

Light oil burner



CODE	MODEL	TYPE
3476582	PRESS 4G	609 T80

TECHNICAL DATA	
Thermal power	415 / 830 -1660 kW - 356.900 / 713.800 - 1.427.600 kcal/h
Output	35 / 70 - 140 kg/h
Fuel	Gas oil, max. viscosity at 20 °C: 6mm ² /s (1.5 °E)

ELECTRICAL DATA		
	MOTOR IE1	MOTOR IE2
Electrical supply	Three-phase 220V +10% -10% ~ 60Hz without neutral 380V +10% -10% ~ 60Hz with neutral	
Motor	10 A / 220V - 5.8 A / 380V	10 A / 230V - 5.8 A / 400V
Ignition transformer	Primary: 1.8 A / 220V - Secondary: 1x 8 kV - 30 mA	
Absorbed electrical power	3.8 kW	4.1 kW

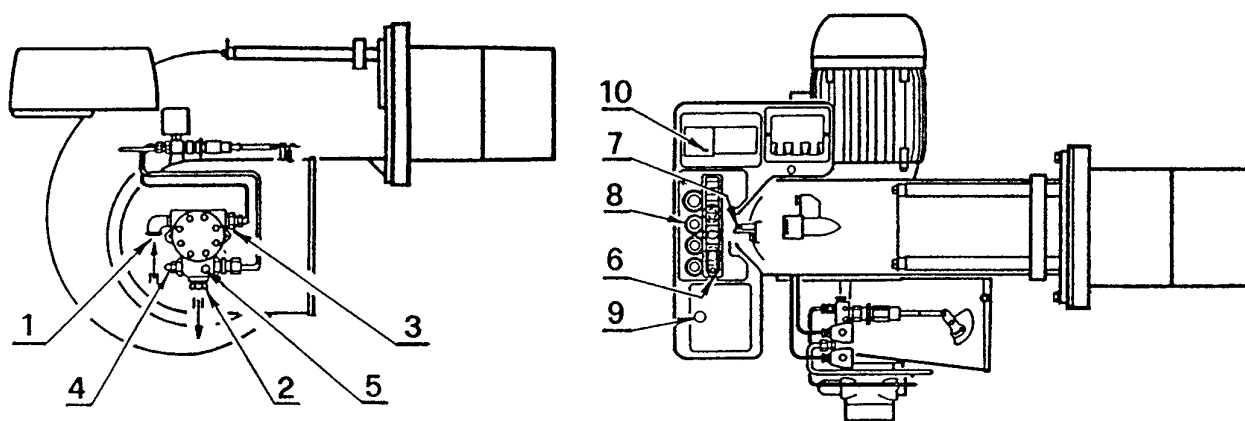
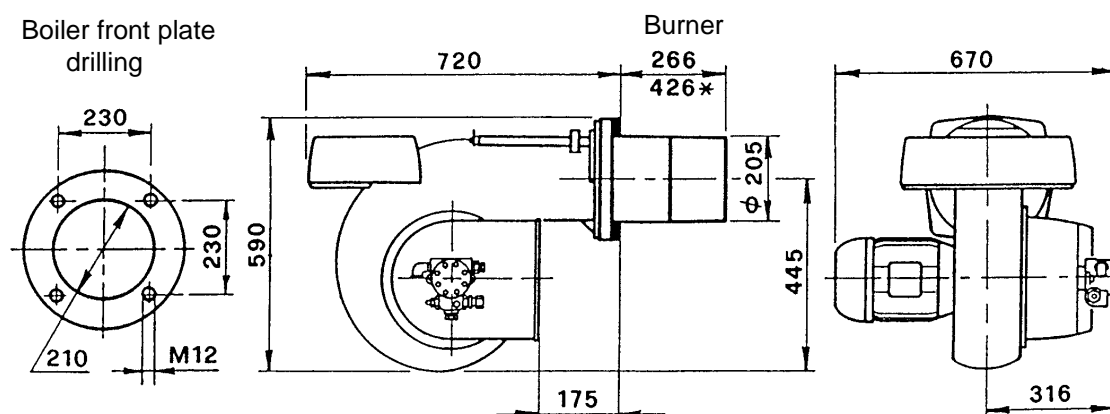


Fig. 1

- 1 - Suction line fitting
- 2 - Return line fitting
- 3 - Valve group return connection
- 4 - Pressure gauge fixing point (G 1/8)
- 5 - Pump pressure adjuster
- 6 - Wiring terminal block
- 7 - Combustion head control shaft
- 8 - Fair leads
- 9 - Control box reset button with signal of lock-out
- 10-Motor relay lock-out reset button

Quantity	Accessories
2	Flexibles oil-lines
2	Connectors for flexibles
2	Gasket for flexibles
1	Flange gasket
4	Screws

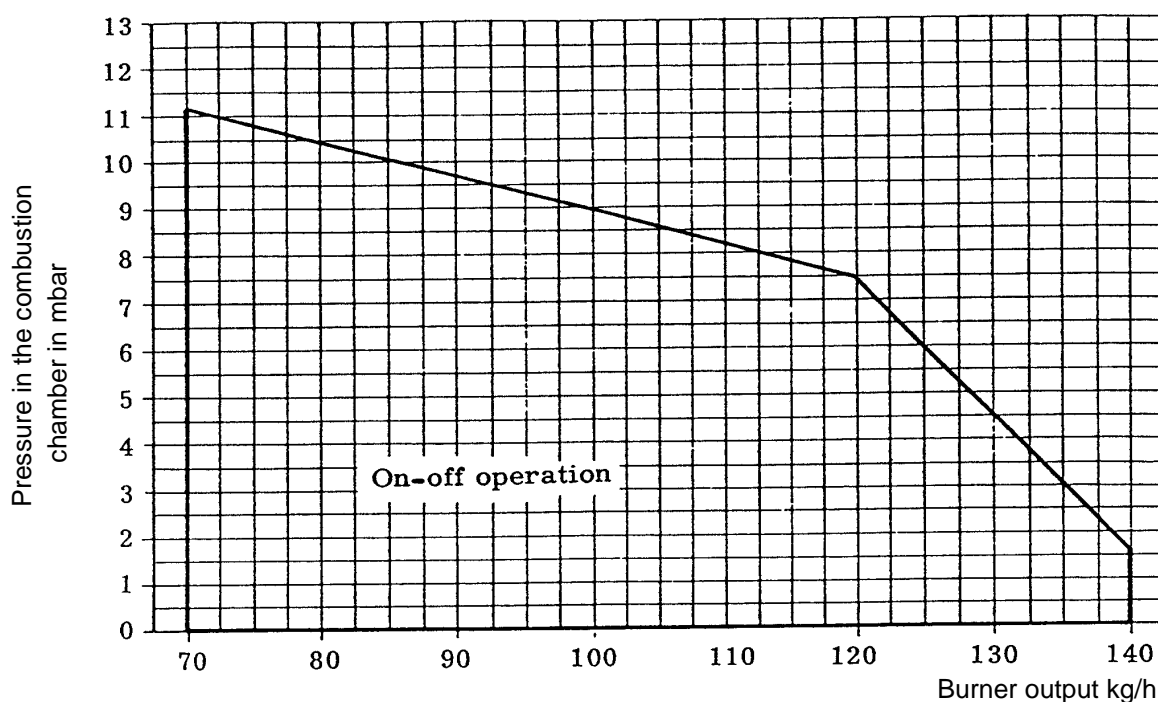
DIMENSIONS (mm)



* Length available with special blast tube to be separately required.

PRESSURE IN THE COMBUSTION CHAMBER - OUTPUT

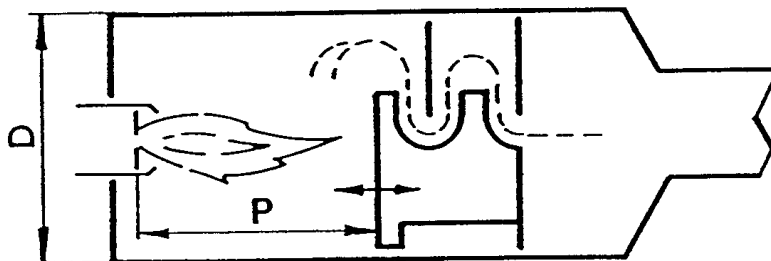
(in compliance with DIN 4787)



The burner is drawn for on-off operation and high-low operation.

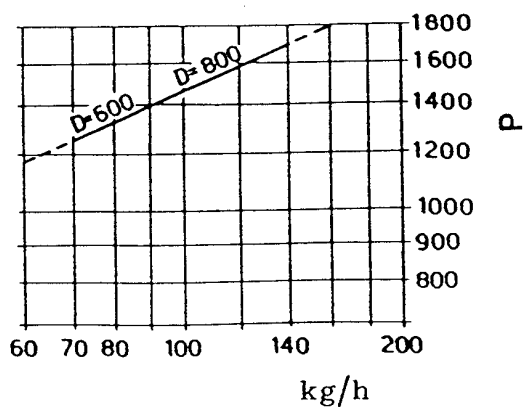
Minimum firing-rate at on-off operation is 70 kg/h (two nozzles) and 35 kg/h (one nozzle) with high-low operation.

DIMENSIONS OF THE TEST COMBUSTION-CHAMBER (DIN 4787)

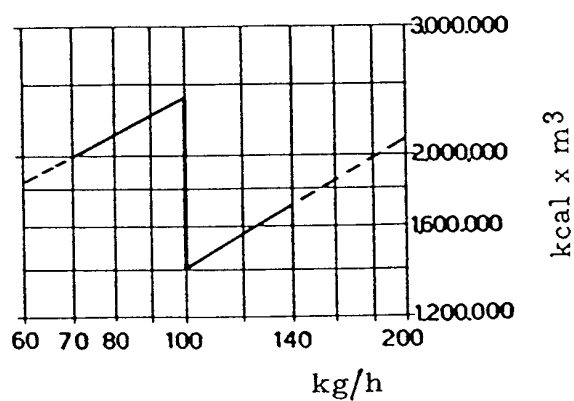


D = Boiler diameter in mm

P = Position of the mobile back in mm

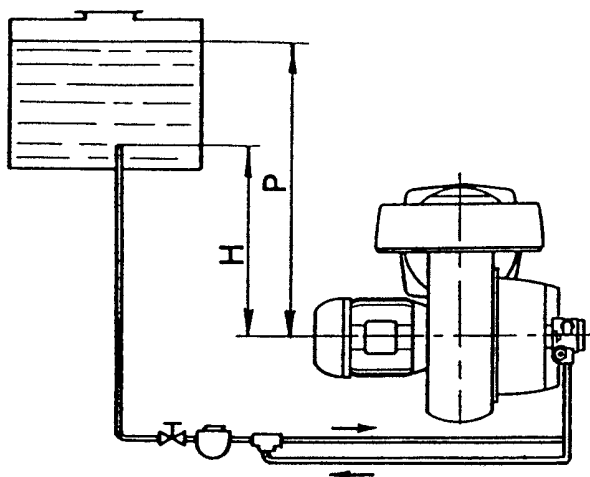


Specific thermal test load



HYDRAULIC SYSTEM

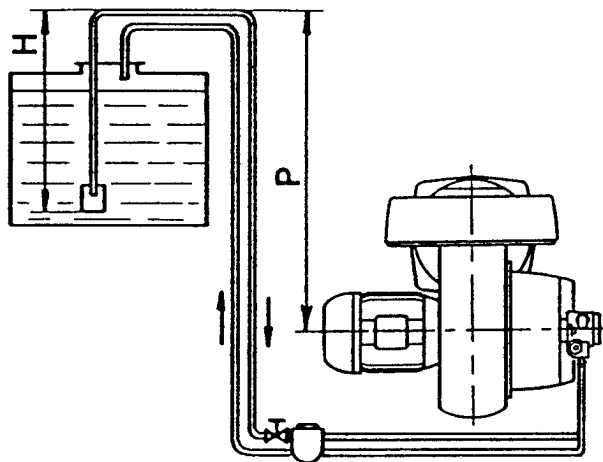
Gravity feed from the bottom of the oil storage tank



The dimension P should not exceed 10 m, to avoid breakage of pump seals.

H meters	L meters	
	I.D. 12 mm	I.D. 14 mm
0.5	4	10
1	8	20
1.5	12	30
2	16	40
2.5	20	50

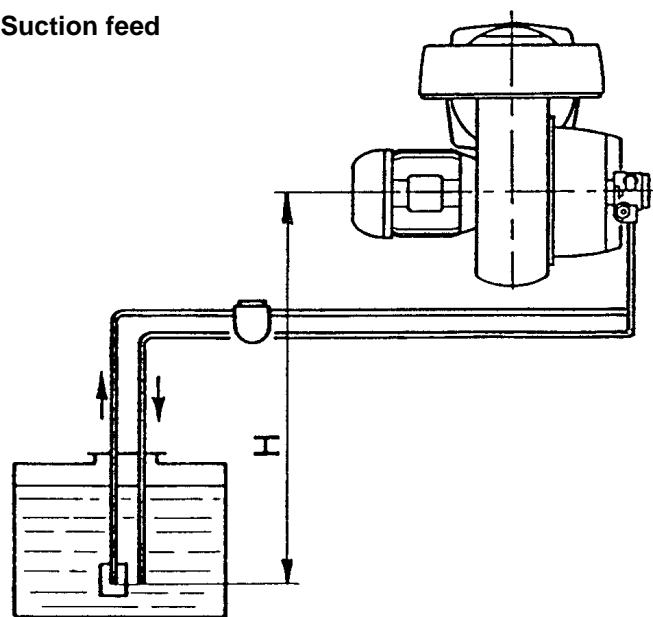
Gravity feed over the top of the oil storage tank



The dimension P should not exceed 10 m, to avoid breakage of pump seals.

H meters	L meters	
	I.D. 12 mm	I.D. 14 mm
0	45	70
0.5	40	60
1	35	50
2	20	30
3	10	15
3.5	-	7

Suction feed



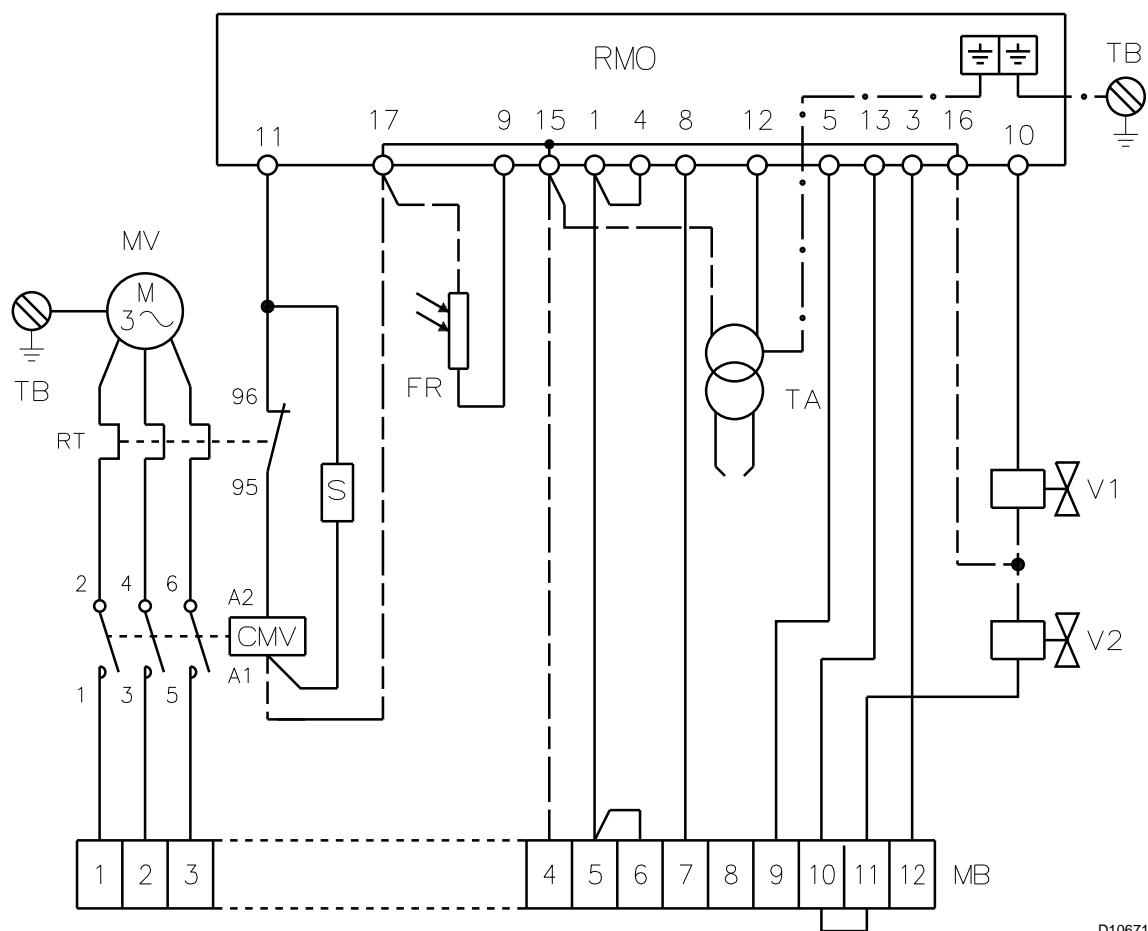
Oil lines must be perfectly sealed. The use of copper pipe is therefore recommended. The pump suction must not exceed 4.5 m w.c. (30 cm Hg) because beyond this value the pump becomes noisy.

The return line must terminate at the same level as the foot valve; otherwise the pump may become air-locked.

H = Difference in height; L = The total length of the suction line, including the vertical section.
The copper pipes of 12 mm and 14 mm I.D., as shown on the tables above, may be replaced by steel pipes of 1/2" or 3/4" Gas.

BURNER ELECTRICAL WIRING

(carried out by the factory)



D10671

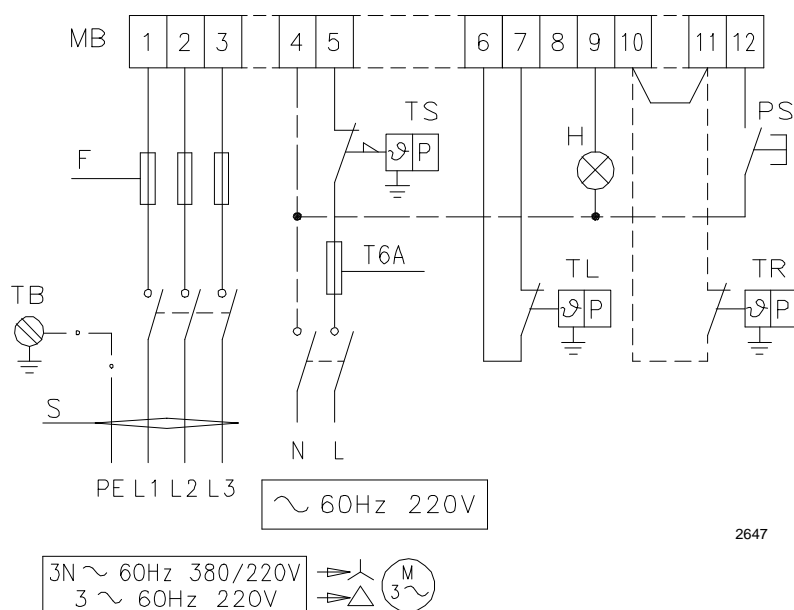
KEY TO LAYOUT

CMV Fan motor contact - maker
FR Photocell
MB Wiring terminal block
MV Fan motor
RMO Control box
S Suppressor

RT Thermal cutout
TA Ignition transformer
TB Burner ground (earth) connection
V1 1st stage solenoid valve
V2 2nd stage solenoid valve

ELECTRICAL CONNECTIONS TO THE WIRING TERMINAL BLOCK

(to be carried out by the installer)



2647

KEY TO LAYOUT

	220V	380V
F Ampere	T25	T16
S mm ²	1,5	1,5

H Remote lock - out signal
MB Wiring terminal block
PS Lock - out reset button
TB Burner ground (earth) connection

TL Limit control device system
TR High - low mode control device system
TS Safety control device system

NOTICE

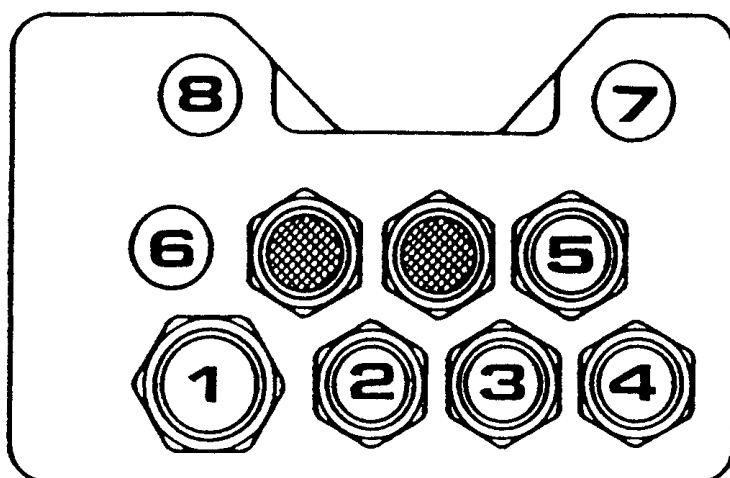
- The electric wiring carried out by the installer must be in compliance with the rules in force in the Country.
- Leads minimal section 1 mm².
- Adjustment for the motor thermal relay:
 - at the beginning of the scale for 380V
 - at the end of the scale for 220V

FLAME MODULATION

The flame modulation is obtainable through the thermostat, controlling the second valve, connected to the terminals 10 and 11, removing the existing bridge.

FIXING OF THE ELECTRICAL WIRES

All the electrical wires, which are to be connected to the terminal block 6) (fig. 1) shall pass through the fair leads 8) (fig. 1) as per this scheme.



- 1 - Three phase supply: fair lead Pg 21
- 2 - Single phase supply: fair lead Pg 13.5
- 3 - Adjustment thermostat: fair lead Pg 13.5
- 4 - Safety thermostat: fair lead Pg 13.5
- 5 - 2nd stage thermostat: fair lead Pg 13.5
- 6 - 7 - 8 - Pre-sheared holes

Further prospective signals or controls can be connected to the burner wiring terminal board by removing the metal weldnuts from the pre-sheared holes and inserting a common fair lead for the passage and the clamping of the leads.

NOTES

- Do not exchange the neutral wire with the phase (avoid the plug-pin connection).
- Carry out a safe earth connection.
- Verify the burner stop by opening the boiler thermostat and the burner lock-out by darkening the photo-resistance.

ACCESSORIES

RADIO DISTURBANCE PROTECTION KIT : CODE 3010386

If the burner is installed in places particularly subject to radio disturbance (emission of signals exceeding 10 V/m) owing to the presence of an INVERTER, or in applications where the length of the thermostat connections exceeds 20 metres, a protection kit is available as an interface between the control box and the burner.

BURNER ADJUSTMENT

Establish, on the basis of the output desired, and in accordance with the table and the diagram underneath:

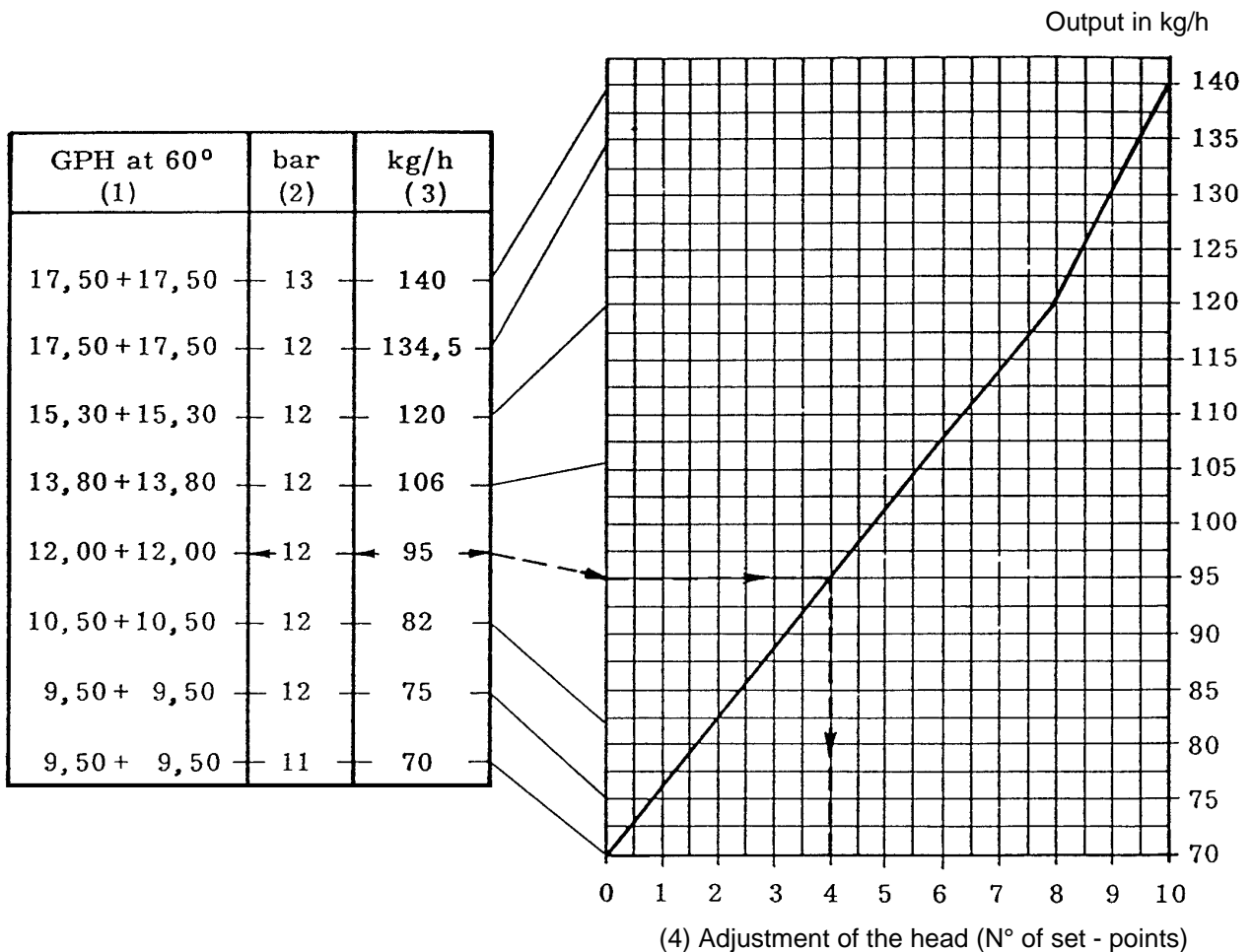
- the type of nozzle;
- the pump pressure;
- the combustion head setting.

EXAMPLE

The burner has to be matched with a boiler of 1000 kW.

Assuming an efficiency of 90%, we need to develop approximately 1112 kW i.e. burning roughly 95 kg/h.

In the output column we find, corresponding to 95, on the left, the required nozzles (2 of 12.00 GPH at 60°) the pump pressure (12 bar), and on the right the correct position of the combustion head (4 set-points).



(1) Nozzles of the major existing makers may be used.

It might well be possible however, that for certain specific outputs, one type of nozzle is less suitable than others. It is recommended not to change the atomizing angle.

(2) It is recommended not to go down to the 10 bar, otherwise the jack controlling the air damper will open with difficulty.

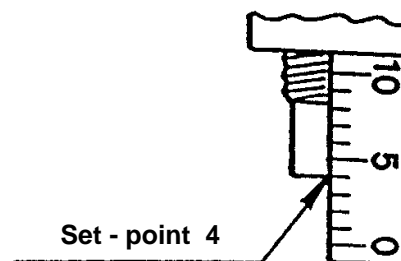
The pump pressure may be varied by acting on the screw 5) (fig. 1) and it can be controlled by placing a pressure switch on the pressure gauge 4) (fig. 1).

(3) The indicated outputs are drawn from the average statistical data of our tests.

Real output may well vary by $\pm 5\%$.

(4) The rear level of the control-shaft (7) (fig. 1) must line-up with the set-point number, indicated by the diagram.

In the sketch on the right, the shaft is shown, in the position required by the example on page 7.

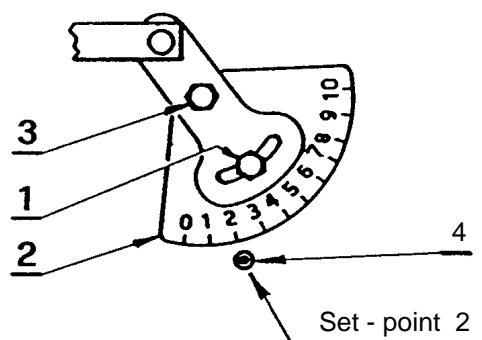


AIR DAMPER ADJUSTMENT

Air damper adjustment for the first flame

Loosen the screw (1), the nut (3) and move the graduated scale (2) so that the pointer (4) lines-up with the set-point desired; then tighten the screw (1) and the nut (3). A sufficiently exact control, valid for 12 bar and for the different boilers pressurizations is given by the following table:

Nozzle (GPH)	N° Set-point
9.50	1.5
10.50	2
12.00	2
13.80	2.5
15.30	2.5
17.50	3



On the sketch the graduated scale is shown, in the position required by the example on page 7.

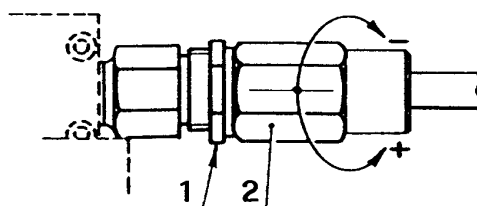
NOTE

For any necessary combustion adjustment, at the first flame stage, remove the bridge or the second stage thermostat (see page 5).

Regulation of the air damper for the second flame

Loosen the threaded locking-ring (1) and tighten the hexagon (2) in order to reduce flow; slacken the hexagon to increase flow.

This adjustment shall be modified, from time to time, in relation to the various combustion chambers pressurizations.



All burner controls are clearly indicated into the instruction.
Only the air damper adjustment for the second flame, is determined at the place of installation, depending on the boiler pressure.

ATTENTION

At the first ignition, passing from the first to the second flame, the oil pressure decrease noticeably because of the filling of the second nozzle line - this decreasing can cause the burner shutdown, sometimes with strong pulsations.

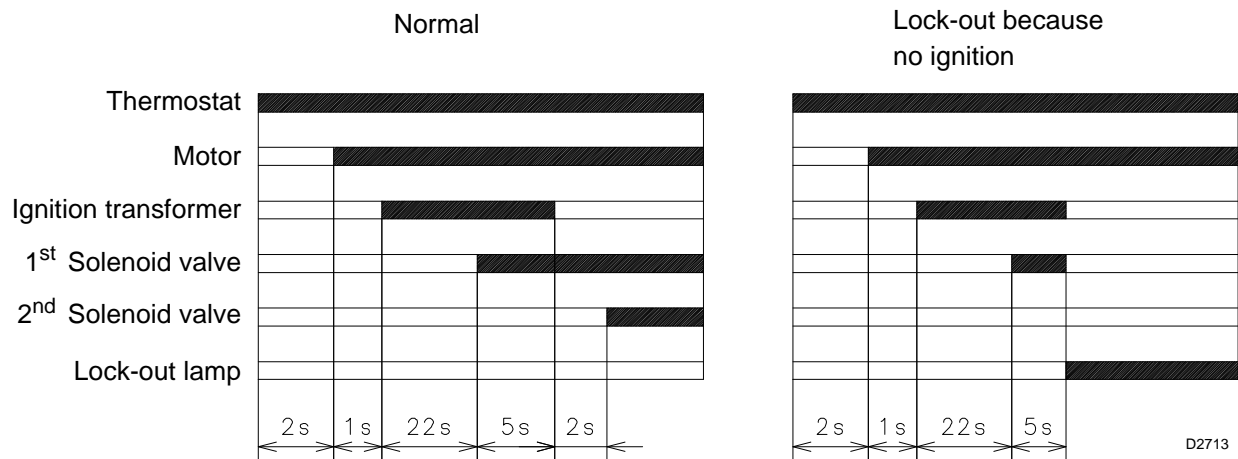
PRIMING THE PUMP

In case of a gravity feed system, from the bottom of the oil-storage tank (see page 3), loosen the screw of the suction-gauge fixing point 3 (fig. 1), until the fuel flows out.
In the other two cases, remove the high voltage cable from the ignition transformer and release air from the pressure gauge fixing point, by loosening the screw 4 (fig. 1) do not light on the photo-resistor, because lock-out immediately will occur.
Should the burner go to lock-out re-set the control-box and repeat the cycle as often as necessary.

CAUTION

Check, before starting the burner, that the return line to the oil-storage tank is not in any way obstructed.
Any obstruction would cause the breakage of the pump seal.

BURNER START-UP CYCLE 60Hz



MOTOR LOCK-OUT

This is caused by the thermal protector relay, in case of overloading, or by the lacking of the phase.
To reset pushdown the appropriate knob, after having removed the protective cover.

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BURNER START-UP CYCLE DIAGNOSTICS

During start-up, indication is according to the followin table:

COLOUR CODE TABLE	
Sequences	Colour code
Pre-purging	● ● ● ● ● ● ● ● ● ● ● ● ● ●
Ignition phase	● ○ ● ○ ● ○ ● ○ ● ○ ● ○ ●
Operation, flame ok	□ □ □ □ □ □ □ □ □ □ □ □ □ □
Operating with weak flame signal	□ ○ □ ○ □ ○ □ ○ □ ○ □ ○
Electrical supply lower than ~ 170V	● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ● ▲ ●
Lock-out	▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲ ▲
Extraneous light	▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲ □ ▲
Key:	○ Off ● Yellow □ Green ▲ Red

OPERATING FAULT DIAGNOSTICS

The control box has a self-diagnostic system, which easily allows identifying the operating faults (**RED LED** signal).

To use this function, wait at least ten seconds from the safety lock out, and then press the reset button for a minimum of 3 seconds.

After releasing the button, the RED LED starts flashing as shown in the diagram below.

RED LED on wait at least 10 s	Press button for > 3 s	Signal	Interval 3 s	Signal
		• • • • • •		• • • • • •

The pulses of the LED constitute a signal spaced by approximately 3 seconds.

The number of pulses will provide the information on the possible faults, according to the table below:

SIGNAL	PROBABLE CAUSE
2 flashes ● ●	The flame does not stabilise at the end of the safety time: – faulty photocell; – faulty or soiled oil valves; – neutral/phase exchange; – faulty ignition transformer – poor burner regulation (insufficient gas oil).
3 flashes ● ● ●	Min. air pressure switch (if installed) does not close: – air pressure switch faulty; – air pressure switch incorrectly regulated; – max. air pressure switch triggered (if installed).
4 flashes ● ● ● ●	Min. air pressure switch (if installed) does not open or light in the chamber before firing: – air pressure switch faulty; – air pressure switch incorrectly regulated.
7 flashes ● ● ● ● ● ● ●	Loss of flame during operations: – poor burner regulation (insufficient gas oil); – faulty or soiled oil valves; – short circuit between photocell and earth.
8 flashes ● ● ● ● ● ● ● ●	– Not used.
10 flashes ● ● ● ● ● ● ● ● ● ●	– Wiring error or internal fault. – Presence of electromagnetic disturbance. Use the radio disturbance protection kit.

The logo consists of the word "RIELLO" in a bold, red, sans-serif typeface.

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