System Design Considerations

IN THE COMMONWEALTH OF MASSACHUSETTS...
- this product shall be installed by a licensed plumber or gas fitter.
- the flexible connector (if used) may not exceed 36”.
- any level type shutoff used must be of tee handle type.

Boiler location

As a direct vent appliance, the Vitodens 100-W may be installed for room air independent operation (sealed combustion) regardless of size and ventilation method of the room in which it is located. The Vitodens 100-W may be installed, for example, in the main living area of a house, in non-ventilated utility rooms, cupboards, closets and alcoves with no clearance required from combustible materials, as well as in attics with a direct outlet for the flue gas/fresh air system. Follow all local and national codes.

Flue gas system

Viessmann coaxial PPS (Polypropylene - flame retardant) concentric flue gas/fresh air systems and two-pipe stainless steel/CPVC systems for room air independent operation (sealed combustion) and side wall venting are tested to ANSI Z21.13 - CSA 4.9 - 2007 standards and are certified together with the Vitodens 100-W boiler as a constructional unit. The Vitodens 100-W boiler may also be vented vertically or horizontally, using a metallic AL29-4C® special stainless steel, or non-metallic CPVC single-wall, room air dependent venting system (UL/ULC listed for category IV). For a more detailed description of the direct vent and single-wall vent system, please refer to the Vitodens Venting System Installation Instructions.

Flue gas temperature protection

Viessmann coaxial PPS (Polypropylene - flame retardant) flue pipes used for the Vitodens 100-W are rated for max. flue gas temperatures of up to 248 °F/120 °C. Flue gas temperature protection is also included although the maximum permissible flue gas temperature will not be exceeded in any operating condition or in the event of malfunctioning.

Low water cut-off

A low water cut-off may be required by local codes. If the boiler is installed above the radiation level, a low water cut-off device of approved type must be installed in all instances. An approved low water cut-off device that meets government and local regulations must be provided by the heating contractor. Do not install an isolation valve between the boiler and the low water cut-off. The Vitodens 100-W boiler has a built-in flow switch, which may be accepted by local codes in lieu of a low water cut-off.

System layout

- The max. boiler water temperature for ...
  - space heating is 180°F / 82°C.
  - DHW production is 172°F / 78°C.
  To minimize distribution losses, Viessmann recommends that the heating and domestic hot water systems be based on a maximum boiler supply temperature of 158 °F/70 °C.
- Due to the low return temperatures required for gas condensing, avoid the use of mixing valves in the heating circuit whenever possible. If mixing valves are required, e.g. for multi-circuit systems or underfloor heating systems, only 3-way mixing valves may be used.
  Do not use 4-way mixing valves in a system with condensing boilers.

Water connections

Vitodens 100-W boilers can be used in any fully pumped hot water heating system. Minimum system pressure is 0.8 bar/12 psig.

Chemical corrosion protection products

Corrosion does not typically occur in sealed heating systems which have been correctly installed and are correctly operated. Many manufacturers of plastic pipes recommend the use of chemical additives. In this case, only commercially available corrosion protection products that have been approved for boilers with domestic hot water heating via single-wall heat exchangers (instantaneous plate heat exchangers or DHW tanks) may be used.

Underfloor heating systems

For underfloor heating systems Viessmann recommends the use of plastic tubing with an oxygen diffusion barrier in order to prevent the diffusion of oxygen through tubing. If plastic tubing without an oxygen diffusion barrier is used in underfloor heating systems, Viessmann recommends that such systems be separated from the boiler with a heat exchanger.

Oxygen diffusion barrier underfloor tubing

The boiler warranty does not cover leaks resulting from corrosion caused by the use of underfloor plastic tubing without an oxygen diffusion barrier. Such systems must have the non-oxygen diffusion barrier tubing separated from the boiler with a heat exchanger. Viessmann recommends the use of underfloor plastic tubing with an oxygen diffusion barrier.

Water quality

Treatment for boiler feed water should be considered in areas of known problems, such as where a high mineral content and hardness exist. In areas where freezing might occur, an antifreeze may be added to the system water to protect the system. Please adhere to the specifications given by the antifreeze manufacturer. Do not use automotive silicate based antifreeze. Please observe that an antifreeze/water mixture may require a backflow preventer within the automatic water feed and influence components such as diaphragm expansion tanks, radiation, etc. Maximum antifreeze content is 50% for the Vitodens 100-W boiler. Do not use antifreeze other than specifically made for hot water heating systems. The system may also contain components which might be negatively affected by antifreeze. Check total system frequently when filled with antifreeze. Advise system operator/ultimate owner that system is filled with a glycol mix.

The heating contractor must provide a MSDS (Material Safety Data Sheet) for the antifreeze used to the system operator/ultimate owner.

Warranty

Our warranty does not cover damages resulting from the following:
- installation or service by unqualified and unlicensed personnel.
- attempting to perform any repair work on the boiler other than that mentioned in the boiler literature.
- tampering with or attempting to readjust the factory settings of the combination gas valve
- leaks resulting from corrosion caused by the use of underfloor plastic tubing without an oxygen diffusion barrier.

For detailed warranty information, please read warranty sheet supplied with product.