

SCOSS – Standing Committee on Structural Safety

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ALERT INSTALLATION OF TIMBER JOIST HANGERS

Background

The use of joist hangers to support timber floor joists, particularly in new housing schemes, has increased in recent years. The revised Part L of the Building Regulations has also led to designers specifying joist hangers, rather than building timber joists into supporting walls. The use of joist hangers on site is, therefore, a common occurrence.

Joist hangers are important structural components. However, they are liable to fail, with the potential for serious injury or fatality, if not installed correctly. The Health and Safety Executive (HSE) reports that a number of collapses have occurred as a consequence of incorrect installation.

Conclusions from incident investigations

The joist hanger failures have been found to occur as a result of the following building defects:

- Building the joist hanger flange into the wall with inadequate masonry restraint above the masonry flange;
- Installing the hanger back plate with a gap to the wall;
- Inaccurate cutting of the joists to length;
- Un-level seating of the joist restraint flange on the adjacent masonry;
- Lack of side nailing and/or timber blocking in place.

The root causes of these problems

These are considered to be:

- A lack of useful point of use information available to the industry on the topic of the safe installation of joist hangers.
- A lack of training on the correct installation of joist hangers for builders from employers and the usual construction training providers.
- Inadequate specification/information from designers to inform and remind builders of the requirements for safe installation.

These lead all too often to an incorrect view that these primary structural support members can be poorly installed and still work effectively.

Responsibilities

Although the contractor installing these items has responsibility for those doing the work, the principal contractor and designer are also likely to have statutory responsibilities. The principal contractor has responsibilities in terms of ensuring the competence of the contractor, and for monitoring his work. The designer has responsibilities in terms of hazard elimination, risk mitigation and the provision of information on residual risks.

HSE investigations have found that the information provided on the working drawings regarding joist hangers has varied from nil to a brief specification and possibly a reference to BS 6178-1: 1990 (Joist hanger specification for building into walls of domestic dwellings) at best.

The Standing Committee on Structural Safety is an independent body supported by the Institutions of Civil and Structural Engineers and the Health & Safety Executive to maintain a continuing review of building and civil engineering matters affecting the safety of structures.

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Appropriate information should appear in the health and safety plan. In addition the Committee considers that in view of the history of collapse related to these items it would be of benefit if a prominent message was incorporated on the drawings to emphasise the need for correct installation and in particular the need for full restraint, prior to loading the floor. Alternatively, temporary propping can be specified.

Notwithstanding, the safe system of work adopted by the contractor should reflect this particular risk.

A suggested format for a drawing safety notice is given below:

For illustration only. Detailed text to be checked against actual requirements of hanger, the wall construction and the mortar specified.

	SAFETY NOTE
1	Joist hangers are to be type xx to BS6178, at centres shown.
2	Ensure that hangers are fitted tight to walls, and are seated evenly.
3	Joists must be cut accurately to length (max gap to back plate xx mm) and nailed to hanger.
4	Do not load or use this floor until at least xx hours (curing time) after xx layers/ xx mm height* of blockwork is completed, above the joist hangers

*as appropriate to align with manufacturer's requirements.

And, if required:

	SAFETY NOTE
1	This floor is to be propped until at least xx layers/ xx height of blockwork are completed and cured for xx hours, above the joist hangers.
2	Props are to consist of ----- positioned as indicated with --- spreader beam over prop heads.

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