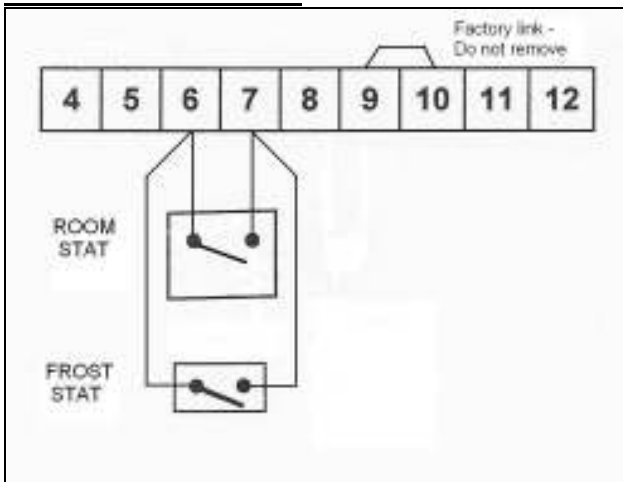


### 5.3.1 24V dc Electrical connections

#### 24V dc Terminals X4



Description	Connector X4	Remarks
Room stat	6 - 7	6 = + 24Vdc
Frost stat	6 -7	Parallel through room stat
Power 24Vdc (3VA)	6 = + 24Vdc, 9 = -	

#### Notes

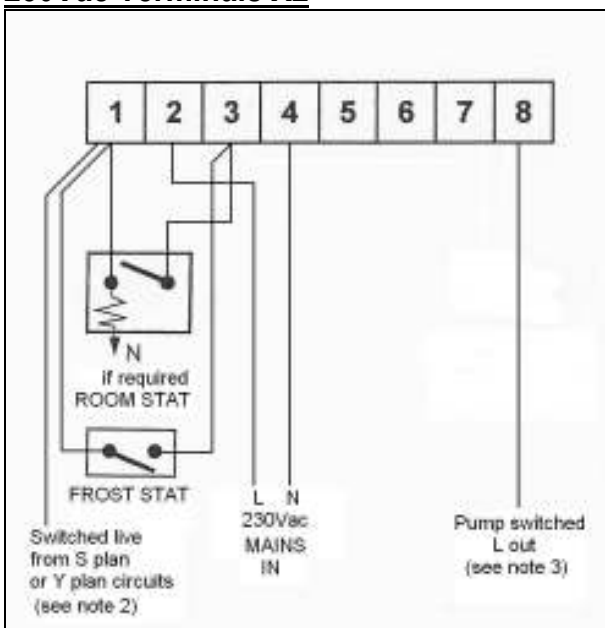
- Under no circumstances must any electrical power be input to the room thermostat terminals. It is a volt-free switch.
- Care must also be taken to avoid induced voltages caused by the running of the thermostat cables along side mains voltage cables.

### 5.3.2 Volt free Room thermostat on/off

- Connect the room thermostat. See §5.3.1.
- The terminal block for the connection for a volt free room thermostat, or time clock, is X4 on the control panel. The terminals are wired to the input circuit of the control unit, which has its own 24V dc 'wetting voltage'.
- If using a room thermostat with heat accelerator, this must be set at 0.1A.
- The maximum permissible resistance of the room thermostat circuit and cable is 15 Ohms.
- Where a 'wireless' room thermostat is employed, consult the manufacturer's instructions for installation.

### 5.3.3 230Vac Electrical connections

#### 230Vac Terminals X2



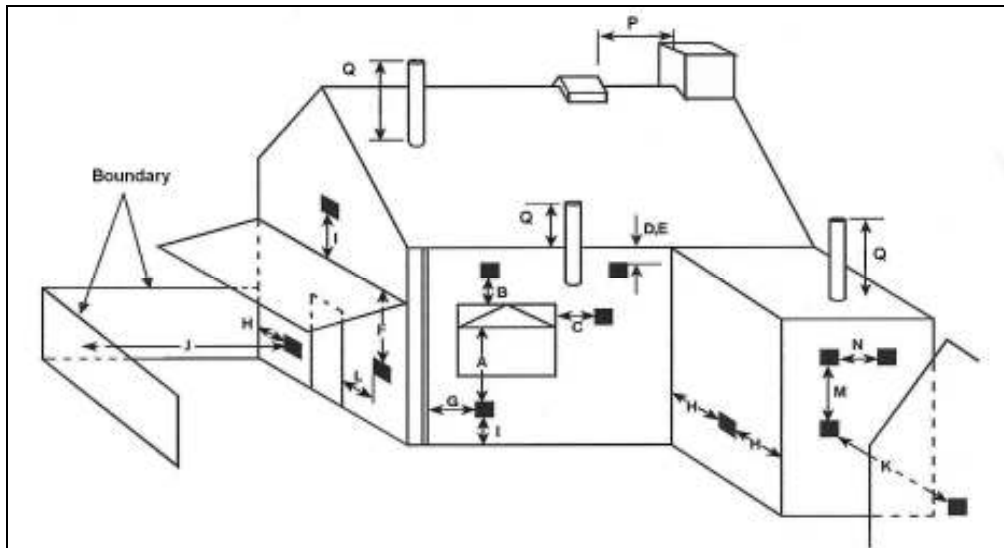
Description	Connector X2	Remarks
Mains In	L= 2, N= 4	Earth: see §10.1
Room stat	1= switch live, 3= live (fused)	
Frost stat	1 - 3	Parallel through room stat
External pump (see note 3)	7 = N, 8 = switched live	

#### Notes

- The 230Vac stat circuits are alternative to the 24Vdc circuits. If the stat has a neutral connection for heat accelerator, then connect it for more efficient operation.
- The switched live can also be used for S plan or Y plan circuits (note that the 230Vac live to the Wiring Centre must come from the same fused spur as the 230Vac supply to the boiler).
- A switched live output is available for a pump if the heating system requires pump overrun. Note that the appliance itself does not require this feature.

## 5.4 General Flue Requirements

### 5.4.1 Flue terminal clearances



TERMINAL POSITION	MIN DISTANCE
A <sup>(1)</sup> - Directly below an opening window or other opening, eg air brick	300mm
B <sup>(1)</sup> - Directly above an opening window or other opening, eg air brick	300mm
C <sup>(1)</sup> - Horizontally to an opening window or other opening, eg air brick	300mm
D - Below gutters, soil pipes or drain pipes	75mm(2)
E - Below eaves	200mm(2)
F - Below balconies or car port roof	Not allowed
G - From a vertical drain pipe or soil pipe	150mm(2)
H - From an internal or external corner or to a boundary alongside the terminal	300mm
I - Above ground, roof or balcony level	300mm
J - From a wall, fence, building or boundary line facing the terminal	2500mm
K - From a terminal facing a terminal	2000mm
L - From an opening in a car port (eg door, window) into a dwelling	Not allowed
M - Vertically from a terminal on the same wall	1500mm
N - Horizontally from a terminal on the same wall	300mm
P - From a vertical structure on the roof	500mm
Q - Above intersection with roof	300mm

#### NOTES

- (1) In addition, the terminal should not be nearer than 150mm to an opening in the building fabric formed for the purpose of accommodating a built-in element such as a window frame.
- (2) Minimum distance is reduced to 25mm from a terminal guard.
- (3) Terminals must be sited above 2.1m from ground for walkway or patio; also for car parking area less than 2.5m from terminal.

The flue terminal must be sited with minimum clearance distances as shown in the diagram.

A terminal guard must be fitted if the terminal is sited less than 2m above ground level, or above a balcony, or accessible flat roof.

Where the flue terminates within 1m of a plastic or painted gutter or within 500mm of painted eaves, then protection should be provided in the form of an aluminium shield at least 1m in length, fitted to the underside of the gutter or painted surface.

#### Please Note!

Due to the low flue gas temperature, 'pluming' will occur at the flue terminal. Care should be taken to ensure that the discharge plume will not cause annoyance to the owner or neighbours. It is generally recommended that flues should discharge vertically at roof level. In this position, pluming is not normally a problem.

### 5.4.2 Flue system

The flue system must be installed in accordance with BS5440:1 and the Building Regulations. **Horizontal flue pipe runs must always be installed with a minimum slope of 50 mm/metre towards the boiler.** This will prevent condensation from gathering in the flue pipe, and will also reduce the chance of icicles forming over horizontal pipe ends in the Winter.

## Note regarding internal air-flue systems.

It is recommended that the boiler is sited on or next to an external wall so as to negate the need to use a void or enclosure as a route for the flue system. Where this is not possible the following applies:

There is a Guidance Document available on the safe installation of flue systems within a dwelling. This is a Technical Bulletin reference TB 008 (Edition 2) and is available from Gas Safe Registers website. In brief this requires the air-flue system to be **\*accessible for visual inspection\*** by a service engineer. Particular concern focuses on the joints, supports, material and correct slope of the flue installation, which should all be in accord with the instructions given in this document and with good practice. We recommend that the guidance given in this document is adhered to, especially in the case of twin pipe flue systems.

## 5.5 Flue discharge and air supply

A number of different flue systems are available from Atmos for use with this appliance:-

- 60/100mm concentric system, comprising a standard through the wall flue kit or an extended system.
- 80/125mm concentric system.
- 80mm twin pipe system which enables separate air intake and flue pipes to be fitted to the appliance.
- 80mm PPS and 50mm Mupvc plastic twin pipe system for special applications.

Maximum lengths are specified in §5.5.2 to 5.5.6, and must not be exceeded.

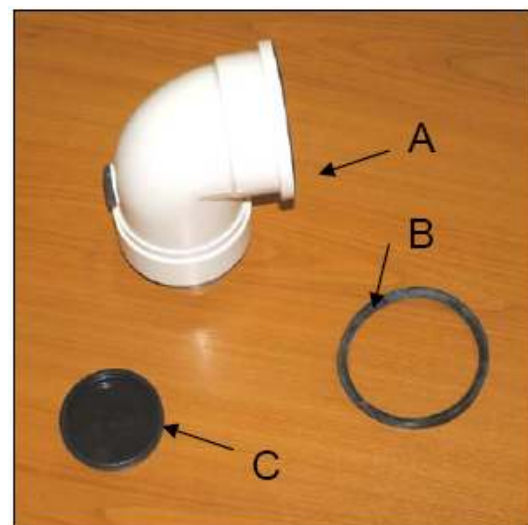
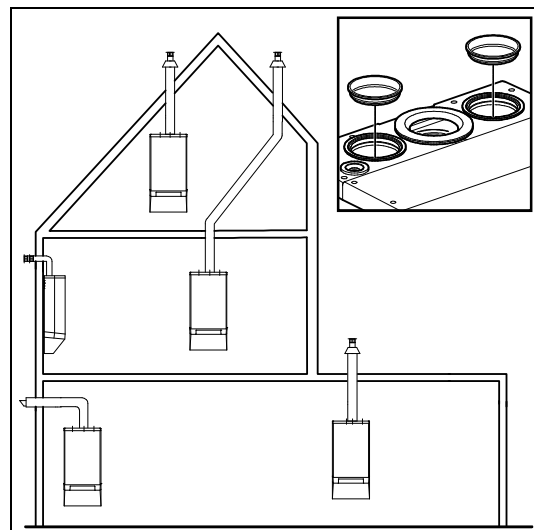
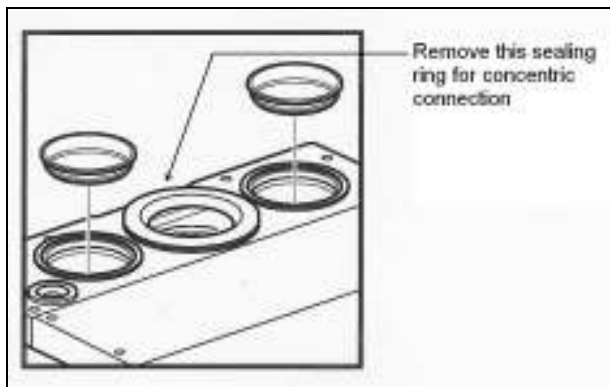
Other special flue arrangements covering Prefabricated Chimneys and Multi Storey flue systems are included in §5.6 to 5.8.

### 5.5.1 60/100mm Concentric Standard through the wall Horizontal Terminal

#### **IMPORTANT!**

Using the concentric adapter set (see photo), the standard two-pipe connection can be changed into a concentric connection.

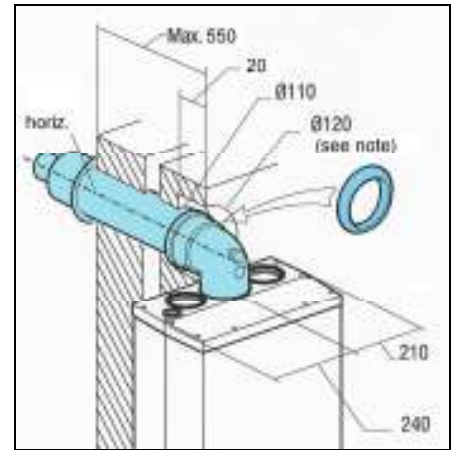
1. Seal the open air supply connections in the appliance with the sealing cap delivered with the set (item C in photo).
2. Remove the sealing ring around the flue discharge in the appliance, as shown below.
3. In its place, fit the sealing ring  $\varnothing 116 \times 110$  mm (item B in photo).
4. Fit the adapter (item A in photo) on the flue discharge.



### Mounting 60/100mm horizontal concentric terminal

1. Drill a hole of 110 mm diameter or larger.
2. Cut the terminal to the length required.
3. Slide the terminal into the opening and fit rosettes to cover the opening.
4. Ensure the flue pipe slopes back to the appliance.

An alternative telescopic 60/100 horizontal concentric terminal is available from Atmos. The flue should be adjusted to length and the supplied sealing tape applied.  
**NOTE : Atmos also provide anti-plume kits for use with the telescopic flue system.**



**Note:** Mark the centre of the hole for the flue at 115mm above the top of the boiler.

### 5.5.2 60/100mm Concentric extended flue system

Refer to the Atmos Price List for the full list of flue components.

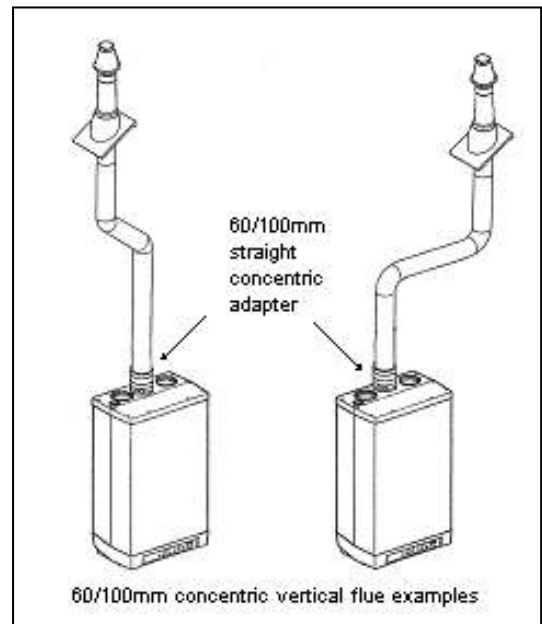
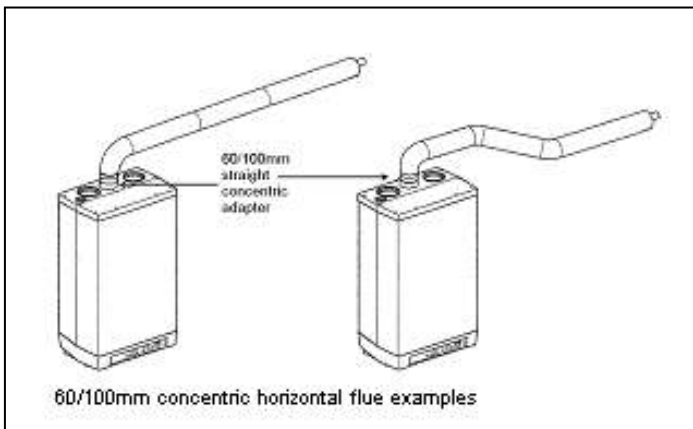
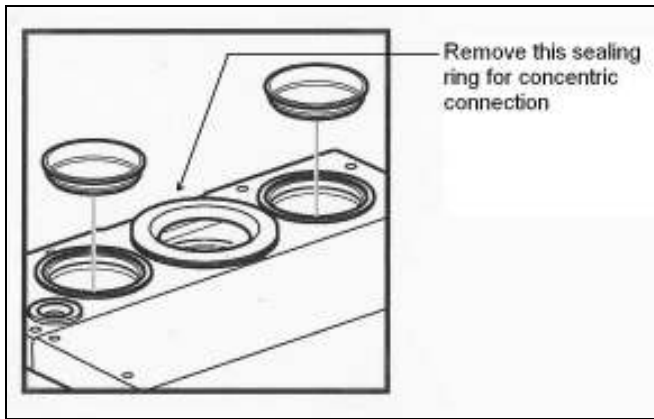


Table of Atmos 60/100mm concentric flue equivalent lengths

Maximum equivalent concentric length allowed is 10 metres (Note: Includes an allowance for the terminal; ie the terminal can be ignored from the equivalent length)		
60/100mm concentric components	Equivalent concentric length (M)	Remarks
45° bend	1.5	
87° bend	3.0	

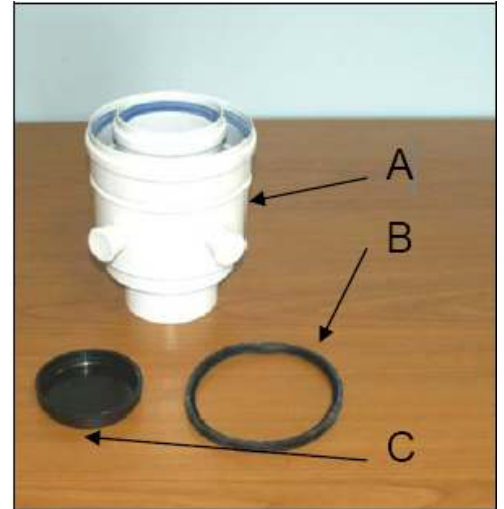


### 5.5.3 Vertical Concentric connection

Straight adapters are available for either 60/100mm or 80/125mm systems. **IMPORTANT!**

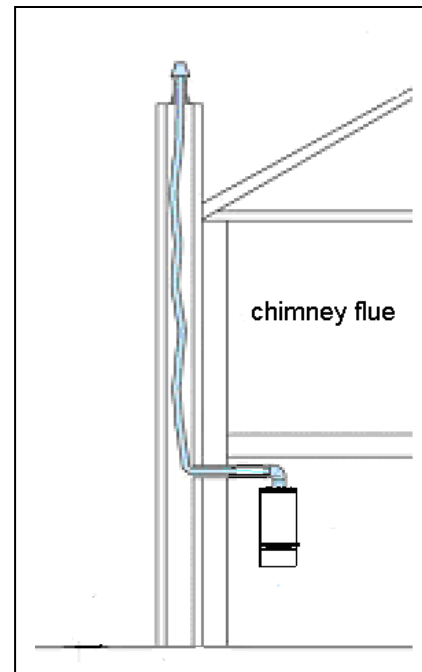
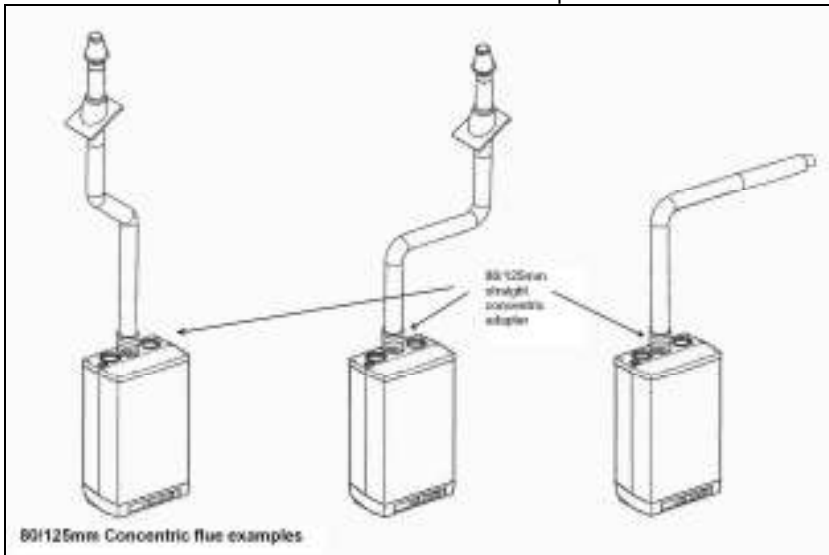
Using the concentric adapter set (see photo), the standard two-pipe connection can be changed into a concentric connection.

1. Seal the open air supply connections in the appliance with the sealing cap delivered with the set (item C in photo).
2. Remove the sealing ring around the flue discharge in the appliance, as shown above.
3. In its place, fit the sealing ring  $\varnothing 116 \times 110$  mm (item B in photo).
4. Fit the adapter (item A in photo) on the flue discharge.



### 5.5.4 80/125mm Concentric flue system

Refer to the Atmos Price List for the full list of flue components.



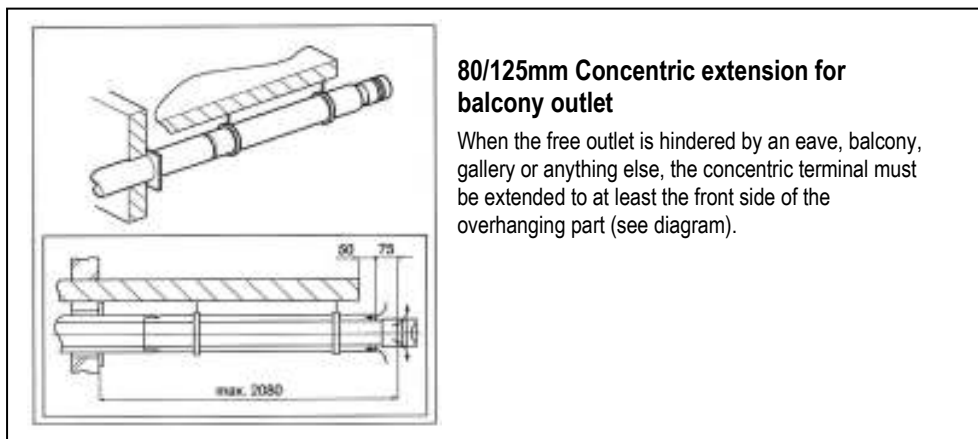
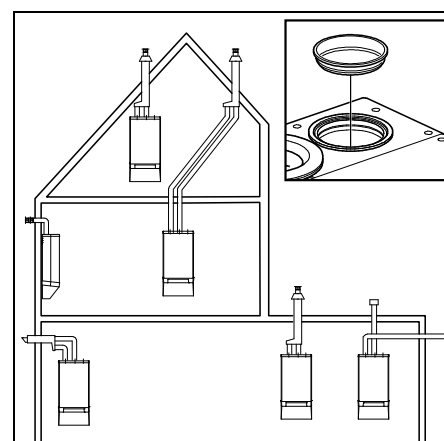


Table of Atmos 80/125mm concentric flue equivalent lengths

Maximum equivalent concentric length allowed is 27 metres (Note: Includes an allowance for the terminal; ie the terminal can be ignored from the equivalent length)		
80/125mm concentric components	Equivalent concentric length (M)	Remarks
45° bend	1.5	
87° bend	3.0	

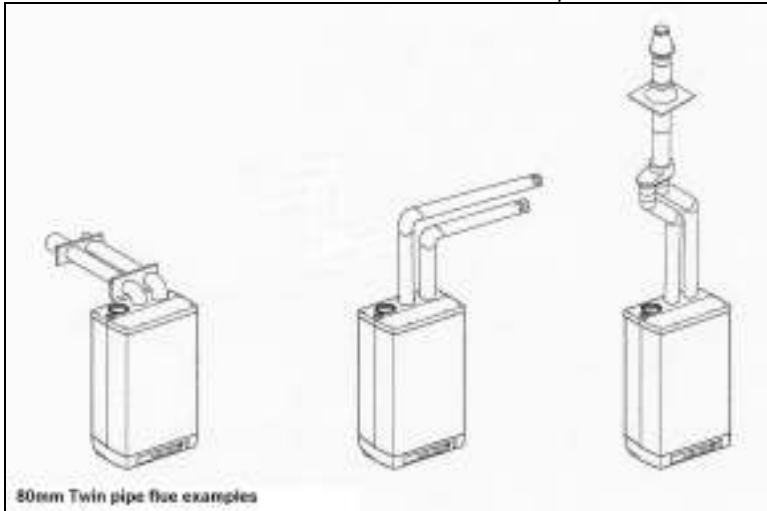
### 5.5.5 Twin-pipe connection

1. Fit the flue pipe to the middle connection on the boiler and fit the air intake pipe to either the left hand or the right hand connection on the boiler. The in-built silicone sealing rings provide airtight connection.
2. When using the right-hand air intake, the sealing cap must be used to cap off the left-hand air intake.



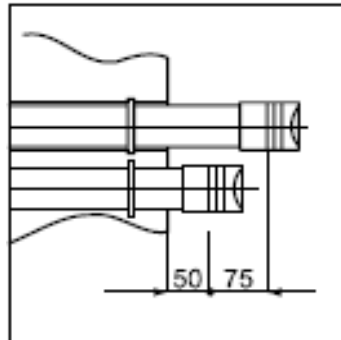
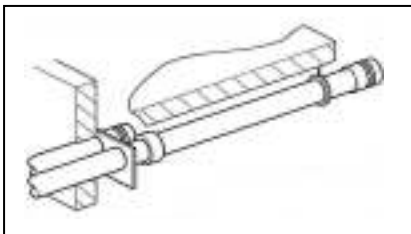
### 5.5.6 80mm twin pipe flue system

Refer to the Atmos Price List for the full list of flue components.



#### Terminal

The flue discharge at the terminal must be at least 75mm in front of the air intake and the distance between the two pipes at least 75mm.



#### 80mm Twin pipe extensions for balcony outlet

When the free outlet is hindered by an eave, balcony, gallery or anything else, the air supply pipe and the flue discharge pipe must be extended to at least the front side of the overhanging part. (In this case the flue discharge must be extended 75mm further than the air supply pipe inlet).

When the air supply is not disturbed by obstacles, such as a separating wall, and when the outlet is not at the edge of a building, the air supply pipe does not need extension (see diagram).

Table of Atmos 80mm twin flue equivalent lengths

Maximum total length allowed is 60 metres (ie Equivalent length of supply pipe + Equivalent length of flue discharge pipe) (Note: Includes an allowance for the terminal; ie the terminal can be ignored from the equivalent length)		
80mm components	Equivalent length (M)	Remarks
45° bend	1.5	
87° bend	3.0	

---

### 5.5.7 Plastic twin pipe flue systems

**NOTE** Consult Atmos for these systems. Use of non-approved flue systems will invalidate the guarantee.  
For special applications, the appliance can be used with plastic flue pipes, which are available from Atmos as follows:

**PPS.** This is a rigid translucent plastic pipe in 60mm and 80mm diameters, together with a range of fittings. This is suitable for continuous use at 120°C and is therefore suitable for connection from the appliance to the flue terminal. This must include the 80mm PPS pipe with flue gas test point, which is required for commissioning of the boiler.

**PPS Flexible.** This is a flexible pipe 80mm diameter which can be used for chimney linings, or for difficult vertical runs. Note that it must only be used vertically and **MUST NOT** be used for horizontal runs because the condensate will accumulate and could block the flue path.

Plastic combustion air inlet systems: All plastic pipes can be used for air inlet. The pipe does not need to slope since there is no condensate.

**NOTE:** In longer runs of 80mm plastic flue pipe – 3m long or longer – it is advisable to fit a condensate drain in the flue pipe to facilitate the draining away of condensate before it reaches the aluminium parts of the flue system or the boiler itself. This is to prevent excessive corrosion. Atmos can supply a condensate drain-off fitting for 80mm flue pipe. It incorporates a flue test point and it needs to be fitted into a vertical section of the flue. The condensate drain-off fitting allows connection to solvent weld overflow pipe. A trap must be fitted into the condensate drain to prevent flue gases escaping.



## 5.6 Roof outlet prefabricated chimney

Appliance category: C33

When there is little space in a shaft, a roof outlet through a prefabricated chimney may be necessary.

The prefabricated chimney must comply with the minimum lengths shown. The supplier must guarantee the proper operation of the prefabricated chimney with respect to wind attack, ice formation, rain ingress, etc.

In view of the different models and requirements, the prefabricated chimneys must be adjusted to the local situation: a gas certificate is not required.



### CAUTION

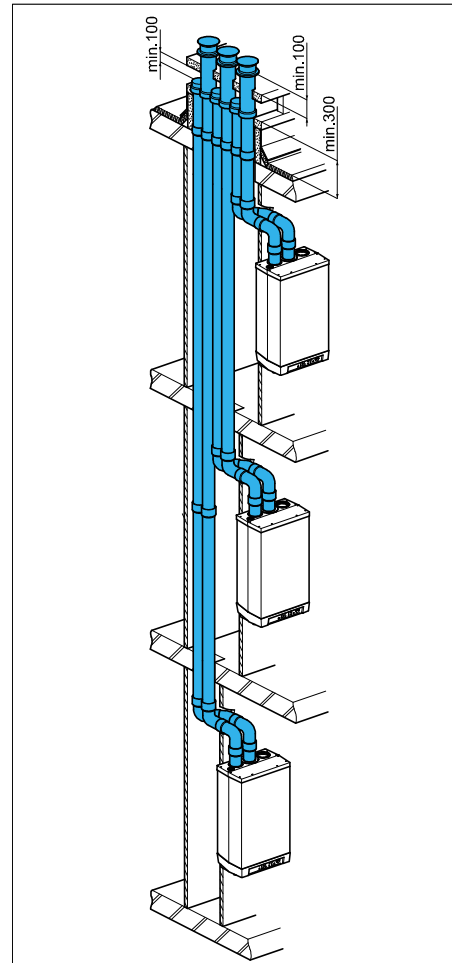
The connection of the air supply and the flue discharge between the appliance and the prefab chimney must be made in pipes of diameter 80 mm.

### Maximum pipe length

See §5.5.5

### Mounting of prefabricated chimney

The outlet can be made at any place in the pitched or flat roof surface.



## 5.7 Atmos MS System

Appliance category: C53 (individual vertical flue and separate horizontal air inlet).



### CAUTION

The air supply (A) in the outside wall must be provided with an Atmos inlet grid.

Flue terminals (B) can be individual, or common terminals can be provided for groups of up to 6 flues.

### Maximum pipe length

See §5.5.5. The air supply pipes and flue discharge pipes should be 80mm.

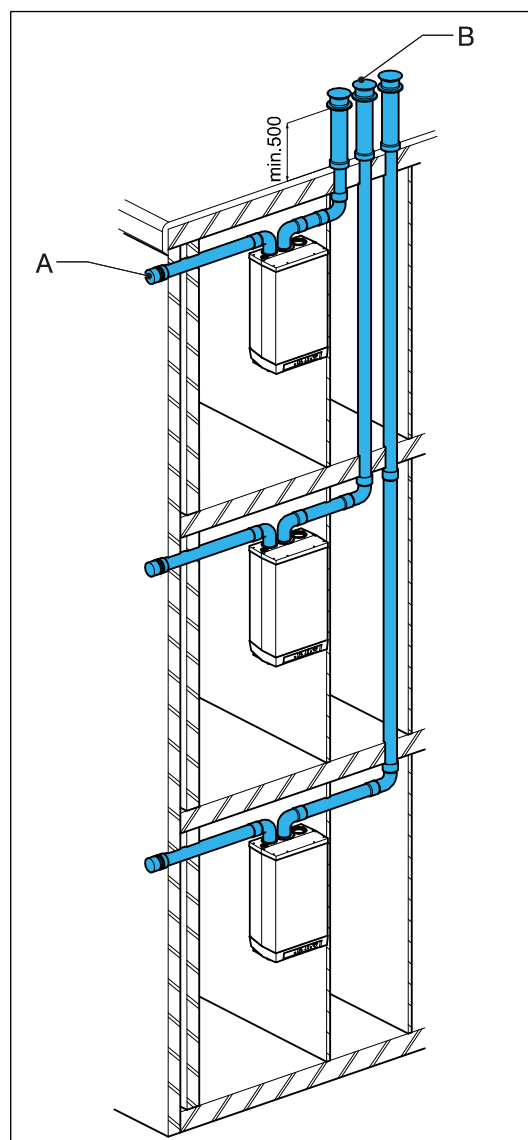
### Mounting of air supply - horizontal

The air supply (A) can be made at any place in the outside wall.

1. Make an opening of diameter 90 mm at the place of the supply.
2. Shorten the air supply pipe to the correct length out of the wall.
3. Mount the Atmos inlet grid and attach this to the pipe.
4. Slide the air supply pipe into the opening and cover the opening with a rosette, if necessary.

### Mounting flue terminal - vertical

1. Mount a roof tile with shell in a pitched roof surface at the place of the outlet.  
Mount an adhesive plate suitable for a double-walled flue terminal diameter 80 mm (outside diameter 96 mm) in a flat roof.
2. Slide the double-walled flue terminal from the outside to the inside through the roof terminal.  
The outlet must protrude at least 500 mm above the roof surface.



## 5.8 Atmos Communal Flue System (CFS)

A design service is provided for each application. There are different configurations possible and the main ones are illustrated.

CFS-NV Naturally ventilated, working under negative pressure  
 CFS-FA Fan assisted, working under positive pressure – smaller diameter pipes are used

### 5.8.1 Atmos CFS<sup>EO</sup> – FA System

Appliance category: C83 (Communal Flue System, Exhaust (Flue) Only – Fan Assisted)

An air supply from the outside wall and a roof outlet with common discharge system is allowed. The system is fan assisted positive pressure.

**A non-return valve arrangement on each boiler is essential to prevent recirculation of exhaust gases to non operational appliances.** There is a common condensate collector at the base of the flue system which must be taken to a suitable drain.

#### Maximum pipe length

The maximum length of the air supply and flue discharge pipes between appliance and common flue discharge and air supply together is 75 metres (80mm pipes).

#### Common flue discharge

The outlet of the flue discharge can be made at any place in the pitching roof surface, provided that the outlet in the roof surface has the same orientation as the air supply in the outside wall. With a flat roof the outlet of the flue discharge must be made in the 'free' outlet area.

### 5.8.2 Atmos CFS System

Appliance category: C43

CFS – NV or CFS – FA systems are available. The fan assisted positive pressure system allows a more compact installation. Connection from the appliance can be either twin pipe or concentric. There is a common condensate collector at the base of the flue system which must be taken to a suitable drain.

**CFS – FA systems require a non-return valve arrangement on each boiler, which is essential to prevent recirculation of exhaust gases to non operational appliances.**

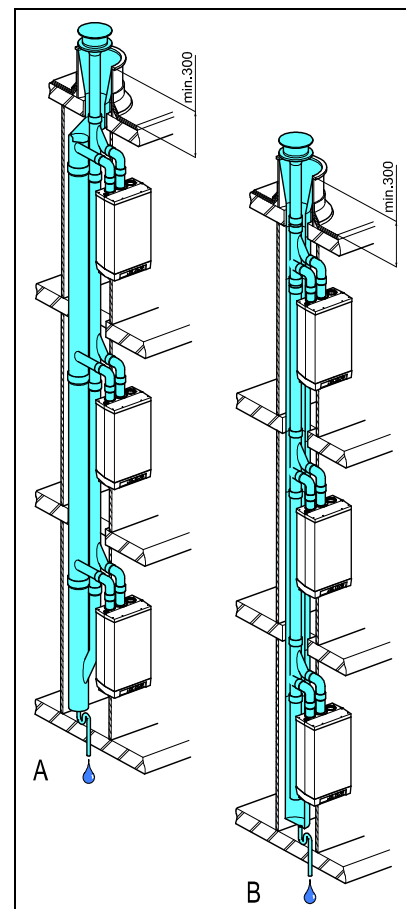
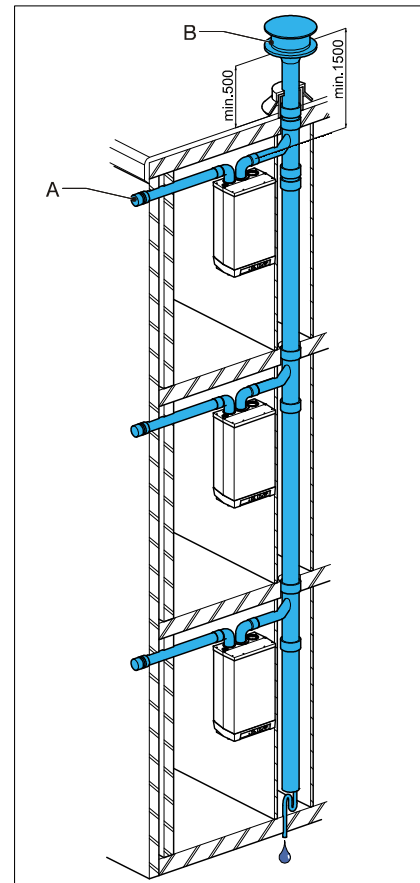


#### CAUTION

For the common flue discharge cover and air supply cover a certificate of incorporation from the Gastec-Gasinstituut is required.

#### Maximum pipe length

The maximum length of the air supply and flue discharge pipes between appliance and CFS system together is 75 metres (80mm pipes).



## 6. COMMISSIONING

### 6.1 Fill and de-aerate the appliance and the system



#### WARNING

Connect the appliance to the mains voltage only after filling and de-aerating!

#### 6.1.1 CH system



#### WARNING

All new and existing systems must be thoroughly drained and flushed out in accordance with BS7593 requirements. A suitable cleaning agent is Sentinel X400. A corrosion inhibitor should be added and the concentration level checked. The inhibitor should be suitable for the materials used in the appliance, such as copper, brass, stainless steel, steel, plastic and rubber. A suitable product is Sentinel X100. When using these products manufacturer's instructions must be followed.

1. Fill the header tank and system.
2. De-aerate the system with the manual air vents on the radiators.
3. Check all joints for leaks.
4. **Fill the condensate trap with water – important (see diagram).**

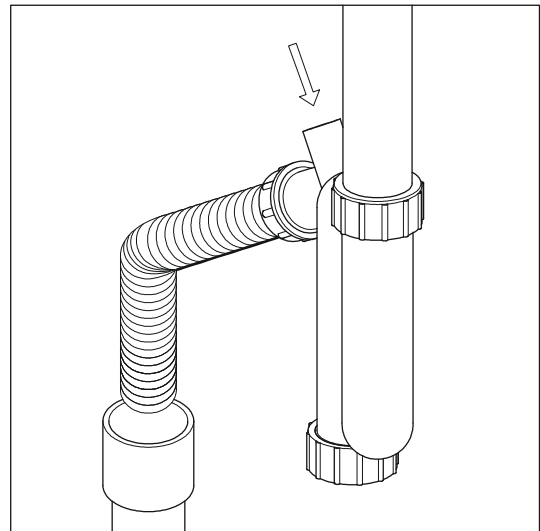
#### 6.1.2 Gas supply

1. Purge the gas supply if necessary via the inlet pressure measuring nipple on the gas valve.
2. Check the connections for leaks.
3. Check the inlet pressure. See Gas and air control.

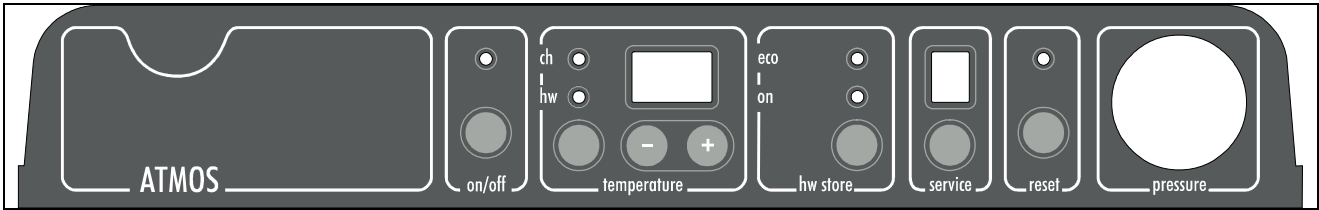
#### Note

The appliance must be installed and commissioned in accordance with the manufacturer's instructions in order to comply with the Building Regs. To demonstrate compliance, the Benchmark Checklist (located at the back of this Manual) must be completed and signed at the time of commissioning, and left with the customer.

**Failure to install and commission according to the manufacturer's instructions and complete the Benchmark Commissioning Checklist will invalidate the warranty for Gas Boiler installations in the UK.**



## 6.2 Commissioning of the appliance



After having carried out the above operations, the appliance can be commissioned.

1. Switch on the electrical supply to the appliance.  
The appliance may carry out a self-test as determined by the controller:  
[ 2 ] (on service display).  
After completing the self-test, a horizontal mark will appear in the service display: [ — ].
5. Press the on/off button in order to put the appliance into operation.  
The boiler is heated and on the service display appear [ 3 ], [ 4 ], [ 7 ]
6. Set the pump position on the basis of the set maximum power and the resistance of the system on the water side. For the head of the pump and the pressure loss of the appliance, see §7.5.
7. Set the room thermostat higher than the room temperature. The appliance will now switch to CH operation: [ 5 ] on service display.
8. Heat the system and the appliance to about 80°C.
9. Check the temperature difference between the supply and return of the appliance and the radiators. This should be about 20°C. At this stage set the maximum power on the service panel. See Setting of maximum power. If necessary, change the pump position and/or the radiator valves. The minimum flow-through is:-
  - 200 l/h at a set power of 7.0 kW
  - 750 l/h at a set power of 26.2 kW
10. Switch off the electrical supply to the appliance.
11. Check the heating system for proper operation.
12. Instruct the User about the operation of the heating system.

### Note

The controls on the display for 'hw' and 'pressure' are not applicable for the HE22 appliance.

### Note

The pump is not part of the HE22 appliance.

### Remarks

- The appliance has been provided with an electronic controller that ignites the flame and continuously monitors this at each heat demand from the heating system.
- Step modulation is set to function (factory setting) so that the power/speed is increased gradually from the minimum (parameter c). This provides the best CH operation. However if the appliance is being used only for heating an indirect hot water tank or for heating fan convectors, the step modulation can be turned off. The appliance will then start almost immediately at the maximum setting and the system will heat up faster.

## 6.3 System Shutdown



### CAUTION

Drain the appliance and the system when the mains voltage has been disconnected and there is a chance of freezing.

1. Drain the appliance using the drain valve.
13. Drain the system at the lowest point.

### 6.3.1 Frost protection

- In order to avoid freezing of the condensate discharge pipe, the appliance should be installed in a frost-free room.
- In order to avoid freezing of the appliance (heat exchanger), it has an appliance frost protection. When the temperature of the heat exchanger drops to 5°C, the burner will be activated and the pump will start running until the temperature of the heat exchanger reaches 10°C.
- When the system (or a part thereof) can freeze, a frost thermostat should be installed in the area to be protected. Connect this according to the wiring diagram. See § 10.1.

#### Note!

The external frost thermostat is not active when the appliance has been switched off at the operating panel or when the mains voltage has been interrupted.

## 7. SETTING AND ADJUSTMENT

The functioning of the appliance is mainly determined by the (parameter) setting in the appliance controller. A part of this can be set directly via the operating panel, while another part requires an Installer code to be entered before settings can be changed.

### 7.1 Directly via operating panel

The following settings can be made directly via the operating panel.

#### Appliance on/off

The appliance is activated by means of the *On/Off* button.

When the appliance is working, the green LED will be lit. When the appliance is off, one bar on the service display (  ) is shown to indicate the presence of voltage.

#### Adjustment of CH supply temperature

Press the *Temperature* button for approx 2 secs until the LED CH and the display start to flash (the display shows the set temperature). Change the temperature using the “+” and “-” buttons, adjustable between 30°C and 90°C.

Press the *Reset* button to store the changes (or press the *On/Off* button to close the menu without storing the changes).

Note: After 30 seconds of no action, the changes will automatically be stored and the controller will return to normal.

#### Reset button

When the controller detects a fault, the red fault LED flashes (above the *Reset* button) and a fault code is shown on the *Temperature* display. (Note: On appliances produced before Nov 07, the red LED is lit and a flashing fault code is shown in the service display). The appliance can be restarted by pressing the *Reset* button for 5 seconds. Check the nature of the fault by means of the fault codes under §8 and solve the problem, if possible, before resetting the appliance.

### 7.2 Settings through the service code

The controller of the appliance has been set in the factory according to the parameters of §7.3.

These parameters can only be changed with the service code. Proceed as follows to activate the program memory:-

1. Set the appliance in the off mode using the *On/Off* button (  on the service display).
2. Simultaneously press the *Service* and *Reset* buttons, until a  appears on the service and the temperature displays.
3. Using the “+” and “-” buttons, set  (service code) on the temperature display.
4. Set using the “*Service*” button the parameter required on the service display.
5. Using the “+” and “-” buttons, adjust the parameter to the required value on the temperature display.
6. After having entered all required changes, press the “*Reset*” button until  appears on the service display (until  appears on the service display for appliances produced before Nov 07).
7. Switch on the appliance again using the “*On/Off*” button.

The controller has now been reprogrammed.

**Note: By pressing the *Temperature* button, the factory settings of the parameters are restored (can only be done if the service code has been set).**

### 7.3 Parameters

Parameter	Setting	Factory setting	Description
		InterOpen HE 22	
0	Service code [15]	-	Access to installer settings. The service code must be entered (=15).
1	System type	1	0 = standard 1 = heating only operation + indirect hot water tank 2 = hot water only operation 3 = heating only operation
2	CH pump continuous	0	0 = pump normal with overrun 1 = pump on continuously; 2 = n/a
3	Set CH power	65	Setting maximum CH load, range c – 99% (or 100 if button pressed again when 99 reached)
4	Set max power	65	Setting maximum HW power (can be increased to 99)
5	n/a		
6	n/a		
7	n/a		
8	CH pump overrun time after CH operation	1	Setting range 0 - 15 minutes Note: Pump overrun is only available if the pump output X2/8 is used for the external pump.
9	CH pump overrun time after external HW tank operation	2	Setting range 0 - 15 minutes (n/a)
A	Position of three-way or two-way valve	0	0 = output signal given for CH operation (n/a) 1 = output signal given for HW tank operation (n/a)
b	(n/a)		
C	Step modulation	1	0 = step modulation off during CH operation 1 = step modulation on during CH operation
c	Min speed in CH operation	25	Setting range 25 to 50% of fan speed (Note: For propane or for appliances with flue non-return valve, set 40)
d	(n/a)		
E	Min. supply temperature during OT demand	10	Setting range 10°C to 60°C. (OT = OpenTherm stat) n/a
E.	OT response	0	0 = Ignore the OT demand if it is lower than parameter E 1 = Set the value at parameter E, if the OT demand is lower 2 = OT device is switched off and the room stat functions as an on/off switch, with the supply temp set at the appliance. n/a
F	Starting speed CH	70	Setting range 50 to 99% (Note: For propane, set 50). This parameter sets the fan speed for ignition and post purge.
F.	Starting speed DHW (not applicable to InterOpen)	70	Setting range 50 to 99% (Note: For propane, set 50). This parameter sets the fan speed for ignition and post purge.
h	Max. fan speed	45	Setting range 40 to 50 (40 = 4000 rpm, 50 = 5000 rpm) The absolute maximum speed can be set through this parameter.
n	Set point for CH flow when heating DHW	85	Setting range 60°C to 90°C.
o	Heating delay after hw use	0	(n/a) (0 to 15 mins).
P	Minimum switch off time during CH operation	5	Setting range 0 to 15 minutes (anti cycling function)



## 7.4 Setting maximum CH power

The maximum CH power is set to 65% in the factory. When the CH system requires more or less power, the maximum CH power can be changed by adjusting the fan speed. See table: Setting CH power.

This table gives the relation between the fan speed and the appliance power.

### Setting CH power

Required CH power	Setting on service display
InterOpen HE22	
(approx kW)	(% of the maximum speed)
22.6	83
20.5	75
19.1	70
17.8	65
16.4	60
15.0	55
13.7	50
12.4	45
11.0	40
9.6	35
8.2	30
6.9	25

#### Caution

The power slowly increases while burning (modulation by time) and decreases as soon as the set supply temperature is reached.

## 7.5 Setting pump power

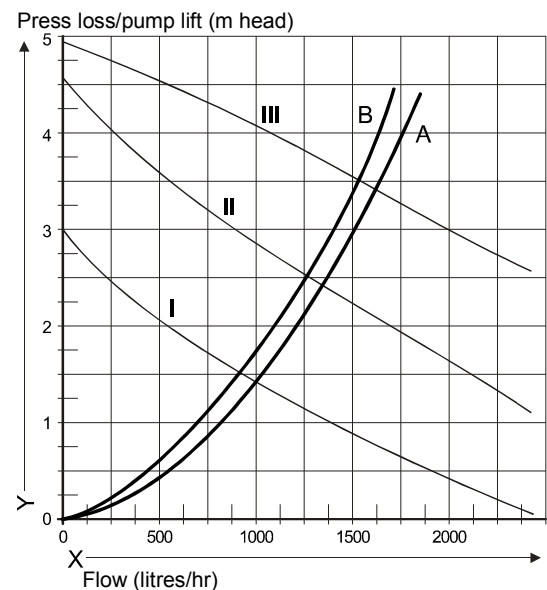
To transport the heat from the appliance into the CH system, a minimum water flow is required (see table below).

1. Set the pump position on the basis of the set maximum power and the resistance of the system on the water side. See typical diagram: Pressure loss and pump lift, type Ups 50-130, positions 1, 2 and 3.
2. Check the temperature difference between the supply and return of the appliance: this should be about 20°C.

The minimum flow-through	Set power
200 l/h	7.0 kW
750 l/h	26.2 kW

- A. InterOpen HE22
- B. (Not applicable)
- I. Pump position 1
- II. Pump position 2
- III. Pump position 3
- X. Flow-through in litres/hr
- Y. Pressure loss / pump lift in metres head

**Note**  
The pump is not part of the HE22 appliance.



## 7.6 Conversion to other gas type



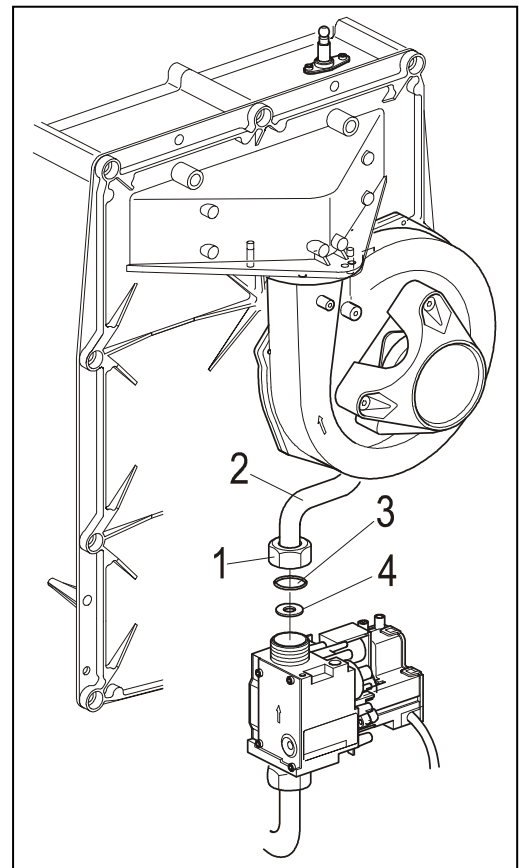
### CAUTION

Activities on the gas-containing parts should only be executed by a qualified registered installer.

When the appliance is connected to another gas type than the type for which the manufacturer has set the appliance, the gas setting ring must be replaced. Conversion sets for other gas types can be ordered.

### Conversion of the gas setting ring

1. Switch off the electrical supply to the appliance .
2. Close the gas tap.
3. Remove the front cover of the appliance.
4. Disconnect the coupling (1) above the gas valve and turn the gas mixing pipe (2) backwards.
5. Replace the O-ring (3) and the gas setting ring (4) by the rings of the conversion set.
6. Reassemble in reverse order.
7. Open the gas tap.
8. Check the gas connections for tightness/ leaks.
9. Switch on the electrical supply to the appliance.
10. Change the parameters c and F to the values given in the table.
11. Now check the setting of the gas/air ratio. (See below)
12. Attach a sticker of the set type over the existing sticker on the gas mixing pipe (2).
13. Apply a sticker of the set gas type at the appliance plate.
14. Remount the front cover of the appliance.



## 7.7 Gas-air control

Although the gas valve is factory-preset, because of variations in different boiler installations this setting must be checked and if necessary adjusted. The setting can be checked by measuring the CO<sub>2</sub> percentage in the flues or by measuring the pressure difference.




In case of any alterations, replacement of the gas valve or conversion to another gas type, the control must be checked and reset if necessary according to the table below:-

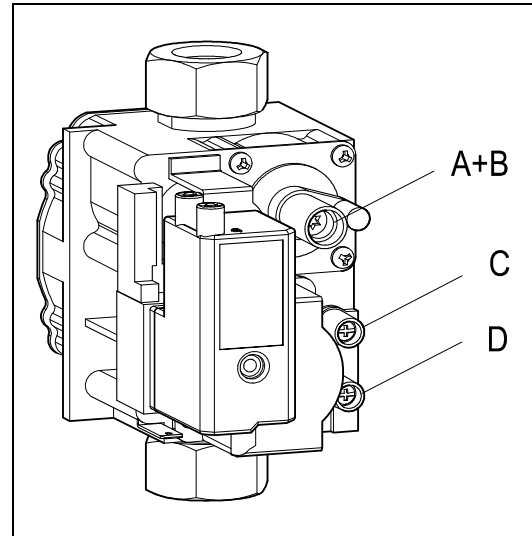
Gas type	Natural gas H	Propane P
Gas category	2H G20	3P G31 (propane)
CO <sub>2</sub> % at low position (L) (service and -)	8.8 – 9.2	9.3 – 9.7
CO <sub>2</sub> % at high position (H) (service and +)	8.6 – 9.6	9.5 – 10.5
CO/CO <sub>2</sub> ratio	0.004 or less	0.004 or less
Gas inlet pressure dynamic (mBar)	17-25	25-45
Gas inlet pressure static (mBar)	20	37
Gas setting ring diameter (mm)	6.95	5.35
Minimum speed (% of max) (parameter c)	25	40
Min. starting speed (% of max) (parameter F)	70	50

Note: See also §7.3 (Parameters)

## Setting gas-air control

### Setting by measuring the CO<sub>2</sub> content of the flue gases

- A flue gas test point must be mounted right above the appliance in the flue discharge.
- A. Dust cap (socket head wrench torx T15)  
 B. Setting screw for the low position (socket head wrench torx T15)  
 C. Off-set pressure measuring nipple  
 D. Inlet pressure measuring nipple
1. Switch off the appliance using the *On/Off* button (  on service display).
  1. Open the flue gas test point and insert the gas test probe.
  2. Switch on the appliance using the *On/Off* button.
  3. Set the boiler to the lowest output by simultaneously pressing the “Service” and “-“ buttons on the operating panel until an  appears on the service display.
  4. Measure the CO<sub>2</sub> value and the CO/CO<sub>2</sub> ratio. Check that these correspond with the values in the table. If the CO<sub>2</sub> value does not correspond with the value in the table, proceed as follows for setting:
  5. Remove the front cover of the appliance.
  6. Remove the dust cap (A) with a torx T15 driver
  7. Using a torx driver (T15), adjust the setting screw (B) to the correct CO<sub>2</sub> value (clockwise higher and counter-clockwise lower).
  8. After measuring and setting, set the boiler to the highest output by simultaneously pressing the “Service” and “+“ buttons (twice) on the operating panel until an  appears on the service display.
  9. Measure the CO<sub>2</sub> value and the CO/CO<sub>2</sub> ratio. Check that these correspond with the values in the table.
  10. If the high output CO<sub>2</sub> is not within the parameters allowed in the chart above, return to low output and adjust the CO<sub>2</sub> setting at low output before returning to high out put to check it again. Contact the manufacturer if you encounter difficulties.
  11. Exit the test mode by simultaneously pressing the “+“ and “-“ buttons on the operating panel. Replace the dust cap (A) and close the flue gas test point.
  12. Remount the front cover of the appliance.





Siemens gas valve & ignition transformer

**Caution:** On windy days or on installations with a long flue run it is necessary to replace the front cover of the boiler in order to obtain an accurate CO<sub>2</sub> measurement

### Setting the gas valve by pressure measurement

This method is less accurate, but usually gives a sufficient result.

1. Switch off the appliance using the *On/Off* button (  on service display).
2. Remove the front cover of the appliance.
3. Turn the measuring nipple (C) on the gas valve open with two turns and connect this through a tube to the plus connection of the pressure gauge.
4. Switch on the appliance using the *On/Off* button.
5. Set the boiler to the lowest output by simultaneously pressing the “Service” and “-“ buttons on the operating panel until an  appears on the service display.
6. Read the pressure. This should be about - 0.05 mBar (between - 0,1 mBar and 0 mBar). When this is not the case, proceed as follows for setting:-
7. Remove the dust cap (A) with a torx T15 driver.
8. Set the pressure using setting screw (B) (clockwise higher and counter-clockwise lower).

9. After measuring and setting, replace the cover cap A and close the measuring nipple (C) again.
10. Remount the front cover of the appliance.

**Caution:** Check the measuring nipple (C) for gas tightness.

### **7.8 Carbon monoxide : carbon dioxide ratio (CO/CO<sub>2</sub> ratio)**

Atmos recommends that a carbon monoxide : carbon dioxide ratio test is carried out when the boiler is commissioned. This is best done when the CO<sub>2</sub> content of the flue gasses is measured. See the procedure described in §7.7.

**The CO/CO<sub>2</sub> ratio at low or high output should be no higher than 0.004.**

A CO/CO<sub>2</sub> ratio between 0.004 and 0.008 means that the appliance is **'At Risk' (AR)**.

A CO/CO<sub>2</sub> ratio above 0.008 means that the appliance is **'Immediately Dangerous' (ID)**

Where an 'at risk' or 'immediately dangerous' situation is encountered, measures **must** be undertaken to rectify the situation. Particular attention should be given to the gas/air ratio, the integrity of the flue, or blockage in the heat exchanger. **Contact the manufacturer for assistance.**