

The **Greenstar Heatslave** range of high efficiency oil-fired condensing combi boilers from Worcester

Technical and specification information



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Bosch Group



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As part of Europe's largest supplier of heating products, Worcester, Bosch Group has the UK-based resources and support capability to offer you the value-added solutions we feel you deserve.

"At Worcester we recognise the vital role you, our customer, has in the specification and installation of 'A' rated, energy efficient appliances in homes across the UK. We will continue to invest in our products, people, facilities and added value services such as training, to give you the support you require in providing a total solution for your customers' comfort."

Richard Soper,
Managing Director, Worcester, Bosch Group

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The Greenstar Heatslave oil-fired condensing combi boiler series



Greenstar Heatslave combi boilers are designed for use with sealed primary systems to provide multi-point mains fed domestic hot water and full central heating. The appliances are pre-plumbed and pre-wired, and combine a robust, mild steel heat cell, stainless steel secondary heat exchanger, circulating pump, motorised valve and expansion vessel.

An instantaneous supply of hot water is available from the hot water heat exchanger. On demand hot water priority directs full boiler output to sustain draw-off temperatures and ensure rapid recovery after draw-off.

The appliances have been designed for energy efficient operation, with accurate thermostatic system control. Simple to use controls for the kitchen models give a completely independent choice of hot water or central heating services.

The Greenstar Heatslave series is part of a market-leading range of energy-saving boilers which is very good news for the environment and excellent news for specifiers, developers, installers and consumers alike.

At least 90% of the oil consumed by a new Greenstar Heatslave condensing combi boiler is converted into heat for the heating and/or hot water system, whereas new non-condensing boilers achieve less than 85% efficiency. Therefore, compared with a non-condensing combi boiler, a Greenstar Heatslave can cut heating and hot water bills by between 5-10%. The Greenstar range of condensing boilers are all SEDBUK band A rated and deliver this energy-saving performance by extracting additional latent heat from the exhaust gases – a highly efficient use of energy which also significantly reduces carbon dioxide emissions into the atmosphere.

And to all these major benefits you can add yet more: superlative Worcester quality and reliability, outputs to comfortably satisfy the heating and hot water demands of the larger household with more than one bathroom and truly exceptional all-round value for money.

The Greenstar Heatslave range at a glance

	12/18	18/25	25/32
Condensing / SEDBUK A rated	•	•	•
Output kW	Min 12kW Max 18kW	18kW 25kW	25kW 32kW
DHW flow rate	15l/min**	18l/min*	22l/min*
Floor standing	•	•	•
Dimensions (mm) (w x h x d)	520 x 855 x 600	520 x 855 x 600	520 x 855 x 600
Conventional CF or RS room sealed from one appliance	•	•	•
28 sec kerosene	•	•	•
Oil burner	Bentone	Bentone	Riello

	External 12/18	External 18/25	External 25/32
Condensing / SEDBUK A rated	•	•	•
Output kW	Min 12kW Max 18kW	18kW 25kW	25kW 32kW
DHW flow rate	15l/min**	18l/min*	22l/min*
Floor standing	• Outdoors	• Outdoors	• Outdoors
Dimensions (mm) (w x h x d)	640 x 950 x 770	640 x 950 x 770	640 x 950 x 770
Balanced flue	•	•	•
28 sec kerosene	•	•	•
Oil burner	Bentone	Bentone	Riello

*Optimum DHW flow rate
**Restricted DHW flow rate

Features	Benefits
Same footprint as previous Heatslave boilers (kitchen models)	Less disturbance during boiler replacement installations
100% testing of heat exchangers and burners	Quality assurance
Conventional flue and room sealed balanced flue from one model (kitchen models)	Siting flexibility, product availability
Circular 'push-fit' flue system	Time saving
Left, right and rear flue direction all below worktop height with inline bends (kitchen models)	Siting flexibility
Optional fascia mounted programmer (kitchen models)	Reduced wiring
2 year [†] warranty (5 years on primary heat exchanger)	Peace of mind for the user
Robust quality manufacture	Quality assurance
Stainless steel secondary heat exchanger	High efficiency, SEDBUK Band A. Durability
Pre-heated thermal store	Instantly heated hot water
SEDBUK A rated	Compliant with forthcoming mandatory building regulations
Built-in frost protection (external models)	Minimises the risk of freezing
IP45 Ingress protection (external models)	Resistant to water, dust and the external elements
Robust green cabinet (external models)	Blends in with garden, long life expectancy

[†]Subject to conditions

The Greenstar Heatslave oil-fired condensing combi boiler series

Models

The Greenstar Heatslave is supplied as standard suitable for sealed primary water systems. The appliance contains an expansion vessel, 3bar pressure relief valve, pressure gauge and an automatic air vent. The appliance can be connected to an open vent or sealed primary system.

Options

Oil

These appliances are for use on 28 sec kerosene fuel only.

Hot water mode

With the appliance in a standby condition, i.e. heatbank at temperature set by the hot water thermostat, on a demand for hot water the flow switch will energise the pump and circulate primary hot water around the boiler and the plated water to water heat exchanger. The burner will automatically light to maintain the temperature of the heatbank.

When hot water is no longer required the appliance will continue to operate until the heatbank has returned to temperature. Priority is always given to the production of domestic hot water. Should the central heating be in operation when a hot water demand is made, the supply to the radiators will be temporarily interrupted.

Central heating mode

On a demand for central heating the diverter valve will open and the pump will energise to circulate primary water around the heating system. The burner will automatically light and the radiators will heat up to the temperature set by the heating control thermostat.

Building Regulations

Part L of the Building Regulations requires that all oil-fired boilers installed in new and existing properties in England, Wales and Scotland have a SEDBUK efficiency of at least 86% (bands A or B).

Applications

- The Greenstar Heatslave can be installed most beneficially where space and water storage are a problem.
- The kitchen models have been designed for siting within a kitchen or utility room. External models have been designed for siting outside of the property. The output and flow rate offered by the Greenstar Heatslave range makes it suitable for many sizes of domestic property.
- Because the Greenstar Heatslave provides hot water at mains pressure, it can be used to provide powerful showers.

Advantages

- All Greenstar oil-fired boilers operate at thermal efficiencies of at least SEDBUK Band A, ensuring optimum economy.
- The optional plug-in programmer eliminates the need for external wiring of a programmer (kitchen models only).
- The room sealed flue ensures extremely quiet operation.
- The Greenstar Heatslave floor standing boiler has at least a 5mm mild steel inner primary heat exchanger surface and a 3mm outer. This, combined with a stainless steel secondary heat exchanger which extracts additional latent heat within the flue gases, ensures a solid, robust product.

Special features

- Designed for easy installation and servicing.
- Many years development has produced the optimum match of burner to boiler, ensuring maximum efficiency and exceptionally clean and quiet operation.
- Every boiler carries a full 2-year warranty (5 years on primary heat exchanger), with an extended-period option.*

User controls

The Greenstar Heatslave kitchen models are supplied as standard with a light grey fascia panel. An optional 7 day twin-channel digital programmer is available to give fully automatic control.

When the appliance is used for central heating, provision is made for external control by room and frost thermostats.

Thermostatic Radiator Valves (TRVs) to BS 2767:10 may be used, but with this type of control a room thermostat is still required to meet Building Regulations.

The Greenstar Heatslave External models fascia is concealed behind a weatherproof access panel. A programmer should be wired internally to the property for ease of access and operation by the homeowner.

*Subject to conditions



Kitchen models



External models

Greenstar Heatslave literature

The appliance is dispatched complete with comprehensive installation, maintenance and user instructions.

User operating instructions for the 7 day twin-channel programmer are contained within the programmer box.

The advantages of a combi boiler

A combi (or combination boiler) is a compact and highly efficient unit giving all the heating and hot water you need, with significant savings on running and installation costs.

Unlike a conventional heating and hot water system, a combi boiler system does not store domestic hot water. It heats water directly from the cold mains – as you use it. There's no hot water cylinder, no tank in the loft (and so less risk of freezing and flooding), and none of the connecting pipe work.

So you not only save space, but also reduce hot water costs – which can account for up to 60% of a typical domestic fuel bill.

A combi also supplies hot water at mains pressure, giving you exhilarating power showering without the need for a pump. And as, on average, a shower uses considerably less water than a typical bath, the savings on hot water costs and water consumption can be significant.

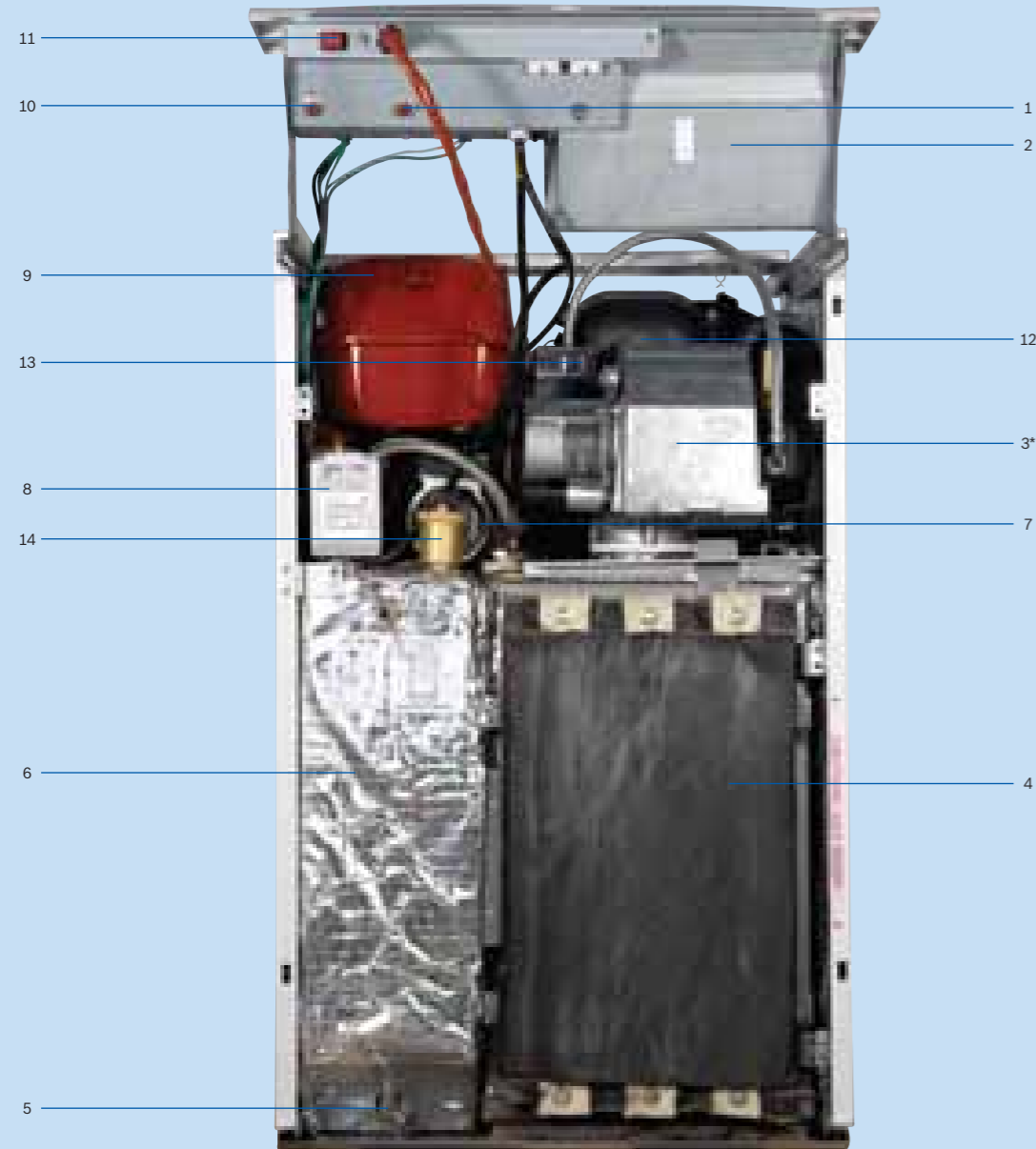
Regular boiler layout



Combi boiler layout

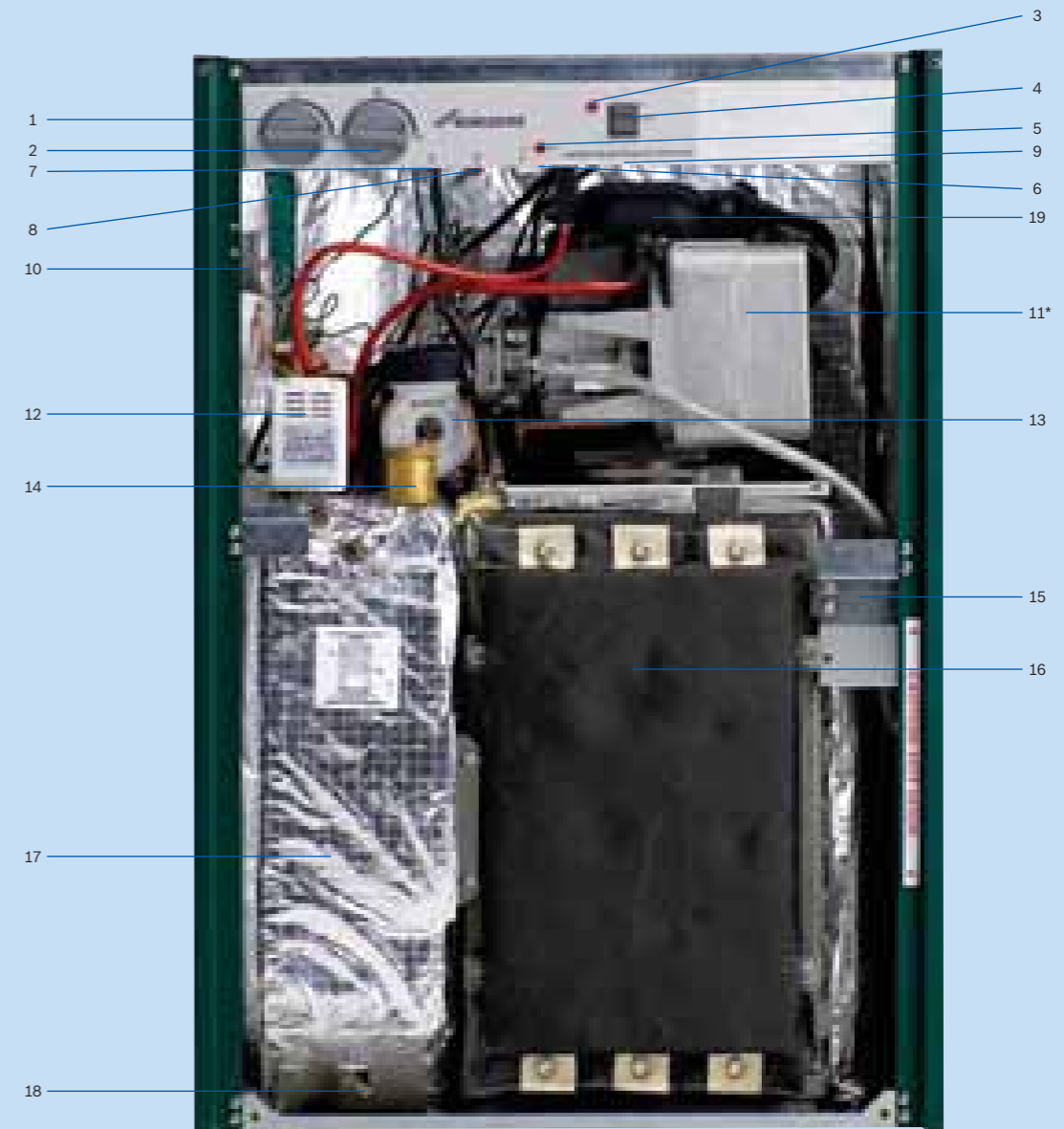


The Greenstar Heatslave oil-fired condensing combi boiler – inside story (kitchen models)



*Burner shown:
Bentone Sterling 50

The Greenstar Heatslave oil-fired condensing combi boiler – inside story (external models)



*Burner shown:
Riello RDB 2.2

Key to components

- 1. Overheat Thermostat Reset Button
- 2. Electrical Control Box Assembly
- 3. Pressure Jet Burner
- 4. Primary Heat Exchanger
- 5. Heat Bank Drain-off Tap
- 6. Heat Bank
- 7. Circulating Pump
- 8. Diverter Valve

- 9. Expansion Vessel
- 10. Flue Gas Overheat Reset Button
- 11. Burner Reset Button
(12/18 and 18/25 models only)
- 12. Flue Gas Analysis Point (behind burner)
- 13. Burner Reset Button
(25/32 model only)
- 14. Auto Air Vent

Key to components

- 1. DHW Temperature Control
- 2. CH Temperature Control
- 3. Mode Indicator
- 4. Mode Switch
- 5. Lockout Indicator
- 6. Burner Reset Button
(12/18 and 18/25 models only)
- 7. Flue Gas Overheat Reset Button
- 8. Overheat Thermostat Reset Button

- 9. Service Connection
- 10. Pressure Gauge
- 11. Pressure Jet Burner
- 12. Diverter Valve
- 13. Circulating Pump
- 14. Auto Air Vent
- 15. Condensate Trap Bracket
- 16. Primary Heat Exchanger
- 17. Heat Bank
- 18. Heat Bank Drain-off Tap
- 19. Flue Gas Analysis Point (behind burner)

Technical data – Greenstar Heatslave series

Model	Greenstar Heatslave 12/18	Greenstar Heatslave 18/25	Greenstar Heatslave 25/32
Primary water capacity (total) (litres)	69	69	72
Maximum static head (metres)	30	30	30
Minimum static head (metres)	1	1	1
Exit flue gas mass flow (kg/hr)	29	40	51
Conventional flue (min. dia. required) (mm) (kitchen models)	100	100	100
Room sealed flue (dia.) (mm)	80/125	80/125	80/125
Fuel line (compression) (mm)	10	10	10
CH flow (mm)	22	22	28
Mains water inlet (mm)	15	15	15
DHW outlet (mm)	22	22	22
CH return (mm)	22	22	28
CH vent (optional)	1" BSP	1" BSP	1" BSP
CH make-up (cold feed)	3/4" BSP	3/4" BSP	3/4" BSP
Condensate (polypropylene) (mm)	21.5	21.5	21.5
Electrical power supply voltage (AC V)	230	230	230
Frequency (Hz)	50	50	50
Maximum power consumption (W)	240	240	263
CH flow temperature range (min/max) (°C)	55/81	55/81	55/81
DHW t/stat range (°C)	55/72	55/72	55/72
CH control thermostat differential (°C)	5	5	5
Boiler high limit thermostat (cut out) (°C)	92	92	92
Boiler manual reset overheat thermostat (cut out) (°C)	105	105	105
Flue reset overheat thermostat (cut out) (°C)	110	110	110
Maximum hearth temperature (°C)	100	100	100
SEDBUK value %/band	90.2%/Band A	90.1%/Band A	90.3%/Band A
Appliance protection rating (with programmer blanking plate fitted) (kitchen models)	IP 20	IP 20	IP 20
Appliance protection rating (with fascia programmer fitted) (kitchen models)	IP 20	IP 20	IP 20
Appliance protection rating (external models)	IP 45	IP 45	IP 45
Weight (kg) (kitchen models)	177	177	179
Weight (kg) (external models)	195	195	206

Installing the Greenstar Heatslave series (kitchen models)

Installation

General

The Greenstar Heatslave oil-fired floor standing appliance is not suitable for external installation unless a suitable enclosure is provided. The floor must be firm and level.

The floor on which the boiler is to be mounted should be capable of supporting an overall weight of approximately 251kg. The appliance has a hearth temperature of below 100°C. The boiler does not therefore require a constructional hearth.

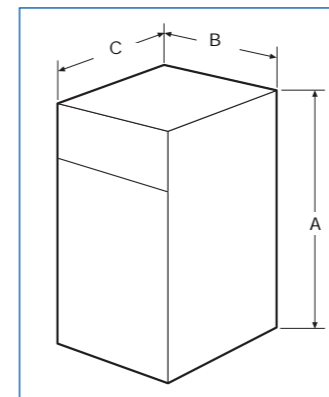
The appliance should however be positioned on a non-permeable solid base. Care should be taken to ensure that the appliance is level.

Flue system

The appliance can be connected to either an open flue system or a multi directional, room sealed balanced flue. In either case either the conventional flue adaptor or the appropriate RS flue kit needs to be specified.

All materials used on open flue systems must be able to withstand the corrosive elements present within the flue gases from condensing boilers. Stainless steel of certain grades is permissible and guidance should be sought from the flue manufacturer. Contact RITE Vent, Tel: 0191 416 1150, SFL, Tel: 01271 326633, Interactive, Tel: 01908 569887.

Casing dimensions



Cabinet dimensions (mm)	
A	855
B	520
C	600

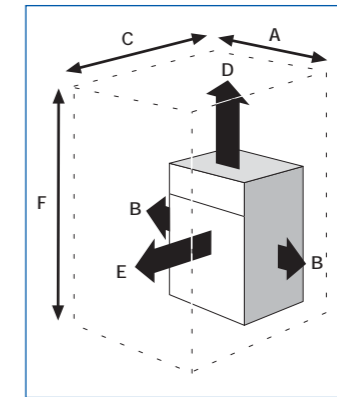
Siting of appliance

Clearances

The following clearances should be allowed for installation and servicing.

Recommended installation clearances

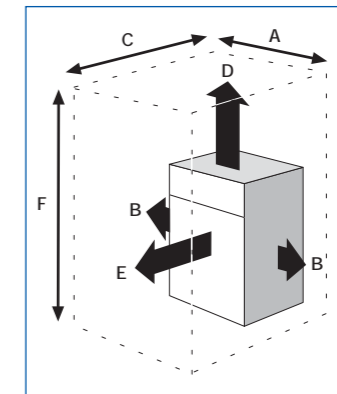
The minimum space required to install the boiler.



Dimensions (mm)	
A	720
B	100
C	1,200
D	300
E	600
F	1,155

Service clearances

The minimum space required to service the boiler only. Access will be required to condensate trap to the right of the boiler.



Dimensions (mm)	
A	530
B	5
C	1,200
D	300
E	600
F	1,155

Installing the Greenstar Heatslave series (external models)

Installation

General

The appliance should not be installed where there is a potential for excessive ground water coverage.

The appliance is only suitable for installing externally at a suitable location onto a fixed, permanent rigid surface.

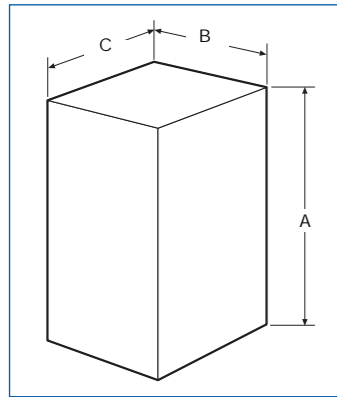
There must be sufficient hard standing around the appliance to allow for servicing.

The appliance must be installed on a flat, level surface to ensure that condensation does not enter the primary heat exchanger. Tarmac and wood hard standings are not recommended.

Flue system

The appliance can only be connected to the Oilfit External room sealed balanced flue (see page 22).

Casing dimensions



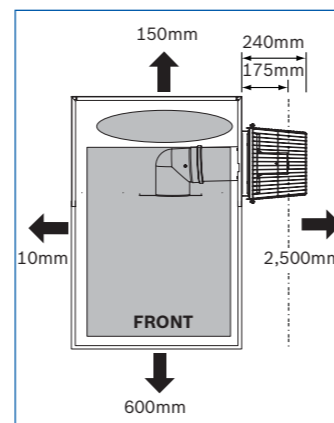
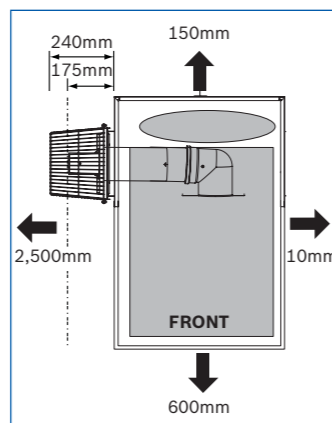
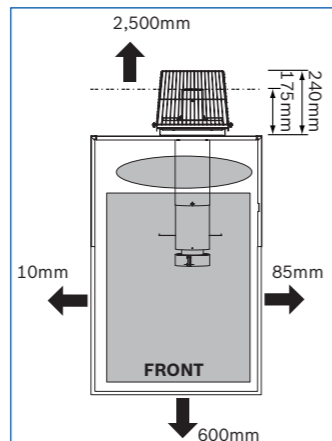
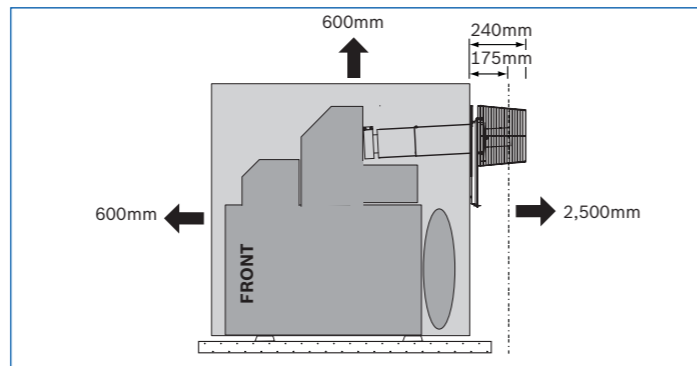
Cabinet dimensions (mm)	
A	950
B	640
C	770

Siting of appliance

Clearances

The following clearances should be allowed for installation and servicing. It is strongly recommended that the flue terminal faces away from walls to reduce the possibility of "wetting" occurring.

Minimum service & flue clearances	
Above	600mm
Front	600mm
RH/LH flue outlet on opposite side	10mm
RH flue outlet on rear	85mm
LH flue outlet on rear	10mm
Rear = flue outlet on side	150mm
Rear = rear flue outlet	2,500mm

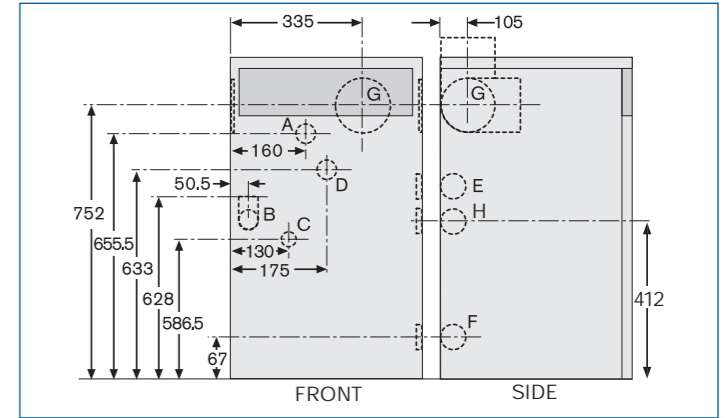


Pipework connections

Pipework positions (kitchen models)

A to H (opposite) show the flue and pipe outlets (mm):

Note: For servicing purposes, keep the condensate and pressure relief discharge pipes away from components and pipework connections.



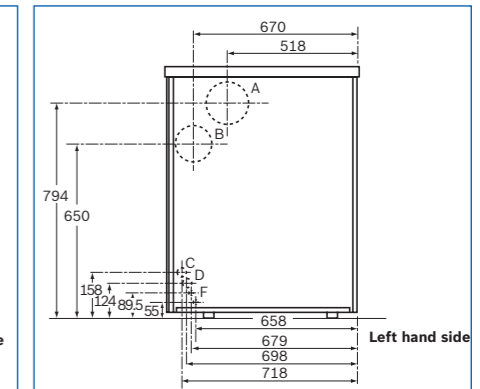
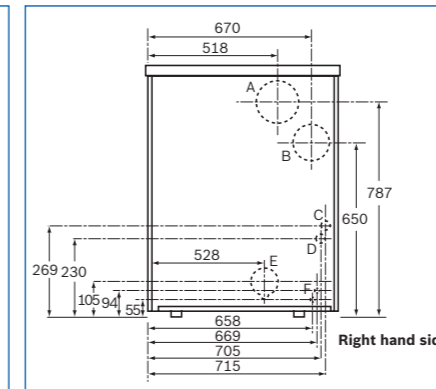
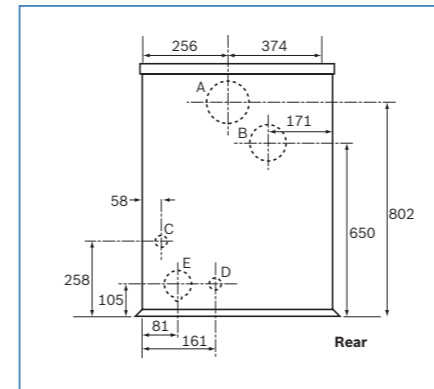
Pipework positions (kitchen models)

Key	Description	Greenstar Heatslave 12/18	Greenstar Heatslave 18/25	Greenstar Heatslave 25/32
A	CH flow/heating vent	22mm dia. plain ended copper	22mm dia. plain ended copper	28mm dia. plain ended copper
B	DHW flow	22mm dia. plain ended copper	22mm dia. plain ended copper	22mm dia. plain ended copper
C	Primary cold feed	15mm dia.	15mm dia.	15mm dia.
D	CH return	22mm dia. plain ended copper	22mm dia. plain ended copper	28mm dia. plain ended copper
E	Optional vent	1" BSP	1" BSP	1" BSP
F	Drain/optional fill	3/4" BSP	3/4" BSP	3/4" BSP
G	Flue outlet	Flue outlet	Flue outlet	Flue outlet
H	Condensate outlet	Condensate outlet	Condensate outlet	Condensate outlet

Pipework positions (external models)

A to F (below) show the flue and pipe outlets (mm):

Note: For servicing purposes, keep the condensate and pressure relief discharge pipes away from components and pipework connections.

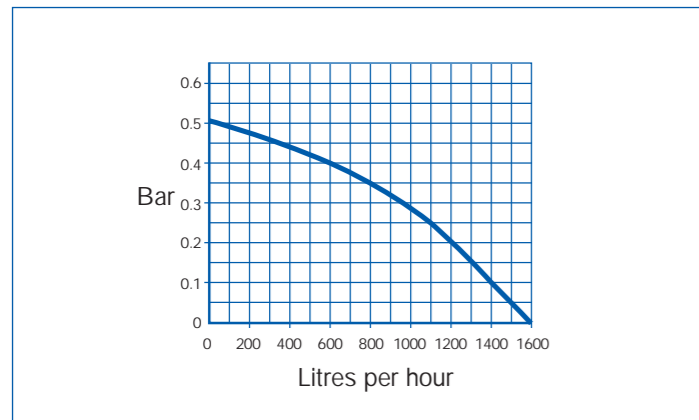


Pipework positions (external models)

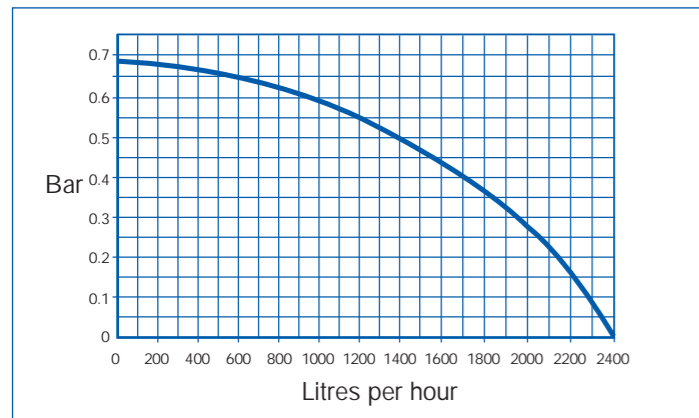
Key	Description	Greenstar Heatslave External 12/18	Greenstar Heatslave External 18/25	Greenstar Heatslave External 25/32
A	Flue outlet	Flue outlet	Flue outlet	Flue outlet
B	CH flow/heating vent	22mm dia. plain ended copper	22mm dia. plain ended copper	28mm dia. plain ended copper
	DHW flow	22mm dia. copper	22mm dia. copper	22mm dia. copper
	Mains water inlet	15mm dia.	15mm dia.	15mm dia.
	CH return	22mm dia. copper	22mm dia. copper	28mm dia. copper
	Optional open vent	Optional open vent	Optional open vent	Optional open vent
C	Condensate outlet	Condensate outlet	Condensate outlet	Condensate outlet
D	Pressure relief pipe	15mm dia.	15mm dia.	15mm dia.
E	Fire valve capillary & drain access	Fire valve capillary & drain access	Fire valve capillary & drain access	Fire valve capillary & drain access
F	Oil connections	Oil connections	Oil connections	Oil connections

Pump output

Greenstar Heatslave 12/18kW and 18/25kW models



Greenstar Heatslave 25/32kW model



Condensate disposal

All condensing boilers generate condensate discharge which needs to be piped away from the appliance in a plastic pipe.

The amount of condensate generated depends on the efficiency and operating status of the appliance. Depending on operating temperatures, the appliance will condense in both heating and hot water modes and can generate up to 2.5 litres of condensate an hour.

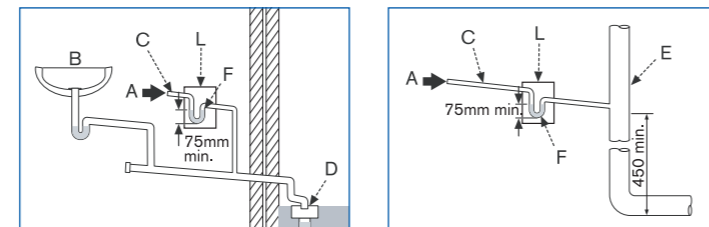
Never terminate or discharge into any open source, including: sink, bath, shower, bidet, toilet etc.

Note: any external condensate pipework should be protected with weather resistant insulation to help prevent freezing or be run in 32mm plastic waste pipe.

The condensate connection on Worcester appliances is in 21.5mm polypropylene. The pipe should be extended and run away from the appliance with a constant fall of 3° or 50mm in every metre.

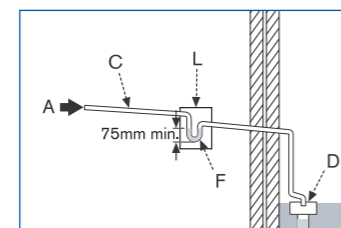
The condensate trap is supplied with the kitchen model for installation externally from the appliance cabinet. This trap is located within the cabinet of the external models.

The condensate pipe can terminate into any one of four areas:



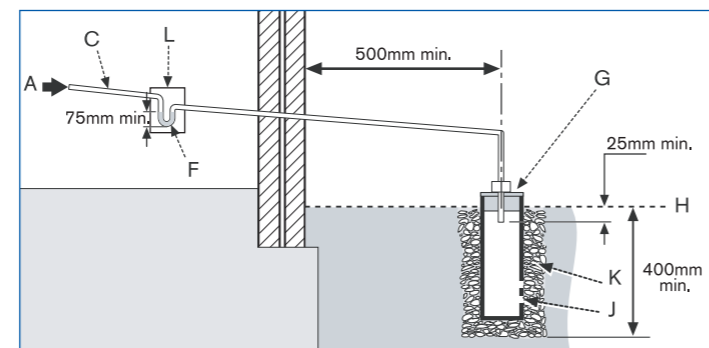
Internal waste drainage system

Soil/vent stack



External drainage system

- A Condensate from boiler
- B Sink
- C 22mm dia. plastic polypropylene condensate pipe
- D Drain
- E Internal soil and vent stack
- F Condensate trap (75mm min)
- G 300mm x 100mm dia. sealed plastic tube
- H Ground level
- J Drainage holes 50mm from base of tube (12mm dia. at 25mm centres) facing away from building
- K Limestone chippings
- L Condensate trap – supplied



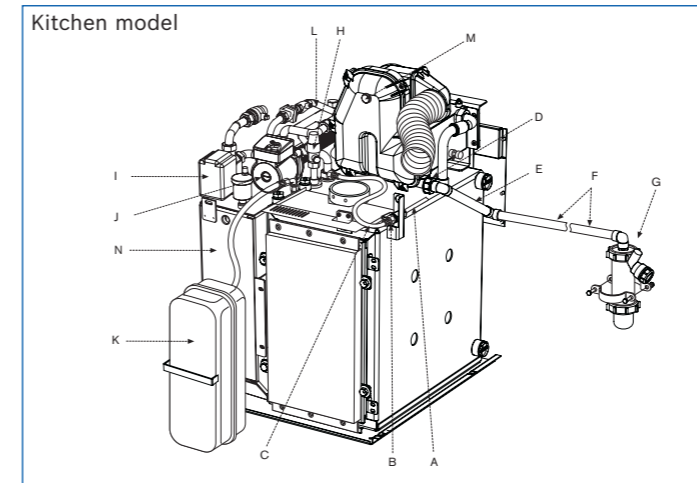
External condensate absorption point

External condensate pipework

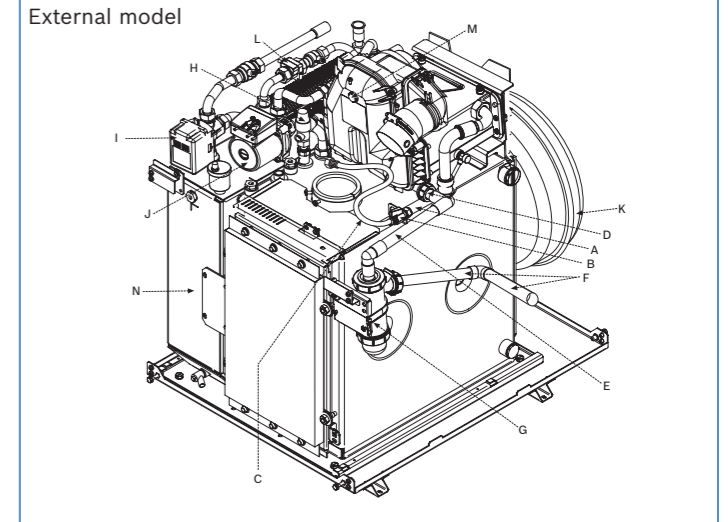
The Greenstar Heatslave is supplied with a condensate trap that needs to be connected outside of the boiler cabinet on kitchen models but as close as possible to the appliance. The condensate trap is located within the cabinet of external models.

Where the condensate pipe has to be externally run, the following should be considered:

- The pipe run should take the shortest practical route.
- The pipework should be protected with weather resistant insulation to help prevent freezing or be run in 32mm plastic waste pipe.
- The pipe should terminate as close as possible to the ground or drain, whilst still allowing the condensate to safely disperse. This will minimise the possibility of wind blowing up the pipe.
- The pipework should be installed with the minimum of horizontal runs and with a downward slope of at least 3° or 50mm in every metre.
- The maximum external condensate run is 3 metres.



- A Oil supply pipe (10mm dia.) – not supplied
- B Oil pipe isolating valve
- C Flexible oil pipe
- D Flue manifold condensate outlet
- E Condensate outlet (21.5mm dia.) – supplied
- F Condensate pipe – not supplied
- G Condensate trap with wall clamp – supplied
- H Pressure relief (15mm dia.)
- I Diverter valve
- J Circulating pump
- K Expansion vessel (in service position)
- L Flow switch
- M Flue gas analysis point
- N Heat Bank



Air supply (kitchen models)

CF (conventional flue)

An adequate supply of free air must be delivered to the boiler for combustion purposes through a permanent inlet, such as an air brick, into the area where the boiler is situated.

Combustion air must not be taken from bathroom or bedroom areas.

Minimum area of air inlet for combustion

kW	Area (cm ²)
12/18	72
18/25	110
25/32	149

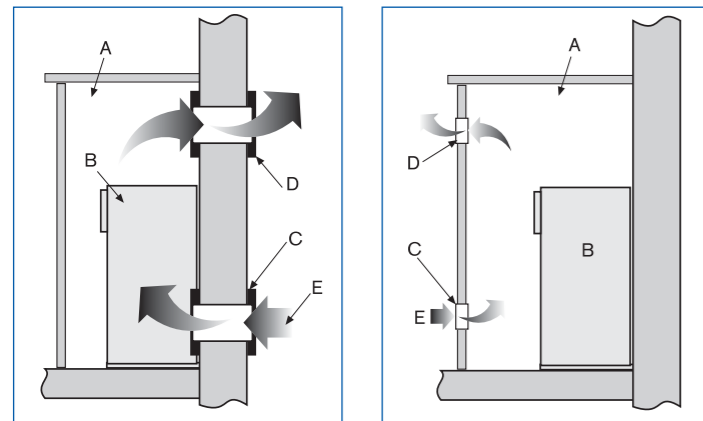
Compartment clearances (kitchen models)

Follow the requirements of BS5410 and note:

- Minimum clearances must be maintained.
- An access door is required to install, service and maintain the boiler and any ancillary equipment.
- If fitting the boiler into an airing cupboard use a non-combustible material (if perforated, maximum hole sizes of 13mm) to separate the boiler from the airing space.

Compartment ventilation

- Ventilation must be provided for boilers fitted into compartments as described in BS5410.
- A minimum of 2 air vents must be fitted, one at low level (C) and another at high level (D) onto the same wall using the same air (E) for circulation.
- Air vents must allow access for clean free air and must be sited to comply with the flue terminal position requirements.
- Air ducting runs must not exceed 3 metres.
- Low level air vents must be less than 450mm from the floor.
- A warning label must be added to the vents with a statement to the effect: "Do not block this vent. Do not use for storage".



External ventilation

Internal ventilation

- A Compartment
B Boiler
C Low level vent
D High level vent
E Air supply

Conventional flue

kW	Internal* ventilation		External** ventilation	
	High level (D)	Low level (C)	High level (D)	Low level (C)
12/18	143	214	72	143
18/25	220	330	110	220
25/32	297	446	149	297

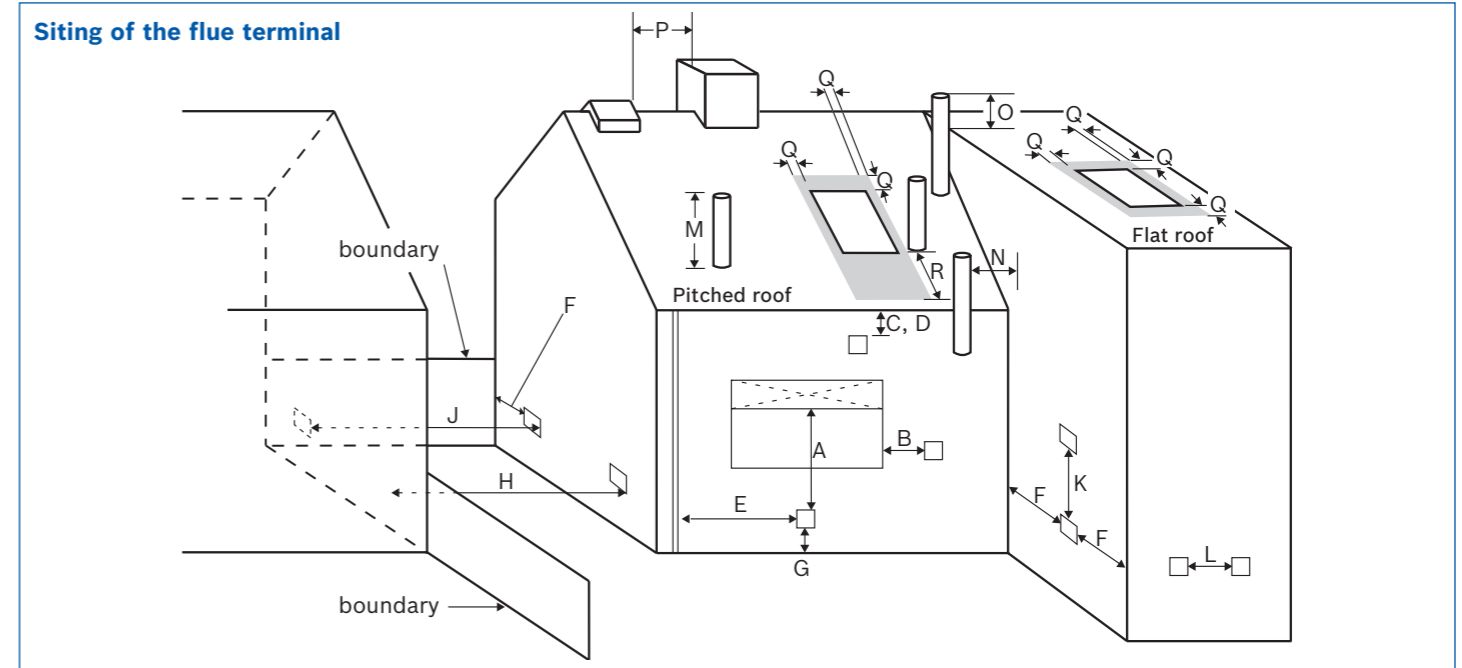
Room sealed flue

kW	Internal* ventilation		External** ventilation	
	High level (D)	Low level (C)	High level (D)	Low level (C)
12/18	143	143	72	72
18/25	220	220	110	110
25/32	297	297	149	149

*Internal air to and from a space/room inside the building.

**External air to and from directly outside the building.

Flue terminal positioning



Key to illustration

Minimum dimensions of flue terminal positions for oil-fired appliances:

Terminal position (mm)	CF	RS(H)	RS(V)
A ¹² Directly below an opening, air brick, opening window, etc	N/A	600	N/A
B ¹² Horizontally to an opening, air brick, opening window, etc	N/A	600	N/A
C Below a plastic/painted gutter, drainage pipe or eaves if combustible material protected	N/A	75	N/A
D ³ Below a plastic/painted gutter, drainage pipe or eaves without protection to combustible material	N/A	600	N/A
E From vertical sanitary pipework	N/A	300	N/A
F From an external or internal corner or from a surface or boundary alongside the terminal	N/A	300	N/A
G Above ground or balcony level	N/A	300*	N/A
H From a surface or boundary facing the terminal	N/A	600**	N/A
J From a terminal facing the terminal	-	1,200**	-
K Vertically from a terminal on the same wall	N/A	1,500	N/A
L Horizontally from a terminal on the same wall	-	750	-
M Above the point of highest intersection with the roof	600	-	600
N From a vertical structure on the side of the terminal	750	-	750
O Above a vertical structure less than 750mm from the side of the terminal	600	-	600
P From a ridge terminal to a vertical structure on the roof	1,500	-	N/A
Q Above or to the side of any opening on a flat or sloping roof	300	-	300
R Below any opening on a sloping roof	1,000	-	1,000

Key: - N/A Not allowed, CF Conventional Flue, RS(H) Room Sealed Horizontal flue, RS(V) Room Sealed Vertical flue.

Notes:

1. Terminals should be positioned so as to avoid products of combustion accumulating in stagnant pockets around the building or entering into buildings.
2. Vertical structure in N, O and P includes tank or lift rooms, parapets, dormers etc.
3. Terminating positions should be at least 1.8m from an oil storage tank unless a wall with at least 30 min fire resistance and extending 300mm higher and wider than the tank is provided between the tank and the terminating position.
4. Where a flue is terminated less than 600mm away from a projection above it and the projection consists of plastics or has a combustible or painted surface, then a heat shield of at least 750mm wide should be fitted.
5. If the lowest part of the terminal is less than 2m above the ground, balcony, flat roof or other place to which any person has access, the terminal should be protected by a guard.
6. Notwithstanding the dimensions given above, a terminal should not be sited closer than 300mm to combustible material. In the case of a thatched roof, double this separation distance should be provided. It is also advisable to treat the thatch with a fire retardant material and close wire in the vicinity of the flue.
7. It is essential that a flue or chimney does not pass through the roof within the shaded area delineated by dimensions Q and R.
8. Where protection is provided for plastic components, such as guttering, it is essential that this is to the standard specified by the manufacturer of the plastic components.

- Flue terminals must be positioned to avoid combustion products entering into buildings.
- The flue must be fitted and terminated in accordance with the recommendations of BS 5410.
- The flue must not cause an obstruction.
- Discharge from the flue outlet must not be a nuisance.
- Flue gases have a tendency to plume and in certain weather conditions a white plume of condensation will be discharged from the flue outlet which could be regarded as a nuisance, for example, near security lighting.
- There should be no restriction preventing the clearance of combustion products from the terminal.
- The air inlet/outlet duct and the terminal of the boiler must not be closer than 25mm to any combustible material. Detailed recommendations on protection of combustible materials are given in BS 5410.
- A protective terminal guard must be fitted if the terminal is 2m or less above a surface where people have access. The guard must be spaced equally (minimum 50mm) around the flue and fixed to the wall with plated screws.

Stainless steel terminal guard

Part No: 7 716 190 050

The following additional guidelines (from part L Exceptions Guidance Document) are recommended when determining the flue outlet position:

- Avoid discharging flue gases into car ports or narrow passageways.
- *Minimum distance of the flue terminal from above ground is 2,100mm where directed to a public footpath, private access route or a frequently used area and 2,500mm from a car parking area.
- **Minimum distance of the flue terminal to a facing wall, fence, building or property boundary is 2,500mm.

Greenstar Heatslave series horizontal fluing options (kitchen models)

Horizontal RS flue



Flue diameter	125mm
Maximum flue length	4,000mm

Standard flue kit

Comprises:

- 1 x terminal assembly
- 1 x internal finishing plate(s)
- 1 x external weather seal
- 1 x flue clamp

Part No. 7 716 190 031

Accessories

	Worcester Part No. 125mm dia.
Flue Extension (1,000mm)	7 716 190 033
90° Bend	7 716 190 034
45° Bend	7 716 190 035
Horizontal Flue Kit	7 716 190 031

The following criteria should be noted when planning the installation:

- The flue system inclines 3° (53mm per metre) from the appliance, to prevent condensation from dripping from the flue terminal.
- Because the appliance operates at high efficiency a white plume of condensation will be emitted from the terminal. Care must be taken when selecting the flue terminal position.

The Greenstar Heatslave can be connected to a conventional flue system or a multi-directional room sealed balanced flue system.

Conventional flue



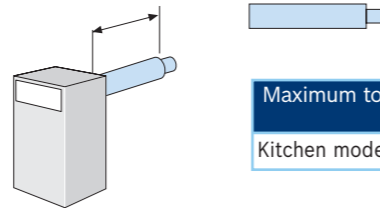
To convert the appliance to a conventional flue system the vertical flue adaptor needs to be specified:

CF flue adaptor

Part No. 7 716 190 036

Option 1

Standard rear flue assembly



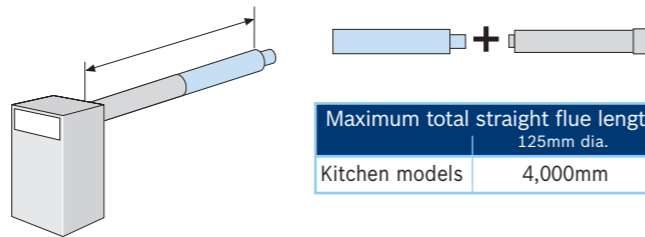
Maximum total straight flue length 125mm dia.	
Kitchen models	140mm - 390mm

Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031

Option 2

Extended rear flue assembly



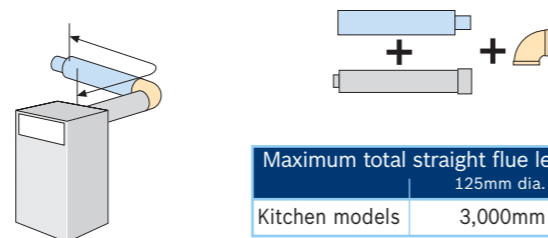
Maximum total straight flue length 125mm dia.	
Kitchen models	4,000mm

Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031
125mm	Flue Extension	up to 4	7 716 190 033

Option 3

Extended rear flue assembly with a 90° bend



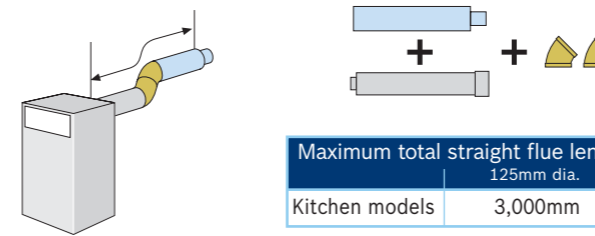
Maximum total straight flue length 125mm dia.	
Kitchen models	3,000mm

Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031
125mm	Flue Extension	up to 3	7 716 190 033
125mm	90° Bend	1	7 716 190 034

Option 4

Extended rear flue assembly with 45° bends



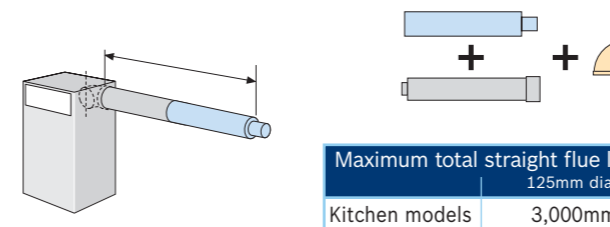
Maximum total straight flue length 125mm dia.	
Kitchen models	3,000mm

Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031
125mm	Flue Extension	up to 3	7 716 190 033
125mm	45° Bend (pair)	1	7 716 190 035

Option 5

Side flue extension*



Maximum total straight flue length 125mm dia.	
Kitchen models	3,000mm

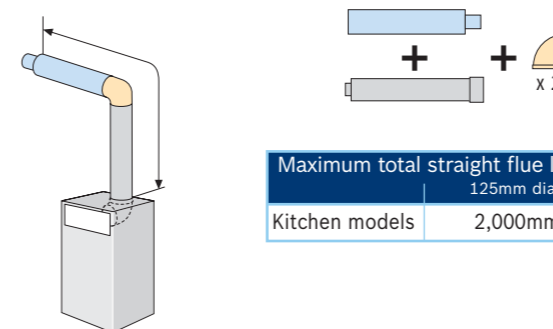
Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031
125mm	Flue Extension	up to 3	7 716 190 033
125mm	90° Bend	1	7 716 190 034

*For left hand flue options the expansion vessel within the boiler requires removal and siting externally from the appliance.

Option 6

High level side discharge



Maximum total straight flue length 125mm dia.	
Kitchen models	2,000mm

Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Standard Flue Kit	1	7 716 190 031
125mm	Flue Extension	2	7 716 190 033
125mm	90° Bend	2	7 716 190 034

Greenstar Heatslave series vertical fluing options (kitchen models)

Vertical RS Flue



Flue diameter	125mm
Flue terminal assembly diameter	138mm
Maximum flue length (inc. terminal)	6,000mm
Flue terminal assembly length	1,020mm

Vertical balanced flue kit

Comprises:

- 1 x flue terminal assembly
- 1 x fire stop plates
- 1 x wall clip
- 1 x flue clamp
- 1 x bend

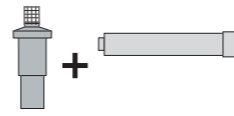
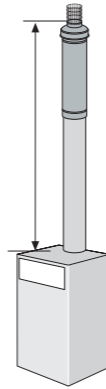
Part No. 7 716 190 032

Accessories

	Worcester Part No. 125mm dia.
Flue Extension (1,000mm)	7 716 190 033
90° Bend	7 716 190 034
45° Bend (pair)	7 716 190 035
Horizontal Flue Kit	7 716 190 031
Flashing Kit - Flat Roof	7 716 191 090
Flashing Kit - Pitched Roof	7 716 191 091

Option 1

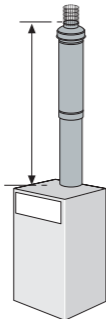
Vertical flue system no offset



Maximum total straight flue length 125mm dia.	
Kitchen models	6,000mm

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Vertical Flue Kit	1	7 716 190 032
125mm	Flue Extension	up to 6	7 716 190 033

Minimum height

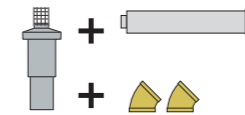
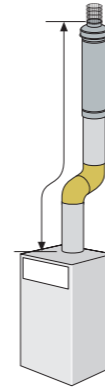


Minimum total straight flue length 125mm dia.	
Kitchen models	800mm

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Vertical Flue Kit	1	7 716 190 032

Option 2

Vertical balanced flue system with two 45° bends

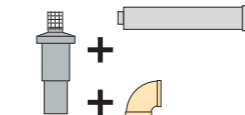
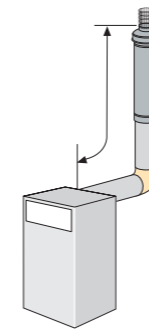


Maximum total straight flue length 125mm dia.	
Kitchen models	5,000mm

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Vertical Flue Kit	1	7 716 190 032
125mm	Flue Extension	up to 4	7 716 190 033
125mm	45° Bend (pair)	1	7 716 190 035

Option 3

High level rear discharge



Maximum total straight flue length 125mm dia.	
Kitchen models	5,000mm

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Kitchen models			
125mm	Vertical Flue Kit	1	7 716 190 032
125mm	Flue Extension	up to 5	7 716 190 033
125mm	90° Bend	1	7 716 190 034

Greenstar Heatslave series horizontal fluing options (external models)

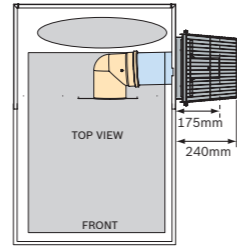


Horizontal RS flue



Option 3

Low-level right



Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave External models			
125mm	Standard Flue Kit	1	7 716 190 052
125mm	90° Bend	1	7 716 190 034
80/125mm	Flue Terminal Guard	1	7 716 190 050

N.B. For left and right hand flue termination, a 90° bend is required.

Low level horizontal BF kit

Comprises:

1 x terminal assembly

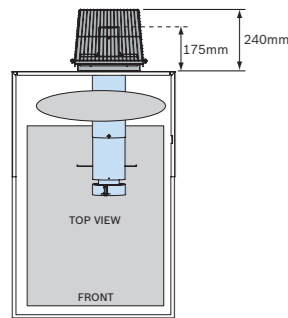
Part No. 7 716 190 052

Accessories

	Worcester Part No. 125mm dia.
90° Bend	7 716 190 034
Flue Terminal Guard	7 716 190 050

Option 1

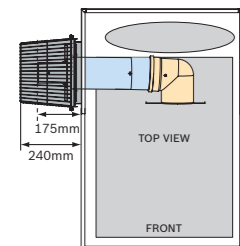
Low-level rear



Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave External models			
125mm	Standard Flue Kit	1	7 716 190 052
80/125mm	Flue Terminal Guard	1	7 716 190 050

Option 2

Low-level left



Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave External models			
125mm	Standard Flue Kit	1	7 716 190 052
80/125mm	90° Bend	1	7 716 190 034
80/125mm	Flue Terminal Guard	1	7 716 190 050

N.B. For left and right hand flue termination, a 90° bend is required.

Oilfit flexible flue liner

Conventional vertical flue kit

100mm dia. conventional vertical flue kit –

Comprises:

1 x adaptor (80mm dia. to 100mm dia.)

1 x adaptor (80mm dia. to 103mm dia.) –

not required for the flexible flue liner installation

1 x bend

1 x bolt and solvent-free grease sachet

1 x air inlet silencer (Greenstar Camray series only)

1 x support bracket

Part No. 7 716 190 036

Accessories

	Worcester Part No. 100mm dia.
1,000mm extension kit	7 716 190 066
500mm extension kit	7 716 190 067
Telescopic extension	7 716 190 068
45° bend	7 716 190 069
Wall cover plate kit	7 716 190 074
Spare seal	8 716 110 299 0

Conventional flexible flue liner kit

100mm dia. Oilfit flexible flue liner kit –

Comprises:

1 x chimney cowl

1 x terminal

1 x support collar

1 x support bracket assembly

1 x centralising spacer

1 x flexible to rigid adaptor kit (includes liner & seal)

1 x flexible liner

1 x rigid to flexible adaptor kit (includes liner & seal)

Part No. 7 716 190 076 (8m)

Part No. 7 716 190 077 (12m)

Part No. 7 716 190 078 (15m)

Typical installations

Open (conventional) flued appliances must not be installed in a bedroom, bathroom or bed-sitting room.

Before installation commences it must be checked that:

- The chimney is structurally sound and free of obstructions
- The chimney has been thoroughly swept to remove deposits since it was last used.

The flexible flue pipe is only suitable for lining chimneys that conform to the Building Regulations and it should not be used as a chimney on its own or outside a masonry or flueblock chimney.

All the flexible liner and adaptors must be within the chimney with rigid stainless steel flue pipe connecting to the boiler.

The first 600mm of the stainless steel flue pipe off the boiler must be vertical with no bends or restrictions.

There must be at least a 25mm clearance between the S/S flue pipe and any combustible material.

The data label must be secured onto the chimney or chimney hearth using the plate provided.

If it is not possible to attach the plate to the chimney, the plate can be attached, in a visible position, next to the electricity consumer unit.

Do not attach the data plate or label to the flue system.

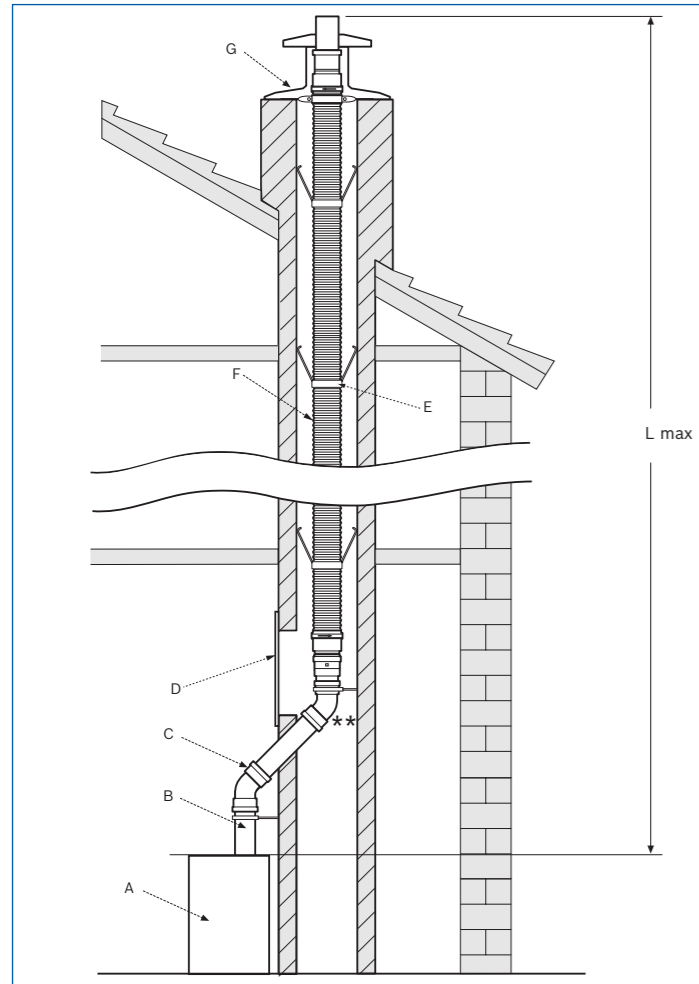
The terminal should not be modified and an extra cowl or cover must not be fitted, the boiler is designed so that any rain that enters the flue will be directed down to the condensate drain.

Calculating the length:

L maximum = boiler maximum minus 1m*.
(Each 45° bend has a 0.5m equivalent flue length)

*If the chimney has an additional offset, then L will be reduced by an extra metre.

**The top 45° bend may not be required if there is sufficient room in the chimney to turn the flexible liner through 45° within the chimney. The stainless steel section must be adequately supported.



- A Boiler
- B S/S vertical section (min. 600mm)
- C Maximum 2 bends at 135°
- D Fire stop plate/inspection plate
- E Centralising spacer
- F Flexible liner
- G Chimney cowl

Model	Flue diameter (mm)	Max. flue length (mm)
Greenstar Heatslave series		
12/18	100	15,000
18/25	100	15,000
25/32	100	15,000

Typical installations

Open (conventional) flued appliances must not be installed in a bedroom, bathroom or bed-sitting room.

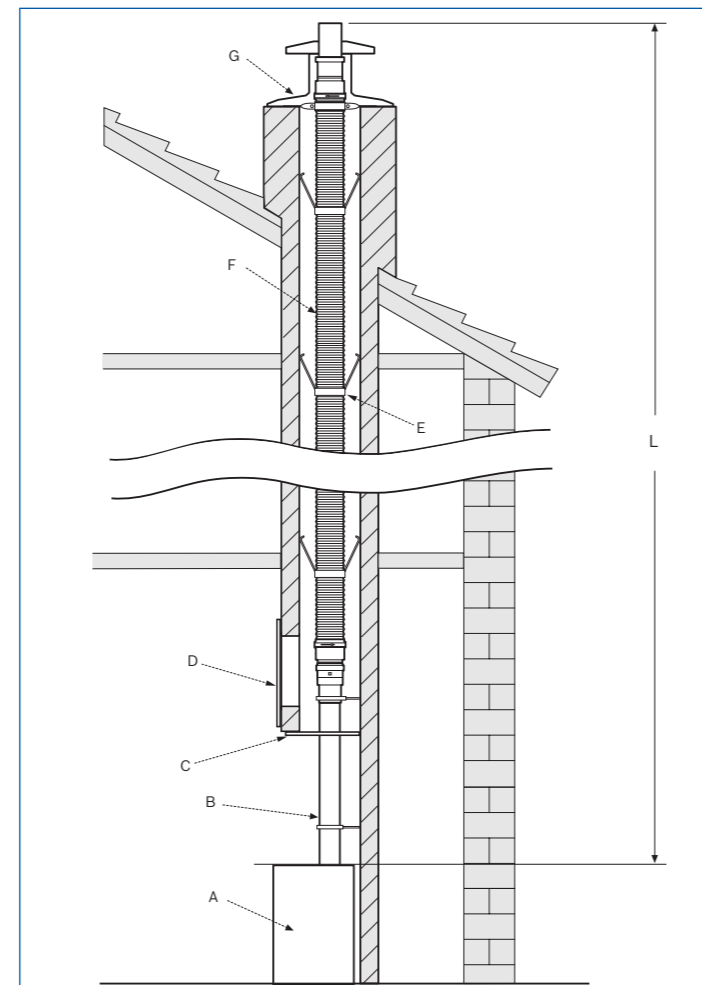
The first 600mm of the stainless steel flue pipe off the boiler must be vertical with no bends or restrictions.

Calculating the flue length:

L maximum = boiler maximum*.

*If the chimney has an additional offset, then L will be reduced by an 1m.

Note: depending upon the opening situation, a fire stop plate can be used.



- A Boiler
- B S/S vertical section (min. 600mm)
- C Fire stop plate
- D Inspection plate
- E Centralising spacer
- F Flexible liner
- G Chimney cowl

Model	Flue diameter (mm)	Max. flue length (mm)
Greenstar Heatslave series		
12/18	100	15,000
18/25	100	15,000
25/32	100	15,000

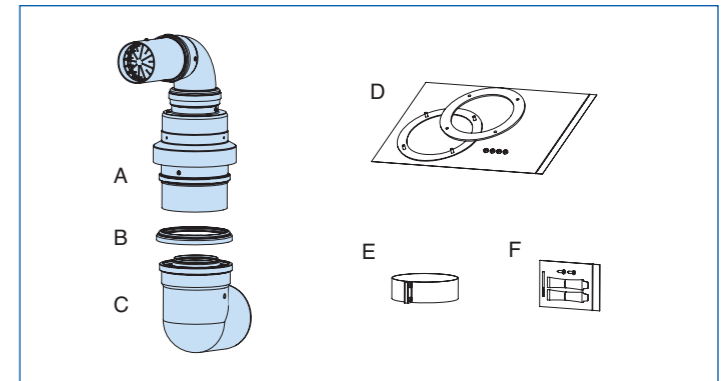
Oilfit external flue system



80/125mm dia. horizontal external flue kit

- Comprises:
- 1 x terminal assembly (A)
 - 1 x 80/125mm dia. weather seal (B)
 - 1 x external bend (C)
 - 1 x external cabinet flue seal and plate (D)
 - 1 x clamp bracket (E)
 - 1 x drill pack (F)

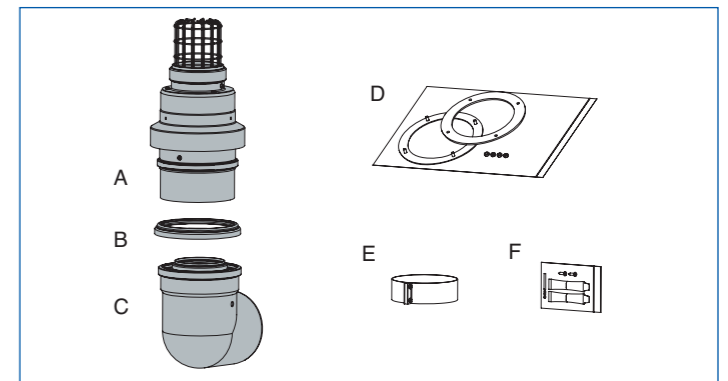
Part No. 7 716 190 057



80/125mm dia. vertical external flue kit

- Comprises:
- 1 x terminal assembly (A)
 - 1 x 80/125mm dia. weather seal (B)
 - 1 x external bend (C)
 - 1 x external cabinet flue seal and plate (D)
 - 1 x clamp bracket (E)
 - 1 x drill pack (F)

Part No. 7 716 190 053

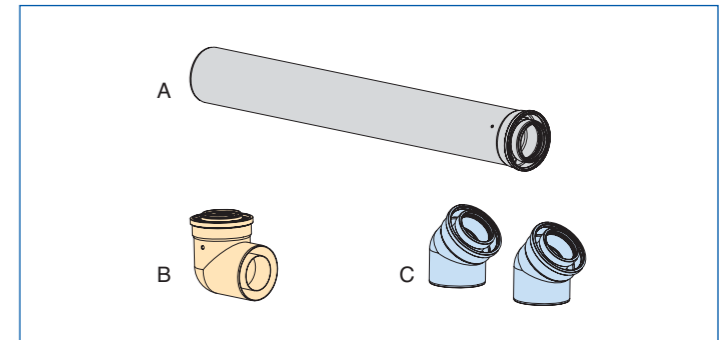


External flue extension components

External flue extension (A)
Part no. 7 716 190 054 (80/125mm dia.)

External 90° bend (B)
Part no. 7 716 190 055 (80/125mm dia.)

External 45° bend (C)
Part no. 7 716 190 056 (80/125mm dia.)



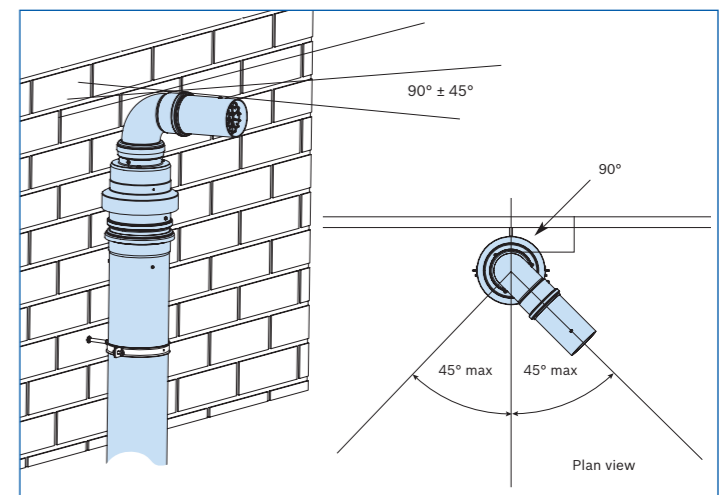
Horizontal balanced external flue

Balanced flue terminal and extensions

Horizontal terminals only:

The terminal outlet must face directly away from the wall or no more than 45° from this direction. All flue clearances must be measured from the end of the terminal in the direction the terminal is facing during use.

Each extension must be supported using the wall clamps supplied or a suitable alternative.



Calculating the flue length

The diagrams (opposite) show the components used and the maximum flue length (L) for each flue configuration.

To achieve the maximum flue length (L), a flue section will have to be reduced in length.

Only flue extensions can be reduced in length by cutting.

Important: All horizontal sections must rise away from the boiler by 52mm per metre (3°) to allow condensate to drain back to the boiler.

- 1). Measure the total flue length required, noting that the maximum straight flue length including the terminal is:

Flue diameter	80/125mm dia.
Greenstar Heatslave series	
Maximum flue length	2,000mm*
Greenstar Heatslave External series	
Maximum flue length	2,000mm*

*From the boiler casing, (the horizontal kit bend is ignored when calculating the flue length).

- 2). Reduce the total straight flue length for each extra flue bend by:
 - 1,000mm for each 90° bend
 - 500mm for each 45° bend.

Flue extension lengths:

Horizontal 1,000mm overall length. Effective length when engaged into sockets within the flue run is 950mm.

Flue terminal lengths:

Horizontal 80/125mm dia.: 305mm

80/125mm dia. horizontal external flue kit –

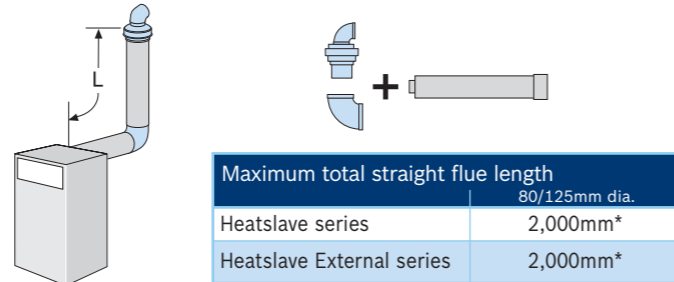
- Comprises:
- 1 x terminal assembly
 - 1 x 80/125 weather seal
 - 1 x external bend
 - 1 x external cabinet flue seal and plate
 - 1 x clamp bracket
 - 1 x drill pack

Part No. 7 716 190 057

Accessories

	Worcester Part No.	
	80/125mm dia.	100/150mm dia.
External Flue Extension	7 716 190 054	7 716 190 060
External 90° Bend	7 716 190 055	–
External 45° Bends (pair)	7 716 190 056	7 716 190 061

Horizontal terminal option



Flue components required

Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave series			
125mm	Horizontal External Flue Kit	1	7 716 190 057
125mm	External Flue Extension	up to 2	7 716 190 054
Greenstar Heatslave External series			
125mm	Horizontal External Flue Kit	1	7 716 190 057
125mm	External Flue Extension	up to 2	7 716 190 054

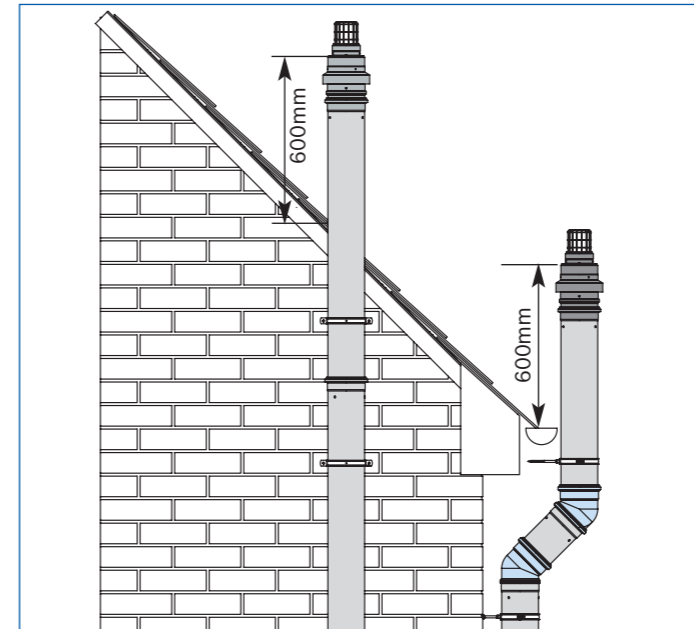
*From the boiler casing, (the horizontal kit bend is ignored when calculating the flue length).

Vertical balanced external flue

Balanced flue terminal and extensions

Vertical terminals only:

- The terminal must extend beyond the roof or wall by 600mm.
- The terminal must be at least 600mm horizontally from any vertical structure.
- Each extension must be supported using the wall clamps supplied or a suitable alternative.



Calculating the flue length

To achieve the maximum flue length (L), a flue section will have to be reduced in length.

Only flue extensions can be reduced in length by cutting.

Important: All horizontal sections must rise away from the boiler by 52mm per metre (3°) to allow condensate to drain back to the boiler.

- 1). Measure the total flue length required, noting that the maximum straight flue length including the terminal is:

Flue diameter	80/125mm dia.	100/150mm dia.
Greenstar Heatslave series		
Maximum flue length	6,000mm*	–
Greenstar Heatslave External series		
Maximum flue length	6,000mm*	–

*From the boiler casing, (the vertical kit bend is ignored when calculating the flue length) maximum 2m of horizontal flue.

- 2). Reduce the total straight flue length for each extra flue bend by:
 - 1,000mm for each 90° bend
 - 500mm for each 45° bend

Flue extension lengths:

Vertical 1,000mm overall length. Effective length when engaged into sockets within the flue run is 950mm.

Flue terminal lengths:

Vertical 80/125mm dia.: 185mm + cage
Vertical 100/150mm dia.: 270mm + cage

80/125mm dia. vertical external flue kit

- Comprises:
- 1 x terminal assembly
 - 1 x 80/125 weather seal
 - 1 x external bend
 - 1 x external cabinet flue seal and plate
 - 1 x clamp bracket
 - 1 x drill pack

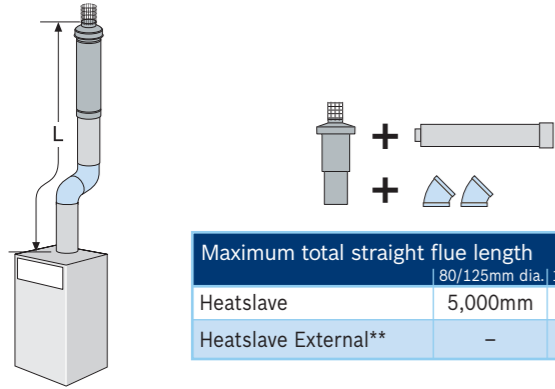
Part No. 7 716 190 053

Accessories

	Worcester Part No.
	80/125mm dia.
External Flue Extension	7 716 190 054
External 90° Bend	7 716 190 055
External 45° Bends (pair)	7 716 190 056

Option 1

Top outlet

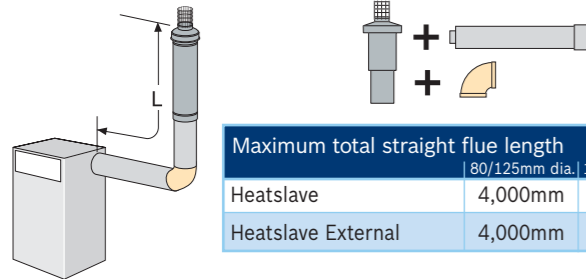


Maximum total straight flue length		
	80/125mm dia.	100/150mm dia.
Heatslave	5,000mm	-
Heatslave External**	-	-

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave			
125mm	Vertical External Flue Kit	1	7 716 190 053
125mm	External Flue Extension	up to 5	7 716 190 054
125mm	External 45° Bends (pair)	1	7 716 190 056

Option 2

Side outlet

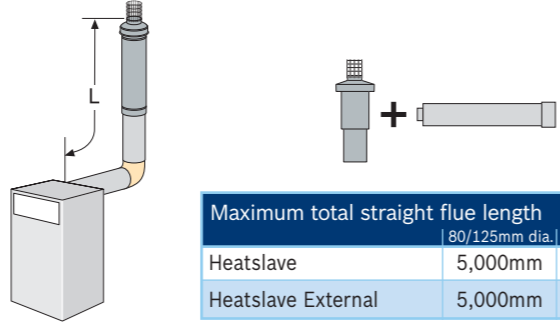


Maximum total straight flue length		
	80/125mm dia.	100/150mm dia.
Heatslave	4,000mm	-
Heatslave External	4,000mm	-

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave			
125mm	Vertical External Flue Kit	1	7 716 190 053
125mm	External Flue Extension	up to 4	7 716 190 054
125mm	External 90° Bend	1	7 716 190 055
Greenstar Heatslave External			
125mm	Vertical External Flue Kit	1	7 716 190 053
125mm	External Flue Extension	up to 4	7 716 190 054
125mm	External 90° Bend	1	7 716 190 055

Option 3

Rear outlet



Maximum total straight flue length		
	80/125mm dia.	100/150mm dia.
Heatslave	5,000mm	-
Heatslave External	5,000mm	-

Flue components required			
Flue Diameter	Description	Quantity	Worcester Part No.
Greenstar Heatslave			
125mm	Vertical External Flue Kit	1	7 716 190 053
125mm	External Flue Extension	up to 5	7 716 190 054
Greenstar Heatslave External			
125mm	Vertical External Flue Kit	1	7 716 190 053
125mm	External Flue Extension	up to 5	7 716 190 054

Installation requirements

Installation regulations

The appliance should be installed by a competent person. The person installing the appliance should be aware of the Health and Safety at Work Act and take appropriate action to ensure that the regulations are adhered to. In order to give optimum efficiency and trouble-free operation the appliance must be commissioned by a qualified OFTEC engineer.

The compliance with a British Standard does not, of itself, confer immunity from legal obligations. In particular the installation of this appliance must be in accordance with the relevant requirements of the following British Standards and regulations in respect of the safe installation of equipment.

BS 5410: part 1 & 2: Code of Practice for Oil Fired Boilers.

BS 799: part 5: Specification for Oil Storage Tanks.

BS 7593: Code of Practice for treatment of water in domestic hot water central heating systems.

BS 5449: part 1: Specification for forced circulation hot water central heating for domestic premises.

BS 5955: part 8: Specification for the installation of thermoplastic pipes and associated fittings for use in domestic hot and cold water services and heating systems.

BS 7291: Thermoplastic pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings.

BS 7074: part 1: Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems.

BS 7671: IEE Wiring Regulations, current edition.

The Building Regulations Part J and L1 England and Wales; Part F and Part J Section III Scotland; Part L and Part F Northern Ireland.

Local water company bye-laws.

The Control of Pollution (Oil) Regulations.

OFTEC Standards

To ensure that the installation will perform to the highest standards, the system and components should conform to those mentioned in these instructions.

Sealed system installation

The Greenstar Heatslave, designed for sealed systems, incorporates a pre-plumbed expansion vessel, pressure relief valve set to 3bar, automatic air vent and pressure gauge. The expansion vessel fitted to the appliance will accommodate differing system volumes depending on initial charge pressure and system pre-pressurisation. Under certain circumstances the system volume may be in excess of that catered for by the expansion vessel provided. In this instance an additional vessel should be fitted as close as possible to the return connection of the appliance. Filling of the system can be from a make-up vessel, fitted with a non-return valve and mounted above the highest point in the system. Alternatively, and to comply with the new Water Authority requirements, the system may be filled through a temporary hose connection to the mains water supply provided that a double check valve assembly and test point are fitted on the system side of the temporary connection.

Radiator valves

Loss of water and drop in pressure from a sealed primary system will necessitate a continuous cycle of recharging with fresh water and consequential introduction of air – a corrosive element – into the system. In order to minimise leakage and prevent early corrosion it is important that all joints are good and all components are suitable for use in a sealed system. Particular care should be exercised when fitting radiator valves and only those of high quality to BS 2767:10 should be used.

**Top outlet not available on Greenstar Heatslave External models.

Note: For satisfactory flue performance it is recommended that no more than 2m of the vertical flue is run horizontally.

Plastic pipework

Plastic pipework must have a polymeric barrier.

Underfloor heating

- Plastic pipework used for underfloor heating must be correctly controlled with a thermostatic blending valve limiting the temperature of the circuits to approx. 50°C. The pipework from the boiler to the blending valve must be in copper or steel (protected from corrosion) if used in a sealed primary water system.

Open vent systems and sealed systems

- A minimum length of 1,000mm of copper or steel pipe must be connected to the boiler after which plastic pipe can be used.

Primary system/connections/valves

- **Do not use galvanised pipes or radiators.**
- All system connections, taps and mixing valves must be capable of sustaining a pressure up to 3bar.
- Radiator valves should conform to BS 2767:10.
- All other valves should conform to BS 1010.
- On new installations TRVs must be used on all radiators except the radiator where the room thermostat is sited, this must be fitted with lockshield valves and left open. All boiler replacement installations should have TRVs fitted to radiators at least within the sleeping accommodation.
- Drain cocks are required at all the lowest points on the system.
- Air vents are required at all the high points on the system.

Domestic water supply

Water Authority requirements

A direct mains water connection is accepted by Water Authorities. However, it is recommended that reference should be made to local requirements. In the event of any difficulty contact the Worcester Technical Services Department.

Pipe sizing

An incoming cold water mains supply with a minimum 15mm diameter is required. A 22mm copper hot water distribution pipe to the first branch is recommended: thereafter 15mm and/or 10mm to all draw off points. To achieve design flow rates a minimum inlet working pressure of 1.5bar (12/18 model), 1.2bar (18/25 model) and 0.9bar (25/32 model) is required.

Mains water connection

The cold water supply connection and general plumbing layout should be in accordance with that shown in the "System Layout" diagram on page 6. There should be no device capable of preventing back flow of expansion water unless separate arrangements for expansion water are made. Wherever possible, the cold water supply to the appliance should be the first tapping off the mains supply, in order to minimise hot water flow reduction when cold services are operated. The final 600mm of piping to the appliance should be of copper only.

Flow balancing

As with all mains fed systems, the flow rate of water obtainable from individual taps will vary in relation to the number of taps operated simultaneously, and will depend upon the cold mains supply to the property. Flow balancing by the use of proprietary constant volume flow regulators or 'Ball-o-Fix' type valves may be required to avoid excessive starvation of flow to individual taps.

Taps and water

Standard hot and cold taps and mixing valves to be used with the appliance must be suitable for operating at mains pressure. The use of lever operated taps being particularly appropriate. In certain circumstances, anti-syphonage arrangements will be necessary.

Shower

When a loose head shower with flexible hose is used over a bath the hose must be fixed so that the head cannot fall closer than 25mm above the top edge of the bath in order to prevent the head from being immersed in the bath water. Alternatively, the shower should incorporate or be fitted with a double check valve at the point of flexible hose connection. With fixed head showers no provision is necessary. The use of a thermostatically controlled shower valve will give added comfort and reduce the fluctuation of the temperature of the water.

Bidet

The supply of hot and cold mains water direct to a bidet is permitted, provided that the bidet is of the over-rim flushing type. The outlet(s) should be unable to have any temporary hand held hose attached.

Use in hard water areas

Under normal circumstances protection against scale is not necessary with the Greenstar Heatslave range. However, in exceptionally hard water areas (where temporary hardness exceeds 200ppm) it may be beneficial to seek the advice of the local Water Authority.

Boiler manufacture

The Greenstar Heatslave appliance is manufactured at our modern factory at Clay Cross in Chesterfield. Stringent in-house quality control ensures that the Greenstar Heatslave appliance meets the highest standards of quality and performance.

Clearances and siting (kitchen models)

The boiler does not require a constructional hearth.

The boiler should however be positioned on a non-permeable solid base. Care should be taken to ensure that the appliance is level.

The following clearances should be left for servicing:

- Above 300mm
- In front 600mm
- Sides 5mm
- Below –

Note: When fitted beneath a worktop, the necessary access for servicing the appliance from above can be achieved by using a removable worktop.

For external models, refer to page 12.

Electricity supply

The electrical connection to the boiler must allow complete isolation of the appliance, preferably via a double pole isolator with a contact separation of 3mm in all poles supplying the boiler and controls only. A 5 amp fuse should be fitted in the mains supply. The installation must be in accordance with the relevant requirements of the IEE Wiring Regulations. **External equipment operated at 230 volts should not be installed, serviced or repaired under adverse weather conditions.**

Oil tanks

Tanks – general

Tanks should be located in the most unobtrusive position possible, however thought should always be given to the needs of safety, filling, maintenance and if necessary the provision of a head of oil above the burner.

Reference must be made to OFTEC – Technical Information note T1/133 covering the risk assessment of environmental damage being caused by spillage from oil storage tanks, this assessment must be completed by an approved OFTEC technician to establish the type of tank necessary.

There should be a minimum distance of 600mm from the tank and any foliage intended as a screen.

Oil storage installations fall into three classes – Class 1, Class 2 and Class 3.

Class 1 – are those installations where the boiler does not exceed 45kW or oil storage does not exceed 3,500 litres, these installations are covered in BS 5410 : Part 1 : 1997.

Class 2 – are those installations where the boiler exceeds 45kW or the oil storage exceeds 3,500 litres, these installations are covered in BS 5410 : Part 2 : 1998.

Class 3 – Large buildings and places of public entertainment or assembly.

In England, the control of pollution (oil storage) (England) regulations 2001 apply to storage over 200 litres for non domestic properties or for any installation over 3,500 litres.

These appliances would generally fall into Class 1. If the installation falls into class 2 or 3, OFTEC Book Three and technical information sheet T1/136 must be consulted.

Size of tank

It is recommended that the minimum size of tank for the Greenstar Heatslave boiler is 2,000 litres. However this can be adjusted accordingly to the customer's requirements.

External tank installations

Building Regulations – England and Wales

In England and Wales installations in single family dwellings must comply with Building Regulations Part J. This in turn requires compliance with BS 5410 : Part 1 : 1997 and Part 2 : 1998. All tanks deemed to be at risk or with a capacity of more than 2,500 litres will require a bund.

Building Regulations – Scotland

In Scotland Building Regulation part F applies. This in turn requires compliance with BS 5410 : Part 1 : 1997 and 2 : 1998. All tanks deemed to be at risk or with a capacity of more than 2,500 litres will require a bund.

Northern Ireland

In Northern Ireland the building regulations do not cover the installation of Oil storage tanks, guidance should be sought from BS 5410 : Part 1 : 1997 and Part 2 : 1998.

Bunds – when are they necessary?

These are ‘enclosures’ designed to contain spillage from the oil tank. Reference must be made to OFTEC – Technical information note T1/133 covering the risk assessment of environmental damage being caused by spillage from oil storage tanks to determine if a bund is required.

There are two main ways to comply if a bund is required:

1. Bunded tanks – are now the most popular way in which to meet the standards and regulations if a bund is required, these tanks are in essence a ‘tank within a tank’ which prevent leakage from the inner ‘oil’ tank escaping into the environment by containing it in the outer tank. The use of these tanks avoids the work of constructing a masonry or concrete wall bund as in point 2.

Integrally bunded plastic tanks must comply to OFTEC Standard OFS T100 and integrally bunded steel tanks must comply to OFTEC standard OFS T200. Both must have an OFCERT license to show compliance.

2. External bunds are masonry or concrete enclosures built around a single skinned plastic or steel tank and lined with an oil resistant material to contain the spillage. The bund must be constructed to CIRIA report 163.

Both of these bunds must be capable of holding 110% of the contents of the tank in the event of a leak or spillage during filling.

The following criteria must be considered before choosing the type of oil tank and its location:

British Standard 5410 : Part 1 : 1997 does not require tanks installed externally to be fitted with a bund unless its absence creates a hazardous situation. OFTEC has published a risk assessment form T1/133, which lists the requirements to be met if the tank is not to be fitted with a bund. The risk assessment must be completed in all cases. The assessment must be completed by an OFTEC approved technician. The below situations would require the provision of a bund in all cases:

1. Tank capacity in excess of 2,500 litres.
2. Tank sited less than 10 metres from controlled water.
3. Tank sited where spillage could run off into an open drain or to a loose fitting manhole cover.
4. Tank within 50 metres of a borehole or spring.
5. Tank on hard surfaced ground that could enable spillage run off to reach controlled water.
6. Tank sited in a position where the vent pipe outlet is not visible from the filling point.
7. Tank supplying heating oil to a building other than a single family dwelling.
8. Any other potential hazard individual to the site.

Internal tank installations

Always inform the local Fire Officer and Insurers of any internal installations.

Oil tanks installed internally must never be sited in a habitable area and must be within an enclosed chamber. This chamber comprises a fully enclosed ventilated space and must have 60 minute fire resistant wall, floor, door and roof with a self closing door that opens outwards. The door must be able to be opened from the inside without the aid of a key. The chamber must act as a bund so the door must open above the top level of any constructed bund. If the use of an internally bunded tank is made then the chamber only has to provide the correct fire protection, the door can be at floor level. The chamber must be vented directly to open atmosphere. Space for access to the tank in the chamber must be provided. In the case of steel tanks adequate space for painting and maintenance is required. Any electrical lighting should be of the bulk head type with switches mounted externally.

Oil storage tanks may be installed in a garage but the guidance in OFTEC Technical sheet T1/127 must be followed.

Underground tank installations

All underground oil storage tanks must be fitted with overfill protection.

In all cases the potential buoyancy of the tank should be considered if the water table in the area can rise above the level of the oil in the tank.

Underground installation can be located closer than 1,800mm to an adjacent building and 760mm to a boundary without additional protection.

All underground tanks must be specially constructed to withstand the pressures placed upon them by the surrounding ground. GRP tanks in either single or double skinned versions are suitable, Polyethylene models are also suitable. If steel tanks are used they must be of the double skinned type.

Steel tanks

Steel tanks are available but are being out dated by maintenance free plastic tanks due to their need for siting on piers and painting.

They must be positioned with a slight back fall away from the oil outlet (40mm per metre) to the drain/sludge cock at the opposite end to enable any water or sludge to be drain out of the tank.

Steel tanks should be constructed to comply with OFTEC Standard OFS T200 and must be covered by an OFCERT license.

Galvanised steel tanks and pipework should never be used in oil storage or supply.

Plastic tanks

Plastic tanks do not require painting and can be sited directly onto the ground (no need for piers) as they do not suffer from corrosion, although the head of oil above the boiler’s burner should always be considered and access for cleaning the oil filter and water trap be available.

Plastic tanks should be constructed to OFTEC Standard OFS T100 and must be covered by an OFCERT license.

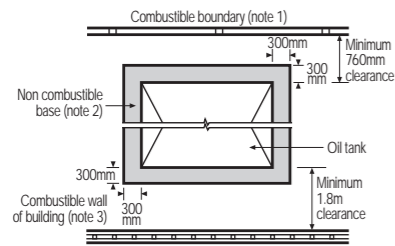
Position in relation to buildings and boundaries

The position of the oil storage tank relative to buildings and boundaries needs consideration in terms of fire protection, the storage tank itself does not constitute a fire hazard but needs protection from a fire which may originate nearby. For Class 1 installations, as mentioned earlier, no special fire protection is needed if the tank is situated more than 1,800mm away from the building and not less than 760mm from the site boundary.

Figs. 1 to 6 illustrate the requirements of a Class 1 tank installation in relation to buildings (combustible wall and non combustible wall) and boundaries (combustible and non combustible).

Fig. 1 Tank installation near combustible buildings & boundaries.

Clearances required when additional protection is not provided.



NOTES: Relevant to Fig. 1

1. Combustible Boundary (has less than 30 minutes fire resistance)
2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)

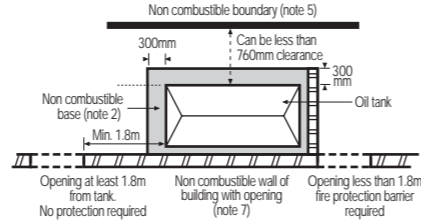
Where the tank is next to a non combustible wall (minimum 30 minutes fire resistance)

Where the tank is located over an existing non combustible surface

Where the tank is located over an existing non combustible surface

Fig. 4 Tank installation near non combustible buildings & boundaries

Building wall with openings. Opening protection required.

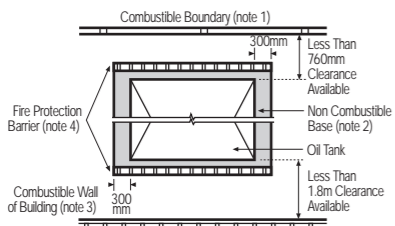


NOTES: Relevant to Fig. 4

2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)
4. Fire Protection Barrier (Non combustible, minimum fire resistance of 30 minutes, extends to non combustible wall, 300mm beyond both ends of tank and 300mm higher than the tank)
5. Non combustible boundary (has minimum fire resistance of 30 minutes). Must extend 300mm higher than the tank and 300mm beyond both ends of the tank.
7. If wall has openings closer than 1.8m to tank then a fire protection barrier 300mm higher than the tank and 300mm beyond the tank can be fitted. The non combustible building wall and the barrier must protect the tank from fire coming through the opening.

Fig. 2 Tank installation near combustible buildings & boundaries

Protection required where clearances in Fig. 1 are not provided.



NOTES: Relevant to Fig. 2

1. Combustible Boundary (has less than 30 minutes fire resistance)
2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)
4. Fire Protection Barrier (Non combustible, minimum fire resistance of 30 minutes, extends 300mm beyond both ends of tank and 300mm higher than the tank)

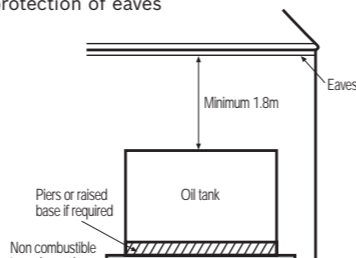
Where the tank is located over an existing non combustible surface

Where the tank is next to a non combustible wall (minimum 30 minutes fire resistance)

Where the tank is located over an existing non combustible surface

Fig. 5 Tank installations under eaves

Without protection of eaves



NOTES: Relevant to Fig. 5

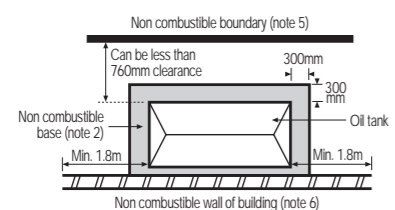
2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)
4. Fire Protection Barrier (Non combustible, minimum fire resistance of 30 minutes, extends 300mm beyond both ends of tank and 300mm higher than the tank)

Where the tank is next to a non combustible wall (minimum 30 minutes fire resistance)

Where the tank is located over an existing non combustible surface

Fig. 3 Tank installation near non combustible buildings & boundaries

Building wall without openings. No added protection required.



NOTES: Relevant to Fig. 3

2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)
4. Fire Protection Barrier (Non combustible, minimum fire resistance of 30 minutes, extends 300mm beyond both ends of tank and 300mm higher than the tank)
5. Non combustible boundary (has minimum fire resistance of 30 minutes). Must extend 300mm higher than the tank and 300mm beyond both ends of the tank.
6. Non Combustible Wall of Building (has minimum fire resistance of 30 minutes). Any part of the wall within 1.8m of the tank must have a fire resistance to internal fire of not less than 30 minutes and have no openings other than airbricks.

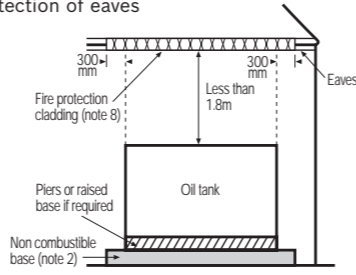
Where the tank is next to a non combustible wall (minimum 30 minutes fire resistance)

Where the tank is located over an existing non combustible surface

Where the tank is located over an existing non combustible surface

Fig. 6 Tank installations under eaves

With protection of eaves



NOTES: Relevant to Fig. 6

2. Non Combustible Base. Covers area beneath tank and extends 300mm outside the tank on all sides except:
3. Combustible Wall of Building (has fire resistance of less than 30 minutes to internal fire)
4. Fire Protection Barrier (Non combustible, minimum fire resistance of 30 minutes, extends 300mm beyond both ends of tank and 300mm higher than the tank)
5. Non combustible boundary (has minimum fire resistance of 30 minutes). Must extend 300mm higher than the tank and 300mm beyond both ends of the tank.
6. Non Combustible Wall of Building (has minimum fire resistance of 30 minutes). Any part of the wall within 1.8m of the tank must have a fire resistance to internal fire of not less than 30 minutes and have no openings other than airbricks.
8. Fire protection to combustible eaves (must provide a minimum resistance to fire of 30 minutes, extends the length of the eaves over the tank with an additional 300mm at both ends). The cladding of the eaves is to prevent fire spreading to the roof from the area of the tank.

Where the tank is next to a non combustible wall (minimum 30 minutes fire resistance)

Where the tank is located over an existing non combustible surface

Where the tank is located over an existing non combustible surface

Oil supply

The oil burner on the Greenstar Heatslave is supplied with a single flexible fuel line from the oil pump which the installer connects the main oil supply line to (via the oil isolation valve), within the appliance. This enables the burner to be removed without the need for disconnection of the fuel line.

The maximum permissible head is 4 metres. If the head is greater, then a head breaking device must be incorporated into the oil supply line.

The oil pump's primary job is to pressurise the oil once in the pump and force it out of the nozzle at high pressure to atomise the fuel to ensure clean and efficient combustion. This same pump can also be converted to 'draw' up the fuel line in cases where the oil tank is lower than the appliance's burner. This conversion is undertaken by the installing engineer.

All oil pumps on Worcester appliances can easily be converted to work on a two pipe system (details of this operation are within the Installation and Servicing instructions which come with the appliance).

More advice on fuel lines can be sought from OFTEC Book Three and Technical sheet TI/134.

De-aeration devices

A de-aeration device is a container of oil about the size of a pint glass with an automatic air vent on top and three connections on the bottom. It saves running a return oil pipe back to the tank from the burner as in Fig.11. Its function is to provide a reservoir of oil from which the oil pump draws oil whilst venting any air in the oil to the atmosphere preventing nuisance 'lockout' of the burner. Not all the oil drawn is consumed and any excess is returned to the de-aeration device, so whilst the burner is firing there is a continuous flow and return of oil. The third connection is for the main fuel line from the oil tank. There is usually a non-return valve located in this connection to prevent oil draining back towards the oil tank under gravity and creating a vacuum. When the burner is firing the whole fuel supply system is under negative pressure i.e. suction, therefore it is imperative that all joints on the fuel supply system are sound. Whilst there may be no obvious signs of an oil leak externally, when the burner is firing it may be possible for air to be drawn in through a bad joint, reducing the pump's capabilities, resulting in a lack of fuel to the oil pump and nuisance 'lockout'. This may manifest itself as a very low level of oil or 'foaming' of the oil inside the de-aeration device whilst the burner is trying to fire.

Most de-aeration devices are made of plastic and vent to the atmosphere. For this reason they must always be located externally, if sited internally they would constitute a fire hazard (see Fig. 12).

Metal types do exist which do not emit vapour. These can be located internally or externally. Plastic pipe specifically for oil lines does exist and is acceptable but must be used underground.

Top outlet oil tanks should have the non return valve removed from the end of the oil feed pipe within the tank if installed in conjunction with a de-aeration device.

Supply pipe

The oil supply pipe itself would normally be annealed copper tube with a protective plastic coating which is easily manipulated around bends and usually enables the fuel line to be run in a continuous length without joints. If joints must be used, they must be accessible, even if underground (via an access duct) and should be of the manipulative type. Plastic pipe specifically for oil lines does exist and is acceptable but must only be used underground.

Galvanised pipe, fittings and soldered joints must not be used in oil lines.

More advice on fuel lines can be sought from OFTEC Book Three and Technical sheet TI/134.

Supply pipe sizing

The diameter of the oil supply pipe itself is subject to the distance from the oil tank to the appliance and the head of oil whether it be positive or negative.

Tables 1 and 2 give the required diameter of supply pipe when cross referenced with the head. Table 3 gives the diameter of the supply pipe when the use of a de-aeration device is made.

Table 1 Single pipe gravity feed system

Maximum allowable pipe run (metres)		
Head (m)	8mm inside dia. pipe (10mm OD copper)	10mm inside dia. pipe (12mm OD copper)
0.5	12	30
1.0	25	69
1.5	37	91
2.0	49	100
2.5	62	100
3.0	74	100
3.4	87	100
4.0	99	100

Table 2 Double pipe sub-gravity feed system

Maximum allowable pipe run (metres)		
Head (m)	8mm inside dia. pipe (10mm OD copper)	10mm inside dia. pipe (12mm OD copper)
0	50	100
-0.5	44	100
-1.0	38	95
-1.5	32	80
-2.0	26	66
-2.5	20	51
-3.0	14	37
-3.5	8	22

Table 3 Single pipe suction lift with de-aerator

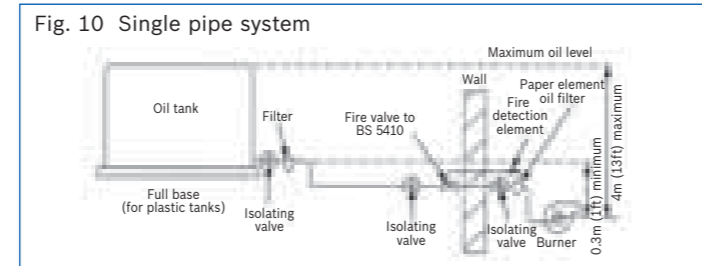
Maximum allowable run from tank to de-aerator (metres)	
Fuel flow rate	2.5(kg/h)
Head (m)	6mm inside dia. pipe (8mm OD copper)
0	100
0.5	95
1.0	80
1.5	70
2.0	60
2.5	45
3.0	35
3.5	25

Oil filters

Oil filters must always be incorporated in the oil supply line, one on the outlet from the oil tank to filter deposits from within the tank or fuel and one near the appliance to filter deposits from within the fuel line itself. They are supplied and fitted by the installing engineer and are not part of the boiler's components. They should be able to be serviced without the need for draining down the fuel supply line. There must be sufficient clearance below the filter to enable servicing operations to be carried out easily. Filters must comply to OFTEC standard OFS E104.

Fire valves

A fire valve is an essential part of the oil supply system. It is supplied and fitted by the installing engineer and is not part of the boiler's components. Its purpose is to cut off the flow of oil outside the building in the event of fire within the boiler area. The valve should be located at the point of entry into the building of the fuel line. It must be activated by a remote sensor located over the burner. A clip is provided within the appliance for the sensor. Fire valves must comply with OFTEC standard OFS E101.



Two pipe systems

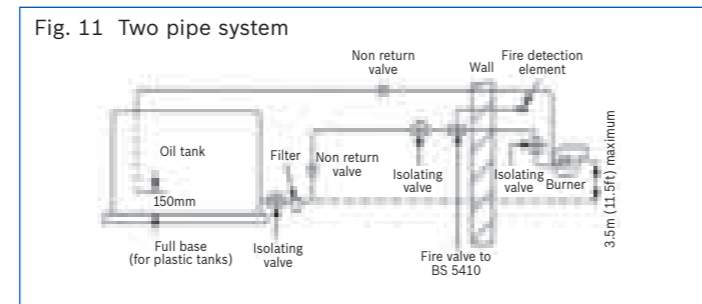
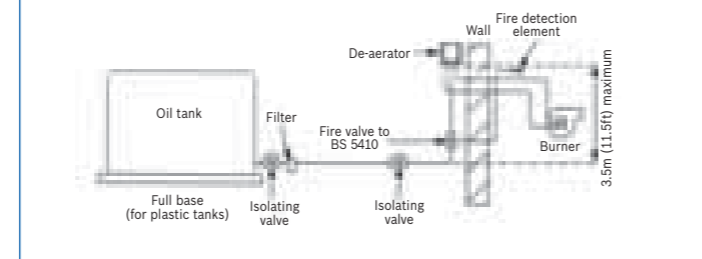


Fig. 12 Single pipe lift system with de-aerator



Warranty

Worcester oil-fired appliances are offered with a 2 year* guarantee on parts and labour from the date of installation if the appliance is commissioned upon installation and the regular service requirements are met. The primary heat exchanger comes with a 5 year* warranty. Ongoing service and maintenance contracts can be arranged through the Worcester Customer Service Department.

*Subject to conditions.

Greenstar Heatslave series accessories (kitchen models)

<p>Horizontal flue kit (125mm dia.)</p> <p>Worcester Part No. 7 716 190 031</p>	<p>Vertical flue kit (125mm dia.)</p> <p>Worcester Part No. 7 716 190 032</p>	<p>Telescopic flue kit short (125mm dia)</p> <p>Worcester Part No. 7 716 190 062</p>	<p>Telescopic flue kit standard (125mm dia)</p> <p>Worcester Part No. 7 716 190 064</p>
<p>Flue extension (125mm dia.)</p> <p>Worcester Part No. 7 716 190 033</p>	<p>45° bend (125mm dia.)</p> <p>Worcester Part No. 7 716 190 035</p>	<p>90° bend (125mm dia.)</p> <p>Worcester Part No. 7 716 190 034</p>	<p>Conventional flue adaptor</p> <p>Worcester Part No. 7 716 190 036</p>
<p>Digital plug-in 7 day twin channel programmer</p> <p>Worcester Part No. 7 716 192 033</p>	<p>Flat roof flashing kit (100mm & 125mm dia.)</p> <p>Worcester Part No. 7 716 191 090</p>	<p>Pitched roof flashing kit (100mm & 125mm dia.)</p> <p>Worcester Part No. 7 716 191 091</p>	<p>Oilfit flexible flue kit</p> <p>Worcester Part No. 100mm dia. 7 716 190 076 (8m) 7 716 190 077 (12m) 7 716 190 078 (15m) 130mm dia. 7 716 190 079 (8m) 7 716 190 080 (12m) 7 716 190 081 (15m)</p>
<p>Stainless steel flue terminal guard</p> <p>Worcester Part No. 7 716 190 050</p>	<p>1,000mm extension kit</p> <p>Worcester Part No. 100mm dia. 7 716 190 066 130mm dia. 7 716 190 070</p>	<p>500mm extension kit</p> <p>Worcester Part No. 100mm dia. 7 716 190 067 130mm dia. 7 716 190 071</p>	

Greenstar Heatslave series accessories (kitchen models)

Telescopic extension



Worcester Part No.
100mm dia.
 7 716 190 068
130mm dia.
 7 716 190 072

45° bend



Worcester Part No.
100mm dia.
 7 716 190 069
130mm dia.
 7 716 190 073

Wall cover plate kit



Worcester Part No.
100mm dia. flue
 7 716 190 074
130mm dia. flue
 7 716 190 075

Horizontal external flue kit (80/125mm dia.)



Worcester Part No.
 7 716 190 057

Vertical external flue kit (80/125mm dia.)



Worcester Part No.
 7 716 190 053

Balanced flue extension (80/125mm dia.)



Worcester Part No.
 7 716 190 054

Balanced flue 90° bend (80/125mm dia.)



Worcester Part No.
 7 716 190 055

Balanced flue 45° bend (80/125mm dia.)



Worcester Part No.
 7 716 190 056

Greenstar Heatslave series accessories (external models)

90° bend (125mm dia.)



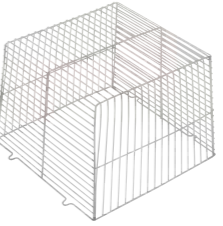
Worcester Part No.
 7 716 190 034

Low level horizontal flue kit (125mm dia.)



Worcester Part No.
 7 716 190 052

Stainless steel flue terminal guard



Worcester Part No.
 7 716 190 050

A complete after-sales service

As part of the worldwide Bosch Group, Worcester strives to maintain the highest possible standards of after-sales care.

In addition to the no-nonsense parts and labour warranty applicable to all Worcester boilers, you and your customers have the assurance that every Worcester boiler is manufactured to both the appropriate British and European standards.

Worcester Contact Centre

Should you require support, our fully trained Contact Centre staff, based at our head office in Worcester, are ready to take your calls. Whatever your query our contact centre operators along with our nationwide team of engineers are ready to help you.

Boiler Protection Options

Worcester offers boiler protection including service and maintenance contracts. Please call the Worcester Contact Centre for further details.

If you do not offer annual service and maintenance contracts please refer your customers to the Worcester Contact Centre:

Tel: 08457 256 206
Fax: 01905 757 536

Opening Times

Monday – Friday: 7.00am – 8.00pm
Saturday: 8.00am – 5.00pm
Sunday: 9.00am – 12 noon

All the technical advice you need

Spares

Genuine replacement parts for all Worcester boilers are readily available from stock, on a next day delivery basis. For more information please call your local stockist. You can find a spares stockist on our website.

Customer Technical Support

The Worcester Technical Helpline is a dedicated phone line – committed to providing a comprehensive service to complement the brand name and quality of our boiler products. Our experienced team of technical experts provides answers to queries of a technical nature across the entire Worcester range.

Worcester also has a pre-sales department, which provides assistance in selecting a boiler system to suit a particular application, along with full guidance on installation. As well as this we will also assist in finding a recommended installer. For more information please contact the Technical Helpline or alternatively visit our website where literature can be downloaded at www.worcester-bosch.co.uk

Technical

Tel: 08705 266 241
Fax: 01905 752 741

Opening Times

Monday – Friday: 7.00am – 8.00pm
Saturday: 8.30am – 4.00pm



The very best training programmes from Worcester

Worcester has always placed great emphasis on technical support and training for installers and service engineers. Today this need is greater than ever. The differences between a combi, conventional and system boiler are substantial, and the technology of each continues to advance at a rapid pace.

To ensure the highest levels of competence and expertise in the installation of all Worcester products, the company runs intensive training courses for installers, commissioning engineers and engineers involved with servicing and fault finding.

Courses available

Our training facilities offer a number of courses suitable for the installer and commissioning engineers, and a more in-depth course for the servicing and fault finding engineers.



Training Centres throughout the UK

Worcester's network of regional training centres are strategically located across the country and include the 'A' Rated Training Academy at the company's headquarters. This facility has recently been extended to include an oil-fired appliance workshop and a renewable energies workshop in addition to the extensive gas-fired training facilities.

In addition to these outstanding facilities there are centres at Clay Cross in Derbyshire and Bangor in Northern Ireland. Further 'A' Rated Academies are open at West Thurrock in Essex and Bradford in West Yorkshire as well as additional training opportunities available throughout the UK. Please phone 01905 752526 for more information about a course near you. Each course is run by specialist trainers and is superbly equipped to deliver a combination of classroom theory and practical hands-on experience that's second to none.

College-linked Learning

A number of the UK's leading proactive technical colleges are equipped with Worcester products and offer excellent practical tuition on a more local level.

Distance Learning/Web Based Learning

Worcester has produced a selection of Distance Learning CD ROMs/DVDs which are packed with information. Call 01905 752556 for your copies, or visit www.worcester-bosch.co.uk for information on Web Based Learning.

Mobile training

Our 7.5 tonne mobile oil training vehicle with working boilers, is now available throughout the country for hands-on oil training and OFTEC courses.

Courses on Air to Water and Air to Air are now available please check with your local Technical Sales Manager and the Worcester website www.worcester-bosch.co.uk. Phone 01905 752526 to book your place.

Get on course for a more profitable future now.

Call now for more information
01905 752526



www.worcester-bosch.co.uk



Worcester training courses

Worcester training courses	
Greenstar CDi and Highflow CDi gas-fired condensing combi boilers	
Models covered	Greenstar 27/30/37/42CDi Greenstar Highflow 440/550CDi
Duration	1 day
Greenstar i Junior and Si gas-fired condensing combi boilers	
Models covered	Greenstar 24/28i Junior Greenstar 25/30Si
Duration	1 day
Greenstar system and regular gas-fired condensing boilers	
Models covered	Greenstar 12/15/18/24Ri Greenstar 30/40CDi Conventional Greenstar FS 30/42CDi Regular Greenstar 30CDi System Greenstar 12/24i System
Duration	1 day
Greenstar Camray high efficiency condensing oil-fired boilers	
Models covered	Greenstar Camray (kitchen) Greenstar Camray (kitchen) System Greenstar Camray Utility Greenstar Camray Utility System Greenstar Camray External
Duration	1 day
Greenstar Danesmoor & Heatslave high efficiency condensing oil-fired boilers	
Models covered	Greenstar Danesmoor Greenstar Utility Greenstar Heatslave Greenstar Heatslave External
Duration	1 day
OFTEC Training	
OFTEC 101	
Covering	Domestic/Light Commercial Pressure Jet Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment)
OFTEC 105e	
Covering	Domestic/Light Commercial Pressure Jet Boiler Installation
Duration	1 day assessment
OFTEC 101 & 105e	
Covering	Domestic/Light Commercial Pressure Jet Installation, Commissioning and Servicing
Duration	3 day course (2 days training plus 1 days assessment comprising 2 theory and 1 practical)
OFTEC 600a	
Covering	Oil Tank Installation and Associated Controls
Duration	1 day assessment course
OFTEC 101/105e/600e	
Covering	Domestic/Light Commercial Pressure Jet Boiler Installation, Commissioning, Servicing and Oil Tank Installation and Associated Controls
Duration	4 days (2 days training and 2 days assessment)
Mobile OFTEC	
All above covered throughout the country on the mobile training vehicle as well as in all our centres.	

Certificate in Energy Efficiency for Domestic Heating Course	
Covering	Key elements of energy-efficient heating and hot water systems and products, compliance with the latest Building Regulations, how condensing boilers work and how they differ to non condensing products.
Duration	1 day
Unvented Cylinder Course	
Covering	All G3 Regulations for the Installation, Servicing and Commissioning of Unvented Cylinders. The course includes recognised accreditation by Logic Certification.
Duration	1 day
Greenskies Solar System	
Covering	Installation, Commissioning and Servicing The course includes recognised accreditation by Logic Certification for eligibility of low carbon buildings programme funding.
Duration	2 days
Greenstore Ground Source Heat Pumps	
Covering	Installation, Commissioning and System Design
Duration	2 days
Greenstore Heat Pumps – Air to Water	
Covering	Installation, Commissioning and System Design
Duration	2 days
Greenstore Heat Pumps – Air to Air	
Covering	Installation, Commissioning and System Design
Duration	1 day



Useful numbers

Sales

Tel: 01905 752640
Fax: 01905 456445

Spare Parts

Tel: 01905 752576
Fax: 01905 754620

Technical (Pre & Post Sales)

Tel: 08705 266241
Fax: 01905 752741

Service

Tel: 08457 256206
Fax: 01905 757536
Livingston (Scotland)
Fax: 01506 441687

Training

Tel: 01905 752526
Fax: 01905 752535

Literature Line

Tel: 01905 752556
or download instantly
from our website

www.worcester-bosch.co.uk



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