International Standard 5261

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Technical drawings for structural metal work

Dessins techniques pour constructions métalliques

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 5261 was developed by Technical Committee ISO/TC 10, *Technical drawings*, and was circulated to the member bodies in February 1978.

It has been approved by the member bodies of the following countries :

Australia	India	Spain
Austria	Italy	Sweden
Belgium	Korea, Rep. of	Switzerland
Bulgaria	Mexico	Turkey
Chile	Netherlands	USA
Denmark	New Zealand	USSR
Finland	Norway	Yugoslavia
France	Romania	
Germany, F.R.	South Africa, Rep. of	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Canada
Japan
United Kingdom

Printed in Switzerland

Technical drawings for structural metal work

0 INTRODUCTION

For uniformity reasons all the linear dimensions given in this International Standard are in millimetres only. It is understood that other units could equally well have been used without prejudice to the principles established. The figures, chosen to illustrate the text only, may be incomplete.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies complementary rules to ISO 128 and 129, necessary for assembly and detail drawings concerning :

- structural metal work consisting of plates and sheets, profile sections and compound elements (including bridges, frameworks, pilings, etc.);
- lifting and transport appliances;
- storage tanks and pressure vessels;
- lifts, moving stairways and conveyor belts;
- etc.

2 REFERENCES

ISO 128, *Technical drawings — General principles of presentation.*[1)]

ISO 129, *Technical drawings — Dimensioning.*[2)]

ISO 406, *Technical drawings — Linear and angular tolerances — Indications on drawings.*[3)]

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units.*

ISO 2553, *Welds — Symbolic representation on drawings.*[4)]

ISO 3098/1, *Technical drawings — Lettering — Part 1 : Currently used characters.*

ISO 3898, *Bases for design of structures — Notations — General symbols.*

ISO 5455, *Technical drawings — Scales.*

ISO 5457, *Technical drawings — Sizes and lay-out of drawing sheets.*

3 REPRESENTATION OF HOLES, BOLTS AND RIVETS

3.1 Representation on projection planes normal to their axes

In order to represent holes, bolts and rivers on projection planes normal to their axes, the following symbols, represented in thick lines, shall be used (tables 1 and 2).

The symbol for holes shall be without a dot in the centre.

1) At present at the stage of draft. (Revision of ISO/R 128-1959.)

2) At present at the stage of draft. (Revison of ISO/R 129-1959.)

3) At present at the stage of draft. (Revision of ISO/R 406-1964.)

4) The position of the symbols on the drawings has been adopted provisionally until such time as Technical Committee ISO/TC 10 works out a single method for the symbolic representation of welds on drawings.

TABLE 1

Hole	Symbol for hole			
	without countersinking	countersunk on near side	countersunk on far side	countersunk on both sides
drilled in the workshop				
drilled on site				

TABLE 2

Bolt or rivet	Symbol for bolt or rivet to fit in hole			Symbol for rivet to fit in hole countersunk on both sides
	without countersinking	countersunk on near side	countersunk on far side	
fitted in the workshop				
fitted on site				
fitted on site and hole drilled on site				

NOTE – To distinguish bolts from rivets, the designation of bolts shall always begin with a prefix showing the type of screw thread. (Example : the designation for a bolt with metric screw thread is M 12 X 50, whilst that for a rivet is ϕ 12 X 50.)

3.2 Representation on projection planes parallel to their axes

In order to represent holes, bolts and rivets on projection planes parallel to their axes, the symbols of the following representations shall be adopted (tables 3 and 4). Only the horizontal dash of these symbols shall be represented in thin line, while all other parts shall be represented in thick line.

TABLE 3

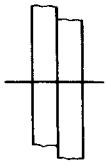
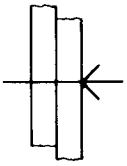
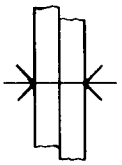
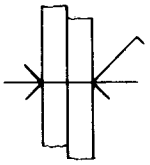
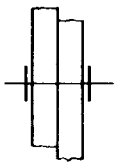
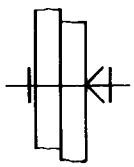
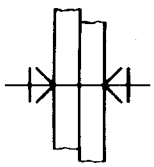
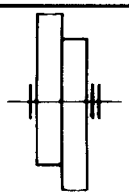
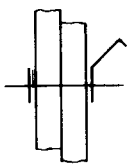
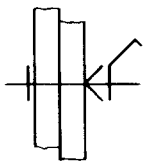
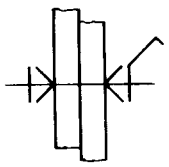
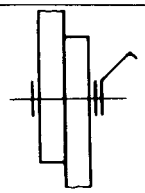
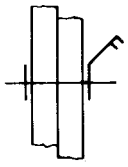
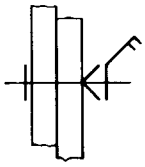
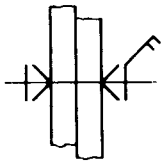
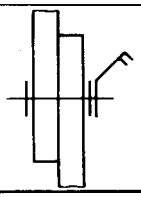
Hole	Symbol for hole		
	without countersinking	countersunk on one side only	countersunk on both sides
drilled in the workshop			
drilled on site			

TABLE 4

Bolt or rivet	Symbol for bolt or rivet to fit in hole		Symbol for rivet to fit in hole countersunk on both sides	Symbol for bolt with designated nut position
	without countersinking	countersunk on one side only		
fitted in the workshop				
fitted on site				
fitted on site and hole drilled on site				

NOTE – To distinguish bolts from rivets, the designation of bolts shall always begin with a prefix showing the type of screw thread. (Example : the designation for a bolt with metric screw thread is M 12 X 50, whilst that for a rivet is ϕ 12 X 50.)

3.3 Dimensioning and designation

NOTE – Because, in practice, the dimension lines and the projection lines are drawn with the same drawing instrument, a short thin line, drawn at 45° to the dimension line, has been used to represent the terminations of dimension lines, instead of a thick stroke as indicated in the draft revision of ISO 2595.

This contradiction will disappear in the next edition of ISO 2595, as well as in the first edition of ISO 129 (at present revision of ISO/R 129).

3.3.1 The projection lines shall be separated from the symbols of holes, bolts and rivets on projection planes parallel to their axes (see figure 1).

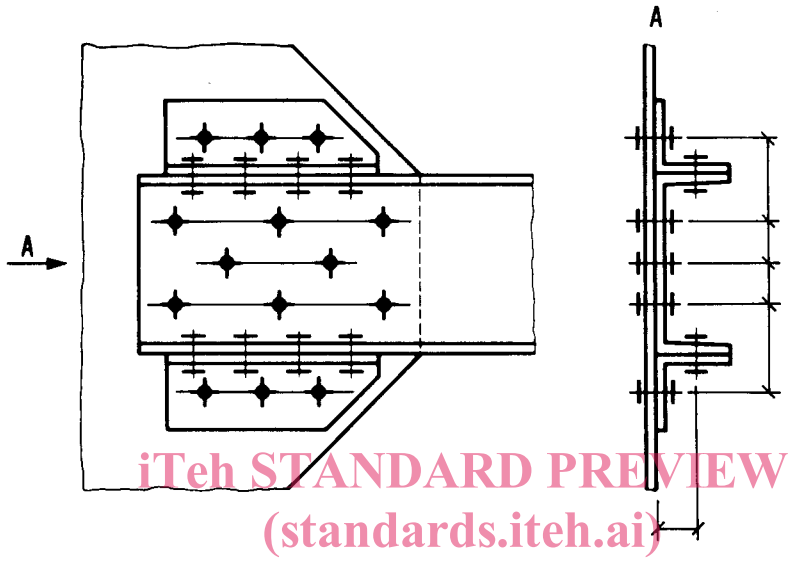


FIGURE 1

3.3.2 The diameter of holes shall be indicated at the side of the symbol (see figure 3).

3.3.3 To indicate the characteristics of bolts and rivets the designation shall be given in accordance with International Standards or, if no International Standard exists, with national standards or other specifications in use (see figure 2).

3.3.4 The designation of holes, bolts and rivets, when referred to groups of identical elements, can be restricted to one exterior element (see figure 2).

In this case the designation shall be preceded by the number of holes, bolts, rivets constituting the group (see figures 2 and 3).

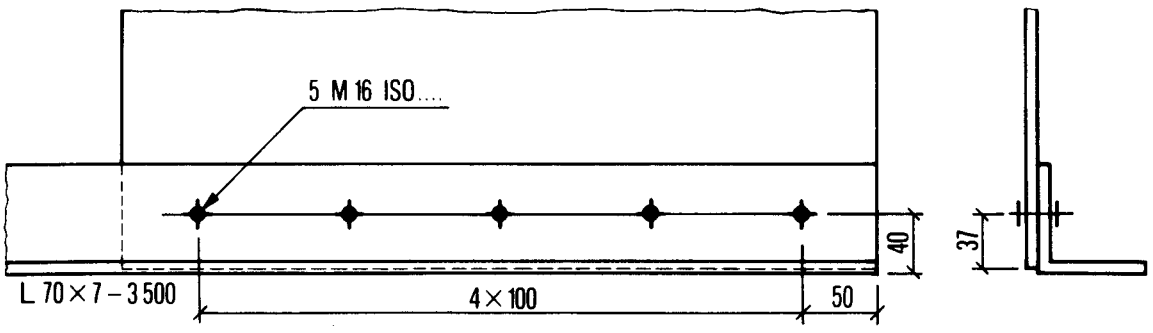


FIGURE 2

3.3.5 Holes, bolts and rivets, with equal distances from the centre line, should be dimensioned as shown in figures 3 and 6.

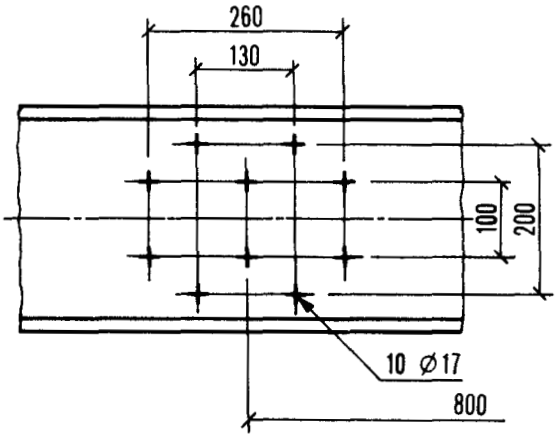


FIGURE 3

4 DIMENSIONING OF CHAMFERS

Chamfers shall be defined by means of linear dimensions as shown in figures 4 a) and 4 b).

FIGURE 4 a)

FIGURE 4 b)

5 DIMENSIONING AND LENGTHS OF ARCS

At the side of the developed lengths of arcs, the bending radius to which these lengths refer shall be indicated in brackets (external fibre, centroidal fibre, etc.) as shown in figures 5 and 6.

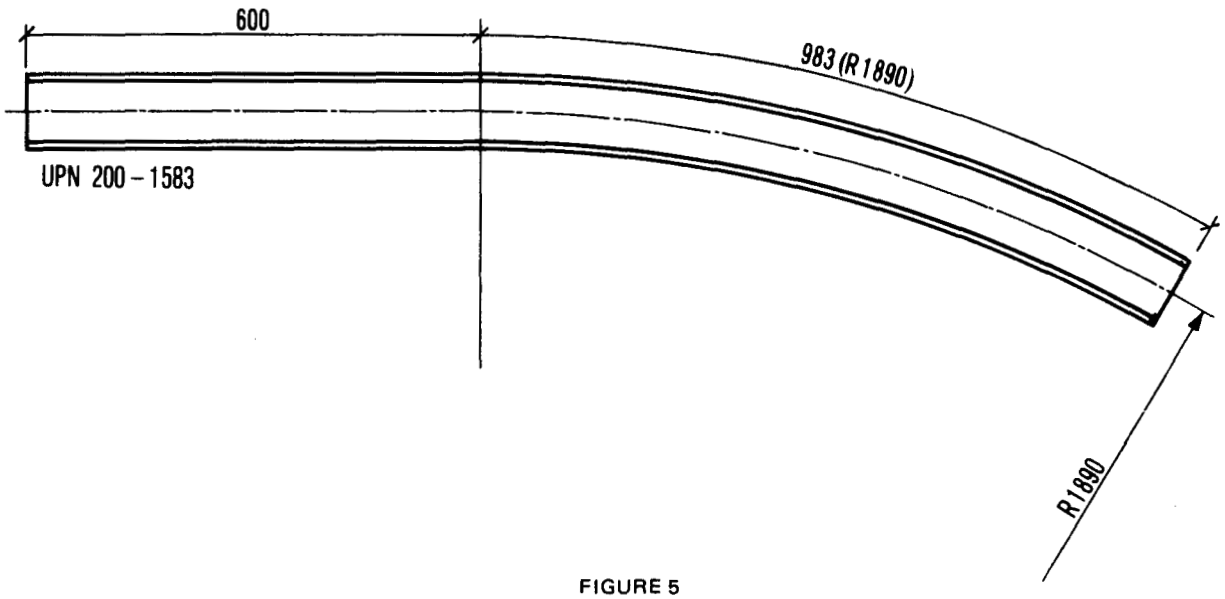


FIGURE 5

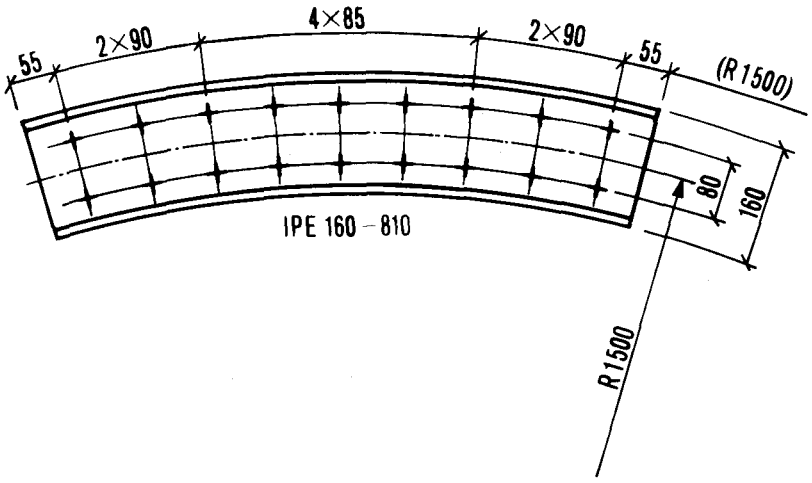


FIGURE 6

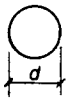
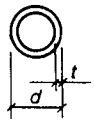
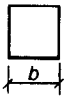
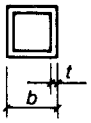
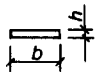
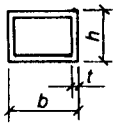
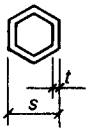
6 DESIGNATION OF BARS, PROFILE SECTIONS, PLATES AND SHEETS

6.1 Bars and profile sections

The representations of bars and profile sections shall be indicated by the relevant ISO designation followed, if necessary, by the cutting length separated by a short horizontal dash.

If there is no ISO designation or other relevant standards, the symbols and dimensions indicated in table 5 shall be applied. The designation on the drawing shall be adapted to the position of the bar or profile section (see figures 1, 5, 6 and 7).

TABLE 5

Description	Designation		Signification of dimensions
	Symbol	Dimensions	
Circular solid section	∅	*d*	
Tube		*d* × *t*	
Square solid section	□	*b*	
Square hollow section		*b* × *t*	
Rectangular solid section	▭	*b* × *h*	
Rectangular hollow section		*b* × *h* × *t*	
Hexagonal solid section	⬡	*s*	
Hexagonal hollow section		*s* × *t*	
Triangular solid section	△	*b*	
Semi-circular solid section	⌓	*b* × *h*