Pressure jet burner

CODE	MODEL	TYPE
3473784	PRESS GW	605 T80

2915897 (2) - 08/2012

Thermal power	107 / 178 - 350 kW - 92.000 / 153.000 - 301.000 kcal/h
Output	9/15 - 30 kg/h
Fuel	Gas oil, max. viscosity at 20 °C: 6 mm^2/s (1.5 °E)
Electrical supply	Single-phase 220V +10% -10% ~ 60Hz
Motor	1.85 A / 220V
Capacitor	8 µF
Ignition transformer	Primary: 1.8 A / 220V - Secondary: 1x 8 kV - 30 mA
Absorbed electrical power	0.4 kW

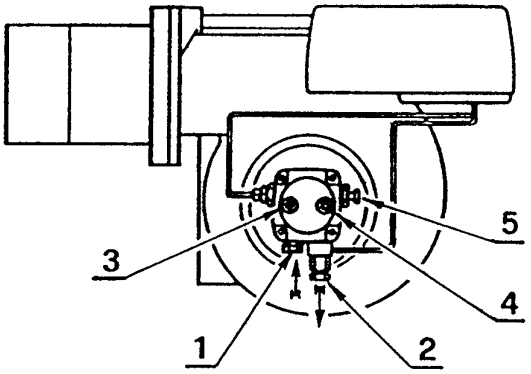
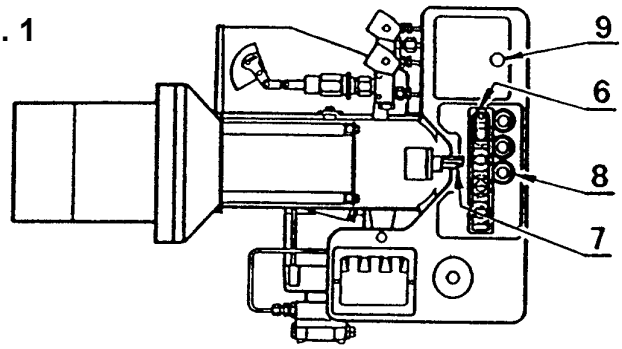


Fig. 1

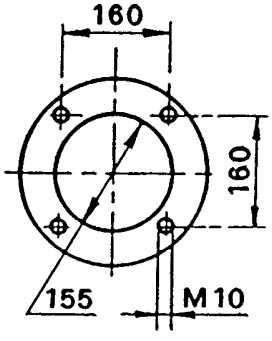


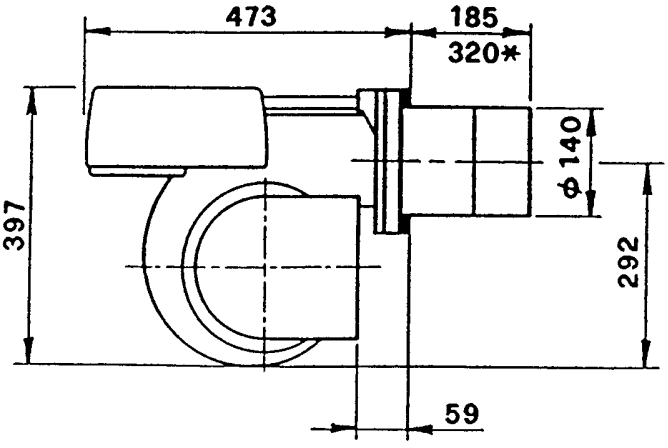
1 - Suction line fitting
2 - Return line fitting
3 - Suction gauge fixing point (G 1/8)
4 - Pressure gauge fixing point (G 1/8)
5 - Pump pressure adjuster
6 - Wiring terminal board
7 - Combustion head control shaft
8 - Fair leads
9 - Control box reset button with signal of lock-out

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

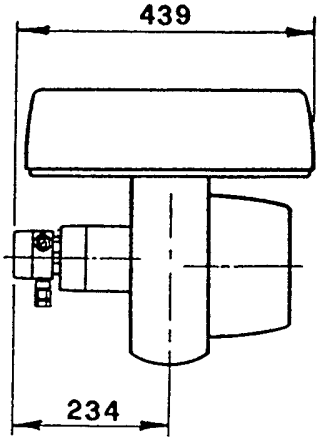
DIMENSIONS (mm)

Boiler front plate drilling





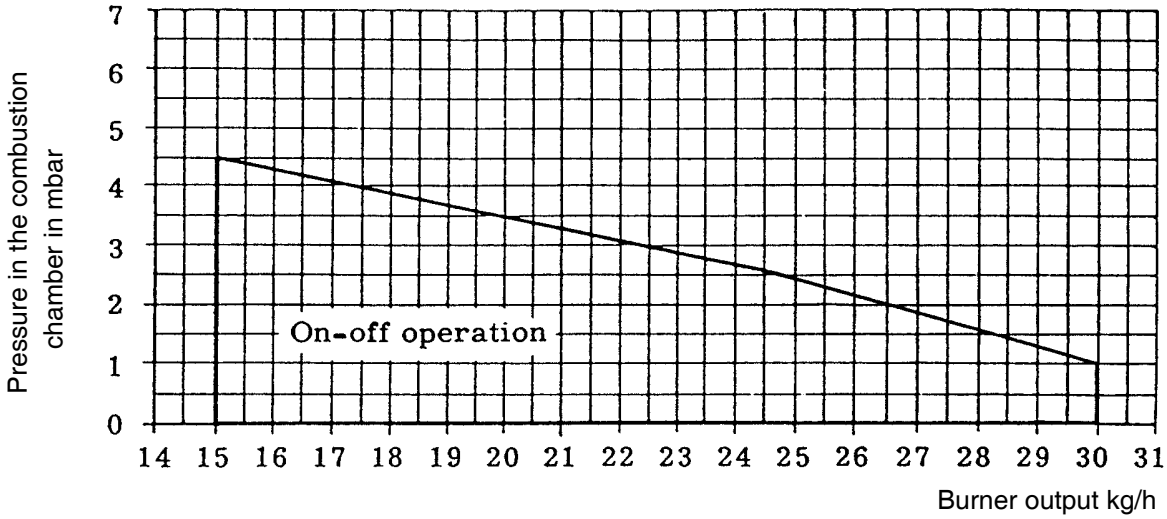
Burner



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

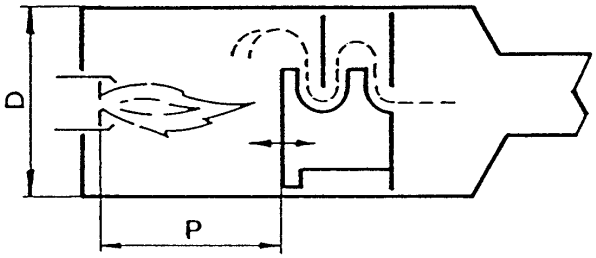
PRESSURE IN THE COMBUSTION CHAMBER - OUTPUT

(in compliance with DIN 4787)



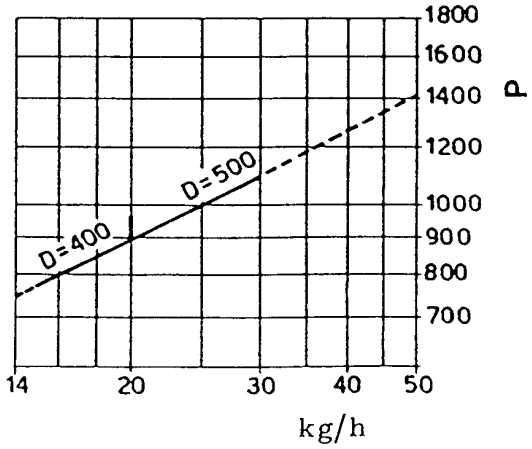
The burner is drawn for on-off operation and high-low operation.
Minimum firing-rate at on-off operation is 15 kg/h (two nozzles) and 9 kg/h (one nozzle) with high-low operation.

DIMENSIONS OF THE TEST COMBUSTION-CHAMBER (DIN 4787)

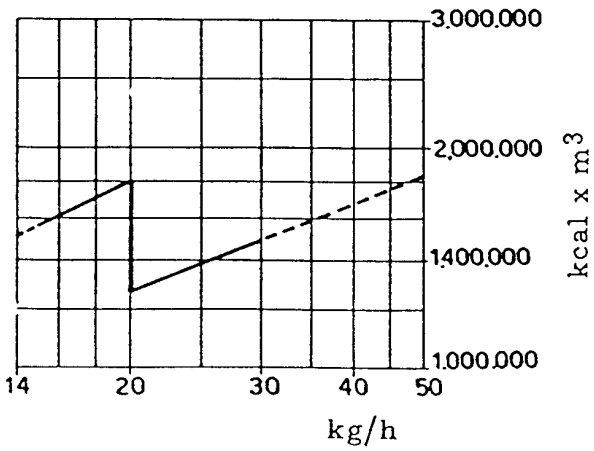


D = Boiler diameter in mm

P = Position of the mobile back in mm

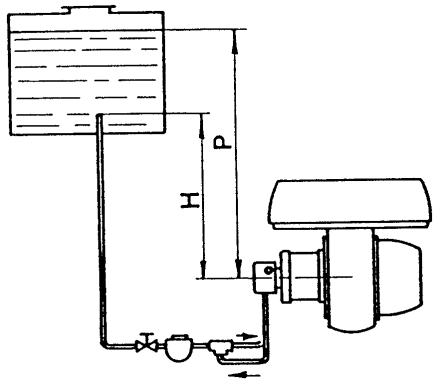


Specific thermal test load



HYDRAULIC SYSTEM

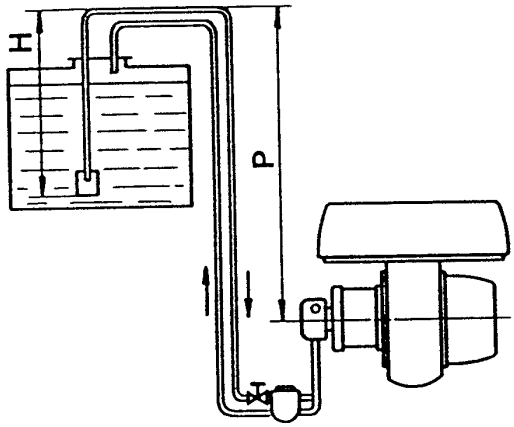
Gravity feed from the bottom of the oil storage tank



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

H meters	L meters	
	I.D. 8 mm	I.D. 10 mm
0.5	5	10
1	10	20
1.5	15	30
2	20	40

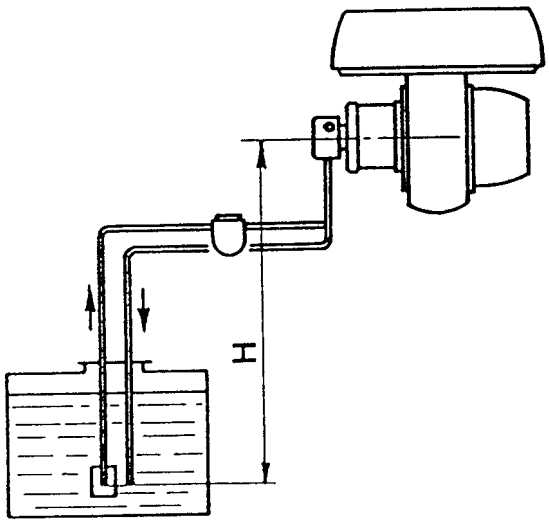
Gravity feed over the top of the oil storage tank



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

H meters	L meters	
	I.D. 8 mm	I.D. 10 mm
0	32	70
0.5	28	62
1	24	55
1.5	20	48
2	16	40
3	7	25
3.5	-	10

Suction feed

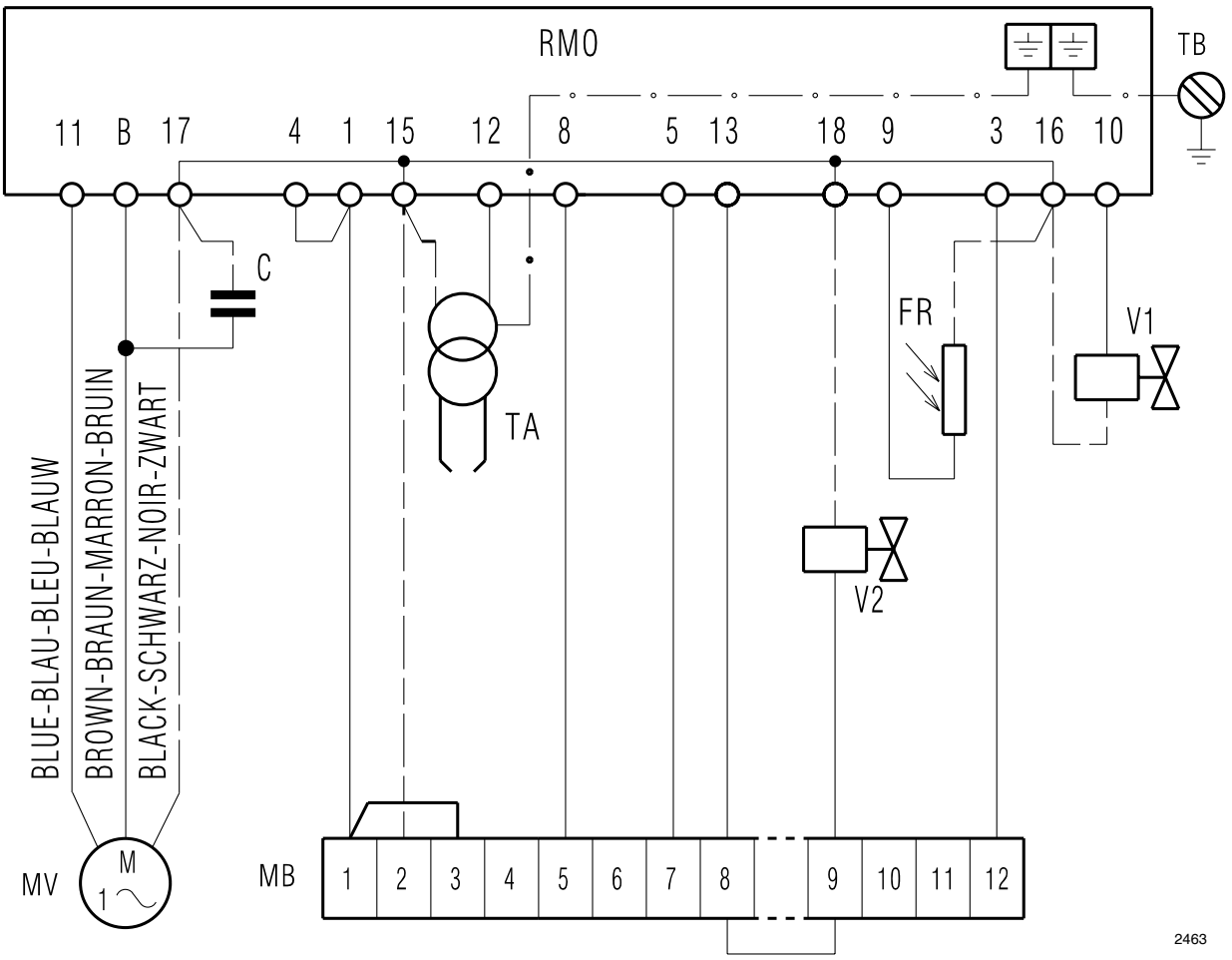


Oil lines must be perfectly sealed. The use of copper pipe is therefore recommended. The pump suction must not exceed 4 m w.c. (30 cm Hg) because beyond this value the pump becomes noisy.
The return line must terminate at the same level as the foot valve; otherwise the pump may become air-locked.

H = Difference in height; **L** = The total length of the suction line, including the vertical section.
The copper pipes of 8 mm and 10 mm I.D., as shown on the tables above, may be replaced by steel pipes of 1/4" or 3/8" Gas.

BURNER ELECTRICAL WIRING

(carried out by the factory)

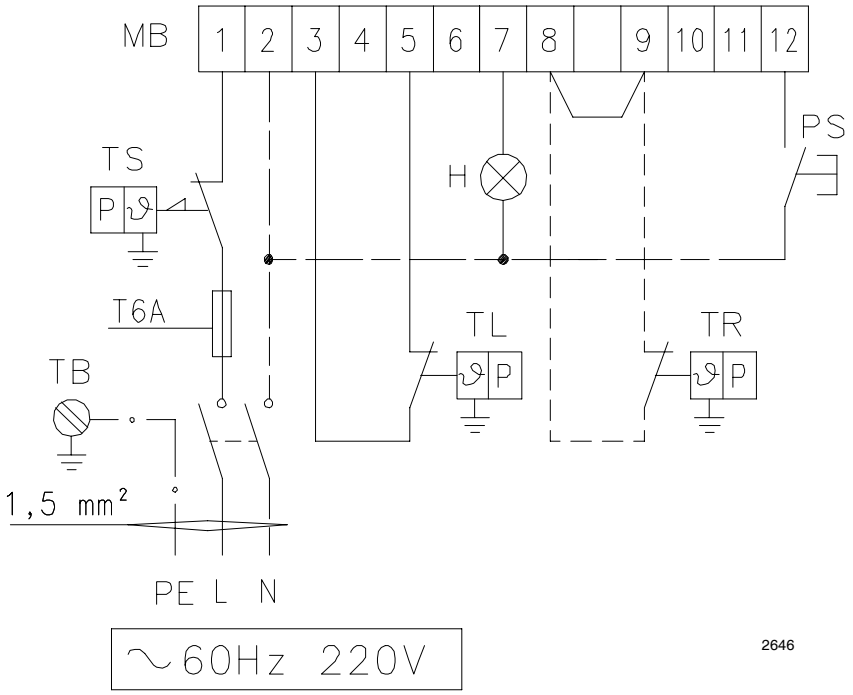


KEY TO LAYOUT

C	Capacitor
FR	Photocell
MB	Wiring terminal block
MV	Fan motor
RMO	Control box
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)



KEY TO LAYOUT

H	Remote lock - out signal	**TL**	Limit control device system
MB	Wiring terminal block	**TR**	High - low mode control device system
PS	Lock - out reset button	**TS**	Safety control device system
TB	Burner ground (earth) connection		

NOTICE

- The electric wiring carried out by the installer must be in compliance with the rules in force in the Country.

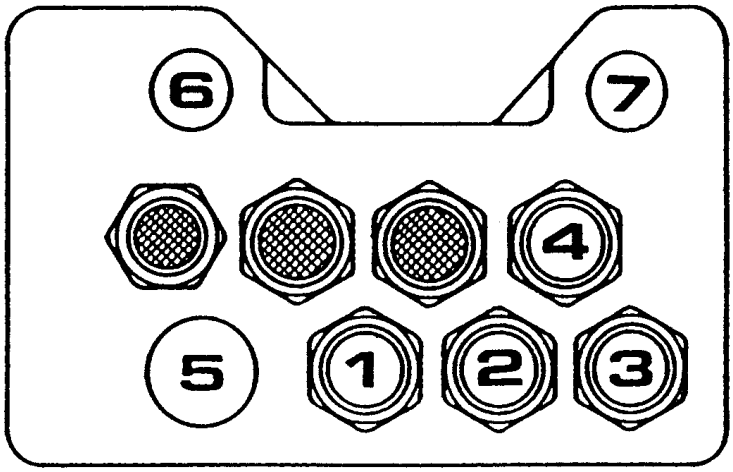
- Leads minimal section 1 mm^2.

FLAME MODULATION

The flame modulation is obtainable through the thermostat, controlling the second valve, connected to the terminals 8 and 9, 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 - Single phase supply: fair lead Pg 13.5
2 - Adjustment thermostat: fair lead Pg 13.5
3 - Safety thermostat: fair lead Pg 13.5
4 - 2nd stage thermostat: fair lead Pg 13.5
5 - **6** - **7** - 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 commun 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
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.

Code	3010386

BURNER ADJUSTMENT

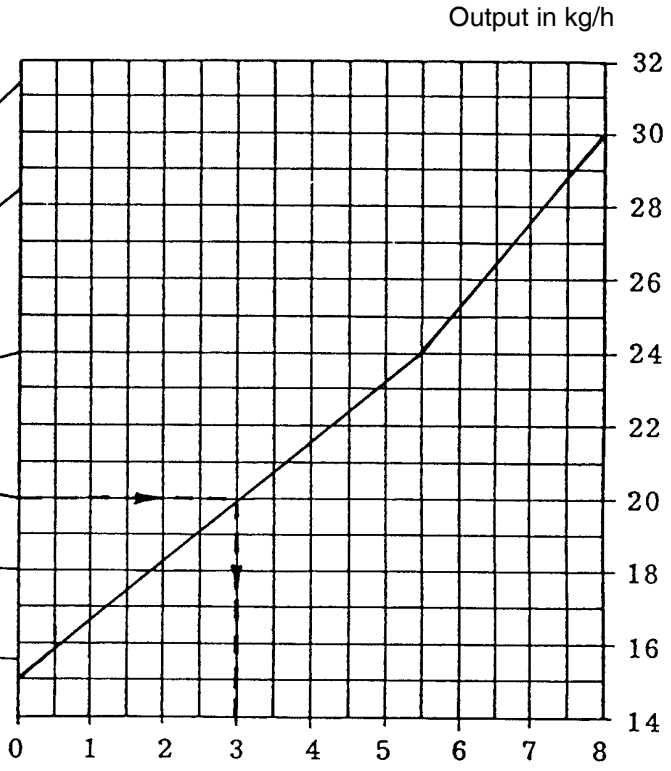
Establish, on the basis of the output desired, and in accordance with the table and the diagram underneath:

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

EXAMPLE

The burner has to be matched with a boiler of 210 kW.
Assuming an efficiency of 90%, we need to develop approximately 233 kW i.e. burning reughly 20 kg/h.
In the output column we find, corresponding to 20, on the left, the required nozzles (2 of 2.50 GPH at 60°) the pump pressure (12 bar), and on the right the correct position of the combustion head (3 set-points).

GPH at 60° (1)	bar (2)	kg/h (3)
4,00 + 4,00	12	31,5
3,50 + 3,50	12	28,5
3,00 + 3,00	12	24
2,50 + 2,50	12	20
2,25 + 2,25	12	18
2,00 + 2,00	12	15,5



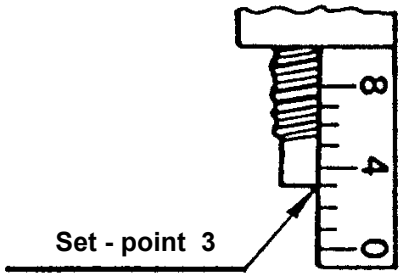
(4) Adjustment of the head (N° of set - points)

(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 goes 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 ± 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.

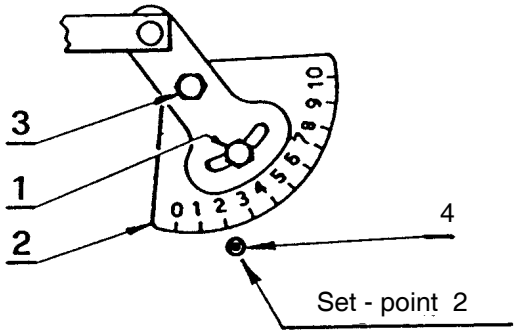


AIR DAMPER ADJUSTMENT

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
2.00	1.5
2.25	1.5
2.50	2
3.00	2.5
3.50	3
4.00	3



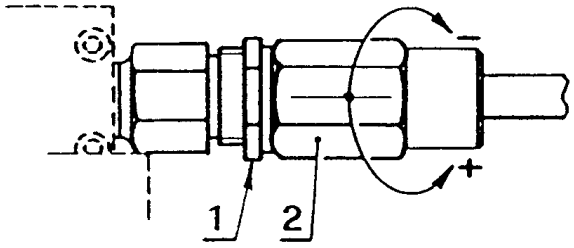
On the sketch the graduated scale is shown, in the position required by the example on page 7.

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.



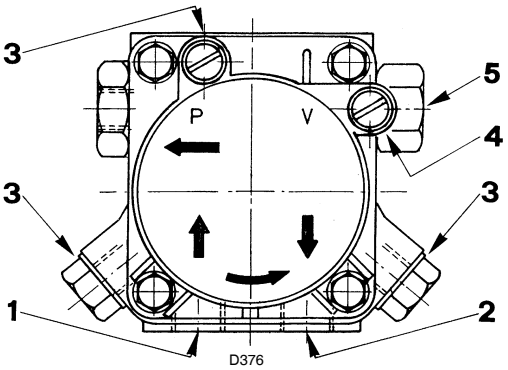
All burner controls are clearly indicated into the instruction.
Only the air damper adjustment for the second flame, is determined at the place of installation, depending on the boiler pressure.

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.

PUMP

SUNTEC AN67



		AN 67
Min. delivery rate at 12 bar pressure	kg/h	65
Delivery pressure range	bar	10 - 18
Max. suction depression	bar	0,45
Viscosity range	cSt	2 - 75
Light oil max. temperature	°C	60
Max. suction and return pressure	bar	2
Pressure calibration in the factory	bar	12
Filter mesh width	mm	0,150

Key to Figure (A)

Pump	AN
1 - Suction	G 1/4"
2 - Return	G 1/4"
3 - Pressure gauge attachment	G 1/8"
4 - Vacuum meter attachment	G 1/8"
5 - Pressure adjustment screw:	
Right rotation =	pressure increases
Left rotation =	pressure decreases

G = cylindrical thread
The connector to be screwed into the cylindrical thread G must be equipped with a sealing washer.
Do not screw a connector with a conical thread (NPTF) into the cylindrical thread G.

NOTE

- The pumps are equipped with a by-pass that connects return line and suction line. The pumps are installed on the burner with the by-pass closed by screw accessible from the return connector 2).
  When single-pipe fuel supply systems without degassing units are used, this screw, accessible from the return connector 2), must be removed. In this way, the excess in the delivery discharged by the pressure regulator into the return line passes into the suction line.
  The pump will break immediately if it is run with the return line closed and the by-pass screw inserted.
- The vacuum meter attachment is located upstream from the pump filter and consequently it is not able to detect a clogged filter.
- The pump is delivered from the factory already full of fuel and with its return and suction connections plugged. This stops the gear unit rusting and permits the pump to prime upon first starting.
- Water must be prevented from accumulating on the bottom of the tank, due to infiltration or condensation, and subsequently reaching the pump. Water in the pump will lead to rusting and eventually the pump will have to be renewed.

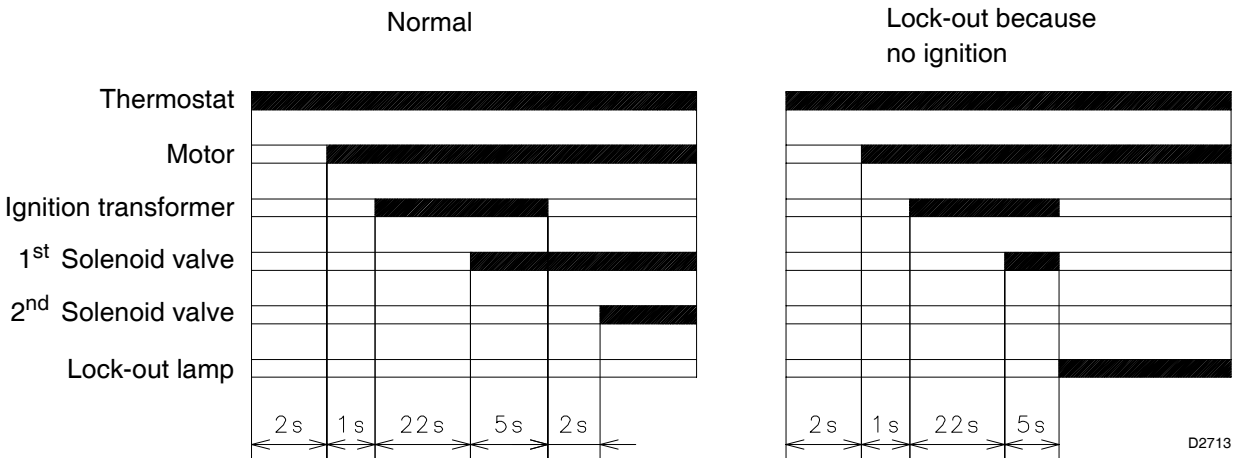
PRIMING THE PUMP

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.
If, during these operations, the burner locks out, reset it and repeat the cycle as many times 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 seals.

BURNER START-UP CYCLE 60Hz



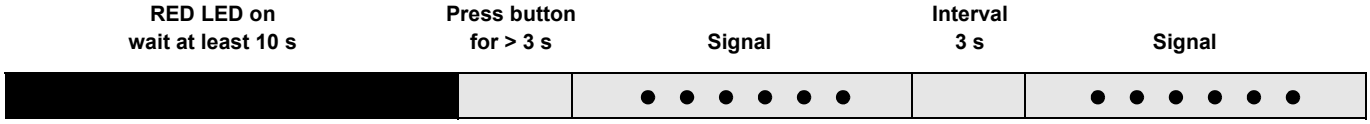
BURNER START-UP CYCLE DIAGNOSTICS

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).
ITo 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.



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

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