NORDAIRNICHE

DIRECT FIRED

DV/DH DIRECT GAS-FIRED MAKE-UP AIR UNITS

Installation, Commissioning
& Service Manual
Ambi-Tec/Ambi-Stat

Installation instructions

Related documents

The installation of the Nordair direct gas fired air heater must be in accordance with the relevant requirements of the current Gas Safety (Installation and Use) Regulations, building Regulations and the IEE Wiring Regulations.

It should also be in accordance with any relevant requirements of the local supplier of gas, Local Authority and the relevant recommendations of the following documents:

British standards

EN525:1997

Requirements for non-domestic gas fired forced convection air heaters for space heating.

BS6230

Specification for installation of gas fired forced convection air heaters for commercial and industrial space heating of rated input exceeding 60kW (2nd family gases).

Institution of gas engineers

IGE/UP/1

Soundness testing and purging of industrial and commercial gas installations.

IGE/UP/2

Gas installation pipework, boosters and compressors on industrial and commercial premises.

Installation of DV/DH direct gas fired air heaters

Note Only a competent person shall be allowed to install a DH heater.

DV/DH gas fired air heaters are manufactured in two configurations, DV as a vertical unit and DH as a horizontal unit, both types are suitable for internal and external installation only.

DV Vertical indoor configuration

The heater should be positioned onto a prepared flat level concrete base, or a support steel work frame, with a minimum 500mm clearance on the non-access sides, and 1000 clearance on the access sides.

The unit should be lifted into position from it's base using a suitably sized fork lift truck with the fresh air inlet facing the outside wall.

The fresh air inlet weather louvre, cowl etc should be sized at a maximum inlet velocity of 2.5m^3/sec to prevent water carryover into the heater, with the duct work tapering to suit the heater fresh air inlet connection.

For heaters with extended ductwork. The ductwork should be sized to ensure that the external static pressure (ESP) does not exceed the figure stated on the data badge.

DH Horizontal indoor configuration

The heater is supplied as a single fan/burner section. It is usual for horizontal units to be mounted above floor level, due to the amount of floor space they would take up, and are normally positioned onto the roofs of internal offices/mezzanine areas or into the building steelwork.

For heaters being installed onto the roof of offices etc, the roof must be adequate to take the weight of the heater, and be adjacent to an outside wall, to allow fresh air to be ducted to the heater. A 1000mm clearance would be required on the access side of the heater, and a minimum 500mm clearance required on the non-access side and top of the heater.

For heaters mounted in the roof steel work, the units can be supported via 6 M12 drop rods through the support channels situated on the base of the unit.

The fresh air to the heater should be ducted through the roof, with a fresh air inlet sized to achieve inlet velocities of 2.5m/sec. Supply ductwork should be sized to suit the flange connection on the distribution head, or for extended ductwork runs, sized to ensure that the external static resistance does not exceed that stated on the Data Badge.

The fan/burner section should be lifted into position with a suitably sized fork lift truck, under the base of the heater or via a crane using straps and spreader bars.

DV - Vertical outdoor configuration

The heater is identical to the indoor configuration except for a control cubicle fitted over the electrical components, and an inlet cowl fitted to the fresh air inlet.

The heater is supplied as a single section, overall sizes and weights as indicated on the arrangement drawing.

The heater should be positioned onto a prepared flat level concrete base or support steelwork frame, with a 50mm clearance from the building wall, and a clearance on the access and control panel side as indicated in the arrangement drawing.

The heater should be lifted into position with the fresh air inlet cowl adjacent to the building wall, using a suitably sized fork lift truck, with the forks positioned under the base of the water. or via a crane with lifting straps slung under the base of the unit and spreader bars between the straps at the top of the heater to prevent the straps from exerting any undue strain onto the heater frame.

The external ductwork from the heater into the building must be weatherproof and form a water tight seal to the top of the flange of the heater. All ductwork should be sized to ensure that the external static resistance (ESP) does not exceed the figure stated on the data badge.

DH - Horizontal Outdoor Configuration.

The heater is identical to the indoor configuration except for a control cubicle fitted over the electrical components, and an inlet cowl fitted to the fresh air inlet. The heater is supplied as a single section, overall sizes and weights as indicated on the arrangement drawing.

The heater should be positioned onto a flat level concrete base, or support steelwork frame, to give a 500mm clearance to the underside of the heater from floor level, 500mm clearance on the non access side and a clearance on the access side as indicated in the arrangement drawing. The heater should be lifted into position, using a suitable sized fork lift

truck, with the forks positioned under the base of the heater, or via a crane with lifting straps slung under the base of the unit and spreader bars between the straps at the top of the heater to prevent the straps from exerting any undue strain onto the heater frame. The external ductwork from the heater into the building must be weatherproof and form a water tight seal to the outlet spigot on the heater. All ductwork must be ensured that the external static resistance (EPS) does not exceed the figure stated on the data badge.

Where additional controls are used they should be CE approved items.

Connection Services

Electrical supply

Wiring external to the heater must be installed in accordance with the IEE Wiring Regulations and any local regulations, which apply.

Nordair DH/DV units are supplied for 415V +-6%, 3 phase, 50Hz, neutral and earth supply, appropriately sized.

The method of connection to the main electricity supply must facilitate complete electrical isolation of the heater. The method of connection should be provided adjacent to each heater in a readily accessible position.

Sensors should be wired with a twisted pair screened cable, Beldon Ref 8762 or equivalent.

Main supply cables are to be sized to suit electrical rating of the heater as indicated on the Data Badge/Tech Specification sheet.

Control cable size should not be less than 0.75mm^2

Gas supply

The Nordair Niche heater is designed for use with natural gas and prpane. The gas type for this heater is marked on the Appliance Data Badge. Check that the available gas supply is as marked and within the pressure range given in heater specification.

Service pipes

The local supplier of gas should be consulted at the installation planning stage in order to establish the availability of an adequate supply of gas. An existing service pipe must not be used without prior consultation with the local supplier of gas.

Meters

A gas meter is connected to the service pipe by the local supplier of gas or the local contractor.

An existing meter should be checked, preferably by the local supplier of gas, to ensure that the meter is adequate to deal with the rate of gas supply required.

Installation pipes

Installation pipes should be fitted in accordance with IGE/UP/1.

Note If a long pipe run is needed to supply the heater, the line pressure drop should be calculated before installation and the supply pipework sized accordingly.

Gas pressure at the heater inlet under full fire conditions should be at least 17.5mbar (7"wg). Gas pressure with main burner off must not exceed 100mbar (40"w.g). The complete installation must be tested for soundness as described in IGE/UP/2.

Internal wiring

The amount of interconnecting wiring will depend on the control system being used, this will be indicated on the schematic wiring diagram, with the minimum connections.

Ambitec controller

The Ambitec controller should be mounted at a suitable height for easy access internally within the building, with an eight core 1.5m^2 SWA cable wired back to the heater control panel.

The room sensor should be mounted at approximately 1.5m to 1.8m above floor level, and should not be subject to high ambient temperatures from local machinery or air velocities discharging from the heater. The room sensor should be wired back to the Ambitec Controller with a twisted pair screened cable.

The duct sensor should be mounted in the discharge head or the extended ductwork and wired back to the heater control panel with a four core twisted pair screened cable.

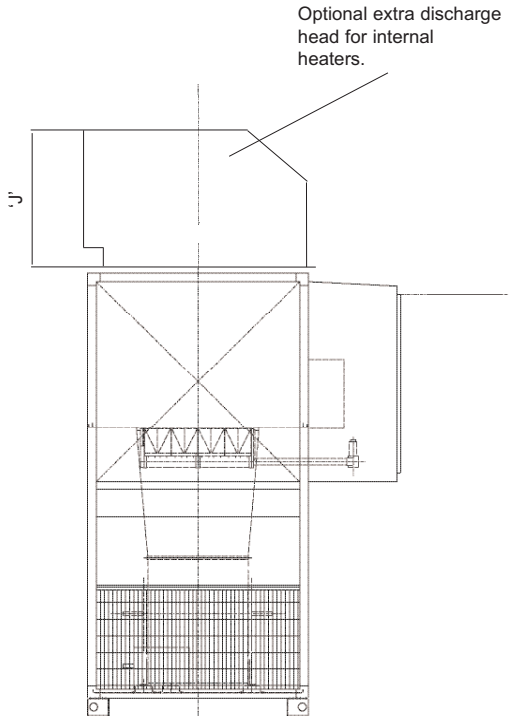
Ambi-Stat AS1 Time/temperature controller

The Ambi-Stat AS1 should be mounted at a suitable height for easy access, but should not be subjected to high ambient temperature from local machinery or air velocities discharging from the heater. A seven core 1.5mm^2 SWA cable should be wired back to the heater control panel.

Specification and technical data

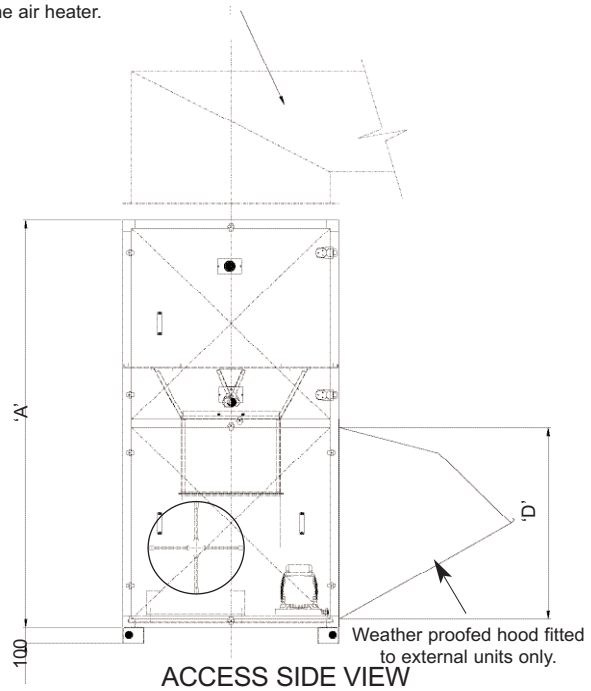
Model	DH2/DV2 75	DH2/DV2 150	DH4/DV4 225	DH4/DV4 300	DH7/DV7 375	DH7/DV7 450
Max GROSS Heat Input	75 kW	150 kW	225 kW	300 kW	375 kW	450 kW
Burner Pressure Maximum Rating (Differential Pressure)	5.0 mbar (G20) 6.8 mbar (G25) 2.0 mbar (G31)					
Min Gross Heat Input DV & DV**EX Ranges	8.2 kW	16.4 kW	24.6 kW	32.7 kW	40.9 kW	49.1 kW
Min GROSS Heat Input DH & DH**EX Ranges	5.4 kW	11.0 kW	16.1 kW	21.4 kW	26.8 kW	32.1 kW
Min GROSS Heat Input (G31 Only) All Ranges	11.0 kW	22.0 kW	33.0 kW	43.0 kW	53.0 kW	64.0 kW
GROSS Start Gas Rate Input	4.6 kW (G20 & G25) 9 kW (G31)					
Burner Pressure At Ignition	5.0 mbar					
Design ΔT Across Appliance	50 K					
Air Delivery Rate (Maximum)	1.20 m^3/sec	2.4 m^3/sec	3.6 m^3/sec	4.5 m^3/sec	6.0 m^3/sec	7.2 m^3/sec
Air Delivery Fan Motor Size @ 125ESP	400V 10A	400V 10A	400V 10A	400V 10A	400V 16A	400V 16A
Gas Connection BSP	15	20	25		40	
Weight [2] Internal Kg	215		290		450	
Weight [2] Outdoor Kg	265		350		520	

DV Vertical Units

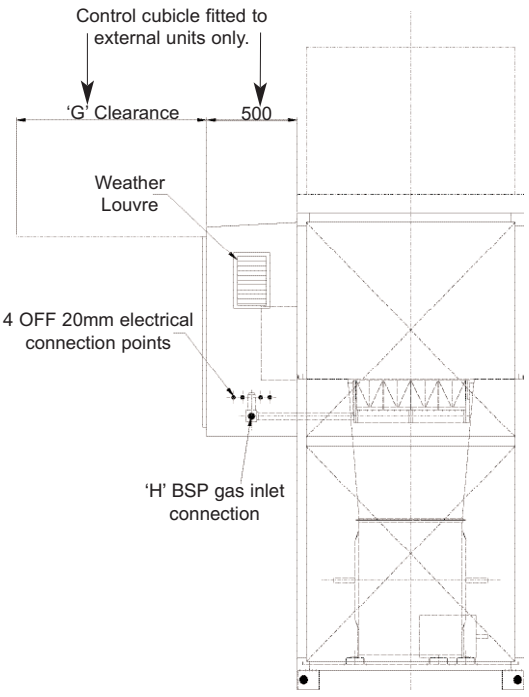


REAR VIEW (FRESH AIR INLET)

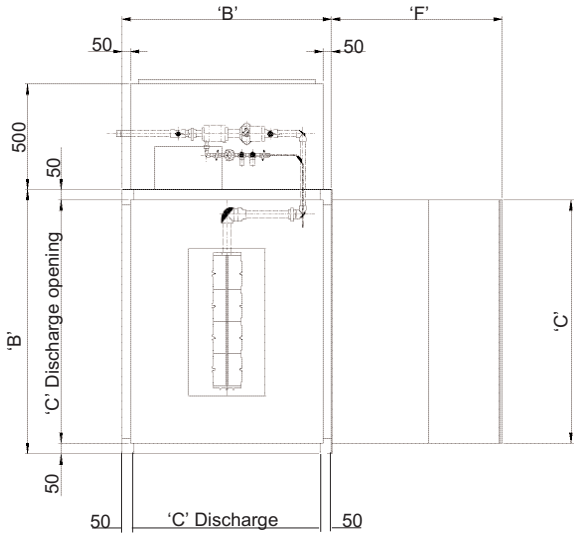
Note - applicable to external units only. Discharge ductwork to be manufactured and fitted by the installer and is to be fully weather proofed and to form a tight seal to the top flange of the air heater.



ACCESS SIDE VIEW



FRONT VIEW (BUILDING SIDE)



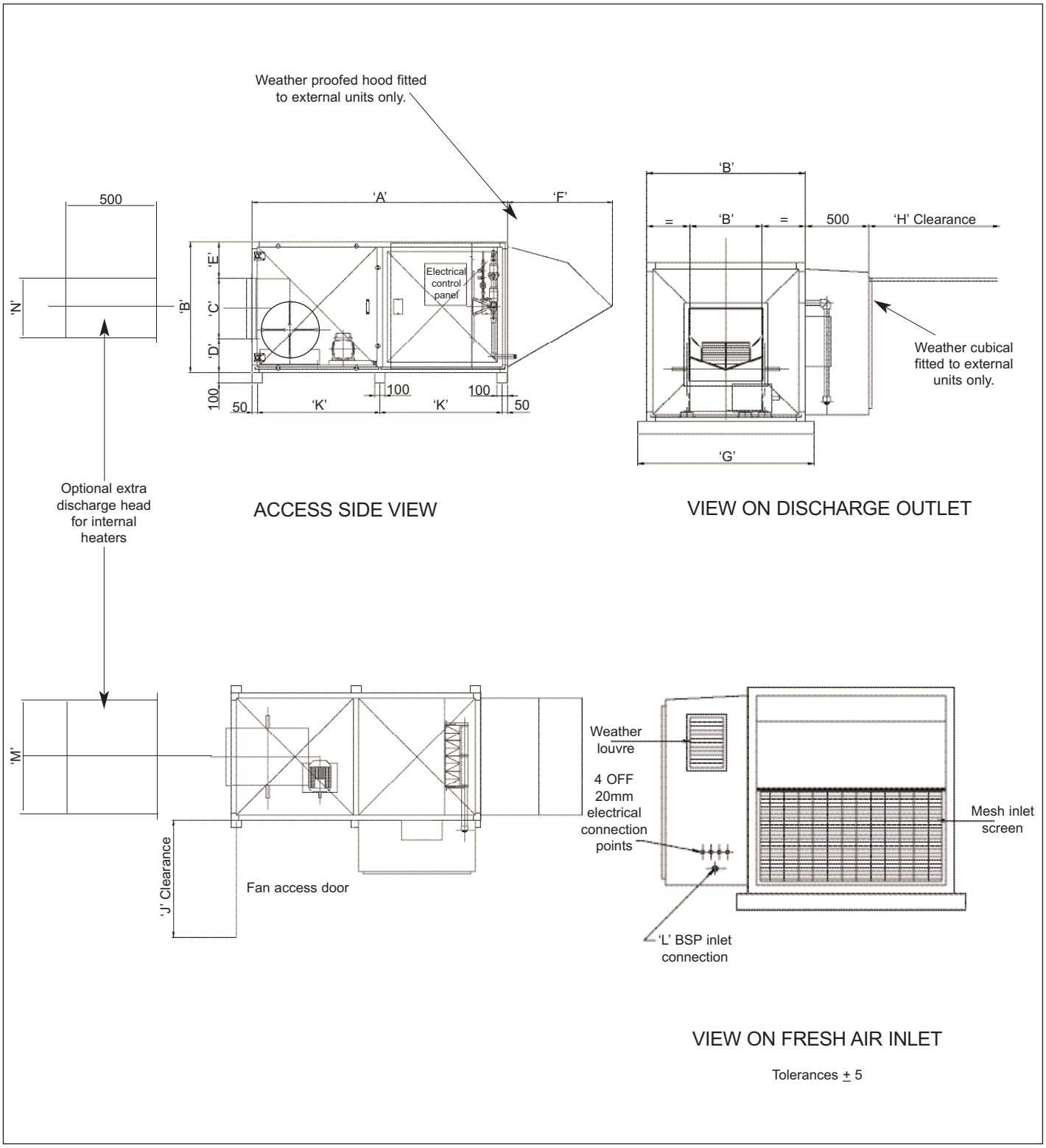
PLAN VIEW

All dimensions in mm

Heater	A	B	C	D	E	F	G	H	J
DV 2	1950	1000	900	900	558	797	780	$^{3}/_{4}$" BSP*	558
DV 4	2450	1250	1150	1150	760	1013	1030	1" BSP	760
DV 7	2450	1500	1400	1150	951	1230	1030	$1^{1}/_{2}$" BSP	950

DH2-75 = $^{1}/_{2}$ BSP

DH Horizontal Units



	All dimensions in mm												
Heater	A	B	C	D	E	F	G	H	J	K	L	M	N
DH 2	1950	1000	404	265	331	797	1140	780	900	925	3/4"BSP*	900	400
DH 4	2450	1250	1150	1150	760	1013	1030	1030	1150	1175	1"BSP	1150	656
DH 7	2450	1500	1400	1150	951	1230	1030	1030	1150	1175	11/2"BSP	1400	856

DH2-75 = $^{1}/_{2}$ BSP

General description

Introduction

The Nordair Niche DV/DH Direct Fired air handling unit is designed for economical and efficient operation to give clean and healthy environmental conditions, with constant even temperature control. It is available as a standard full fresh air unit only.

The two versions of the heater feature a burner mounted in an air handling unit. The burner is especially designed so that a proportion of the incoming air is forced into contact with the flame to ensure rapid mixing and uniform heating to the desired temperature. Each heater is supplied complete with automatic safety and temperature control systems. These systems are pre-piped, wired and checked before despatch.

Gas burner assembly

Each burner is built up from modular components to give the required heat duty. The burner consists of a heavy duty iron body which forms the fuel gas manifold, fitted with stainless steel mixing plates carefully designed to withstand the stresses of thermal expansion. The mixing plates are perforated to ensure intimate and progressive mixing of the incoming air with the fuel gas at all firing rates.

Heater casing

The heater casing comprises of an aluminium pentapost frame construction with 1.2mm 'Alunzink' single skin panels. The casing incorporates an internal burner profile opening and mild steel angle support.

The unit is fitted with removable/hinged access panels in the side of the heater for inspection internally of the fan, motor and burner module.

The DV vertical configuration heaters are a 'blow through' type, where the fan unit is situated within the base of the unit and blows the air over the burner.

The DH horizontal configuration heater are a 'pull through' type where the fan, unit is situated on the downstream side of burner with the air being drawn through the burner.

Control sequence

The time/temperature control of the heater will be carried out by either a Ambi-Tec electronic control panel, or a Ambi-Stat AS1 thermostat panel.

Ambi-Tec control panel

The Ambi-Tec electronic controller contains a digital display panel for monitoring/controlling the following heater functions. Outside of occupancy time a frost set point will start up the heater if the space temperature falls below the desired frost protection temperature.

During occupancy time and below room set point (say 19˚C adjustable) the heater discharge air temperature is controlled at a constant 40˚C by means of a active duct sensor modulating the gas throughput control valve.

At 1˚C above room set point the discharge air temperature is reset to 25˚C (Adjustable) and maintained again by modulating the gas throughput control valve. Reducing the discharge air temperatures to 25˚C eliminates stratification, and provides an even temperature both laterally and vertically throughout the space. At 3˚C adjustable up to 6˚C) above room set point, the gas burner shuts off, and the fan only is allowed to run.

Ambi-Stat control panel

The Ambi-Stat control panel, comprises of a seven day electronic time clock, room and frost thermostats, Heat/Vent select switch and lockout indication and reset, incorporated into a sheet steel enclosure.

Outside of time schedule the heater will operate under the dictates of the frost stat to maintain the desired frost protection temperature.

During occupancy time, and below the room set point the heater is controlled via the room thermostat. The heater will discharge air at a constant 40˚C by means of a active duct sensor modulating the gas throughput control valve.

At room set point the heater shuts off, and will not restart until the room temperature falls below the room thermostat setting.

The Heat/Vent switch will during occupancy times, switch the burner off in the vent position allowing the air fan to operate.

In the event of the heater locking out, an indication lamp will energise on the control panel, and can be reset by depressing the switch.

Control panel

The heater control panel incorporates a Satronic flame programmer, necessary MCB, contactors, relays, illuminated push button etc. All pre-wired to a terminal rail.

Burner sequence

The purge, ignition and main flame stages of the burner are carried out via Satronic MMI 810-1 approved flame programmer.

Overheat

In the event of an over-heat condition, within the heater casing, the heater is fitted with over temperature protection, which has to be manually reset if acted. By depressing the red button on the honeywell overheat thermostat.

Safety interlocks

The DH/DV heater includes the following safety interlocks:

1. Low air differential pressure switch.
2. Overheat controller.
3. Lockout on flame failure/or air pressure failure.

Site wiring

Site wiring requires the connection of:

1. 415 volt 3 phase 50Hz 4 wire supply to the main heater control panel.
2. Duct sensor, room sensor.

Fuel supply system

Start gas supply line

The start gas line comprises of:

1. Inlet gas isolating valve.
2. Gas governor.
3. Class 1 approved solenoid valves.
4. Gas isolating valves.
5. Pipework, fittings and pressure test points.

The main gas train comprises

1. Optional inlet gas isolating valve.
2. Combined gas governor, safety shut off valves and strainer.
3. Motorised control ball valve.
4. Burner isolating valve.
5. Pipework, fitting and pressure test points.

Commissioning & testing

Nordair Niche DV/DH heaters are fully tested before despatch, but still require to be commissioned once installed by a suitably qualified and competent person. There are two blank copies of the commissioning settings both of which are to be filled in. One copy to be retained in the manual, and the other returned to Nordair Niche.

The Nordair Niche Commissioning Service does not cover responsibility for the connection of the gas and electrical services which remain the responsibility of the installer.

General installation

The installation should be checked to ensure that work carried out is in accordance with the design requirements. Particular attention should be given to the adequacy of the air supply.

Gas installation

The whole of the gas installation, including the meter, should be inspected and tested for soundness and purged in accordance with the recommendations IGE/UP/2 and tested for soundness and purged in accordance with the recommendations IGE/UP/2.

Electrical installation

Checks to ensure electrical safety should be carried out by a competent person.

Commissioning procedure Ambi-Tec controllers

To be read in conjunction with the schematic wiring diagram, and process diagram. Commissioning of Nordair heaters should be carried out by competent engineers. Training courses are available at Nordair works.

Externally positioned heaters should not be commissioned during adverse weather conditions i.e. during rain and high winds etc...

Each heater is fully tested for safety checks and operational sequence, prior to delivery, but requires the following inspection to be carried out PRIOR TO commencing commissioning.

All manual gas valves are closed.

All electrical supplies are isolated.

Electrical earth continuity between the heaters, gas pipework and main electrical supply.

Gas installation pipework has been tested for soundness.

Gas installation has been purged.

Note and record fan motor data badge details.

Note and record fan and motor pulley sizes, belt reference and pulley centres.

Fan belt tension and alignment.

Check overheat controller setting is 85˚C.

Pre firing commissioning

Ensure all MCB's in the control panel are in the OFF position.

Set motor overload to the motor plate FLC. For direct on line motors, and 60% of the motor FLC for star delta motors.

Set discharge head vertical distribution blades to give maximum spread, and the horizontal blades slightly upwards, to prevent downward air movement. Discharge heads fitted with Novo-Jet nozzles should be twisted to give maximum spread with no downward air movement.

Switch on electrical supply to heater check voltage across each Phase for 415 volts, and down to neutral for 240 Volts.

Switch on the 240 and 24 Volt control circuit breakers, adjust the room set point on the Ambi-Tec to 5˚C below room temperature, and override to OFF period. Switch on the the fan motor circuit breaker to the ON position.

Override the Ambi-Tec to a ON period, the air fan will start. Check fan rotation is correct, if not isolate electrical supply and change over two of the phases. Switch on the electronic supply and check rotation is correct.

Measure and record the motor FLC on each phase measure and record air velocity over the burner profile opening. Reading should be between 14 - 16m/sec.

An adjustable damper plate is incorporated within the burner opening and can be adjusted if required to achieve the optimum velocities. Record the profile opening size and security mark position with a suitable tamper evident seal.

Override the Ambi-Tec to a OFF period, remove the cool/heat relay from its base. Reset the room set point to 2˚C above actual room temperature.

Connect a suitable manometer to the pressure tapping point P5 upstream of the motorised gas valve. Open burner isolating valve V6 and record the gas line suction pressure. Close V6 on completion.

Check within the factory area that no air movement can be felt at low level, adjust horizontal blades in distribution head or Nova-Jet nozzles if necessary.

Override the Ambi-Tec to an OFF period, refit cool/heat relay into its base.

Check gas soundness of the gas control train by following the procedure leak testing the gas line at the end of the commissioning and testing section.

Burner commissioning Ambi-Tec controllers

Burner commissioning

To be read in conjunction with the schematic wiring diagram and the process diagram. Commissioning setting are to be recorded on the enclosed sheets, a copy of which is to be returned to Nordair.

Adjust the room set point on the Ambi-Tec to 5˚C above room temperature and override to a ON period.

The flame programmer will commence a 40 second air purge followed by ignition and lockout.

Open main gas isolating valve V1, and pilot isolating valves V7 and V11. Ensure burner isolating valve V6 is closed.

Connect a suitable manometer to pressure tapping point P7.

Depress the lockout-reset button on the front of the Satronic Flame Programmer. A 40 second air purge will commence, followed by pilot ignition and lockout. Check pilot gas pressure and reset governor, if necessary to 5mbar (2" wg). Additional lockout resets may be required to adjust pilot governor pressure due to the time allowed prior to lockout occurring.

Remove the cover from the active duct sensor situated in the discharge/ducting distribution head to reveal two setting 'Pots',

Pot 1. Controls the duct discharge temperature at 40˚C up to room set point.

Pot 2. Controls the duct discharge temperature at 25˚C when above room set point.

The active duct sensor transmits a 0-10VDC output signal to drive the gas control valve motor.

Adjust Pot 1 to maximum adjustment. Adjust Pot 2 to minimum adjustment.

Open burner gas isolating valve V6 and reset the lockout condition. A 40 second purge will commence followed by pilot ignition and main flame ignition at low fire.

Within 3 seconds of main flame ignition the gas valve will commence driving to the full open position. Whilst driving the flame colour should be blue with a maximum flame length of 250-300mm (10"-12") extending from the burner plates. If flame length's in excess of 250-300mm (10"-12") or orange in colour, close burner isolating valve V6, until the correct length/colour is obtained.

Connect a manometer to pressure tapping point P1. Measure and record the main gas inlet pressure, which should be in the range of 19.8-45mbar (7.5"wg-18"wg).

Connect a manometer to pressure tapping point P3 and measure governor outlet pressure, which should be approximately 9.5mbar (3.8"wg). If valve V6 had to be closed reduce governor outlet pressure and fully open valve V6.

To increase or decrease the gas supply pressure to the burner, turn clockwise to increase the governor outlet pressure, and anti-clockwise to reduce outlet pressure. It is strongly recommended that a pressure gauge is connected to pressure point P3 when adjusting governor outlet pressure.

Note DO NOT adjust governor pressure when setting low fire gas pressure.

If increasing the governor outlet gas pressure does not increase the burner pressure at high fire, then the gas control valve requires resetting.

Connect a separate manometer to pressure tapping point P5 and P9 measure the pressure which should be 5.0mbar (2.0"wg). If the differential pressure is lower than 5.0mbar (2.0"wg) increase governor outlet pressure until this differential pressure is obtained. If the differential is high than 5.0mbar (2.0"wg) lower the governor outlet pressure, note and record governor outlet pressure.

As a cross check at high fire, measure the outside air temperature and deduct from the duct discharge temperature, this should be 42˚C.

Reset the room set point on the Ambi-Tec to 2˚C below room temperature. The gas control valve will commence to drive to the minimum position.

The flame at low fire should be a small continuous blue flame, along the full length of the burner, with a temperature rise of 5˚C maximum over the outside air temperature. The low fire valve setting may have to be adjusted to obtain this
temperature rise if the main gas governor outlet pressure was increased to obtain high fire setting.

To adjust the low setting, slacken the M6 nuts from the motor 'U' clamp around the valve spindle and with a pair of grips on the valve spindle minutely close to the valve in small stages until the 5˚C temperature rise is obtained. With great care, tighten the 'U' clamp onto the valve spindle, ensuring that the shaft does not move.

Override the gas valve motor to high fire, and then back to low fire to ensure the low fire setting has not altered, by switching the directional switch between L & R.

The high fire stop has been factory set to ensure the valve opens fully, and should not require adjusting.

To ensure that the burner ignites smoothly and consistently at low fire. Repeat this 4/5 times to ensure trouble free ignition.

With burner firing at minimum rate connect both ends of a manometer to the tapping points on the pressure switch sensing tubes, to measure and record the differential air pressure across the profile plate at full fresh air. Reading should be between 1 to 1.5mbar (0.4-0.6wg").

Adjust air pressure switch by inserting a screw driving into the slotted adjusting screw. Screwing clockwise, increases the pressure range. Anti-clockwise reduces the pressure range. The ideal setting is to screw clockwise until the

flags commence to move, then screw anti-clockwise until it remains steady, which is normally around the 10mmwg (0.4"wg) mark. Setting higher than 0.5mbar (0.2"w.g) with the indicator flag bouncing will give rise to nuisance lockouts. Setting around 0.175mbar (0.07"w.g) or less may not lockout the heater in the event of air failure.

Ensure gas valve motor rotational switch to L (normal position). Reset active duct sensor temperature set point to 40˚C adjust the minimum settings to 25˚C.

Tamper sealings

On completition of commissioning all adjustable setting are to sealed with suitable evident seal.

Safety checks

With the burner firing, close burner isolating valve V6, lockout will occur. Open valve and reset lockout condition.

Remove the air sensing tube from the bottom connection of the air pressure switch. The heater will lockout. Replace and reset. Adjust overheat controller set point down until heater shuts off on overheat. Reset temperature to 85˚C for the DV range and 75˚C for the DH range. Reset by depressing the red button on the Honeywell overheat thermostat.

Particular attention should be given to the adequacy of the air supply.

Commissioning procedure Ambi-Stat controllers

To be read in conjunction with the schematic wiring diagram, and process diagram. Commissioning of Nordair heaters should be carried out by competent engineers. Training courses are available at Nordair works.

Externally positioned heaters should not be commissioned during adverse weather conditions i.e. during rain and high winds etc...

Each heater is fully tested for safety checks and operational sequence, prior to delivery, but requires the following inspection to be carried out PRIOR TO commencing commissioning.

All manual gas valves are closed.

All electrical supplies are isolated.

Electrical earth continuity between the heaters, gas pipework and main electrical supply.

Gas installation pipework has been tested for soundness.

Gas installation has been purged.

Note and record fan motor data badge details.

Note and record fan and motor pulley sizes, belt reference and pulley centres.

Fan belt tension and alignment.

Check overheat controller setting is 85˚C.

Pre firing commissioning

Ensure all MCB's in control panel are in the OFF position.

Set motor overload to the motor plate FLC. For direct on line motors, and 60% of the motor FLC for star delta motors.

Set the discharge head vertical distribution blades to give maximum spread, and the horizontal blades slightly upwards, to prevent downward air movement. Discharge heads fitted with Novo-Jet nozzles should be twisted to give maximum spread with no downward air movement.

Switch on electrical supply to heater, check voltage across each phase for 415 volts, and down to neutral for 240 Volts.

Switch on the 240 and 24 volt control circuit breakers.

Adjust the room thermostat on the Ambi-Stat to minimum, override the time clock to the OFF position.

Switch the fan motor circuit breaker to the 'ON' position. Switch the Heat/Vent switch to the vent position. Override the time clock and the air fan will start up. Check fan rotation is correct if not isolate the electrical supply and change two of the phases over. Switch on the electrical supply and check isolation is correct.

Measure and record the motor FLC over each phase. Measure and record the air velocity over the burner profile opening. Reading should be between 14-16 m/sec adjust profile opening if required. Measure and record final profile opening.

Connect a suitable manometer to the pressure tapping point P5 upstream of the motorised gas valve. Open burner isolating valve V6 and record the gas line suction pressure. Close V6 on completion.

Check within the factory area that no air movement can be felt at low level, adjust horizontal blades in distribution head or Nova-Jet nozzles if necessary.

Check gas soundness of the gas control train by following the procedure leak testing the gas line at the end of the commissioning and testing section.

Burner commissioning Ambi-Stat controllers

To be read in conjunction with the schematic wiring diagram and the process diagram.

Commissioning settings are to be recorded on the enclosed sheets, a copy of which is to be returned to Nordair.

Override the time clock to a ON position adjust room thermostat to maximum setting.

The flame programmer will commence a 40 second air purge followed by ignition and lockout.

Open main gas isolating valve V1, and pilot isolating valves V7 and V11. Ensure burner isolating valve V6 is closed.

Connect a suitable manometer to pressure tapping point P7.

Depress the lockout-reset button on the front of the Satronic Flame Programmer. A 40 second air purge will commence, followed by pilot ignition and lockout. Check pilot gas pressure and reset governor, if necessary to 5mbar (2″wg). Additional lockout resets may be required to adjust pilot governor pressure due to the time allowed prior to lockout occurring.

Remove the cover from the active duct sensor situated in the discharge ducting/distribution head to reveal a set point and proportional band adjusters.

The active duct sensor transmits a 0-10 VDC output signal to drive the gas control valve motor.

Adjust temperature set point to maximum adjustment.

Open burner gas isolating valve V6 and reset the lockout condition. A 40 second purge will commence followed by pilot ignition and main flame ignition.

Within 3 seconds of main flame ignition the gas valve will commence driving to the full open position. Whilst driving the flame colour should be blue with a maximum flame length of 250-300mm (10″-12″) extending from the burner plates. If flame lengths in excess of 250-300mm (10″-12″) occur, or orange in colour, close burner isolating valve V6, until the correct length/colour is obtained.

Connect a manometer to pressure tapping point P1. Measure and record the main gas inlet pressure, which should be in the range of 19.8-45mbar (7.5″wg-18″wg).

Connect a manometer to pressure tapping point P3 and measure governor outlet pressure, which should be approximately 9.5mbar (3.8″wg). If valve V6 had to be closed reduce governor outlet pressure and fully open valve V6.

To increase or decrease the gas supply pressure to the burner, turn clockwise to increase the governor outlet pressure, and anti-clockwise to reduce outlet pressure. It is strongly recommended that a pressure gauge is connected to pressure point P3 when adjusting governor outlet pressure.

Note DO NOT adjust governor pressure when setting low fire gas pressure.

If increasing the governor outlet gas pressure does not increase the burner pressure at high fire, then the gas control valve requires resetting.

Connect a separate manometer to pressure tapping point P5 and P9 measure the pressure. The differential gas pressure which should be 5.0mbar (2.0″wg). If the differential pressure is lower than 5.0mbar (2.0″wg) increase governor outlet pressure until this differential pressure is obtained. If the differential is higher than 5.0mbar (2.0″wg) lower the governor outlet pressure, note and record governor outlet pressure.

As a cross check at high fire, measure the outside air temperature and deduct from the duct discharge temperature, this should be 42˚C.

Reset the Belimo gas control valve motor directional switch between L/R. The gas control valve will commence to drive to the minimum position.

The flame at low fire should be a small continuous blue flame, along the full length of the burner, with a temperature rise of 5˚C maximum over the outside air temperature. The low fire valve setting may have to be adjusted to obtain this temperature rise if the main gas governor outlet pressure was increased to obtain high fire setting.

To adjust the low setting, slacken the M6 nuts from the motor ‘U’ clamp around the valve spindle and with a pair of grips on the valve spindle minutely close to the valve in small stages until the 5˚C temperature rise is obtained. With great care, tighten the ‘U’ clamp onto the valve spindle, ensuring that the shaft does not move.

Override the gas valve motor to high fire and then back to low fire to ensure the low fire setting has not altered, by switching the directional switch between L & R.

The high fire stop has been factory set to ensure the valve opens fully, and should not require adjusting.

To ensure that the burner ignites smoothly and consistently at low fire. Repeat this 4/5 times to ensure trouble free ignition.

With burner firing at minimum rate connect both ends of a manometer to the tapping points on the pressure switch sensing tubes, to measure and record the differential air pressure across the profile plate at full fresh air. Reading should be between 1 to 1.5mbar (0.4-0.6wg″).

Adjust air pressure switch by inserting a screw driving into the slotted adjusting screw. Screwing clockwise, increases the pressure range. Anti-clockwise reduces the pressure range. The ideal setting is to screw clockwise until the flags commence to move, then screw anti-clockwise until it remains steady, which is normally around the 10mm wg (0.4″w.g) mark. Setting higher than 10mm wg (0.4″w.g) with the indicator flag bouncing will give rise to nuisance lockouts. Setting around 0.175mbar (0.07″w.g) or less may not lockout the heater in the event of air failure.

Ensure gas valve motor rotational switch to L (normal position). Reset active duct sensor temperature set point to 40˚C adjust the span settings to ensure the gas valve does not hunt replace cover.

Tamper sealings

On completition of commissioning all adjustable settings are to be sealed with suitable evident seal.

Safety checks

With the burner firing, close burner isolating valve V6, lockout will occur. Open valve and reset lockout condition.

Remove the air sensing tube from the bottom connection of the air pressure switch. The heater will lockout. Replace and reset. Adjust overheat controller set point down until heater shuts off on overheat. Reset temperature to 85˚C for the DV range and 75˚C for the DH range. Reset by depressing amber illuminated push button on front of panel.

Instructions

On completition of commissioning the engineer must instruct the end user basic start up/shut down procedures.

Component	Limiting concentration (CL) PPM (5 V/V)	
Carbon	10	
Carbon Dioxide	2500	(0.25)
Nitric Oxide	5	(0.0005)
Nitrogen Dioxide	1	(0.0001)
Aldehydes	0.4	(0.00004)

Report check list

SO NUMBER ..... DATE .....

This sheet must be completed by the commissioning engineer after the heater has been started for the first time.

TO BE RETAINED IN THE MANUAL

CUSTOMER	
HEATER TYPE	
SERIAL No	
BMS CONTROLLER TYPE	
HEATER ADDRESS	
CUSTOMER UNIT REFERENCE	

TEST / COMMISSIONING / SERVICE

☐	FAN BALANCE/VIBRATION	
☐	FAN BEARING/GREASE	
☐	MOTOR BEARING/GREASE	
☐	PROFILE PLATE DRIVE/FREE	
☐	PROFILE DAMPER SLIDE RAILS/GREASE	
☐	PROFILE DAMPER LIMIT SWITCH/OPERATION	
☐	PROFILE DAMPER DRIVE LINKAGE	
☐	PROFILE DAMPER DRIVE MOTOR	
☐	DRIVE BELT/CONDITION	
☐	BURNER GAS PORTS/RE-DRILL	
☐	BURNER MIXER PLATES/REPLACE	
☐	FLAME PROBE/REPLACE	
☐	SPARK PROBE/REPLACE	
☐	INTERNAL CASING CONDITION	
☐	EXTERNAL CASING CONDITION	
☐	INTAKE/GRILLES/CLEAN	
☐	FILTERS IF APPLICABLE	
☐	DISCHARGE GRILLES	
☐	SPARK PROBE CAP AND LEAD/CLEAN/REPLACE	
☐	FLAME PROBE CAP AND LEAD/CLEAN/REPLACE	
☐	CONTROL PANEL GENERAL	
☐	CONTROL PANEL WIRING/SOUNDNESS	
☐	INDICATOR LAMPS	
☐	FAN ROTATION	
☐	SUPPLY WIRING GENERAL	

Engineer .....

Report check list

SO NUMBER ..... DATE .....

This sheet must be completed by the commissioning engineer after the heater has been started for the first time.
TO BE RETURNED TO NORDAIR NICHE

CUSTOMER	
HEATER TYPE	
SERIAL No	
BMS CONTROLLER TYPE	
HEATER ADDRESS	
CUSTOMER UNIT REFERENCE	

TEST / COMMISSIONING / SERVICE

☐ FAN BALANCE/VIBRATION	
☐ FAN BEARING/GREASE	
☐ MOTOR BEARING/GREASE	
☐ PROFILE PLATE DRIVE/FREE	
☐ PROFILE DAMPER SLIDE RAILS/GREASE	
☐ PROFILE DAMPER LIMIT SWITCH/OPERATION	
☐ PROFILE DAMPER DRIVE LINKAGE	
☐ PROFILE DAMPER DRIVE MOTOR	
☐ DRIVE BELT/CONDITION	
☐ BURNER GAS PORTS/RE-DRILL	
☐ BURNER MIXER PLATES/REPLACE	
☐ FLAME PROBE/REPLACE	
☐ SPARK PROBE/REPLACE	
☐ INTERNAL CASING CONDITION	
☐ EXTERNAL CASING CONDITION	
☐ INTAKE/GRILLES/CLEAN	
☐ FILTERS IF APPLICABLE	
☐ DISCHARGE GRILLES	
☐ SPARK PROBE CAP AND LEAD/CLEAN/REPLACE	
☐ FLAME PROBE CAP AND LEAD/CLEAN/REPLACE	
☐ CONTROL PANEL GENERAL	
☐ CONTROL PANEL WIRING/SOUNDNESS	
☐ INDICATOR LAMPS	
☐ FAN ROTATION	
☐ SUPPLY WIRING GENERAL	

Engineer .....

Commissioning setting fresh air heaters

This sheet must be completed by the commissioning engineer after the heater has been started for the first time.

TO BE RETAINED IN MANUAL

CUSTOMER			
HEATER TYPE			
SERIAL No			
BMS CONTROLLER TYPE			
HEATER ADDRESS			
MOTOR			
MOTOR PULLEY			
FAN PULLEY			
BELTS			
BELT CENTRES			
ALIGNMENT			
TENSION			
PROFILE OPENING			
VELOCITY			
BURNER SIZE			
CURRENT	L_1	L_2	L_3
OVERLOAD SIZE			
GAS LINE SUCTION			
LOW FIRE			
HIGH FIRE (DIFF)			
GOVERNOR INLET PRESS			
GOVERNOR OUTLET PRESS			
PILOT PRESSURE			
AIR PRESS DIF			
AIR PRESS SWITCH SET @			
OVERHEAT SET@			

CHECKS			
FULL SYSTEM CHECK	☐	LOCKOUT FLAME FAILURE	☐
	☐	LOCKOUT AIR FAILURE	☐
GAS TRAIN SOUNDNESS	☐	GAS VALVE POSITION	☐
OVERHEAT STAT	☐	GAS VALVE MODULATION	☐

Engineer..... Date.....

Commissioning setting fresh air heaters

This sheet must be completed by the commissioning engineer after the heater has been started for the first time.

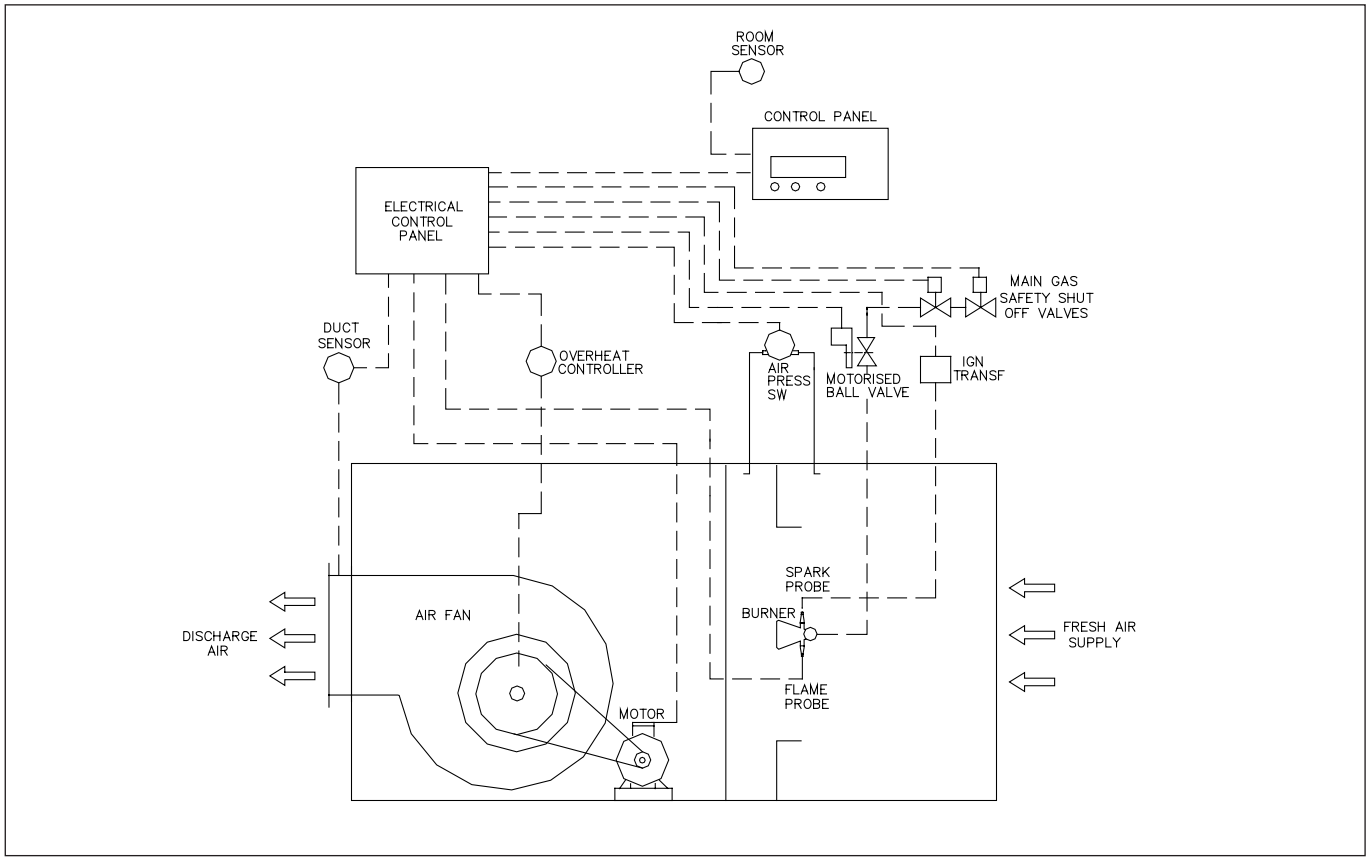
TO BE RETURNED TO NORDAIR NICHE

CUSTOMER			
HEATER TYPE			
SERIAL No			
BMS CONTROLLER TYPE			
HEATER ADDRESS			
MOTOR			
MOTOR PULLEY			
FAN PULLEY			
BELTS			
BELT CENTRES			
ALIGNMENT			
TENSION			
PROFILE OPENING			
VELOCITY			
BURNER SIZE			
CURRENT	L_1	L_2	L_3
OVERLOAD SIZE			
GAS LINE SUCTION			
LOW FIRE			
HIGH FIRE (DIFF)			
GOVERNOR INLET PRESS			
GOVERNOR OUTLET PRESS			
PILOT PRESSURE			
AIR PRESS DIF			
AIR PRESS SWITCH SET @			
OVERHEAT SET@			

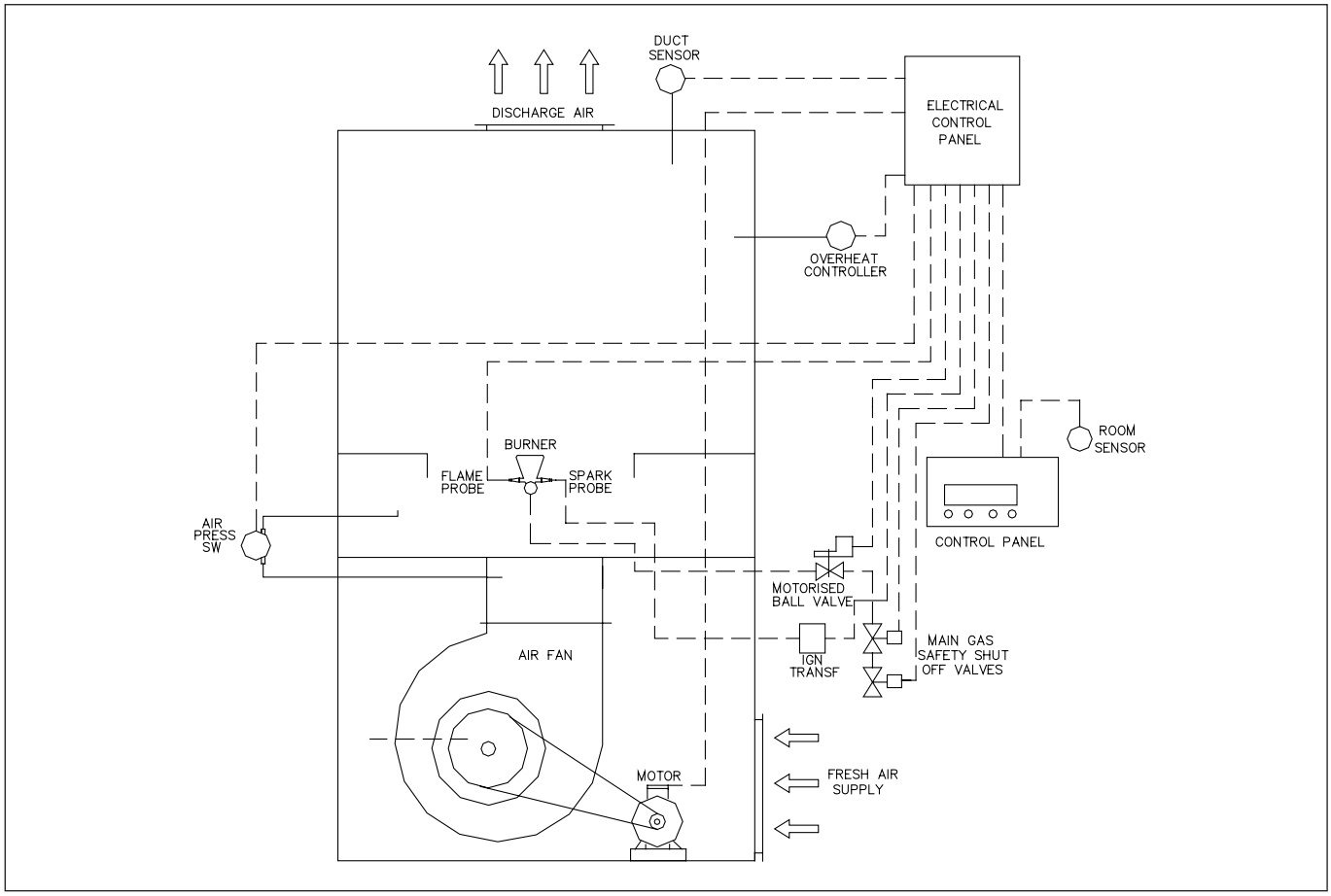
CHECKS			
FULL SYSTEM CHECK	☐	LOCKOUT FLAME FAILURE	☐
	☐	LOCKOUT AIR FAILURE	☐
GAS TRAIN SOUNDNESS	☐	GAS VALVE POSITION	☐
OVERHEAT STAT	☐	GAS VALVE MODULATION	☐

Engineer..... Date.....

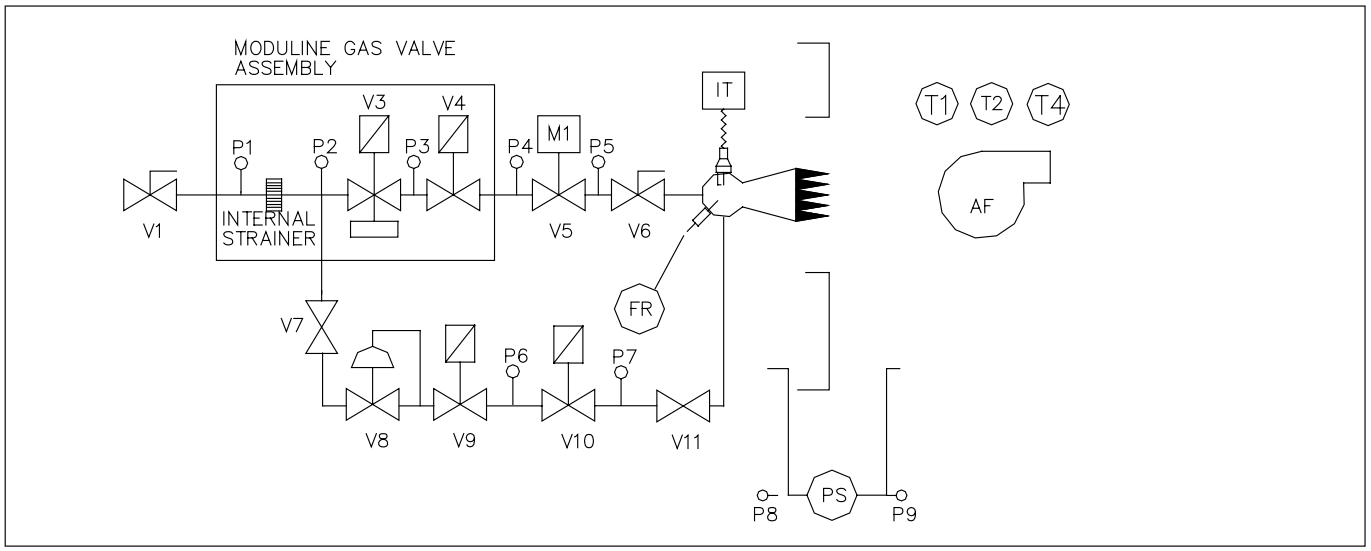
Layout of electrical equipment DH heater



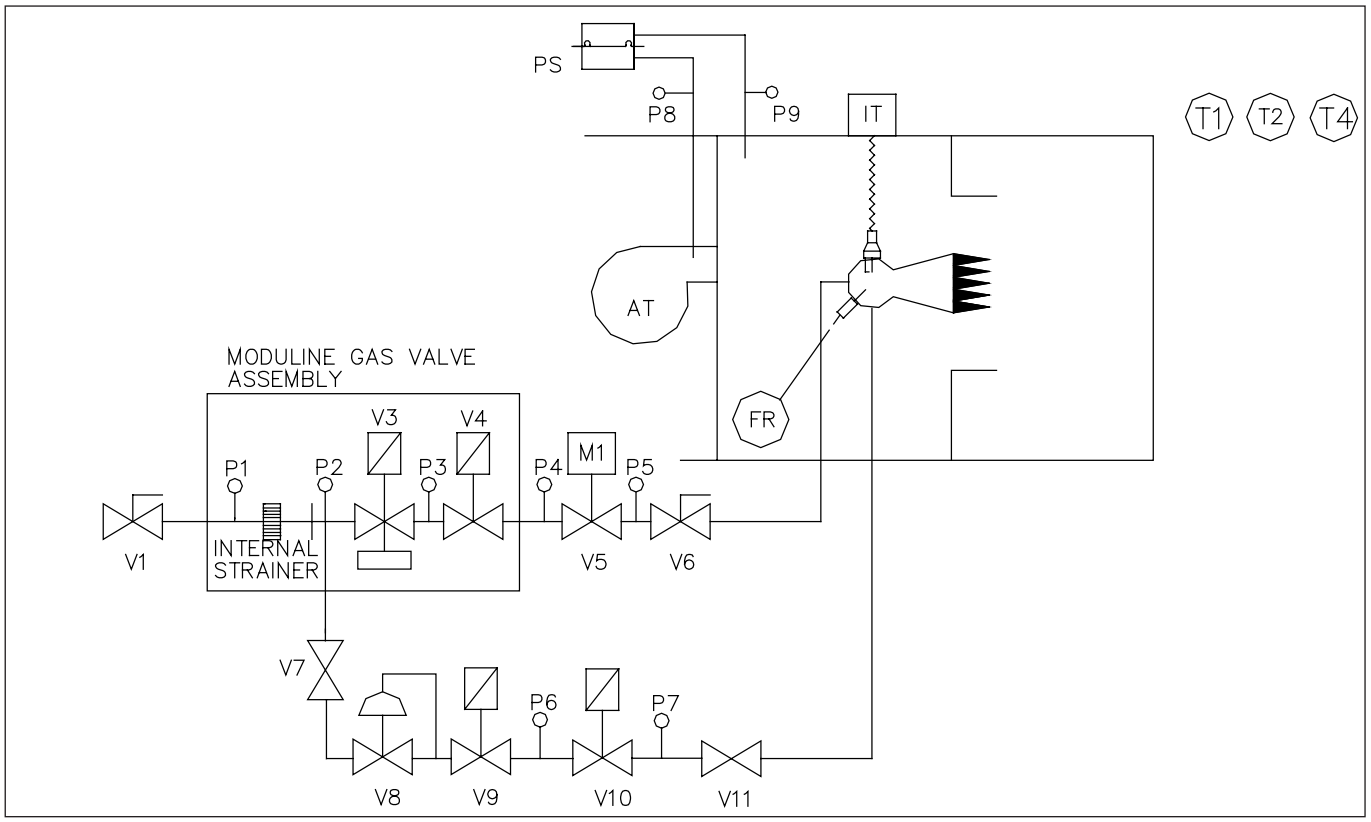
Layout of electrical equipment DV heater



Process diagram - DH



Process diagram - DV



Valve and instrument list

V1	Main Gas Isolating Valve
V3/V4	Combination main safety shut off valves valves incorporating electronic governor
V5	Motorised Ball Valve
V6	Burner Isolating Valve
V7	Pilot Gas Isolating valve
V8	Pilot Governor
V9/V10	Pilot Solenoid Valves
V11	Pilot Isolating Valve
V12	3 Way Solenoid Valve

AF	Air Fan
FR	Flame Rod
IT	Ignition transformer
M1	Modulating Control Valve Motor
P4	Air Pressure Switch
T1	Room Sensor
T2	Duct Sensor
T3	Outside Air Sensor (Optional)
T4	Overheat Controller
P7	Pressure Test Points

Leak testing the gas line

The procedure should be used in conjunction with the Process and Instrumentation drawing.

1. Ensure that gas and electricity supplies are turned off and close manual valves V1, V6, V7 and V11.

Testing the pipework up to and including the upstream main safety shut-off valves.

2. Connect a suitable pressure gauge to pressure test point P2.

3. Open V1 to pressurise the governor assembly.

4. Close V1. Leave the system for 3 minutes and watch for a fall in pipework pressure. If the pressure falls open V1, and test for leaks with a soap solution. Make good as necessary and re-check.

Note 3 minutes should be allowed for all pressure checks.

5. If no external leaks are observed, the upstream main safety shut-off valve is passing gas.
   To check this, replace the sealing screw on the pressure test point 2, and connect the pressure gauge. To test point 4 and leave for 3 minutes with V1 still open. A rise in pressure will confirm main valve is passing gas. Replace the valve and re-check for soundness.

   Testing the downstream main safety shut off valve.

6. Close V1 and connect pressure test points P1 and P4 with a length of | rubber tubing.

7. Open V1 to pressurise the assembly upto the burner isolating valve, V6.

8. Using a leak detection solution check all joints downstream of the second safety shut off valve up to V6. If leaks are detected close V1 and remake leaking joints. Repeat 7 and 8 to re-check after assembly.

9. If no external leaks are observed, close V1 and connect rubber tube to pressure test point P1 and P3 to pressurise the assembly between the two safety shut off valves. Connect pressure gauge to pressure test point P4.

10. Open V1, any rise in pressure indicates the downstream safety shut off valve is passing gas. Replace valve and re-check for soundness.

Testing the start gas pipework

11. Connect pressure gauge to P2 and open V7 and V1 to pressurise the start gas line up to the first gas safety shut-off valve.

12. Close V1. Leave the systems for 3 minutes and watch the pressure gauge. If the pressure falls, open V1 and soap test the start gas pipework and re-test.

13. If no external leaks are evident the start gas safety shut-off valve is passing gas.

To check this, replace the sealing screw on the pressure test point P2 and connect the pressure gauge to test point P6 and leave for three minutes with V1 still open. A rise in pressure confirms the upstream pilot valve is passing gas. Replace valve and re-check for soundness.

Testing the downstream pilot safety shut off valve

14. Close V1 and V11, connect pressure test points P1 and P7.

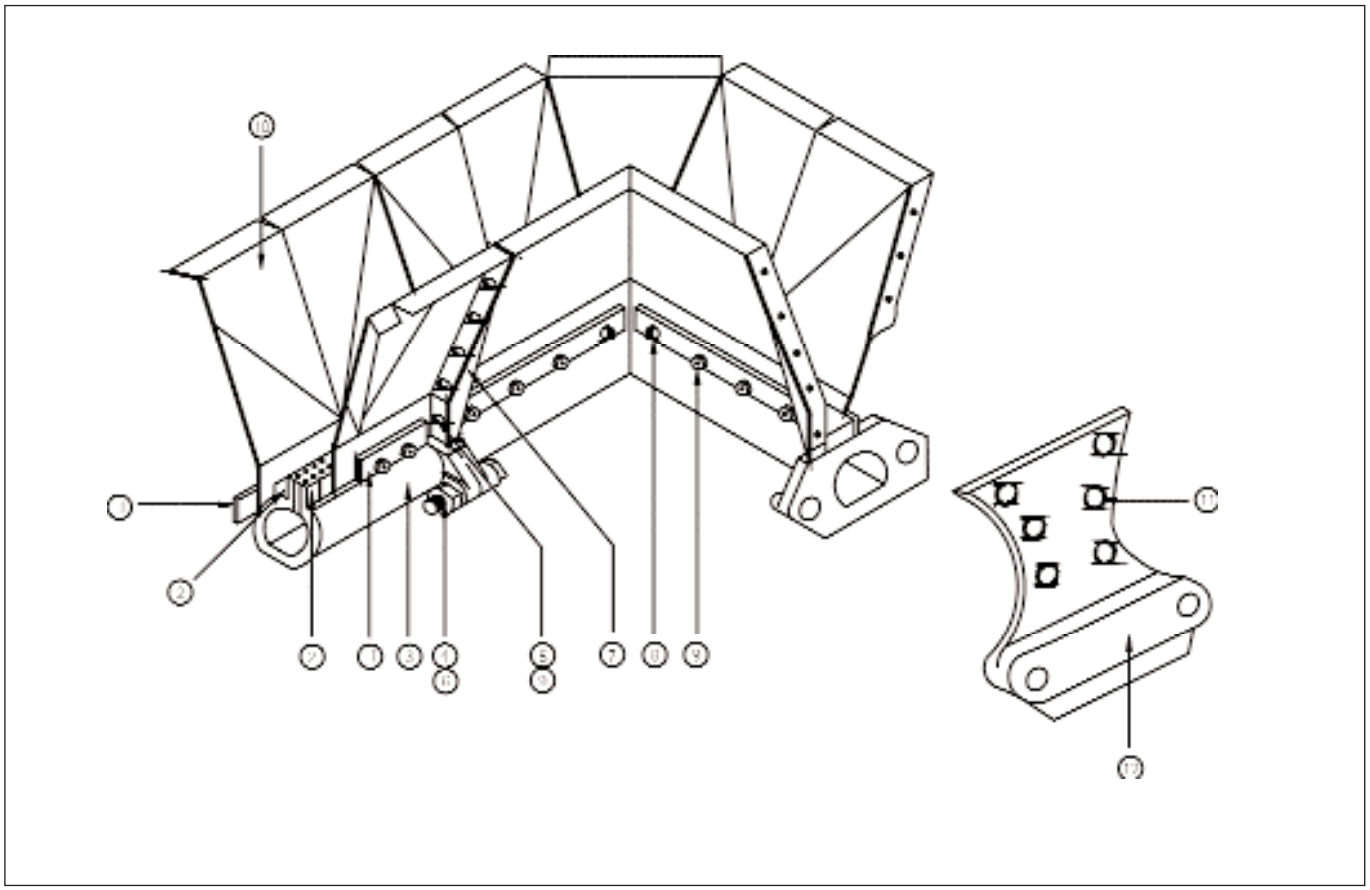
15. Open V1 to pressurise the assembly up to the isolating valve, V11.

16. Using a leak detection solution, check all joints downstream of the second safety shut off valve up to V11. If leaks are detected close V11 any remake leaking joints. Repeat 15 and 16 to re-check after re-assembly.

17. If no external leaks are observed, close V1 and connect rubber tube to pressure test point P1 and P6 to pressurise the assembly between the two safety shut off valves. Connect pressure gauge to pressure test point P7.

18. Open V1, and rise in pressure indicates the downstream safety shut off valve is passing gas. Replace valve and re-check for soundness.

NG11 burner assembly



No	Description	Part No
1	Back Up Bar	N0008
2	Body Gasket	N0011
3	Burner Body	N0002
4	M10 x 50 LG HEX Head Set Screw	
5	M5 x 12 HEX Head Set Screw	
6	M10 Nut and Washer	
7	Support Bracket/Gasket	N0010
8	M5 x 40 HEX Head Set Screw	
9	M5 nut and Washer	
10	Stainless Steel Mixing Plate	N0006
11	M5 x 20 Road HD Machine Screw	
12	End Plate/Feed End Plate	N0004

Servicing

The servicing of the DF heaters must only be carried out by a competent person

Externally positioned heaters should not be commissioned during adverse weather conditions i.e. during rain and high winds etc...

It is recommended that the heater is serviced twice a year, a major service should be carried out prior to heating season, and a minor service after 2000 running hours.

After servicing the heater should be re-commissioned.

Routine servicing

Note Isolate electricity supply and gas supply before servicing.

Access to the fan, motor, drive belts and burner are through the twin access doors on the side of the heater.

Remove and clean spark igniter with a wire brush. Replace it every two years.

Inspect and clean the flame rod with a dry clean cloth to ensure freedom from dirt and moisture. Replace the flame rod when showing signs of excessive wear.

Remove protection boot from the spark electrode cap, with a clean cloth wipe clean both the HT and flame probe leads, replace protection boot.

Check fan belts for wear and tension after 2000 hours of operation.

The tension of each belt should be determined using a belt tensioned.

Check condition of burner ports, if necessary, clear the ports using a 1.8mm drill.

Note Check stainless steel mixing plates for cracking.

Inspect the entire external system for signs of leakage, wear or general damage.

Check fan bearing for grease nipples, only the smaller range of heaters are fitted with “sealed for life” bearing, if fitted with nipples regrease using Shell Alvania R3.

Check control settings

Outer casing and blades to be wiped with a damp soapy cloth, then dried.

Fault finding

General

Should either the burner fail in operating or its light up sequence fail, the following procedures should be carried out.

Check that the connectors to the spark electrode and flame detector are securely fixed and that there has been no interruption to the gas, air or electric supplies.

Flame failure lockout is indicated on the heater via a red indication lamp. Rest can be achieved by depressing the Satronic flame programmer RESET button protruding from the front of the electrical control panel.

If the burner still fails to ignite, proceed to carry out systematic checks in accordance with the fault finding guide.

Control system fault finding

The Satronic burner controller has a coloured timing wheel and pointer visible through the controller itself, this may be used to establish the cause of a fault. When failure occurs the controller stops and remains in this condition until reset. After the controller has been successfully reset, the controller cycles to the beginning of its cycle (start of the blue section) and recommence the purge sequence. The complete cycle i.e from the start of the blue section to the start of the black section normally takes 1 min 28 seconds for the MMI 810-1.

Note References to terminal numbers in this section relate to those in the Satronic burner controller sub-base and do not correspond to the numbers on the terminal strip in the control panel.

Trouble shooting checklist

Symptoms	Fault	Action
Regardless of the position of the coloured wheel, the controller does not move even when reset.	No power supply to the controller Faulty controller.	Check electrical supply-live to terminal 9 neutral to terminal 8. Check by replacement.
Coloured programme wheel rotates continuously	Controller is permanently sensing a flame	Check to see if there is a flame caused by leaking gas valve.
	Faulty controller.	Check by replacement.
	Flame probe earthing.	Check probe condition if necessary replace.
Controller on black/blue border and will not start	Control circuit not complete.	Check continuity to terminal 1 and 9.
	Air pressure switch in the normal closed position i.e. airflow is sensed.	Check air pressure proving system and coloured program wheel rotates continuesly.
		wiring to air pressure switch. Check supply voltage greater than 180V.
Lockout ar red line near start of the blue section.	Air pressure switch is not changing to normally closed position within the first 8 seconds.	Check fan is running i.e. circuit breakers have not tripped. Check air pressure-proving system and in particular the wiring to the air pressure switch. Check also air sensing pipes are not blocked. Check pilot solenoid valves connected to terminal 5 or terminal C. If solenoid coils fitted with rectifier the negative side must be connected to terminal 5 or C.
	Flame sensing probe earthing.	Reposition or replace flame sensing probe.
Lockout during the second blue section	Air pressure switch changed back to the normally open position i.e. insufficient air flow.	Investigate cause of insufficient air flow.
	Controller senses flame or simulation of flame.	Investigate cause of flame signal
Pilot flame established for few seconds seconds but controller locks out at the end of the yellow section.	Failure to sense pilot flame.	Check position and wiring to flame sensing probe. Check also the probe if clean and dry.
Lockout at the end of the yellow section section without any appearance of pilot flame.	Pilot flame not established due to a lack of gas.	Check that start valve is opening and gas is flowing. Also check that gas isolation valves are open.
	Pilot flame not established due to no ignition.	Check spark gap and that spark is present and is arcing in the correct place. The ignition transformer is energised via terminal 3 at the end of the yellow section. Check also that HT lead is in good condition.
Lockout during red section.	Unsuitable pilot flame.	Check start gas adjustment for satisfactory flame, small light blue flame. Check position of and wiring to flame sensing probe. Check also that the probe is clean and dry. Check if gas is turned on.

Trouble shooting checklist

Symptoms	Fault	Action
Lockout near start of the green.	Unstable main flame.	Check the main gas air adjustment for satisfactory flame.
		Check position of and wiring to flame sensing probe. Check also that the probe is clean and dry.
Lockout at the end of the green section. This is the normal running position of the position of the control system.	Insufficient air flow causing air pressure switch to change to the normally open position.	Check the air pressure proving system and investigate cause of insufficient air flow.
	Flame failure due to loss of gas supply.	Investigate the cause of gas supply failure.
	Flame failure due to an unstable flame.	Check the flame signal during the switching from high to low to hire fire. Adjust gas rates if necessary and recommission the burner.
	Flame failure due to weak flame sensing signal.	Check position of and wiring to flame sensing probe. Check also that probe is clean and dry.
	No main flame.	Check main SSOV's are opening.

Note In the event that the fault cannot be traced, it is recommended that the services of a Nordair Niche Engineer be obtained.

Nordair Niche (A Division of AmbiRad)
6-14 Bean Leach Road
Hazel Grove
STOCKPORT
Cheshire
SK7 4LD

Tel: 0161 482 7900
Fax: 0161 482 7901

Recommended spares

For two year operation, we recommend that the following items should be held in stock.

Description	Part No
Spark Probe	N1014
Flame Probe IEG 18-6	N1007
Satronic MMI810	N1018
4 Pole Miniature Relays	N1244, N1260
Fenner Belts	See Technical Specification
Ignition Transformer	N1010
Duct Sensor	See Wiring Diagram
Room Sensor	See Wiring Diagram

Should the heater be in constant operation, we suggest the following items be stocked at all times.

Description	Part No
Pilot Solenoid valve	Refer to manufacturer
Main SSOV Actuator	Refer to manufacturer
Modulating Control Motor NM.24.SR	N9002
Overheat thermostat	N7042
Ambi-Tec controller	ATEM1
Ambi-Stat 1 Thermostat (See wiring diagram)	AS1
Air Pressure Switch JD2	N3038
Motor MPCB	See Wiring Diagram
Control MCB 4 amp	N1157

We strongly recommend that your heater be serviced twice a year, a major service carried out prior to heating season and a minor service after 2000 running hours.

Nordair Niche must be consulted if genuine parts are not to be used.

Contact
Nordair Niche(A Division of AmbiRad)
6-14 Bean Leach Road
Hazel Grove
STOCKPORT
Cheshire
SK7 4LD

Tel: 0161 482 7900
Fax: 0161 482 7901

Replacement instructions

Note Replacement of components should only be carried out by a competent person.

Isolate electrical and gas supplies before replacement of parts. Check for gas soundness after replacing gas carrying components. Access for replacement of the main burner assembly, ignition electrode, flame electrode, fan, motor, drive belts, is via the access doors in the fan section.

Inadvertent substitution or replacement of similar components, particularly those with plug-in bases, could cause a hazard.

Main burner assembly

Disconnect main gas supply union and pilot gas supply, HT cable and flame rod connections. Unbolt burner straps from the burner supports and remove assembly from heater. If necessary, replace damaged sections as required, re-join flanges using Hermetite, Plasticoll X10G joining compound.

Replace burner assembly in reverse order to removal. Check operation and combustion as detailed in the Commissioning Instructions.

Ignition electrode

Isolate electrical supply, remove HT cable, unscrew ignition electrode from burner body, ensure electrode has 3mm spark gap, replace with new and reconnect HT cable, and protective boot.

Ignition transformer

Isolate electricity supply, unbolt ignition transformer. Disconnect cable from terminal block and remove and replace ignition transformer. Reconnect cables.

Flame electrode

Isolate electrical supply, remove cable from flame electrode, unscrew old rod and replace with a new one, bending the probe through 45˚ so that the probe runs parallel to the burner plates. It will be necessary to straighten the old probe prior to unscrewing from the burner.

Ambi-Tec controller

Isolate electrical supply at heater. Remove Ambi-Tec front cover, discount wires from terminal rail ensuring cable/terminal numbers are recorded. Remove 5WA multicode cable from the base and unscrew base plate from wall. Refit new Ambi-Tec controller, ensuring all wiring connections are correct. The Ambi-Tec controller will require reprogramming and this should be carried out by a Nordair Niche Engineer.

Modulating gas valve control unit

Isolate electric supply, unbolt motor clamp from valve spindle and remove motor from motor mounting bracket, replace and re-connect. Care should be taken not to move the valve spindle, as this will alter the low fire setting and will require re-commissioning.

Gas train components

Isolate gas and electricity supply, disconnect electrical connections to valves and modulating valve motor unit. Unscrew unions on gas train, replace components where necessary using approved thread sealing compound, re-fit and tighten unions. Gas train should be leak tested and recommissioned.

Drive belts

Access is via the twin access doors in the fan section. Loosen motor adjusting screw, replace belts and re-tension.

Active duct sensor

Isolate electrical supply, remove cover from sensor, unscrew terminals, remove cable, remove fixing screw and withdraw. Refit new duct sensor and refit in reverse order. Potentiometer will require resetting, this should be carried out by a Nordair Engineer.

Room sensor

Isolate electrical supply, unclip room sensor, unscrew terminal, and remove cable. Refit new room sensor and refit in reverse order.

Air differential pressure switch

Isolate main electrical supply, remove cover of pressure switch, terminal box. Disconnect electrical wires, remove sensing tubes and unbolt pressure switch from mounting bracket, replace the switch, re-connect the sensing tubes, re-connect the electrical supply.

Recommission the differential pressure switch by setting to the pressure switch to 75% of the measured differential pressure between pressure points P8 and 9.

Control panel components

Burner programmer

Unscrew body from terminal base and replace.

Relays

Unplug body and replace.

Motor MPCB

Remove and replace, replace amp trip setting.

Control MCB

Remove and replace.

Overheat thermostat

Isolate electrical supply, remove the cover, disconnect wiring, unscrew from duct/casing and withdraw. Fit replacement thermostat reconnect wiring and reset to 85˚C for the DV range and 75˚C for the DH range, then replace cover.

NORTEK GLOBAL HVAC (UK) LTD
Fens Pool Avenue
Brierley Hill
West Midlands DY5 1QA
United Kingdom

Tel: **01384 489 250**
Fax: **01384 489 707**

nordairnichesales@nortek.com
www.nordairniche.co.uk

NORTEK™
GLOBAL HVAC

Registered in England No. 1390934. Registered office: 10 Norwich Street, London, EC4A 1BD

Document reference number : GB/NOR/021/0408