

Content of the Modules

We have included the following contents list to assist you with navigating your way around the modules.

Module	Item	Page	
●	1	Legislation and key installation requirements of above ground sanitation systems	1
		Legislation & above ground sanitary pipework systems	3
		– Other Building Regulations impacting on above ground systems installations	3
		Controlled service or fitting?	4
		– Work falling within Building Regulation requirements	4
		Key above ground system installation requirements	5
		– Accommodating pipework in floor joists	5
		– Fire stopping services pipework	6
		– Sound insulation requirements	8
		– Requirements for sanitary appliances in dwellings	9
		– Sanitary facilities for disabled occupancy in dwellings	11
		– Specification for plastic pipework materials in above ground systems	12
		– Pipe bracketing arrangements and spacing requirements	12
		– Accommodating expansion in above ground systems	14
		– Access into above ground systems	16
		– Trap seal loss	17
		– Connections to below ground drainage systems	19
		– Sizing above ground systems	19
●	2	Types of above ground sanitary pipework system & key system design features	21
		Types of above ground sanitary pipework system	23
		Design features of the primary ventilated stack system	26
		– The foot of the stack	26
		– The discharge stack	27
		– Branch discharge pipework	28
		– The stack vent	33
		Other methods of connecting appliances to the drainage system	37
●	3	Using self sealing valves as an alternative to traps	41
		Use of the self sealing valve	43
●	4	Specialist appliances (macerator WCs & sink waste disposal units)	47
		Macerator WC installation	49
		Sink waste disposal units	51
●	5	Commissioning above ground sanitary pipework systems	55
		The commissioning process	57
		– Visual inspection	57
		– The soundness test	57
		– The performance test	59
		– Handover	60
●	6	Rainwater system design and installation	63
		Legislation & rainwater systems	65
		Controlled service or fitting?	66
		– Work falling within Building Regulation requirements	66
		Sizing rainwater systems	67
		Installation of an eaves gutter system	69

Module 1

Legislation and key installation requirements
of above ground sanitation systems

LEGISLATION AND KEY INSTALLATION REQUIREMENTS OF ABOVE GROUND SANITATION SYSTEMS

Module Objectives

On completion of this self-study module and following attendance on the associated training course, you should be able to –

- State the Building Regulation requirements relating to the design and installation of above ground sanitary pipework systems
 - Part A
 - Part B
 - Part E
 - Part G
 - Part H
 - Part M

- Identify key installation requirements relating to –
 - Accommodating pipework in timber floor joists
 - Fire stopping services pipework
 - Sound insulation requirements
 - Requirements for sanitary appliances in dwellings
 - Sanitary facilities for disabled occupancy
 - Specification for plastic pipework materials
 - Pipe bracketing and spacing requirements
 - Accommodating expansion in plastic systems
 - Access into systems pipework
 - Trap seal loss
 - Connections to below ground systems
 - Sizing above ground systems

Legislation & Above Ground Sanitary Pipework Systems

Part H – Drainage & Waste Disposal of the Building Regulations details the legal requirements for the installation of sanitary pipework systems in properties. The Building Regulations are supported by a series of Approved Documents. The relevant section of Approved Document H for this module of the course is –

- H1 – Foul water drainage

A copy of Approved Document H – Drainage & Waste Disposal may be downloaded from the Department of Communities & Local Government (DCLG) website at www.communities.gov.uk.

The Building Regulations are also supported by **BS EN 12056 – Gravity Drainage Systems Inside Buildings**. The British Standard provides greater detail on the installation requirements of sanitary pipework systems, although British Standards are not in themselves legal documents they can be used in court proceedings as a method of proving compliance with the requirements of Building Regulations. Relevant parts of BS EN 12056 to this module are –

- Part 2 – Sanitary pipework, layout and calculation
- Part 5 – Installation and testing, instructions for operation, maintenance and use

The essential requirements of the Approved Document section H1 and relevant parts of BS EN 12056 are detailed in this training course manual.

Other Building Regulations Impacting on Above Ground Systems Installations

Care must be taken to ensure compliance with other aspects of the Building Regulations when carrying out work on the installation of above ground sanitary pipework systems and sanitary appliances, namely –

- **Part A – Structure** lays down requirements to ensure that the structural integrity of the building is not compromised by the installation of building services such as sanitary pipework systems. One of the key areas covered in Part A is accommodating pipework in floor joists, the requirements for this are detailed on page 5 of this module
- **Part B – Fire Safety** lays down the requirements for the necessary prevention arrangements that need to be put in place to ensure that fire cannot readily spread from one part of a building to another via building service entry or exit points. The requirements under Part B for fire-stopping are detailed on page 6 of this module
- **Part E – Resistance to the Passage of Sound** details the requirements for providing sound insulation to pipes or ducts that penetrate a floor separating habitable rooms in different flats. The requirements under Part E for sound insulation are detailed on page 8 of this module
- **Part G – Hygiene** lays down the requirements for the provision of sanitary appliances in buildings. The requirements under Part G for hygiene are detailed on page 9 of this module
- **Part M – Access to & Use of Buildings** – details the requirements for the provision of accessible sanitary convenience arrangements for use by disabled people. The requirements under Part M for disabled access to sanitary conveniences in dwellings are detailed on page 11 of this module.

Controlled Service or Fitting?

The installation of –

- sanitary appliances under Part G of the Building Regulations, and
- above ground sanitary pipework systems under Part H of the Building Regulations

Both fall within the definition of a **controlled service or fitting** under the Regulations, requiring that work on the appliance/system is either –

- Notified to the local building control body for approval purposes **prior to the work taking place**, or
- The work is undertaken by a firm who is a member of a **DCLG approved competent persons self certification scheme** such as APHC (Certification) Ltd.

Notification – includes the requirement to submit a building notice together with the appropriate fee to the local building control body prior to undertaking the work. The notice is reviewed by the building control body and approval granted/refused based on the notice details. The work is usually inspected by the building control body and a completion certificate is issued by the building control body on satisfactory completion of the works to confirm compliance with the regulations.

Contact details for relevant building control bodies can be obtained at the Local Authority Building Control (LABC) website – www.labc.co.uk.

Self certification – includes the requirement for the approved competent persons firm to carry out work in accordance with the requirements of the regulations and on completion of the work to initiate the production of a building regulations compliance certificate (completion certificate) via their competent persons scheme provider e.g. APHC (Certification) Ltd. The detail of the work undertaken by the member firm being transmitted to the local building control department by the competent persons scheme provider.

Note:

Self certification can only be carried out through competent persons scheme providers that are approved to certificate that aspect of the Building Regulations e.g. Part H. Plumbing staff undertaking work and commissioning systems must meet the requirements laid down by the competent persons scheme provider for operative qualifications.

As an example this training course meets the requirements of APHC (Certification) Ltd. in terms of the installation of sanitary appliances and above ground sanitary pipework and rainwater systems.

Work Falling Within Building Regulation Requirements

The following outlines examples of the type of work on above ground sanitation and rainwater systems that fall within scope of the regulations requiring either notification or self certification –

- The installation of a new sanitary appliance which includes the provision of new waste or soil connections
- The new installation or complete replacement of a soil and waste pipework system

The following outlines examples of the type of work falling outside the scope of the regulations and which does not require either notification or self certification –

- The like for like replacement of a sanitary appliance (minimal modification to the waste or soil connection)
- Maintenance work on above ground sanitary pipework systems e.g. replacing defective pipe lengths, unblocking etc.

Note:

Work on below ground drainage systems does not currently fall within scope of any competent persons self certification schemes therefore the new installation or major modification of an existing below ground system must be the subject of notification to the local building control body.

Key Above Ground System Installation Requirements

Accommodating Pipework in Floor Joists

It's not normal practice to consider running soil or waste pipework within timber floor joists owing to the restrictions (as shown in figure 1.1 & 1.2) that are placed on notches and holes that can be cut in a traditional timber floor joist.

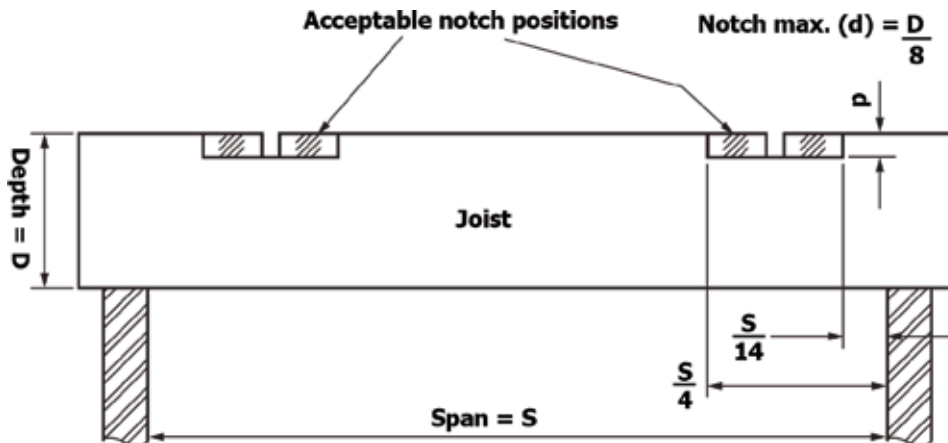


Fig. 1.1 – Notching timber joists

- The maximum depth of notch is the joist depth divided by 8
- The joist can only be notched between the following distances from its support point – minimum from the support, the span divided by 14 and maximum from the support the span divided by 4

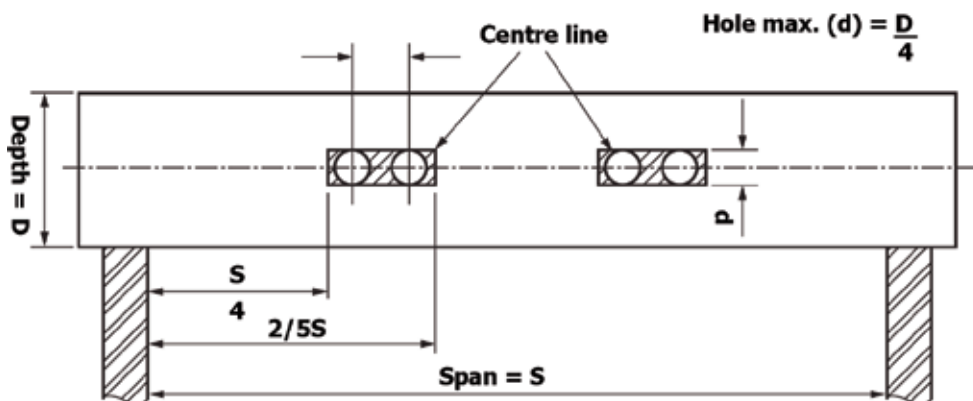


Fig. 1.2 – Holes in joists

- The maximum diameter of hole that can be drilled in the joist is the joist depth divided by 4
- The minimum distance between the hole centres is 3 times the pipe diameter
- Holes can only be drilled in a joist between the following distances from its support point – minimum from the support, the span divided by 4 and maximum from the support, two fifths of the span

Modern new-build properties can include alternative floor joist arrangements such as the I-Joist, with this type of joist it may be possible to cut larger diameter holes through the joist (in some cases large enough to accommodate a 110mm diameter soil pipe).

The manufacturer instructions must be referred to together with the building designer to determine the requirements for cutting holes in joists of this type.



Fig. 1.3 – The I-Joist

Fire Stopping Services Pipework

Approved Document E to the Building Regulations requires that there should be effective fire stopping arrangements when a services pipe such as a soil or waste pipe penetrates a compartment wall or floor within a building.

A compartment wall or floor is defined as – a fire resisting wall/floor used in the separation of one fire compartment from another.

Approved Document E identifies 3 alternatives for pipes passing through compartment walls or floors –

- **Alternative 1** – Provide a proprietary sealing system such as an intumescent collar or intumescent pipe wrap which has been shown by test to maintain the fire resistance of the wall or floor. Intumescent collars or pipe wrap can normally be used with solid wall or floor materials. Some intumescent collars can be used with suspended timber floors or stud partition walls, care must be taken to ensure the suitability of the collar for the wall or floor material by consulting manufacturer instructions



Fig. 1.4 – Intumescent collar

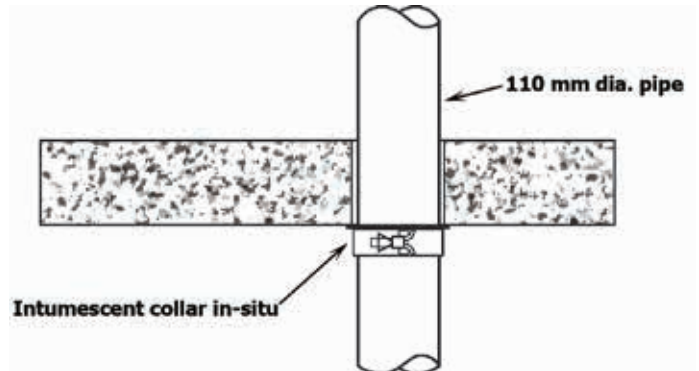


Fig. 1.5 – Intumescent collar (fitted)



Fig. 1.6 – Intumescent pipe wrap

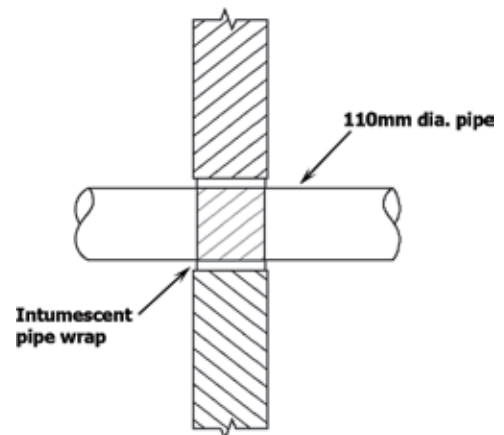


Fig. 1.7 – Intumescent pipe wrap (fitted)

- **Alternative 2** – in circumstances where a proprietary sealing system is not used, appropriate fire stopping materials may be used around the pipe assuming that the pipe opening is kept as small as possible. The internal diameter of the pipe must not be any larger than that shown in Table 1 – Maximum internal diameter of pipes passing through a compartment wall/floor

Table 1 – Maximum internal diameter of pipes passing through a compartment wall/floor

Situation	Pipe material and maximum internal diameter (mm)		
	(a) Non combustible material ¹	(b) lead, aluminium, PVC-u ² , fibre cement	(c) Any other material
1. Structure (not a separating wall between buildings) enclosing a protected shaft which is not a stairway or lift shaft	160	110	40
2. Wall separating dwellings or compartment wall or compartment floor between flats	160	160 (stack pipe) ³ 110 (branch pipe) ³	40
3. Any other situation	160	40	40

Notes:

1. Any non-combustible materials (such as cast iron, copper or steel) which if exposed to a temperature of 800°C will not soften or fracture so that flame or hot gases will not pass through the pipe wall
2. PVC-u pipes complying with BS4514 or BS5255
3. These diameters only relate to pipes forming part of an above ground sanitary pipework system and must be enclosed in a fireproof casing giving a minimum of 30 minutes fire resistance, in other situations the maximum diameter applicable to situation 3 apply.

- **Alternative 3** – a pipe of lead, aluminium, fibre cement or PVC-u with a maximum internal diameter of 160mm may be used with a sleeving of non-combustible material from table 1 (note 1) provided that the pipe meets the minimum specification in the notes to table 1.

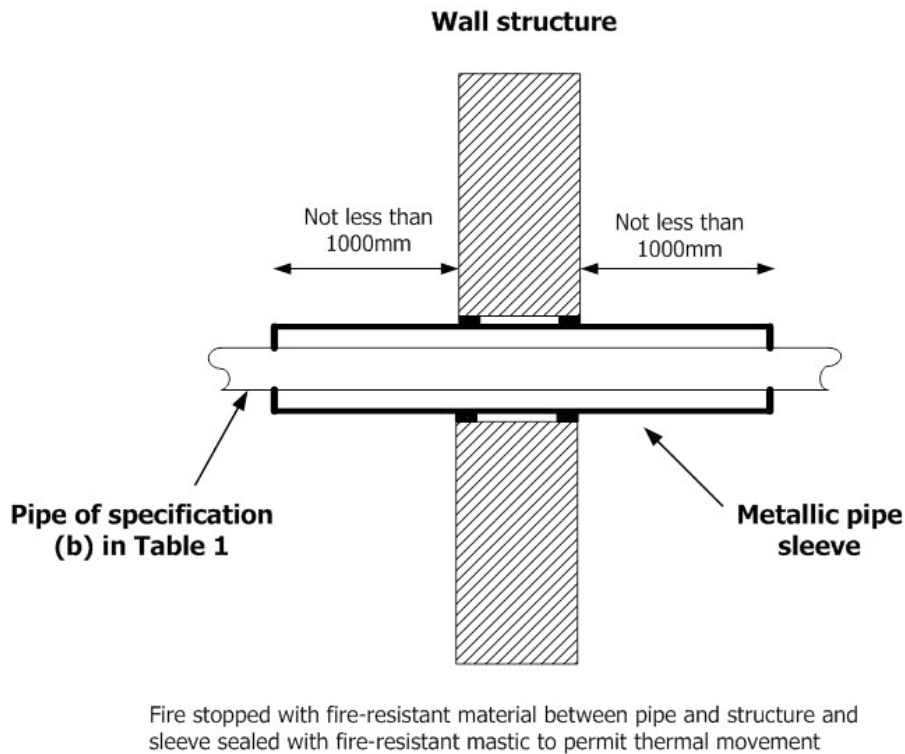


Fig. 1.8 – Sleeving method for pipes penetrating structure

Acceptable fire-stopping materials that can be used include –

- Proprietary systems – approved intumescent pipe collars and pipe wraps
- Cement mortar
- Gypsum based plaster
- Cement or gypsum based vermiculite/perlite mixes
- Glass fibre
- Intumescent mastics

Sound Insulation Requirements

Approved Document E to the Building Regulations requires that pipes and ducts penetrating a floor separating habitable rooms in different flats should be insulated to minimise sound transmission. This requirement applies to new-build dwellings and to renovations to existing dwellings (flat conversions). Key requirements are –

- The pipes should be enclosed in a boxing for their full height in each flat
- The enclosure must be constructed of material having a mass per unit area of 15kg/m²
- The enclosure must be lined or the pipe or duct wrapped with a minimum 25mm thickness of unfaced mineral wool

Module 6

Rainwater system design and installation

RAINWATER SYSTEM DESIGN AND INSTALLATION

Module Objectives

On completion of this self-study module and following attendance on the associated training course, you should be able to –

- Carry out a basic sizing calculation for a gutter system to a domestic property
- State the main requirements for installing a gutter system to a domestic property
- State the main requirements for installing a rainwater pipework system to a domestic property