RIELLO BURNERS

CE

ONE STAGE LIGHT OIL BURNERS

RIELLO 40 G SERIES

G3	23,8	÷	35,9	kW
G3R	23,8	÷	35,9	kW
G3RK	15,0	÷	35,0	kW
G5	28,0	÷	60,0	kW
G5R	28,0	÷	60,0	kW
G5K	29,0	÷	60,0	kW
G5RK	12,0	÷	60,0	kW
G7	29,0	÷	69,0	kW
G10	54,0	÷	120,0	kW
G20	95,0	÷	213,0	kW
G20S	95,0	÷	240,0	kW

The Riello 40 G series of one stage light oil burners, is a complete range of products developed to respond to any request for home heating. The Riello 40 G series is available in eleven different models, whit an output ranging from 12 to 240 kW, divided in four different structures.
All the models use the same components designed by Riello for the Riello 40 G series. The high quality level guarantees safe working.
In developing these burners, special attention was paid to reducing noise, to the ease of installation and adjustment, to obtaining the smallest size possible to fit into any sort of boiler available on the market.
All the models are approved by the EN 267 European Standard and conform to European Directives for EMC, Low Voltage, Machinery and Boiler Efficiency.
All the Riello 40 G burners are fired before leaving the factory.

TECHNICAL DATA

	Model		G3	G3R	G3RK	G5	G5R	G5K	G5RK	G7	G10	G20	G20S
Fuel / air data	Setting		One stage							One stage			
	Servo-motor type		--							--			
	Servo-motor run time	s	--							--			
	Heat output	kW	23,8 - 35,9	23,8 - 35,9	15 - 35	28 - 60	28 - 60	29 - 60	12 - 60	29 - 69	54 - 120	95 - 213	95 - 240
		Mcal/h	20 - 31	20 - 31	13 - 30	24 - 52	24 - 52	25 - 52	10 - 52	25 - 59	46 - 103	82 - 183	82 - 206
		kg/h	2 - 3	2 - 3	1,3 - 3	2,3 - 5	2,3 - 5	2,5 - 5	1 - 5	2,5 - 5,8	4,5 - 10	8 - 18	8 - 20
	Working temperature	°C min./max.	0/40							0/40			
	Net calorific value	kWh/kg	11,8							11,8			
		kcal/kg	10.200							10.200			
	Viscosity at 20°C	mm^2/s (cSt)	4 ÷ 6					4 ÷ 6		2 ÷ 6		4 ÷ 6	
	Pump type		R.B.L.							R.B.L.			
	Pump output	kg/h at 12 bar	30							30			
	Atomised pressure	bar	8 - 15							8 - 15			
	Fuel temperature	max. °C	50							50			
	Fuel pre-heater		NO	YES	YES	NO	YES	NO	YES	NO	NO	NO	NO
	Fan	type	forward tilted blades							forward tilted blades			
	Air temperature	max. °C	40							40			
Electrical data	Electrical supply	Ph/Hz/V	1/50/230 ±10%							1/50/230 ±10%			
	Aux. electrical supply	Ph/Hz/V	--							--			
	Control box	type	RBL 530 SE	RBL 531 SE	RBL 531 SE	RBL 530 SE	RBL 531 SE	RBL 530 SE	RBL 531 SE	RBL 530 SE	RBL 530 SE	RBL 530 SE	RBL 530 SE
	Total electrical power	kW	0,12	0,17	0,17	0,13	0,19	0,13	0,19	0,16	0,17	0,33	0,33
	Total rated current	A	0,7	1	1	0,75	1,1	0,75	1,1	0,8	0,85	1,5	1,5
	Protection level	IP	40							40			
	Motor electrical power	kW	0,9	0,9	0,9	0,1	0,1	0,1	0,1	0,13	0,14	0,30	0,30
	Rated motor current	A	0,7	0,7	0,7	0,75	0,75	0,75	0,75	0,8	0,85	1,5	1,5
	Motor start current	A	2,5	2,5	2,5	3	3	3	3	3,5	3,5	6	6
	Motor protection level	IP	20							20			
	Ignition transformer		incorporated in the control box							incorporated in the control box			
	Operation		intermittent (at least one halt every 24 h)							intermittent (at least one halt every 24 h)			
Emissions	Sound pressure	dB(A)	57	57	56	59	59	59	59	64	65	74	72
	CO Emissions	mg/kWh	<60							<60			
	Grade of smoke indicator	N° Bach.	<1							<1			
	C_xH_y Emissions	mg/kWh	<10 AFTER THE FIRST 20s							<10 AFTER THE FIRST 20s			
	NOx Emissions	mg/kWh	<250							<250			
Approval	Directives		89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC				89/336/EEC, 73/23/EEC, 89/392/EEC, 92/42/EEC	89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC		89/336/EEC, 73/23/EEC, 89/392/EEC, 92/42/EEC	89/336/EEC, 73/23/EEC, 98/37/EEC, 92/42/EEC		
	Conforming to:		EN 267							EN 267			
	Certifications		--	--	CE-0036 0253/99	--	--	CE-0036 0255/99	CE-0036 0256/99	--	CE-0036 0257/99	--	--

Reference conditions:
Temperature: 20 °C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.
Noise was measured in the boiler room behind the burner at a distance of 1 meter.

Since the Company is constantly engaged in the production improvement, the aesthetic and dimensional features, the technical data, the equipment and the accessories can be changed.
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SPECIFICATION DESCRIPTION

Burner:

Completely automatic monobloc light oil burners, with one stage operation fitted with:
- Fan with forward inclined blades
- Metallic cover lined with sound-deadening material
- Air damper, completely closed in stand by, with adjustment
- Single phase electric motor 230 V, 50 Hz
- Combustion head fitted with:
    - stainless steel head cone, resistant to high temperatures
    - ignition electrodes
    - flame stability disk
- Geared pump for fuel supply, fitted with:
    - filter
    - pressure regulator
    - attachments for fitting a pressure gauge and vacuum meter
    - internal by-pass for preparing for single-pipe installations
- Fuel feed solenoid valve incorporated in the pump
- Photocell for flame detection
- Electronic flame control equipment
- Light oil nozzle
- IP 40 protection level
- Fuel pre-heater (optional)
- Reduced output ignition mechanism (optional).

Approval:
- EN 267 standard.

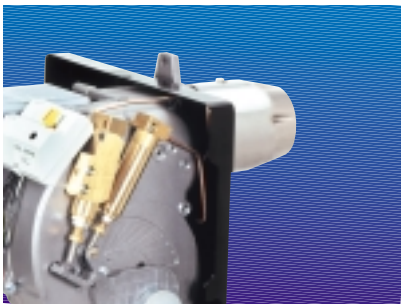
Conforming to:
- Directive 89/336/EEC (electromagnetic compatibility)
- Directive 73/23/EEC (low voltage)
- Directive 98/37/EEC - 89/392/EEC (machinery)
- Directive 92/42/EEC (efficiency).

Standard equipment:
- Two flexible pipes for connection to the light oil supply line
- Two nipples for connection to the pump
- Flange, screws and nuts for fixing
- Thermal screen
- 7-pin plug
- Instruction handbook for installation, use and maintenance
- Spare parts catalogue.

Available accessories to be ordered separately:
- Extended head kit
- Spacer kit
- Light oil filter
- Biodiesel kit
- Remote resetting kit
- Balanced flue version.

ELECTRICAL CONNECTIONS
to be made by the installer

Electrical connections must be made by qualified and skilled personnel in conformity with the local regulations in force.

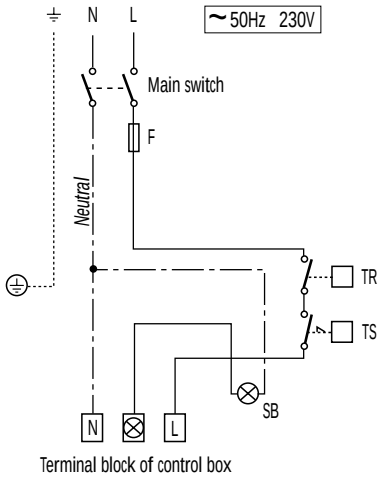


7-pole socket wiring with 7-pin plug

Control box fitted with an ignition transformer

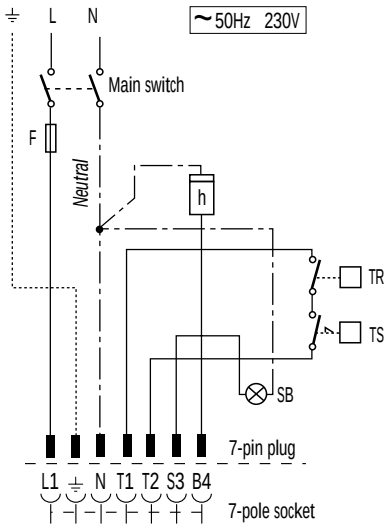
"ONE STAGE" OPERATION

G3 - G3R - G5 - G5R - G7 - G20 - G20S



TR - Regulating thermostat
TS - Safety thermostat (with manual resetting)
SB - Remote lock-out lamp (230V 0,5A max)
F - Fuse

G3RK - G5K - G5RK - G10



TR - Regulating thermostat
TS - Safety thermostat (with manual resetting)
SB - Remote lock-out lamp (230V 0,5A max)
h - Hour meter
F - Fuse

The following table shows the supply lead sections and types of fuse to be used.

Model	G3	G3R	G3RK	G5	G5R	G5K	G5RK	G7	G10	G20	G20S
	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V
F A	6	6	6	6	6	6	6	6	6	T6	T6
L mm^2	1	1	1	1	1	1	1	1	1	1	1

F = Fuse L = Lead section

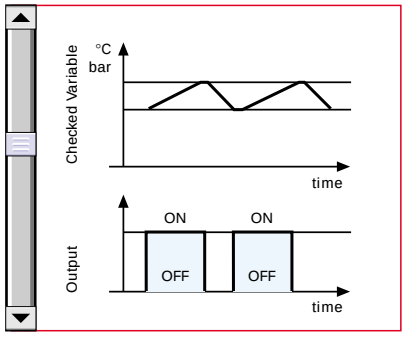
ADJUSTMENT

BURNER OPERATION MODE

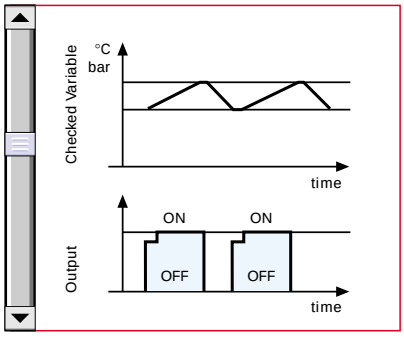
All these models are one stage operation; the G20S model is one stage operation with reduced output firing.

Air damper

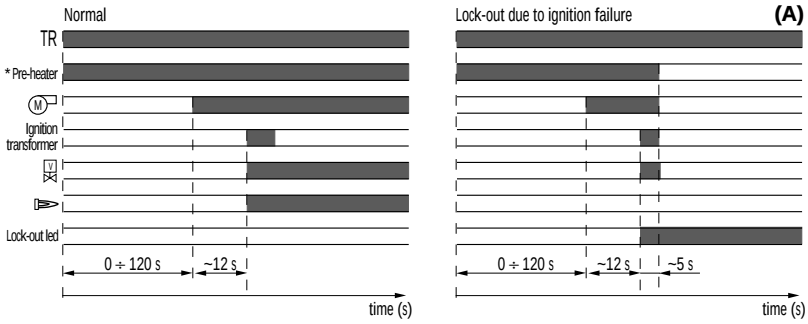
One stage operation



One stage operation with reduced output ignition



IGNITION



* Only model with pre-heater.

(A) Lock-out is shown by a led on the appliance.

Correct operation

0s The burner begins the ignition cycle.
0s-12s Pre-purge with the air damper open.
12s Ignition.

* If the pre-heater is fitted (G...R series), there is a further delay before pre-purge; this delay can reach 120s depending on room and fuel temperatures.

Lock-out due to ignition failure

If the flame does not light within the safety limit (~ 5s) the burner locks-out.

VENTILATION

The ventilation circuits always ensure low noise levels with high performance of pressure and air delivery, inspite of their compact size.

Air suction

COMBUSTION HEAD

The G3 and G3R models all have fixed heads. Certain models allows you to choose the length of the combustion head.

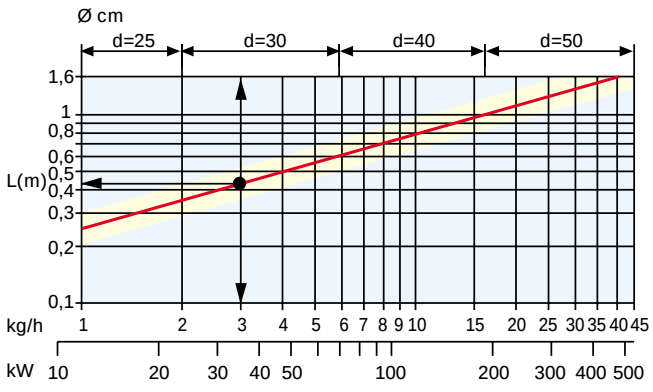
This choice depends on the thickness of the front wall and type of the boiler.

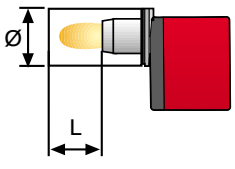
Depending on the type of generator, you should check the correct penetration of the head into the combustion chamber.

Simple adjustment to the combustion head allows adapting internal geometry of the head to the maximum rated output of the burner.

Combustion head

Combustion chamber dimensions used in the test laboratory





$L\ (m) = 0{,}25 \times \sqrt{kg/h}$

With simple adjustments, the burner can be adapted to combustion chambers that are slightly different from those used in the tests.

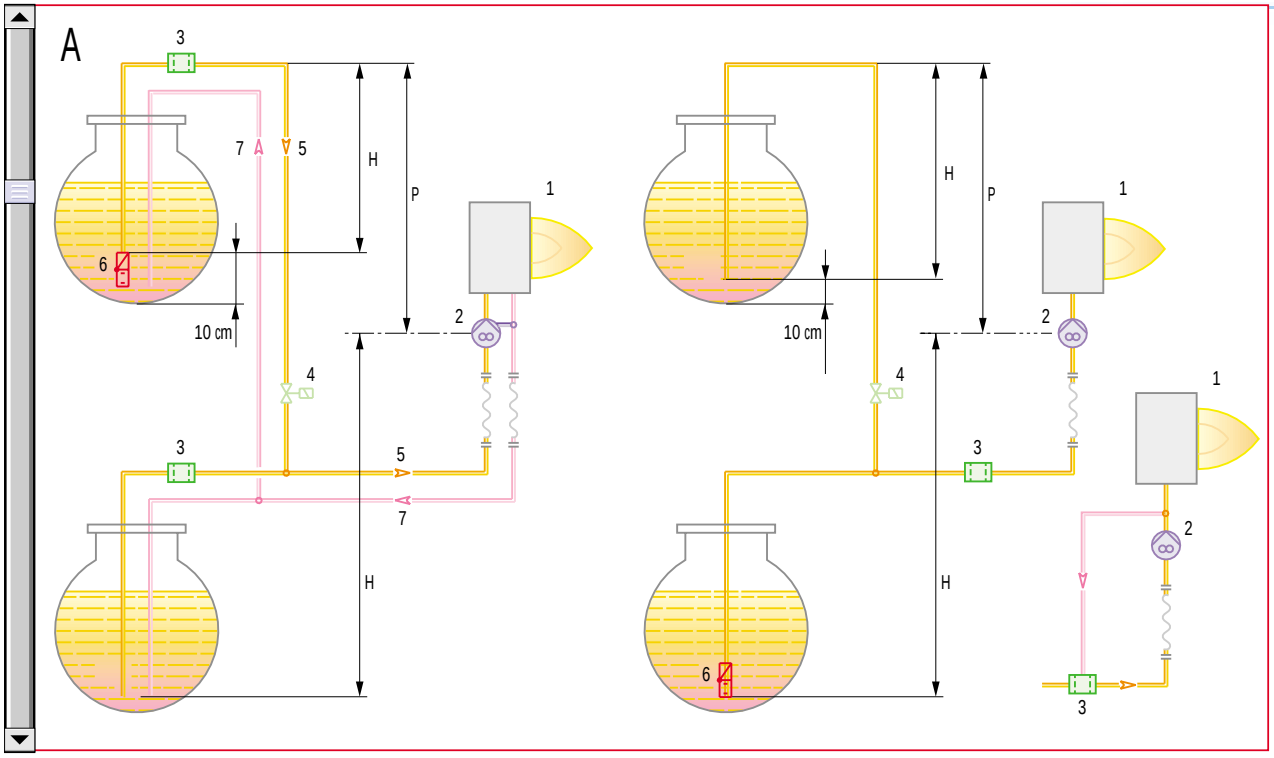
Example:
burnt thermal delivery = 3 kg/h;
L (m) = 0,25 x $\sqrt{3}$ = 0,43 (m);
Ø = 30 (cm)

DIMENSIONING OF THE FUEL SUPPLY LINES

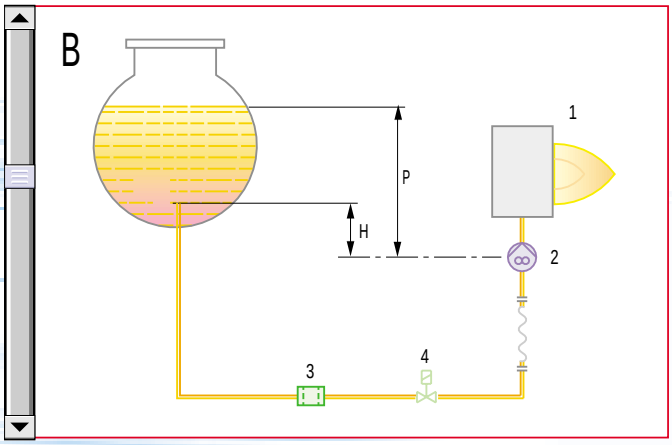
The fuel feed must be completed with the safety devices required by the local regulations in force.

The table shows the choice of piping diameter for the various burners, depending on the difference in the height between the burner and the tank and the distance between them.

MAXIMUM EQUIVALENT LENGTH OF THE PIPEWORK L[m]				
	▼ Type A system		▼ Type B system	
Pipe size	Ø8mm	Ø10mm	Ø8mm	Ø10mm
H (m)	Lmax (m)	Lmax (m)	Lmax (m)	Lmax (m)
0	35	100	-	-
0,5	30	100	10	20
1,0	25	100	20	40
1,5	20	90	40	80
2,0	15	70	60	100
3,0	8	30	-	-
3,5	6	20	-	-



Type of system that can be installed

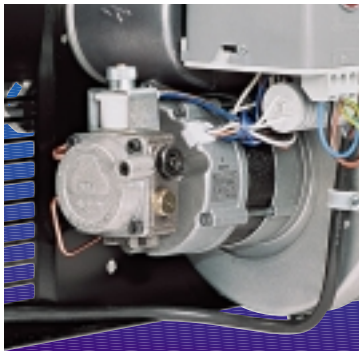


H	Difference in height
Ø	Internal pipe diameter
P	Difference in height ≤ 4 m
1	Burner
2	Pump
3	Filter
4	Shut-off solenoid valve
5	Suction pipework
6	Bottom valve
7	Return pipework

FUEL SUPPLY

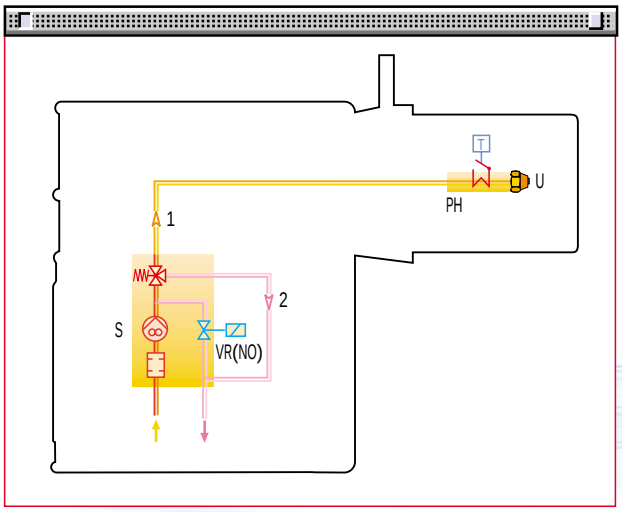
HYDRAULIC CIRCUITS

All the burners have a R.B.L. geared pump with safety valve on the return circuit.



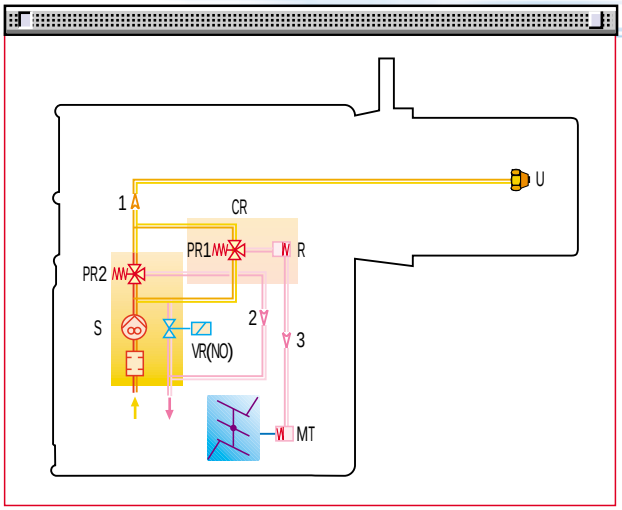
Fuel pump

G3 - G3R - G3RK - G5 - G5R - G5K - G5RK - G7 - G10 - G20



Fuel feed to the burner can be from the right or the left side on all models.

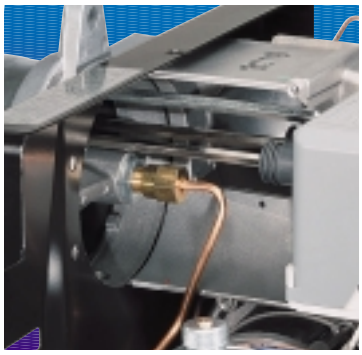
G20S

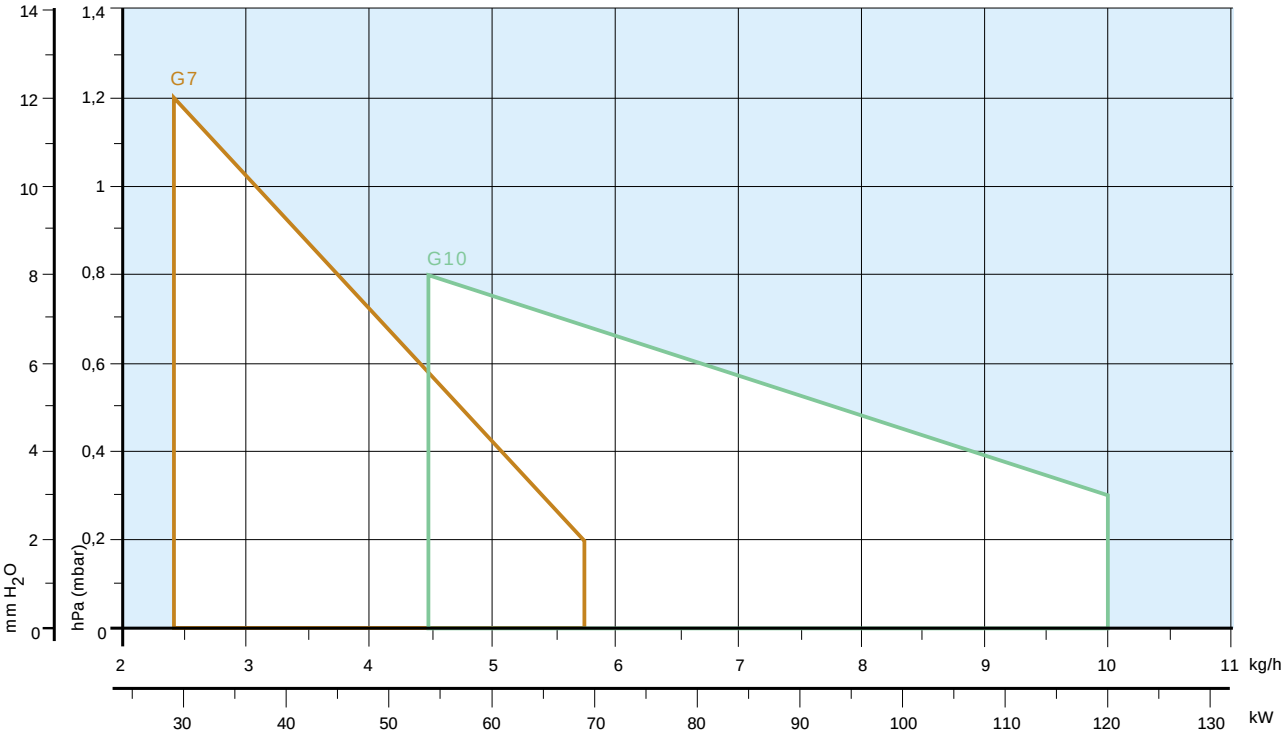


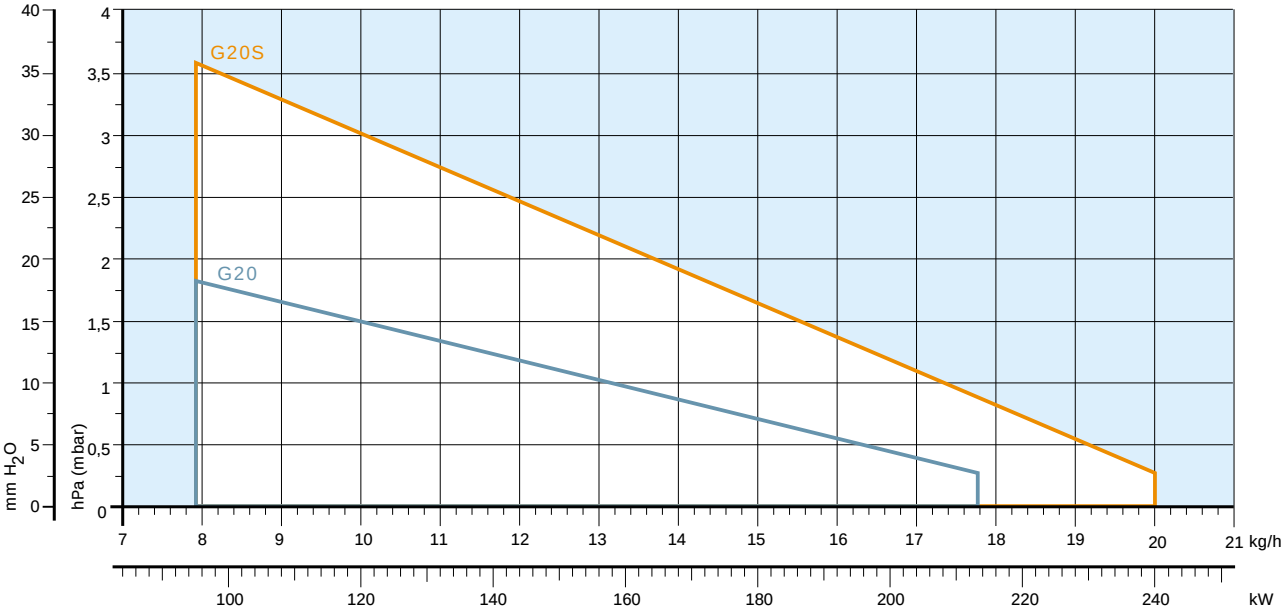
S	Pump with filter and pressure regulator on the delivery pipe
VR(NO)	Oil return valve on the delivery pipe
1	Oil input pipe to the nozzle
2	Oil return pipe from the regulator
3	Oil delivery pipe to the air damper hydraulic jack
MT	Air damper hydraulic jack for high pressure working
PR1	Low pressure oil regulator
PR2	High pressure oil regulator
R	Delayer
CR	Delayer casing
PH	Oil pre-heater with thermostat (where provided)
U	Nozzle

LIGHT OIL PRE-HEATER

The models “R” have light oil pre-heater which is located next to the nozzle, operated by the control box which delays burner ignition before each start in order to adequately pre-heat the oil.







Useful working field for choosing the burner

Test conditions conforming to EN 267 standards:
Temperature: 20°C
Pressure: 1013.5 mbar
Altitude: 100 m a.s.l.