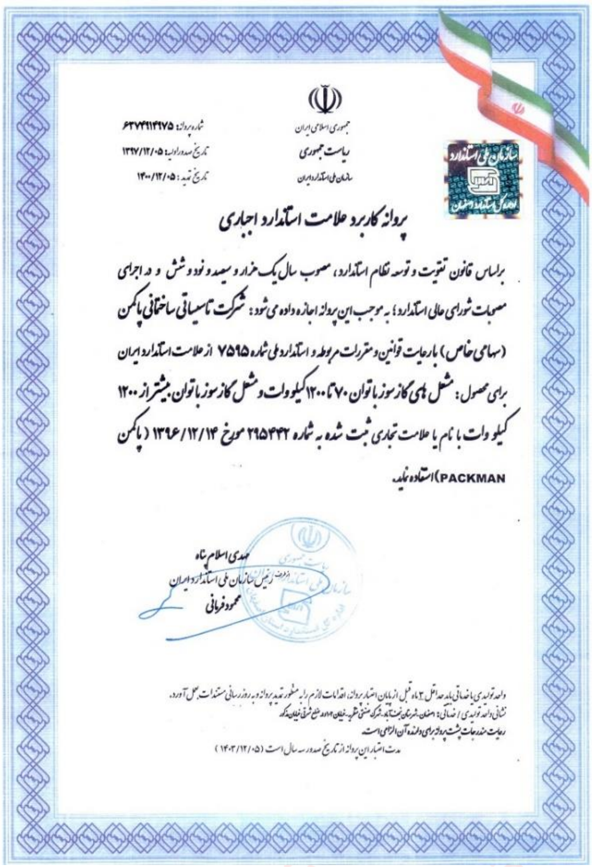
A short introduction of PACKMAN Dual fuel burners

RLGB-M Series or RAADMAN modular dual fuel burners, covering a firing range from 160 to 32000 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) and ISIRI-7594 (BS-EN 267) for gas and oil operation respectively. 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

RLGB-M/M-2250 (2750-22000 kW)

RLGB-M/M-2250 is an electronic modular dual 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. Compact design, silent operation due to injected absorption material, backward fan wheel and independent actuators are the most considerable advantages for this burner.

Burner Certificate


جمهوری اسلامی ایران
ریاست جمهوری
سازمان ملی استاندارد ایران

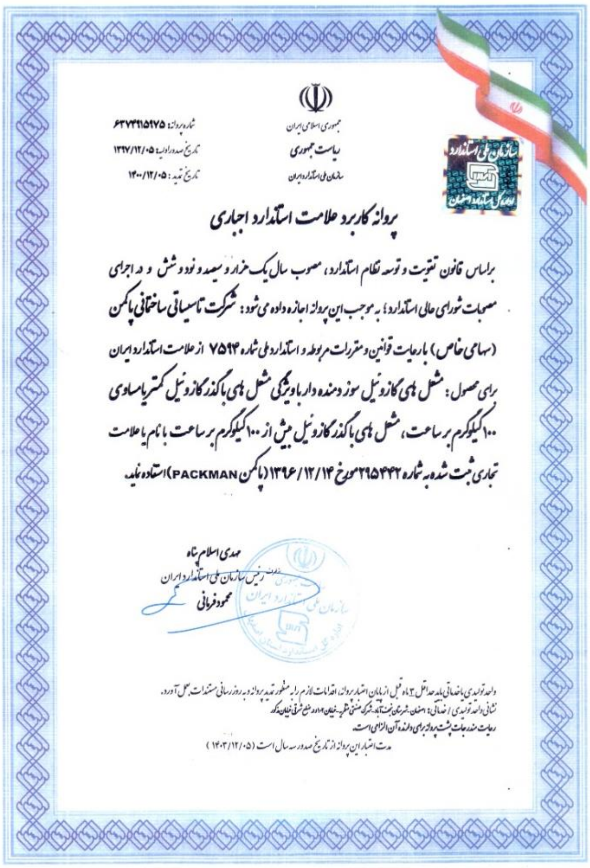
شماره پروانه: ۶۳۷۴۹۱۱۴۹۷۵
تاریخ صدور اولیه: ۱۳۹۷/۱۲/۰۵
تاریخ تمدید: ۱۴۰۰/۱۲/۰۵

پروانه کاربرد علامت استاندارد اجباری

براساس قانون تقویت و توسعه نظام استاندارد، مصوب سال یک هزار و سیصد و نود و شش و در اجرای مصوبات شورای عالی استاندارد، به موجب این پروانه اجازه داده می شود: شرکت تاسیساتی ساختمانی پاکمن (سهامی خاص) بارعایت قوانین و مقررات مربوطه و استاندارد ملی شماره ۷۵۹۵ از علامت استاندارد ایران برای محصول: مشعل های گازسوز با توان ۷۰ تا ۱۲۰۰ کیلووات و مشعل گازسوز با توان بیشتر از ۱۲۰۰ کیلو وات با نام یا علامت تجاری ثبت شده به شماره ۲۹۵۴۴۲ مورخ ۱۳۹۶/۱۲/۱۴ (پاکمن PACKMAN) استفاده نماید.

مهدی اسلام پناه
از طرف رئیس سازمان ملی استاندارد ایران
محمود فربانی

Figure 1 -Burner certification based on the Iran national standard ISIRI-7595, Equal to the BS-EN 676 international standard.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مهدی اسلام پناه
از طرف رئیس سازمان ملی استاندارد ایران
محمود فربانی

Figure 2-Burner certification based on Iran national standard ISIRI-7594, Equal to the BS- EN 267 international standard.

General Dimension

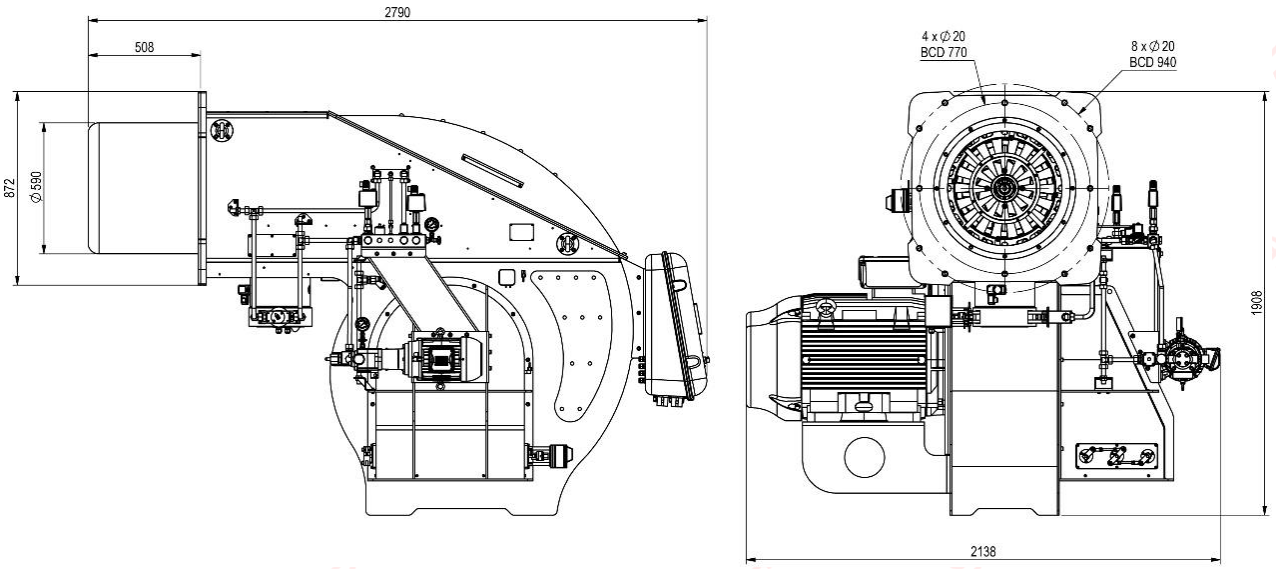


Figure 3 - Burner Dimensions

RLGB-M/M-2250 Technical and Functional Features

- Highly efficient dual fuel burners 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.
- Electronic Modular operation with independent actuators.
- 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 & 7594 Iran national standard (BS-EN 676 & BS-EN 267)
- Suitable for single/double hot water/steam boilers plus high capacity multi burner water tube boilers.
- Equipped with high quality and reliable electronic devices.

Table 1-RLGB-M/M-2250 Combustion Specification

Item	Description
Fuels	Natural Gas / Light oil
Gas Capacity **	2750-22000 kW
Oil capacity	360-1800 kg/h
Gas operation	Electronic modular
Light oil operation	Electronic modular
Gas Pollution	II class of NOx according to BS-EN 676
Light oil pollution	II class of NOx according to BS-EN 267
Certificates Certificates No.	ISIRI 7595, ISIRI 7594 6374914975, 6374915975
Other abilities	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 start. -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) -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 O2 and CO, SO2… sensors

** 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: DN 100 , 4 bar			
Item	QTY	Specification	Brand*
MBE-VB-100 (Multi-block Solenoid valve)	1	Multiblock valve with two safety shutoff valves and pressure regulator, Single stage gas valve, maximum inlet pressure = 700 mbar, DN100	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	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 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 3/4	DUNGS
FRS 507	1	Pressure regulator with spring P max=500 mbar, Rp 3/4	DUNGS
MVD 207/5 (Vent valve**)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=360 mbar, Rp 3/4	DUNGS
GW 500 A6	2	Gas pressure switch, Range: 100-500 mbar - with plug	DUNGS
GW 150 A6	1	Gas pressure switch, Range: 5-150 mbar - with plug	DUNGS
PS-50/200	1	Pressure transmitter	DUNGS
Push button valve	3	Rp 1/2	
Pressure indicator	1	Range: 0-6 bar, Rp 1/2	
Pressure indicator	1	Range: 0-600 mbar, Rp 1/2	
Pressure indicator	1	Range: 0-250 mbar, Rp 1/2	
Collector 1	1	DN 100 – DN 80	
Collector 2	1	DN 80 – DN 100	
Collector 3	1	DN 100 – DN 150	

Table 3 - Recommended Gas Train

Standard Gas Train: Multi-block items, DN 125/100, Lower than 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 60125/4	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 (Vent Valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=360 mbar, Rp ¾	DUNGS
MVD 207/5 (Safety pilot valve)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=360 mbar, Rp ¾	DUNGS
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
MVD 207/5 (Vent valve**)	1	Solenoid valve, Single stage gas valve, Fast opening fast closing, Max operating pressure=360 mbar, Rp 3/4	DUNGS
GW 500 A6	2	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: 0-600 mbar, Rp ½	
Pressure indicator	1	Range: 0-250 mbar, Rp ½	
Collector 1	1	DN 125 - DN 100	
Collector 2	1	DN 100 - DN 150	

* 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.

** Optional (Depend of customer request)

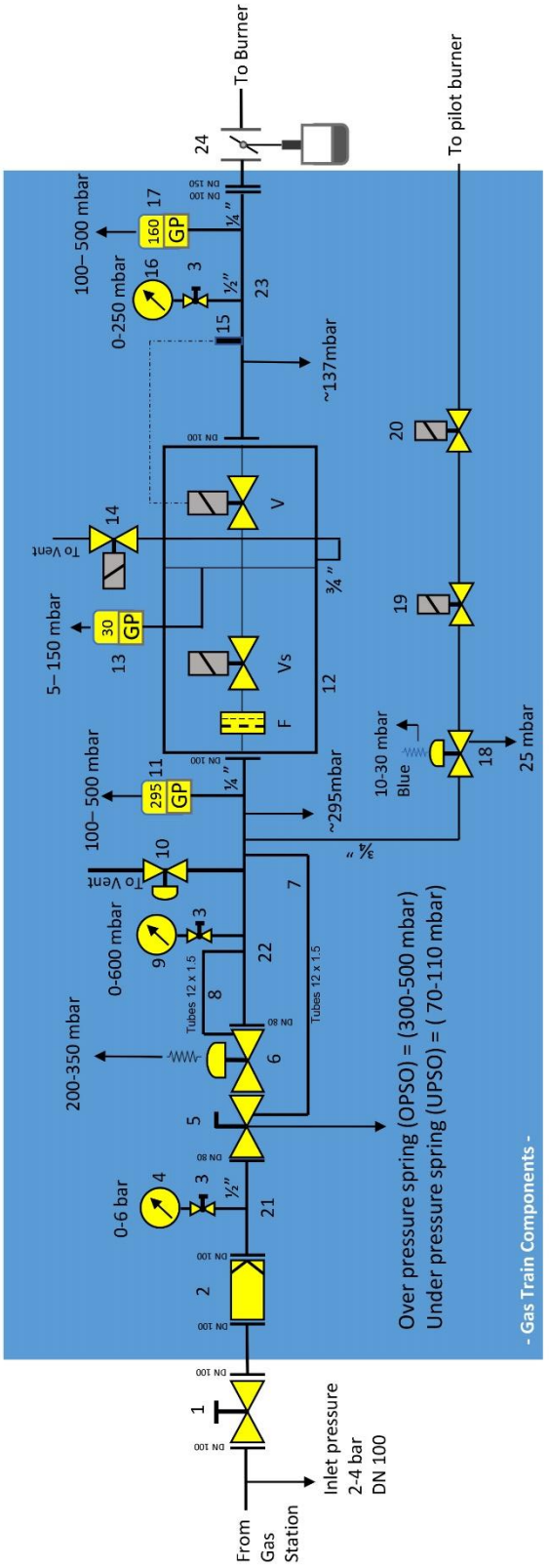
Table 4 - Burner Equipment and Accessories

Power System		
Item	Specification	Brand*
Main motor	75 kW, 3 Phase, B35, 380-400 Volt, 50 Hz, 2900 rpm	WEG, ABB, ITALMOTORS
Soft Starter	PSTX170-600-70	ABB
Selector switches	XB4 BD21	SCHNEIDER
Minotaur Circuit Breaker	NSX400F-LV432676	SCHNEIDER
Selector switches	XB4 BD21, XB4 BD33	SCHNEIDER
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	INDUSTRIAL UNIC SERVOMOTORS, 230V 50/60Hz, 40Nm, 30ft lbs - 2x ½" BSPP (male) to ½" NPSM (female)	AUTOFLAME
Head actuator	INDUSTRIAL UNIC SERVOMOTORS, 230V 50/60Hz, 40Nm, 30ft lbs - 2x ½" BSPP (male) to ½" NPSM (female)	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
Oil delivery system		
Main motor	4 kW, B34, 380-400 Volt, 50 Hz, 2940 rpm	ELECTROGEN
Bi-metal	LRD14	SCHNEIDER
Contactor	LC1D18	SCHNEIDER
Pump	T5C 107 accompanied by TV 4001-1 pressure adjuster	SUNTEC
solenoid valve (Main and safety on feed and return line)	Pilot acting valve 3/4" Kv: 70.00 l/min Pmin-Pmax (bar): 0.5-40 bar Tmin / Tmax (°C): -10 °C / 80 °C	GEVAX
Normally closed solenoid valve for needle supply	Direct acting valve 1/4" Kv : 3.50 l/min Pmin-Pmax (bar): 0-30 bar Tmin / Tmax (°C): -10 °C / 150 °C	GEVAX
Normally open solenoid valve for needle opening	Direct acting valve 1/4" Kv : 3.50 l/min Pmin-Pmax (bar): 0-30 bar Tmin / Tmax (°C): -10 °C / 160 °C	GEVAX
Max oil pressure switch	PSM03 (0,2...6bar)	WIKA
Min oil pressure switch	PSM03 (10...80bar)	WIKA
Oil regulator	Code: S100-VK1/2	FLUIDAL
Oil Nozzle	Industrial fly back oil Nozzle with Needle	BERGONZO
Feed line pressure gauge	0-100 bar	
Return line pressure gauge	0-60 bar	

Ignition System		
Item	Specification	Brand*
Transformer	Fida Ignition Transformer 1 Wire	FIDA
Gas pilot	Appropriate for 2250 series	PACKMAN CO.
Oil transformer	Fida Ignition Transformer 2 Wire	FIDA
Other Components		
Item	Specification	Brand*
Air pressure switch (Min switch)	LGW 10 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.

Burner code: RLGB-M/M-2250 -Output : 2750 – 22000 kW
Gas consumption(G20) : 2200 m^3/h - General Pipe size : DN 100 - Pilot pipe size : Rp 3/4



1: Ball valve/high pressure(Out of scope)
2: Gas filter
3: Push button valve
4: Pressure Gauge /(0-6 Bar)
5: Shut-off valve
6: Medium pressure regulator
7:Impulse line
8: Impulse line
9: Pressure Gauge /(0-600 mbar)
10: Relief valve
11: Min gas pressure switch
12: Multi-block solenoid valve (MBE-VB-100)
13: Leak test gas pressure switch
14: Vent solenoid valve
15: Pressure transmitter (PS-50/200)
16: Pressure Gauge /(0-250 mbar)
17: Max gas pressure switch
18: Pilot regulator
19: Pilot valve1
20: Pilot valve2
21: Collector 1
22: Collector 2
23: Collector 3
24: Butterfly valve(Out of scope)

Figure 4 - standard gas train, DN 100, 4 Bar

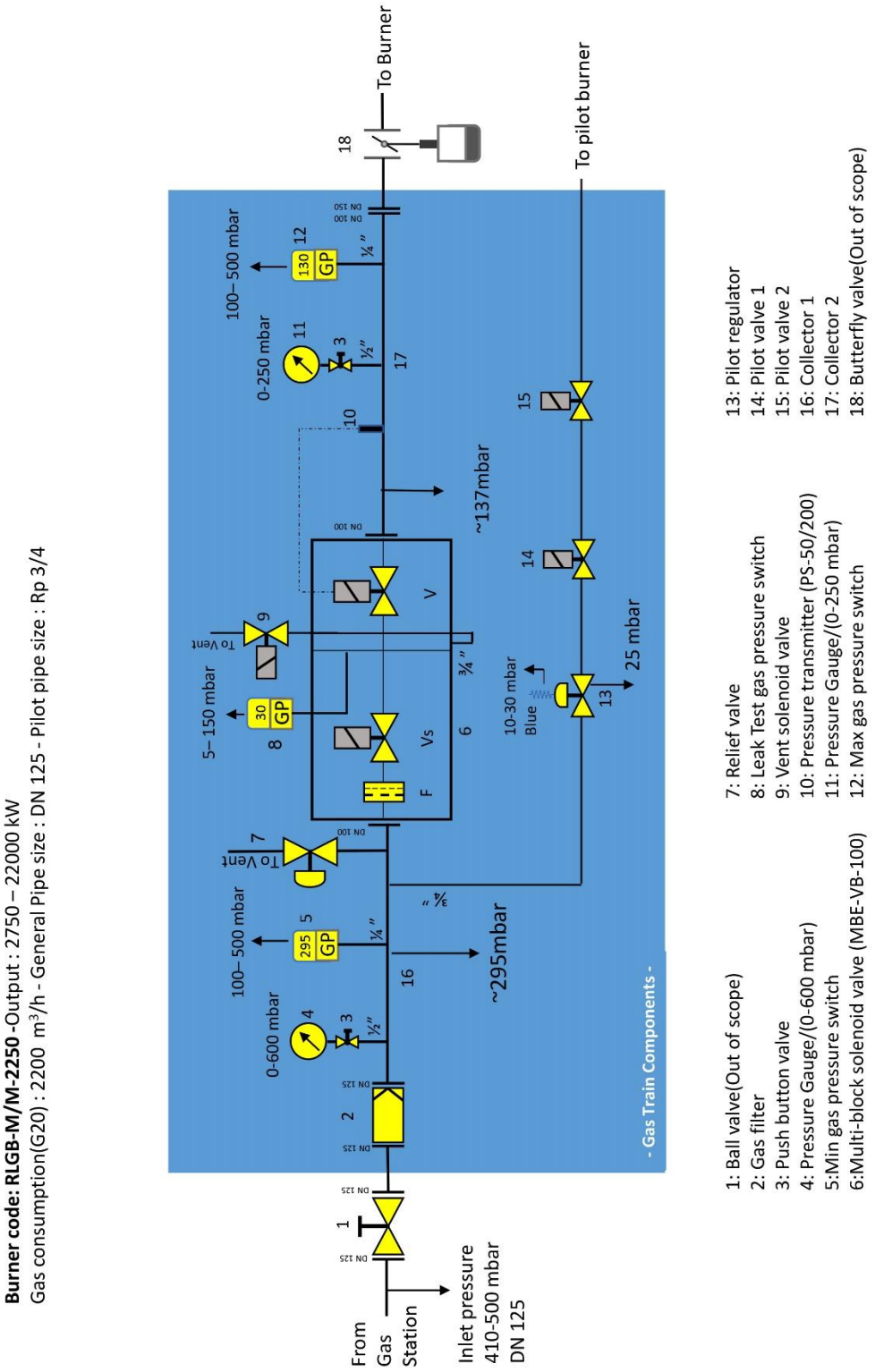


Figure 5- standard gas train, DN 100, 410-500 mbar