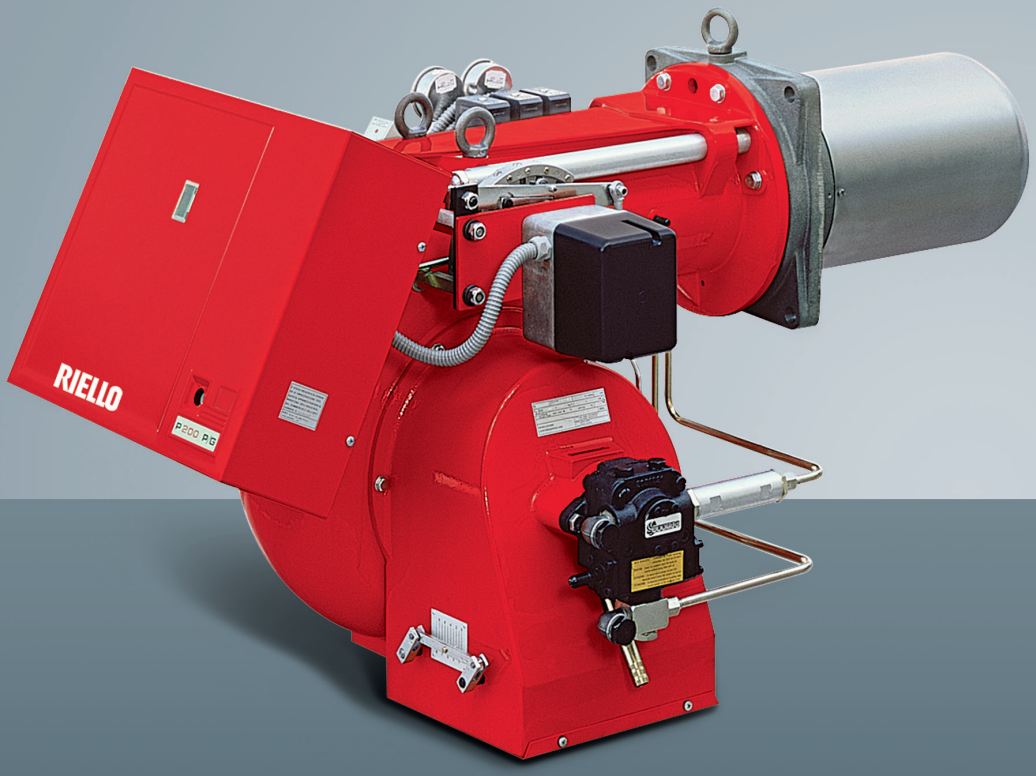
TECHNICAL DATA LEAFLET

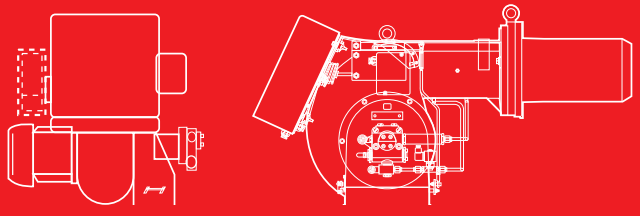
LIGHT OIL



PRESS P/G Series

Modulating Light Oil Burners

P 140 P/G	415/830	÷	1660	kW
P 200 P/G	590/1185	÷	2370	kW
P 300 P/G	890/1780	÷	3560	kW
P 450 P/G	1190/2670	÷	5340	kW



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RIELLO

Energy For Life

The PRESS P/G series of burners covers a firing range from 415 to 5340 kW.
Setting can be "two stage progressive" or, alternatively, "modulating" with the installation of a PID logic regulator and respective probes, which guarantees a turn down ratio of 3:1.
The versatility of this range makes the burner well suited for use on commercial or industrial applications where the load factor is subject to wide variations over a short period of time.
Simplified maintenance is achieved by Riello designed slide bar system, which allows easy access to all of the essential components of the combustion head.

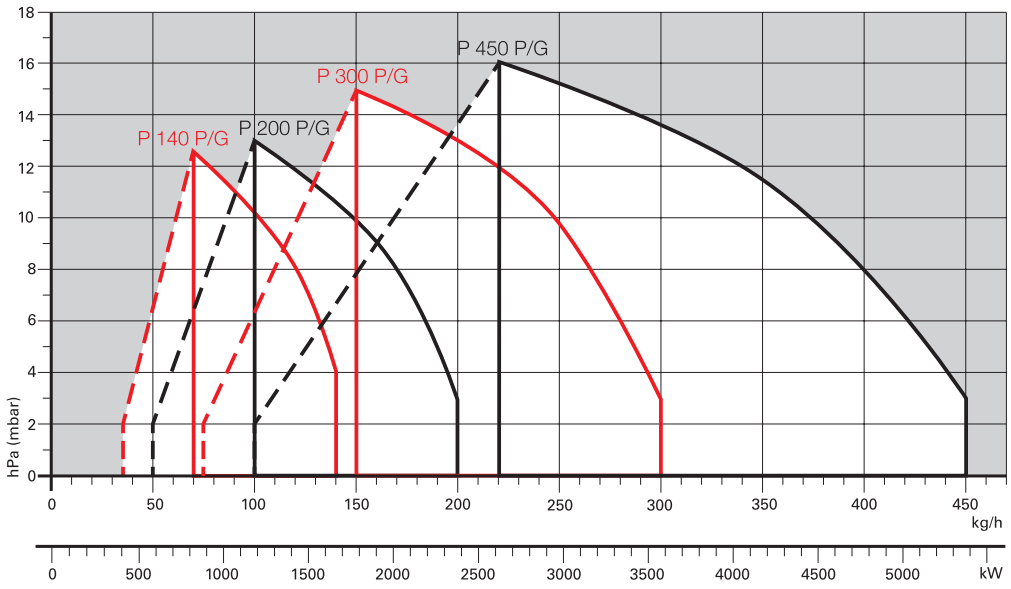
A RIELLO burner (Heat Generator), where it is matched with a water-based boiler (Heater Housing) with a nominal output ≤400 kW, providing heat for heating purposes and heat to deliver sanitary hot water, can be installed:
- With boilers (heater housings) already in service in the field, for replacement, in conformity to Article 1, paragraph 2, point (G) of the EU Regulation No. 813/2013;
- With boilers (heater housings) on a new installation, put on the market after 26th of September 2015;
- With all new boilers (heater housings), where placed on the market before 26th of September 2015.

Technical Data

Model			P 140 P/G	P 200 P/G	P 300 P/G	P 450 P/G
Burner operation mode			Modulating (with regulator and probes accessories) or Two-stage progressive			
Modulation ratio at max. output			3 : 1			
Servomotor		type	SQM 10			
	run time	s	42			
Heat output		kW	415/830÷1660	590/1185÷2370	890/1780÷3560	1190/2670÷5340
		Mcal/h	357/714÷1428	507/1019÷2038	765/1531÷3062	1023/2296÷4592
		kg/h	35/70÷140	50/100÷200	75/150÷300	100/225÷450
Working temperature		°C min./max.	0/40			
FUEL/AIR DATA						
Light oil	Net calorific value	kWh/kg	11,86			
		kcal/kg	10200			
	Viscosity	mm^2/s (cSt)	4 ÷ 6 (at 20°C)			
Pump	type		TA2	TA3	TA4	TA5
	delivery	kg/h	330 (25 bar)	520 (25 bar)	700 (25 bar)	880 (25 bar)
Atomised pressure		bar	25			
Fuel temperature		max. °C	50			
Fuel pre-heater			NO			
Fan		type	Centrifugal with forward curve blades			
Air temperature		max. °C	60			
ELECTRICAL DATA						
Electrical supply		Ph/Hz/V	3N/50/400-230 (±10%) ⅄ or 3/50/230 (±10%) △			
Auxiliary electrical supply		Ph/Hz/V	1/50/230 (±10%)			
Control box		type	LAL 1.25			
Total electrical power		kW	4,5	5,5	10	18
Auxiliary electrical power		kW	1,5	1,5	2,5	3
Heaters electrical power		kW	--			
Protection level		IP	40			
Pump motor electrical power		kW	--			
Rated pump motor current		A	--			
Pump motor start up current		A	--			
Pump motor protection level		IP	--			
Fan motor electrical power		kW	3	4	7,5	15
Rated fan motor current		A	8/13,5	9,5/16,4	17,5/30	29/50,2
Fan motor start up current		A	51/86	48/83	113/195	167/291
Fan motor protection level		IP	55			
Ignition trasformer		type				
		V1 - V2	230 V - 2x6 kV			
		I1 - I2	2,3 A - 35 mA			
Operation			Intermittent (at least one stop every 24 h)			
EMISSIONS						
Sound pressure		dBA	86,5	85,5	89,5	90
Sound power		dBA	97,5	96,5	100,5	101
CO emission		mg/kWh	< 35			
Grade of smoke indicator		NO Bacharach	< 0,6			
CxHy emission		mg/kWh	< 8 (after the first 20 seconds)			
NOx emission		mg/kWh	< 200			< 220
APPROVAL						
Directive			2009/142/EC - 2014/30/UE - 2014/35 UE			
Conforming to			EN 267			
Certification			CE-0441/B	CE-0441/B	CE-0441/B	CE-0441/B

Reference conditions:
Temperature: 20°C - Pressure: 1013,5 mbar - Altitude: 0 m a.s.l. - Noise measured at a distance of 1 meter.
Sound pressure measured in manufacturer's combustion laboratory, with burner operating on test boiler and at maximum rated output. The sound power is measured with the "Free Field" method, as per EN 15036, and according to an "Accuracy: Category 3" measuring accuracy, as set out in EN ISO 3746.

Firing Rates



Useful working field for choosing the burner

Modulation range

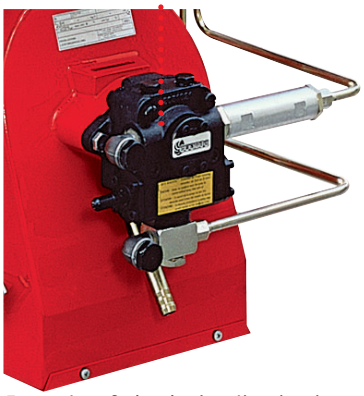
Test conditions conforming to EN267
Temperature: 20°C
Pressure: 1013,5 mbar
Altitude: 0 m a.s.l.

Fuel Supply

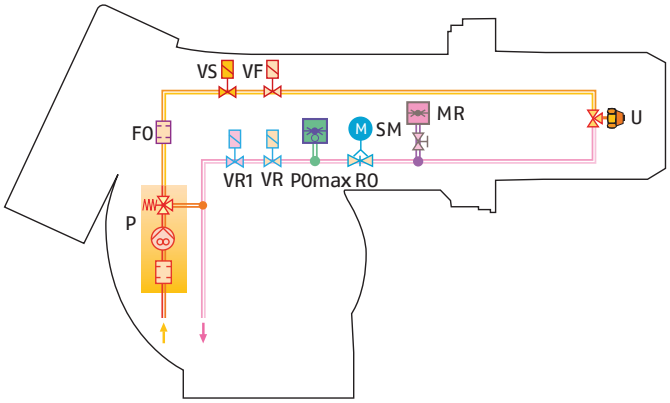
HYDRAULIC CIRCUIT

Various hydraulic circuits are available, depending on fuel output asset according to local norms of steam generators.

The burners are fitted with two valves (a safety valve and an operation valve) and an oil filter along the oil line from the pump to the nozzle.
A pressure regulator on the return circuit from the nozzle allows to vary the quantity of fuel burnt.
A double safety valve on the return circuit avoids oil leakage from the nozzle when the burner is in stand-by and prepurge phase.
The models are fitted with a maximum pressure switch on the oil return circuit.



Example of the hydraulic circuit on PRESS 200 P/G

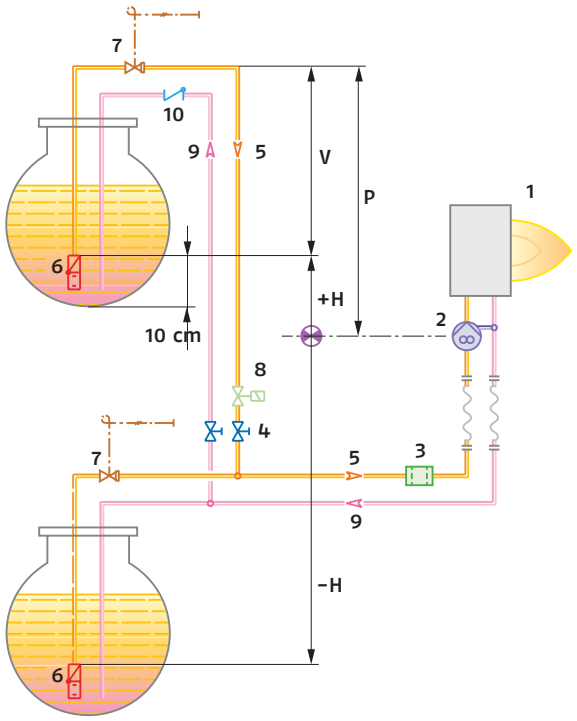


P	Pump with filter and pressure regulator on the output circuit
FO	Oil filter
VS	Safety valve on the output circuit
VF	Working valve on the output circuit
U	Nozzle
MR	Pressure gauge on the return circuit
SM	Servomotor
RO	Pressure regulator on the return circuit
P0 max	Max. Oil pressure switch on the return circuit
VR	1st safety valve on the return circuit
VR1	2nd safety valve on the return circuit

Dimensioning Of The Fuel Supply Lines

The fuel feed must be completed with the safety devices required by the local norms.
The table shows the choice of piping diameter for the various burners, depending on the difference in height between the burner and the tank and their distance.

H	Difference in height pump-foot valve
0	Internal pipe diameter
P	Max. height 10 m
V	Height 4 m
1	Burner
2	Burner pump
3	Filter
4	Manual shut off valve
5	Suction pipework
6	Bottom valve
7	Remote controlled rapid manual shut off valve (compulsory in Italy)
8	Type approved shut off solenoid valve (compulsory in Italy)
9	Return pipework
10	Check valve

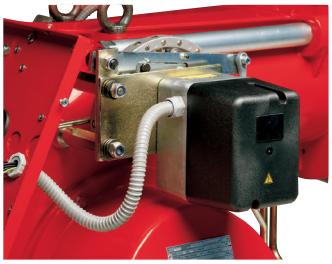


MAXIMUM EQUIVALENT LENGTH FOR THE PIPING L[m]								
Model	P 140 P/G		P 200 P/G		P 300 P/G		P 450 P/G	
Diameter piping	Ø14mm	Ø16mm	Ø16mm	Ø18mm	Ø1/2"	Ø3/4"	Ø3/4"	Ø1"
+H, -H (m)	Lmax (m)	Lmax (m)	L max (m)	L max (m)	L max (m)	Lmax (m)	Lmax (m)	L max (m)
+2,0	50	70	40	60	25	85	55	130
+1,5	45	65	35	55	23	80	50	120
+1,0	40	60	30	50	20	70	45	110
+0,5	35	50	25	45	18	65	40	100
0	30	45	20	40	15	60	35	90
-0,5	25	40	18	35	12	50	30	80
-1,0	20	35	15	30	10	45	25	70
-1,5	15	30	13	25	8	35	20	60
-2,0	10	25	10	20	5	30	15	45
-3,0	5	15	5	10	3	15	10	25

With ring distribution oil systems, the feasible drawings and dimensioning are the responsibility of specialised engineering studios, who must check compatibility with the requirements and features of each single installation.

Ventilation

The ventilation circuit is provided with a forward blades centrifugal fan, which guarantees high pressure levels at the required air deliveries and permits installation flexibility.
In spite of the remarkable output power and of the very high pressure performances, the structures of PRESS models are extremely compact.
The use of sound proofing boxes help in reducing the noise level.
A variable profile cam connects fuel and air setting, ensuring fuel efficiency in all firing rates.



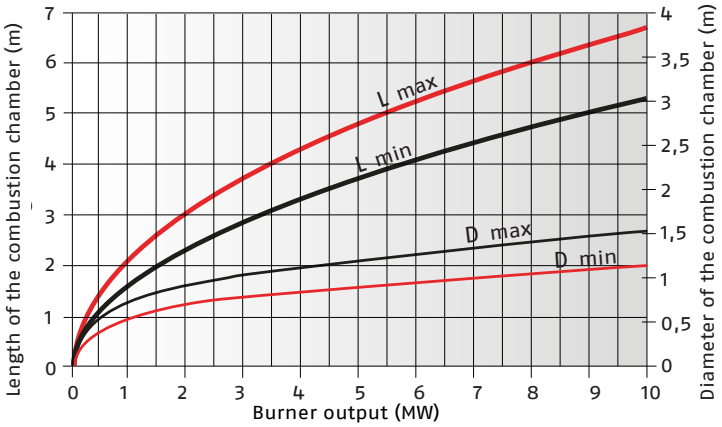
Example of three stage hydraulic ram

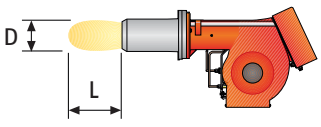
Combustion Head

Two different lengths of the combustion head can be chosen for the various models of the PRESS P/G series of burners.
The choice depends on the thickness of the front panel and the type of the boiler.
Depending on the type of heat generator, it is necessary to check the correct head penetration into the combustion chamber.
These burners are equipped with a variable geometry combustion head. The chance to control air speed in combustion head is essential to gain the full advantage of a modulating burner. This function allows optimum combustion performance through the working field, ensuring peak combustion efficiency thus saving on fuel consumption.
The following diagram shows the flame dimensions in relation to the burner output. The length and diameter shown in the diagram below should be employed for a preliminary check: it is required a more careful investigation if combustion chamber dimensions are much different from the above reported values.

Example of a PRESS P/G burner combustion head

FLAME DIMENSIONS





Example:
Burner thermal output = 3500 kW;
L Combustion Chamber (m) (m) = 3,5 m (medium value);
D Combustion Chamber (m) = 1 m (medium value)

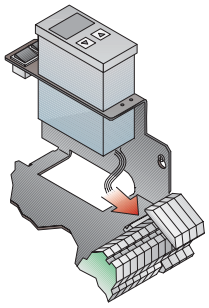
Operation

BURNER OPERATION MODE

The PRESS P/G series of burners can have "two-stage progressive" or "modulating" operation.

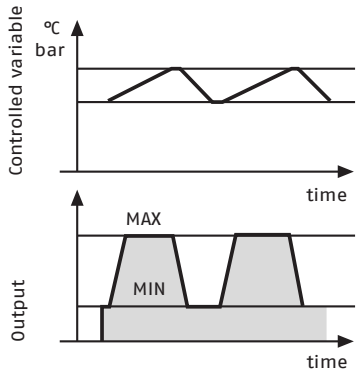
On "two-stage progressive" operation, the burner gradually adapts the output to the requested level, by varying between two pre-set levels (see picture A).

On "modulating" operation, normally required in steam generators, in superheated boilers or diathermic oil burners, a specific regulator and probes are required. These are supplied as accessories that must be ordered separately. The burner can work for long periods at intermediate output levels (see picture B).



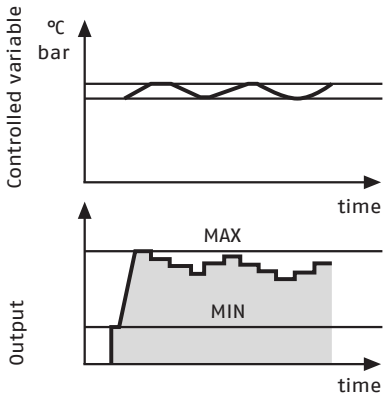
Example of a regulator

"Two-stage progressive" operation



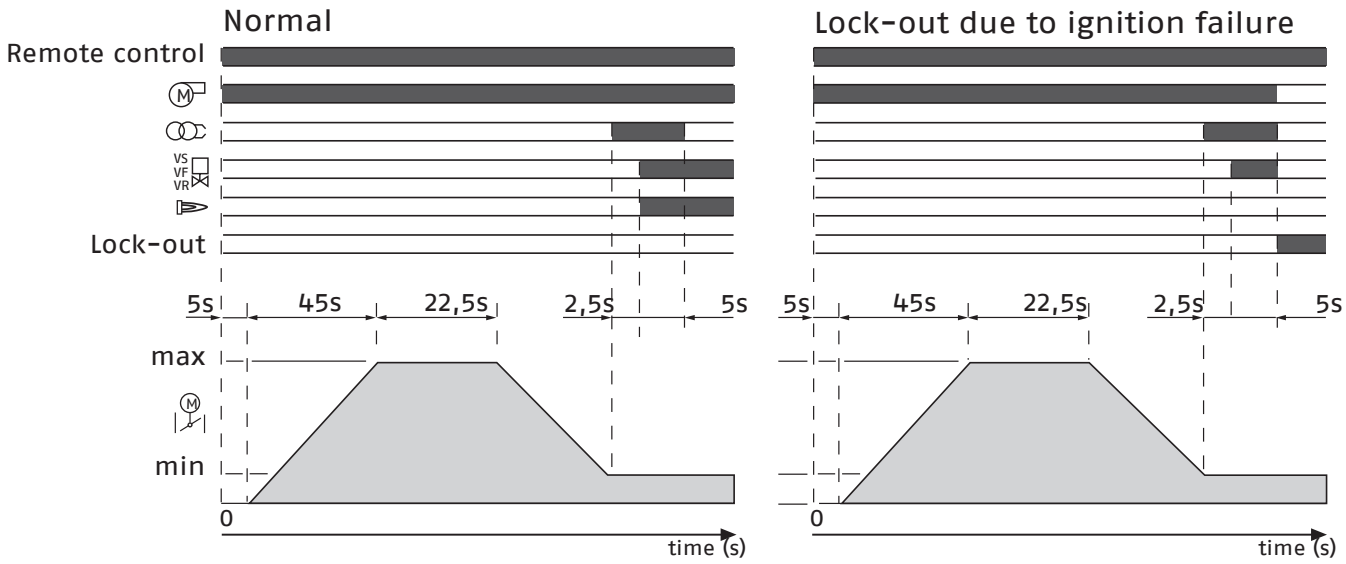
Picture A

"Modulating" operation



Picture B

START UP CYCLE

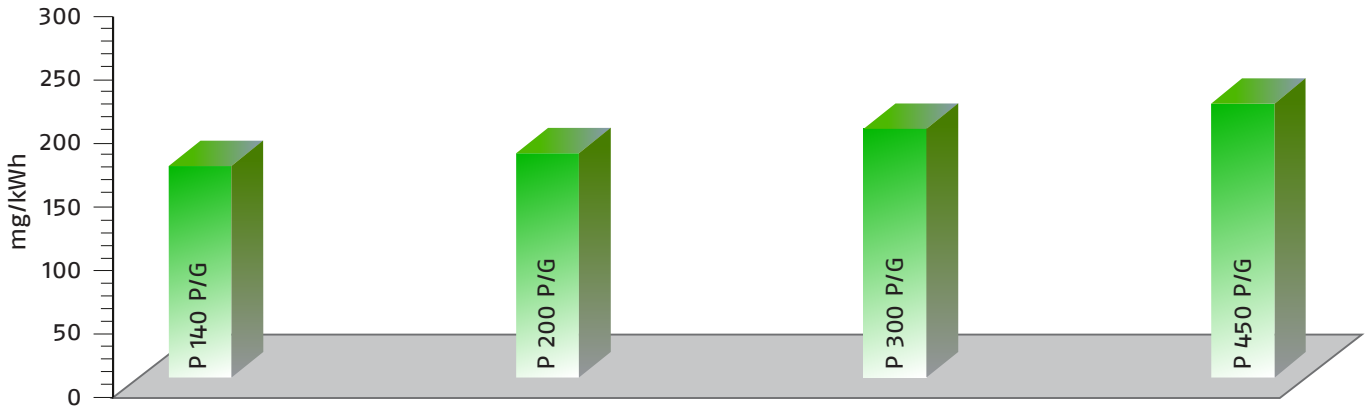


0″	The burner begins the start-up cycle: the motor starts running.
5″-50″	The servomotor opens the air damper at the maximum position.
50″-72,5″	Pre-purge phase with air damper open.
72,5″-92,5″	The servomotor takes the air damper to the ignition position.
92,5″	Ignition transformer turns on.
95″	0il solenoid valves open and flame detection with PE. cell is activated.
100″	After a safety time of 7,5″ the ignition transformer turns off if there is the flame, otherwise lock-out happens.

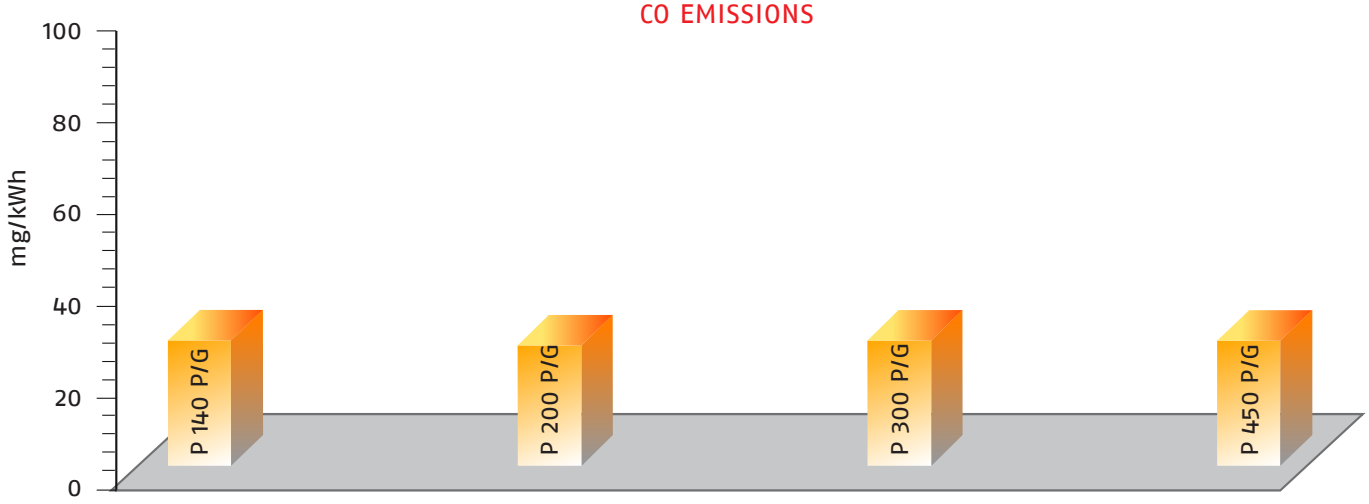
Emissions

The emission data has been measured in the various models at maximum output, according to EN 267 standard.

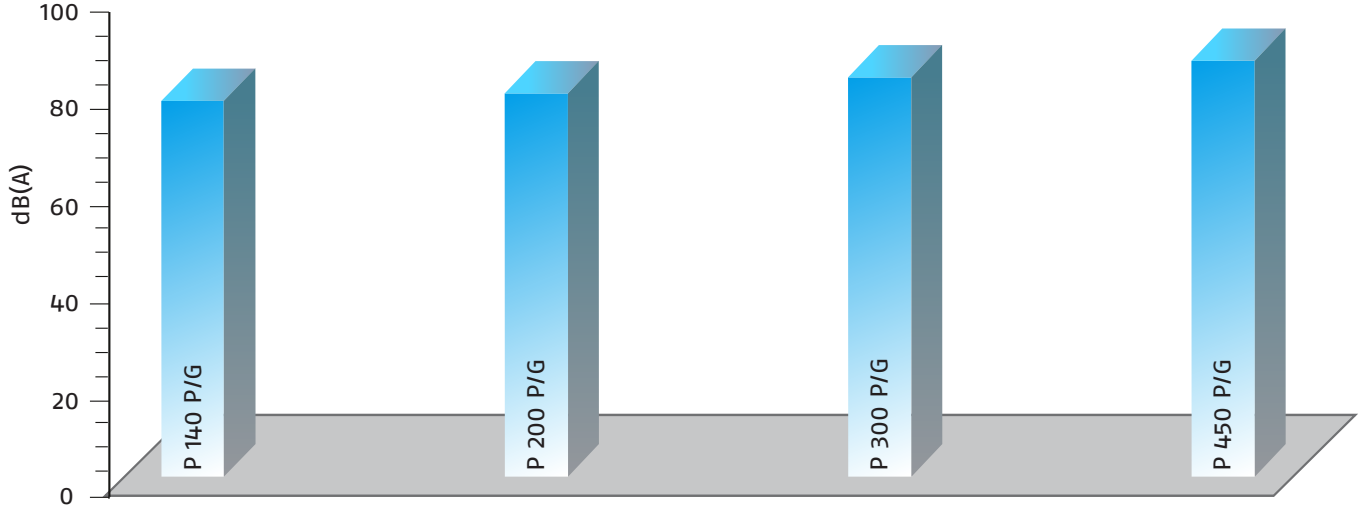
NO2 EMISSIONS



CO EMISSIONS

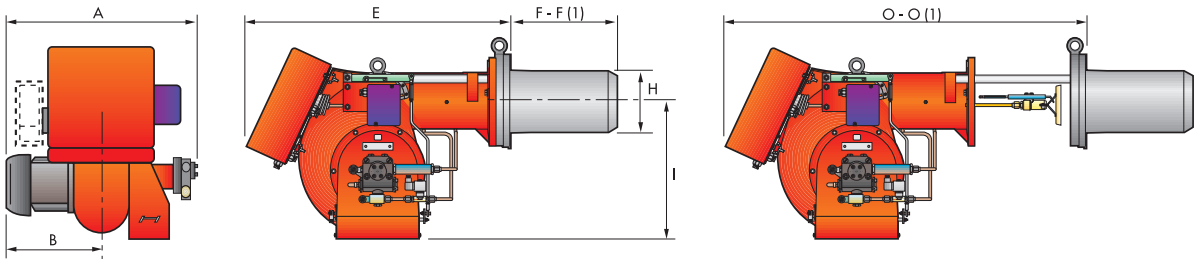


NOISE EMISSIONS



Overall Dimensions (mm)

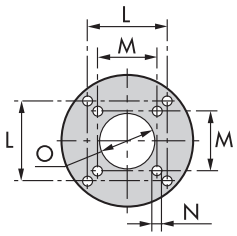
BURNER



MODEL	A	B	E	F – F (1)	H	I	O – O (1)
P 140 P/G	765	365	890	363 – 473	222	467	1250 –1360
P 200 P/G	796	396	890	391 – 501	250	467	1280 –1390
P 300 P/G	858	447	1000	444 – 574	295	496	1440 –1570
P 450 P/G	950	508	1070	476 – 606	336	525	1546 –1676

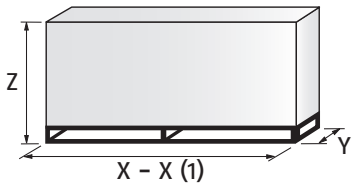
(1) Length with extended combustion head.

BURNER – BOILER MOUNTING FLANGE



MODEL	L	M	N	O
P 140 P/G	260	230	M14	225
P 200 P/G	260	–	M16	255
P 300 P/G	260	–	M18	300
P 450 P/G	310	–	M20	340

PACKAGING



MODEL	X – X (1)	Y	Z	kg
P 140 P/G	1740	990	950	130
P 200 P/G	1740	990	950	220
P 300 P/G	2040	1180	1125	238
P 450 P/G	2040	1180	1125	300

(1) Length with extended combustion head.

Installation Description

Installation, start-up and maintenance must be carried out by qualified and skilled personnel.
All operations must be performed in accordance with the technical handbook supplied with the burner.

BURNER SETTING

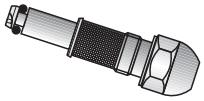
- All the burners have slide bars, for easier installation and maintenance.
- After removing the cover, the split pin and the pin, the nuts and the screws, dismantle the blast tube form the burner of approximatively 100-120mm and fix it to the boiler.
- Adjust the combustion head.
- Refit the burner casing to the slide bars.
- Install the nozzle, choosing it on the basis of the maximum boiler output and following the diagrams included in the burner instruction handbook.
- Check the position of the electrodes.
- Close the burner, fasten the screws, the nuts, the split pin and the pin.

HYDRAULIC AND ELECTRICAL CONNECTIONS AND START-UP

- The burners are supplied for connection to two pipes fuel supply system.
- Connect the ends of the flexible pipes to the suction and return pipework using the supplied nipples.
- Make the electrical connections to the burner following the wiring diagrams included in the instruction handbook.
- Prime the pump by turning the motor (after checking rotation direction if it is a three phase motor). On start up, check:
  - Pressure pump and valve unit regulator (to max. and min.)
  - Combustion quality, in terms of unburned substances and excess air.

Burner accessories

Return nozzles



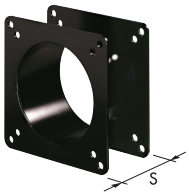
The following list shows the features and codes on the basis of the maximum required fuel output.

NOTE: each burner needs N° 1 nozzle.

BURNER	RATED OUTPUT kg/h (*)	NOZZLES BERGONZO B5 45° WITHOUT "SA" NEEDLE CODE	NOZZLES FLUIDICS N2 45° WITHOUT NEEDLE CODE
P 140 P/G	70	3009303	3045471
P 140 P/G	80	3009305	3045472
P 140 P/G	90	3009307	3045473
P 140 - 200 P/G	100	3009310	3045475
P 140 - 200 P/G	125	3009312	3045477
P 200 - 300 P/G	150	3009314	3045479
P 200 - 300 P/G	175	3009316	3045481
P 200 - 300 P/G	200	3009318	3045483
P 300 - 400 P/G	225	3009320	3045485
P 300 - 400 P/G	250	3009322	3045487
P 300 - 400 P/G	275	3009324	3045489
P 300 - 400 P/G	300	3009326	3045491
P 450 P/G	325	3009328	3045493
P 450 P/G	350	3009330	3045495
P 450 P/G	375	3009332	3045497
P 450 P/G	400	3009334	3045499
P 450 P/G	425	3009336	3045500
P 450 P/G	450	3009338	3045501

(*) Nozzle rated delivery is referred to atomised pressure

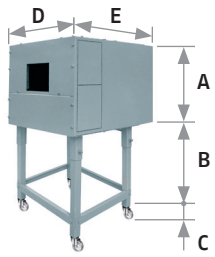
Spacer kit



If burner head penetration into the combustion chamber needs reducing, varying thickness spacers are available, as given in the following list.

Burner	Spacer thickness S (mm)	Kit code
P 140 P/G	102	3000722
P 200 P/G	102	3000722
P 300 P/G	130	3000723
P 450 P/G	130	3000751

Sound proofing box



If noise emission needs reducing even further, sound-proofing boxes are available. In case of generator heights, where a lower dimension "B" is required, ask for the Box Support Kit code 20065135. The useful dimensions are 40 mm less than the total dimensions indicated in the table (A, D, E). Not suitable for outdoor use.

Burner	Box type	A (mm)	B (mm) min-max	C (mm)	D (mm)	E (mm)	[dB(A)] (*)	Box code
P 140 P/G P 200 P/G	C4/5	850	160 - 980	110	980	930	10	3010404
P 300 P/G P 450 P/G	C7	1255	160 - 980	110	1140	1345	10	3010376

(*) Average noise reduction according to EN 15036-1 standard

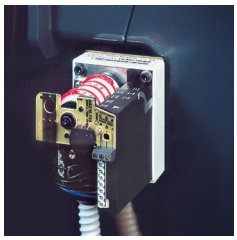
Accessories for modulating operation

To obtain modulating operation, the PRESS P/G series of burners requires a regulator.

BURNER	REGULATOR TYPE	REGULATOR CODE
P 140 - 200 - 300 - 450 P/G	RWF 50.2	20100018
	RWF 55.5	20101965

The relative temperature or pressure probes fitted to the regulator, must be chosen on the basis of the application.

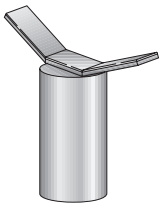
BURNER	PROBE TYPE	RANGE (°C) (bar)	PROBE CODE
P 140 - 200 - 300 - 450 P/G	Temperature PT 100	-100 ÷ 500°C	3010110
P 140 - 200 - 300 - 450 P/G	Pressure 4 ÷ 20 mA	0 ÷ 2,5 bar	3010213
P 140 - 200 - 300 - 450 P/G	Pressure 4 ÷ 20 mA	0 ÷ 16 bar	3010214
P 140 - 200 - 300 - 450 P/G	Pressure 4 ÷ 20 mA	0 ÷ 25 bar	3090873



Depending on the servomotor fitted to the burner, a three-pole potentiometer (1000 Ω) can be installed to check the position of the servomotor.

BURNER	POTENTIOMETER KIT CODE
P 140 - 200 - 300 - 450 P/G	3010021

Burner support

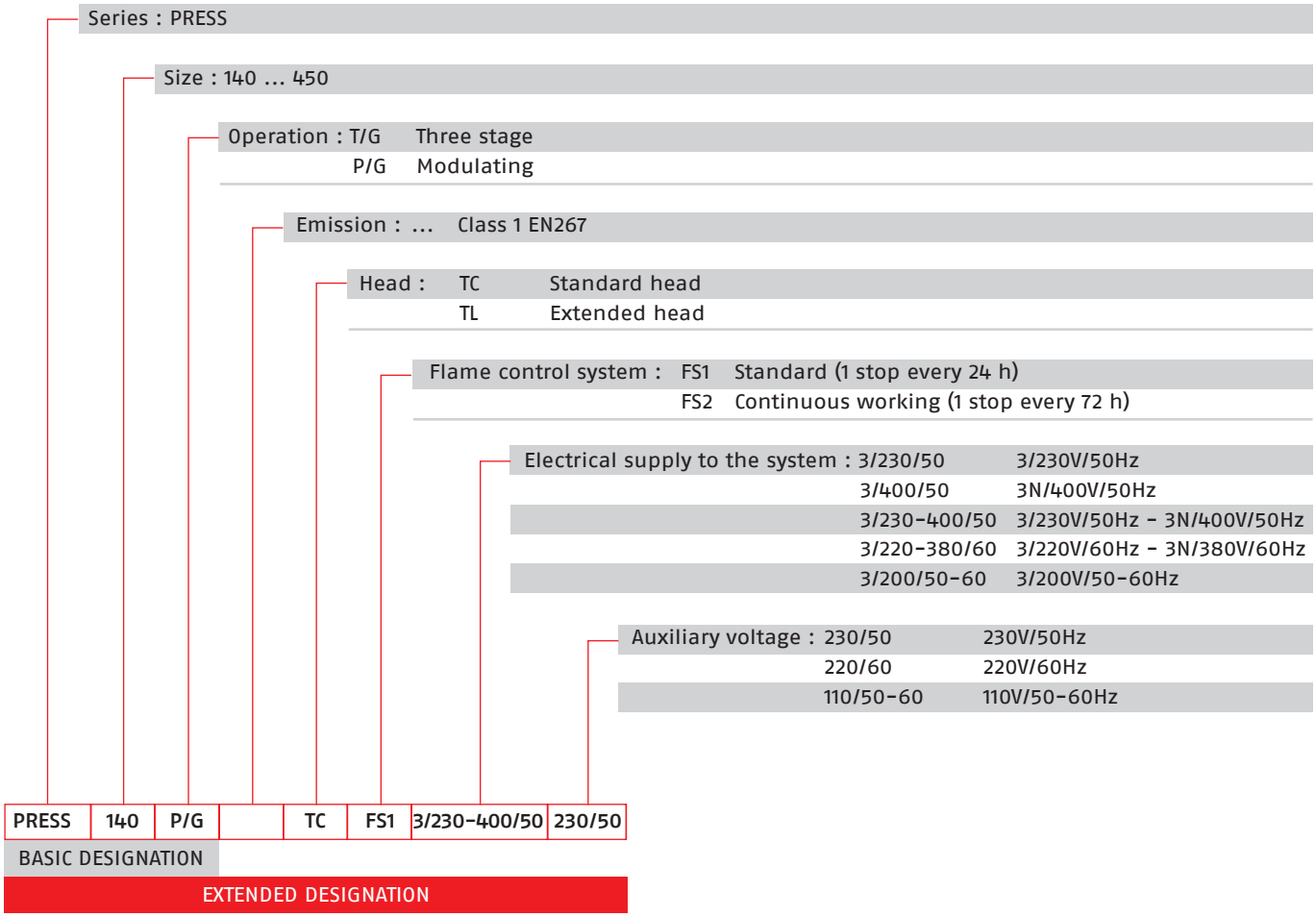


For easier maintenance, a mobile burner support has been designed, which means the burner can be dismantled without the need of forklift trucks.

Burner	Support code
P 300 P/G - P 450 P/G	3000731

Specification

DESIGNATION OF SERIES



AVAILABLE MODELS

PRESS 140 P/G	TC	FS1	3/230-400/50	230/50
PRESS 140 P/G	TL	FS1	3/230-400/50	230/50
PRESS 200 P/G	TC	FS1	3/230-400/50	230/50
PRESS 200 P/G	TL	FS1	3/230-400/50	230/50
PRESS 300 P/G	TC	FS1	3/230-400/50	230/50
PRESS 300 P/G	TL	FS1	3/230-400/50	230/50
PRESS 300 P/G	TC	FS1	3/230/50	230/50
PRESS 300 P/G	TL	FS1	3/230/50	230/50
PRESS 300 P/G	TC	FS1	3/400/50	230/50
PRESS 300 P/G	TL	FS1	3/400/50	230/50
PRESS 450 P/G	TC	FS1	3/230/50	230/50
PRESS 450 P/G	TL	FS1	3/230/50	230/50
PRESS 450 P/G	TC	FS1	3/400/50	230/50
PRESS 450 P/G	TL	FS1	3/400/50	230/50

STATE OF SUPPLY

Monoblock forced draught oil burner, two stage progressive or modulating operation, with a kit, fully automatic, made up of:
- Air suction circuit
- Fan with forward curved blades high performance pressure levels
- Air damper for air setting and automatic oil output regulator controlled by a servomotor with variable cam
- Starting motor at 2850rpm, three-phase 400V with neutral, 50Hz
- Combustion head, that can be set on the basis of the required output, fitted with:
    - stainless steel end cone, resistant to corrosion and high temperatures
    - ignition electrodes
    - flame stability disk
- Gears pump for high pressure fuel supply, fitted with:
    - filter
    - pressure regulator
    - connections for installing a pressure gauge and vacuometer
    - internal by-pass for single pipe installation
- Valve unit with a double oil safety valve on the output circuit and double safety valve on the return circuit
- Safey oil pressure switch for stop the burner in the case of problems on return circuit
- Photocell for flame detection
- Burner safety control box, fitted with control functions for the correct positioning of the servomotor and possibility of post-ventilation by just changing the electric wiring
- Flame inspection window
- Slide bars for easier installation and maintenance
- Protection filter against radio interference
- IP X0D (IP 40) electric protection level.

Standard equipment:
- 2 flexible pipes for connection to the oil supply network
- 2 nipples for the connection to the pump
- wiring looms fittings for electrcial connections
- 4 screws for fixing the burner flange to the boiler
- 2 slide bar extensions (for the extended head models of P 300 P/G e P 450 P/G)
- 1 star delta starter (on models where provided)
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

NOTES

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Riello Burners a world of experience in every burner we sell.

06/2016
TS0039UK03

[1]

[2]

[1] BURNERS PRODUCTION PLANT
S. PIETRO, LEGNAGO (VERONA) – ITALIA

[2] HEADQUARTER BURNERS DIVISION
S. PIETRO, LEGNAGO (VERONA) – ITALIA

Across the world, Riello sets the standard in reliable and high efficiency burner technology.
With burner capacity from 5 kW to 48 MW, Riello gas, oil, dual fuel and Low Nox burners deliver unbeatable performance across the full range of residential and commercial heating applications, as well as in industrial processes.
With headquarter in Legnago, Italy, Riello has been manufacturing premium quality burners for over 90 year.
The manufacturing plant is equipped with the most innovative systems of assembling lines and modern manufacturing cells for a quick and flexible response to the market.
Besides, the Riello Combustion Research Centre, located in Angiari, Italy, represents one of the most modern facility in Europe and one of the most advanced in the world for the development of the combustion technology.
Today, the company's presence on worldwide markets is distinguished by a well-constructed and efficient sales network, alongside many important Training Centres located in various countries to meet its customers' needs.
Riello has 13 operational branches abroad (in Europe, America and Asia), with customers in over 60 countries.

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