

INTERNATIONAL
STANDARD

ISO
5845-1

First edition
1995-11-01

**Technical drawings — Simplified
representation of the assembly of parts
with fasteners —**

Part 1:
General principles

*Dessins techniques — Représentation simplifiée d'assemblage de pièces
au moyen d'éléments de fixation —*

Partie 1: Principes généraux



Reference number
ISO 5845-1:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 5845-1 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*, Subcommittee SC 6, *Mechanical engineering documentation*.

This first edition of ISO 5845-1 is a partial revision of ISO 5261:1981, clause 3 of which has been technically revised.

ISO 5845 consists of the following parts, under the general title *Technical drawings — Simplified representation of the assembly of parts with fasteners*:

- Part 1: *General principles*
- Part 2: *Rivets for aerospace equipment*

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Introduction

ISO 5845 has been devised to provide a universal means of communication among the various parties involved in the design and manufacture, in general, as well as the installation of fasteners.

The representation of fasteners on technical drawings should conform to one of the following two methods, which must meet requirements for microcopying and reproduction:

- a) conventional drawing of fasteners (according to ISO 128); this method is particularly suitable for drawings containing a small number of fasteners, or when the use of symbols may not provide complete understanding;
- b) symbolic representation; this method is best suited to drawings containing a large number of fasteners (see clauses 4 and 5).

Requirements within industries vary considerably; in recognition of this fact, ISO 5845 is presented in two parts. Part 1 is mainly devoted to structural metal work. Part 2 is mainly devoted to aerospace equipment. Both are recommended for application to other fields as well.

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Technical drawings — Simplified representation of the assembly of parts with fasteners —

Part 1:

General principles

1 Scope

This part of ISO 5845 establishes general principles for the simplified representation of holes, bolts (screws), rivets, etc. on technical drawings.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5845. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5845 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 128:1982, *Technical drawings — General principles of presentation*.

ISO 129:1985, *Technical drawings — Dimensioning — General principles, definitions, methods of execution and special indications*.

ISO 5845-2:1995, *Technical drawings — Simplified representation of the assembly of parts with fasteners — Part 2: Rivets for aerospace equipment*.

ISO 10209-1:1992, *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawings*.

ISO 10209-2:1993, *Technical product documentation — Vocabulary — Part 2: Terms relating to projection methods*.

3 Definitions

For the purposes of this part of ISO 5845, the definitions given in ISO 10209-1 and ISO 10209-2 apply.

4 Simplified representation of fasteners

4.1 Representation on projection planes normal to the axes of the fasteners

In order to represent holes, bolts and rivets on projection planes normal to their axes, the symbolic representation shall be drawn in continuous thick lines, type A, in accordance with ISO 128. The position of the fastener is indicated by a cross (see figure 1).

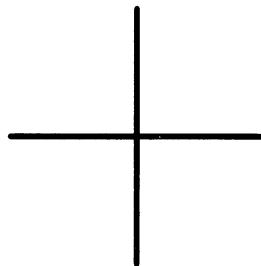


Figure 1

Additional information should be indicated in accordance with tables 1 and 2 or in accordance with ISO 5845-2.

A prominent dot may be placed in the centre of the cross in order to facilitate the use of drawing copies as a template (see example in figure 2). The diameter of the dot shall be five times the thickness of the line used for indicating the cross.

Table 1 — Symbolic representation of holes, bolts and rivets to fit in holes

Hole ¹⁾ and bolt or rivet	Hole			
	without countersinking	countersunk on near side	countersunk on far side	countersunk on both sides
Drilled and fitted in the workshop	+	*	*	*
Drilled in the workshop and fitted on site	↗	↗	↗	↗
Drilled and fitted on site	↗	↗	↗	↗

1) To distinguish bolts and rivets from holes, the correct designation of the hole or fastener shall be given in accordance with the relevant International Standard.

EXAMPLE

The designation for a hole of diameter 13 mm is $\emptyset 13$, the designation for a bolt with metric screw thread of diameter 12 mm and length 50 mm is $M12 \times 50$, while that for a rivet of diameter 12 mm and length 50 mm is $\emptyset 12 \times 50$.

4.2 Representation on projection planes parallel to the axes of the fastener

In order to represent holes, bolts and rivets on projection planes parallel to their axes, the symbolic representation shown in tables 2 and 3 shall be adopted. The horizontal line of this symbolic representation shall be drawn in a continuous thin line, type B; all other parts shall be drawn in a thick line, type A, in accordance with ISO 128.

Table 2 — Symbolic representation of holes

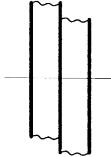
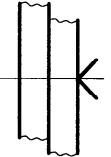
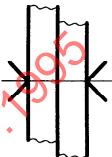
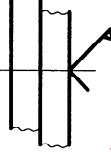
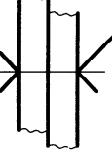
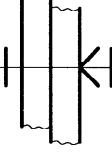
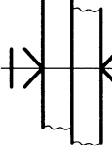
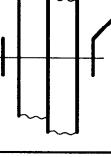
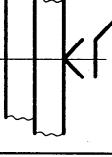
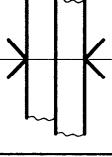
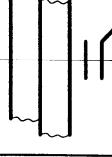
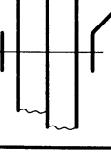
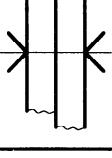
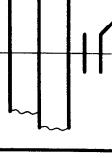
Hole	Hole		
	without countersinking	countersunk on one side only	countersunk on both sides
Drilled in the workshop			
Drilled on site			

Table 3 — Symbolic representation of bolts or rivets to fit in holes

Bolt or rivet ¹⁾	Hole			Bolt with designated nut position
	without countersinking	countersunk on one side only	countersunk on both sides	
Fitted in the workshop				
Fitted on site				
Hole drilled on site and bolt or rivet fitted on site				

1) To distinguish bolts from rivets, the correct designation of the fastener shall be given in accordance with the relevant International Standard.

EXAMPLE

The designation for a bolt with metric screw thread of diameter 12 mm and length 50 mm is M12 × 50, while that for a rivet of diameter 12 mm and length 50 mm is Ø 12 × 50.

5 Dimensioning

Dimension lines shall be terminated in accordance with ISO 129.

5.1 The extension lines shall be separated from the symbolic representation of holes, bolts and rivets on projection planes parallel to their axes (see figure 2).

5.2 The diameter of holes shall be indicated on a leader line pointing to the symbolic representation of a hole (see figure 3).

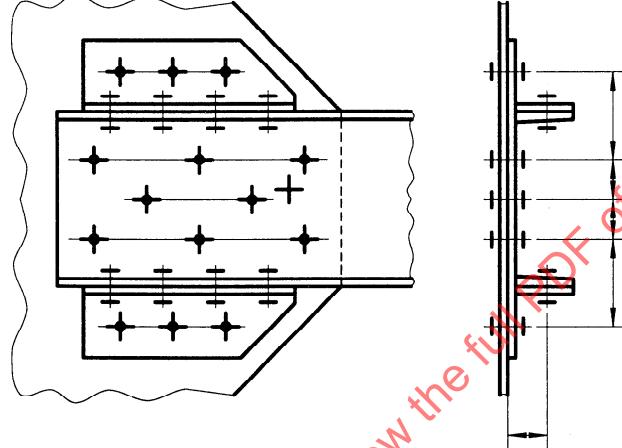


Figure 2

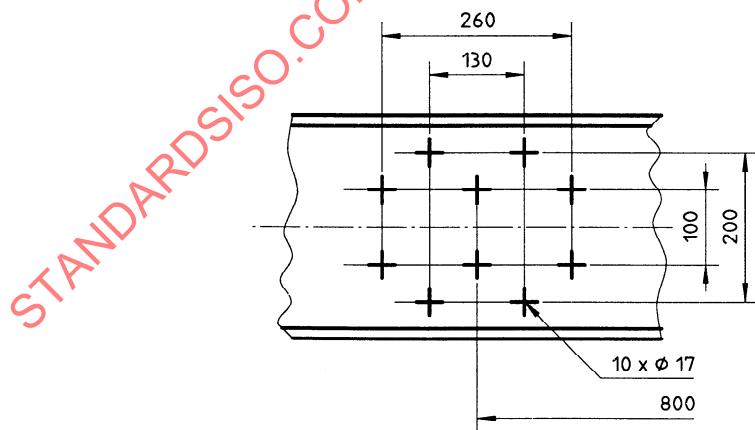


Figure 3

5.3 To indicate the characteristics of bolts and rivets, their designation shall be given on a leader line pointing to the symbolic representation in accordance with the relevant International Standard or other specification in use (see figure 4).

5.4 The designation of holes, bolts and rivets, when referring to a group of identical elements, can be restricted to one exterior element. In this case the designation shall be preceded by the number of holes, bolts or rivets constituting the group (see figures 3 and 4).

5.5 Holes, bolts and rivets equidistant from a centreline may be dimensioned as shown in figures 3 to 5.

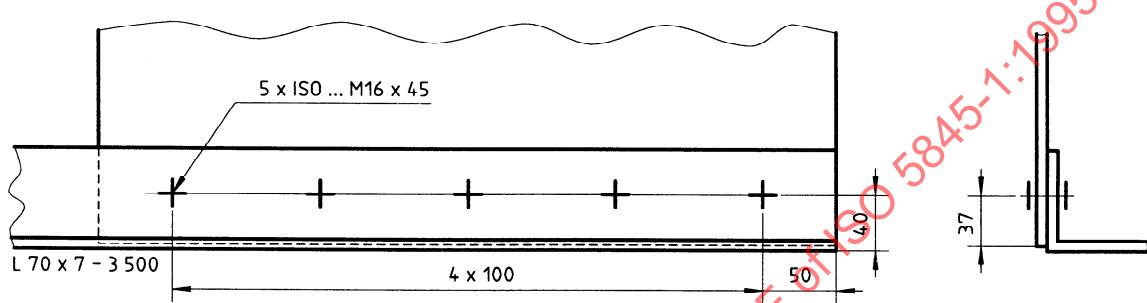


Figure 4

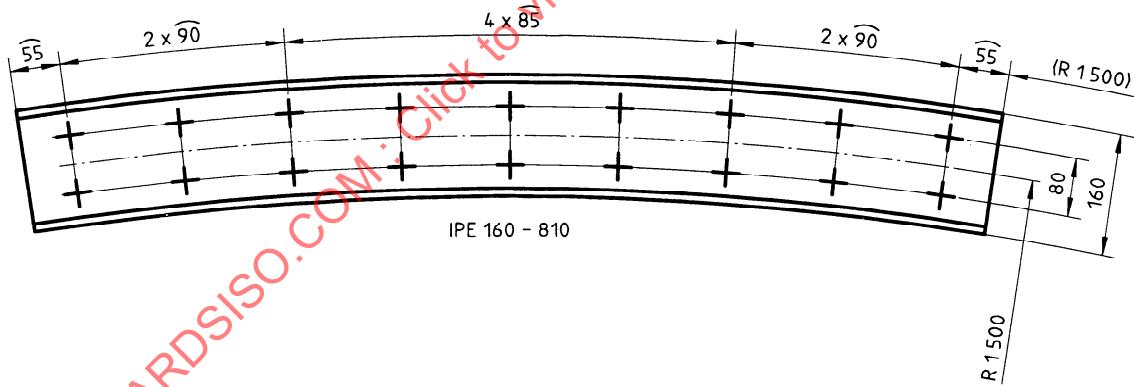


Figure 5