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



Table 2 - Burner Equipment and Accessories

Power System		
Item	Specification	Brand*
Main motor	2.2 kW, 3 Phase, B5, 380-400 Volt, 50 Hz, 2890 rpm	ABB, LENZE, ELECTROGEN
Bi-metal	LRD10	SCHNEIDER
Contactora	LC1D12	SCHNEIDER
Selector switches	XB4 BD21	SCHNEIDER
Burner Management System		
Item	Specification	Brand*
Main controller	TMG740-3, 220-240 Volt, 50-60 Hz, 6A	SHOKOUH
Air actuator	LKS 210-21(B1-15 S2), 200-240 Volt, 3 N.m	HONEYWELL
Ignition System		
Item	Specification	Brand*
Transformer	Tra.f.an- cof 2 wire	TRAFO
Other Components		
Item	Specification	Brand*
Air pressure switch	LGW 10 A2, 1-10 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.



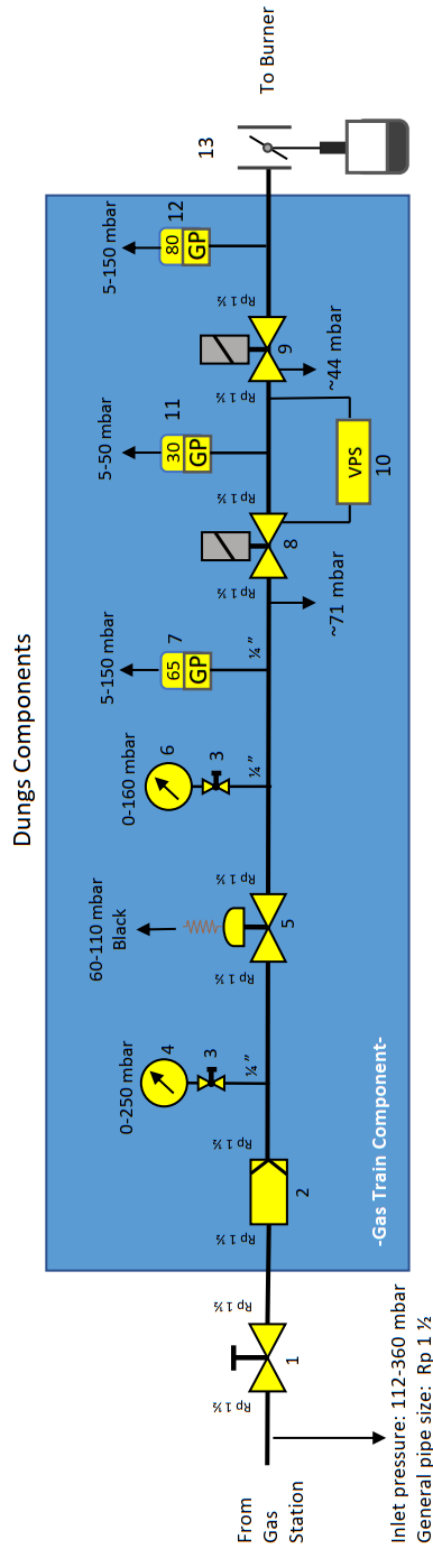
Table 3 - Recommended Gas Train

Standard gas train: Separated item, Rp 1 1/2			
Item	QTY	Specification	Brand*
MVD 215/5 (Safety valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=200 mbar, Rp 1 1/2	DUNGS
MVDLE 215/5 (Main valve)	1	Solenoid valve, Single stage gas Valve, Slow opening fast closing, Max Operating Pressure= 200 mbar, Rp 1 1/2	DUNGS
FRS 515	1	Gas regulator, Max operating pressure=500 mbar, Rp 1 1/2	DUNGS
GF 515/1	1	Gas filter, Max operating pressure= 500 mbar, Rp 1 1/2	DUNGS
GW150 A6	2	Gas pressure switch, Range: 5-150 mbar - with plug	DUNGS
GW50 A6	1	Gas pressure switch, Range: 5-50 mbar - with plug	DUNGS
Valve proving system	1	VPS 504, S04	DUNGS
Pressure indicator	1	Range: 0-250 mbar, Rp ¼	
Pressure indicator	1	Range: 0-160 mbar, Rp ¼	
Ball valve	2	Rp ¼	

* 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 Model: RGB-MS-145 : Output : 400 – 1480 kW
Gas consumption (G20) : 148 m³/h - General Pipe size : Rp 1 ½



- 1: Ball valve
- 2: Gas filter
- 3: Ball valve
- 4: Pressure gauge/(0-250 mbar)
- 5: Pressure regulator
- 6: Pressure gauge/(0-160 mbar)
- 7: Min gas pressure switch
- 8: Safety gas valve(Max. 200 mbar)
- 9: Main gas valve (Max. 200 mbar)
- 10: Valve proving system
- 11: Leak test gas pressure switch
- 12: Max gas pressure switch
- 13: Butterfly valve

Figure 4 - Standard gas train, Rp 1 1/2, 360 mbar