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# Technical Bulletin

Managing risk from Carbon Monoxide as per I.S.813.2014

July 2015

## BACKGROUND

NSAI published SWIFT 8 - Specific requirements for electrical apparatus for the detection of Carbon Monoxide (CO) in domestic premises in 2011. Edition 3 of the Irish Standard I.S. 813 - Domestic Gas Installations was published in 2014 which introduced the requirements for Carbon Monoxide (CO)detectors(manufactured to EN50291)to be fitted during a gas installation in certain circumstances.

The Register of Gas Installers of Ireland (RGII) Inspectors reported that there is some confusion within the Gas industry as to where and when a Carbon Monoxide (CO) detector is required. This Technical Bulletin will bring clarity to the subject.

## SCOPE

- This bulletin is directed at Registered Gas Installers, (RGI's).
- This bulletin deals with Carbon Monoxide (CO) detectors, specifically when and where they are required to be fitted, the type and number of detectors required ensuring full compliance with the I.S.813:2014. It must be noted that this is a Technical Bulletin and that the National Standard takes precedent at all times.

## SAFETY ACTIONS

It is very important when fitting gas appliances, or indeed any carbon burning fuelled appliance, that the appliance has sufficient air for complete combustion and a properly constructed and effective flue to remove the products of combustion safely to atmosphere.

**NOTE: I.S. 813: Domestic Gas Installations published 28th January 2014 effective date.**

## New boiler installations or boiler replacements

10.9 Extended Fan Flue Systems for room sealed fan flues.
The first reference in the standard to the requirements for CO detector is on page 47,subclause 10.9.1.7:

***10.9.1.7*** *Where the extended flue is concealed within a void, inspection hatches shall be provided to permit inspection of the flue throughout its entire length. A type A carbon monoxide detector complying with the requirements of Annex I shall be installed within each void and interlinked to shut down the appliance when in the alarm condition. A carbon monoxide detector complying with the requirements of Annex I shall be installed in every room through which the flue passes and in any room where the flue passes through the ceiling space.*

This covers the requirements for **new installations** where there is a concealed extended flue i.e. an extended flue concealed in a void.

**NOTE: It is preferable to avoid this situation by sighting the boiler on an outside wall**

The requirements are as follows:

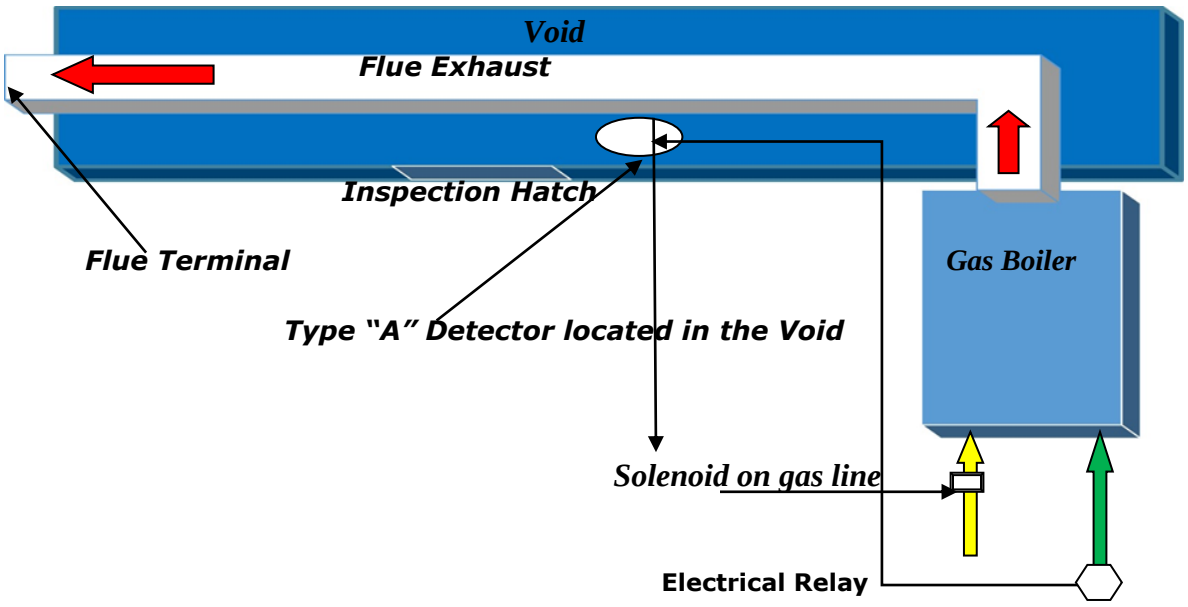
1) Inspection hatches **must be** provided to allow a full inspection of the flue and the flue joints throughout its entire length;
2) A type "A" CO detector complying with the requirements of Annex I (referenced later) **must be** installed in each void/duct and interlinked to shut down the appliance or the gas supply (Solenoid) when in alarm condition; and
3) A CO detector complying with the requirements of Annex I **must also be** installed in every room through which the flue passes and in any room where the flue concealed in a void/duct passes.

**NOTE 1: Type "A" detector i.e. interlinked to shut off gas to appliance or shut off appliance electrically.**

**NOTE 2: Type "B" is a standalone detector (Audible and visual only).**

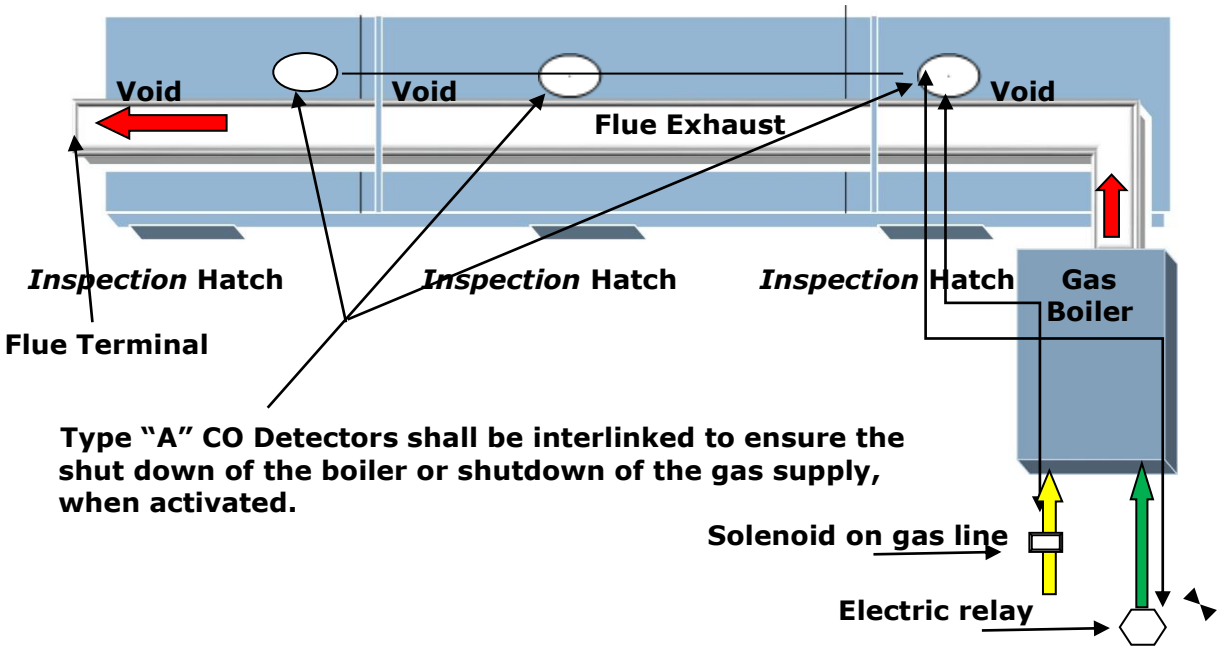
- You must fit access hatches in all new installation;
- You must fit type "A" detectors in each void/duct (Figures 1 and 2);
- You must fit type "B" detector in each room through which the flue or flue concealed in a void/duct passes;
- All detectors must be interlinked and the type "A" controlling the appliance and must shut off the appliance when alarm/alarms are activated by a solenoid on the gas line or shut off the boiler through an electrical relay;

## Figure 1 - Continuous Void

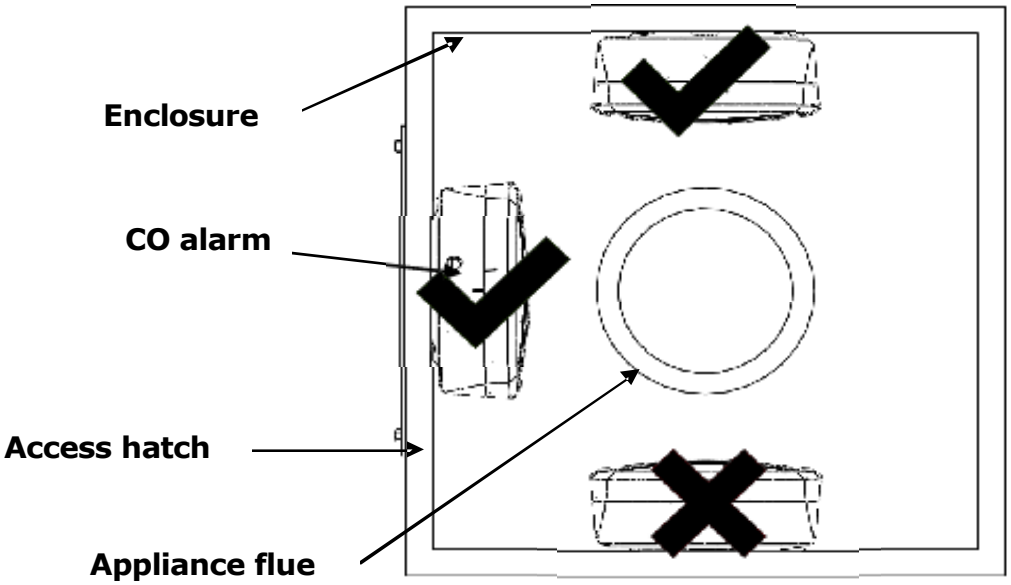



## Figure 2 – Sectionalised Void

*This diagram illustrates the requirements where the Void is not continuous as in Fig 1.*



**Location of CO Alarms in Enclosed Flues/Voids**




**NOTE:**
Ensure there is sufficient space around the alarm to remove it from the mounting plate

***10.9.1.8*** *On commissioning the appliance the combustion measurements must be verified using a calibrated flue gas analyser complying with I.S. EN 50379-3.*

## New Appliance installations

***I.3.1.3*** *A CO detector shall be installed in each room containing an open-flue or fixed flueless appliance*

Since 28th Jan 2014 all Open Flued and Fixed Flueless appliances fitted **must have** a CO detector installed in the room containing the appliance **and** in each bedroom **or** located in a corridor within 5 meters of the bedroom(s) door.

*Therefore you **must fit** a minimum of two CO detectors every time you fit a gas appliance only exception is a room sealed, balanced flue appliance fitted direct to an outside wall with flue direct to outside*

## When servicing existing appliances with a concealed extended flue

***C.2.5*** *A combustion flue gas analysis and air intake contamination analysis at the flue sample points (where fitted) at the boiler shall be carried out. Where no sample points are fitted at the boiler then the flue gas sample should be taken at the flue terminal where reasonably possible.*

***C.2.7*** *Wherever there is a concealed flue which cannot be inspected, it shall be recorded on the Declaration of Conformance Certificate, confirming the safety of the appliance. The owner/occupier responsible for the premises in which the concealed extended flue is fitted shall be made aware of the risk. Where considered necessary a Notification of Hazard shall be issued.*

***C.2.8*** *Where the extended flue is concealed within a void/duct, inspection hatches* ***should be provided*** *to permit inspection of the flue throughout its entire length.* A carbon monoxide detector, complying with the requirements of Annex I I.S. 813:2014 **must be** installed within each void through which a concealed extended flue passes.

On existing installations where inspection hatches are not installed, the pathway of the concealed extended flue **shall be** visually inspected for evidence of staining. Where access to the void is available, testing for carbon monoxide **shall be** carried out within the void. Any ongoing problems or issues with boiler performance should be investigated. A carbon monoxide detector complying with the requirements of Annex I **shall** be installed in every room through which a concealed extended flue passes.

**NOTE: Where the owner-occupier refuses to have alarms fitted a Notification of Hazard (NOHZ) shall be issued and where appropriate, the appliance should be isolated (see I.S. 813:2014, Annex E.9).**

## Example of Access Hatch Installation

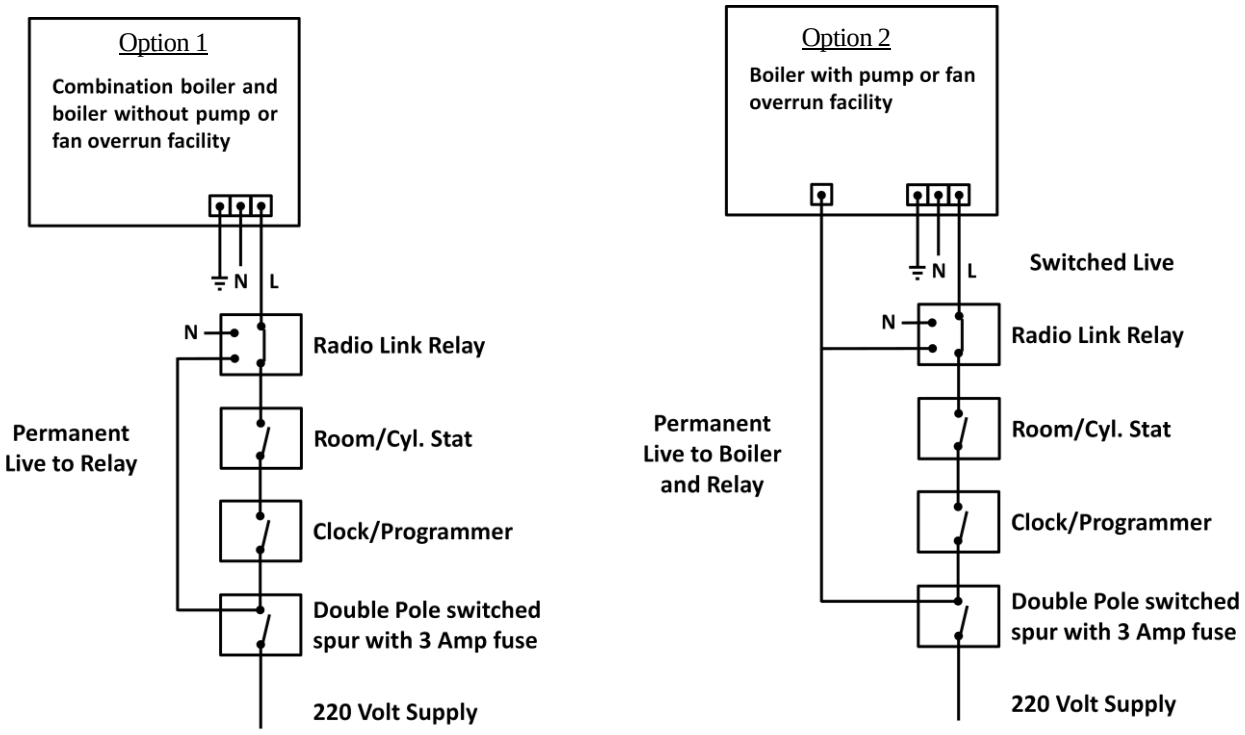
# Carbon Monoxide Detector Boiler Interlink

**Important:** Before carrying out installation or maintenance work, ensure all electrical circuits are isolated and the fuse is removed.

The schematic diagram below illustrates how to interconnect CO detectors using a type A CO detector as the switching device or, alternatively a wireless receiver relay.

The CO detector may be wired or wireless and must be connected in such a way that will ensure that the boiler will switch off if CO is detected. See recommended wiring options 1 and 2 below, but always refer to boiler and CO detector manufacturers' specifications and instructions.

It is recommended that all detectors installed are interconnected, so that detection of CO by any one unit will result in activation of all units and boiler shut off.




The wireless receiver relay device must be connected via a spur/switch which needs to be doubled poled and fused at 3 amps. It is recommended that the wireless receiver relay or type A detector be the last control device in the wiring circuit before connection to boiler.

The wireless receiver relay or type A CO detector can be connected, as shown in wiring options 1 or 2 above, depending on the boiler type. For boilers with a pump or fan overrun facility Option 2 is recommended.

**Important:** For Combination Type Boiler use wiring Option 1.This is necessary to control the boiler when operating in either heating or hot water modes

**Important:** Be aware that when the CO level has dropped below the alarm activation setting the boiler will re-start automatically

If a boiler has shut down due to the detection of CO and no fault can be found in the boiler or flue system, other potential sources of CO e.g. solid fuel fires or leaks from adjoining properties should be investigated.

END.