

HEATBASE Ltd FACTSHEET 21

Appliance Location, Combustion & Ventilation air supply

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There are certain places an Appliance should never be installed and other locations that should only be used if there is no other suitable place. The appliance should be sited to reduce risks; especially the risk of fire. **If possible, the appliance should be installed at ground floor or basement level, preferably in a boiler room, utility area or kitchen.** Any flue or chimney system used on an appliance, should be of the appropriate type as specified by the appliance manufacture. Flexible flue liners are only designed and permitted to be installed within a masonry chimney. Prefabricated flue systems and flexible liners should be constructed of the appropriate material and have the correct temperature rating and acid resistance and insulation properties as specified by the appliance manufacturer and in accordance with relevant Building Regulations and British Standards. The appliance should be installed on a floor or above a surface that is impervious to oil, minor spillages from the burner or its connections occurring during installation or maintenance should be contained within the appliance (if it is impervious to oil) or within a separate containment tray. The appliance should not be positioned where accidental spillage could soak into combustible material such as wood or carpeting. Fuel pipework within the building or structure should be kept to a minimum. Alternatively, floor standing, or wall mounted appliances designed specifically for external use can be installed.

If an appliance cannot be installed in the preferred locations, it may need to be located in a compartment i.e. an enclosed space intended solely to contain a heating appliance, with or without ancillary equipment. If an appliance is installed in a compartment (or room of insufficient volume) it should be in accordance with the following basic recommendations, but if it is installed in certain other places, additional requirements will be needed. BS 5410 part1 2019 states “where a liquid fuel appliance is located inside a building or structure or within a restricted area externally, a carbon monoxide detector conforming to BS EN 5029-1 should be installed in accordance with the manufacturers instructions”.

Basic compartment construction requirements

1. it should be a fixed rigid structure; the internal surfaces are protected in accordance with point 6.
2. It should incorporate air vents for the provision of ventilation and where necessary, combustion air.
3. It should allow access for inspection and maintenance of the appliance and any ancillary equipment. It should be fitted with a door that will permit withdrawal of the appliance and any ancillary equipment and to discourage its use as a storage cupboard, it should have a notice in a prominent position to warn against such use.
4. Where the compartment houses an open flued appliance, the air vents must not communicate with a garage, bathroom, bedroom or bed sitting room.
5. Where the compartment houses an open flued appliance and the door opens onto a garage, bathroom, bedroom or bed sitting room, the door should have an additional warning notice attached stating “This door must be kept closed at all times except when resetting the appliance controls”.
6. The internal surfaces of the compartment should be protected in accordance with the appliance manufacturers installation instructions. Where the Manufacturers Instructions do not give any specific instructions, any internal surface of the compartment which is of combustible material should be either 75mm from any part of the appliance or should be lined with non-combustible material.

Airing cupboard installations: The space in an airing cupboard portioned to house the appliance should be in accordance with the basic compartment construction, but in addition, the airing space should be separated from the appliance by a non-combustible partition. It can be perforated if required but the maximum dimensions of any aperture should not exceed 13mm. The flue pipe should not pass through the airing space unless protected sufficiently to prevent damage to the contents or injury to users. Flue pipes should be separated from combustible material by at least the minimum safe distance specified by the flue manufacturer which is usually an air gap of at least 25mm. The air gap required may be provided by a non-combustible guard such as expanded metal or ridged wire mesh which forms an annular space around the flue pipe.

Under stairs installations: An appliance should only be installed in an under stairs location if no other practicable alternative location is available. Whenever possible the appliance should be of the room sealed type. Under stairs installations should be in accordance with the following recommendations:

1. The premises in which the appliance is installed should be no more than two stories.
2. Where the area is enclosed, the enclosure should be in accordance with the basic compartment construction (and)
3. In addition to basic compartment construction, all internal surfaces around and above the appliance, including its base should be non-combustible material or lined with non-combustible material having a fire resistance of not less than 30 minutes.
4. The air vents should be directed to outside air, not to internal spaces.

Bathroom Installations: An appliance should only be installed in a bathroom if no other practicable alternative location is available. The appliance should be of the room sealed type. The electrical connections should be in accordance with BS 7671. Switches or controls in bathrooms should be the enclosed by the appliance outer casing or compartment in such away that they cannot be touched by a person using the bath or shower. If an open flued appliance is located in a compartment in a Bathroom, it should be in accordance with the basic compartment construction requirements.

Bedroom or Bed sitting room Installations: An appliance should only be installed in a Bedroom or Bed sitting room if no other practicable alternative location is available. The appliance should be of the room sealed type. The need to avoid noise and vibration nuisance to building occupants and neighbours should be taken into account. If an open flued appliance is located in a compartment in a Bedroom or Bed sitting room, it should be in accordance with the basic compartment construction requirements.

Garage Installations: Only room sealed appliances should be used. If an open flued appliance is located in a compartment in a garage, it should be in accordance with the basic compartment construction requirements.

Roof Space Installations: An appliance should not be fitted in a roof space unless there is no practical alternative location. If an appliance has been fitted in a roof space it should be in accordance with the following requirements:

1. Sufficient clearance must be allowed for correct maintenance and operation of the system, including any static head requirements
2. A flooring area for normal use should be provided under and around the appliance. This should take the form of an oil proof tray with sides at least 75mm high and should incorporate an oil level detector that will shut off the oil supply to the appliance should it become filled with oil or water.
3. The appliance support should be capable of supporting the load of the water filled boiler, associated pipework and equipment, and the tray if it became filled with water or fuel. It should also be capable to support maintenance personnel, including their tools and equipment.
4. If the floor that supports the appliance is combustible, a non-combustible base of at least 12mm thickness should be provided under the boiler.
5. The fuel supply should preferably be run up to the height required on the outside of the building or structure and should have no joints in its internal section, other than within the area protected by the fuel proof tray (as mentioned in point 2).
6. A permanent means of access to the appliance should be provided such as a retractable loft ladder and a hatch guard rail and a securely fixed protected walkway should be provided to and around the appliance and system components from the loft hatch. Suitable lighting and a power supply should be provided.
7. A means to shut off the oil and power supply should be provided without entering the roof space, in addition to isolation of fuel and power next to the boiler.

External Boilers installations: An appliance fitted externally should be either:

1. An appliance specifically designed for external use (or)
2. Installed in an enclosure capable of providing permanent weather protection.

Where an enclosure is required, it should be in accordance with basic compartment construction recommendations, and the following:

1. Within the enclosure an accessible, waterproof, fused double pole switch should be provided to give complete isolation of the appliance and any ancillary equipment. It should have a waterproof outlet supply to enable use of a vacuum during service and maintenance visits.
2. Air vents should be fitted in the enclosure connecting directly to the outside air, at both high and low level. The lowest part of the vent should not be less than 300mm above ground level.
3. Any permanent openings to the enclosure including those in air vents, should have a maximum dimension of 16mm to prevent entry of birds or rodents, but should be no smaller than 6mm in order to reduce the risk of blockage.
4. The enclosure should be fitted with a means to prevent access by unauthorised persons.

For all external installations:

1. The system should incorporate protection against corrosion, damage and freezing. Water carrying pipework should also be insulated against freezing.
2. The appliance should be located such that it is accessible for maintenance without the use of ladders.
3. If maintenance work is likely to be required in wet weather or at night, weather protection and lighting should be provided.
4. Purpose built external appliances should be located on an adequately sized free draining hard surface to enable clean and safe Maintenance and have an accessible, waterproof, fused double pole switch provide to give complete isolation of the appliance.

Combustion Air supply requirements:

A Room Sealed balanced flue appliance would not require any additional air for combustion; unless the air hose/box has been left disconnected due to an internal flue gas leak or any other reason; see F/S 23 Flue gas leak and conversion to open flue.

An Open flued appliance requires 5.5 square cm of free air space for each KW of the appliances maximum output. Ideally the air should be drawn from outside the building but if this is not possible and it is supplied from another room, this room must also have an airbrick of the same requirements, but it must draw the required air from outside the building.

A vaporising Oil-fired cooker such as an AGA or Rayburn, require a minimum free air supply of 10 square cm. Ideally the air should be drawn from outside the building but if this is not possible and it is supplied from another room, this room must also have an airbrick of the same requirements, but it must draw the required air from outside the building.

Ventilation Air supply requirements:

If the appliance is located in a compartment or enclosure i.e. a room or space partitioned for the purpose of containing plant and equipment or a room or space of insufficient volume that cannot satisfactorily disperse any build-up of latent heat around the plant or equipment; then it will require air for ventilation in addition to any air requirements for combustion.

If the air for ventilation is supplied directly from outside the building there must be 2 vents, one positioned at high level and one at low level; the total free air supplied from each vent must be 5.5 square cm per KW of the appliances maximum output rating. If the air for ventilation is supplied from a heated space i.e. inside the building there must be 2 vents, one positioned at high level and one at low level; the total free air supplied from each vent must be 11 square cm per KW of the appliances maximum output rating. Additional requirements for the position of Air vents can be found above within specific installation requirements depending upon appliance location.

Any air supply must be purposely made and have non-closable openings and not be fitted with any obstructions such as fly screens and must not be drawn from or ventilated to a garage, bath/shower room or a bedroom or bed sitting room.