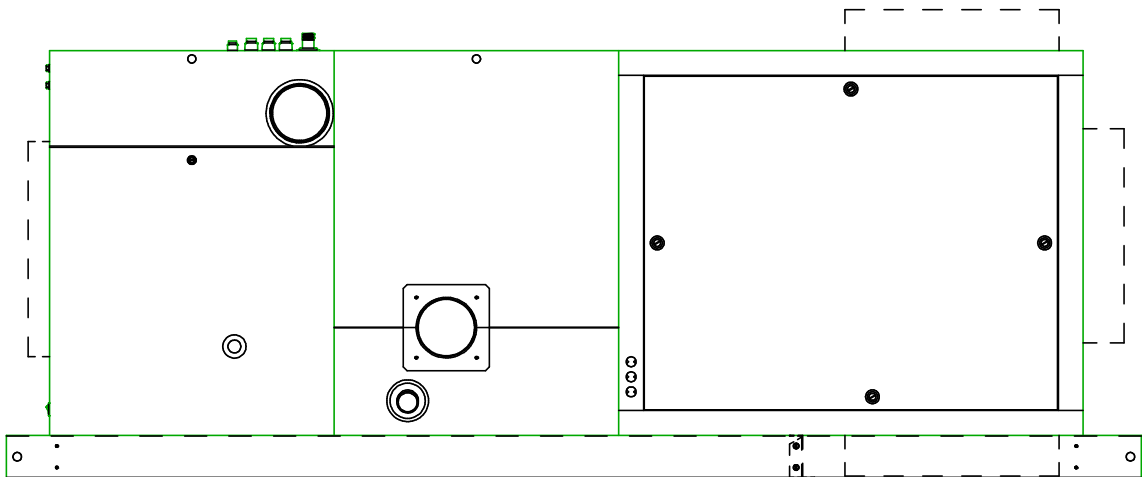


GAS FIRED AIR HEATERS TYPE EURO-H 30000 E

Centrifugal Fanned, Forced Convection, Condensing High Efficiency
Air Heaters with Automatic Ignition & Fanned Flues for use as:
Type B22 - C12 - C32 Appliances
Principally for use as fully ducted air heaters

INSTALLATION, COMMISSIONING, SERVICING & USER INSTRUCTIONS



These appliances meet the following EC directives:

Dir. CE 90/396/EEC: GAD

Dir. CE 89/336/EEC: EMC

Dir. CE 89/392/EEC: MD

Dir. CE 73/23/EEC: LVD

PLEASE READ THIS DOCUMENT CAREFULLY BEFORE COMMENCING INSTALLATION AND LEAVE IT WITH THE USER OR ATTACHED TO THE APPLIANCE OR GAS SERVICE AFTER INSTALLATION

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If optional equipment was ordered and supplied with this air heater, please refer to additional instructions for option(s).

SECTION 1. GENERAL

- | | | | |
|-----|---|---|---|
| 1.1 | Before installation, check that 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. | The Installation must also be in accordance with the relevant requirements of "The Gas Safety (Installation and Use regulations) and (Amendment Regulations 1990)" and The "Building" and "Electrical Regulations" (in GB the IEE Regulations). | |
| 1.2 | After unpacking the appliance, leave it fastened to any base packing for transportation until it has been suspended or until just before base mounting. This affords protection to the underside which is normally exposed to view after installation. | The requirements of the "Local Building Standards Office", the local water services department responsible for the disposal of effluent, the premises "Insurance" undertaking and the "Fire Office" must also be observed. | |
| 1.3 | Please read this document before commencing installation. | 1.7 | Unauthorized modification of this appliance or departure from use in the manner for which it was intended by the manufacturer or installation in a manner contrary to these instructions, may constitute a hazard and jeopardize all warranties. Deviations may only be carried out after formal consent has been obtained from the manufacturer. |
| 1.4 | These instructions are only valid for the country of use indicated on the appliance i.e. GB - IE. If these symbols are not shown, it is necessary to obtain appropriate technical instructions which will provide information concerning the necessary modification of the appliance for the conditions of use in the country concerned. Such instructions may be obtained upon request from your supplier. | 1.8 | Ensure the environment in which the air heater will be installed will not create a hazard i.e. where excessive (volatile) dust, flammable or corrosive substances and/or vapours and combustible materials may be present. |
| 1.5 | Check that the local distribution conditions of electricity supply, type of gas and pressure, and adjustment of the appliance are compatible. | 1.9 | This appliance has been tested, and set according to the data plate before leaving the factory. |
| 1.6 | When installed in Great Britain the total installation must comply with the requirements and recommendations of British Standard BS 6230 1991. "Installation of Gas Fired Forced Convection Air Heaters for Commercial and Industrial Space Heating". | | |

SECTION 2. TECHNICAL DATA

Table 1. Appliance Data

Standard model Type EURO-H 30000 E			30067 E	30087 E	30107 E
Model with Low NO _x option EURO-H 35000 E			35067 E	35087 E	35107 E
Gas category 'Cat.'			II _{2H3+}		
Air supply and flue type			B22 - C12 - C32		
Heat input (Hs) 'Qn'	kW		64,4	89,1	115,5
Heat input (Hi) 'Qn'	kW		58,0	80,2	104,0
Heat output normal rate 100%	kW		60,0	83,0	107,0
Heat output low fire rate 50%	kW		30,0	42,0	54,0
Number of jets			9	12	16
Jet size	natural gas	i mm	2,4		
	propane/butane	i mm	1,35		
Gas supply pressure 'P' ¹	natural gas	mbar	17,5 GB - 20,0 IE		
	propane	mbar	37		
	butane	mbar	28		
Burner pressure ²	natural gas	mbar	8,50	9,30	8,80
Gas consumption	natural gas ³	m ³ /h	6,15	8,50	11,02
	propane	kg/h	4,60	6,36	8,25
	butane	kg/h	4,70	6,50	8,43
Gas service connection (not supply line size)			Rc ³ / ₄		
Air volume ⁴	minimum ⁵	m ³ /h	4380 *	6060	7810
	maximum	m ³ /h	7500 *	9000	1200
Fan motor rating	minimum	kW	0,37	0,55	0,75
	maximum	kW	3,0	3,0	3,0
Electrical supply	0,18 - 0,37 kW : 230/240 V 1N ~ 50 Hz 0,55 - 3,00 kW : 400/415 V 3N ~ 50 Hz				
Protection grade	IP 20				
*Total electric rating ⁶	kW	= Motor rating plus 0,15 kW			
Volume of condensation produced to be drained (max)	ltr/h	3,5	4,0	6,0	
Appliance weight net ⁷	" kg	328	406	480	
Appliance weight gross (shipping) ⁷	" kg	348	431	509	

1 Maximum gas pressure at inlet to appliance = 50,0 mbar

2 All casing panels fitted, service door open

3 Natural gas G20, calorific heating value 10,48 kWh/m³ on Hs @ 15EC & 1013 mbar

Propane G31, calorific heating value 14,0 kWh/kg. Butane G30, calorific heating value 13,7 kWh/kg

4 Isothermic condition (20 EC)

5 Minimum volume to limit ΔT to maximum 40 EC. For higher values consult Reznor Technical Department

6 Total electrical rating during the start-up period " 30 seconds is increased by 130 W and is not included on the appliance data plate or in the above table

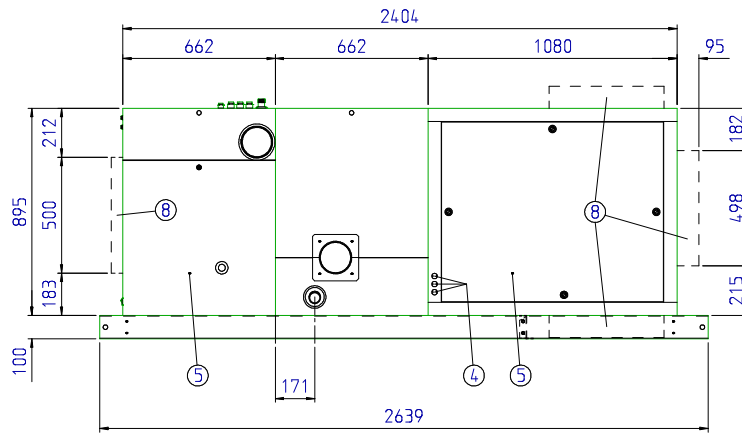
7 Dependant upon options and motors fitted.

NOTE: Selection of motors and drives and resultant noise criteria can be specified within the range given. Consult separate document Reznor reference: FANCOOO49607.

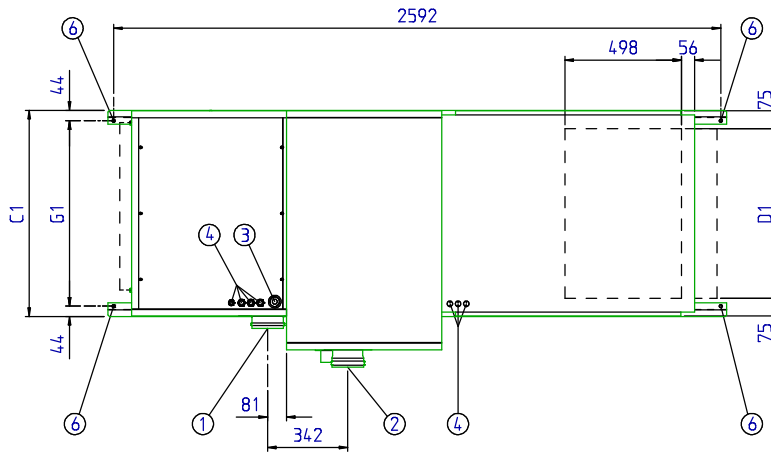
* For this model when making selection from FANCOOO49607 use line C as base for assessing static pressure (Pa), **add** values below line C and if appropriate values for filters resistance below line B, above line C.

Figure 1.

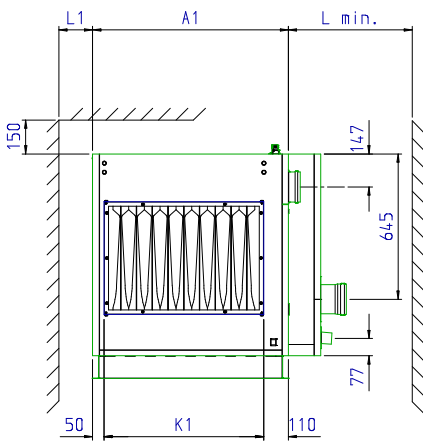
DIMENSIONS



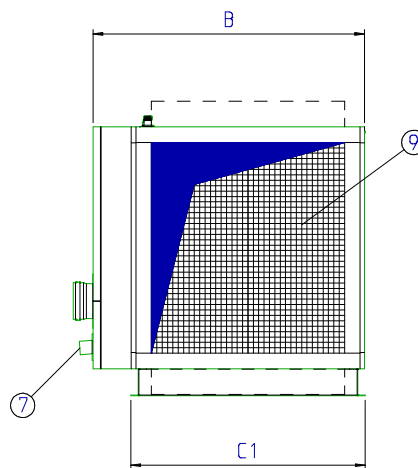
Left hand side controls side



Plan



Front view



Rear view

Legend:

- | | |
|-----------------------------------|------------------------------------|
| 1. Combustion air inlet socket | 6. Suspension points in base frame |
| 2. Flue gas socket | 7. Condensation drain connection |
| 3. Gas service connection | 8. Damper connection spigots |
| 4. Electrical & controls inlets | 9. Air intake protection grille |
| 5. Burner & controls access panel | |

Table 2

Dimensions reference figure 1.

Model	30067 E	30087 E	30107 E
Dimension	35067 E	35087 E	35107 E
A1 Width overall	870	1080	1360
B Cabinet width overall	1013	1223	1503
C1 With of base frame overall	874	1084	1364
D1 Width of duct flange overall	720	930	1210
G1 Width of suspension points (holes i 13.0 mm)	786	996	1276
K1 Width of outlet duct spigot overall	710	920	1200
L1 Opposite side clearance	150	300	300
L minimum	900	1100	1400
Key 9 Rear opening width x height 780 mm	728	938	1218
Condensation drain	i 1½" ID - 41 mm OD		
Flue & Combustion air socket i internal	130		

SECTION 3 INSTALLING

3.1 **IMPORTANT** Reznor EURO-H 30000 series air heaters are high efficiency appliances designed to extract part of the latent heat from the products of combustion. The condensation so formed is collected within the appliance and directed to a drainage point from which it must be piped away as part of the installation. Provision for connection to standard sanitary plumbing materials has been made, nominal size 1½" ID - 41 mm OD. The approximate volume of condensation for drainage purposes is given in table 1.

It should be noted that the products of combustion will be acidic. The level of concentration dependant upon the environment where the appliance is installed and may be as high as PH 3,0

Copper or copper based alloys must not be used for condensate drains.

- 3.2 Figure 3 shows the clearances necessary to ensure safety from combustibles and for service access.
- 3.3 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. flue system.
- 3.4 The location where the air heater is to be installed, must provide sufficient space around the heater for servicing and clearances for safety.
- 3.5 Ensure that the air heater is installed in a level plain.
- 3.6 Base mounting is optional The air heater must be fastened securely to any base mounting arrangement.
- 3.7 4 suspension points with holes i 13 mm are

provided in the base frame of the appliance.

- 3.8 After suspension, the air heater should be rigid so as to avoid placing a strain on the flue system, condensate drain, gas services and electrical wiring.
- 3.9 Figure 2 shows methods to be avoided when mechanically handling the appliances. Please observe these guidelines.
- 3.10 **DUCT CONNECTIONS**
The Euro-H 30000 E series air heaters 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.
- 3.11 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 shut-down of the burner due to over heating.

Figure 2. TRANSPORTING AND HANDLING THE EURO-H 30000 AIR HEATER

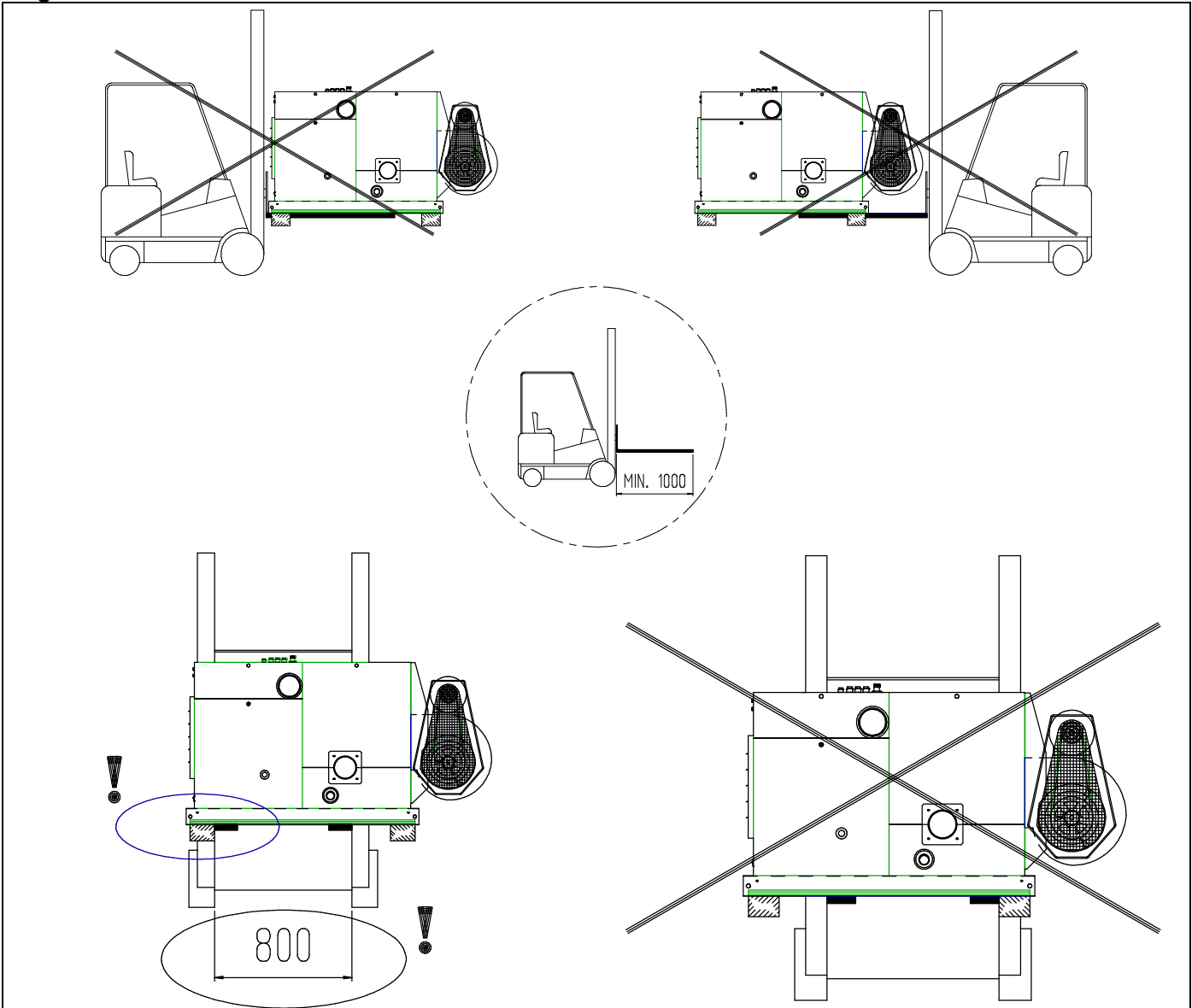


Figure 3. CLEARANCES, SERVICING & COMBUSTIBLES

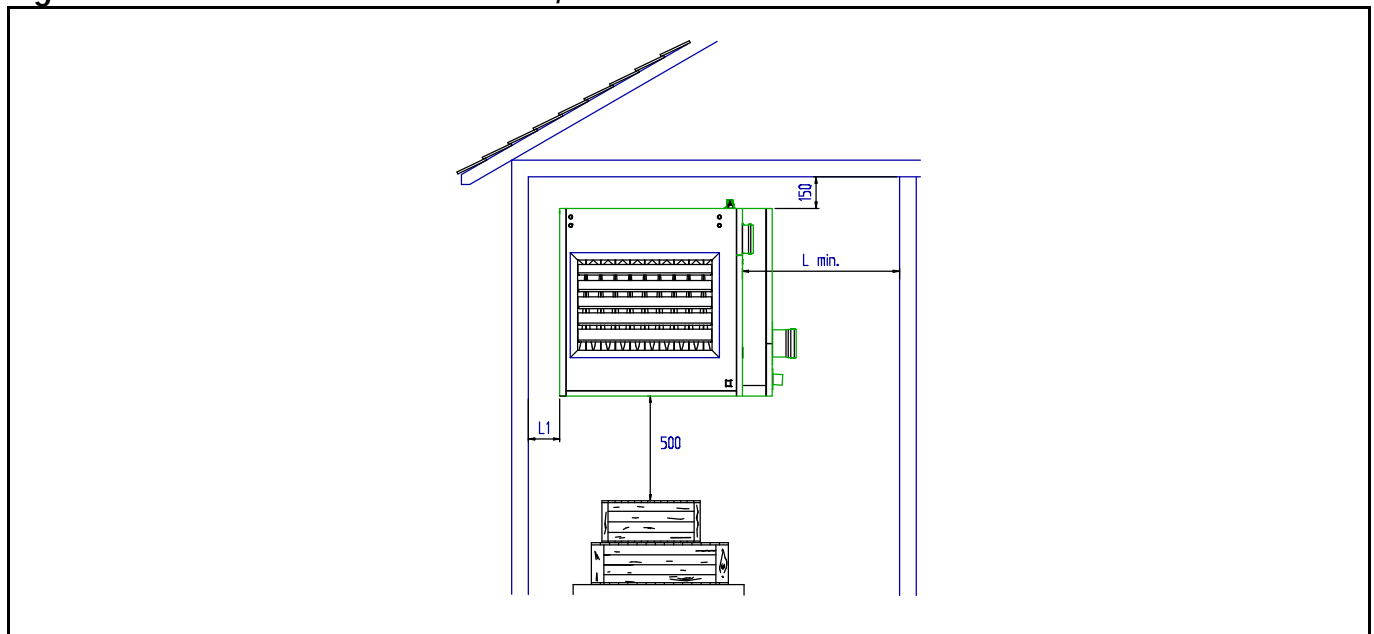
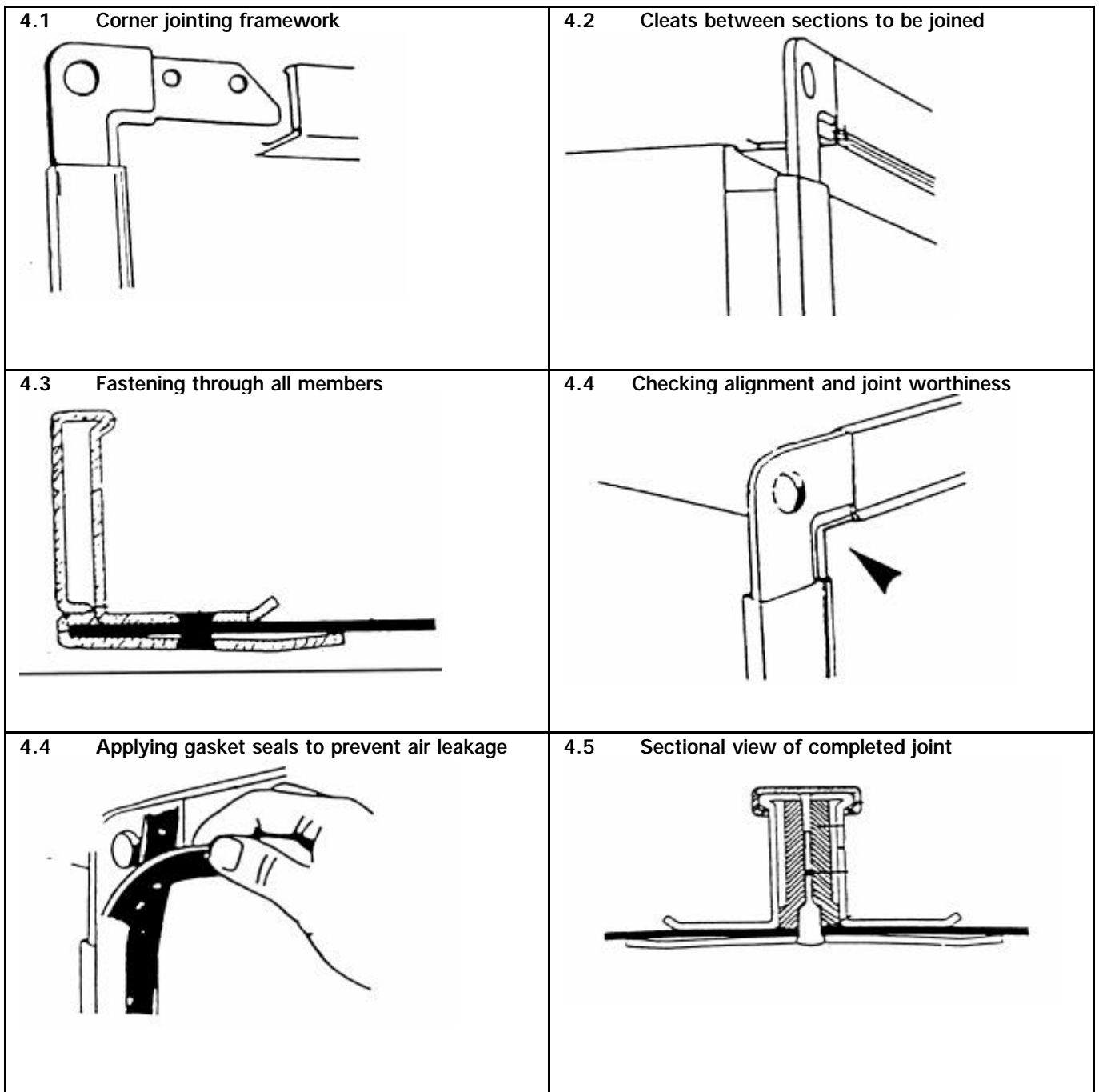


Table 3. DIMENSIONS Re: FIGURE 3

Model	30067 E	30087 E	30107 E
Dimensions	35067 E	35087 E	35107 E
L Minimum	900	1100	1400
L1 Opposite	150	300	300

Figure 4. Recommended procedure and method for connection of ductwork and transitions to the air heaters using a typical proprietary flange system.



Legend: Figure 4.

- 4.1 Cut and assemble flange frame to suit opening
- 4.2 Check dimensions and position on duct spigot
- 4.3 Ensuring flange is mated correctly before fastening
- 4.4 Checking location after positioning
- 4.5 Applying sealing gasket
- 4.6 Sectional view of completed joint

SECTION 4. COMBUSTION AIR SUPPLY AND FLUE SYSTEM

4.1 Flue systems must comply with national and local regulations.

4.2 The products of combustion must be flued to outdoor atmosphere. Common flues for more than one appliance must **NOT** be used.

4.3 Combustion air should be taken from out-door atmosphere, this improves the operational efficiency of the heating system.

4.4 Flues and combustion air ducts where connected to the air heater must incorporate a disconnect section adjacent to the appliance to facilitate removal of the venter assembly for servicing. The flue system must therefore, be supported independently.

4.5 Dimensions and allowances in suggested flue and combustion air intake arrangements are based upon the use of smooth wall aluminium flue and combustion air ducts and fittings.

4.6 **IMPORTANT:** The products of combustion from EURO-H 30000 series air heaters are laden with moisture some of which will condense out within the flue. Flues therefore, must be constructed from materials that can be installed without water leakage occurring. Reznor can supply seamless plastic gasket jointed flue systems.

Horizontal flue runs must rise away (1 E 17 mm per m) from the appliance to ensure that the condensation water returns to the appliance internal drain.

Heavy gauge aluminium flue pipes are recommended for use with condensing gas appliances.

4.7 Type C Appliances

4.7.1 When using a concentric termination arrangement as figure 5 & 5A, then only an approved system using Reznor specified components may be used. These items are manufactured from seamless aluminium with connection sockets fitted with silicone double edged seals, thus assuring, if the components are undamaged, leak free flue systems.

Important: This type of flue/combustion air intake system is regarded as an integral part of the air heater therefore, departure from this method of flue system is in breach of the EC Gas Appliance Directive.

4.7.2 Distance between the appliance and the concentric flue termination must not be greater than 10.0 m.

When calculating the total length the following equivalent data must be taken into account:

1 elbow @ 45E = 1 m.
1 elbow @ 90E = 1,5 m.

4.8 Type B Appliances

4.8.1 If the air heater is to be installed as a B type appliance i.e. air for combustion to be taken from within the space to be heated, as figure 6 then it must be ensured that an adequate air supply for combustion and ventilation is provided, in accordance with the regulations and rules in force.

4.8.2 A horizontal distance between air heater and flue terminal and any combustion air intake duct, must not be in excess of 16 m.

Note: 2 Meters of vertical rise negates the resistance imposed by 1 meter of horizontal run. Runs exceeding 16m may be subject to condensation forming within the flue.
Equivalent lengths of flue fittings:

Elbow @ 45E = 1 m.
Elbow @ 90E = 1,5 m.
Typical flue terminal # 3.0 m.

4.8.3 To ensure that the allowable resistance is not exceeded and water drainage is ensured in the case of horizontal runs of flues, a positive rise from the air heater of 1E i.e. 17 mm per metre is recommended.

4.8.4 Flue terminals from condensing gas appliances are prone to icing in cold conditions. The location of flue terminals should take into account the possible hazard of icicles forming and dropping from the flue terminal.

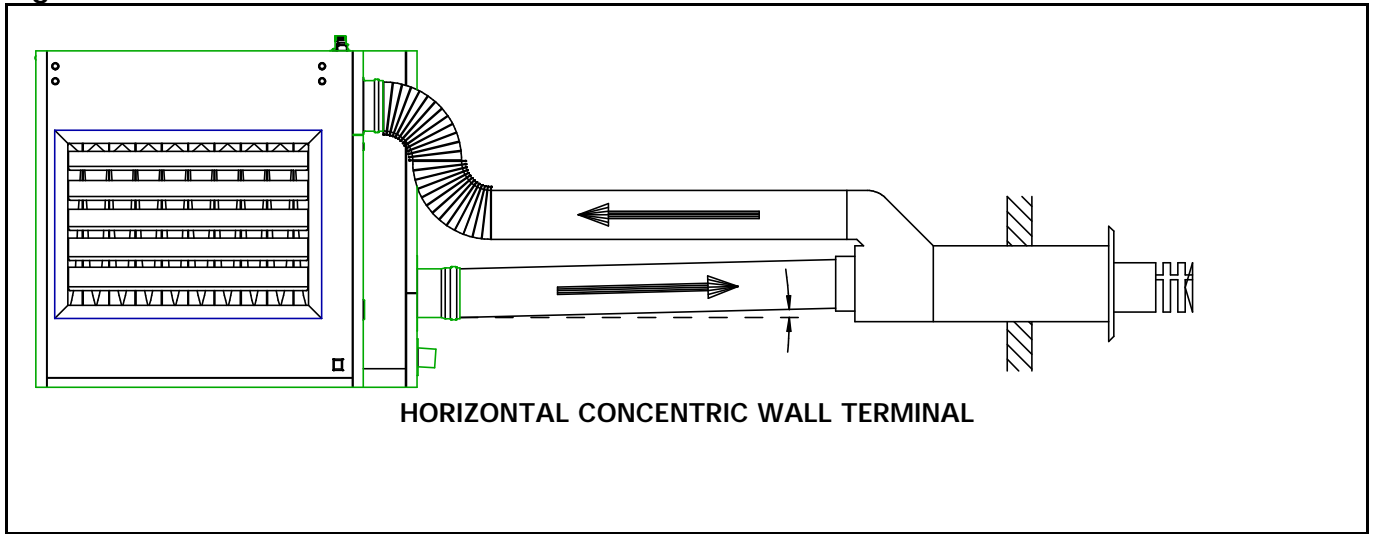
4.8.5 The terminal of a vertical flue must extend 1 m above a roof surface, flues must not terminate where combustion products might enter the building. Terminals must be fitted to flues and combustion air inlets.

NOTE: The combustion air inlet on the air heater, if not used must be protected with an appropriate access guard.

4.8.5 Where type B installations are installed where mechanical building ventilation is used, it shall be by mechanical inlet with either mechanical or natural extraction. Automatic means of control such as electrical interlocks must be provided. The function of other ventilation systems in the heated zone must be taken into account. At no time should a negative pressure environment exist in the zone where the appliance is installed, this can lead to a hazardous situation, whereby the air heater flue may act as a pressure relief.

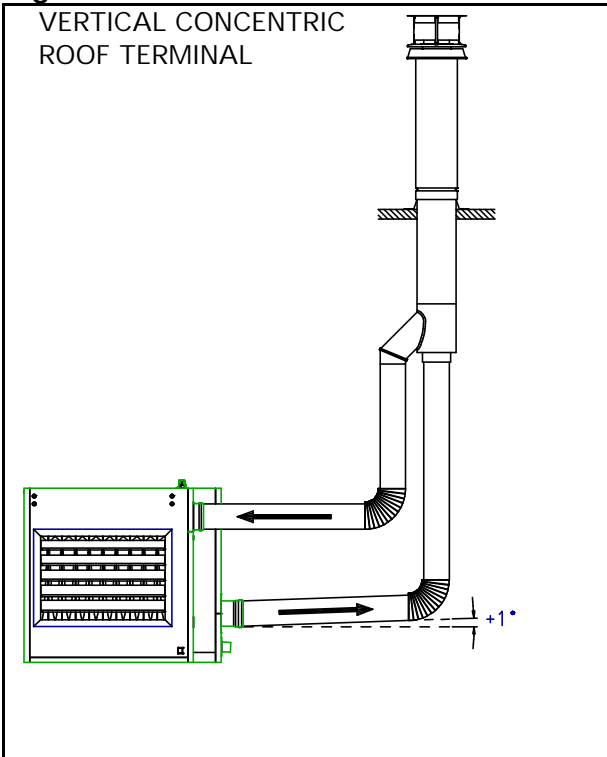
FLUE AND COMBUSTION AIR INTAKE ARRANGEMENTS

Figure 5. TYPE C APPLIANCES



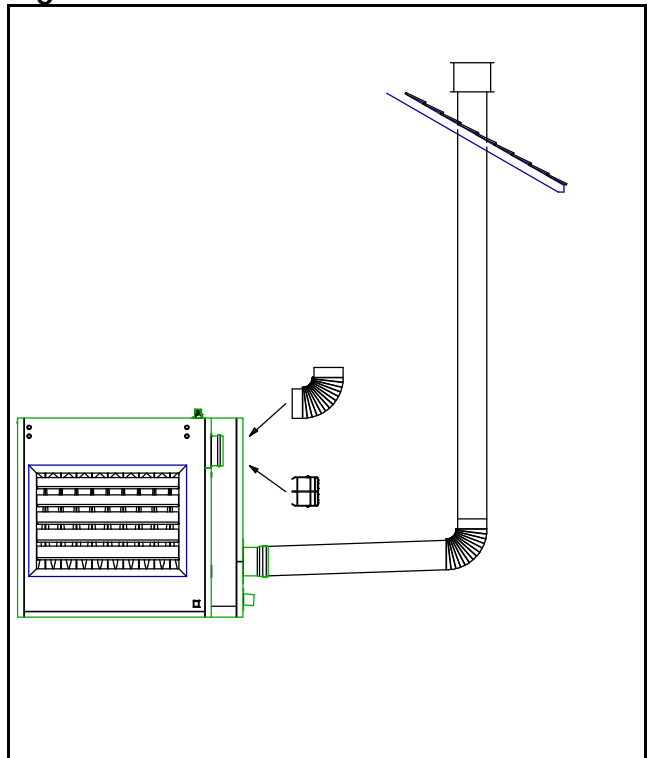
Mugro type 2000 or Burfix type 130 systems must be used on type C appliances (not icicle free)

Figure 5A. TYPE C APPLIANCES



Recommended: Mugro type 3000 i 130 mm icicle free
Alternative: Mugro type 2000 i 130 mm not icicle free
or Burfix type 130 not available icicle free

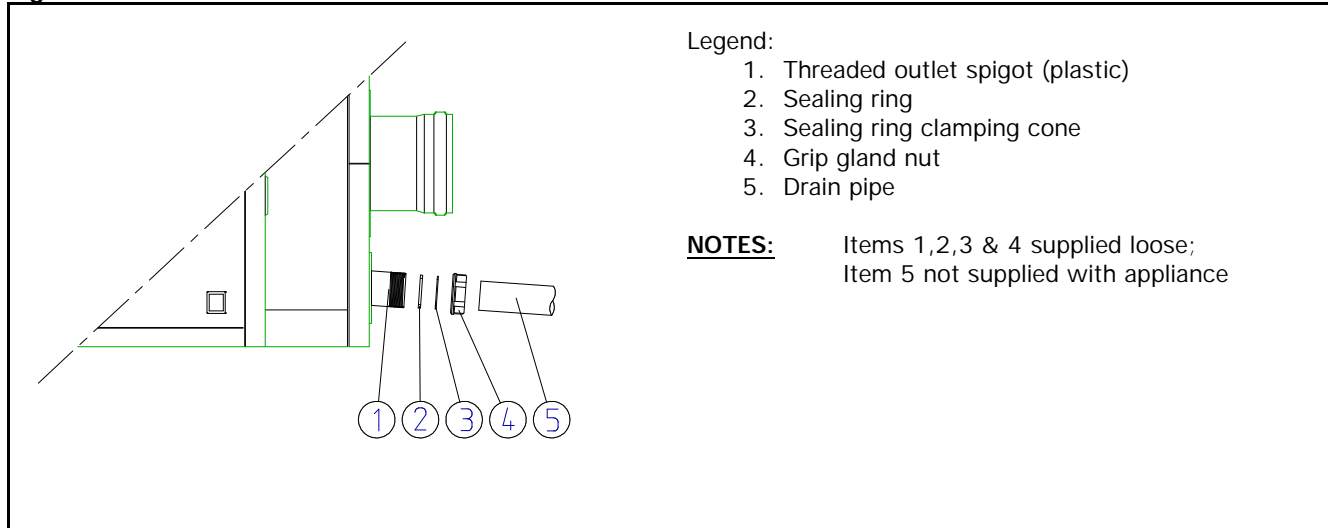
Figure 6. TYPE B APPLIANCES



NOTE: If combustion air intake duct is not fitted inlet socket must have a protection guard as shown. Icicle free terminals are available as an option.

Figure 7.

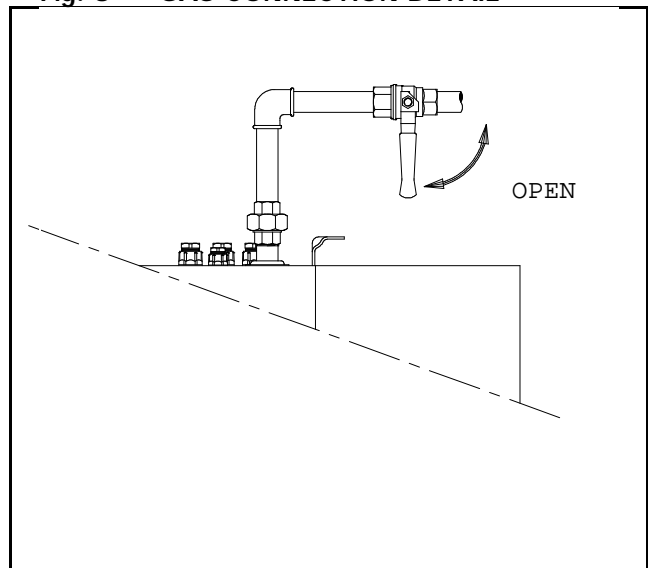
CONDENSATION DRAINAGE DETAILS



SECTION 5. GAS CONNECTION

- 5.1 Connection to a gas service may only be carried by suitably qualified persons. The gas installation must comply with the rules in force using materials appropriate for gas service installations.
- 5.2 Check that the gas category is in accordance with the data described on the air heater.
- 5.3 An adequate gas supply sized to provide the dynamic pressure for the volume required by the air heater(s) is essential to maintain the nominal heat input.
- 5.4 A 90E action gas service tap and, to facilitate servicing, a disconnect union fitting must be provided adjacent to the appliance, see fig. 8.
- 5.5 Ensure that a gas service includes a filter and has been tested and purged in accordance with prescribed practice prior to commissioning and taking the air heater into service.

Fig. 8 GAS CONNECTION DETAIL



WARNING: NEVER use a FLAME to test for GAS Soundness !!!

SECTION 6. ELECTRICAL CONNECTION

- 6.1 The Electrical installation may only be carried out by suitably qualified persons observing the rules in force.
- 6.2 Check that the electrical specification is in accordance with the specified data on the air heater. A unique appliance wiring diagram is supplied as a separate document attached to this one, plus an additional copy attached to the air heater.
- 6.3 These appliances **must** be earthed.
- 6.4 A separate key lockable electrical isolator for each heater must be provided adjacent to the appliance and in site of any person working on it. The isolator must have a contact separation of at least 3.0 mm on all poles.
- 6.5 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.
- 6.6 Ensure when planning the external appliance control circuitry, that power will be supplied at all times to the air heater, even when it is control switched in the 'heat-off' mode. This is necessary to ensure that the fan can operate independent of the heating control. Therefore, **Never** incorporate automatic controls that electrically isolate the appliance.
- 6.7 The centrifugal blowers fitted to Euro-H 30...E series air heaters are of the forward curved type therefore, the speed setting for the static pressure imposed by the air distribution system will govern the motor loading. All Euro-H 30... E air heaters leave the factory with the drives set to the specified conditions of the appliance. Table 4 provides the motor characteristics for the various sizes.
- 6.8 Refer to section 7 to learn how to carry out adjustments necessary to alter the fan speed and motor load factors.

Table 4 Maximum load ratings for 4 pole motors: Single phase

Motor rating	kW	0.18	0.25	0.37	0.55	0.75
Phase	~	1	1	1	1	1
Voltage	V	230	230	230	230	230
Load rating	A	2.3	2.3	2.8	3.9	4.7

Maximum load ratings for 4 pole motors: Three phase

Motor rating	kW	0,55		0,75		1,1		1,5		2,2		3,0	
Phase	~	3	3	3	3	3	3	3	3	3	3	3	3
Voltage	V	230	400	230	400	230	400	230	400	230	400	230	400
Load rating	A	2,4	1,4	3,1	1,8	4,5	2,6	5,0	2,9	9,0	5,2	12,1	7,0

NOTE:

EURO-H 30000 SERIES AIR HEATERS ARE SUPPLIED WITH EXTERNAL CONTROL CIRCUITS BRIDGED. THE AIR HEATERS WILL OPERATE CONTINUOUSLY UNLESS THESE ARE REMOVED AND TIME AND TEMPERATURE CONTROLS SUBSTITUTED FOR THEM

SECTION 7. COMMISSIONING, LIGHTING AND OPERATION

COMMISSIONING

7.1 Normally Reznor EURO-H air heaters do not require commissioning. Final testing after production ensures that: **If installation has been carried out strictly in accordance with this document**, the appliance is ready to be taken into service.

7.2 Checks to ensure;

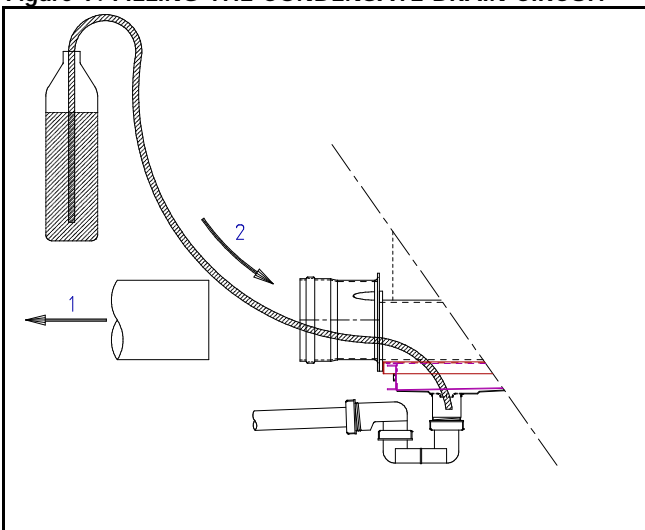
- earth continuity
- resistance to earth
- phase supply to correct terminals
- current rating and fuse value
- correct supply gas pressure
- correct burner gas pressure
- satisfactory & smooth ignition
- flue system is evacuating the products of combustion to outdoor atmosphere and are leak free
- that the condensation drain works satisfactorily
- that the motor load factor is correct
- that fan directional rotation is correct must be made.

7.3 Before commencing commissioning it is necessary to make the drain system airtight. A "bubble-pot" in the form of a drain trap is provided for this purpose, this must be filled with water before start-up of the burner.

To fill the trap; disconnect the flue at the appliance flue outlet connection and pour a minimum of 2 litres of clean water into the flue connection socket, see figure 9, re-connect the flue.

NOTE: The above action serves also to verify the worthiness of the condensate drain system.

Figure 9. FILLING THE CONDENSATE DRAIN CIRCUIT



Legend figure 9.

1. Disconnect flue pipe
2. Fill drain trap with **clean** water
- 7.4 **Drives general and adjustments**

7.4.1 The drive assembly of Euro-H 30... E air heaters is guard protected to class IP20. Adjustment may be necessary to set the fan duty for the static pressure and motor load requirements. It is necessary to remove the guards prior to making adjustments. Before commencing work on the fan assembly:

- Set external controls to off or their lowest setting.
- Turn **OFF** the gas supply to the air heater.
- Switch **OFF** the electricity supply to the air heater after the air circulating fan has stopped.
- Remove protection guards as necessary and carry out adjustments as appropriate.
- Before placing the appliance back into service or switching the fan on ensure that all protection guards are replaced and secured.

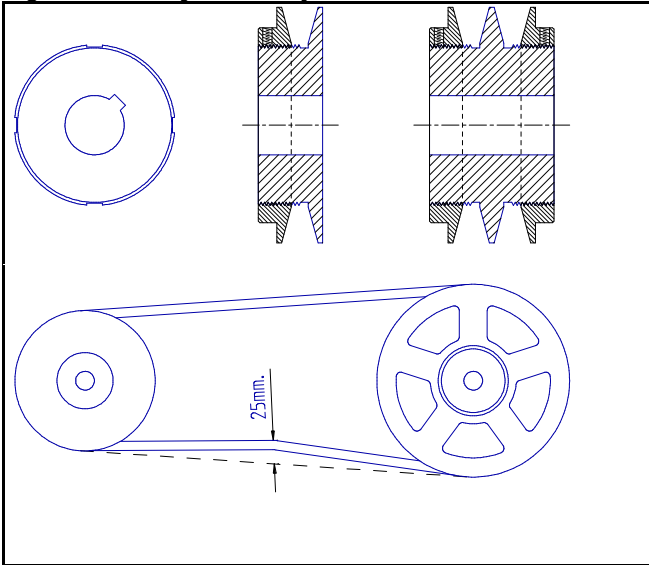
N.B. Rotational speed checks should be carried out using an infra red tachometer or stroboscope.

7.4.2 Adjusting the fan speed can be carried out by altering the diameter of the adjustable drive pulley.

- Loosen the belt tension adjustment device and remove the drive belt.
- Refer to figure 10 and note that the outer section of the drive pulley is secured by a hexagon socket grub screw to a flat on the pulley hub, this is positioned by loosening the grub screw sufficiently to enable the pulley to be either opened or closed by turning it on the thread on which it is engaged.
- It should be noted that one complete turn of the pulley half is equal to approximately 8% of the fan speed. Closing the pulley increases the speed and opening decreases the speed.
- after making speed adjustments tension belt in accordance with the dimensions given in figure 10 and check pulley alignment to ensure the belt runs correctly.

NB. Always ensure that the pulley is tightened onto a flat of the hub before switching on the fan, even when testing a reset condition.

Figure 10 Pulley & belt adjustment



7.4.3 Caution!

Opening the pulley too far will cause the belt to touch the bottom of the v groove resulting in greatly reduced belt life and loss of grip.

7.4.4 If the amount of adjustment is not achieved with the range obtainable with the pulleys fitted, it will be necessary to change the driven pulley fitted on the blower and possibly the size of the drive belt. **After adjustment ensure the motor load rating is not exceeded!**

7.5 LIGHTING

- Ensure that air discharge louvres are set to open.
- Turn on gas supply.
- Switch on electrical supply.
- Set time switch (if fitted) to an 'ON' cycle.
- Set room thermostat to 'ON' position.
- If reset button on heater and/or on remote control (if fitted) glows, press reset button.
- Heater should now light automatically within 2 minutes. after a further period the air circulation fan should run, (see also below: "operation" point 6).
- For a new installation or if the appliance has been turned off for an extended period then up to 3 attempts to light the air heater may be necessary. If the heater still does not light, consult the fault finding guide section 9.

7.6 OPERATION: Refer to figure 17

- 7.6.1 At the dictates of the external controls, an electrical circuit is made and the combustion air fan ("venter") runs.
- 7.6.2 Provided adequate combustion air flow is proved, the fan will continue to run approximately 30 sec. (pre-purge period).

7.6.3 Euro-H air heaters employ the direct burner ignition principle. A hot surface igniter will glow for " 15 seconds, after which time the gas valve(s) will open and the burner will be lit.

7.6.4 If the burner has not lit within 5 seconds, the electronic flame relay will switch off and lockout will occur. This will cause the signal lamp to glow within the reset push-button on the appliance and/or on a remote control (if fitted). After 10 seconds the reset button on the appliance or the remote control can be activated in order to reset and restart the appliance.

7.6.5 Flame failure protection is by the ionisation principle i.e. the ability of a suitable flame to pass an electrical current between the igniter and the earthed burner assembly. To check the flame current is adequate, remove jumper between terminal 17 and 18 on the automatic burner control, connect a DC micro ammeter between the terminals. Ionisation current should be $\geq 2\mu A$.

Note: The terminals carry mains voltage when energised.

7.6.6 Simultaneously to the ignition circuit and gas valve circuit being energised, electrical power is supplied to an anticipator within the air circulation thermal fan control. The air fan will start after about 2 minutes and warm air at a temperature of approximately 40EC is now discharged from the appliance.

7.6.7 In the event of the combustion air volume falling below a safe level, the burner will be extinguished a re-start cycle will commence after adequate combustion air volume has been restored.

7.6.8 If the burner flame is extinguished for any reason during a run cycle, an automatic attempt for re-ignition will take place, if the burner does not relight then safety shut down and lockout will occur. Manual intervention to reset is necessary to put the air heater back into service.

7.6.9 In the event of overheating for any reason, thermally activated fail safe overheat controls operate to switch off the burner. The first control (LC1) switches off the burner and upon its cooling, automatically resets and the lighting sequence starts automatically. The second control (LC3) which operates at a higher temperature setting, will switch off the burner and itself set to a lockout condition which also requires manual intervention to reset to restore the heater to operational condition. A cooling time of " 1 minute is necessary before re-setting.

7.6.10 When the set temperature or the heating time period has been reached, electrical power to the burner relay will be switched of and the burner will extinguish. The air fan will continue to run

until the heat exchanger has been cooled down to a safe level.

7.6.11 To turn off the air heater:

For a short period;

- turn room thermostat to lowest setting.

To relight reset thermostat.

For a prolonged period;

- turn room thermostat to low setting or **OFF**
- turn gas supply to the appliance **OFF**
- switch **OFF** the electricity supply to the air heater **after the air circulating fan has stopped.**

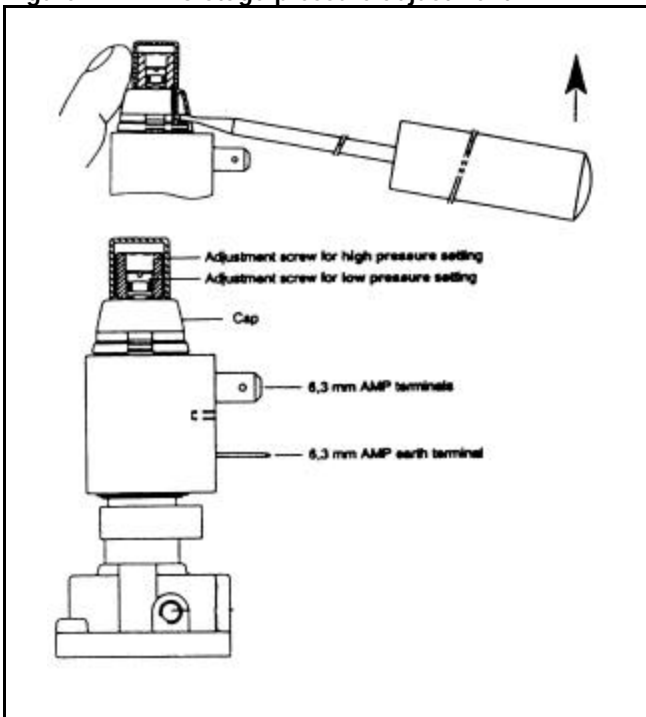
To relight the air heater follow the lighting instructions.

- 7.6.13 The gas service tap must only be operated in emergencies, for servicing or for prolonged periods of shut-down of the air heater.

SECTION 8 TWO STAGE BURNERS SETTING AND ADJUSTMENT

- 8.1 The EURO-H 30000 E series air heaters may be equipped with two stage burners as standard specification. This feature is an option. The type of gas control fitted is the "Honeywell" VR 4601P/B or VR 4601A/B either are fitted with a two-stage pressure governor model V4336A. Regulation is possible for the pressure range 3 - 20 mbar for natural gas and 4 -37 mbar for propane/butane gas. The appliances are fitted with a relay to ensure that during burner start-up the initial firing rate is 100% to ensure good burner cross-lighting.

Figure 11. Two stage pressure adjustment



- 8.2 Setting. Refer to figure 11.

NB. Allow time for pressure to stabilise before and during making adjustments.

- Lever off the plastic cover cap
- Maximum high rate setting must be adjusted first after which the minimum low rate setting

can be adjusted. Any adjustment of the maximum setting influences the minimum setting.

- Do not adjust maximum or minimum settings above or below the pressures stated on the air heater data plate or table 5.

To adjust:

Connect a manometer to the appliance burner test point.

Adjusting maximum pressure setting

- Energise high/low regulator, set gas control in operation and wait until an outlet pressure is recorded on pressure gauge.
- Using an 6 mm hexagon wrench or 10 mm screwdriver to turn adjustment screw for **maximum** pressure setting clockwise to increase and counter-clockwise to decrease pressure until desired maximum pressure is obtained.
- Check maximum pressure setting several times.

Adjusting minimum pressure setting

- Disconnect electrical connection of high/low regulator.
- Set gas control in operation and wait until an outlet pressure is recorded on pressure gauge.
- If minimum pressure setting needs adjustment then use a 3.5 mm screwdriver to turn adjustment screw for **minimum** pressure setting, clockwise to increase or counter-clockwise to decrease pressure, until desired minimum pressure setting is obtained.
- Reconnect high/low regulator in circuit.
- Check **maximum** pressure setting, re-adjust if necessary and check minimum pressure again
- Replace cover cap.

Table 6. EURO-H 30000 E Models With High/Low burner gas pressures and low rate consumption values

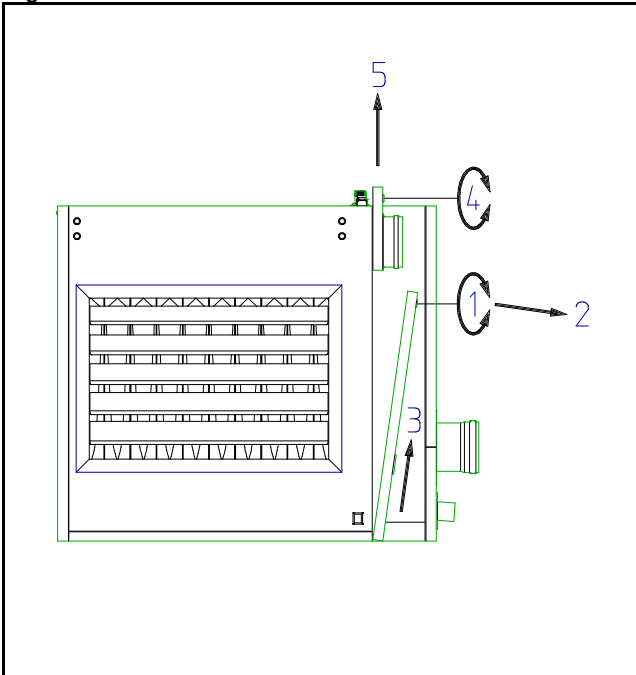
EURO-H 30000 E				30067 E 35067 E	30087 E 35087 E	30107 E 35107 E
BURNER PRESSURE	Pressure @ 100%	Natural G 20	mbar	8,5		
		Butane G 30	mbar	37,0		
		Propane G 31	mbar	28,0		
	Pressure @ 50%	Natural G 20	mbar	2,2		
		Butane G 30	mbar	7,5		
		Propane G 31	mbar	8,8		
Gas consumption @ 50% ¹ Reference 15E C, 1013 mbar	Natural G 20	m ³ /h	3.05	4.15	5.50	
	Butane G 30	kg/h	2.31	3.16	4.21	
	Propane G 31	kg/h	2.26	3.09	4.13	

Note: Burner pressures for Butane/Propane gasses are approximate based on regulated supply pressure.

- 1 Natural gas G 20 calorific value 10.48 kWh/m³ @ 15E C & 1013 mbar
 Butane gas G 30 calorific value 13.70 kg/h
 Propane gas G 31 calorific value 14.0 kg/h
 Low fire rate must not be reduced below the values stated above for 50% rating.

SECTION 9. SERVICING & MAINTENANCE

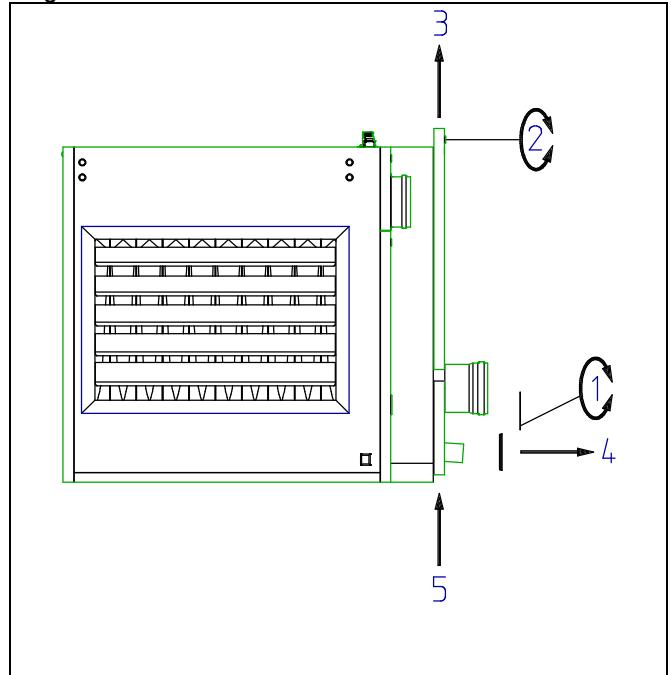
Figure 12. CONTROLS COMPARTMENT ACCESS



Legend figure 12:

1. Undo access panel catch
2. Lift top of panel away
3. Lift panel upwards to clear bottom retainer
4. Undo upper panel catch
5. Lift away upper panel

Figure 13. FAN COMPARTMENT ACCESS

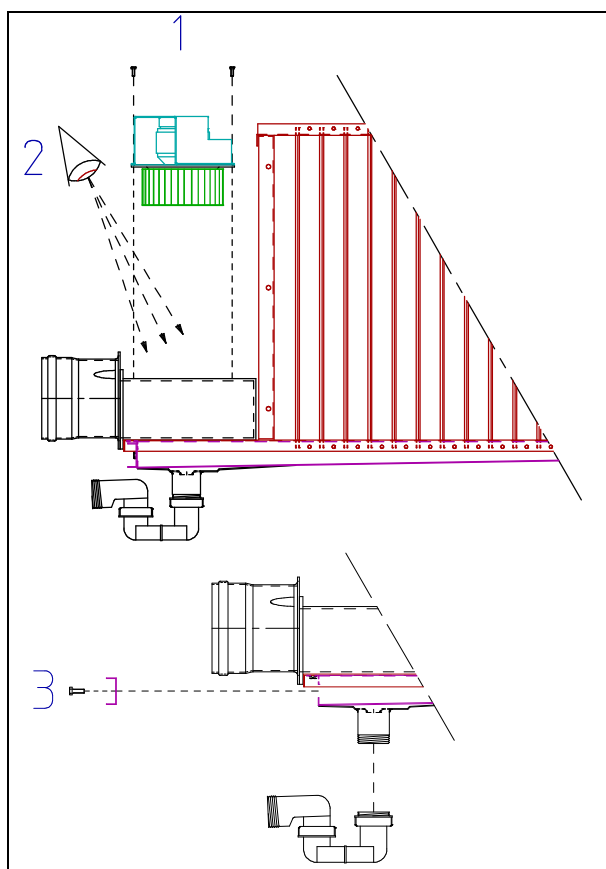


Legend figure 13

1. Remove trim plate
2. Undo access panel securing catch
3. Lift panel away
4. Remove drain pipe panel seal
5. Remove lower access panel

- 9.1 Before commencing servicing, turn off the main gas supply and switch off the main electricity supply after the air circulation fan has stopped.
- 9.2 It is recommended that maintenance is carried out at least once a year. More frequent servicing may be required dependent upon the environmental circumstances where the air heater is installed. Regular inspection is necessary, especially in dirty areas, to assess the servicing frequency.
- 9.3 To gain access to the controls and flue gas fan assembly it is necessary to remove the casing panels after isolating the electrical and gas supplies to the appliance, see figures 12 & 13.
- All serviceable components are then accessible from the controls side of the appliance.
- 9.4 Check condition and security of flue and combustion air system.
- 9.5 Check the condition of the condensate collector box and drainage system, see figure 14. Ensure that the "bubble-pot" trap is clean and free from oxide debris.

Figure 14. COMBUSTION AIR FAN & CONDENSATE DRAINAGE SYSTEM



Legend figure 14.

1. Remove combustion air fan
 2. Visually inspect condensate collector box
 3. Removable access door if required for cleaning
- NOTE:** Exercise caution not to damage seal gasket.
- 9.5 To gain access to the condensation collector box for inspection and cleaning remove the combustion air fan which is secured by 4 stainless steel screws into the fan housing, visual inspection is now possible. Additional access can be gained by removing the inspection cover plate figure 14 key 3 from the end of the box, 2 screws, take care not to damage the gasket unless a replacement has been obtained prior to commencing the service.
- Remove any dirt accumulation from the combustion air fan taking care not to damage the fan impeller. Check that it rotates freely and is in balance after cleaning.
- 9.6 Check for security and worthiness of any suspension or mounting system.
- 9.7 Check that air circulating fan guard is undamaged and secure.
- 9.8 Check security of the fan blade and fan motor.
- Note:** The fan motor is lubricated for life and does not require lubrication.
- 9.9 Inspect hot surface igniter fig. 16 replace if in doubt about its condition.
- Note: The Igniter device is fragile, therefore, handle carefully**
- 9.10 Inspect and clean the burner assembly, refer to fig.15 for a guide to removal
- 9.11 Inspect heat exchanger and clean as necessary. This can only be done after removing the burner assembly. The use of an inspection lamp and mirror is necessary to carry out this operation.
- 9.12 After removal of burner assembly, each element of the heat exchanger can be cleaned by use of a soft brush and compressed air. Clean both inside and the outside surfaces.
- 9.13 Clean burners and gas jets with soft brush and compressed air. To prevent damage, do not use hard objects for cleaning the gas injectors. Any deposits can be easily remove by using acetone solution.
- 9.14 Clean the condensation discharge system by removing the combustion air fan, the cleaning access panel and the bubble trap fitted to the condensation collector box at the bottom of the secondary heat exchanger.

Flush the system with clean water after reconnecting the "bubble-pot" trap and cleaning access panel and check the entire drainage system for leaks and free flowing to outlet.

- 9.15 If anchor lines of service panels are removed for servicing, they must be replaced upon completion of the work.
- 9.16 **Upon completion of servicing re-commission the appliance in accordance with the step procedure described in section 7.2 of this document.**

Figure 15. REMOVAL OF BURNER ASSEMBLY

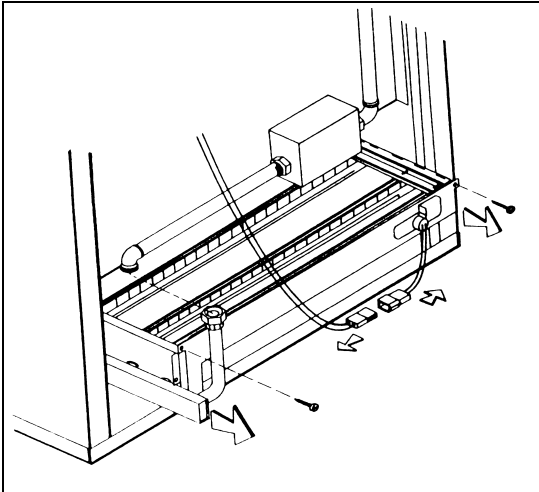
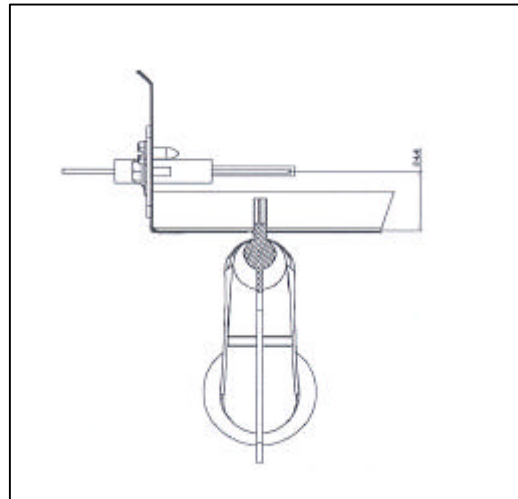


Figure 16. IGNITER ASSEMBLY & LOCATION



- 9.19 Air filters
EURO-H 30000 E air heaters have an optional facility for air intake filters.

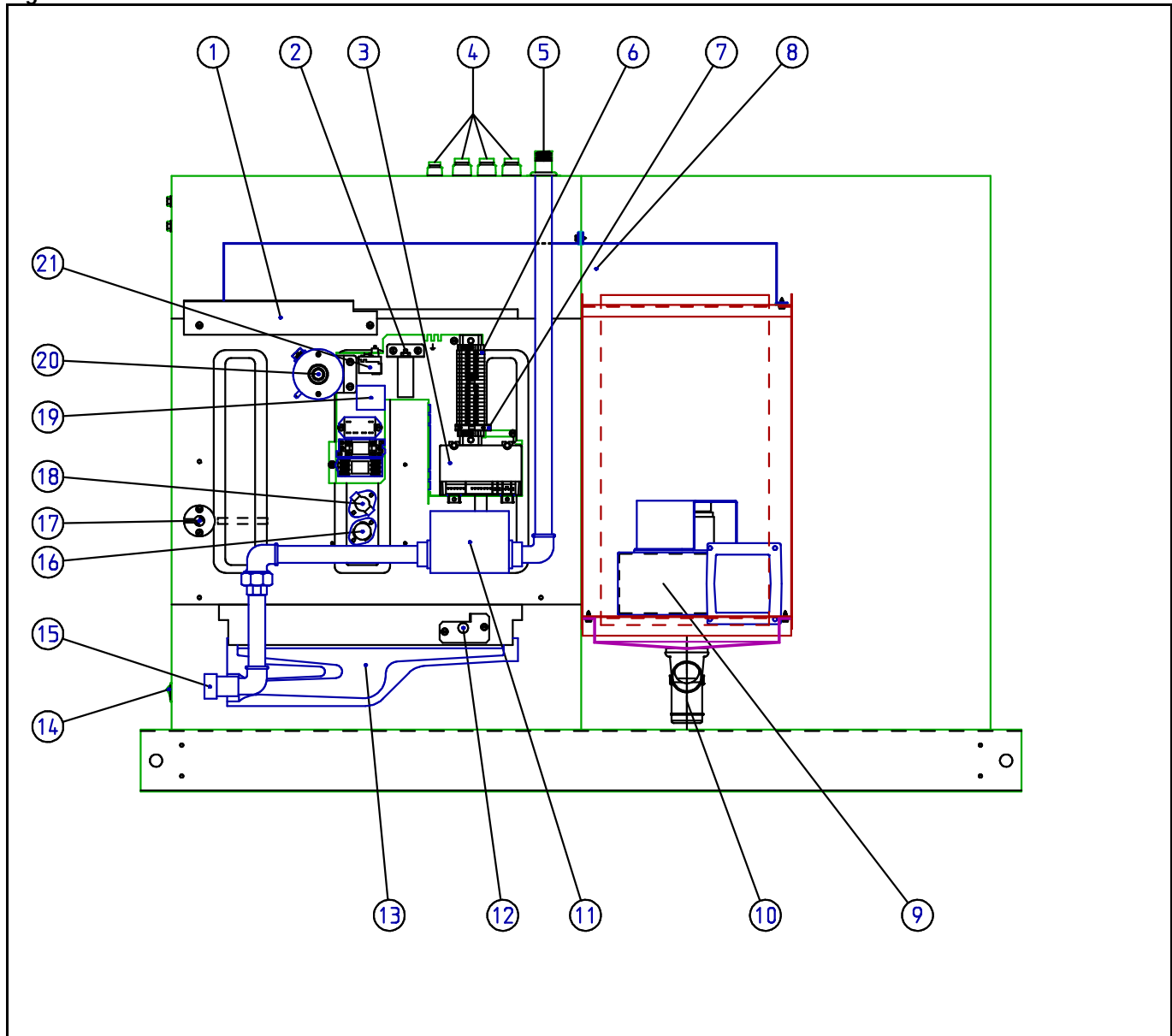
Standard rack/supports are provided to accommodate 25 mm nominal thickness filter elements. Refer to spare parts list for sizes.

TO REMOVE BURNER ASSEMBLY:

1. Turn off the main gas supply.
2. Switch off the main electricity supply **after air circulation fan has stopped.**
3. Open service panel figure 12.
4. Disconnect wires of igniter.
5. Disconnect union fittings between gas valve(s) and burner.
6. Unscrew fixing screws of burner and pull forward burner assembly on it's slide rails.
7. Replace in reverse order

Figure. 17

COMPONENT PARTS LAY OUT



Legend figure 17:

- | | |
|---|---|
| 1. Heat shield | 11. Multi-functional gas valve |
| 2. Combustion air fan motor capacitor | 12. Hot surface igniter |
| 3. Electronic burner control | 13. Burner assembly |
| 4. Electrical & controls inlets | 14. Burner lockout indicator/reset |
| 5. Inlet gas connection | 15. Burner gas manifold, injectors & test point |
| 6. Electrical terminals | 16. Thermal fan control (FCR) |
| 7. Controls fuse | 17. Thermal over-heat control sensor (LC3) |
| 8. Flue gas pressure point | 18. Thermal over heat (limit) control (LC1) |
| 9. Direct drive combustion air fan | 19. Isolation transformer (NOT GB or IE) |
| 10. Condensation discharged trap (bubble pot) | 20. Differential pressure control (flue gas fan) |
| | 21. Thermal overheat control (LC3) |

THE APPLIANCE WILL ONLY OPERATE CORRECTLY WITH ALL PANELS FITTED SECURELY!! GROSS OVER HEATING WILL OCCUR IF AIR CIRCULATING FAN ACCESS PANEL IS REMOVED DUE TO SHORT CIRCUITING OF AIR STREAM

SECTION 10. FAULT FINDING

10.1 Burner does not ignite

- Thermostat set too low or time switch not correctly set; no power to terminals 2 and 5.
- Fuse F3 has blown; no power to terminal 2 and LC3.
- Reference tube to differential air pressure switch S3 is not airtight or blocked.
- Faulty differential air pressure switch S3; no power to terminals 2 and 13.
- Insufficient differential pressure in flue pipe system; Flue blocked or too long.
- Flue gas fan blocked; check
- Water level high in condensation collector box; check drain system.
- Burner relay in lockout (point 2 below) or faulty.
- Faulty combustion air fan M3 (venter).
- Faulty limit control LC1; no power to terminal 2 and ¹⁾LC1.
- Overheat control LC3 in lockout; no power to terminal 2 and LC3; Reset manually.

10.2 Flame relay in lockout

- Air in gas service; purge.
- Low gas pressure.
- Faulty hot surface igniter.
- Faulty differential air pressure switch.
- Gas valve does not open; no power to terminals 2 and 7.
- Insufficient ionisation flame current; ionisation current $\leq 2\mu\text{A}$.
- Incorrect wiring of mains input line, neutral, earth.

10.3. Combustion air fan (venter) does not start

- Faulty motor or capacitor.
- Faulty burner relay.
- Differential air pressure switch S3 still in normal run position no change-over.
- Faulty fuse F3.

10.4 Differential air pressure switch switches burner off

- Switch-point should be:
30067-ON = 1,37 mbar, OFF = 1,30 mbar
30087-ON = 0,92 mbar, OFF = 0,85 mbar
30107-ON = 0,45 mbar, OFF = 0,38 mbar
- No differential pressure in flue gas system; check flue and air inlet.
- Faulty combustion air fan or capacitor.

10.5 Appliance does not provide sufficient warm air

- Check gas inlet pressure.
- Check burner pressure.
- Gas filter (if fitted) dirty or blocked.
- Limit control LC1 switches burner off (see 10.6).
- Differential pressure switches relay off (see 10.4).

10.6 Limit control LC1 switches burner off

- Switch temperature 51,5EC,
- Insufficient air flow.
- Vertical and horizontal louvres set in closed position.
- Burner overload, check burner and inlet gas pressure.
- Fan control switch faulty
- Check fan rotational direction.
- Air temperature at fan inlet too high; T max. 30EC (see 10.6).
- Thermal contact in fan motor switches off intermittently.

10.7 Limit control LC3 switches

- Switch temperature 96EC (+ 0/-5).
- Check location and security of capillary and probe.
- Air discharge temperature too high (see 10.6).
- Faulty limit control LC1.
- Air fan stops immediately after burner is switched off; incorrect control/s wiring.
- Faulty fan control (FC).

10.8 Air fan does not start

- No power to terminals 2 and 11.
- Faulty fan control (FC).
- Faulty motor or capacitor.
- Thermal over-load in motor switching.

10.9 Fan starts and stops intermittently while burner is on.

- Faulty heat anticipator (FCR) in fan switch.
- Thermal over-load in motor switching.
- Inlet ambient air temperature too low; T min. $< 5\text{EC}$.; will correct as space temperature rises.
- Faulty wiring connection; loose terminals!

SECTION 11. SPARE PARTS LIST

11.1 GAS SECTION

DESCRIPTION	PART NUMBER	MFGS.REF.	APPLICATION
Gas valve single stage burners	03 25136	H'well VR4601AB	All
Gas valve two stage burners	03 35136	H'well VR4601BP	Two stage options

11.2 ELECTRICAL SECTION

DESCRIPTION	PART NUMBER	MFGS.REF.	APPLICATION
Thermal fan control	03 25166	TOD29T12 (250V)	All
Thermal over-heat control (limit) LC1	03 24970	TOD60T11	All
Thermal over-heat control LC3	03 24959	Imit 96E C	All
Combustion fan assembly	03 49017	EBM	All
Combustion circuit pressure switch	30 60615 067	Huba 604. 9...	30067 E
Combustion circuit pressure switch	30 60609 087	Huba 604. 9...	30087 E
Combustion circuit pressure switch	30 60607 107	Huba 604. 9...	30107 E
Automatic burner control	03 25317	Honeywell S4570LS	All
Hot surface ignition device (assy.)	36 25217	Norton 240V	All
Two pole relay K1.2	30 61738 240V	Omron G7L2A	All two stage burners
Capacitor combustion fan motor	01 25600 2.5 mf	2.5 mfd 400V	All
Wiring harness for burner control	06 41631 HGC	----	All
Wiring connector for igniter device	06 41531 HGC	----	All
Wiring harness for two stage burners	06 41621	----	All
Wiring terminals	06 41635	Entrelec	All

11.3 AIR HANDLING SECTION

DESCRIPTION	PART NUMBER	MFGS. REF.	APPLICATION
Centrifugal blower	02 25753 01	BDC 321-321	30067 E
Centrifugal blower	02 25754 01	BPC 270-270	30087 E
Centrifugal blower	02 25756 01	BPC 321-321	30107 E
Pulleys	Specify: Motor or blower, diameter and shaft size when ordering		
Motors	Specify: kW rating - phase - shaft size when ordering		
Drive belts	Specify: Length & section when ordering		

ALWAYS SPECIFY APPLIANCE SERIAL NUMBER WHEN ORDERING SPARE PARTS

11.4

MISCELLANEOUS

DESCRIPTION	PART NUMBER	MFGS. REF.	APPLICATION
Sampling pressure test point	07 25811 02	M8	All
Silicon tubing	06 20224 cm	f 5-8 mm x 1.0 m	All
Combustion fan assembly gasket	11 44696	---	All
Capillary seal gasket	06 07726	---	All
Capillary seal plate	08 07727	---	All
Gasket condense collector box cover	06 71590	---	All
Condensation drain trap (bubble pot)	70 61765	---	All

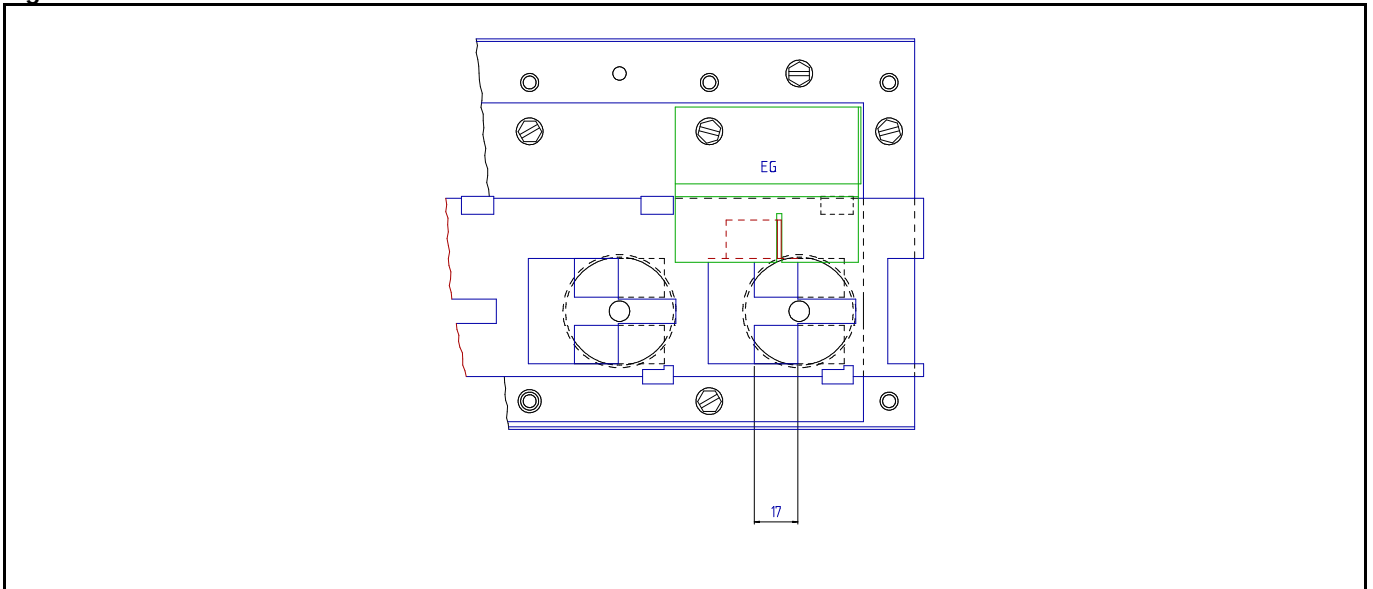
Filter size and quantities schedule

EURO-H 30000 E Model size	Filter element size mm X 25 mm nominal thickness			Reznor part number
	Quantity required	Length	Width	
30067 E - 35067 E	4	622	394	60 61045 622394
30087 E - 35087 E	4	622	495	60 61045 622495
30107 E - 35107 E	2	622	495	60 61045 622495
	4	622	394	60 61045 622394

SECTION 12. GAS CONVERSION

- 12.1 This air heater is designed to operate on natural, propane or butane gas and will be supplied as ordered for the gas type specified. In the event it is required to convert to a different gas type to that which has been supplied, conversion of the gas burner must be carried out.
- 12.2 A Reznor approved conversion kit to suit the appropriate gas type must be used.
- 12.3 In addition to changing the burner injectors, and adjusting the gas pressure sealing a governor or fitting a blanking plate it is necessary to fix over stickers as supplied with the conversion kit of parts.
- 12.4 After conversion re-commission appliance according to section 7 of this document.

Figure. 18 BURNER AIR SHUTTER AND SETTING DIMENSION for all GASES UK & IE



SECTION 13. HEALTH & SAFETY STATEMENT

Health and Safety Information for the Installer and Commissioning-Service Engineer

Under the Consumer Protection Act 1987 and Section 6 of the Health and Safety at Work Act 1974 we hereby provide the following information on substances hazardous to health.
Product range reference EURO-H 30000 Series air heaters.

13.1 **Cautionary note**

During first firing some smoking may occur, this is due to the burning off of protective/lubricating oils used during appliance production. Most of this will have been removed during the production testing process. It is a wise precaution to ensure that adequate ventilation is provided during the initial firing and throughout the commissioning period, this is particularly important if the discharge air is to blow into a confined space. This smoking does not constitute a poison hazard.

following eye contact or prolonged reddening of the skin.

13.2 **Declaration**

Reznor products contain no asbestos; copper is not employed in gas carrying components; solder which has a melting point below 450EC is not used; paints for corrosion protection and decoration are heat cured and contain no lead.

The above appliances meet the Electrical Safety requirements of EN60 335 Pt. 1 1988.

13.3 **Miscellaneous**

Small quantities of adhesives and sealants used in the product are dried and cured and present no known hazard.

13.4 **Insulation and Seals.**

Material: Synthetic Ceramic Fibre with Organic binder.

Description: Tapes and Papers

Known hazards: Some people can suffer reddening and itching of the skin. Fibre entry into the eyes will cause foreign body irritation.

Inhalation will cause irritation to the respiratory tract. As with any dust pre-existing respiratory condition and lung diseases may be aggravated.

Prolonged exposure for the purposes envisaged pertaining to this Reznor product is not anticipated.

Precautions: Wear protective gloves when handling. If abrading and dust is generated suitable protective respirators must be used.

People with a history of skin complaints may be susceptible to irritation.

Dust levels are only likely when the material is abraded.

In general normal handling and use for this purpose will not present discomfort. Follow good hygiene practices, wash hands before consuming food or using the toilet.

First Aid: Medical attention must be sought

13.5 **Thermostat.(Thermal overheat (limit) control LC3)**

Material: Illuminating Kerosene.

Description: Sealed phial contains a small quantity in liquid form.

Recognition: Colourless liquid, paraffin oil/petroleum hydrocarbon odour.

Characteristics: Non-corrosive, flammable with no poisonous reference-CH poison Class 3

Precautions: Avoid handling. This product can irritate and de-fat the skin. Prolonged contact may cause dermatitis. Avoid breathing vapour. Avoid eye contact. Do not ingest.

First Aid: Skin. Wash thoroughly with soap and water.

Eyes. Rinse immediately with copious amounts of clean water.

Ingestion: Seek medical advice.

NOTE: If skin irritation persists seek medical advice.

13.6 **Electrolytic Capacitor**

Two types are used by random selection:

Recognition: 1. Plastic enclosure 2. Aluminium enclosure

Material: Contained liquid electrolyte

Known hazards: Electric shock possible if charged.

Precautions: Discharge to ground/earth. Do not incinerate.

First Aid: Treat for electric shock if affected.

13.7 **CAUTION:** Condensate water may be acidic (hydrochloric) to PH 3.0 This equates to vinegar exercise caution when in contact with the skin.

SECTION 14. USER INSTRUCTIONS

OPERATING

How the air heater works:

Gas is burned by an atmospheric burner which fires into a heat exchanger. The gas burner is controlled by a double gas valve via an electronic burner control, which is actuated automatically via external controls i.e. a room thermostat and/or a time switch. The burner is ignited by a hot surface igniter. When the burner fires and warms the heat exchanger, the heat is sensed by a thermally actuated fan control which switches on the fan when the air temperature has reached its preset operating level.

At the end of a heating cycle the burner is switched off, the air circulation fan will continue to run until the air heater has cooled to a safe condition. Thereafter the fan will remain off until the next cycle is initiated.

Safety:

1. Flame failure is detected by the hot surface igniter which is also the sensor and will immediately result in gas valve shut down.
2. Safety against overheating is assured by two overheat controls. The first is an automatic recycle control which protects against low air flow i.e. clogged air ways, fan failure etc. The second, which is set to a higher level than the first one, is a control which locks out and switches off the burner in the event of gross overheating for any reason. Manual intervention is necessary to reset this control device. Resetting of the automatic burner control may also be required.
3. The location of the air heater should be maintained at normal atmospheric pressure. Changes to the building after air heater installation, should have regard to the heating installation, i.e. structural changes causing excessive draughts from doors, windows etc. Other air handlers and installation of air extraction equipment which may cause a negative pressure environment, can seriously affect the operation of this type of air heater, especially if combustion air supply is not ducted.

To light the heater:

1. Turn on the gas supply to the air heater.
2. Switch on the electricity supply to the air heater.
3. Ensure time switch (if fitted) is set to a 'ON' cycle.
4. Adjust control/room thermostat to desired temperature.
5. Air heater will light automatically when the room thermostat calls for heat.

6. If the appliance does not light:
 - a) check that the burner control does not require resetting. An indicator light glows at the front panel of the appliance and on a remote control if fitted). Reset by pushing light/button on appliance or the remote control.
 - b) check if thermal overheat control requires resetting (see fig. 17 key 14).
7. If the thermal overheat control requires resetting and doing so restarts the air heater, wait until the appliance warms to thermal equilibrium, to ensure the overheat control does not lock out again. **If it does and the temperature near the heater is less than 30EC, then switch off the appliance and call for service.** If the temperature is over 30EC, take appropriate action to reduce the ambient temperature near the air heater.

Air circulation:

1. The space heating process is for air to be circulated through the appliance whereby it gains heat from a heat exchanger. The air is directly discharged into the space to be heated. The air is eventually re-circulated. Therefore it is very important that an unobstructed path for the circulation of the air will be maintained. This is particularly important if the air heater has been installed to blow through the wall between two rooms.
2. Sometimes the air circulation fan of the appliance is connected to a remote over-ride switch. This enables cool air to be used for circulation purposes when the air heater is not used for heating purposes e.g. in summer.
To use this feature:
 - a) switch ON electricity
 - b) switch ON manual override switch, this may be fitted as a feature on a remote composite control.

Maintenance:

1. Maintenance and service must only be carried out by appropriately qualified persons e.g. "Corgi" registered undertakings.
2. It is in your interest to ensure proper service and maintenance is carried out at a regular basis. Periods between service are dependent upon the local environment where the heater is installed. All gas appliances should be serviced at least once a year.
3. In case of any damage to the appliance, it must be shut down completely and checked by an appropriately qualified person. 4. In the event of difficulties in resolving any of these matters, please do not hesitate to contact Reznor or their official distributor.

NEVER SWITCH OFF ELECTRICITY SUPPLY TO THE AIR HEATER WITHOUT FIRST CLOSING THE INLET GAS TAP. DO NOT USE THE AIR HEATER WITH THE ACCESS PANELS OPEN. DOING SO WILL CAUSE OVERHEATING RESULTING IN DAMAGE TO THE APPLIANCE.

Reznor® EURO-H 30000 E

ONE OF THE Reznor GENERATION OF CE MARKED GAS FIRED
HIGHLY ENERGY EFFICIENT AIR HEATERS

BEST USED WITH Reznor OPTIONAL ELECTRONIC CONTROL PANELS
SAVE ENERGY AND OPTIMISE THERMAL COMFORT

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Thomas&Betts

REZNOR CERTIFICATE

EC DECLARATION OF CONFORMITY FOR MACHINERY

(Directive 89/392/EEC, Annexe II, Sub A)

REZNOR EUROPE S.A.
J & M Sabbestraat 130
B-8930 MENEN (Belgium)

herewith declares that,

The Gas Fired Air Heaters REZNOR, Series UL 1000, Reflex, EURO-X 1000, ML 1500, EURO-T 2000/2500, RPV 2000/2500, EURO-H 30000/35000, Types S,SL,A,B,E,J, and EUROPAK PV 2000/2500, EUROPAK RPV 2000/2500, DFMA, MAXIMIZOR

are in conformity with the provisions of the Machinery Directive (Directive 89/392/EEC), as amended, and with national implementing legislation.

Menen, 1.01.97

REZNOR EUROPE S.A.


P. HUYGHE
Engineering & Development Manager REZNOR EUROPE

Doc. 03 31101 - GB.