

Technical Bulletin 008 (Edition 2)

Developed by Industry



Title: Room-sealed fanned-draught chimney/flue systems concealed within voids

Date issued: 1 December 2010

Note: This version of Technical Bulletin (TB) 008 (formerly CORGI TB 200) replaces the version originally published 1 April 2009 which is now withdrawn. This version has been reviewed and where appropriate revised to ensure that it remains both current and relevant.

This Technical Bulletin highlights the gas safety considerations relating to room-sealed fanned-draught gas appliance chimney systems installed in voids and provides guidance on how to manage the potential risks and satisfy the Gas Safety (Installation and Use) Regulations

Introduction

The issue covered in this Technical Bulletin (TB) is a matter of serious concern to the gas and home building industries. In October 2008, following a fatal carbon monoxide (CO) poisoning incident, the Health and Safety Executive (HSE) in Great Britain (GB) issued a Safety Alert on this topic. If appropriate action is not taken, there is a risk of further serious incidents, i.e. in the event of a defect in a concealed chimney system. For further information about the HSE Safety Alert, see [TB 017^{\(1\)}](#).

This TB highlights the gas safety concerns relating to room-sealed fanned-draught gas appliance chimney systems installed in voids and provides guidance on how to manage the risks and satisfy the requirements of the primary legislation concerning the safe installation, maintenance and use of gas systems and appliances, (i.e. in GB – the Gas Safety (Installation and Use) Regulations (GSIUR)).

Note 1: *Similar requirements apply in other geographical areas covered by Gas Safe Register. For details of current gas safety legislation, building legislation and industry standards for the geographical areas covered by Gas Safe Register, see [TB 999^{\(2\)}](#).*

Guidance

This TB covers the access requirements needed to allow room-sealed fanned-draught chimney systems concealed within voids to be visually inspected and the process to be followed where access is not provided for inspection purposes. The information contained in this TB has been agreed through stakeholder consultation and should be applied by all Gas Safe registered businesses/engineers involved in the installation, commissioning and ongoing maintenance of room-sealed fanned-draught appliances connected to chimney systems concealed within voids, such as central heating boilers, ducted warm air heaters, water heaters and certain gas fires.

Note 2: *For the purpose of this TB, the term 'void' includes ceiling voids, floor voids, purpose-built enclosures, service risers, certain roof spaces and any other enclosure that will restrict access to the chimney system.*

Note 3: *The requirement to visually inspect applies equally to both the flue duct and the air duct of a room-sealed fanned-draught chimney system and this is applicable in both domestic and non-domestic situations. However, it is not intended that this requirement should apply to joints in short chimney system runs which may be within the building structure (e.g. direct from the rear of an appliance to outside air through an external wall). Installations incorporating proprietary liners within constructional chimneys are also excluded, providing that no flue joints are located within the constructed chimney.*

New installations

It is acceptable to install a new room-sealed fanned-draught chimney system within a void providing the installation meets the requirements of all relevant legislation, installation standards and both the appliance manufacturer's and chimney system manufacturer's installation instructions.

Clause 10.2.4 of BS 5440-1⁽³⁾ states: "Where chimneys are enclosed, e.g. within ceiling voids, they shall be installed in accordance with appliance manufacturer's instructions and provision made for visual inspection".

Single room-sealed fanned-draught chimney systems should not be commissioned where they pass through other properties, either horizontally or vertically, because access for inspection may not always be available either to the property or to the chimney system running through the property.

Note 4: *For guidance on the installation and inspection requirements for communal room-sealed fanned-draught chimney systems connected to communal chimney systems, reference should be made to IGEM/UP/17⁽⁴⁾.*

Where a chimney system is routed within a void, appropriate means of inspection at strategic locations need to be provided to allow the following aspects to be visually checked and confirmed by registered engineers undertaking service, maintenance or safety check visits:

- the chimney system is continuous throughout its length;
- all joints are correctly assembled and are appropriately sealed;
- the chimney system is adequately supported throughout its length;
- where the chimney system is connected to a condensing appliance, any required gradient of 'fall' back to the appliance (required to recover the condensate produced as part of the combustion process) and any other drain points have been provided.

Note 5: *Changes to building legislation in the geographical areas covered by Gas Safe Register which came into force 1 October 2010, specifically outline requirements that must be followed for new installations when routing room-sealed fanned-draught chimney systems within voids. For further guidance see [Changes to building legislation](#) in [Appendix 1](#) of this TB.*

All of the related trade functions involved in the building construction, installation and commissioning of the gas appliance need to understand the minimum requirements and ensure that adequately sized and located means of visually inspecting the chimney system (without the use of mechanical aids such as 'endoscopes') along its route are provided at strategic locations and that any inspection hatches installed to accommodate this are made permanent (see [Appendix 1](#) for additional information on inspection hatches).

The appliance and associated chimney system needs to be installed in accordance with the appliance manufacturer's installation instructions, for both the appliance and chimney system and where appropriate Approved Document 'J' (ADJ)⁽⁵⁾ (see [Note 1](#) and [Note 5](#)).

For new installations where the aforementioned requirements have been adhered to, there should be no barriers to registered engineers undertaking adequate chimney system checks throughout the life of the installation. If it is identified that the requirements have not been adhered to, registered engineers responsible for the installation of the gas appliance need to alert the builder and/or developer immediately to this issue to ensure that effective remedial action is taken **before** any appliances are commissioned.

Existing installations - ongoing service and maintenance

There will be installations that do not have adequate provision for inspection, but the requirement to examine the effectiveness of the room-sealed fanned-draught chimney system still exists. Where a room-sealed fanned-draught chimney system in a void without appropriate means of access is encountered, a risk assessment of the installation needs to be carried out in accordance with the [Chimney systems in voids risk assessment process](#) (below) and the additional guidance offered in [Appendix 2](#) of this TB.

Following the risk assessment, where necessary, the installation will need to be classified in accordance with [Table A3.1](#) in [Appendix 3](#) of this TB and the appropriate action taken in accordance with the current Gas Industry Unsafe Situations Procedure (GIUSP) ([TB 001^{\(6\)}](#)).

Important: *Where appropriate inspection hatches are not available, registered engineers still need to carry out as a minimum, the checks required by Regulation 26(9) of GSIUR in GB to ensure no other risks are apparent with regard to the gas installation and appliance concerned (see also [Note 1](#) and [Appendix 3](#)).*

Where inspection hatches are available, the checks outlined in [Appendix 2](#) need to be applied to ensure the chimney system will continue to operate safely, **or**;

Where there are any concerns with the installation following the risk assessment process, the installation should be classified as either 'Immediately Dangerous' ('ID'), 'At Risk' ('AR') or 'Not to Current Standards' ('NCS') (see [Table A3.1](#) in [Appendix 3](#)) as appropriate in accordance with the current GIUSP ([TB 001^{\(6\)}](#)).

In certain circumstances it may be possible to leave the appliance operational for a limited period of time - **up until 31 December 2012** - providing the installation meets the specific requirements of the risk assessment prescribed in the [Chimney systems in voids risk assessment process](#) (below).

Chimney systems in voids - risk assessment process

When encountering an existing installation where access to the chimney system has not been provided, a checklist as described in [Appendix 3](#) should be completed to ensure defects in the system (if any) can be identified.

With reference to the [Checklist](#) and [Figure A3.1](#) in [Appendix 3](#), provided all checks result in answers being entered in the left hand (green) column then the installation may be left operational until appropriate inspection hatches have been provided.

The gas user/responsible person should be advised that if by 31 December 2012 no inspection hatches have been provided then the installation will default to a GIUSP ([TB 001^{\(6\)}](#)) 'At Risk' classification and should not be used.

If any checks result in a response being given in the right hand (red) column of the [Checklist](#), then the installation should be classified as 'ID' or 'AR' (as appropriate) in accordance with the information contained in [Table A3.1](#) and [Figure A3.1](#) in [Appendix 3](#) and the gas user/responsible person advised that the installation should be disconnected or turned off in accordance with the current GIUSP ([TB 001^{\(6\)}](#)) and a relevant Warning Notice left and label applied.

Following completion of the [Checklist](#) in [Appendix 3](#), a copy of the completed [Checklist](#) should be provided to the gas user/responsible person and where appropriate the owner, landlord or managing agent and a copy should be kept by the registered business for audit purposes.

The requirements for RIDDOR reporting

'ID' situations relating to these types of chimney systems should be reported under the RIDDOR 6(2) reporting requirements for 'dangerous gas fittings' at the earliest opportunity and in any case, they must be reported within 14 days. In the case of GB, they can be reported by telephone by calling 0845 300 9923, or by completing the appropriate form via the internet at: <http://www.riddor.gov.uk> (see **Note 1** and also **Appendix 5** of this TB for contact details). For further guidance on the requirements for reporting under RIDDOR, see the relevant version of **TB 002⁽⁷⁾**.

Note 6: For general information about the process behind the development of Gas Safe Register Technical Bulletins and the expectations for all Stakeholders, see **TB 1000⁽⁸⁾**.

Bibliography

(1) TB 017 – HSE Safety Alert on gas appliance flue systems in voids

(2) TB 999 – Gas Safe Register Normative Document List

(3) BS 5440-1: 2008 – Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases) – Part 1: Specification for installation of gas appliances to chimneys and for maintenance of chimneys

(4) IGEM/UP/17 – Shared chimney and flue systems for domestic gas appliances (currently still in draft format)

(5) Approved Document J (ADJ) – Combustion appliances and fuel storage systems

(6) TB 001 – The Gas Industry Unsafe Situations Procedure

(7) TB 002 (A), (B), (C), (D) (as appropriate) – Reporting of dangerous gas fittings – Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)

(8) TB 1000 – An introduction to Gas Safe Register Technical Bulletins

(9) BS 7967-4: 2007 – Carbon monoxide in dwellings and the combustion performance of gas-fired appliances. Part 4 Guide for using electronic portable combustion gas analysers as part of the process of servicing and maintenance of gas-fired appliances

(10) TB 126 – Combustion performance information for condensing boilers incorporating air/gas ratio control valve technology

(11) BS 7967-3: 2005 – Carbon monoxide in dwellings and the combustion performance of gas-fired appliances. Part 3 - Guide for responding to measurements obtained from electronic portable combustion gas analysers

(12) TB 019 – British Standard 7967 Carbon monoxide in dwellings and the combustion performance of gas-fired appliances

(13) BS EN 50291: 2001 – Electrical apparatus for the detection of carbon monoxide in domestic premises — Test methods and performance requirements

(14) BS EN 50292: 2002 – Electrical apparatus for the detection of carbon monoxide in domestic premises — Guide on the selection, installation, use and maintenance

Note: Gas Safe Register Technical Bulletins can be viewed at: <https://engineers.gassaferegister.co.uk> - login and visit the Technical Information area.

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Appendix 1

Access to chimney systems in voids - Requirements

It is not intended that the inspection hatches should be sized to allow for full physical access to the chimney system (e.g. to carry out maintenance of the system) although this may be a consideration.

Inspection hatches are required to allow a visual inspection of the chimney system.

The number of inspection hatches will depend on the length and route of the chimney system in the void. The registered engineer and the person installing the inspection hatches need to liaise to determine the number and position of inspection hatches required (see below).

Inspection hatches installed to provide access to an existing chimney system in a void should have one hour fire resistance for residential buildings with floors no higher than 18m above ground level. The inspection hatch manufacturer will be able to confirm the fire resistance and provide a fire test certificate. In new build situations, the building control body will be able to advise on the suitability of the inspection hatches.

The inspection hatches should meet the following standards:

- all voids containing concealed chimney systems should have a minimum of at least one inspection hatch;
- all inspection hatches should measure at least 300mm x 300mm;
- no flue joint within the void should be more than 1.5m distant from the edge of the nearest inspection hatch;
- where possible, inspection hatches should be located at changes of direction;
- where this is not possible then bends should be viewable from both directions.

As far as reasonably practicable, inspection hatches should be installed in non-habitable areas, such as cupboards, corridors or the like. When installing inspection hatches in existing installations, it may not be always possible to put inspection hatches in these locations (e.g. within 1.5m of each joint). It should however be possible to inspect the entire chimney system and every joint.

In existing installations it is advisable to consult with the property owner about the appearance of the inspection hatches. Inspection hatches do vary in their appearance and will typically have a frame which will also be visible.

Advice on fitting inspection hatches *(please read fully before commencing any work)*

Based on the guidance above, choose an inspection hatch suitable for the circumstances.

Liaise with the Gas Safe registered engineer on the position and number of inspection hatches required. It may be helpful to install the first inspection hatch near to the point where the boiler's chimney system disappears into the ceiling void and a second inspection hatch at the terminal location. Use access points to establish the direction of travel of the chimney system and the best location for any other inspection hatches and so on until all sections of the chimney system can be inspected.

In the locations identified, use a metal/stud detector to establish if other services (pipes, electrical cables, ventilation ducts) or ceiling supports exist, but are not visible from within the property.

Note A1.1: *Plastic pipes and ducts will not be identifiable using this method and due care will need to be taken when cutting access.*

Once the approximate position for an inspection hatch in a ceiling has been determined, carefully cut a small hole using a core drill (e.g. 50mm diameter) to provide sufficient access to determine if the inspection hatch and frame (about 300mm x 300mm) can be fitted without obstruction from other services or the ceiling support system see - [Changes to building legislation](#) (below).

If obstructions are identified, check if it is possible to adjust the inspection hatch position to avoid the services/supports but still provide sufficient access for inspection of the boiler's chimney system.

In exceptional situations, it may be necessary to re-route the other services to obtain an inspection hatch location which is not restricted.

Inspection hatches vary in depth depending on their design, with some requiring a framing system within the void for fixing purposes. Check that there is sufficient clear space in the void, free from services/supports at the chosen position to suit the inspection hatch chosen. Manufacturer's instructions should specify how much clearance is required for the inspection hatch.

Install the inspection hatch in accordance with the manufacturer's instructions.

On completion, check that the inspection hatch opens and closes correctly.

Changes to building legislation

New building legislation requirements that recognise the need to provide access for the inspection of newly installed chimney systems have been introduced in some of the geographical areas covered by Gas Safe Register and for England and Wales, came into effect 1 October 2010, in particular:

For England and Wales - Approved Document 'J' (ADJ⁽⁵⁾) of the Building Regulations specifically outlines requirements that must be followed for new installations when routing room-sealed fanned-draught chimney systems within voids. Important requirements in clause 1.47 include:

- All voids containing concealed flues should have at least one inspection hatch measuring at least 300mm x 300mm;
- No flue joint within the void should be more than 1.5m distant from the edge of the nearest inspection hatch;
- Where possible, inspection hatches should be located at changes of direction;
- Where this is not possible then bends should be viewable from both directions.

ADJ⁽⁵⁾ can be viewed at http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADJ_2010.pdf.

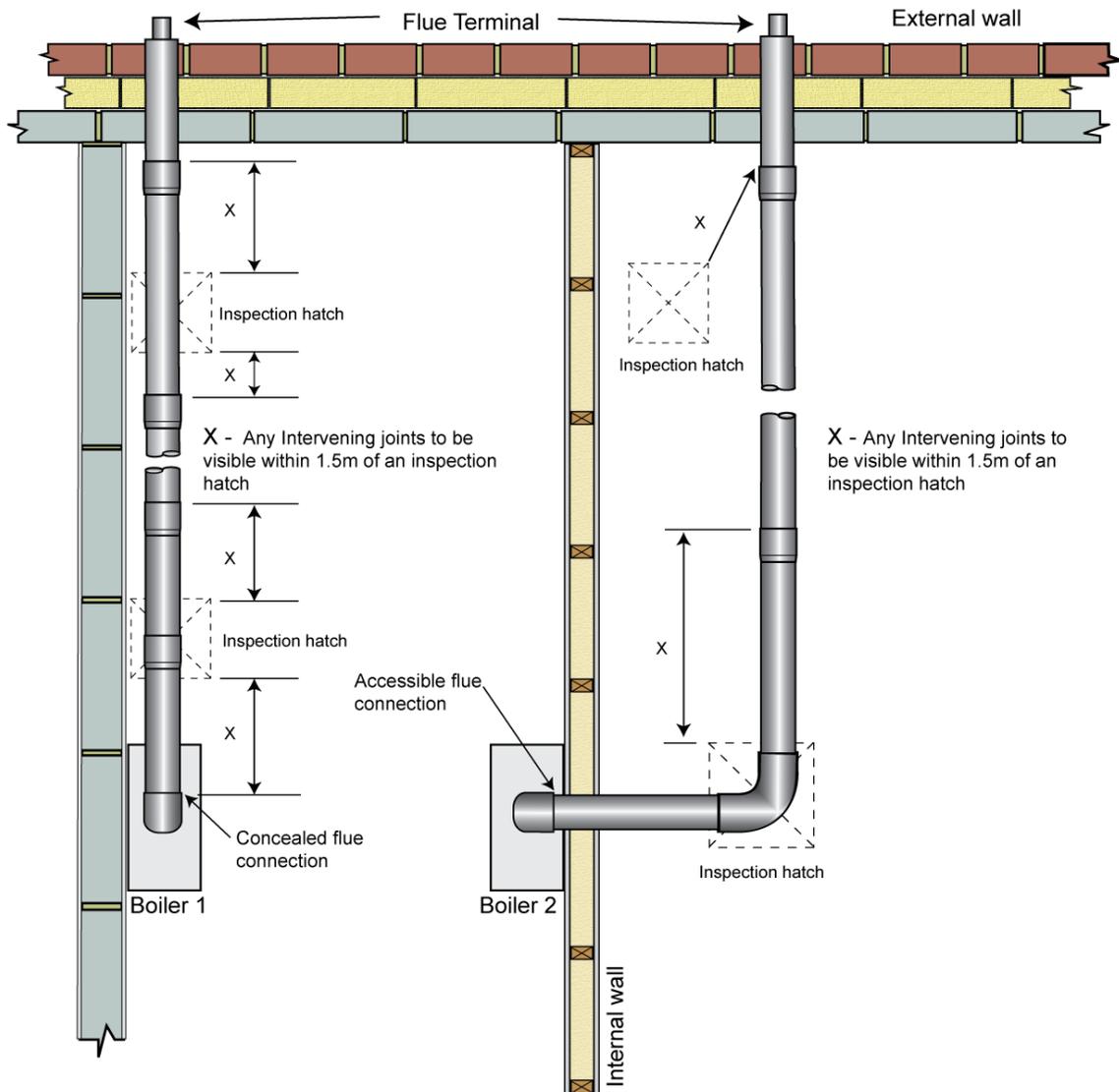
Essentially, by applying the revised requirements for ADJ (England and Wales) in all other geographical areas, covered by Gas Safe Register, this would be considered by Industry to be applying a 'best practice' approach. Equally, similar guidance should be considered and applied wherever practicable when dealing with existing installations of this type when determining access positioning and design, with particular attention being given to fire protection requirements.

Figure A1.1 on page 7 of this TB provides further illustrative guidance on the suitable positioning for inspection hatches for concealed horizontal chimney/flue systems that reflects the requirements of ADJ⁽⁵⁾.

Bibliography

See main part of TB 008 (Edition 2) for a list of references.

Figure A1.1 Example of suitable positioning for inspection hatches for concealed horizontal chimney/flue systems



Attention:

All voids containing concealed chimney systems should have at least one inspection hatch.

All inspection hatches should measure at least 300mm x 300mm.

No flue joint within the void should be more than 1.5m distant from the edge of the nearest inspection hatch. This is expressed as dimension 'x' in [Figure A1.1](#).

Where possible, inspection hatches should be located at changes of direction. Where this is not possible then bends should be viewable from both directions.

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Appendix 2

Visual risk assessment

When work is carried out on an appliance, regardless of whether inspection hatches are provided or not, a risk assessment of the installation should be carried out to determine if further action is required. In particular, the following points (not exhaustive) need to be considered when carrying out a risk assessment of the installation.

Note A2.1: *Some of the checks highlighted below will only be possible when inspection hatches have been provided for the chimney system. However, it is important in all cases that the installation is appropriately assessed, even when inspection hatches have not been provided as there may be faults with the chimney system that would need immediate attention from the Gas Safe registered engineer (see also [Appendix 3](#)).*

Question the gas user/responsible person

Before commencing any work, through discussions with the gas user/responsible person, establish the age of the appliance/installation and whether it has been regularly maintained. Also try to establish the route of the chimney system through the void and whether there have been any previous problems arising from the routing of the chimney system. It is important that this initial investigation takes place so that the registered engineer is aware of the history of the appliance and the installation. This will help in the overall assessment of the installation.

It is also important to ask the gas user/responsible person if they know of any historical problems with chimney systems concealed within voids involving their neighbours or the development as a whole. Where there are known historical problems with the development, this needs to be considered as part of the risk assessment. Advice and guidance can also be sought from others such as the Gas Safe Register Technical Helpline and helplines provided by appliance manufacturers, building warranty providers, etc. (see [Appendix 5](#) for useful contact details).

Chimney system

The chimney system should be assessed to ensure that it is of the type specified by the appliance manufacturer, typically either 'concentric' or 'twin-pipe' and that the correct materials have been used.

It is important to check that the chimney system is connected correctly to the appliance in the manner prescribed by the appliance manufacturer. The chimney system termination (both flue pipe and air supply pipe if run separately) should also be checked to ensure it is installed in accordance with the appliance manufacturer's installation instructions, or if these are not available, BS 5440-1⁽³⁾.

Where it is found that the chimney system material or jointing method used are not as specified by the appliance manufacturer, further investigation will be needed to ascertain whether it is considered safe to allow the continued use of the gas appliance.

Note A2.2: *Advice should be sought from the appliance manufacturer prior to making this decision.*

The route of the chimney system should be 'walked' to ensure that there are no stains or discoloration to the material used to construct the void below the chimney system, as this may indicate that there is a break or defect in the chimney system.

The chimney system itself should be visually checked along its entire length to ensure that it is adequately supported. This will include where appropriate any adjoining property (or properties) through which the chimney system passes.

The length and size of the chimney system will also need to be assessed to ensure it again meets the requirements of the appliance manufacturer. If it is found that the chimney system is incorrectly sized or of excessive length, the appliance manufacturer will again need to be consulted to seek their advice and the installation classified in accordance with [Table A3.1](#) in [Appendix 3](#) where appropriate.

Operational checks

In all cases, as previously discussed, there is a need to carry out the minimum safety checks as required by Regulation 26(9) of GSIUR in GB as far as reasonably practicable, to ensure that the appliance itself is operating safely (see also [Note A2.3](#)).

Note A2.3: *Similar requirements apply in other geographical areas covered by Gas Safe Register.*

Where the appliance manufacturer requires combustion readings to be taken as part of the routine servicing or maintenance, combustion gas analysis should be carried out using a suitable electronic combustion gas analyser (ECGA) to ensure the appliance meets the specified requirements.

Where the appliance manufacturer does not provide specific combustion readings, but a suitable ECGA is available, it is highly advisable to carry out combustion gas analysis following the recommendations in BS 7967-4⁽⁹⁾ or TB 126⁽¹⁰⁾ (as appropriate) for the particular appliance type.

If the combustion analysis readings exceed those specified by the appliance manufacturer or those outlined in BS 7967-3⁽¹¹⁾ and TB 126⁽¹⁰⁾ relevant to the particular appliance controls and any incorrect combustion levels cannot be corrected, the appliance should be classified as 'Immediately Dangerous' ('ID'), or 'At Risk' ('AR') as appropriate, in accordance with procedure detailed in the current GIUSP (TB 001⁽⁶⁾) and made safe. Further investigation will need to be undertaken.

Note A2.4: *Additional information on the requirements of the BS 7967 suite of standards can be found in TB 019⁽¹²⁾.*

Following the risk assessment, the installation should be classified in accordance with [Table A3.1](#) in [Appendix 3](#) and the appropriate action taken in accordance with the current GIUSP (TB 001⁽⁶⁾). The gas user/responsible person for the property should be advised of this in writing; together with details of the remedial work necessary for the installation to comply with current industry Standards and legislation (see also [Figure A3.1](#)).

Where there is a concern that other properties in the development may be similarly affected, the registered engineer should consider advising the occupiers of neighbouring properties, the developer and where appropriate the managing agent, etc of the issue. Where an 'ID' situation has been identified, there will also be a requirement to notify HSE using the RIDDOR process. For further guidance see ['The requirements for RIDDOR reporting'](#), in the main part of TB 008 (Edition 2).

If access is available to fully inspect the chimney system, it may also be advisable to install an audible carbon monoxide (CO) alarm in spaces which could be affected if an appliance or chimney system became faulty. Where a CO alarm is required, it should be manufactured to BS EN 50291⁽¹³⁾ and display a 'mark' to confirm it complies with relevant standards, such as a 'Kitemark' and 'CE Mark' (see [Appendix 4](#) for more information about CO alarms).

Where access is not provided to fully inspect the chimney system, under no circumstances should the appliance be left operational without first ensuring that all elements of [Appendix 3](#) have been satisfied. It would not be appropriate for registered engineers to leave the appliance operational if CO alarms are unavailable at the time of risk assessment, even where the gas user/responsible person indicates that they will source and fit CO alarms themselves at a subsequent date/time.

For installations where the chimney system is found to be routed through neighbouring properties this will be particularly challenging to assess. Unless access is available to the neighbouring properties to carry out the risk assessment and check/fit CO alarms (see [Appendix 3](#)), then an 'AR' classification in accordance with the current GIUSP (TB 001⁽⁶⁾) will be the minimum classification that can be applied to the property until such time as access is provided to fully inspect the chimney system.

Note A2.5: *A supporting document (TB 008Ed 2 CIP-RACL) has been developed in association with TB 008 (Edition 2), which contains information which can be provided to consumers/responsible person(s) and also an example of an appropriate Risk Assessment Checklist template (see [Appendix 3](#)) which should be used to provide a report on the condition of a room-sealed fanned-draught chimney/flue system concealed within a void.*

Bibliography

See main part of TB 008 (Edition 2) for a list of references.

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Appendix 3

If all answers are entered in the left hand (green) column of this Checklist then the appliance may be left operational until means of access have been provided, or until 31 December 2012. If any response is given to any question or statement in the right hand (red) column of this Checklist, then the installation should be classified as 'Immediately Dangerous' ('ID') or 'At Risk' ('AR') as appropriate in accordance with the current Gas Industry Unsafe Situations Procedure (TB 001⁽⁶⁾) and the information contained in Table A3.1.

Chimney systems in voids risk assessment checklist where there are inadequate inspection facilities					
Regarding access facilities to chimney system			YES	NO*	
Is it possible to determine the likely route of the whole chimney system?					
Where the chimney system is routed through neighbouring properties or areas, is access available in the neighbouring properties to carry out this risk assessment?					
Where the chimney system is visible, is it possible to confirm that the correct materials have been used?					
Where visible, does the chimney system (e.g. length of flue, angle of fall back to boiler, material, etc.) and the termination comply with the manufacturer's instructions for the appliance and chimney system and/or BS 5440-1 ⁽⁹⁾ ?					
Where the chimney system is not fully visible, is the ceiling or other enclosure free from evidence of distress or surface staining within the vicinity of the likely chimney route and which cannot be attributed to other causes (e.g. water leaks)?					
Question for gas user/responsible person			NO	YES*	
Is the responsible person/gas user and/or Gas Safe registered engineer aware of any previous history within the property or on site that could be related to flues in voids issues?					
Regarding the presence of carbon monoxide (CO) alarms			YES	NO*	
Where carbon monoxide (CO) alarms are installed, can the gas user/responsible person confirm that there has been no history of alarm activation in the property?					
Are CO alarms conforming to BS EN 50291 ⁽¹³⁾ installed/located in each room along the suspected route of the chimney system including where necessary neighbouring properties (see Appendix 4 of TB 008 (Ed 2))?					
Are the existing CO alarms installed in accordance with the manufacturer's instructions or industry guidance (see Appendix 4 of TB 008 (Ed 2))?					
Do the CO alarms 'alarm' when the test button is pressed?					
Will all CO alarms be within the manufacturer's recommended lifespan on 31 December 2012 or, where this information is not available, will they be less than 5 years old on 31 December 2012 ?					
Appliance operational checks			YES	NO*	
Is the burner pressure and/or gas rate in accordance with the appliance manufacturer's specifications?					
Is satisfactory combustion performance being achieved? (See manufacturer's instructions, TB 126 ⁽¹⁰⁾ , BS 7967-3/4 ^(11/9)). Where combustion performance analysis is not feasible but it is possible to inspect the flame picture, is the flame picture visually satisfactory?					
Enter combustion analysis results High Range (HR) & Low Range (LR) (as appropriate)	CO (ppm) HR:	CO ₂ % HR:	CO/CO ₂ ratio HR:	-	-
	CO (ppm) LR:	CO ₂ % LR:	CO/CO ₂ ratio LR:		
Does the appliance appear to be functioning otherwise safely (e.g. all safety controls operating correctly, no signs of distress or staining around the appliance)?					

* Refer to Table A3.1 of TB 008 (Edition 2)

Following reference to Table A3.1 (overleaf), the resulting risk assessment of the installation is considered as:

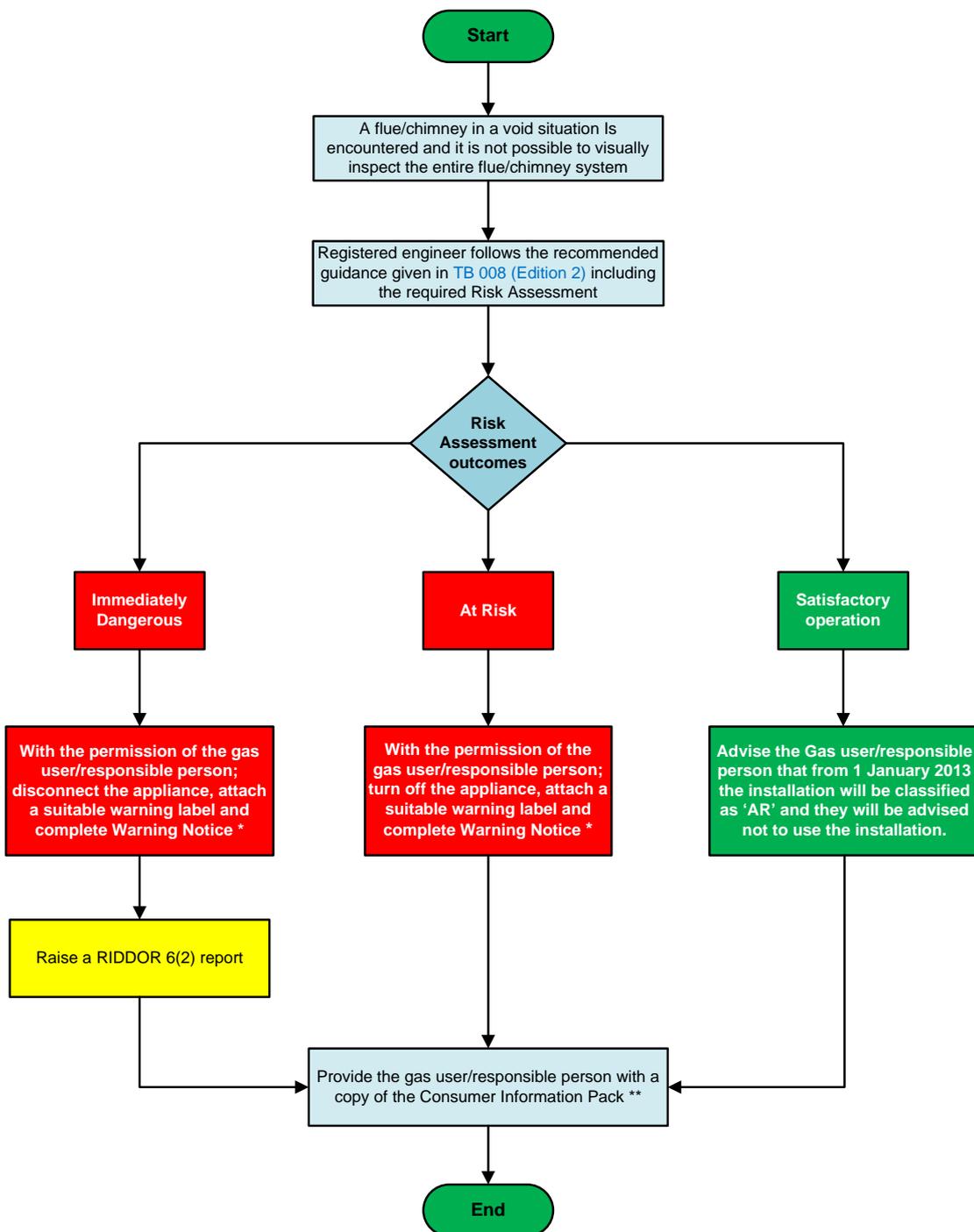
Immediately Dangerous		At Risk		Left operational based on risk assessment	
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Company Name:	
Gas Safe registration number:	
Engineer's name:	
Date of check:	
Engineer's Signature:	
Gas user/responsible person's Name:	
Property address:	
Post Code:	
Gas user/responsible person's Signature:	
Date:	

Appendix 3 (continued)

Table A3.1: Gas Industry Unsafe Situations Procedure (GIUSP) classifications (TB 001 ⁽⁶⁾)					
Situation	Category	RIDDOR	Regulation	Notes	
1	Break in chimney system or signs of distress to the material of the enclosure/ceiling around the chimney system where further investigation is prevented	ID	Yes	GSIUR	In the circumstances where an 'ID' situation has been identified, a RIDDOR 6(2) report needs to be raised. Where the affected property is one of a number of similar properties in a block, or complex, the approximate number of properties in the development should be included in the summary of the report.
2	Signs of distress to the chimney system e.g. cracking or condensate leakage at joints	ID	Yes	GSIUR	Also refer to the Notes in item 1 above
3	Failure to achieve satisfactory combustion readings when using an electronic portable combustion gas analyser. Installations where: <ul style="list-style-type: none"> the CO/CO₂ combustion ratio is above 0.008 (appliances incorporating air/gas ratio valves only (TB 126⁽¹⁰⁾)) the CO/CO₂ combustion ratio is between 0.004 and 0.008 (appliances incorporating air/gas ratio valves only (TB 126⁽¹⁰⁾)) 	ID AR	Yes No		Satisfactory combustion readings may include CO, CO ₂ or CO/CO ₂ combustion ratio. See specific appliance manufacturer's installation instructions, TB 126 ⁽¹⁰⁾ or the appropriate parts of BS 7967 ^(11/9) Note: For guidance on appliances which do not incorporate air/gas ratio valve technology, see GIUSP Table 1 - Situation 10.6. (TB 001 ⁽⁶⁾)
4	No access or inadequate access provided to allow satisfactory visual inspection of the chimney system/route. This includes the property in question and other properties through which the chimney system passes through	see Notes opposite	No	GSIUR	See 'Chimney systems in voids - risk assessment process' - in the main part of TB 008 (Edition 2) and the risk assessment Checklist and Figure A3.1 in Appendix 3. Where the risk assessment has not identified any other obvious non-compliance with the chimney system and suitable CO alarms are fitted as detailed in Appendix 4 the appliance may be left operational until 31 December 2012. Registered engineers are advised they are able to continue to work on the appliance until the date outlined above. From 1 January 2013, all installations without appropriate inspection access provided will be classified as 'AR' and should not be used until adequate access for inspection is provided.
5	Incorrect grade of plastic chimney system material used where there are signs of distress e.g. discolouration, or it is not possible to visually inspect the entire chimney system	AR	No		Where the incorrect grade of plastic chimney system material is used but has adequate access to inspect and ensure that every joint is intact and the chimney system is appropriately supported then this can be classified as 'NCS' in accordance with current GIUSP (TB 001 ⁽⁶⁾).
6	Incorrect jointing methods used e.g. use of lubricant on push-fit fittings, or screws missing from mechanical joints	AR	No		
7	Upon visual inspection, it is identified that the chimney system is insecure or inadequately supported	AR	No		Evidence that the chimney system is inadequately supported includes insufficient clipping and sagging of pipe.
8	The overall measured chimney system length exceeds the manufacturers' specification	AR	No		The appliance manufacturer should be contacted for their advice. Following this advice and after confirming the safe operation of the appliance (including combustion gas analysis) it may be appropriate to classify the installation as 'NCS'.
9	For condensing appliances, upon visual inspection, it is identified that the chimney system does not have the manufacturer's specified gradient of fall back to the appliance or other drain points, but the appliance is operating safely	NCS	No	GSIUR	

Figure A3.1: Process flowchart mapping the actions of a registered engineer based on the outcome of the TB 008 (Edition 2) Risk Assessment



* For a full description of the actions to be taken in this situation refer to the current edition of the Gas Industry Unsafe Situations Procedure (TB 001).
 ** For further guidance on the Consumer Information Pack, see Appendix 2 Note A2.5 in TB 008 (Edition 2)

Bibliography

See main part of TB 008 (Edition 2) for a list of references.

Appendix 4

Carbon monoxide (CO) alarms

The information contained within this Appendix is based on the requirements of BS EN 50292⁽¹⁴⁾.

It is important to also follow the guidance of the CO alarm manufacturer to ensure the correct operation of the alarm.

CO alarms need to be within the manufacturer's recommended lifespan, which is typically between 5 and 7 years.

Location of CO alarm(s) within the property

To satisfy the requirements of the TB 008 (Edition 2) risk assessment, as a minimum, a CO alarm(s) should be installed in the room containing the gas appliance **and** in every room through which the concealed chimney system passes. The layout of individual properties may mean that consideration should also be given to fitting alarms in rooms used for sleeping, e.g. in remote rooms such as those in which occupants may not be able to hear an alarm fitted in another part of the premises.

Note A4.1: *Where it is not possible to determine the likely route of the whole chimney system, the use of CO alarms as an interim measure (pending installation of inspection hatches) is not appropriate, in this case, an 'At Risk' ('AR') classification in accordance with the current GIUSP (TB 001⁽⁶⁾) will be the minimum classification that can be applied until such time as inspection hatches are provided to allow inspection of the chimney system.*

Location of CO alarm within a room containing a gas appliance

Due to the difference in room types and uses across individual properties, it is not possible to give specific guidance on the exact location of an alarm. However, the following points should be considered when determining the best location for an alarm.

It should be possible to view any light indicator on the alarm when in the general location of the alarm.

An alarm should not be installed:

- in an enclosed space (for example in a compartment or covered by a curtain);
- where it can be obstructed (for example by furniture);
- directly above a sink;
- next to a door, window, extractor fan, air vent or other similar ventilation openings;
- in an area where the temperature may drop below -10°C or exceed 40°C, unless the alarm is designed to do so;
- where dirt and dust may block the sensor;
- in a damp or humid location;
- in the immediate vicinity of a cooking appliance.

Where the alarm is wall mounted in the room containing the gas appliance, it should be located at high level but no closer than 150mm to the ceiling. The alarm should also be positioned at a height greater than any door or window within that room.

Where the alarm is ceiling mounted within the room containing the appliance, it should be at least 300mm from any wall and be at a horizontal distance of between 1m and 3m from the gas appliance.

If there is a partition in a room, the alarm should be located on the same side of the partition as the gas appliance.

Where an alarm is located in a room with a sloped ceiling, it should be positioned at the high side of the room.

If the alarm is located in a room used as sleeping accommodation, it should be positioned relatively close to the breathing zone of the occupants.

Bibliography

See main part of TB 008 (Edition 2) for a list of references.

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Appendix 5 – Useful contacts

Organisation	Contact details
Gas Safe Register	<p>☎ 0800 408 5500 (Consumer)</p> <p>☎ 0800 408 5577 (Registered Business)</p> <p>🌐 www.gassaferegister.co.uk</p>
Health & Safety Executive (Great Britain)	<p>☎ 0845 345 0055</p> <p>🌐 www.hse.gov.uk</p>
RIDDOR reporting (Great Britain)	<p>☎ 0845 300 9923</p> <p>☎ 0845 300 9924 (Fax)</p> <p>🌐 http://www.hse.gov.uk/riddor/online.htm</p> <p>✉ riddor@connaught.plc.uk</p>
Health & Safety Executive (Northern Ireland)	<p>☎ 08000 320 121</p> <p>🌐 www.hseni.gov.uk</p>
RIDDOR reporting (Northern Ireland)	<p>☎ 0289024 3249</p> <p>☎ 028 9023 5383 (Fax)</p> <p>🌐 http://www.hseni.gov.uk/contact-us/report-an-incident.htm</p> <p>✉ hseni@detini.gov.uk</p>
Health & Safety at Work Inspectorate (Isle of Man)	<p>☎ 01624 685881</p> <p>🌐 http://www.gov.im/transport/msd/healthandsafety/</p>
RIDDOR reporting (Isle of Man)	<p>☎ 01624 685952</p> <p>🌐 http://www.gov.im/transport/msd/healthandsafety/gas.xml</p> <p>✉ Helen.Nolan@Gov.im</p>
Health & Safety Executive (States of Guernsey)	<p>☎ 01481 234567</p> <p>🌐 www.hse.guernsey.gg/ContactUs.html</p>
RIDDOR reporting (States of Guernsey)	<p>☎ 01481 234567</p> <p>🌐 http://www.hse.guernsey.gg/Downloads_Gas_Safety.html</p> <p>✉ hse@commerce.gov.gg</p>
Heating & Hotwater Industry Council (HHIC)	<p>☎ 01926 513747</p> <p>🌐 www.centralheating.co.uk</p>
NHBC (National House Building Council)	<p>☎ 0844 633 1000</p> <p>🌐 www.nhbc.co.uk</p>
Premier Guarantee	<p>☎ 0151 650 4343</p> <p>🌐 http://www.premierguarantee.co.uk/home.aspx</p>
Zurich Building Guarantee	<p>☎ 01252 377 474</p> <p>🌐 www.zurich.co.uk</p>

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