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ErP 2021
ErP Lot 21
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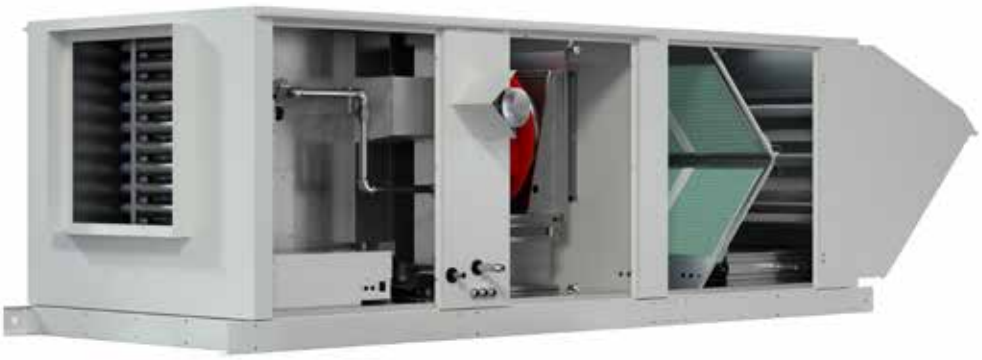
PREEVA NEOS

GAS FIRED HEATING, VENTILATION AND COOLING UNITS



INSTALLATION, COMMISSIONING AND SERVICING MANUAL

CE UKCA

These appliances meet the following EC directives
(EU) 2016/426: GAR
DIR 2014/30/EU:EMC
DIR 2014/35/EU:LVD
DIR 2006/42/EC:MD

Please read this document carefully before commencing installation, commissioning and/or servicing.
Leave it with the end user/site agent to be placed in their premises technical file after installation.

WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.
All work must be carried out by appropriately qualified persons.
The manufacturer does not take any responsibility in the event of non-observance of the regulations concerning the connection of the apparatus causing a dangerous operation possibly resulting in damage to the apparatus and/or environment in which the unit is installed.

MANUAL PART NO. D301315 ISS 3

NORTEK™ GLOBAL HVAC

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PREEVA NEOS Range

General product information

PREEVA NEOS is the latest generation of packaged gas fired heating, ventilation and cooling units, CE and UKCA certified to EN17082 for use in non domestic installations.

All models and sizes are available for use with natural gas (G20, G25 or G25.3). The type of gas, the input rate and the electrical supply requirement is shown on the heater rating plate. Check the rating plate to determine if the heater is appropriate for the intended installation.

This installation manual is shipped with the unit. Verify that the literature is correct for the model being installed. If the manual is incorrect for the heater, contact the supplier before beginning installation.

The instructions in this manual apply only to the models listed.

Installation should be carried out by a suitably qualified installer in accordance with these instructions and the current rules and regulations in force. The installer is responsible for the safe installation of the heater.

Using this manual

The symbols for 'Caution' and 'Warning' are used to highlight certain points throughout this manual.

Caution is used when failure to follow or implement the instruction(s) can lead to premature failure or damage to the heater or its component parts.

Warning is used when failure to heed or implement the instruction(s) can lead to not only component damage, but also to a hazardous situation being created where there is a risk of personal injury.

Warranty

This equipment comes as standard with a manufacturers two year warranty (2 years parts, 1 year labour). The warranty is void if:

1. The installation is not in accordance with these instructions.
2. Wiring is not in accordance with the diagram furnished with the heater.
3. The unit is installed without proper clearances wherever clearances are required regardless of the material being combustible.
4. The unit is installed without proper ventilation and air for combustion.
5. The equipment is used in atmospheres containing flammable vapours or chlorinated or halogenated hydrocarbons or any contaminant (silicon, aluminium oxide, etc.).
6. The equipment has not been serviced and maintained in accordance with the information contained within these instructions.
7. The air throughput is not adjusted within the range specified on the rating plate.

Ignoring the warning and caution notices, and ignoring the advice from the manufacturer on installation, commissioning, servicing, or use, will jeopardise any applicable warranty. This could also compromise the safe and efficient running of the appliance itself, and thereby constitute a hazard.

The electrical isolator should only be used for maintenance purposes or in an emergency. It should not be used for closing down the main burner, as it switches off the fan prematurely and may damage the heat exchanger, invalidating the warranty.

Important notice to installers

Before installation, carefully read these instructions and follow the processes explained by the manufacturer. These instructions are only valid for appliances designed to operate in Europe. If the country code and gas category on the appliance data label does not match the country of installation or the country codes and gas categories as shown in this instruction manual, it will be necessary to contact the distributor or manufacturer to provide the necessary information for the modification of the appliance to the conditions of use for the country of installation.

Installing, commissioning, testing, programming and maintenance of these products must only be carried out by suitably qualified and trained technicians and in full compliance with all applicable regulations and current best practices.

Check if the appliance as described on the packaging label is in accordance with the correct type and model as specified on the data plate and complies with your customer order.

Check that the temperature ranges given and those of the location match. The appliance must be powered with a voltage corresponding to the value shown on the rating plate.

These units must be installed in accordance with the rules in force and local regulations / legislation as appropriate plus all local building codes. Installers should satisfy themselves that the gas pipework installation is carried out in accordance with all current legislation, Codes of Practice and recommendations.

Additionally it may be necessary to protect the gas valves which form part of the heater or burner assembly from potential pipe contamination particularly, but not exclusively, where copper gas pipework is used. In instances where copper pipework is to be used for all or part of a gas pipework installation, including short length final connections then we advise that installers consult with the gas supplier or provider and satisfy themselves what additional precautions may be necessary.

Improper installation, adjustment, alteration, service, or maintenance can cause property damage, injury, or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapours or combustible dust, in atmospheres containing chlorinated or halogenated hydrocarbons or in applications with airborne silicone substances.

Any reference made to Laws, Standards, Directives, Codes of Practice or other recommendations governing the application and installation of heating appliances and which may be referred to in Brochures, Specifications, Quotations, and Installation, Operation and Maintenance manuals is done so for information and guidance purposes only and should only be considered valid at the time of the publication.

The manufacturer cannot be held responsible from any matters arising from the revision to or introduction of new Laws, Standards, Directives, Codes of Practice or other recommendations.

External Units

Care must be taken when installing air heaters in outdoor locations to ensure that unauthorised access to the building cannot be gained via the appliance or its ductwork system. The unit can be installed using full fresh air or a combination of fresh air and recirculation air; the unit must be provided with an additional air intake complete with a water separator.

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Health and safety

Ensure that anchoring points are suitable for the weight and loading of the product and if required, add suitable reinforcement to the anchoring points area.

Due consideration should be taken for workplace safety, risk assessments and waste disposal.

Any modification of the product may be hazardous and the manufacturer is not liable for any damage or injury caused by improper use.

Do not use this appliance if any part has been immersed in water. Immediately call a qualified service technician to inspect the appliance and replace any gas control that has been immersed in water.

This appliance is not intended for use by persons (including children) with reduced sensory or mental capabilities or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

Should overheating occur or the gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off the electrical supply.

Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapours or combustible dust, in atmospheres containing chlorinated or halogenated hydrocarbons or in appliances with airborne silicone substances.

The manual should be kept in a safe place for future reference.

For your safety, if you smell gas:

- **Do not try to light any appliance**
- **Do not touch any electrical switch, do not use any phone in your building**
- **Evacuate all personnel**
- **Contact your gas supplier immediately**

Do not store or use petrol or other flammable vapours and liquids in the vicinity of the appliance.

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death.

Read the installation, operation and maintenance instructions thoroughly before installing or servicing this equipment.

Installation, assembly, commissioning, service and maintenance procedures must be carried out only by suitably competent qualified persons.

Unauthorised modifications to the appliance, or departure from the manufacturer's guidance on intended use, or installation contrary to the manufacturer's recommendations may constitute a hazard.

Use only factory authorised parts and spares when replacement is required.

In case of persistent problems, contact your distributor.

Uncrating / preparation

Prior to crating and shipping, this unit was test operated and inspected in the factory and left in full operating condition. If the unit has incurred damage in shipment, document the damage with the transport company and contact your supplier.

After unpacking the appliance leave it fastened to the wooden blocks until just before siting to prevent damage to the base frame.

When transporting the appliance after it has been unpacked (i.e. fork lifting, etc.) note the restrictions and recommendation indicated in figure 1.The base frame contains internal support members, which act as a lifting fulcrum point to prevent damage to the underside of the appliance by lifting forks.

Read this booklet and become familiar with the installation requirements of your unit. If you do not have knowledge of local requirements, check with the gas supplier and any other local agencies who might have requirements concerning this installation. Before beginning, make preparations for necessary supplies, tools, and manpower.

Check if the local distribution conditions of electricity supply, type of gas and pressure of the appliance are compatible with the data plate.

The appliance must be installed in accordance with the current rules in force and any local or national regulations.

The requirements of the "Local Building Standards office", the premises "Insurance" undertaking and the "Fire Office" must also be observed.

If the installation includes optional vertical louvres or downturn nozzle etc., install these options before the heater is suspended. Follow the instructions included in the option package.

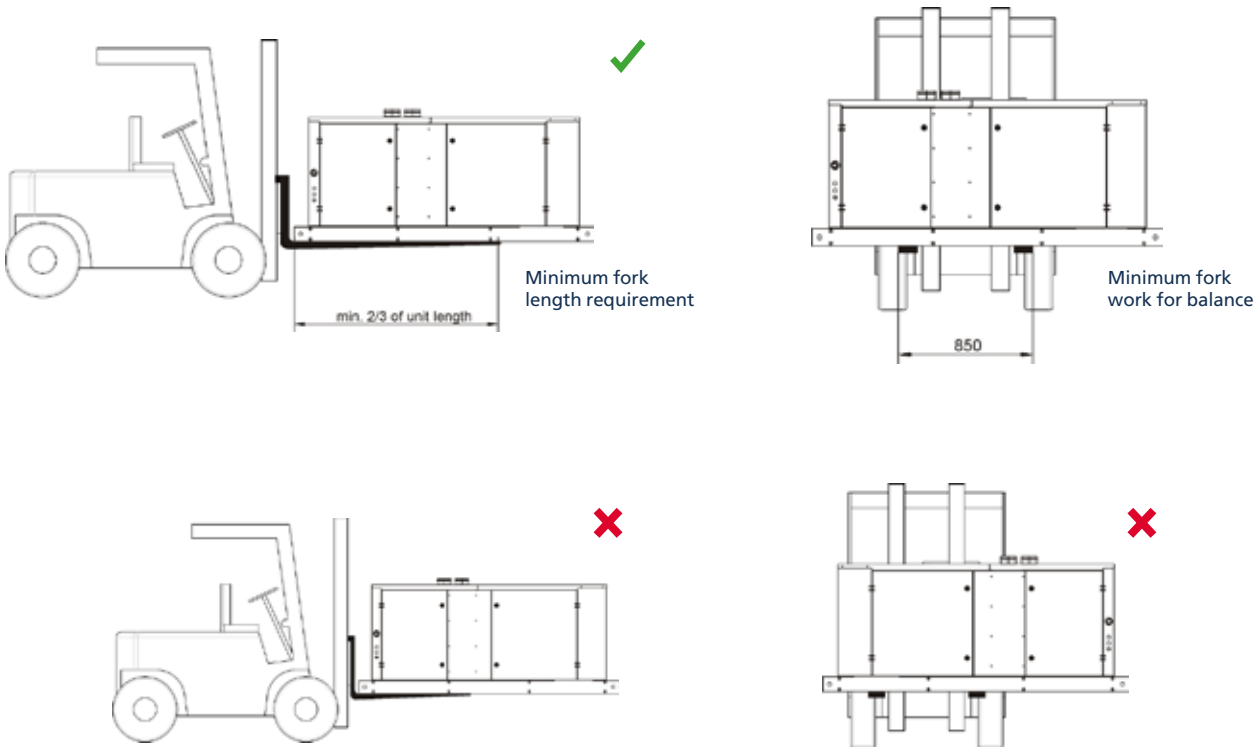


Figure 1 - Handling Criteria

Technical Data

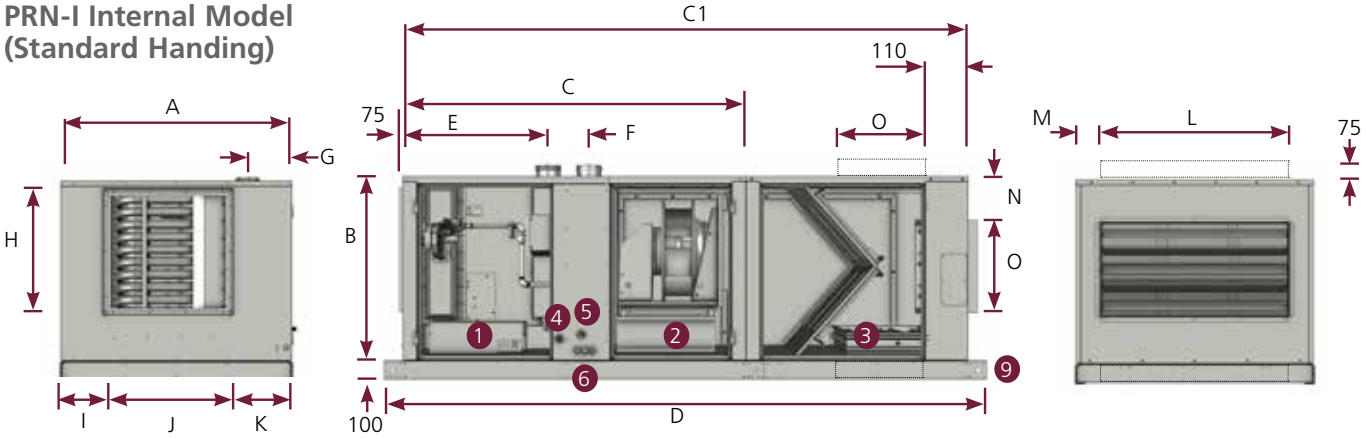
TD

PRN-I and PRN-E Technical Data							
Model	**Internal (-I)** / **External (-E)**	**PRN025**	**PRN035**	**PRN045**	**PRN055**	**PRN070**	**PRN100**
Combustion Air and Flue Type	Internal	B23 / B53 / C13 / C33					
	External	Rooftop					
Heat Input High Fire (HS) [1]	kW	32.40	41.00	51.60	64.80	86.00	119.00
Heat Input Low Fire (HS) [1]	kW	11.34	14.35	18.06	22.68	30.10	44.00
Heat Input High Fire (HI) [2]	kW	29.19	36.94	46.49	58.38	77.48	107.21
Heat Input Low Fire (HI) [2]	kW	10.22	12.93	16.27	20.43	27.12	37.52
Heat Output High Fire	kW	26.61	33.85	42.53	53.56	70.66	99.12
Heat Output Low Fire	kW	10.03	12.69	15.89	19.92	26.42	39.14
Gas Consumption High Fire (HS) G20 [3]	m³/h	3.09	3.90	4.91	6.17	8.19	11.33
Gas Consumption Low Fire (HS) G20 [3]	m³/h	1.05	1.37	1.72	2.16	2.97	4.23
Gas Consumption High Fire (HS) G25 [3]	m³/h	3.59	4.54	5.71	7.18	9.52	13.18
Gas Consumption Low Fire (HS) G25 [3]	m³/h	1.22	1.59	2.00	2.51	3.33	4.92
Gas Consumption High Fire (HS) G25.3 [3]	m³/h	3.50	4.44	5.64	7.20	9.32	12.90
Gas Consumption Low Fire (HS) G25.3 [3]	m³/h	1.19	1.56	1.96	2.46	3.26	4.81
Gas Connection	BSP	½"	¾"				1"
Flue and Combustion Air Connection Collars (Indoor)	Ø mm	100			130		
Maximum Flue Length	m	9.5					
Condensation Connection / Outlet [6]	Ø mm	22					
Minimum Airflow at 15°C [4]	m³/h	2000	2530	3060	3980	5300	8060
Temperature Rise at Minimum Airflow	K	40	40	41	40		37
Maximum Airflow at 15°C [4]	m³/h	3500	5080	6100	7000	10500	14000 [7]
Temperature Rise at Maximum Airflow	K	23	21	21	20		21
Maximum external static pressure	Pa	400					
Sound Level Maximum Airflow [5]	dBA	51.3	54.0	58.0	57.0	64.0	64.9
Sound Level Minimum Airflow [5]	dBA	47.2	47.2	47.0	48.3	49.6	53.2
Output cooling capacity Maximum with DX Coil Maximum with cooling water coil	 kW kW	 19 19	 28 28	 30 30	 30 30	 51 51	 63 63
Electrical Connections and Fan Motor Rating	Single Phase	1.35 kW: 230V 50HZ	1.25 kW: 230V 50HZ	Not Applicable			
	Three Phase	3.0 kW: 380-415V 50Hz	2.4 kW: 380-415V 50Hz	3.3 kW: 380-415V 50Hz	3.6 kW: 380-415V 50Hz	5.4 kW: 380-415V 50Hz	6.0 kW: 380-415V 50Hz
Total Electrical Rating	Single Phase	1.450	1.329	Not Applicable			
	Three Phase	3.060	2.480	3.390	3.670	5.530	6.190
Protection Grade	IP	IP20 Indoor / IPX4D Outdoor					
Net weight without filter cabinet	Kg	225	240	260	340	360	470
Net weight with filter cabinet	Kg	340	355	375	490	510	640

[1] Refers to gross calorific value of fuel
[2] Refers to net calorific value of fuel
[3] Natural gas: G20 Hs 37.78 MJ/m³, G25 Hs 32.49 MJ/m³, G25.3 Hs 33.2 MJ/m³ @ 15°C and 1013.25 mbar
[4] Maximum temperature rise 40K. Contact manufacturer for more details on different airflow / static pressure requirements
[5] Measured without filter cabinet
[6] At 20°C ambient temperature, minimum airflow

Dimensions

PRN-I Internal Model (Standard Handing)

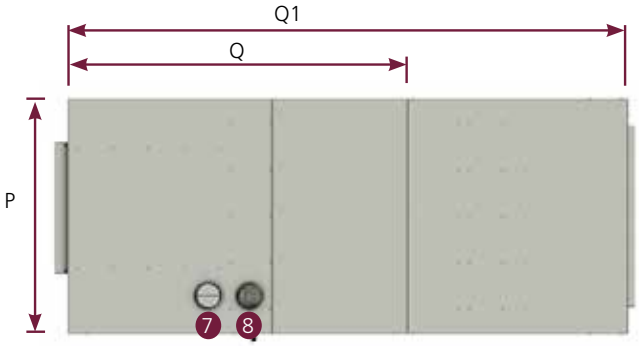


Front View

Side View

Rear View

1. Heater Section Access
2. Fan Section Access
3. Filter/Mixing Section Access
4. Condensate Drain Connection
5. Gas Connection
6. Electrical Connections
7. Combustion Air Inlet
8. Flue Outlet
9. Lifting Points



Plan View

Please contact technical sales for dimensional data for units fitted with cooling coil or additional cabinets.

Dimensions							
Model		PRN025-I	PRN035-I	PRN045-I	PRN055-I	PRN070-I	PRN100-I
A	mm	1094	1094	1094	1268	1268	1468
B	mm	753	753	753	988	988	988
C	mm	1684	1684	1684	1842	1842	2412
C1	mm	2704	2704	2704	3034	3034	3604
D	mm	2904	2904	2904	3245	3245	3804
E	mm	726	726	726	765	765	1180
F	mm	187	187	187	224	224	225
G	mm	110	110	110	205	205	210
H (Outlet Opening)	mm	380	380	380	615	615	615
Optional Spigot for Outlet Opening	mm	451	451	451	686	686	686
I	mm	68	68	68	274	274	275
J	mm	837	837	837	710	710	901
K	mm	270	270	270	365	365	373
L	mm	702	702	702	1002	1002	1202
M	mm	196	196	196	133	133	133
N	mm	212	212	212	229	229	229
O	mm	302	302	302	502	502	502
P (Lifting centres)	mm	1060	1060	1060	1234	1234	1434
Q (Lifting centres without filter cabinet)	mm	1584	1584	1584	1972	1972	2106
Q1 (Lifting centres with filter cabinet)	mm	2604	2604	2604	3164	3164	3298
Flue & Combustion Air Spigots	mm	100	100	100	130	130	130

For alternative configurations please consult technical sales. Unit shown with left hand access, right hand is available but must be specified at time of ordering as this cannot be changed once unit is built. All Dimensions have a tolerance of +/- 3mm.

PRN-E External Model (Standard Handing)

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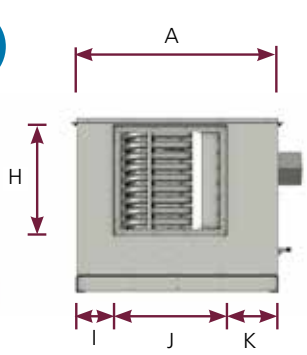
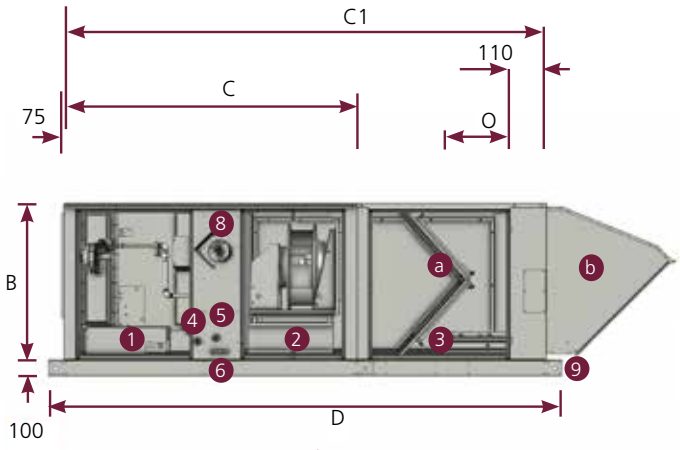


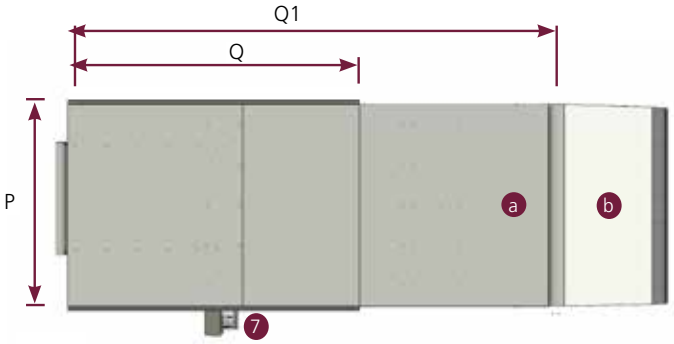
Front View



Side View

Rear View

1. Heater Section Access
2. Fan Section Access
3. Filter/Mixing Section Access
4. Condensate Drain Connection
5. Gas Connection
6. Electrical Connections
7. Combustion Air Inlet
8. Flue Outlet
9. Lifting Points
a. Optional Filter / Mixing Section
b. Optional Fresh Air Intake Hood



Plan View

Please contact technical sales for dimensional data for units fitted with cooling coil or additional cabinets.

Dimensions							
Model		PRN025-E	PRN035-E	PRN045-E	PRN055-E	PRN070-E	PRN100-E
A	mm	1094	1094	1094	1268	1268	1468
B	mm	753	753	753	988	988	988
C	mm	1684	1684	1684	1842	1842	2412
C1	mm	2704	2704	2704	3034	3034	3604
D	mm	2904	2904	2904	3245	3245	3804
H (Outlet Opening)	mm	380	380	380	615	615	615
Optional Spigot for Outlet Opening	mm	451	451	451	686	686	686
I	mm	68	68	68	274	274	275
J	mm	837	837	837	710	710	901
K	mm	270	270	270	365	365	373
L	mm	702	702	702	1002	1002	1202
M	mm	196	196	196	133	133	133
N	mm	212	212	212	229	229	229
O	mm	302	302	302	502	502	502
P (Lifting centres)	mm	1060	1060	1060	1234	1234	1434
Q (Lifting centres without filter cabinet)	mm	1584	1584	1584	1972	1972	2106
Q1 (Lifting centres with filter cabinet)	mm	2604	2604	2604	3164	3164	3298
R	mm	649	649	649	816	816	816

For alternative configurations please consult technical sales. Unit shown with left hand access, right hand is available but must be specified at time of ordering as this cannot be changed once unit is built. All Dimensions have a tolerance of +/- 3mm.

Installation

Clearance distances

The following table shows the minimum clearances necessary to ensure that safety from combustibles and for servicing are maintained. In the event that the appliance is required to be installed on the floor then a non-combustible base must be provided.

Model		PRN025-I PRN025-E	PRN035-I PRN035-E	PRN045-I PRN045-E	PRN055-I PRN055-E	PRN070-I PRN070-E	PRN100-I PRN100-E
Min distance from wall not control side	mm	150	150	150	150	150	150
Min distance from wall on control side	mm	750	750	750	750	750	750
Min distance from floor to underside	mm	1800	1800	2500	2500	2500	2500
Min distance from ceiling to top of unit	mm	200	200	200	200	200	200

Internal model location

For best results, the unit should be placed with certain rules in mind:

- Always ensure that the minimum clearances are maintained.
- When possible, heaters should be arranged to blow toward or along exposed wall surfaces.
- Suspended heaters are most effective when located as close to the working zone as possible, but care should be exercised to avoid directing the discharged air directly on to room occupants.
- Partitions, columns, counters or other obstructions should be taken into consideration when locating the unit heater so that a minimum quantity of airflow will be deflected by such obstacles.
- When units are located in the centre of the space to be heated, the air should be discharged toward the exposed walls.
- In large areas, units should be located to discharge air along exposed walls with extra units provided to discharge air in toward the centre of the area. For optimum results heaters are best used in conjunction with recirculating air fans suspended at high level. Contact the manufacturer / distributor for more details.
- At those points where infiltration of cold air is excessive, such as at entrance doors and shipping doors, it is desirable to locate the unit so that it will discharge directly toward the source of cold air, typically from a distance of 4.5 to 6.0 metres. Alternatively, air curtains can be installed.

Do not locate the heater where it may be exposed to water or where the ambient temperature exceeds 40°C.

Suspension is not allowed when the air handler comprises more than a heating and ventilation section (i.e. a mixing and filter section is included).

In cases where the installation is by means of supporting points, make sure that the distance between supporting points does not exceed 1.5m. In general it is recommended to support the base where it is screwed down with supporting points.

Ensure that the structural elements, which will be used to suspend or support the appliance, are adequate to carry the weight of the appliance and its ancillary components i.e. the flue system.

The location where the air heater is to be installed must provide sufficient space around the heater for servicing and clearances for safety. Beware to allow space for the passage of vehicles i.e. lift trucks, etc.

Ensure that the air heater is installed in a level plane.

The heater must be fastened securely to any base mount framework.

Always provide a minimum clearance of 600mm at an open air intake (inlet side)

Four-point suspension is possible from the Ø11.0 mm holes provided in the base frame using drop rods etc.

Ensure that suspension fixings are lock nut secured to secure against loosening. When suspended, the air heater should be rigid so as to avoid placing a strain on the flue system and connected services.

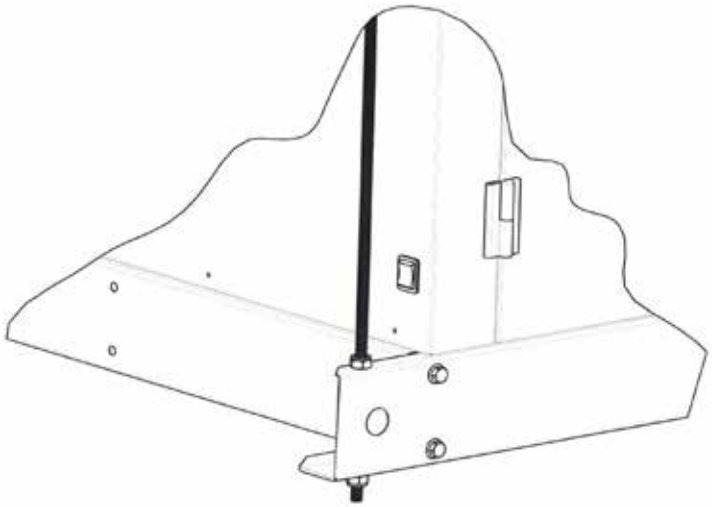


Figure 2 Detail fixation (only if unit and framework is a one-part construction)

External model location

When installing, ensure the complete unit will not jeopardize or compromise the integrity of the building security.

A distance of 500mm must be maintained between the deck on which the appliance is installed and any air inlet provided to the burner.

The location where the unit is to be installed must allow sufficient space around the heater for servicing and to allow the flue products to escape freely.

A minimum distance of 1500mm must be maintained on the controls side of the appliance for access and maintenance.

When installed at ground level the entire installation should be protected by a fence to guard against damage and to protect the public from possible injury.

Ensure that the structural elements which will be used to support the appliance are adequate to carry the weight of the appliance and its ancillary components i.e. the ductwork system.

Ensure that the air heater is installed in a level plain and that the surface onto which it is installed is vibration free.

The air heater must be fastened securely to any base mount frame work. Roof-curbs are manufactured from galvanised mild steel and should be fixed prior to siting the appliance.

It is necessary to provide weatherproof seals between the appliance and the structural elements of the building. Exposed ducting should be insulated and covered with a weatherproof membrane.

The duct connection to the appliance should be made using flexible connections to reduce noise transmission and allow for thermal expansion of the air heating module.

When siting the appliance and unloading, extreme care must be exercised to ensure that the slings etc. employed do not damage the casing. The weatherproofing will become unsealed should any damage be sustained.

Sling spreaders must be used to provide clearance between the appliance and the slings. Figure 3 shows the location of spreaders and slinging points provided for this purpose.

Use all available sling points

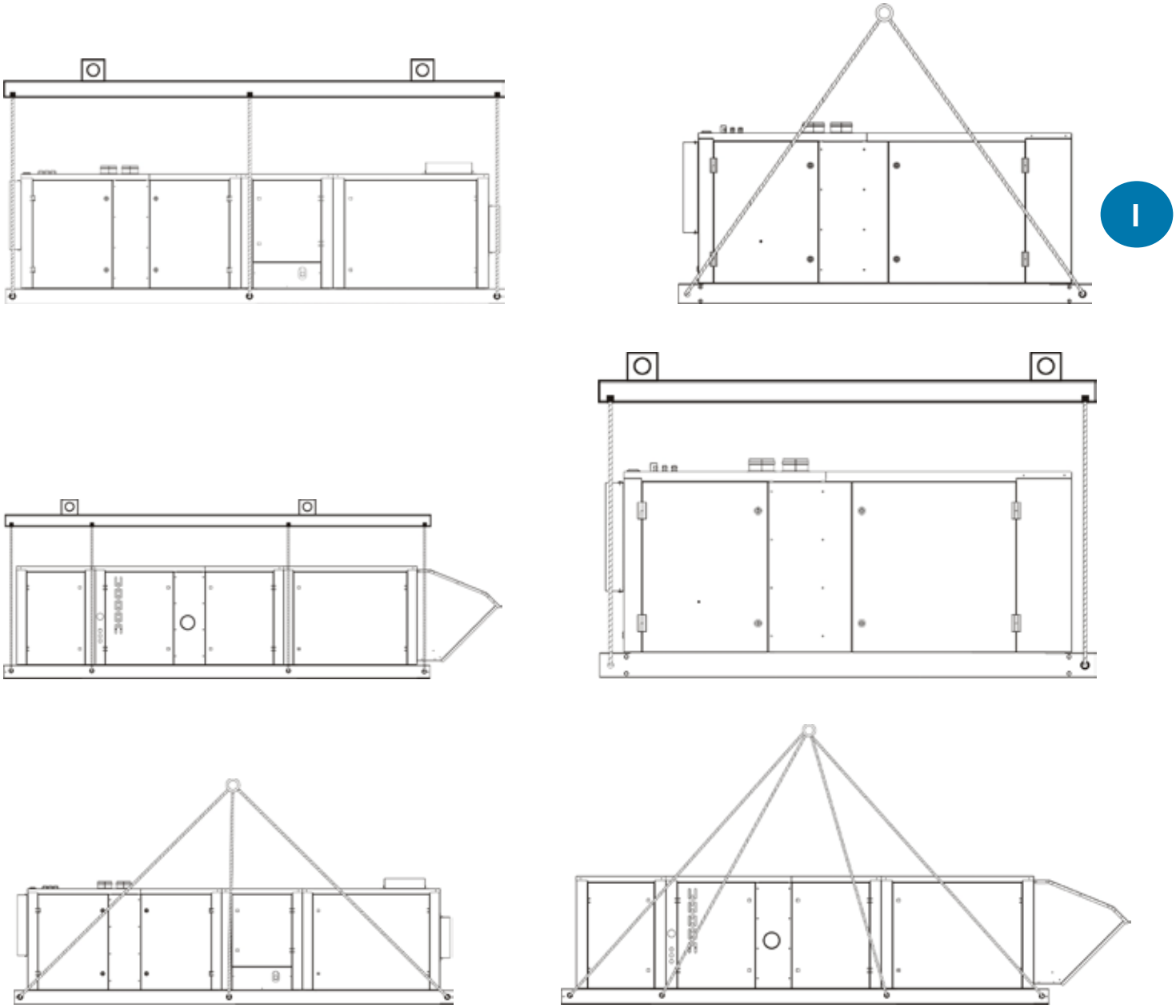


Figure 3 Lifting Sling Points

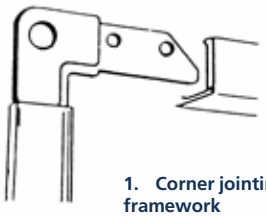
Minimum temperature requirements

If the appliance is installed in an area where extremely low external temperatures can occur, measures will need to be taken to ensure frost protection is provided inside the burner controls compartment. Consideration also needs to be given to the prevention of condensation forming inside the burner controls compartment.

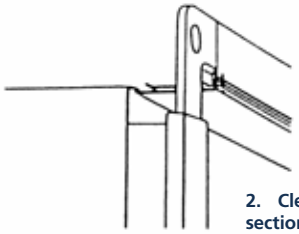
Ductwork connections

The units are designed to be used in conjunction with intake and or discharge ducting. A positive seal should be made between any ducting and the air heater. A flexible connection is desirable to eliminate transmission of noise and to take account of thermal expansion. Figure 4 illustrates a method of connection between the appliance and the duct using a proprietary patented connection system.

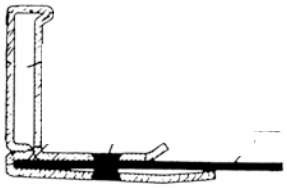
Consideration should be given to the application of duct fittings directly connected to the appliance. Air inlet and outlet elbows, transitions etc. should be designed to ensure an unrestricted and turbulent free air flow. This requirement is to ensure that an even air temperature is maintained when leaving the appliance thus eliminating heat exchanger "hot-spots" and nuisance shutdown of the burner due to over heating.



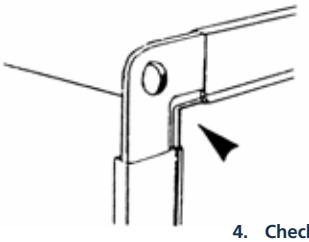
1. Corner jointing framework
Cut and assemble flange into frame to suit opening



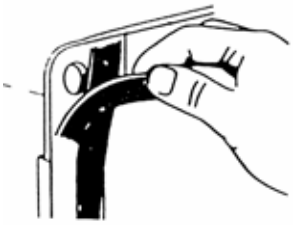
2. Cleats between sections to be joined
Check dimensions and position on duct spigot



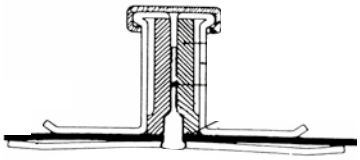
3. Fastening through all members
Ensuring flange is mated correctly before fastening.



4. Checking alignment and joint worthiness
Checking location after positioning.



5. Applying gasket seals to prevent air leakage



6. Sectional view of completed joint

Figure 4 - Recommended Procedure and Method for the Connection of Ducting and Transitions to the Unit Using a Typical Proprietory Flange System

Combustion air supply / flue arrangement

A properly sized flue system is required for safe operation of the unit. An improperly sized flue system can cause unsafe conditions.

The unit is designed to operate safely and efficiently with either a horizontal or vertical flue system when installed in accordance with the specific requirements and instructions.

The unit may be installed as a balanced flue (type C) heater requiring both a combustion air inlet duct and a flue pipe or as a power vented heater (type B) where combustion air is taken from the space where the heater is installed and which requires only a flue pipe exhausting to outdoors.

All products of combustion must be flued to outdoor atmosphere. Each heater installed as a type B appliance must be fitted with an individual flue pipe and the combustion air inlet opening must be provided with a protection grille.

Each heater installed as a type C appliance must be fitted with an individual combustion air/flue pipe system. Type C2 appliance, with single duct system for supply of combustion air and evacuation of flue gasses, are not allowed.

Flue pipe diameters and maximum (and minimum) pipe lengths in table 1 below apply to both horizontal and vertical systems.

Add all straight sections and equivalent lengths for elbow. The total combined length must not exceed the maximum flue length.

If this unit is replacing an existing unit, ensure that the flue is sized properly for the unit being installed and that the existing flue is in good condition.

IMPORTANT: The flue must be installed in accordance with national and local regulations. Failure to provide proper flueing could result in death, serious injury and/or property damage. The air heater must be installed with a flue to the outside of the building. Safe operation of any power vented gas apparatus requires a properly operating flue system, correct provision for combustion air and regular maintenance and inspection.

The appliance must be installed with an adequate and clean air supply for the burner that is free from dust or other contaminants.

Prior to fitting the flue, fill the flue condensate drainage pipework trap with water via the flue outlet opening.

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Model		PRN025-I PRN025-E	PRN035-I PRN035-E	PRN045-I PRN045-E	PRN055-I PRN055-E	PRN070-I PRN070-E	PRN100-I PRN100-E
Heater socket and flue diameter	mm	100			130		
Maximum straight length two pipes (combustion air inlet and flue outlet pipe) with wall or roof terminal (type C appliance)	m	9.0					
Maximum straight length single pipe (flue outlet pipe) with wall or roof terminal	m	9.0					
Equivalent length of 45° elbow	m	0.75					
Equivalent length of 90° elbow	m	1.5					
Minimum Flue Length	m	0.5					

Table 1 Flue Pipe Lengths

Model		PRN025-I PRN025-E	PRN035-I PRN035-E	PRN045-I PRN045-E	PRN055-I PRN055-E	PRN070-I PRN070-E	PRN100-I PRN100-E
Flue Gas Temperature High Fire ΔT	°C	172.5	159.5	159.5	161.7	174.9	146.7
Flue Gas Temperature Low Fire ΔT	°C	33.6	32.7	40.4	44.3	45.3	38.4
Mass Flow Rate Flue Gases High Fire G20	kg/h	24.45	33.98	43.79	48.09	59.36	90.55
Mass Flow Rate Flue Gases High Fire G25	kg/h	29.39	30.92	47.16	46.65	71.25	109.18
Mass Flow Rate Flue Gases High Fire G25.3	kg/h	25.47	33.70	41.57	49.28	66.77	98.99
Flue Pressure at Maximum Flue Resistance	Pa	7	15	15	13	14	32

Table 2 Flue Gas Properties

Type B appliances

If the unit is to be installed as a type B appliance, air for combustion will be taken from within the space where the heater is installed.

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Single wall seamless aluminium or stainless steel flue pipes are required. All joints must be sealed to prevent the products of combustion from leaking into the building. If the flue passes through a combustible element of the building it must be enclosed in a sleeve of non-combustible material and separated from the sleeve by a minimum of 25 mm air break. The temperature of any combustible material near to the flue must not exceed 65°C when the heater is in operation. The flue must be at least 150 mm away from any combustible material.

Single wall flue pipe exposed to cold air or run through unheated areas should be insulated. Where condensation is unavoidable, provision must be made for the condensation to flow freely to a point to which it can be released, i.e. a drain or gully. The condensation drain from the flue must be constructed from non-corrodible material not less than 20 mm diameter. Copper or copper based alloys must not be used for condensation drains.

For testing, the flue pipe should include a sealable test port. The port must be at least 450mm away from the air heater flue connection socket.

Follow the flue pipe manufacturers installation instructions for making joints, including connections to the air heater, for passing through a building element and for support requirements.

It is important to ensure that there is an adequate air supply at all times for both combustion and heating requirements.

Modern buildings involve greater use of insulation, improved vapour barriers, and weather proofing. These practices mean that buildings are sealed much tighter than in the past.

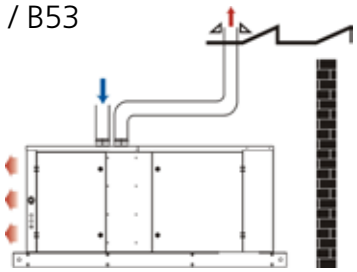
Proper combustion air supply for a power vented Type B installation requires ventilation of the heated space. Natural infiltration of air may not be adequate. Use of exhaust fans aggravates this situation. It is important to ensure that there is adequate combustion air supply at all times. Reliance on doors and windows is not allowed.

Ensure that the air combustion inlet opening at the rear side of the unit cannot be obstructed.

When these units are installed in type B applications, air for combustion is taken from the space in which it is installed. Do not restrict the combustion air intake.

Ensure that an adequate clean air supply for combustion and ventilation is provided within the building in accordance with the relevant rules and regulations in force.

Roof B23 / B53



Wall B23 / B53

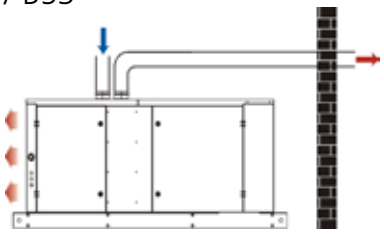
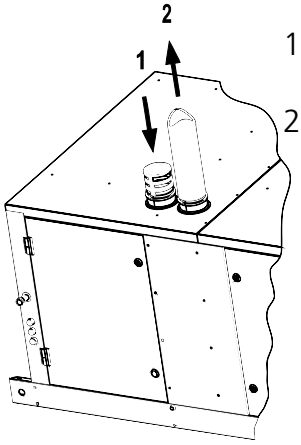


Figure 5 Approved appliances Type B



1. Combustion air inlet with grille
2. Flue pipe outlet collar

Type C appliances

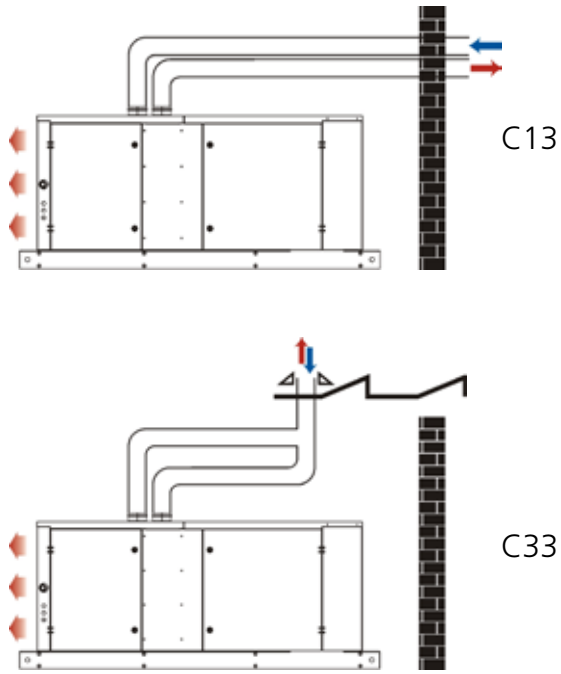
Units used in a balanced flue application are designed to be fitted with a combustion air inlet duct that obtains outdoor air and a flue pipe that exhausts flue products to outdoors.

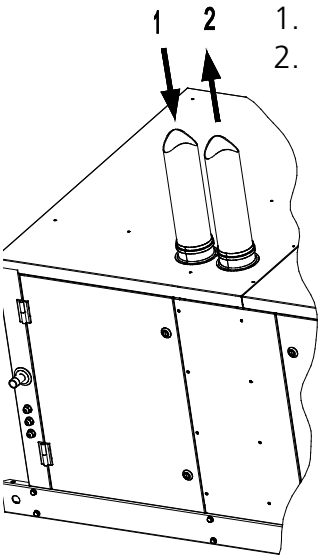
Single wall seamless aluminium or stainless steel flue pipes are required. All joints must be sealed to prevent the products of combustion from leaking into the building. If the flue passes through a combustible element of the building it must be enclosed by a sleeve of non-combustible material and separated from the sleeve by a minimum of 25 mm air break. The temperature of any combustible material near to the flue must not exceed 65°C when the heater is in operation. The flue must be at least 150 mm away from any combustible material.

Single wall flue pipe exposed to cold air or run through unheated areas should be insulated. Where condensation is unavoidable, provision must be made for the condensation to flow freely to a point to which it can be released, i.e. a drain or gully. The condensation drain from the flue must be constructed from non-corrodible material not less than 20 mm diameter. Copper or copper based alloys must not be used for condensation drains.

For testing, the flue pipe should include a sealable test port. The port must be at least 450 mm away from the air heater flue connection socket.

Follow the flue pipe manufacturers installation instructions for making joints, including connections to the air heater, for passing through a building element and for support requirements.





1. Combustion air inlet
2. Flue pipe outlet collar

Figure 6 Approved appliances Type C

Condensate drain

All PREEVA Neos units are designed with a built-in drain connection complete with a U trap. This will need to be filled with water (via the flue outlet opening) during commissioning.

Follow local regulations for the correct disposal of condensate.

A PVC condensate discharge pipe should be run by the installer to connect the drain from the unit to the nearest foul drainage point. Condensate water does not belong in a rain-water tank!

A condensate disposal system that relies on gravity should be satisfactory for most installations. If a gravity system is not possible, a condensate pump must be installed. There are a number of commercially available pumps made for this purpose.

If using a condensate pump, follow the pump manufacturer's installation recommendations.

Condensate drain pipe connections must be glued, to prevent condensation water dripping from the drain pipe.

The condensate water coming from the unit heater has a pH-level of approx 4.6 and can affect materials made from zinc and/or copper, hence it is strongly advised against letting the condensation water flow off through the gutter.

To ensure the condensation water does not freeze, it is recommended to mount the drain pipe inside the building. If there is no other choice but mounting it outside, it is strongly recommended to equip it with frost proof insulation. For external units it may be necessary to fit trace heating to the condensation pipe to prevent freezing.

Model	PRN-I / PRN-E	025	035	045	055	070	100
Condensate	l/hr	0.65	0.75	0.88	1.00	1.25	1.75

Table 3 Condensate drainage flows

Gas connection

A competent and/or qualified engineer is required to either install a new gas meter to the service pipe or to check that the existing meter is adequate to deal with the rate of gas supply required. Installation pipes should be fitted in accordance with national standards so that the supply pressure, as stated in the technical data section will be achieved.

It is the responsibility of the competent engineer to ensure that other relevant standards and codes of practice are complied with in the country of installation. Pipes of smaller size than the heater inlet gas connection must not be used. The complete installation must be tested for soundness as described in the country of installation. Support gas piping with pipe hangers, metal strapping, or other suitable material.

Do not rely on the unit to support the gas pipework installation.

Before installation, check that the local distribution conditions, nature of gas and pressure, and adjustment of the appliance are compatible.

This appliance is designed for a maximum gas supply pressure of 50mbar. When pressure testing the supply piping with test pressures above 50mbar, disconnect the heater and manual valve from the gas supply line that is to be tested. Cap or plug the supply line.

All sealing products must be resistant to the action of liquefied petroleum gas or any other chemical constituents of the gas being supplied.

Install a ground joint union and manual shut-off gas cock upstream of the unit control system.

The unit is equipped with a nipple that extends outside the cabinet.

Check that the gas category is in accordance with the data described on the air heater.

Ensure that a gas supply line includes a filter and has been tested and purged in accordance with prescribed practice prior to commissioning and taking the air heater into service.

This appliance is equipped for a maximum gas supply pressure of 50mbar.

Never use a flame to test for gas soundness.

PREEVA Neos units are designed to operate on natural gas (G20, G25 or G25.3). Check that the gas supply, gas category and gas inlet pressure is in accordance with the information given on the unit data plate. To let the unit function at maximal heat output, the gas supply pipe MUST be correctly sized. Close to the air heater a gas tap with coupling must be mounted for servicing (see figure 7).

The whole of the gas service installation including the meter must be inspected, tested for soundness and purged in accordance with appropriate requirements by a qualified person.

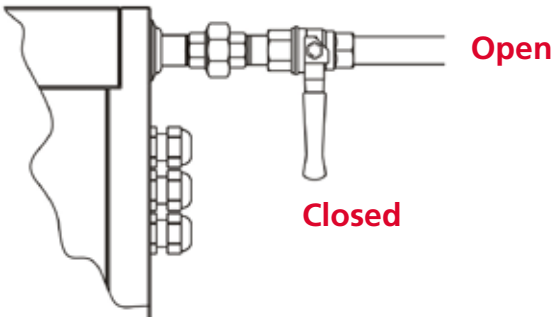


Figure 7 Gas Connection Details

Country	Gas Category	Gas Type	Nominal Supply Pressure (mbar)	Maximum Supply Pressure (mbar)	Minimum Supply Pressure (mbar)
AT, BG, CH, CY, CZ, DK, EE, ES, FI, GB, GR, HR, IE, IT, LT, LV, NO, PT, RO, SE, SI, SK, TR	I_{2H}	Natural Gas (G20)	20	25	17
LU, PL, RO	I_{2E}	Natural Gas (G20)	20	25	17
BE	$I_{2E(R)B}$	Natural Gas (G20 / G25)	20 / 25	25 / 30	17 / 20
FR	I_{2Er}	Natural Gas (G20 / G25)	20 / 25	25 / 30	17 / 20
DE	I_{2ELL}	Natural Gas (G20 / G25)	20 / 20	25 / 30	17 / 18
NL	I_{2EK}	Natural Gas (G20 / G25.3)	20 / 25	25 / 30	17 / 20

Table 4 Gas Supply Details

Electrical supply and connections

The electrical installation may only be carried out by an appropriately qualified person in accordance with the current Rules and Regulations in force.
This appliance must be earthed.

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Check that the electrical specification is in accordance with the specified data on the air heater. All electrical connections must be made in the heater control compartment (refer to Figure 16). Connections must be in accordance with the terminal markings and the wiring diagram affixed to the unit.

The minimum external control required for the unit is a room thermostat capable of providing a 0-10V DC signal to the burner. It is essential that the main input line and neutral to terminals L and N remain live at all times even when the unit is switched off to ensure correct operation of the unit and to let the fan operate independent of the heating control. Never incorporate controls that isolate the appliance electrically.

The supply line to the heater should include a mains switch / isolator adjacent to the appliance.

The minimum clearance distance between the contacts must be more than 3 mm. Check that the air heater is well earthed and that an earth leakage test is carried out.

An external green indicator light is fitted on the heater section to signify when the burner is ON.

An external burner reset switch with red indicator light is fitted on the unit. To add a remote reset button, make connections to the terminals in the electric box as indicated on the wiring diagram.

If the reset button requires activating for any reason, the cause must be determined. After determining and correcting the problem, restart the heater and monitor for a period long enough to ensure proper operation (approximately 5 minutes).

Ensure that all cables and installers wiring are appropriately fixed and that they do not touch the flue or combustion collector box.

To ensure that the unit is airtight, all unused cable couplings must be hermetically sealed.

Permanent damage can occur to the ignition controller when faulty/incorrect connections to the thermostat, reset switch or burner failure lamp are made!

Switching of wires for reset switch and flame failure will destroy the burner relay.

Thermostat controls

Ancillary controls are required to provide timed heat cycles, room comfort temperature level, frost protection, override air circulation etc. These are not included with the appliance and should be ordered separately.

Do not attempt to control more than one unit from a single thermostat or control panel unless a properly wired relay is fitted. Follow the instructions supplied with such panels.

The location of the room thermostat or sensor is very important. It should not be positioned on a cold wall or cold surface. Avoid location in draughty areas or where it may be influenced by heat sources e.g. the sun, process plant, etc. The thermostat should be mounted on a vibration free surface and mounted about 1.5 metres above floor level. Follow the thermostat manufacturers instructions. The thermostat must be suitable for potential free contacts.

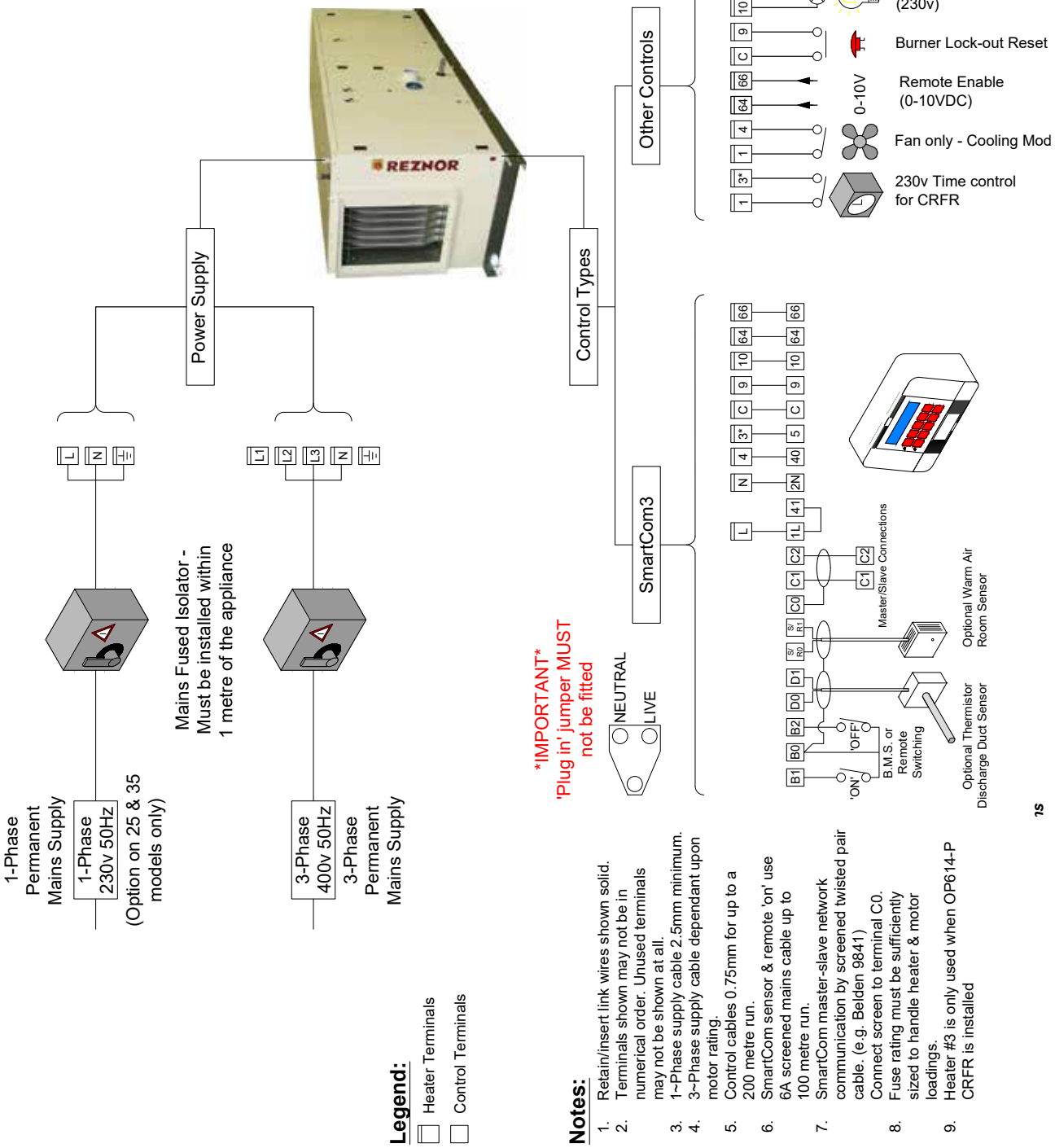

Figure 8 Wiring Connections on the terminal board

Commissioning and operation

PREEVA Neos units must be commissioned before putting into service.

Outdoor commissioning work on PRN-E appliances should not be undertaken during wet conditions. A second person must be available to provide assistance in the event of an emergency.

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Pre-start checks

Prior to starting up the unit, carry out the following checks:-

- Do not use this appliance if any part has been subjected to water ingress. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control.
- Check suspension (indoor unit) or unit support (outdoor unit). The unit must be secure.
- Verify that no other parts are fitted which are not individually supported and secured.
- Check gas pipework for leaks and correct gas line pressure.
- Bleed gas lines of trapped air.
- Check electrical wiring and ensure that wiring conforms to the wiring diagram. Be sure that all cables are correctly sized to meet the requirements of the units.
- Ensure the correct phases in the supply cable are connected to the correct terminals at the unit.
- Check polarity. Verify that line voltage exists between each live terminal (L1, L2 and L3) and earth ground.
- Verify that the appliance is earthed by conducting an earth continuity test.
- Ensure that fuses are of the correct rating and fuse value.
- Check ignition controller program key matches the resistance value as shown in Combustion data table for the heater model.
- Ensure condensate drain U trap is full of water and the condensate drain pipe is watertight.
- Ensure that the air discharge louvres are open (if fitted).
- Commission air supply dampers (if fitted).
- Check to ensure that the fan performance and motor load factors are correct for the application and in accordance with the application data plate.
- Press LC3 thermostat reset button to ensure it is not in lockout.

Supplementary checks for an indoor unit installation:

- Check that no combustibles are near to the unit. Requirements are in the location and installation section of this manual.
- Check vent system to be sure that it is installed according to the combustion air supply instructions given in the installation section of this manual.

Start up

For your safety, follow the instructions exactly otherwise damage or injury could occur!

During start up all gas services (up to the gas meter) must be checked again for gas soundness to ensure no leaks are present.

Fill the condensation drain pipe U trap with water (through the flue outlet of the unit) until water runs out of the condensate drain.

The condensation drain pipe and trap must be visually tested for water tightness.

1. Turn on the gas supply and check for gas leaks. Ensure that all pressure test points are closed and gas tight.

2. Switch on the electrical supply.

3. Set the room thermostat to call for heat at high fire (10V).

4. If the red light next to the lockout reset switch is illuminated, press and hold it for 3 seconds, then release. If the light does not go off see Fault Finding section.

5. From initial power up there can be a delay of up to 2 minutes before the heater will respond to a heat demand. During this time, the ignition controller performs a self diagnostic routine.

6. The combustion fan will now run and the burner will automatically light after about 35 seconds. The air circulation fan will run within 30 seconds.

7. If the installation is new, 3 start-up cycles may be necessary due to air still being present in the gas pipe. Should the air heater still not light, refer to Fault Finding section.

8. The gas pressure must correspond to the data in table 4. If the gas pressure is higher than 50mbar, a pressure regulator must be installed. If the gas pressure is lower than the minimum as shown on the data plate, check the supply pipework to ensure it is correctly sized. Gas pressure should be checked with the appliance running at maximum heat load.

When overheating occurs, shut the manual gas tap before turning off the electric power.

Air / gas ratio controls

PREEVA Neos appliances are fitted with air-gas ratio control devices with two adjustments - throttle and offset.

Throttle is adjusted at high fire.

Offset is adjusted at low fire.

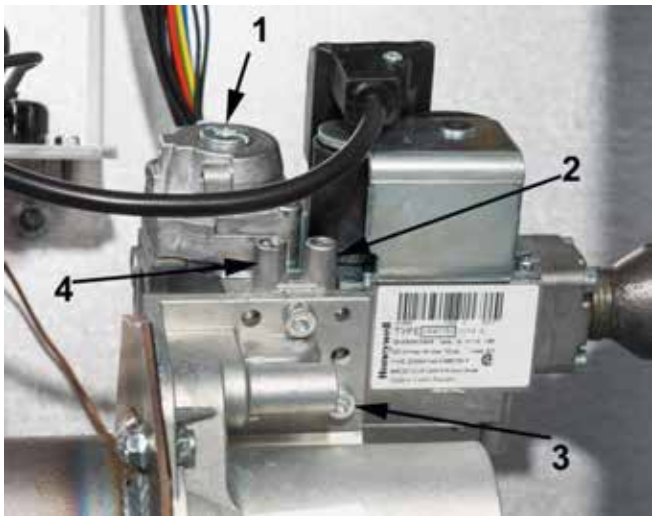
Gas valve adjustment

All units are set before leaving the factory. Any modification must be carried out by a suitably qualified technician.

Models 25-70

To adjust the throttle use a 4mm hex key on the screw located on the venturi. Rotate counter clockwise to increase %CO_2. Rotate clockwise to decrease %CO_2.

To adjust the offset, remove the protection screw on the gas valve. Rotate counter clockwise to decrease pressure / %CO_2 and rotate clockwise to increase pressure / %CO_2. Refit cap after adjustment.



1 - Offset adjustment
2 - Inlet pressure measuring point
3 - CO_2 adjustment point (throttle)
4 - Offset pressure measuring point

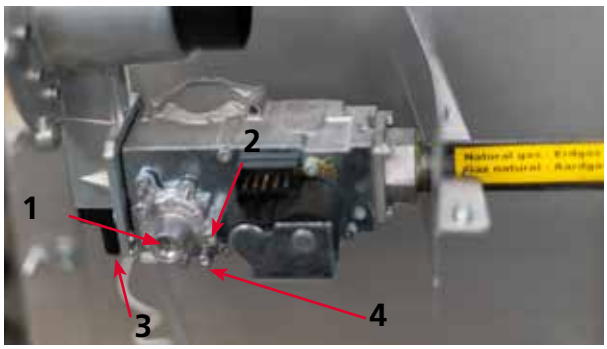
Figure 11 Gas valve adjustment models 25-70

Model 100

To adjust the throttle use a 4mm hex key on the screw located on the venturi. Rotate counter clockwise to decrease %CO_2. Rotate clockwise to increase %CO_2.

To adjust the offset, use a T40 torx key to remove the protection screw on the gas valve.

Rotate counter clockwise to decrease pressure / %CO_2 and rotate clockwise to increase pressure / %CO_2. Refit cap after adjustment.



1 - Offset adjustment
2 - Inlet pressure measuring point
3 - CO_2 adjustment point (throttle)
4 - Offset pressure measuring point

Figure 12 Gas valve adjustment model 100

Gas conversion

PREEVA Neos units are designed to operate on natural gas types G20, G25 and G25.3. All appliances are set to G20 when they leave the factory. To modify for use on G25 or G25.3 gas follow commissioning guide and refer to the Combustion Data table for approximate throttle turns from G20 setup.

Upon completion of conversion recommission the heater. Refer to the commissioning section for more details.

Commissioning checks

Commissioning requires the use of a CO/CO_2 flue gas analyser with an inaccuracy < 0.1% and two pressure gauges.

For measuring gas pressure a resolution of 0.1 mbar or better is recommended.

For measuring offset pressure a low range gauge with a resolution of 0.1 Pa or better is required.

Read section on air-gas ratio control adjustment before proceeding.

During commissioning the appliance %CO_2, CO ppm and flue gas temperature values should be compared to those shown in the Combustion Data Table.

1. Slacken screw in gas valve inlet pressure test point and attach gas pressure gauge.

2. Start the appliance following the start up procedure.

3. Ensure the thermostat is set to call for maximum heat (10V). For optimal appliance control during commissioning the 0-10VDC thermostat inputs can be substituted with a manually adjustable 0-10VDC generator wired into the burner terminals 66 & 64 (see wiring diagram).

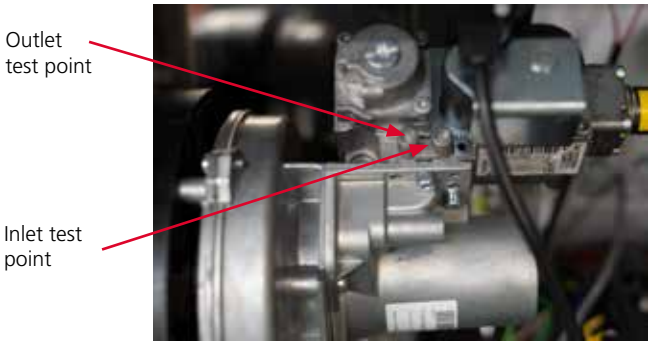
4. Check gas supply pressure against the values on the data plate. If gas supply pressure is too low, shut-down the unit and correct.

5. Put CO/CO_2 analyser probe into flue. Observe the CO/CO_2 readings and adjust throttle screw until nominal high fire %CO_2 value is achieved +/- 0.1%CO_2 (see Combustion Data for details). If the venturi has been replaced it can be approximately set by fully closing and then adjusting the throttle a set number of turns as indicated in the combustion data table.

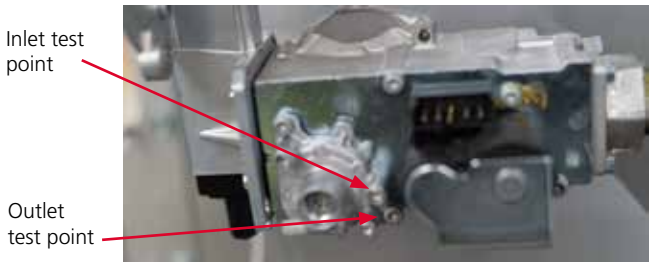
If the chamber insulation has been replaced the organic binders will burn off during the first few minutes of operation. This will result in a temporary increase in CO and CO_2 readings.

6. Keep appliance running at full rate until completely stabilised and recheck %CO_2. If necessary make further adjustments to throttle before proceeding.

7. Slacken screw in gas valve outlet pressure test point and attach low range pressure gauge. Note, offset is a vacuum reading.



Gas pressure test points PREEVA Neos 25-70



Gas pressure test points for PREEVA Neos 100

To set low fire adjust thermostat to call for minimum heat (1V):-

- Adjust offset screw to obtain nominal offset pressure +/- 1 Pa models 25-70 and +/- 0.5 Pa model 100 (see Combustion Data for details).
- Observe the CO/CO_2 readings and adjust offset screw if needed to obtain nominal low fire %CO_2 (+/-0.1%CO_2).
- Return heater to high fire (10V) and recheck high fire %CO_2 value. If necessary make any final adjustments to the throttle.
- Disconnect pressure gauges and tighten screws in gas valve test points.
- Remove heat demand and allow heater to shut-down.
- Reconnect thermostat connections if bypassed for commissioning.

Commissioning - hand over

Upon full and satisfactory completion of commissioning, a record of commissioning information should be left with the person responsible for the heater. The commissioning engineer must ensure that the user is familiar with the safe and efficient use of the heater, detailing the function of all controls and main components.

C

The user should be made aware of the following in particular: -

(i) Lighting, shutdown, and operational information.

(ii) Safety features, data plate, and labelling.

(iii) The requirement for regular inspection - especially if the heater is within a more demanding environment - and the need for regular servicing carried out by a suitably qualified person.

Model		25	35	45	55	70	100
CO_2 at High Fire (Throttle) G20	%	8.50	8.50	8.50	8.50	8.50	8.50
CO G20	ppm	< 50ppm					
Throttle Turns from Closed G20	-	4.5 out	5.1 out	6.25 out	4.25 out	7.5 out	29.5 in
CO_2 at Low Fire (Offset) G20	%	7.90	7.90	7.90	7.90	7.90	7.60
CO G20	ppm	< 50ppm					
Low Fire Offset Pressure G20	Pa	-16	-15	-37	-31	-77	-1.2
CO_2 at High Fire (Throttle) G25	%	8.50	8.50	8.50	8.50	8.50	8.50
CO G25	ppm	< 50ppm					
Throttle Turns from G20	-	2.0 out	2.7 out	1.75 out	4.0 out	4.0 out	6.0 in
CO_2 at Low Fire (Offset) G25	%	7.90	7.90	7.90	7.90	7.90	7.60
CO G25	ppm	< 50ppm					
Low Fire Offset Pressure G25	Pa	-15	-14	-37	-43	-78	-1.3
CO_2 at High Fire (Throttle) G25.3	%	8.50	8.50	8.50	8.50	8.50	8.50
CO G25.3	ppm	< 50ppm					
Throttle Turns from G20	-	1.9 out	2.5 out	1.5 out	3.25 out	3.5 out	5.5 in
CO_2 at Low Fire (Offset) G25.3	%	7.90	7.90	7.90	7.90	7.90	7.60
CO G25.3	ppm	< 50ppm					
Low Fire Offset Pressure G25.3	Pa	-31	-47	-47	-42	-61	-0.6
Flue Gas Temperature High Fire ΔT	°C	172.5	159.5	159.5	161.7	174.9	146.7
Flue Gas Temperature Low Fire ΔT	°C	33.6	32.7	40.4	44.3	45.3	38.4
Flue Pressure at Maximum Flue Resistance	Pa	7	15	15	13	14	32
Thermal Efficiency High Fire NCV	%	91.2	91.6	91.6	91.7	91.2	92.5
Thermal Efficiency Low Fire NCV	%	98.1	98.1	97.7	97.5	97.4	97.8
Ignition Controller Program Key	Ω	3,300	4,700	6,800	10,000	22,000	33,000
$\%CO_2$ tolerance ± 0.1%							

Table 5 Nominal Combustion Values with service door closed

Operation

The appliance requires a 0-10VDC signal to control the burner. A value > 1.0VDC will indicate a heat demand and the combustion fan will start the pre-purge.

Before an ignition attempt the combustion fan slows to ignition speed. When the ignition speed has been reached the burner will attempt ignition.

If ignition is unsuccessful there will be another purge followed by ignition. The total number of ignition attempts before lockout is 3.

The spark electrode stays energised throughout the ignition attempt, even if the flame has been established.

Once the flame has been sensed the burner will run at the ignition speed for a few seconds to allow the flame to stabilise. Following flame stabilisation the fan speed will increase to high fire to allow the heat exchanger to warm up quickly.

After a short delay the air movement fan will start. Once warm up has completed the burner is released to the control of the 0-10VDC thermostat and will modulate to the requested heat demand.

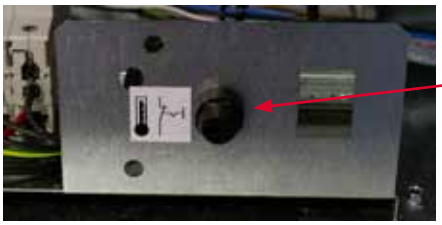
The burner will begin to modulate before the set temperature has been reached. At this point the burner rate will adjust according to the heat demand from the thermostat. When set point temperature is reached the burner will turn off and the appliance will post-purge to dissipate any residual heat.

If, for any reason, the burner flame is extinguished during a run cycle, an automatic attempt at re-ignition will take place. If after three ignition attempts the burner does not relight, safety shut down and lockout will occur. Manual intervention to reset will be necessary to put the unit back into service.

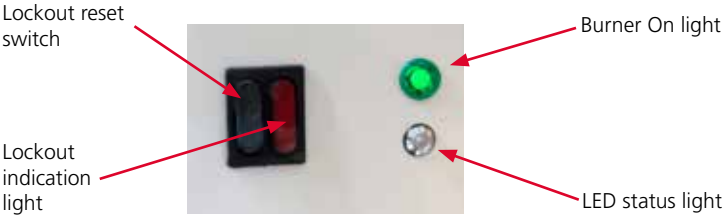
In the event of overheating for any reason, overheat controls operate to switch off the burner.

In case the heat exchanger's temperature is too high, the burner will be switched off by the LC1 limit control (first safety). The burner automatically switches on again after cooling down and re-start will take place.

The limit control LC3, which operates at a higher temperature setting, switches off the burner to a lockout condition requiring a thorough check of the heater and a manual reset via the LC3 limit control body followed by the lockout reset switch. A cooling time of about 3 minutes is necessary before resetting.



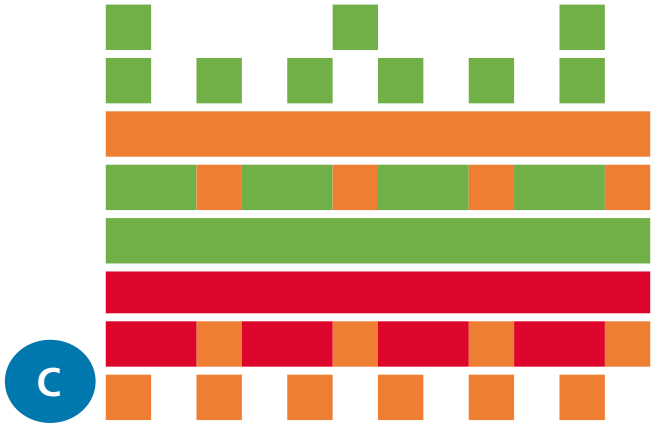
The appliance is fitted with an LED status light. This can be used to determine the current status of the appliance and help to diagnose fault conditions. See figure 9 LED Status table for more information.



To turn off the air heater for a short period, turn the room thermostat to a lower setting (a voltage below 0.8VDC will be deemed as no heat demand). To relight, reset the thermostat.

To turn off the heater for a prolonged period, turn the room thermostat to lowest setting and turn off the gas supply to the appliance. Switch off electrical supply to the air heater only after the air circulation fan has stopped. To relight, follow the start up instructions.

Gas and electricity must only be turned off in case of emergency or for prolonged periods of shutdown of the air heater.



Standby

Pre-purge

Ignition

Stabilisation

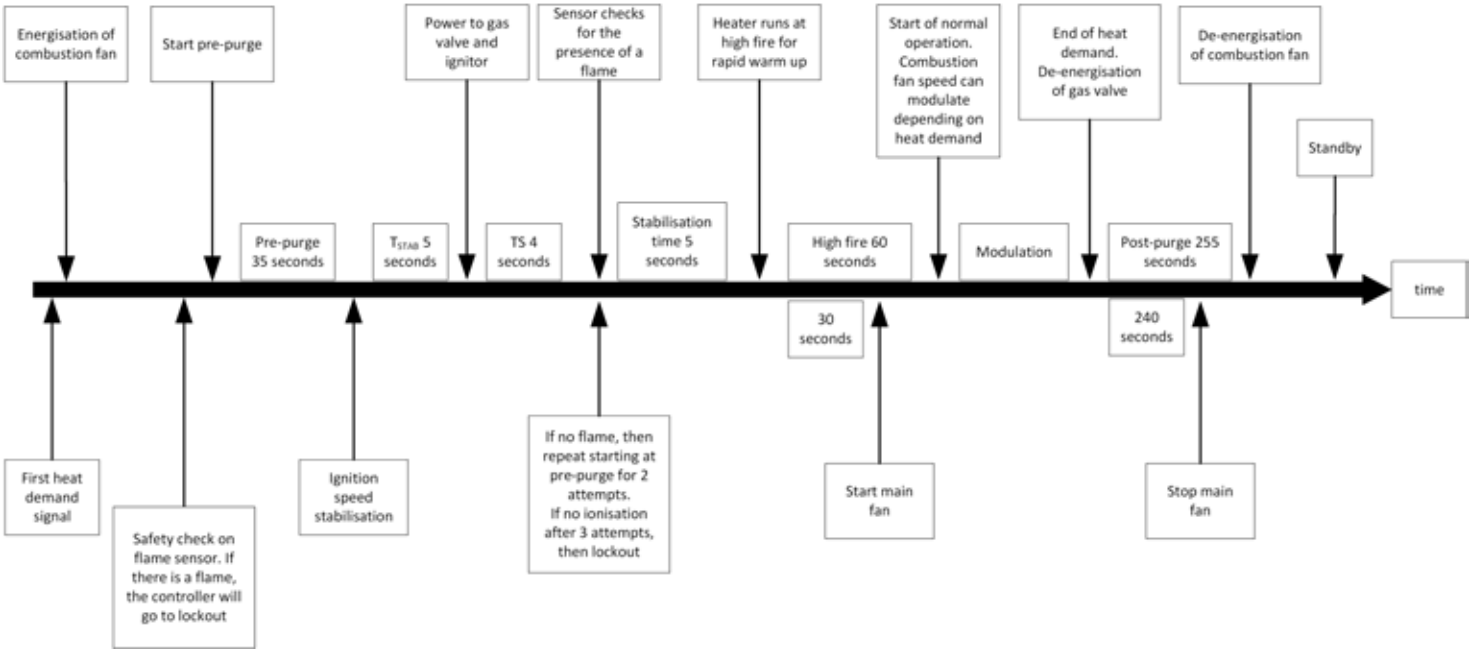
Unit is functioning

General lockout

Lockout due to LC3 over temperature

LC1 open or short circuit / program key error

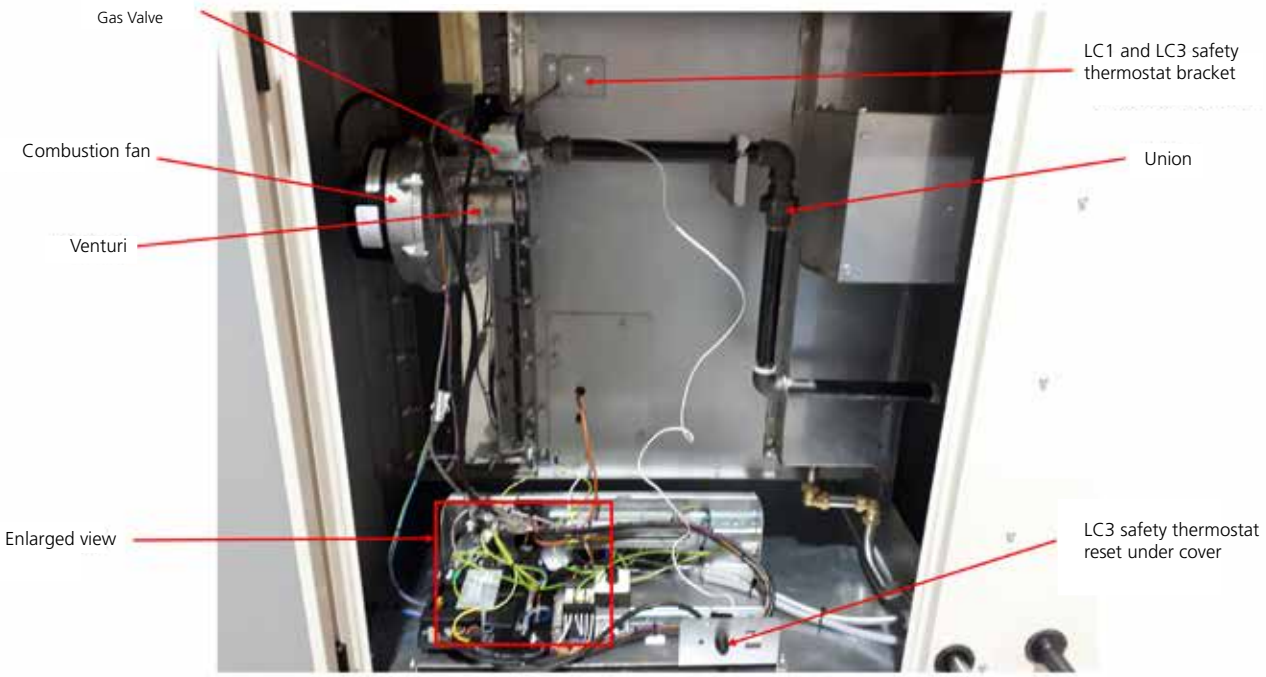
Figure 9 LED Status

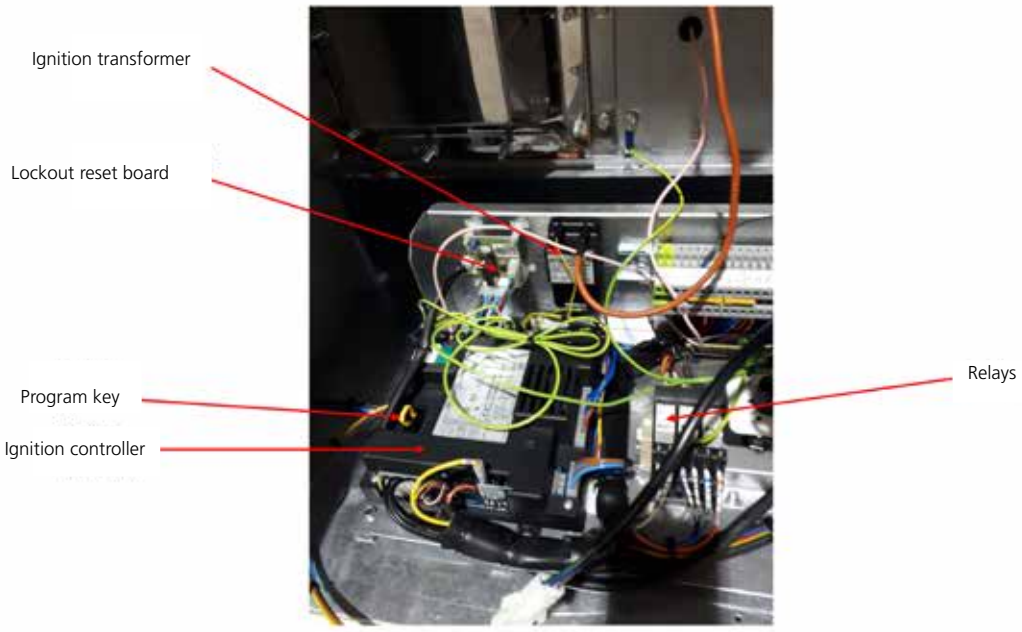


Start position	The system is not in lock-out and can proceed with the start up sequence upon a demand for heat
Pre-purge time	This is a period of 35 seconds during which the combustion fan operates prior to activation of the ignition device.
Safety time	The safety time is the delay between the gas valve being energised and the flame sensor checking for the presence of a flame. This is a period of 4 seconds. Note : if no flame is sensed, the burner controller will attempt ignition 3 times before going into lock-out mode.
Post-purge time	This is the time of 255 seconds between burner shut-down and the moment the combustion fan is de-energised.

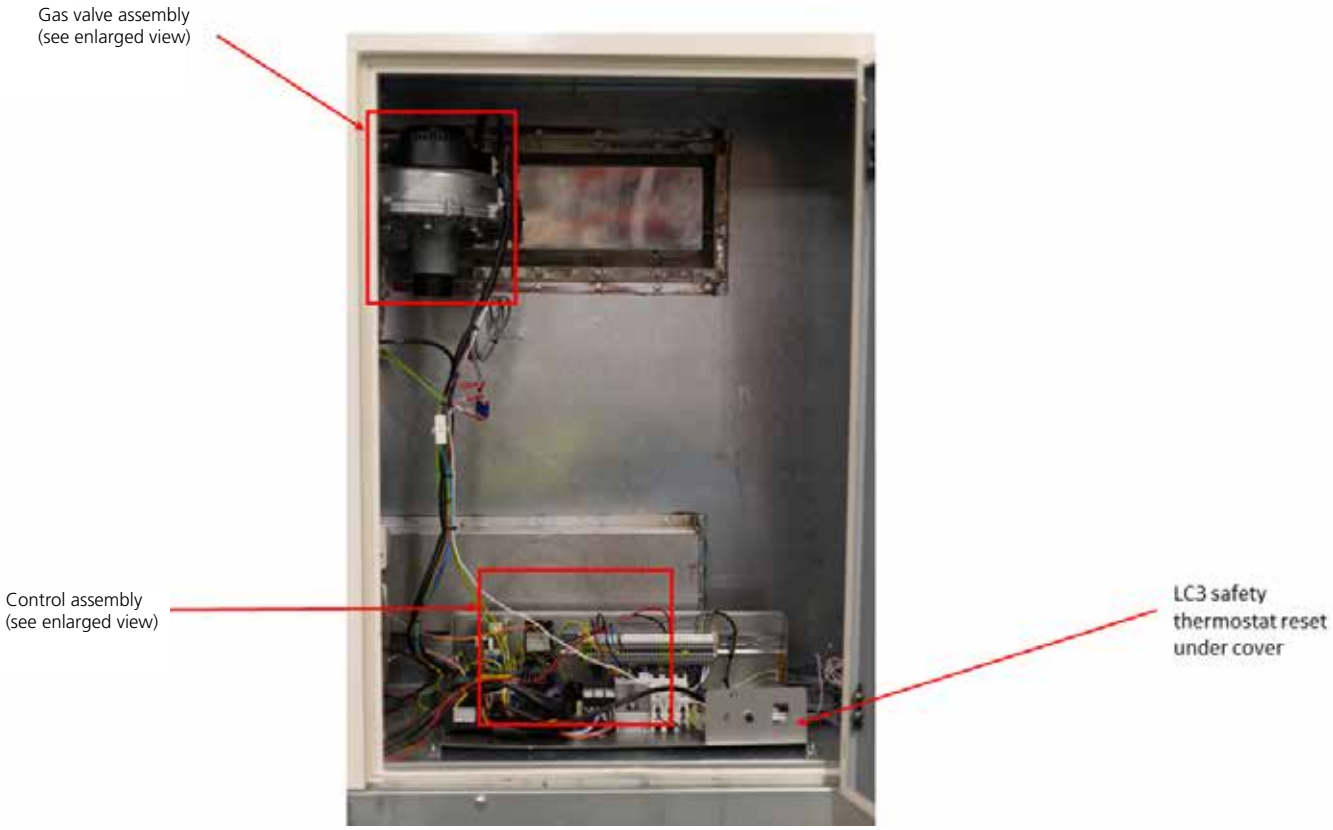
Figure 10 Ignition system timetable

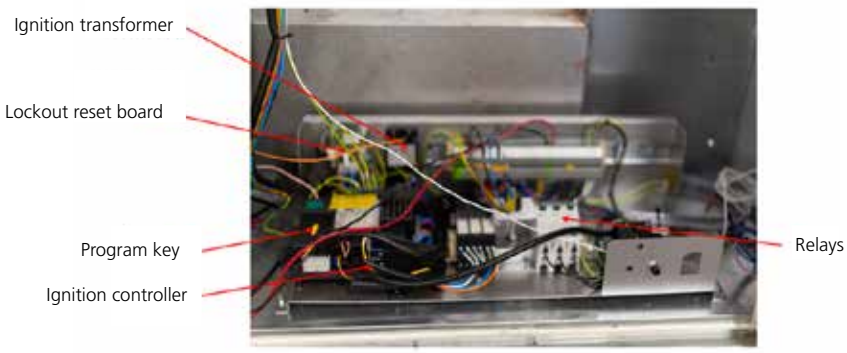
Component Layout Model 25-70





Component Layout Model 100





Maintenance schedule

Before commencing, turn off the main gas supply and switch off the main electricity supply after the air circulation fan has stopped.

Always consult your distributor at the slightest doubt.

The unit will operate with a minimum of maintenance. It is recommended that maintenance is carried out at least once a year by a suitably qualified person. More frequent servicing may be required dependent upon the environmental circumstances where the unit is installed. Regular inspection is necessary, especially in dirty areas, to assess the servicing frequency.

Hinged service access panels are provided to allow easy access to the burner controls compartment, air circulation fan and options cabinets (if fitted).

Check condition and security of flue and combustion air system. Check for security and worthiness of the suspension or mounting system.

The following procedures should be carried out at least once each year (see Figure 16).

- Clean all dirt, lint, and grease from the fan and motor.
- Check the heat exchanger and externally for evidence of physical damage.
- Check the burner for scale, dust, or lint accumulation. Clean if required.
- Check the vent or vent/combustion air system for soundness. Replace any parts that do not appear sound.
- Check the wiring for any damage. Replace damaged wiring.

Heat exchanger maintenance

Remove any external dirt or dust accumulation. Visually check the heat exchanger for cracks and holes. If a crack or hole is observed, replace the heat exchanger.

Replacement of gas valve

1. Unplug the gas valve and combustion fan power cables.

2. Disconnect the gas supply union inside the cabinet and release the gas pipe from the support bracket.

3. Unscrew the outer 8mm nuts securing the combustion fan to the burner.

4. Remove the gas valve / combustion fan assembly from the unit.

MS

5. The gas valve can now be disconnected from the venturi by removing the fixing screws. There are 3 screws on PREEVA Neos models 25-70 and 4 screws on model 100. To gain access to the venturi fixing screws on the gas valves for the 100 model, the combustion fan must be first removed.

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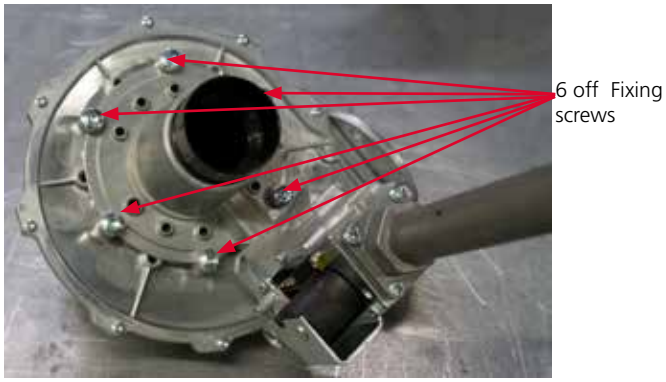
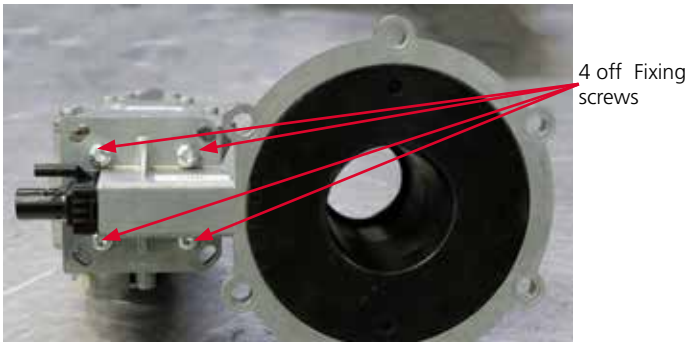
PREEVA Neos 25-70 gas valve fixing screws

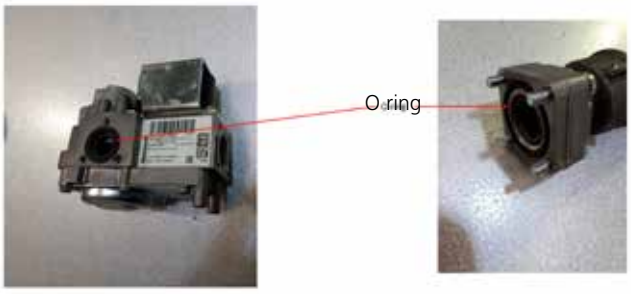


PREEVA Neos 100 remove combustion fan to reveal gas valve fixing screws

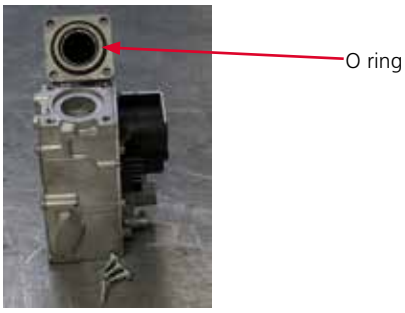


PREEVA Neos 100 gas valve fixing screws

6. The gas supply pipe with flange can be removed by unscrewing the 4 fixings. Do not lose the o-ring seal.



PREEVA Neos 25-70 gas valve inlet flange assembly



PREEVA Neos 100 gas valve inlet flange assembly

7. Refit gas valve in reverse order ensuring a new o-ring is fitted between the gas valve and venturi.

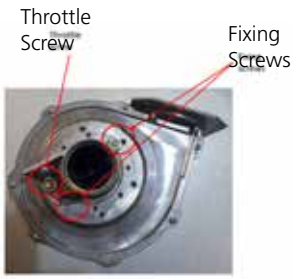
8. Follow start up and commissioning procedures.

Venturi cleaning and replacement

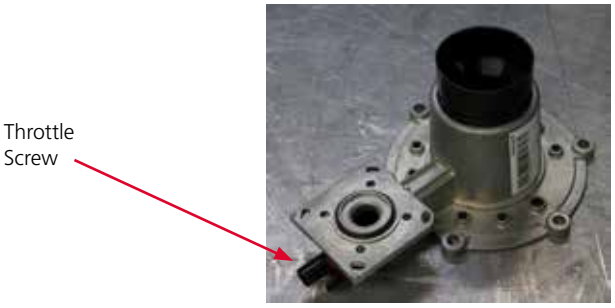
1. Clean the venturi inlet with a lint free cloth.

2. For replacement follow steps 1 to 5 from gas valve replacement.

3. Separate the venturi from the combustion fan by removing the fixings (2 screws models 25-70 and 6 screws model 100 as per the photographs shown under gas valve replacement).



PREEVA Neos 25-70 venturi

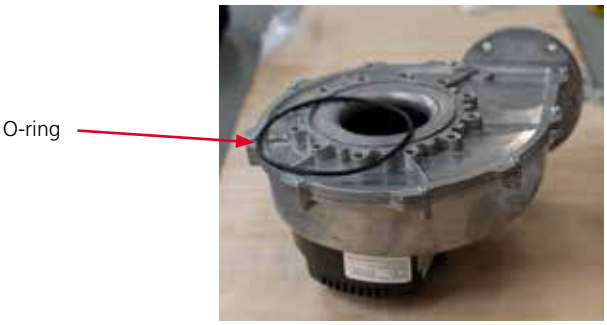


PREEVA Neos 100 venturi

4. Before fitting new venturi, ensure throttle screw is fully closed (turn throttle clockwise for models 25-70 and anticlockwise for model 100. Do not overtighten.

5. Replace cork gasket (models 25-70) or o-ring (model 100) between combustion fan and venturi.

PREEVA Neos 25-70 combustion fan



PREEVA Neos 100 combustion fan

6. Refit remaining items in reverse order.

7. Follow start up and commissioning procedure.

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Combustion fan cleaning and replacement

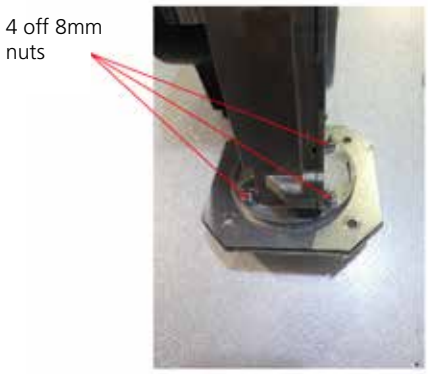
1. Follow steps 1 to 4 from gas valve replacement and step 3 from venturi replacement.

2. Clean fan body with a lint free cloth and blow any dirt out of the wheel using compressed air (air should not exceed 1.5 bar).

3. Check condition of fan wheel. If damaged replace fan.

4. On models 25-70 there is a mounting plate that will need to be transferred across to the new fan.

5. To remove unscrew the 8mm nuts.



6. Attach new gasket to fan outlet flange (all models) and fit mounting plate (models 25-70 only)

MS

7. Refit remaining items in reverse order.
8. Follow start up and commissioning procedure.

Burner cleaning and replacement

1. Follow steps 1 to 4 from gas valve replacement.
2. Unscrew the burner fixings with a deep 10mm socket.

3. The burner can now be removed.
4. Rinse the burner body with clean water and dry.
5. Inspect the burner for cracks, holes or splits in the mesh. If damaged the burner should be replaced.

6. The burner mesh can be cleaned by either placing it under clean running water or by immersing it in a container full of clean water. The burner should be allowed to dry naturally or be blown dry using compressed air (drying air should not exceed 1.5 bar).
7. Replace the burner gasket if necessary.
8. Refit in reverse order.
9. Follow start up and commissioning procedure.

Burner chamber / tube insulation check and replacement

1. The insulation material is a mixture containing Refractory Ceramic Fibres (RCF) / Alumino-Silicate Wools (ASW). Do not handle until all safety instructions have been read.
2. Wear appropriate PPE such as gloves, protective clothing, eye protection, and respiratory protection. Follow all local regulations and industrial hygiene standards.
3. Handle insulation with care to minimise airborne dust.
4. Dispose of waste in accordance with local regulations, such as a landfill licensed for this purpose.
5. Unless wetted, such waste may be dusty and should be properly sealed in containers for disposal.
6. The Material Safety Data Sheet is available from the appliance manufacturer.

7. With the burner removed the integrity of the combustion chamber and tube insulation can be verified. It is normal for small superficial cracks to be present in the surface of the insulation.

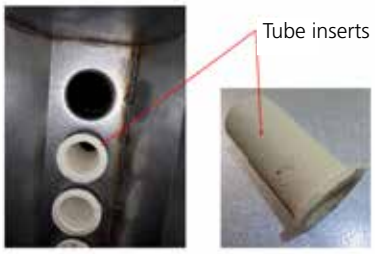
8. Remove any debris from inside the burner chamber. A vacuum with a minimum of M Class dust extraction rating can be used. Do not use compressed air.

9. Check the integrity of the insulation. Use a torch to inspect the insulation sleeves fitted into each tube. Broken tube inserts or the presence of deep cracks or warping indicate that the insulation needs to be replaced.

10. To remove the chamber insulation the burner probes must first be removed. See cleaning and replacement of burner probes for procedure.

11. With the burner probes removed the insulation block can be pulled out from the chamber. This will reveal two additional thin strips of insulation material. The first is located at the front of the chamber where the tubes are secured. The second is located on the lower right side of the chamber where the probes are normally located. It is recommended that both of these thin insulation strips are replaced whenever the cast insulation block is removed. Ensure the lower right insulation strip has the preformed holes lined up with the probe holes in the side of the chamber.

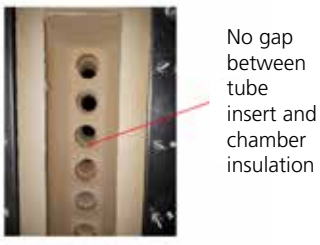
12. The tube inserts can now be accessed and withdrawn from the tubes.



13. Refit replacement tube inserts, tube insert spacer gaskets and chamber insulation ensuring the chamber insulation is correctly orientated, so the cut outs line up with the burner probe position.

MS

14. Confirm the tube inserts slot into the corresponding recess in the front face of the chamber insulation block and gently pull them towards the chamber insulation. Ensure there are no gaps between the chamber insulation and tube inserts. Up to three tube insert spacer gaskets may be needed per tube insert.



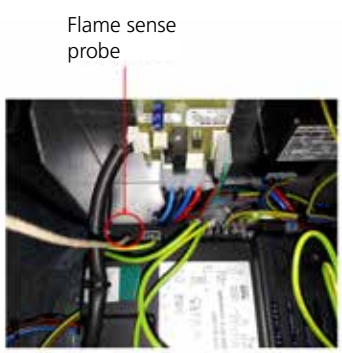
15. Refit burner probes. Check condition of probe bracket gasket and replace if necessary.

16. Replace the burner gasket if necessary.

17. Refit in reverse order, then follow start up and commissioning procedure.

Cleaning and replacement of burner probes

1. Disconnect the spark and flame sense cables from the ignition transformer and ignition controller.



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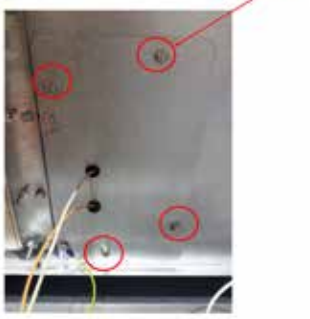
2. Unscrew 4 fixings with 10mm socket to remove the probe access panel.



3. Once removed unscrew the 2 fixings with a 10mm socket to release the probe mounting bracket.

4. Pull probe mounting bracket away from the burner chamber to extract the burner probes.

Withdraw probe mounting bracket from chamber

5. The burner probe assembly can now be removed from the heater.

6. Review the condition of the probes. Light oxidation can be removed with a fine abrasive paper.

7. Measure the length of each probe and check against the dimensions given below. If probes are corroded or damaged in any way, they will need to be replaced.

Flame probe

Length of probe =

46.55mm overall

32.95mm to angle

13.79 mm angle to tip

Tip deflection away from 0° = 27°

8. Check spark gap against dimensions below, if necessary, adjust using long nose pilers. Be careful not to crack the ceramic sleeve.

Spark probe

Length of probe =

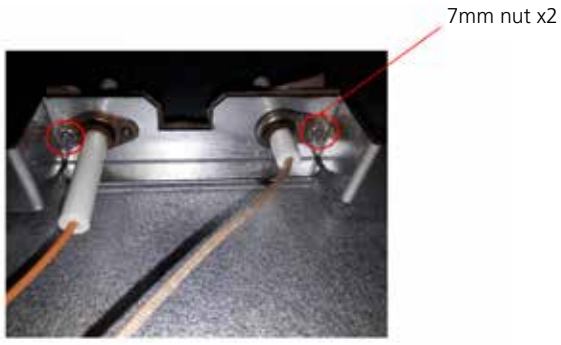
78.5mm long probe

42.3mm short probe

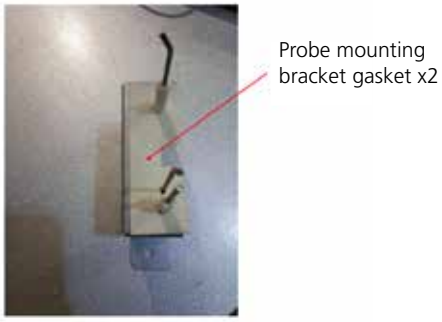
3.5±0.5 mm gap between probes

Angle of probe = 20°

9. To replace the probe, unscrew the 7mm nut to release the probe from the bracket and change.



10. Check condition of probe bracket gasket and replace if necessary.

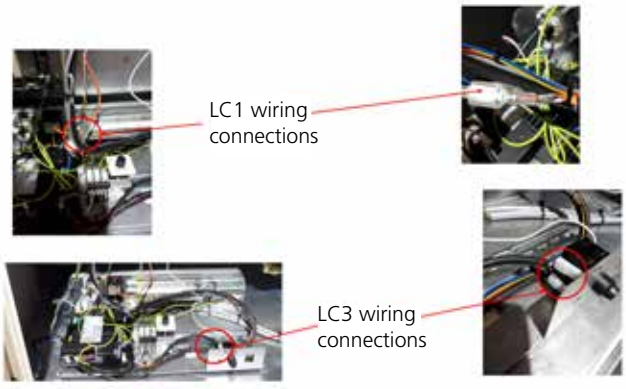


11. Refit all parts in reverse order.

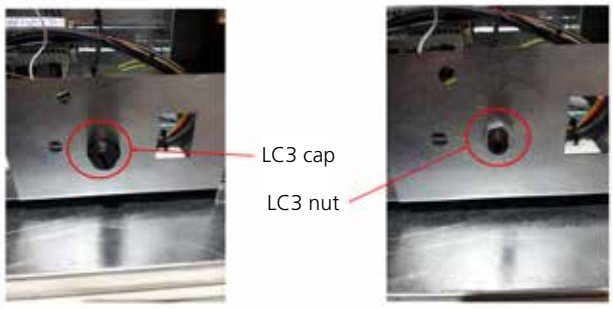
12. Follow start up and commissioning procedure.

Replacement of LC1 and LC3 safety thermostats

1. Disconnect LC1 and LC3 electrical connectors.



2. Remove LC3 protective cap and lock nut.



3. Unscrew the 3 fixings from the mounting bracket.

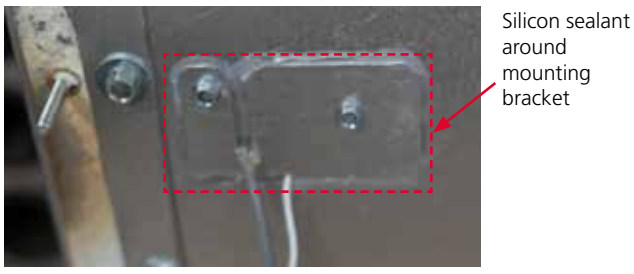
4. Withdraw mounting bracket from heater.

5. The thermostats can now be removed from the mounting bracket.

6. Replace one or both thermostats as needed. Ensure sensor is pushed up to the return at the end of the bracket and secured in place with the retaining clips. Replace clips if necessary. Ensure thermostat is held tightly by the retention clips. It may be necessary to close the clips with pliers before fitting the thermostat.

7. Refit all parts in reverse order. Press LC3 button to reset thermostat.

8. Seal gaps around thermostat mounting bracket with silicone sealant to maintain the integrity of the burner compartment.



9. Follow start up and commissioning procedure.

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Replacement of ignition controller

1. Disconnect all electrical connections.
2. Unscrew fixings located in the corners of the controller.
3. Remove program key and refit into new controller.
4. Fix new controller to electrical panel and reattach all wiring.
5. Follow start up and commissioning procedure.

MS

Replacement of ignition transformer

1. Disconnect all electrical connections.
2. Unscrew fixings and remove transformer.
3. Refit in reverse order.
4. Follow start up and commissioning procedure.

Replacement of lockout circuit board

1. Disconnect all electrical connections.
2. Pinch circuit board retention clips to release.
3. Refit in reverse order.
4. Follow start up and commissioning procedure.

Replacement of fan relay

1. Disconnect all electrical connections, including blanking connector.
2. Unscrew fixings and remove relay.
3. Refit in reverse order, ensuring blanking connector is fitted to the normally closed terminal.
4. Follow start up and commissioning procedure.

Replacement of air circulation fan

1. Remove electrical terminal cover and disconnect cables.
2. Loosen cable gland and retract cable.
3. Disconnect flexible duct between fan inlet and appliance case.
4. Unscrew fixings securing fan to base of appliance.
5. The fan can now be removed from the unit. For safety reasons it is recommended to wear gloves when handling the fan.
6. Replace in reverse order.
7. Follow start up and commissioning procedure.

Flue and combustion air

Check the complete system at least once a year. The inspection should include all joints, seams, concentric adapters and the flue terminal cap. Replace any defective or heavily corroded parts.

Flue condensate drainage trap

Ensure the flue condensate pipework drainage trap is full of water. Access to the trap can be gained by removing the flue then topping up the trap via the flue outlet opening.

Fan motor and fan maintenance

The fan motor is equipped with thermal overload protection of the automatic reset type.

Should the motor fail to run, it may be because of improper voltage characteristics. Make certain that the correct voltage is available at the motor.

Remove dirt and grease from the motor, the fan guard and the fan blades. Use care when cleaning the fan blades to prevent causing misalignment or imbalance.

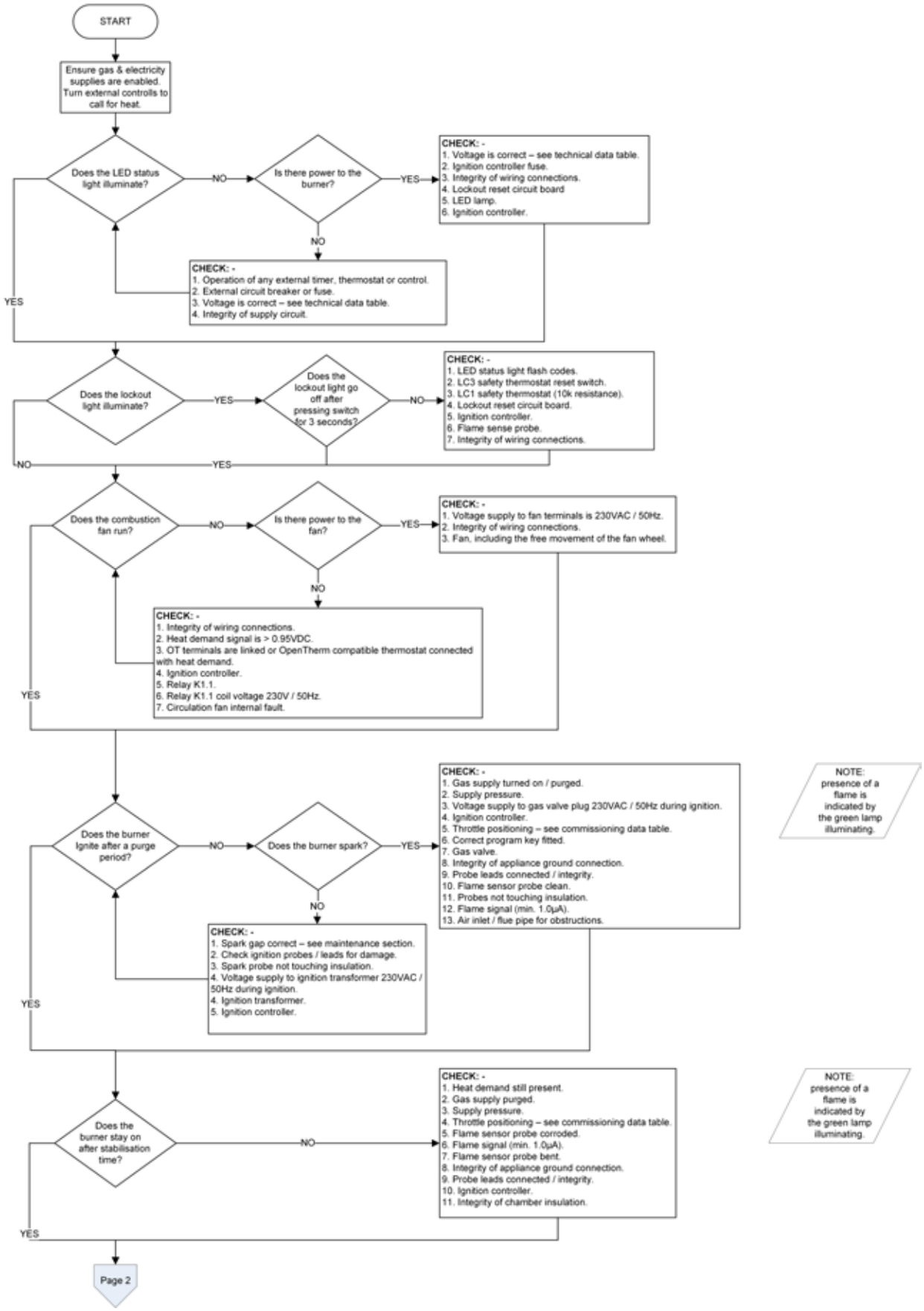
Unit operation

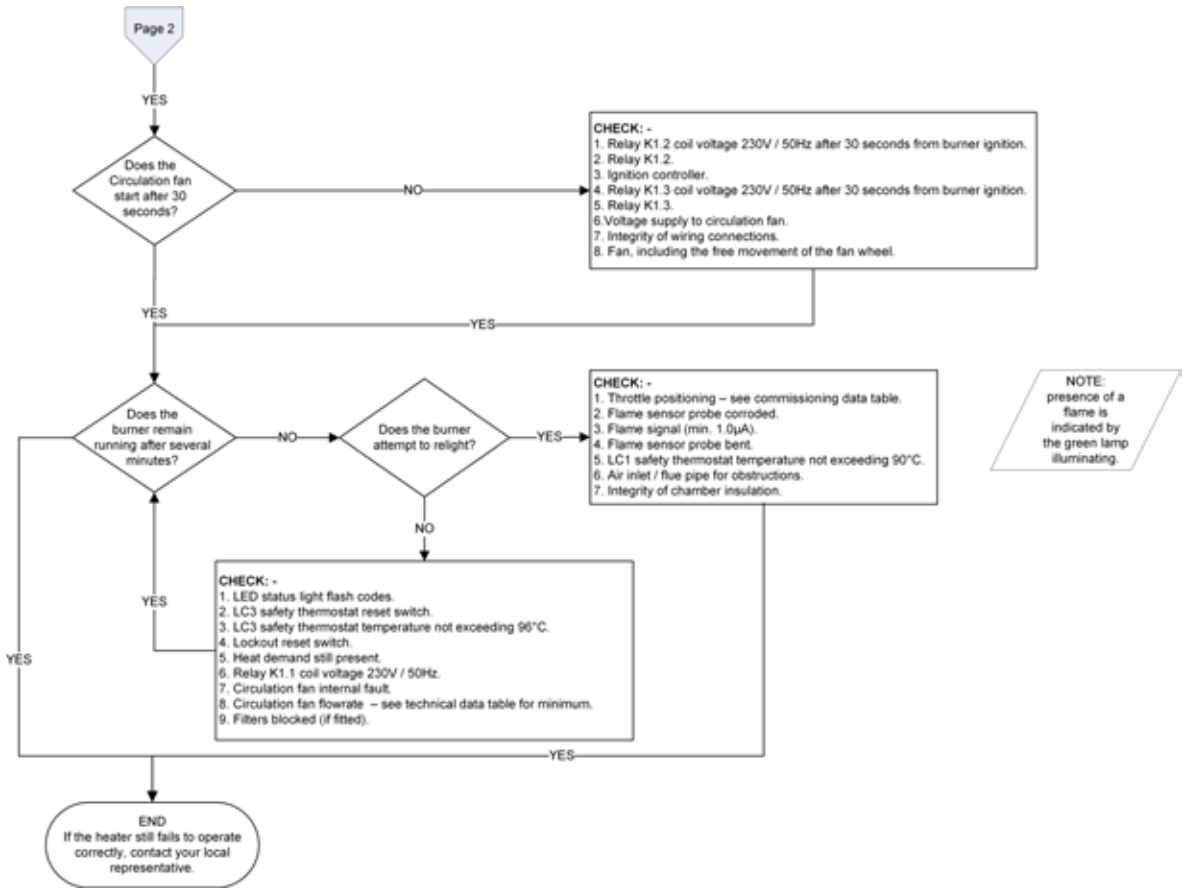
The combustion and correct operation of the appliance should be verified as a part of the normal service routine. Follow the steps in the start up and commissioning procedures to verify.

MS

Fault Finding

FF




Page 2
YES
Does the Circulation fan start after 30 seconds?
NO
CHECK: -
1. Relay K1.2 coil voltage 230V / 50Hz after 30 seconds from burner ignition.
2. Relay K1.2.
3. Ignition controller.
4. Relay K1.3 coil voltage 230V / 50Hz after 30 seconds from burner ignition.
5. Relay K1.3.
6.Voltage supply to circulation fan.
7. Integrity of wiring connections.
8. Fan, including the free movement of the fan wheel.
YES
YES
Does the burner remain running after several minutes?
NO
Does the burner attempt to relight?
YES
CHECK: -
1. Throttle positioning – see commissioning data table.
2. Flame sensor probe corroded.
3. Flame signal (min. 1.0µA).
4. Flame sensor probe bent.
5. LC1 safety thermostat temperature not exceeding 90°C.
6. Air inlet / flue pipe for obstructions.
7. Integrity of chamber insulation.
NOTE: presence of a flame is indicated by the green lamp illuminating.
NO
YES
CHECK: -
1. LED status light flash codes.
2. LC3 safety thermostat reset switch.
3. LC3 safety thermostat temperature not exceeding 96°C.
4. Lockout reset switch.
5. Heat demand still present.
6. Relay K1.1 coil voltage 230V / 50Hz.
7. Circulation fan internal fault.
8. Circulation fan flowrate – see technical data table for minimum.
9. Filters blocked (if fitted).
YES
YES
END
If the heater still fails to operate correctly, contact your local representative.

FF

Spare Parts

Description	Part Number	Application
Ignition controller	1031685	All
Program key	1031715	025
Program key	1031716	035
Program key	1031717	045
Program key	1031718	055
Program key	1031720	070
Program key	1031721	100
Ignition transformer	1030638	All
Spark probe with lead	1030466	All
Flame sense probe with lead	1030467	All
Probe mounting bracket gasket 2 required	1030619	All
Probe access panel gasket		All
Gas Valve with o-ring and 3x fixing screws	03-25800	025-055
Gas Valve with o-ring and 3x fixing screws	03-25801	070
Gas Valve with 2x o-ring and 4x fixing screws	1030499	100
Gas valve flange with o-ring and 4x fixing screws	03-25137	025-070
Gas valve flange with o-ring and 4x fixing screws	03-24976-02	100
Gas valve lead	1030864	All
Venturi with gasket and 2x fixing screws	03-25700-053	025
Venturi with gasket and 2x fixing screws	03-25700-002	035
Venturi with gasket and 2x fixing screws	03-25700-001	045
Venturi with gasket and 2x fixing screws	03-25700-051	055 & 070
Venturi with 6x fixing screws	1030764	100
Venturi to combustion fan o-ring seal	1031567	100
Combustion fan	1030413	025
Combustion fan	1030139	035-070
Combustion fan	1030565	100
Combustion fan outlet gasket	1026946	025-070
Combustion fan mounting bracket gasket	1026947	025-070
Fan to burner gasket	1030566	100
Chamber insulation	1030628	025
Chamber insulation	1030350	035
Chamber insulation	1030315	045
Chamber insulation	1026991	055
Chamber insulation	1030457	070
Chamber insulation	1030292	100
Tube insert insulation	1030374	All
LC3 safety thermostat	03-24959	All
LC1 safety thermostat	05-25167-5050	All
LC1 & LC3 retention clip (3 required)	06-01849-5014	All
Lockout reset circuit board	03-25327-01	All
Circuit board spacer (4 required)	06-25940-2710	All
Lockout reset switch	60-61998	All
LED lamp	60-61997	All
Green lamp	28-50-038	All
Relay	28-25-029	All
Burner wiring harness	1031792	All
Premix burner	1030630	025
Premix burner	1030352	035

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Description	Part Number	Application
Premix burner	1030327	045
Premix burner	1030135	055
Premix burner	1030446	070
Premix burner	1030280	100
Burner gasket strip		
Panel air filter	60-61038-395496	See table below
Panel air filter	60-61038-496624	
Bag filter	TBC	TBC
Anti-vibration dampers (4 per plug fan)	60-52002	All
Flexible air intake	60-52003-02	025 & 035
Flexible air intake		045
Flexible air intake	60-52003-01	055 & 070
Flexible air intake		100
EC plug fan 1 x 230V		025
EC plug fan 1 x 230V		035
EC plug fan 3 x 400V	60-52024	025
EC plug fan 3 x 400V	60-52025	035
EC plug fan 3 x 400V	1031931	045
EC plug fan 3 x 400V	60-52007	055
EC plug fan 3 x 400V	60-52027	070
EC plug fan 3 x 400V	1023630	100
Potentiometer 10kΩ	60-52030	All
AM Modbus module	60-52007-01	All

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Optional air filters

PREEVA Neos indoor and outdoor units have an optional facility for air intake filters. Standard racks are provided to accommodate 50mm nominal thickness filter elements. Unless otherwise specified, filters supplied will be expendable type synthetic pleated elements. The sizes and quantities required to suit individual appliances are listed in the table below.

PRN-I PRN-E	Filter Dimensions			Part Number
	Qty Required	Length (mm)	Width (mm)	
025	4	496	395	60-61038 395496
035	4	496	395	60-61038 395496
045	4	496	395	60-61038 395496
055	6	496	395	60-61038 395496
070	6	496	395	60-61038 395496
100	4	496	395	60-61038 395496
	2	624	496	60-61038 496624

Model			**PREEVA Neos**					
Item	Symbol	Units	PRN025-I	PRN035-I	PRN045-I	PRN055-I	PRN070-I	PRN100-I
Type of Fuel	-	-	Natural Gas G20					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	33.8	42.6	53.6	70.7	99.1
Minimum Capacity	Pmin	kW	9.7	12.7	15.9	19.9	26.4	39.1
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.1	82.6	82.5	82.6	82.2	83.3
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	88.4	88.4	88.0	87.8	87.8	88.1
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.00
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.00
Emissions of Nitrogen Oxides (Input Energy (GCV)	NOx	mg/kWh	65	65	68	56	63	66
Emission Efficiency	$\eta_{s, flow}$	%	93.8	93.7	93.5	93.7	93.7	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	81.4	81.3	80.9	80.9	80.8	81.4
Thermal Efficiency at Rated Heating Capacity (NCV)	η	%	91.2	91.6	91.7	91.7	91.2	92.5

Model			**Preeva Neos**					
Item	Symbol	Units	PRN025-I	PRN035-I	PRN045-I	PRN055-I	PRN070-I	PRN100-I
Type of Fuel	-	-	Natural Gas G25					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	34.0	42.4	53.6	70.3	99.1
Minimum Capacity	Pmin	kW	9.7	12.7	15.8	19.8	26.2	39.1
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.0	82.8	82.2	82.7	81.8	83.2
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	87.8	88.4	87.7	87.5	87.1	88.1
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.0
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.0
Emissions of Nitrogen Oxides (Input Energy (GCV)	NOx	mg/kWh	58	69	67	63	59	52
Emission Efficiency	$\eta_{s, flow}$	%	93.9	93.7	93.5	93.7	93.8	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	80.9	81.3	80.5	80.7	80.3	81.4
Thermal Efficiency at Rated Heating Capacity (NCV)	η	%	91.0	92.0	91.3	91.8	90.8	92.4

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ErP Table - Internal Units - G25.3

Model			Preeva Neos					
Item	Symbol	Units	PRN025-I	PRN035-I	PRN045-I	PRN055-I	PRN070-I	PRN100-I
Type of Fuel	-	-	Natural Gas G25.3					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	33.8	42.5	53.5	70.5	98.8
Minimum Capacity	Pmin	kW	9.6	12.7	15.9	19.9	26.4	39.0
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.1	82.4	82.4	82.5	82.0	83.1
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	87.7	88.4	87.9	87.5	87.6	87.9
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.0
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.0
Emissions of Nitrogen Oxides (Input Energy (GCV)	NOx	mg/kWh	68	69	68	66	65	65
Emission Efficiency	$\eta_{s, flow}$	%	93.9	93.7	93.5	93.7	93.7	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	80.9	81.2	80.6	80.7	80.6	81.2
Thermal Efficiency at Rated Heating Capacity (NCV)	η	%	91.1	91.5	91.5	91.6	91.0	92.2

Model			**PREEVA Neos**					
Item	Symbol	Units	PRN025-E	PRN035-E	-PRN045-E	PRN055-E	PRN070-E	PRN100-E
Type of Fuel	-	-	Natural Gas G20					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	33.8	42.6	53.6	70.7	99.1
Minimum Capacity	Pmin	kW	9.7	12.7	15.9	19.9	26.4	39.1
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.1	82.6	82.5	82.6	82.2	83.3
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	88.4	88.4	88.0	87.8	87.8	88.1
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.0
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.0
Emissions of Nitrogen Oxides (Input Energy GCV)	NOx	mg/kWh	65	65	68	56	63	66
Emission Efficiency	$\eta_{s, flow}$	%	93.8	93.7	93.5	93.7	93.7	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	81.0	80.9	80.4	80.5	80.4	81.0
Thermal Efficiency at Rated Heating Capacity	η	%	91.2	91.6	91.6	91.7	91.2	92.5

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ErP Table - External Units - G25

Model			**Preeva Neos**					
Item	Symbol	Units	PRN025-E	PRN035-E	-PRN045-E	PRN055-E	PRN070-E	PRN100-E
Type of Fuel	-	-	Natural Gas G25					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	34.0	42.4	53.6	70.3	99.1
Minimum Capacity	Pmin	kW	9.7	12.7	15.8	19.8	26.2	39.1
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.0	82.8	82.2	82.7	81.8	83.2
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	87.8	88.4	87.7	87.5	87.1	88.1
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.0
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.0
Emissions of Nitrogen Oxides (Input Energy (GCV)	NOx	mg/kWh	58	69	67	63	59	52
Emission Efficiency	$\eta_{s, flow}$	%	93.9	93.7	93.5	93.7	93.8	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	80.5	81.0	80.1	80.3	79.9	81.0
Thermal Efficiency at Rated Heating Capacity (NCV	η	%	91.0	92.0	91.3	91.8	90.8	92.4

Model			**PREEVA Neos**					
Item	Symbol	Units	PRN025-E	PRN035-E	-PRN045-E	PRN055-E	PRN070-E	PRN100-E
Type of Fuel	-	-	Natural Gas G25.3					
Capacity								
Rated Heating Capacity	Pnom	kW	26.6	33.8	42.5	53.5	70.5	98.8
Minimum Capacity	Pmin	kW	9.6	12.7	15.9	19.9	26.4	39.0
Electrical Power Consumption								
At Rated Heating Capacity	elmax	kW	0.055	0.079	0.087	0.066	0.129	0.192
At Minimal Capacity	elmin	kW	0.014	0.013	0.018	0.020	0.024	0.025
In Standby Mode	elsb	kW	0.005	0.005	0.005	0.005	0.005	0.005
Useful Efficiency								
Useful Efficiency at Rated Heating Capacity	$\eta_{th, nom}$	%	82.1	82.4	82.4	82.5	82.0	83.1
Useful Efficiency at Minimum Capacity	$\eta_{th,min}$	%	87.7	88.4	87.9	87.5	87.6	87.9
Other Items								
Envelope Loss Factor	Fenv	%	0.0	0.0	0.0	0.0	0.0	0.0
Flame Consumption	Pign	kW	0.0	0.0	0.0	0.0	0.0	0.0
Emissions of Nitrogen Oxides (Input Energy GCV)	NOx	mg/kWh	68	69	68	66	65	65
Emission Efficiency	$\eta_{s, flow}$	%	93.9	93.7	93.5	93.7	93.7	94.0
ErP Seasonal Space Heating Energy Efficiency	η_s	%	80.5	80.9	80.3	80.3	80.2	80.8
Thermal Efficiency at Rated Heating Capacity	η	%	91.1	91.5	91.5	91.6	91.0	92.2

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Notes

Notes

This document replaces the previous Manual Part No. Reznor, PREEVA Neos, Installation Manual, EN 2022-03, D301315 Iss 2
Current full Part No. **Reznor,** PREEVA Neos, Installation Manual, EN 2022-06, D301315 Iss 3

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