

Technical Bulletin

Developed with Glow-worm

Title: Product information and servicing reminder – Glow-worm Flexicom boiler range, internal ignition overpressure.

Date issued: 22nd October 2018

Glow-worm has identified a potential issue with excessive ignition overpressure in a very small number of older Flexicom boilers as a consequence of poor system water quality. Glow-worm have issued additional guidance to support the ongoing maintenance and servicing of these appliances.

Introduction

This Technical Bulletin has been published in conjunction with Glow-worm to provide information for the ongoing service, inspection and maintenance of Flexicom boiler systems.

Glow-worm have identified a small number of boilers that have experienced accelerated corrosion in heating systems which have been very poorly treated or not maintained with suitable water treatment chemicals. This has been particularly evident in systems using Flexicom boilers. This accelerated corrosion has led, in a small number of incidents, to excessive ignition overpressure within the appliance combustion case which can damage the appliance casing.

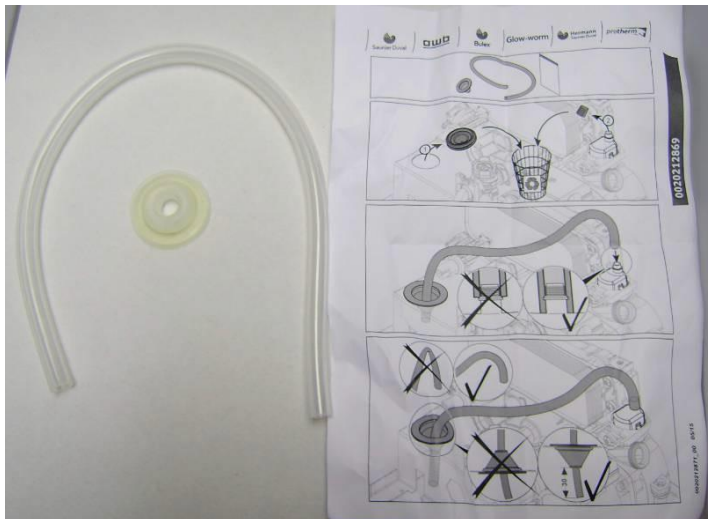
Background

Glow-worm has become aware that there are a very small number of Flexicom appliances which have been left dormant for an extended period – particularly after several years in service, being subject to excessive ignition overpressure, which can cause casing damage. The root cause of these events has been positively traced to the poor system water quality in these systems giving rise to metallic corrosion in the system – aluminium or steel – dependant on pH levels - and the subsequent release of flammable gas*. This gas finds its way into the boiler and increases the intensity of ignition.

These types of events are extremely rare, and have occurred predominantly in those systems left dormant for longer periods of time – which allows the corrosion process (and flammable gas) to build up rather than being released over time. In particular, aluminium corrosion can be excessive when the system has a high pH value. Glow-worm recommends a pH of no higher than 8.5 to ensure corrosion of the aluminium heat exchanger cannot occur.

*Found to be Hydrogen gas in a number of cases

The ultimate solution to the issue rests with the correct water treatment practices of complete cleansing, flushing and inhibition of the system during commissioning and thereafter, correct maintenance and monitoring of inhibitor levels and pH levels. However, Glow-worm has created a vent kit for those installations that may present specific challenges in ensuring the above criteria is achieved. The vent kit is easily fitted on to the automatic air vent and through the base grommet of the appliance and will ensure any gases will not vent into the appliance. This operation, for those systems that require it, could be completed during normal servicing and inspection activities.



Glow-worm Flexicom vent Kit Part Number 0020212869.

This kit can be applied to the ranges of appliances as detailed below:

- Glow-worm Flexicom cx combination boilers
- Glow-worm Flexicom sx system boilers

The guidance contained in this Technical Bulletin only applies to the above model ranges which ceased in production in August 2015.

Service and Maintenance Advice

Key Issues found with poorly treated systems

The main issues found with the poorly treated systems are:

- The cleansing process has been performed with a chemical cleanser, mobilizing all the system debris, however the flushing out of this mixture has not been properly completed. Consequently this has led to enhanced electrolytic corrosion with mixed metal debris (iron, copper, aluminium) eventually deposited in radiators, pumps and heat exchangers. Any inhibitor added has either been insufficient or ineffective due to the amount of debris in the system.
- An alkaline water treatment product has been used – there are not many of these on the UK market but they are not suitable for aluminium systems (aluminium boilers or radiators) and lead to enhanced aluminium corrosion.

- Insufficient inhibitor (or no inhibitor) has been used in the system, leading to low corrosion protection and subsequent electrolytic corrosion.
- Very high pH levels of the system water – caused by one or more of the issues above. High pH levels (above 8.5) are increasingly more corrosive.
- All of the above issues can lead to the formation of flammable gas from corrosion processes which impairs heating system and boiler performance.

Boiler Inspection/servicing

When servicing or maintaining a Flexicom appliance, particularly one left dormant for a period of time, it is advisable to remove the outer case front before operating the appliance to let any gases in the water system vent freely into the atmosphere and avoid any potential ignition overpressure event.

Key symptoms of gases accumulating in the system are cold radiators and gurgling noises from the system. Also, due to gas formation the system water pressure can increase – sometimes enough to open the system pressure relief valve.

Key Do's/Don'ts for Installers servicing and maintaining Flexicom Boilers

✓ Do's

- ✓ **All Water Treatment products must be suitable for use with aluminium**, otherwise accelerated corrosion of the aluminium heat exchanger could occur.
- ✓ **It is ESSENTIAL that the system is thoroughly flushed** to prevent electrolytic corrosion due to mixed metal debris and flux materials
- ✓ **ALL system debris MUST be removed, together with the cleanser before adding inhibitor**. This will prevent electrolytic corrosion due to mixed metal debris and flux materials. This will also ensure that the inhibitor is fully effective
- ✓ **The pH value of the system water after treatment should be between 6.5 and 8.5**. Above 8.5 the system water will be increasingly more corrosive

✗ Don'ts

- ✗ **DO NOT use alkaline water treatment products**. Above a pH of 8.5 the system water will be increasingly more corrosive.
- ✗ **DO NOT mix water treatment product types to avoid compromising the performance of either**. Insufficient or ineffective cleansing or inhibition can lead to accelerated corrosion
- ✗ **DO NOT use artificially softened water to fill the central heating system (as BS 14743)** Artificially softened water, particularly in higher pH systems can lead to enhanced Aluminium corrosion.

Potential additional Action

As a responsible manufacturer Glow-worm want to ensure that our customers have minimal inconvenience and are provided with a quick resolution in the event that a troublesome system is discovered. The system should of course be re-flushed and re-inhibited, but the addition of the vent kit, provided free of charge as a goodwill gesture, can be easily and quickly fitted during servicing. It can also be fitted as a matter of course during servicing to provide peace of mind throughout the lifetime of the boiler

Registered businesses and engineers can contact Glow-worm using the contact details below to receive free of charge vent kits when servicing the affected Flexicom boilers. Registered businesses and engineers will be asked to provide the following details relating to the boiler and where it is installed:-

- First line of the address and postcode of the property
- Boiler serial number
- Boiler model name

The provision of the vent kit on a free of charge basis applies to the affected Flexicom model ranges only and is a gesture of goodwill from Glow-worm to address system issues and does not relate to the manufacture of the particular boilers.

Contact details

Registered businesses and engineers should contact Glow-worm using the following hyperlink, which will open up an online Part Request Form:-

<https://tinyurl.com/y8546gws>

Regulations, Standards and Codes of Practice guidelines for correct water treatment

Technical Guidance Document J - Heat Producing Appliances

<https://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownload%2C37240%2Cen.pdf>

Standards – available from BSI and NSAI

BS 7593⁽¹⁾ - *Code of practice for treatment of water in domestic central heating systems*

IS 813⁽²⁾ - *Domestic gas installations (Edition 3) and Amendment 1:2017*

BS EN 14743⁽³⁾ - *Water conditioning equipment inside buildings. Softeners. Requirements for performance, safety and testing*

BuildCert Chemical Inhibitor Approval Scheme (CIAS)

<http://www.beama.org.uk/download.cfm/docid/83DC22C1-2FCB-4D80-A663E9BD1277BDA5>

BEAMA Code of Practice for Chemical Cleaning and Inhibiting of Domestic Hot Water Central Heating Systems.

<http://www.beama.org.uk/download.cfm/docid/E2280148-AB02-4E16-B7E1710BE610870A>

Bibliography

BS 7593 - *Code of practice for treatment of water in domestic central heating systems*

(2) **IS 813** - *Domestic gas installations (Edition 3) and Amendment 1:2017*

(3) **BS EN 14743** - *Water conditioning equipment inside buildings. Softeners. Requirements for performance, safety and testing*