COMBI-BOILERS AND NON-RETURN/CHECK VALVES- ADVICE TO INSTALLERS

Stewart Clements, Director,

With some areas of the UK increasingly under “water stress” due to rising demand and limitations on supply, the growing number of water meter installations, along with other environmental measures such as grey water recycling, are beginning to highlight a potential issue for households with gas-fired combi boilers and water heaters - particularly those where the appliance has been installed for some time.

Members of The Heating and Hot Water Industry Council (HHIC) who manufacture combi boilers and water heaters have reported an increase in customer calls arising from leakage of, or damage to, appliance components and some downstream plumbing fittings such as shower cartridges, ceramic discs in taps etc.

Problems have mainly occurred in situations where a non-return valve or check valve has been introduced into a pre-existing household water supply system, close to the point at which the combi boiler or water heater is installed. In some cases this has been associated with the fitting of an internally-located water meter.

Water UK has advised HHIC that not all UK water companies specify the use of such valves when a water meter is fitted. However the increasing use of efficiency measures such as “grey water” systems means backflow prevention devices may be fitted with increasing frequency in future.

In view of the increasing potential for problems of this nature to occur, plumbers and heating engineers are being alerted to this issue. HHIC, in consultation with the Water Regulations Advisory Scheme (WRAS) and members of Water UK, have written new guidance, which will be published on our website shortly, and Water UK have agreed that they will ask water companies to place further details in their metering booklets or link to the guidance document from their meter application websites.

ADVICE TO PLUMBERS, GAS INSTALLERS AND HOUSEHOLDERS

A combi-boiler will generate a small amount of expansion in the water within the boiler’s hot water heat exchanger, every time a hot water demand is made. The amount of expansion created is very small and can normally be accommodated within the cold water

supply pipework feeding the boiler and the domestic hot water system fed from the boiler – which is permitted under Water Supply (Water Fittings) Regulations and Byelaws.

Combi-boiler installations have generally been completed in this manner, as detailed in the manufacturer's installation instructions, and in these cases any expansion of water created will usually travel back into the cold water supply pipe.

In many properties, a non-return valve* or in some circumstances (e.g. for backflow prevention measures) a check valve** may be fitted in between the boiler and the internal stopcock. Sometimes these valves are fitted as part of an internal water meter installation or during other alterations to the plumbing system. These valves can reduce or prevent the allowed expansion into the cold water supply pipework, leading to increased pressure within the water pipework downstream of the valve. Although some provision is made within the Water Fittings Regulations and Byelaws for the accommodation of expanded (heated) water, plumbing systems must be designed and installed to accommodate both expanded water plus any water this displaces within the supply pipe.

Advice where a combi-boiler/water heater is to be fitted and a non-return valve/check valves is already installed:

If the householder is aware of the presence of a non-return valve or check valve on the water supply pipe, they should inform the gas installer before installation work commences. However the boiler manufacturer's instructions will also require the gas installer to check for these valves and, if necessary, fit a small expansion vessel to the cold water supply pipe. This must be located after the internal stopcock, non-return valve or check valve and before the boiler. This will allow the water expansion to be accommodated and avoid any future problems.

It is important that plumbers, gas installers and the householder should be aware of this requirement and check that these instructions have been observed.

Advice where a non-return valve/check valve is to be fitted and a combi-boiler is already installed:

It is possible that a non-return valve or check valve may be fitted in a property at some time after the installation of a combi-boiler, where water expansion has previously been permitted into the water supply pipework. Fitting of a non-return valve may be associated with the installation of an internal water meter – although many meter installations do not incorporate one – or with other alterations to the water supply pipework.

In this case, if the non-return valve or check valve is to be fitted internally or in close proximity to the boiler, the householder should, on receiving notice, either –

(a) Alert the installation company or contractor carrying out the work to the presence of a combi-boiler and seek their advice on whether the installation can proceed,

OR

(b) Check to see if a small expansion vessel has already been installed and, if not, make arrangements for one to be fitted by a WaterSafe plumber – as recommended by the boiler manufacturer.

IF IN DOUBT, THE HOUSEHOLDER SHOULD SEEK THE ADVICE OF AN APPROVED PLUMBING PROFESSIONAL OR THE BOILER MANUFACTURER.

General advice for gas installers and others where boiler/plumbing faults may have occurred subsequent to incorrect installation.

It is possible that problems such as boiler component failure and/or failure of downstream plumbing fittings such as shower cartridges, ceramic discs in taps etc. may occur sometime after incorrect installation of the boiler or the check/non-return valve. In such a situation it is important that plumbers, gas installers, water meter installation contractors and others should be aware of the issue described here so that they can check the water supply pipework installation and take corrective action where required.

* *A non-return valve is a simple device that stops water flowing in the opposite direction to its intended flow. It stops the water system being drained down unnecessarily during maintenance, such as when a meter is being changed.*

** *A check valve is similar device which has to meet stricter performance testing criteria than a non-return valve. It can be used to prevent potentially contaminated fluids from getting into to the water supply system.*