

## Handbook

# Series NOL automatic oil burner Models NOL6/NOL9

### BURNER CAPACITY

Based on a Gross CV of Gas Oil  
(45.5 MJ/kg)

NOL6 - 97 kW to 193 kW  
(330,000 to 660,000 Btu/hr.)

NOL9 - 161 kW to 278 kW  
(550,000 to 950,000 Btu/hr.)

These burners are able to fire, at reduced thermal output, appliances having resistances as listed under the burner selection chart.

The NOL series of Pressure Jet Oil Burners sets new standards in efficient and reliable operation. Developed to meet current and future test authority requirements in the UK and overseas markets. Delivered ready to install with pre-wired packaged control system.

### OPERATION

Single stage On/Off. Two stage High/Low, (single nozzle with two set pressures from oil pump to give maximum turndown of 1.5:1).

### AIR REGULATION

Adjustable air trimming damper for on/off operation, electrically actuated for high/low control. Burner fitted with patented air control device producing smoother starting conditions.

### CONTROLS

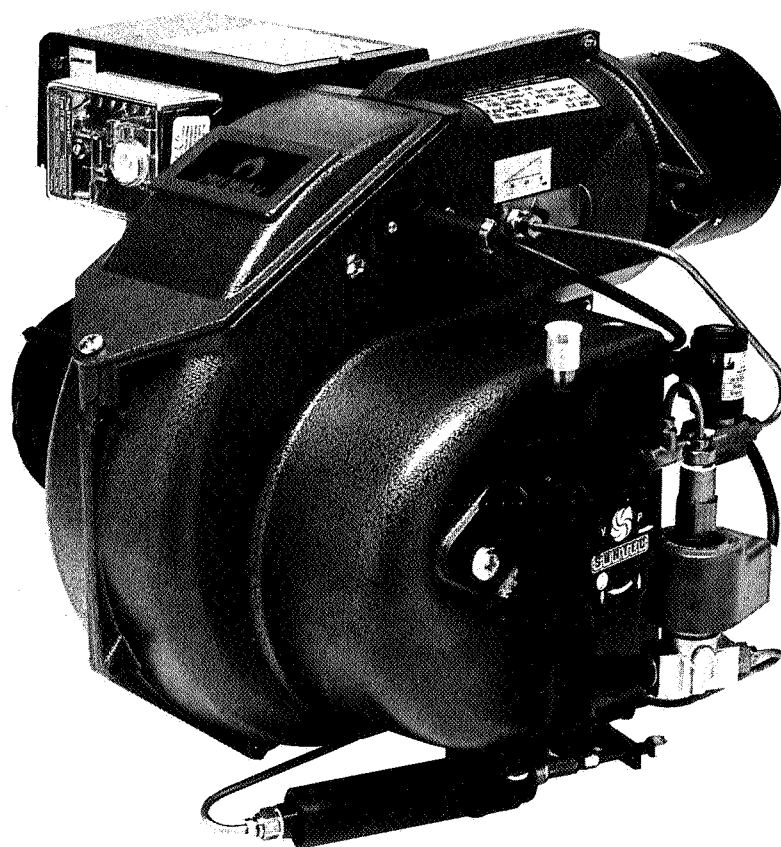
Flame supervision by photo-electric cell with sequence controller to comply with relevant standards. NOL6 & 9 burners may be controlled by suitable thermostats, time switches, etc.

### FUEL

Light distillate oil Class D  
(1.5-5.5 cSt @ 40°C).

### FUEL SYSTEM

Suitable for single pipe gravity or two pipe suction lift oil supply systems. For fuel storage and handling temperature requirements please consult the Burner Manual.



### CONSTRUCTION (ZL)

Monobloc metric design using fasteners to ISO standards. Removable coverplate for easy access to fan and inner assembly. Adjustable burner head maintains high air velocity and gives maximum combustion efficiency throughout burner range.

### APPROX. WEIGHT

20.5 kg. (on/off)  
23.0 kg. (two stage)

### OPTIONAL EXTRA FEATURE

This burner can be supplied with electrically operated fully closing air control, at extra cost. (Standard on two stage burners).

## BURNER DATA

Burner Model	Minimum Burner Capacity			Maximum Burner Capacity			Diffuser diameter mm	Minimum Burner Throughput*		Maximum Burner Throughput*		Nozzle Spray Angle
	kW	kcal/h x 10 <sup>3</sup>	Btu/h x 10 <sup>3</sup>	kW	kcal/h x 10 <sup>3</sup>	Btu/h x 10 <sup>3</sup>		Litres/h	USgal/h	Litres/h	USgal/h	
NOL6 On/Off	97	82	330	193	166	666	78	9.0	2.4	18	4.8	60°
NOL6 High/Low	128	109	436	193	166	666	78	12	3.1	18	4.8	60°
NOL9 On/Off	161	137	550	278	237	950	78	13	4.0	26	6.9	60°
NOL9 High/Low	185	158	631	278	237	950	78	17	4.6	26	6.9	60°

**Notes:**  
 Pump pressure of 1250 kPa (12.7 kg/cm<sup>2</sup>: = 180 psi) is factory-set standard - on/off only.  
 The turndown on high/low units is 1.5:1 pump pressure of low fire 980 kPa (9.9 kg/cm<sup>2</sup> 140 psi) and high fire of 2100 kPa (21 kg/cm<sup>2</sup> 300 psi) is factory-set standard.

\* Based on calorific value of 10.6 kW/litre (137,500 Btu/US gal).

Minimum capacity of high/low burner based on maximum output as shown in table above.

### INSTALLATION

**Flue** The top of the chimney should be above all roofs within a radius of 10 m. If a cowl is fitted, remove it.

Ensure that the flue pipe from the appliance finishes flush with the inside wall of the chimney.

If draught over the fire exceeds 0.02 kPa (2mm wg: 0.08 in wg) draught stabiliser should be fitted in a position recommended by the appliance maker. To provide minimum requirements of 0.05 and 0.012 kPa (5.0 — 1.2mm wg: 0.05 — 0.2 in wg.). For pressurised combustion conditions check Burner Selection Chart.

**Fuel Storage and Handling** The provisions of BS. 2869 will normally ensure that the fuel will be of adequate performance. As there are Winter and Summer fuel grades and in order to prevent the fuel waxing under sustained cold and exposed conditions, Class D grade of fuel should be stored and supplied to the burner at a minimum temperature of 5°C (41°F), in line with the fuel suppliers recommendations to suit site conditions.

**Fuel Supply** (and, where fitted, return) line should consist of copper tube (NEVER galvanised steel), the final connection to the pump inlet port being made with the length of flexible pipe supplied with the burner. Joints should be made with compression fittings, not by soldering.

When gravity feed is used (the most common), the maximum head should not exceed 4m (equivalent to a pressure of 35 kPa).

On installations where the fuel tank is situated below the level of the burner the maximum suction permitted is 40 kPa (300 mm Hg) and a two-pipe (supply and return) fuel supply system MUST be used.

Note that the pump is factory set for single pipe installation. When using a two-pipe system refer to the appropriate sketch opposite for pump modifications.

**Single Pipe System** On a single pipe (gravity feed) system, the pump should be primed under gravity from the tank and not by running the pump mechanically. To prime the pump remove the purge plug, connect the purge port to a suitable container.

**Two Pipe System** The suction line/pump will require priming before energising the pump mechanically. It is essential to ensure that the return pipe is not obstructed in any way, e.g. by a plug, closed valve, etc. Any obstructions will damage the pump.

The fuel supply line/pump may need bleeding/priming, if the oil storage is allowed to drain completely.

**Electricity Supply** Connect burner to electricity supply, thermostats, time switches etc., as appropriate.

### PRE-FIRING CHECK & INITIAL SETTING

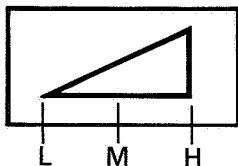
1. Remove nozzle assembly by taking cover and carrying out instructions shown in maintenance photograph.
2. Check or fit nozzles of correct size/angle for appliance.
3. Check electrode setting is as sketch (on/off setting is different to high/low).
4. Replace nozzle assembly.
5. The setting of the burner diffuser plate which has an adjustment of 20mm, is carried out by loosening retaining screw between the oil inlet pipes and sliding to desired position. This screw must be firmly secured when setting is achieved.

To determine setting the following instruction should be carried out.

### NOL6

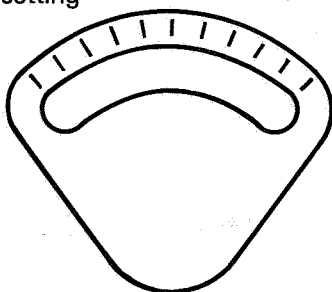
- a) 97—127 kW (82—108 kcal/h x 10<sup>3</sup>) adjust to position 'L' in sketch (diffuser fully back). The air damper should be approximately No. 3 (see sketch).
- b) 127—157 kW (108—134 kcal/h x 10<sup>3</sup>) adjust to position 'M' in sketch (diffuser mid-position). The air damper should be approximately No. 7 (see sketch).
- c) 157 kW upwards (134 kcal/h x 10<sup>3</sup>) adjust to position 'H' in sketch (diffuser fully forward). The air damper should be in the fully open position (see sketch).
- d) High/low burners set diffuser as described in a, b or c above. Set air damper to position No. 2 (see sketch) for low flame setting at all ratings.

Diffuser plate setting



Note: L M H shown for illustration purposes only

Air damper setting



## NOL9

- 161—190 kW (137—162 kcal/h x 10<sup>3</sup>) adjust to position 'L' in sketch (diffuser fully back). The air damper should be approximately No. 3 (see sketch).
- 190—230 kW (162—196 kcal/h x 10<sup>3</sup>) adjust to position 'M' in sketch (diffuser mid-position). The air damper should be approximately No. 7 (see sketch).
- 230 kW upwards (196 kcal/h x 10<sup>3</sup>) adjust to position 'H' in sketch (diffuser fully forward). The air damper should be in the fully open position (see sketch).
- High/low burners set diffuser as described in a, b or ca above. Set air damper to position No. 2 (see sketch) for low flame setting at all ratings.

## GENERAL

The air damper should be used as a final adjustment with the diffuser set in the appropriate position. Obviously variation of both settings are necessary to cater for all appliances. Optimum combustion results are obtained by using the maximum air pressure available across the diffuser plate and adjusting air damper to obtain acceptable CO<sub>2</sub> and smoke values.

## OPERATION.

To start burner turn main electricity isolating switch and, where fitted, separate burner switch, to ON.

The burner can be stopped in an emergency by opening the electrical switch provided in the line between the burner and the electricity supply.

There is a pre-purge period during which the ignition is switched on and the motor will run.

At the end of this period magnetic oil valve opens and burner lights.

After a further period the ignition is switched off and the burner continues to run until it is switched off by:-

- the control thermostat contacts opening upon the room or water temperature being reached
- safety or limit thermostat contacts opening
- burner is switched off manually.

If, during start up, the flame fails to be established the photocell will detect this and will shut down the burner and the "lock out" lamp in the sequence control box is automatically lit.

If during normal running, the flame is extinguished the magnetic oil valve closes and ignition spark is restored, the purge period recommences, magnetic oil valve opens after 10-15 seconds, on flame re-establishment, burner will continue to run. If burner fails to light it goes to "lock-out" after 10-15 seconds.

The manual reset button, also on the sequence control box, should not be operated until at least 30 seconds after the burner has been "locked out".

For burners with fully closing air dampers see page 6.

## COMMISSIONING.

Ensure correct nozzle fitted. Set air damper to suit combustion requirement.

## FAULT FINDING.

**Motor fails to start.** Check that power is available to the burner. Check all fuses in the supply to the burner. Check that the contacts of both control and safety limit thermostats on the appliance or in the room are closed, and therefore "calling for heat". If these thermostat contacts are not closed check the thermostat settings.

**Motor starts but burner will not light.** If the flame is not established the burner will be stopped and "locked out" after a safety period of 10-15 seconds: a warning light is illuminated on the sequence control box. The manual reset button on the sequence controller should not be operated until at least 30 seconds after the burner has been "locked out".

**Fully closing air damper (if fitted) check that air flap is open and micro switch is in the closed position.**

Ascertain whether oil is being sprayed by the nozzle.

If oil is passing through nozzle, check that there is a spark at the electrodes. Check all connections including high voltage leads.

Check electrode gap and correct if necessary.

Ensure that electrodes are not short circuited and that their insulators are clean and not cracked.

If there is no oil spray check that there is an oil supply to the burner and that all valves are open. Check that nozzle is not blocked. Ensure that all filters are able to pass oil. Check that the solenoid valve is open. Check that fuel pressure delivered by the pump is correct (180 psi).

**Unstable pump pressure.** On two pipe suction lift systems disconnect return pipe from pump; air free fuel should flow out when the pump is run.

On single pipe systems remove the purge plug to ascertain that air-free oil flows out.

Check that all pipework and connections on the suction side are free of leaks and that there are no blockages.

**Burner starts, then stops after a short time.** Check that photocell is clean and correctly located. Check air damper setting and re-adjust as necessary. Check for blocked nozzle.

**Flame unstable, burner stops.** Check for fuel supply fault, eg partial blockage of fuel supply pipe. Check nozzle atomisation, etc.

**Burner stops after satisfactory running period.** If flame fails during normal running period, the ignition will be switched on again. If the flame is not re-established after a period the burner is stopped and "locked out", and a warning (lock out) light illuminated in the sequence control box.

If the flame is re-established during this period the ignition is switched off and the burner will continue to operate normally.

## MAINTENANCE.

Before carrying out any work on the burner ensure that the electricity and oil supply is switched off.

**Filters.** A filter is fitted within the pump. To gain access remove pump end-plate.

Withdraw filter and clean it in paraffin or other solvent, using a stiff brush.

Replace filter and pump end-plate. Re-prime pump.

A filter should also be fitted in the fuel supply line. If fitted with a disposable element this should be replaced at least once per year, the frequency depending on the needs of the installation and the cleanliness of the fuel.

If the filter has a cleanable element this should be cleaned, at suitable intervals, in exactly the same way as has been described for the pump filter. Re-prime pump.

**Motor.** The motor requires no maintenance: it has bearings which are factory lubricated for the life of the motor.

**Fan.** If fan is damaged or becomes loose on the motor shaft the motor must be removed from the burner casing. Re-fit/replace fan.

## BURNERS HIGH/LOW/OFF CONTROL (Hydraulic Ram System)

### INTRODUCTION

High/low burners differ from the simpler on/off models in the following respects:

The burner still uses a single nozzle as the on/off burner but to obtain the two stage firing for high/low it incorporates a pressure variation system using an AS57 pump with high and low adjustments of oil pressures. The pump has a solenoid (V2) fitted which has, through the centre, the low flame oil pressure adjustment (refer to diagram below).

The oil line consists of safety solenoid valve (V1) and a three way solenoid valve (V3). The latter controls the oil flow to the hydraulic ram which, when energised, relieves pressure back to inlet of pump to give high fire air, and de-energised to give low fire.

When the burner lights on low fire and is established, the solenoid V2 is energised via the high/low appliance controlling instrument and gives high fire condition.

### TYPICAL TIMINGS

Pre-purge with ignition 12 seconds.

V1 opens to give low fire (powers ram to low air)

20 second delay V2 and V3 energised to give high fire oil and air.

On burner shut-down, or if returns to low fire V2 and V3 close and hydraulic ram moves to low air.

### INITIAL SETTINGS (approx.)

Low fire oil pressure 140 psi

High fire oil pressure 300 psi

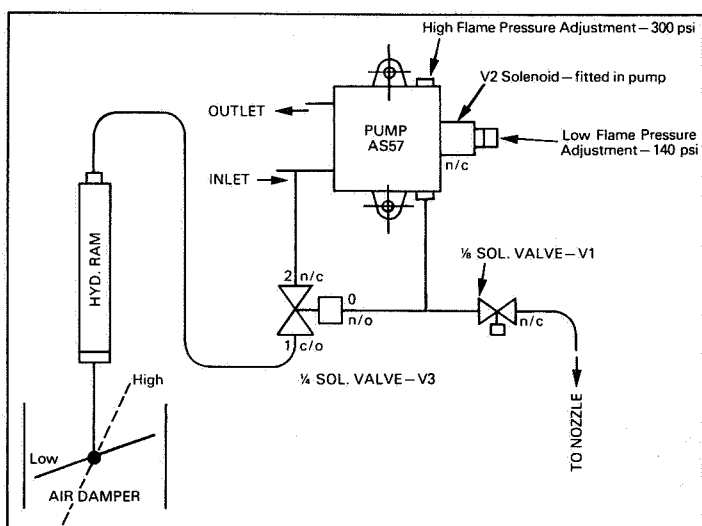
Low fire air damper No. 3 (1/3 open)

High fire air damper No. 7 (2/3 open)

**Note:** Fully closing air damper not available with this system.

### INITIAL FIRING

Follow the installation instructions for on/off burners, as listed under pre-firing check.



### TESTING THE INSTALLATION

Bleed the oil line to the burner. Bleed the pump free of air by slackening off the plug in the pressure gauge port and briefly running the burner motor (see pump maker's instructions). Remove the burner nozzle assembly (see photographs) and check that the electrodes are set in the correct position (see diagram).

### OPERATION

Set the appliance H/L controlling instrument to the required operating temperature (or pressure). Set the on/off control instrument to a temperature some 5°C above this. Set the limit instrument 5°C above the on/off control setting.

Initially, set the air damper (see pre-firing check) by means of the low flame stop. Manually extend the ram and set the high flame stop so that the damper can open almost fully. Turn on the burner and allow it to start. It will light on low flame and should be held in that position until appliance is ready to accept high flame. Whilst on low flame adjust damper to give a clean flame. In 15 to 30 seconds (dependent upon the model of control box fitted) it will then change to high flame. Adjust the high flame stop to give a clean flame without unnecessary excess air and then run the installation for fifteen minutes approx. (until it is at normal running temperature).

Whilst still on high flame, again re-adjust the high flame stop to give a CO<sub>2</sub> reading of 10% to 12% (or as specified by the appliance manufacturer). Reduce the setting of the control instrument until the burner changes to low flame. Adjust the damper linkage until a CO<sub>2</sub> reading 8% to 10% (or as specified by the appliance manufacturer) is achieved.

In all cases an acceptable smoke reading should be achieved.

### FAULT FINDING

The fault finding section for on/off burners apply generally to the H/L models. However, additional notes on fault finding for H/L burners are as shown.

**Burner will not change to high flame.** Check the settings and operation of the H/L thermostat (or pressure switch) — H/L magnetic valve failing to open. (Faulty valve or no high flame signal from control box).

**Flame failure on changing to high flame** (or small sparky high flame). Low oil pressure.

**Momentary flame failure on changing to high flame.** Restricted or insufficient oil supply to burner.

**Large smokey flame on changing to high flame.** Air shutter sticking in the low flame position. Oil line to pump blocked (see sketch). The diffuser has not been adjusted to allow sufficient air to pass.

**Burner will not change to low flame** (except on initial start). Check setting and operation of H/L control instrument.

**Burner starts on high flame.** Faulty control unit.

**Burner lockouts during pre-purge** If photo-cell detects light during pre-purge period, burner will lock-out or fail safe; cause could be leaking solenoid, illumination from combustion chamber, etc.

**BURNERS HIGH/LOW/OFF CONTROL WITH FULLY CLOSING AIR DAMPER (Electric Motor System)**

**INTRODUCTION**

The burner system/head is that described for high/low burners but in order to achieve the fully closing air damper facility a reversible motor with a separate adjustable cam bank is fitted to the burner to give the necessary modes of operation.

The cam arrangement is as indicated below and should be initially set as shown for given operation.

- Cam 2 — fixed for F.C.A.D.
- Cam 1 — high flame air
- Cam 3 — low flame air
- Cam 5 — high flame oil value

The cams are friction therefore move clockwise to increase and anti-clockwise to decrease. (Never undo the Nyloc retaining nut on top of the cam bank when adjusting the cam positions.)

**INITIAL CAM SETTING**

- Cam 2 — fixed for F.C.A.D.
- Cam 1 — to give air damper 60° open
- Cam 3 — to give air damper 20° open
- Cam 5 — will activate the high oil valve and should be set when air damper moves off cam 3 but before it reaches cam 1 thus ensuring a smooth changeover from low to high fire. Suggested position half way between cams 3 and 1.

All other combustion checks and settings should be as that stated in this manual for the high/low burner.

**BURNERS ON/OFF CONTROL WITH FULLY CLOSING AIR DAMPER (Ram Operated)**

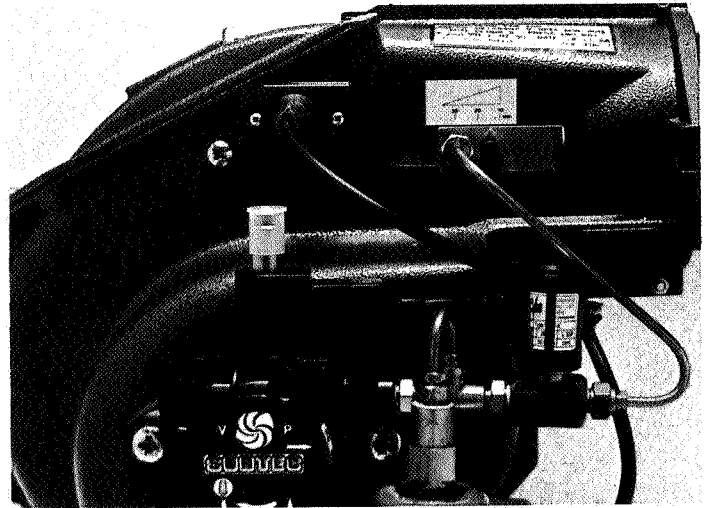
**INTRODUCTION**

The burner system is that described for on/off but in order to achieve the fully closing air damper facility a hydraulic ram is fitted to operate the air flap from the closed position.

**OPERATION**

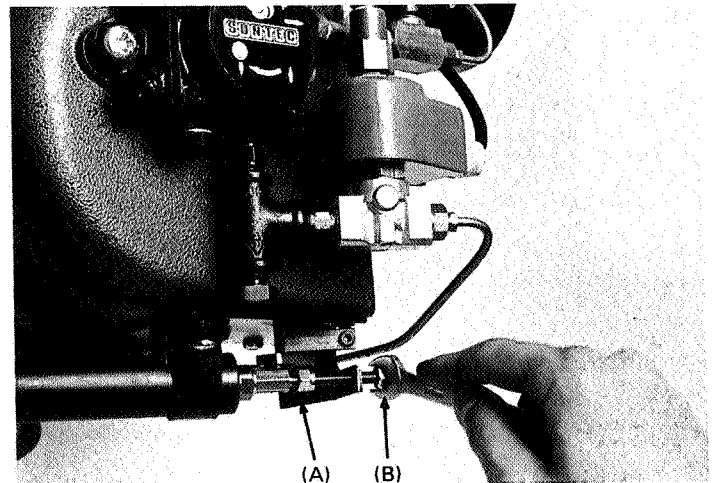
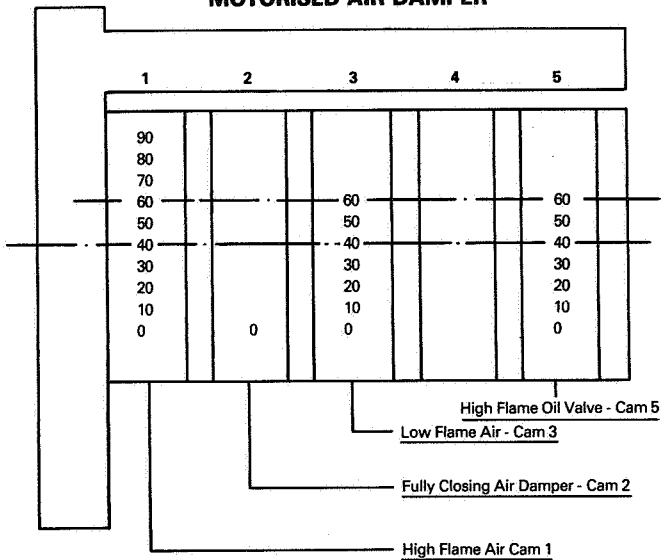
At the start of the pre-purge period the motor runs and the air damper opens under hydraulic pressure from the pump. At the end of the pre-purge and providing that the interlock micro-switch is made proving air in the operational position, the burner will then light and continue to run under the control of the appliance instruments.

When the appliance shuts down, the hydraulic pressure will cease and the air damper will close.



AIR DAMPER MICRO SWITCH ADJUSTMENT.

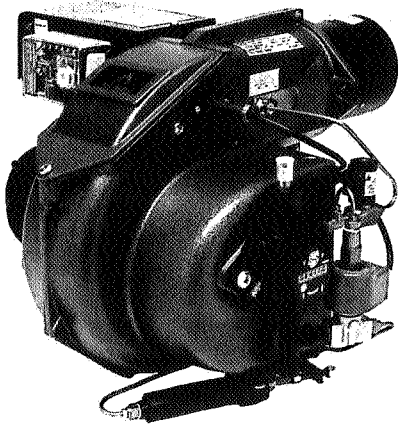
**MOTORISED AIR DAMPER**



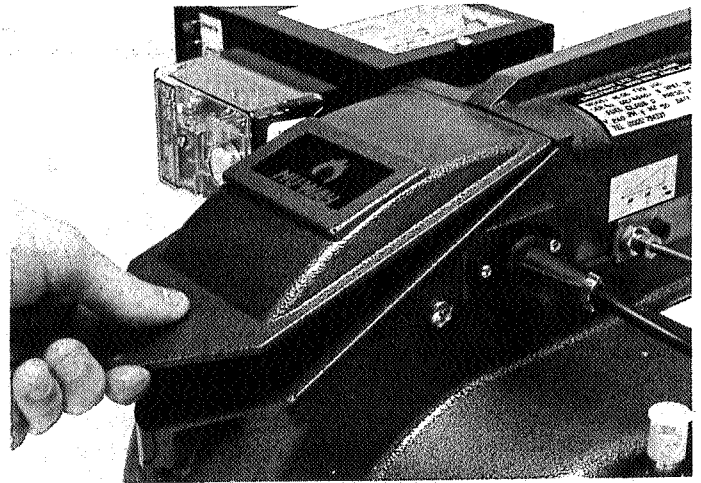
ADJUSTMENT TO AIR FLAP POSITION:  
 ADJUST NUT (A) TO ATTAIN REQUIRED AIR SETTING.  
 ADJUST NUT (B) TO FINALLY SET FULLY CLOSED POSITION.

## MAINTENANCE.

Switch off electricity supply and oil supply to the burner.



General view of the burner showing the fixing flange which secures the burner to the boiler front plate. Sequence control box is to left of burner casing and is secured in position by a single screw adjacent to the reset button.



Cover removed after withdrawal of a single screw at cover base. Ignition electrode leads can then be removed from electrodes.

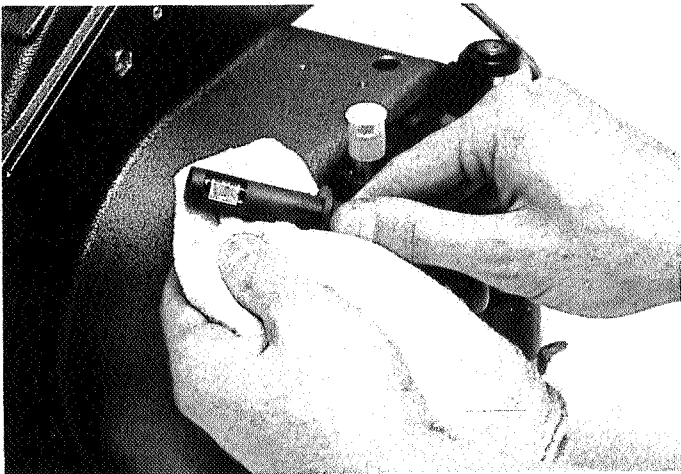
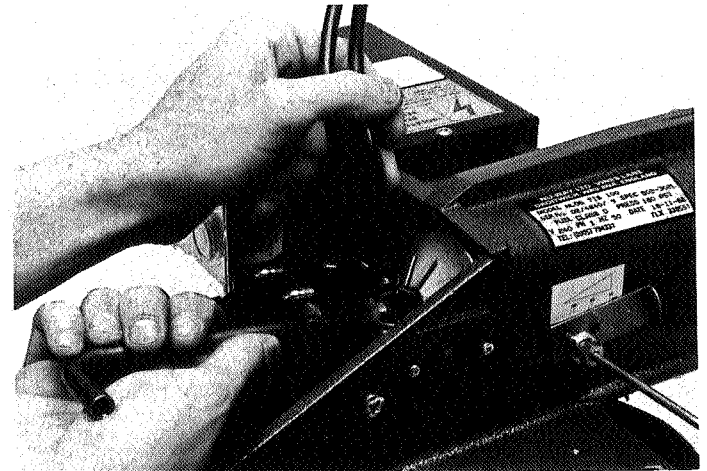
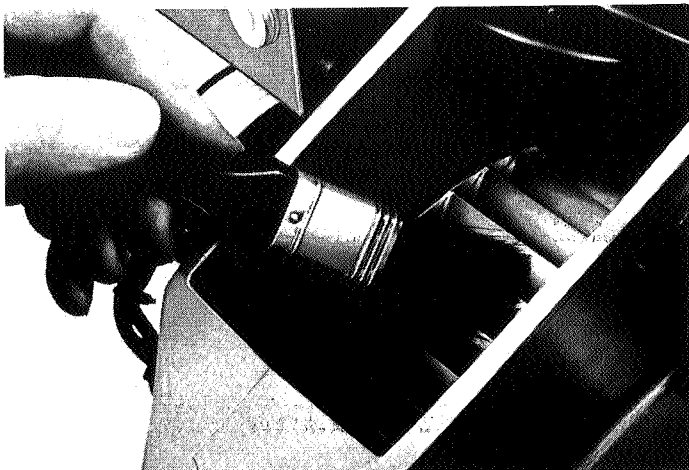


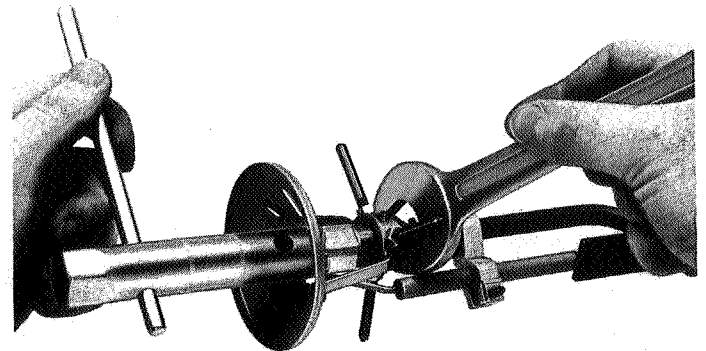
Photo-cell is removed from burner for cleaning. Do not touch cell with the fingers; use only a clean, dry cloth for cleaning. For burners fitted with Satronic TF830N control box you should ensure the 'M.Z.' photo-cell is positioned as indicated by the position label.



Before attempting to remove inner assembly withdraw photo-electric cell from its housing on right side of burner. Tubing nut and Allen screw is fully unscrewed to release inner assembly which can now be withdrawn from burner.

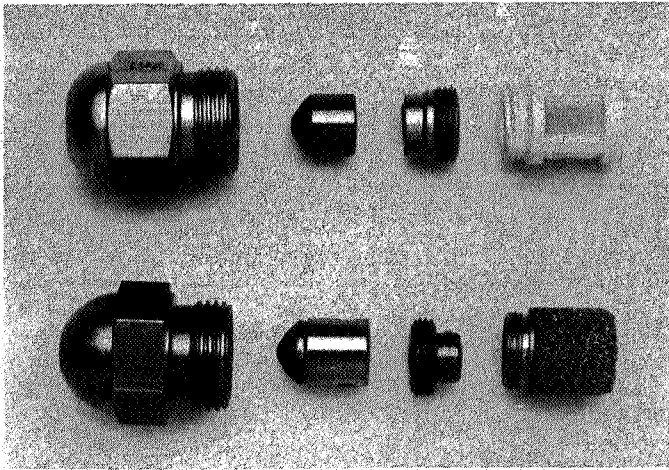


Cleaning the fan runner; use stiff brush.

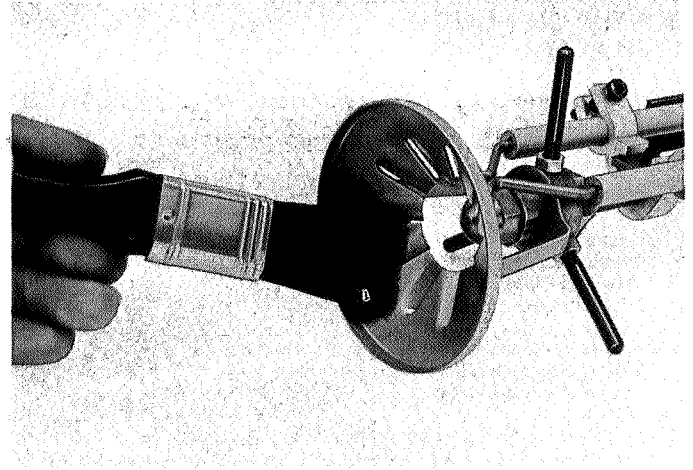


Nozzle is removed from inner assembly using a tube spanner. Fit nozzle to burner inner assembly by hand: use spanner only for final tightening. Handle with care to avoid damage to electrode porcelains.



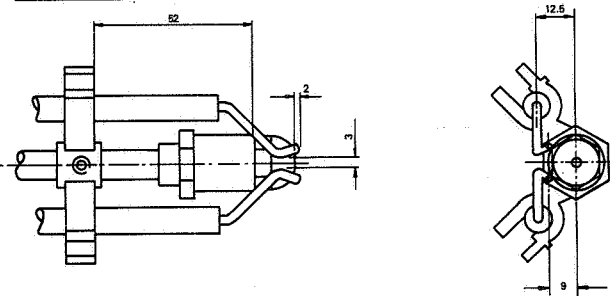
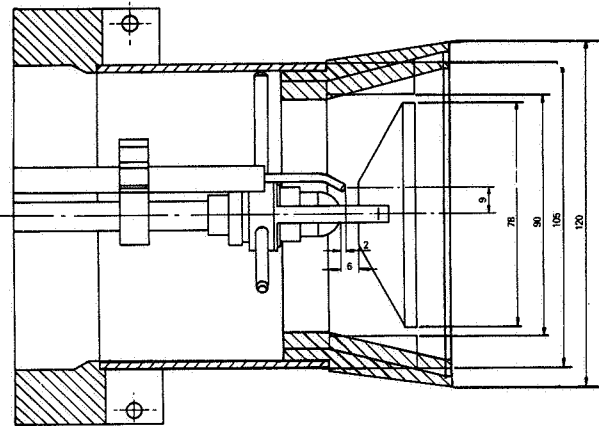


Dismantle nozzle itself to enable internal filter to be cleaned. Do not use any metal or wood to remove deposits. Wash in solvent. Wipe off any remaining dust using a clean, lint-free rag. Illustration shows correct assembly sequence for (above) Danfoss and (below) Monarch nozzles.

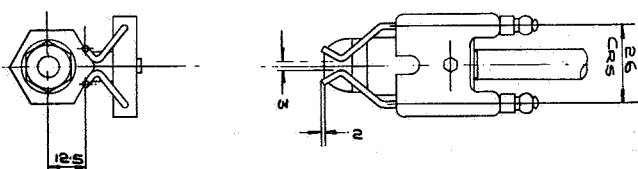
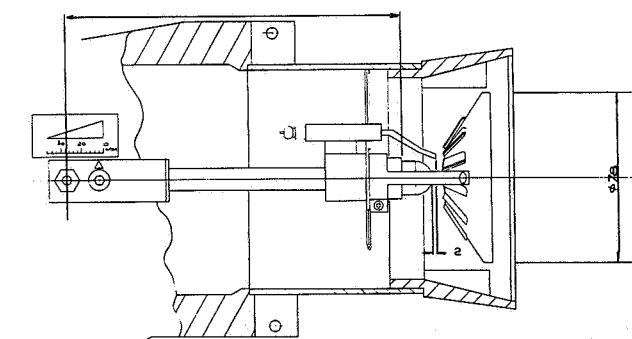


Air diffuser should be cleaned using a stiff brush.

### HEAD ARRANGEMENT AND ELECTRODE SETTINGS (In mms)

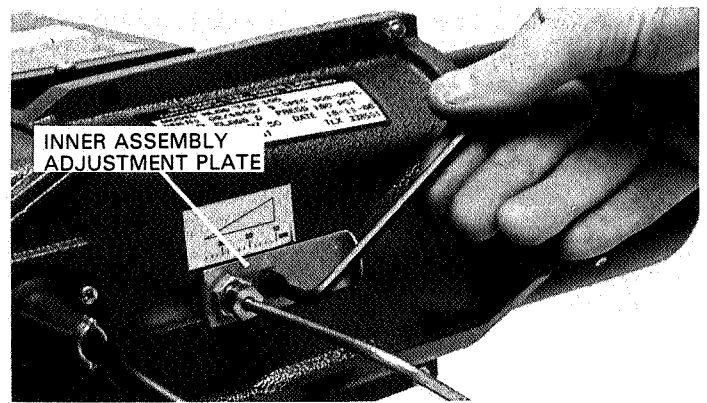


A. For NOL6 and NOL9 with projections over 150mm



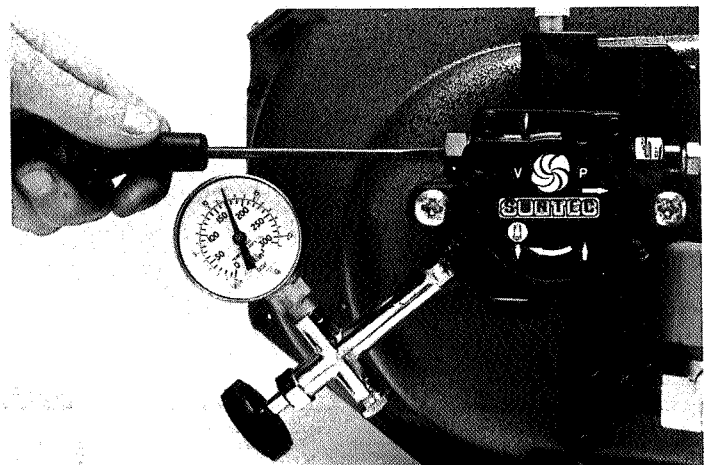
B. For NOL6 and NOL9 with 100mm and 150mm projections

### COMBUSTION HEAD ADJUSTMENT.



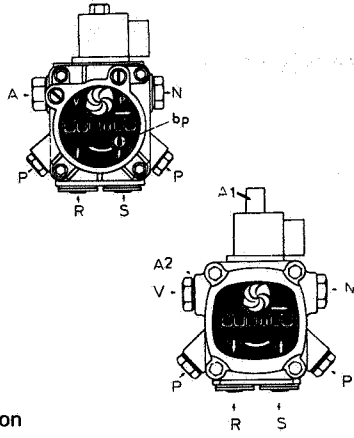
Loosen the Allen screw to allow the inner assembly adjustment plate to move easily. The inner assembly is adjusted by sliding the adjustment plate.

The indicator label designates the position of the diffuser. At the lowest point on the scale the diffuser is fully retracted allowing minimum air volume and highest possible static air pressure, whilst at the highest point on the scale the diffuser is fully advanced allowing maximum air volume. When the desired setting has been attained tighten the Allen screw and set position by tightening locking nuts.



To check pump pressure fit pressure gauge and test manifold. Adjusting pump delivery pressure. Normal pressure is 1241 kPa (12.7 Kg/cm<sup>2</sup> = 180 psi on/off only).

## SUNTEC OIL PUMP TYPE AS47 & AP47



### CONNECTIONS

S : suction 1/4" BSP or 1/8" BSP  
 N : nozzle outlet 1/8" BSP  
 R : return 1/4" BSP or 1/8" BSP  
 P : pressure gauge port 1/8" BSP  
 V : vacuum gauge port 1/8" BSP  
 A : pressure adjustment  
     (A1 = low pressure  
     A2 = high pressure)  
 r : rotation  
 bp : by-pass plug for 2 pipe operation

### INSTALLATION

Pumps with letter 'P' in the pump code are usually supplied for 2-pipe operation (the by-pass plug is fitted in the return port).

For 1-pipe operation this plug must be removed with a 5/32" allen key and the return port sealed by steel plug and washer.

Pumps identified by an 'M' in the pump code are supplied for 1-pipe operation (without by-pass plug, and with return plugged).

Pumps may be mounted in any position except with the shaft upwards, but the shaft should not be submitted to any axial or radial forces.

The maximum inlet and return pressures must not exceed 2 bar.

The maximum vacuum must not be more than 0.45 bar to prevent air separation from oil.

It is recommended to use a separate filter upstream of the pump.

The pump is intended to be used with cylindrical fittings and sealing washers, other sealants are not recommended.

### START UP

Check that sense of rotation for pump and motor are the same.

In order to purge pumps used on 1 pipe systems, loosen one of the high pressure connections: on 2 pipe systems, purging is automatic.

With AP pumps, any air that may have accumulated in the tube should be purged by several successive operations of the solenoid.

With AS and AP pumps, do not activate the solenoid when it is not fitted on the pump.

Viscosity range	2 to 12mm <sup>2</sup> /s (cSt)
Inlet pressure	2 bar max.
Return pressure	2 bar max.
Suction height	0.5 bar max. vacuum - 0.4 bar advised to prevent air separation from oil.
Rated speed	3600 rmp max.
Oil temperature	Max. 70°C in the pump
Starting torque	1.0 cm . daN

### Electrical characteristics

Solenoid valve voltage	24,110 or 220 V + 10% - 15%; 50/60Hz
Consumption	9 VA
Protection	IP 50

### PRESSURE REGULATION

With all models the pressure is increased by turning the regulator screw clockwise and vice versa.

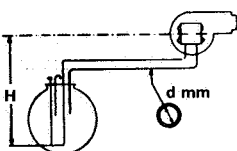
With AP pumps, it is preferable to set the high pressure (screw on pump with solenoid activated) before the low pressure (screw in tube, with solenoid non activated).

Care should be taken not to overtighten the screw in the tube, as this may eliminate the lower pressure range.

### SYSTEMATIC MAINTENANCE

- Check stop valve and in line filter.**
- Check pump filter.**  
This filter should be cleaned with a soft brush and clean fuel oil.  
Each time, the cover gasket and 'o' ring for Rev. 3 models should be changed.
- Check tightness of all couplings and unused plugs.**
- Check shaft coupling.**
- Check pump pressure.**  
Fit a pressure gauge in the fitting provided and run the pump in the normal manner.  
If the pressure required cannot be obtained, check that the pump is completely purged. If air bubbles are found in the fuel, check all connections for tightness.
- Check pump vacuum.**  
Fit a vacuum gauge in the fitting provided and run the pump in the normal manner, making sure to fully purge the pump.  
The vacuum should not exceed 0.45 bar. If this is the case, check condition of all components (non return valve, stop valves, filters. . .)  
If the pump does not suck correctly, check for air leaks in the line by retightening all fittings.

### Two pipe lift system



H max = 4.5m

Pump	45/47			
Q* (l/h)	60			
H (m)	d (mm)**			
	6	8	10	12
8	14	49	123	150
0.5	12	43	109	150
1	10	37	94	150
2	7	26	65	138
3	3	14	37	78
4	0	2	8	18

### PIPE DIMENSIONS

Rated speed: 2850 rpm

Viscosity: 5 cSt

Pressure: 9 bar

The table below gives the maximum length (in metres) of suction line as a function of 3 variables:

- lift between fuel unit and tank (H)
  - nozzle capacity or pump type
  - pipe diameter (d)
- for normal atmospheric pressure (sea-level) and 0.45 bar vacuum.

The length indicated (intersection of horizontal lines and columns) assumes the fitting of 4 right angle bends, 1 stop valve, 1 non return valve; if additional restrictions exist, the length must be reduced accordingly.

\*Q: Pump capacity at 0 bar

\*\* Only mentioned diameters can be used, bigger pipes are not suitable.



**BURNER SETTING RECORD**

- 1. Burner Type .....
- 2. Burner Specification .....
- 3. Nozzle Type and Size Reference .....
- 4. Pump Pressure - Bar .....
- 5. Low Flame (High/Low Burners Only) Spill Pressure - Bar .....
- 6. High Flame (Main Flame On/Off Burners) Spill Pressure - Bar .....
- 7. Turn-Down Ratio .....
- 8. Oil Throughput Kg/H .....
- 9. % CO<sub>2</sub> High (Main) Flame .....
- 10. % CO<sub>2</sub> Low Flame .....
- 11. Smoke Number H/F (M/F) .....
- 12. Smoke Number L/F .....
- 13. Date of Commissioning .....
- 14. Commissioning Engineer .....

**This form must be completed by the Commissioning Engineer**

# BURNER MODIFICATIONS

Date	Details of Modification

# BOILERHOUSE INSTRUCTIONS

# NOL6 NOL9

These instructions are provided for the benefit of the operator and are intended to be of assistance in making minor adjustments and providing the burner with proper maintenance, cleaning and lubrication. Additional information can be obtained through your installer or from the manufacturer.

## FUEL

The unit is designed to burn light distillate oil (28-40 secs Redwood No 1 at 38°C: 1.4-5.7 cSt at 38°C). Do not attempt to use petrol, or any oil which may contain traces of petrol.

## BOILERHOUSE VENTILATION

It is most important that the boilerhouse has an adequate supply of fresh air for both ventilation and combustion purposes.

## PUMP BLEEDING

If the fuel tank is allowed to drain completely it will be necessary to bleed the oil pump free of air by slackening the plug in the pressure gauge port allowing oil to run through until air free. (See pump instructions.)

## OIL FILTRATION - SEDIMENT REMOVAL

There is an oil strainer inside the body of the fuel pump and a separate oil filter between the oil pipe from the tank and the oil burner. The oil strainer should be removed and cleaned with paraffin during the pre-season check-up. At the same time the oil filter cartridge should be replaced or cleaned, as appropriate for the type fitted. Bleed fuel pump free of air, as described above, to remove any trapped air.

Draw off any accumulation of water or sediment in the fuel tank by opening the sludge cock in the tank bottom, immediately before any new delivery of fuel. Do not run the burner while the tank is being refilled and, if possible, do not restart for one hour after refilling is concluded.

## NOZZLE CLEANING

Nozzles cleaned as required see maintenance photographs. Replace after 2000 hours service.

## STARTING AND STOPPING

Start the burner by setting the thermostat pointer to a figure which is higher than the room or water temperature. Stop the burner by setting the thermostat to a point below this temperature.

The burner may set itself in the 'Safety Lockout' position — this will occur if the burner stops for any reason other than the action of the thermostat — and must then be restarted by pressing the reset button on the flameguard/sequence control. Ask your installer to

instruct you in the proper method of resetting. If frequent resetting becomes necessary, call the service engineer whose name and address should be inserted below.

Do not attempt to start the burner when the fire-box may be full of oil vapour. It is desirable to allow the furnace to cool for about 15 minutes before resetting the control to restart the burner from the 'Lock-out' position.

## EMERGENCY STOP

The burner can be stopped in emergency by opening the wall switch provided on the line between the burner and the electric supply. The installer must identify this switch.

## CHECKING BURNER OPERATION

Inspect burner flame periodically. If it becomes lopsided or smokey, call a service engineer.

When cleaning the room housing the heater unit, always switch off the burner to reduce the amount of dust and lint drawn in through the air inlet.

## SUMMER CARE, AUTUMN RESTART

During the summer months, or whenever heat is not required over a considerable period, the wall switch may be opened. To restart the burner it is only necessary to close this switch.

At the close of the heating season have the furnace cleaned and flues swept. See that the complete burner plant, especially the electric ignition system, nozzle, oil filter etc., is checked over and cleaned by a competent service engineer.

## PREVENTIVE MAINTENANCE

Consult your heating engineer for advice on regular preventive maintenance intervals. It is not possible to recommend a service interval for universal use since operating conditions vary widely from installation to installation.

## CAUTION

Never burn rubbish or refuse in the heater fire-box. Never leave waste paper or rags lying around near the burner or the heater.

## NOTES

Nu-way oil burner training courses are available — for details of specific courses contact the training officer at head office.

## SAFETY

The burner must be operated and serviced in accordance with the procedures detailed within this handbook.

## SPARES

**IMPORTANT:** It is essential when ordering spare parts that model number, serial number and specification number are quoted.



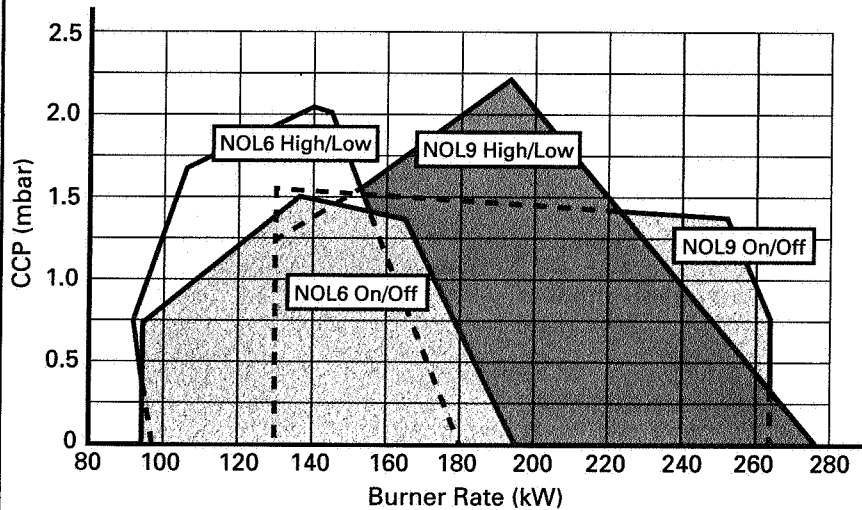
**MODEL**

**NOL6  
NOL9**

**ELECTRICAL DATA**

	1 phase	3 phase
Main Supply (V) + - 10%	230	400
Frequency (Hz)	50	50
Motor (W)	250	250
(HP) 2 Pole	0.33	0.33
Burner Run Current (A)	1.7	0.7
Burner Start Current (A)	7.0	3.5
Main Fuse (A)	10	5

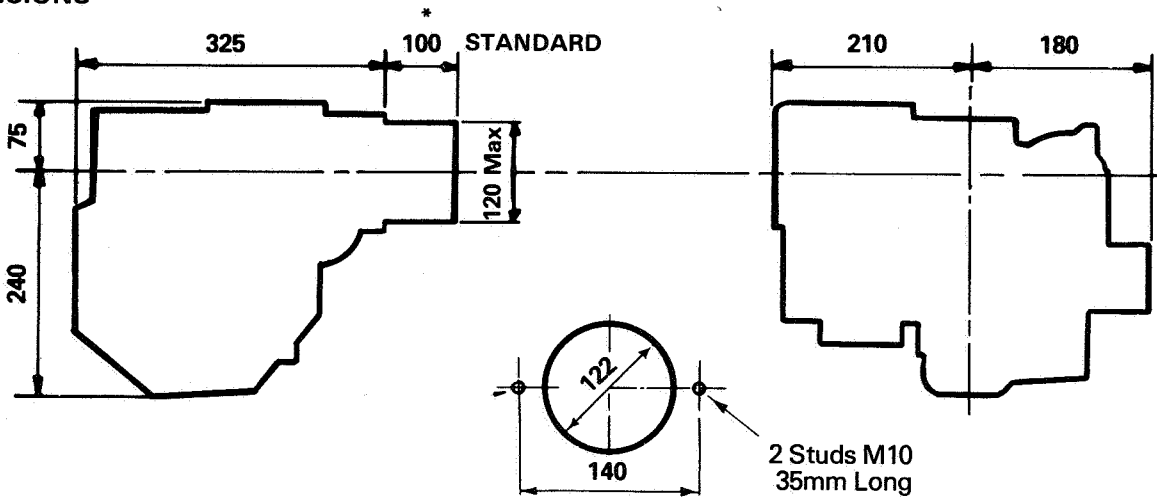
**BURNER SELECTION CHART**



**BURNER OUTPUT**

Burner outputs shown are based upon an air temperature of 20°C and an altitude of 500m.

**DIMENSIONS**

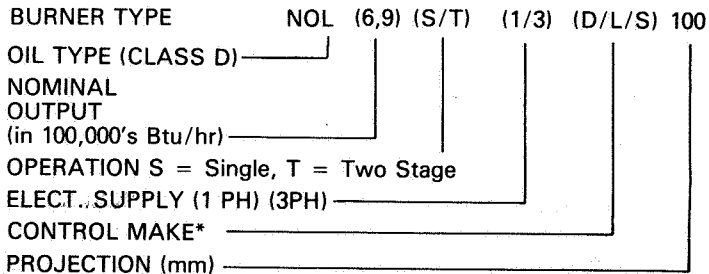


**TYPICAL BURNER DESIGNATION**  
NOL6 S3L 100

**\*Control Make**

- D = Danfoss
- L = Landis & Gyr
- S = Satronic

**FULL BURNER DESIGNATION - NOL6-NOL9**



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