

Building tolerances — Measurement of buildings and building products —

Part 2: Position of measuring points

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee (BDB/-) to Technical Committee BDB/4, upon which the following bodies were represented:

- Association of County Councils
- British Standards Society
- Building Employers Confederation
- Chartered Institution of Building Services Engineers
- Concrete Society
- Department of Education and Science
- Department of the Environment (Property Services Agency)
- Department of the Environment (Building Research Establishment)
- Incorporated Association of Architects and Surveyors
- Institute of Building Control
- Institute of Clerks of Works of Great Britain Inc.
- Institution of Civil Engineers
- Institution of Structural Engineers
- Institution of Water and Environmental Management
- Royal Institute of British Architects
- Royal Institution of Chartered Surveyors

The following body was also represented in the drafting of the standard, through sub-committees and panels:

- Chartered Institute of Building

This British Standard, having been prepared under the direction of the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 28 September 1990

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National foreword

This Part of BS 7301, which has been prepared under the direction of the Basic Data and Performance Criteria for Civil Engineering and Building Structures Standards Policy Committee, is identical with ISO 7976-2 *“Tolerances for building — Methods of measurement of buildings and building products — Part 2: Position of measuring points”*, published by the International Organization for Standardization (ISO).

It recommends the position of measuring points to be used in conjunction with the measuring methods given in BS 7307-1, for use in the control of building construction. Its provisions also apply to the collection of measured accuracy data for inclusion in BS 5606 (see also BS 7308 which is identical with ISO 7737:1986 *“Tolerances for building — Method of presentation of dimensional accuracy data”*).

Cross-references

International standard	Corresponding British Standard
ISO 4463:1979 ^a	BS 5964:1980 <i>Methods for setting out and measurement of buildings: permissible measuring deviations</i> (Identical)
ISO 7676-1:1989	BS 7307 <i>Building tolerances. Measurement of buildings and building products</i> Part 1:1990 <i>Methods and instruments</i> (Identical)

^a ISO 4463 has been superseded by ISO 4463-1:1989. ISO 4463-1 has been implemented as BS 5964:1990, which has superseded BS 5964:1980.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope and field of application

This part of ISO 7976 gives guidance on the position of measuring points to be used in the measurements of buildings and building products. The positions given apply for check and compliance measurement, and when collecting accuracy data.

It is divided into two sections. Section 1 deals with the position of measuring points for those measurements which can be carried out both in factories and on building sites, and section 2 with the position of measuring points for the measurements which can be carried out on building sites only.

Building products consisting of glass wool and similar soft materials are not the subject of this International Standard.

To facilitate cross-referencing, the same numbering is used in both parts of this International Standard.

2 References

ISO 4463, *Measurement methods for building — Setting out and measurement — Permissible measuring deviations*.

ISO 7976-1, *Tolerances for building — Methods of measurement of buildings and building products — Part 1: Methods and instruments*.

3 General

Suitable positions for measuring points are given for both compliance measurement and the collection of accuracy data; measurements should be carried out from, towards, or between these points.

The points at which measurements are taken should be those specified in the inspection schedule or similar document. If not, they shall be taken at 100 mm from corners or edges (see Figure 1); the examples below illustrate some general cases. If this is not possible, the position of the measuring points should be noted in the field book.

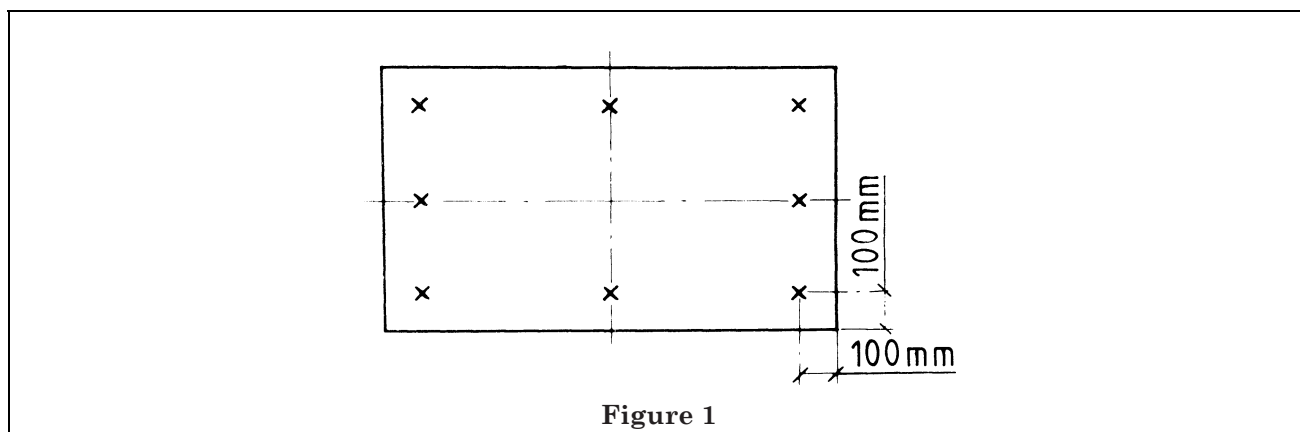


Figure 1

The number of measuring points shown in the clauses below is considered to be the minimum number required; additional measurements may therefore be taken to reflect any additional dimensional accuracy requirements.

The items to be measured should be supported as they will be supported in use. When this is impractical, the support conditions should be as agreed in the inspection schedule or similar document.

Whenever possible it is recommended that components be measured in the state in which they are ready for delivery.

Unless specifically required, the measurements should not be made whilst the manufactured component is still in the manufacturing jig or mould.

On sites, construction deviations (dealt with in section 2) can be determined in relation to the co-ordinate system of the site, in relation to a reference system in plan or height in the assembly, in relation to the vertical line or in relation to other components.

Section 1. Position of measuring points for those measurements which can be carried out both in factories and on building sites

NOTE Most of the examples concerning components can also be applied to parts executed on site.

4 Sizes of components

4.1 Length and width

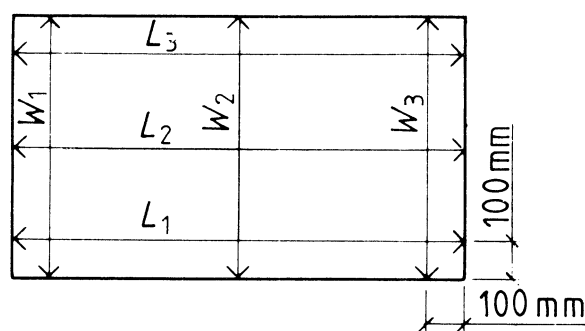


Figure 2

On each face of the manufactured component, three length measurements (L_1 to L_3) and three width measurements (W_1 to W_3) shall be taken as shown in Figure 2. If the specified width does not exceed 1,20 m, measurement L_2 may be omitted. If the specified length does not exceed 1,20 m, measurement W_2 may be omitted.

4.1.1 Effective span

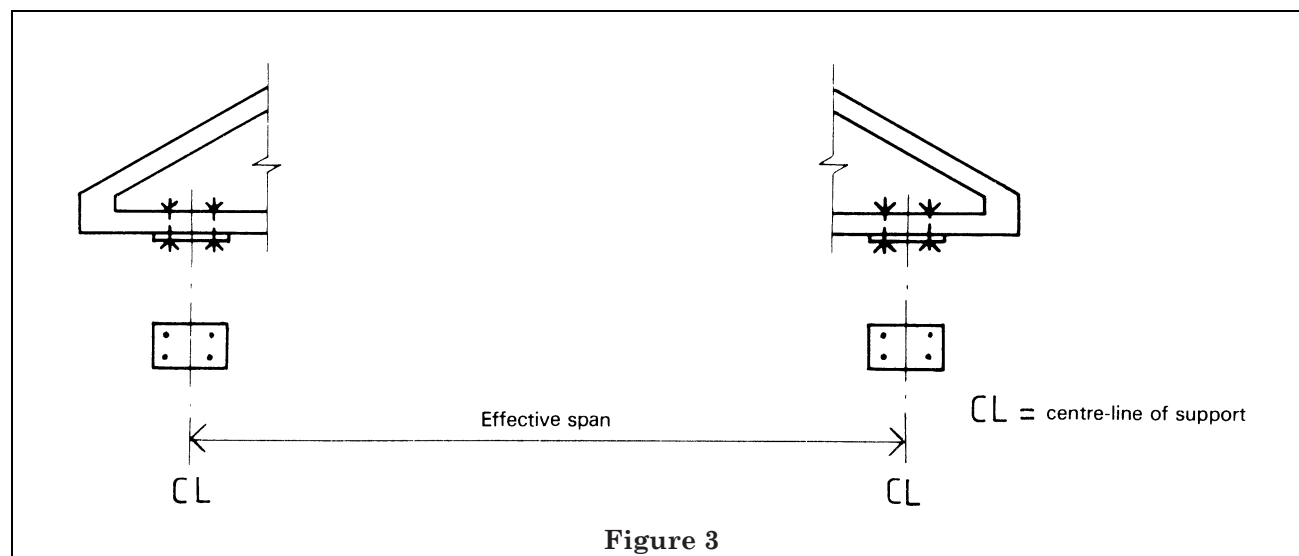
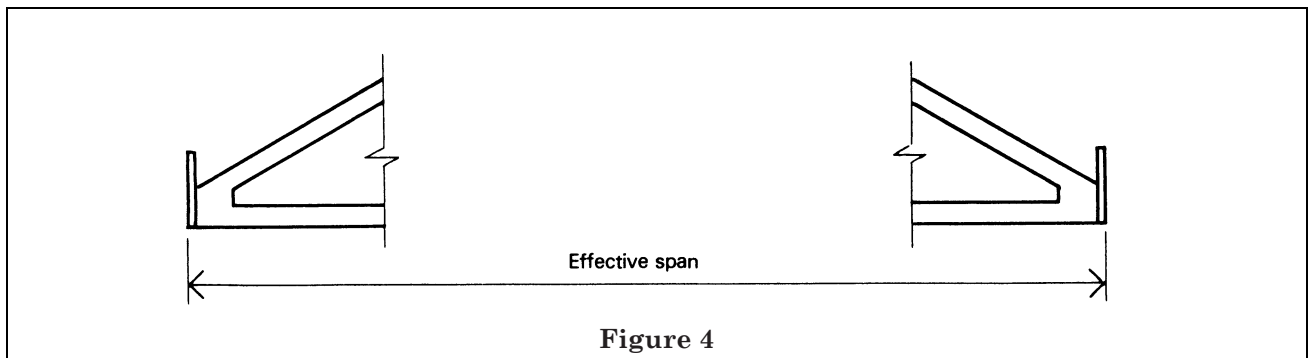


Figure 3

One measurement shall be made of the effective span on each manufactured component. For components which have base plate fixings, the two measuring points shall be as shown in Figure 3.

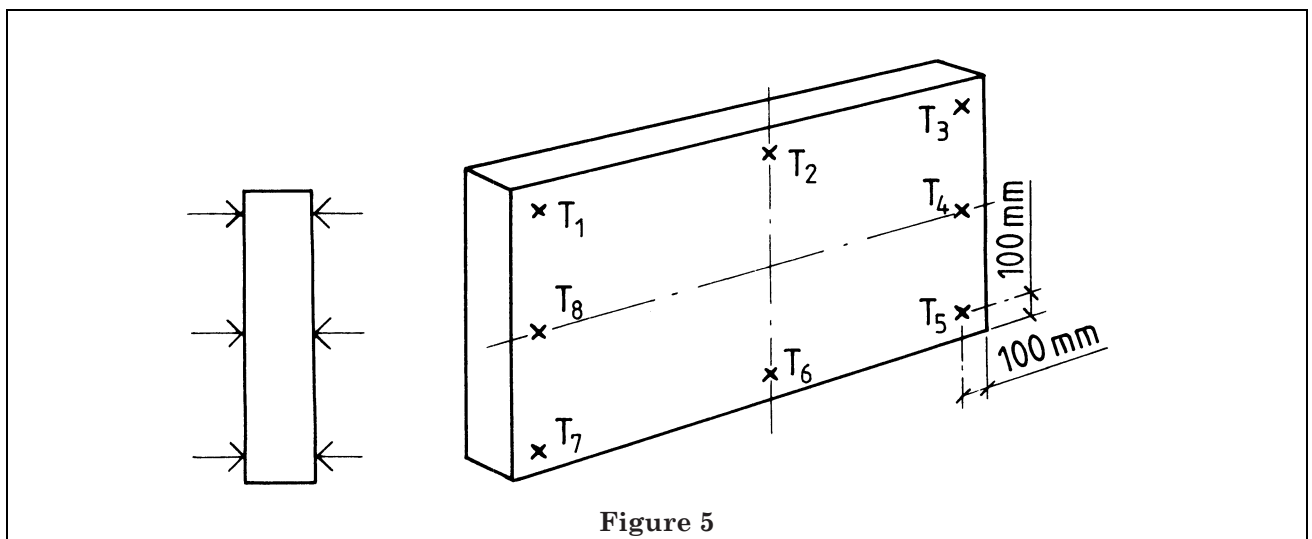


For components which have end or wall plate fixings, the two measuring points shall be as shown in Figure 4.

For components which are manufactured in sections, the measurement shall be made only after the sections have been firmly bolted together.

4.2 Thickness or depth

Eight thickness or depth measurements shall be made on each manufactured component.



For components having a rectangular cross-section, the measuring points shall be as shown in Figure 5. Where the specified width does not exceed 1,20 m, measurements at points T_4 and T_8 may be omitted. Where the specified length does not exceed 1,20 m, measurements at points T_2 and T_6 may be omitted.

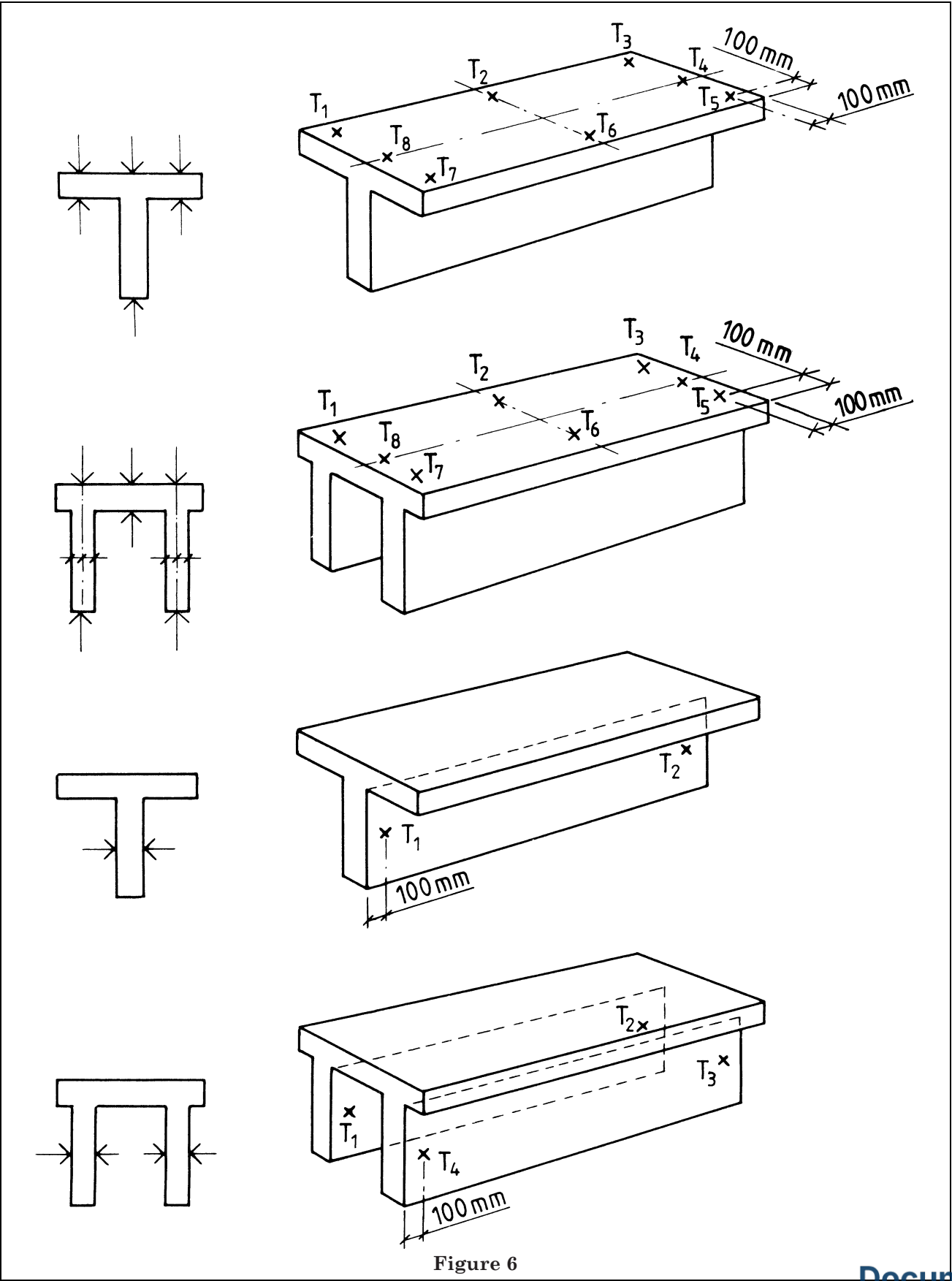
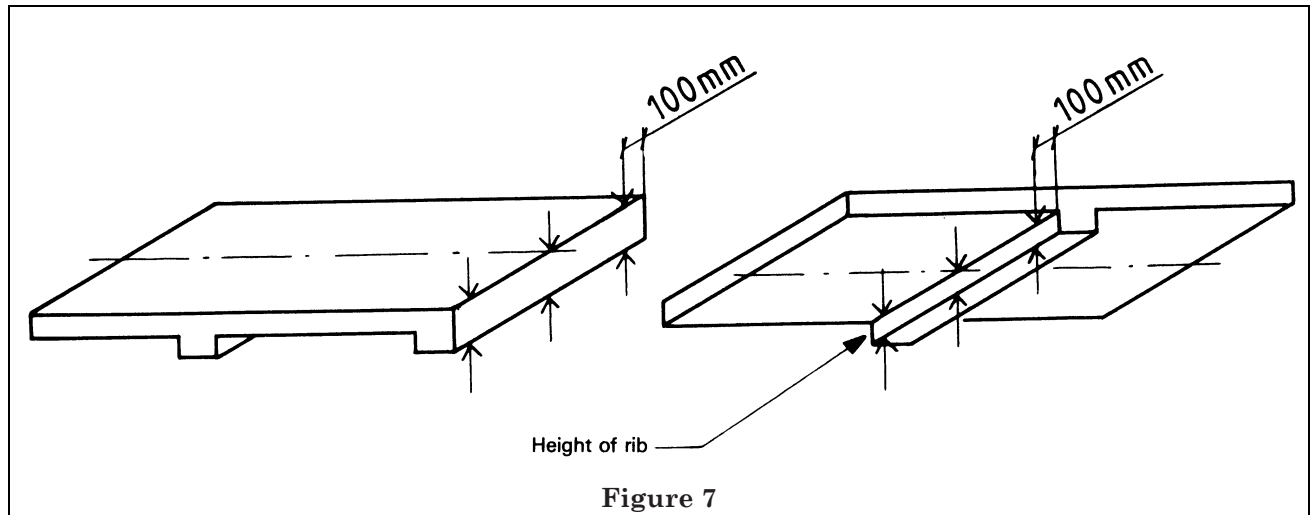


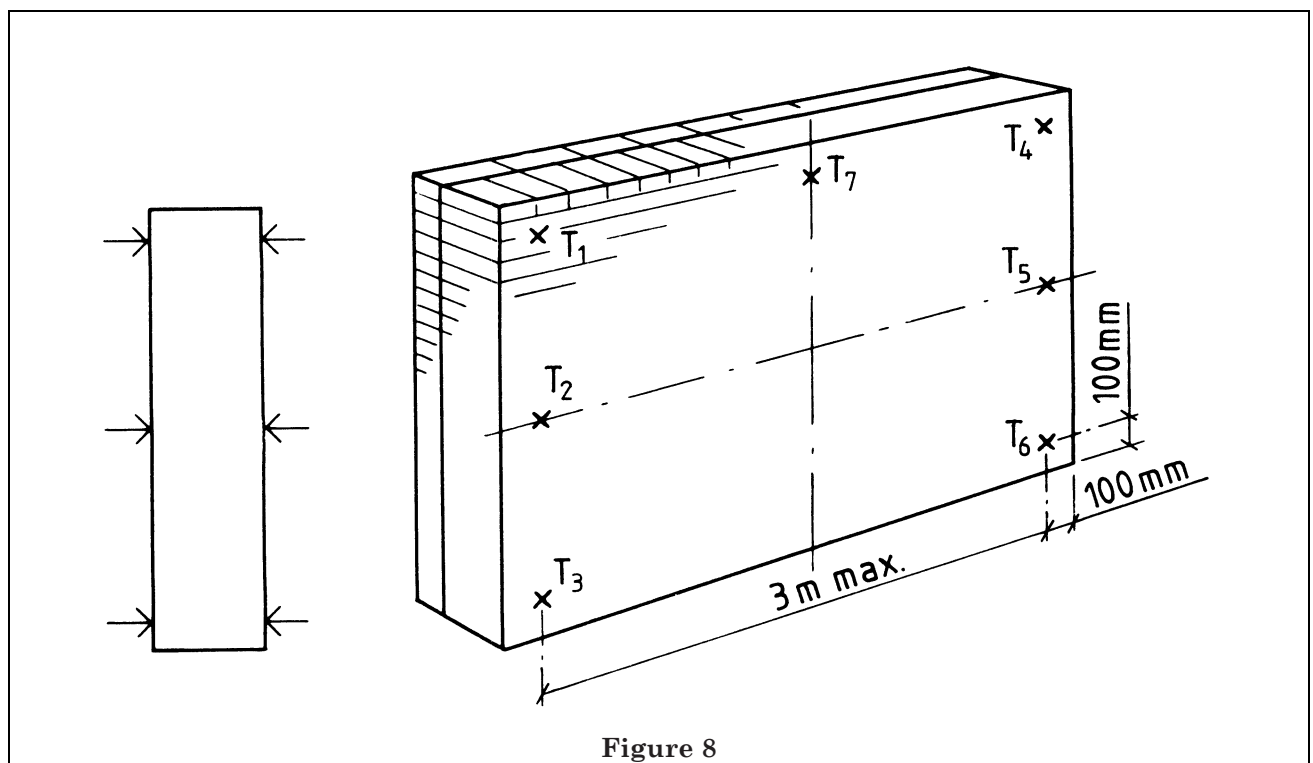
Figure 6

The position of measuring points for thickness measurement of components which have a non-rectangular cross-section such as beams provided with ribs shall be as shown in Figure 6.



The position of measuring points for thickness measurements for *in situ* concrete beams shall be as shown in Figure 7.

4.2.1 Thickness of brick or block walls or *in situ* concrete walls



The position of measuring points for thickness measurement of walls shorter than 3 m is shown in Figure 8.