INTERNATIONAL STANDARD

ISO 12166

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Resistance welding equipment — Particular specifications applicable to transformers with one secondary winding for multi-spot welding, as used in the automobile industry

Matériel de soudage par résistance — Spécifications particulières applicables aux transformateurs à un enroulement secondaire pour soudage multipoints, utilisés dans l'industrie automobile

Reference number
ISO 12166:1997(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 12166 was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 6, *Resistance welding.*

Annex A of this International Standard is for information only.

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Resistance welding equipment — Particular specifications applicable to transformers with one secondary winding for multi-spot welding, as used in the automobile industry

1 Scope

The purpose of this International Standard is to give specific details or to complement ISO 5826, which deals with general specifications applicable to all transformers, relating to particular transformers within its field of application.

Unless otherwise specified, those requirements of ISO 5826 not modified by this International Standard are applicable.

This International Standard applies to transformers with one secondary winding for multi-spot welding machines as used in the automobile industry. These transformers can substitute transformers covered by ISO 7284 for applications with current control. They can also replace transformers covered by ISO 7284 if only one secondary winding is used.

Transformers covered by this International Standard shall be designed as to

a) allow separate control and regulation of one single secondary welding circuit;

b) allow substitution of one transformer covered by ISO 7284 by two transformers covered by this International Standard.

NOTE — By agreement between the manufacturer and the user, this International Standard may also be applied also for other industries or for other welding machines or applications where possible. ISO 5826 is applicable in all cases.

2 Normative references

The following standards contain provisions which through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revisions, and parties to agreements based on this International Standard 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 5826:—[1)], *Transformers for resistance welding equipment – General specifications applicable to all transformers*.

ISO 7284:1993, *Resistance welding equipment – Particular specifications applicable to transformers with two separate windings for multi-spot welding, as used in the automobile industry*.

1) To be published. (Revision of ISO 5826:1983)

3 Types of transformer

This International Standard covers the following types of transformer with one secondary winding which are characterized by the secondary no-load voltage U_{20}, the secondary permanent current I_{2p} and, for information, by continuous power S_p and/or the input power at the duty factor 50 % (S_{50}).

Transformers may have only 1 secondary voltage (see table 1) or selection of the secondary voltage on the primary side by a set of connectors (see table 2).

Table 1 — Types of transformers with one secondary voltage only, electrical characteristics

U_{20} V	I_{2p} kA	S_p kVA	S_{50} kVA
7,1	4	28	40
10	4,5	45	63

Table 2 — Types of transformer with taps to be changed by a primary set of connectors, electrical characteristics

Position	U_{20} V	I_{2p} kA	S_p kVA	S_{50} kVA
1	5	3,2		
2	5,6			
3	6,3			
4	7,1		23	32
1	7,1	3,5		
2	8			
3	9			
4	10		35	50

4 Dimensions of transformers

The dimensions of the transformers shall be as shown in figure 1 and as given in table 3.

Table 3 — Dimensions l_1 and l_2, as a function of the secondary permanent current

Dimensions in millimetres

Transformateur	Dimensions	
I_{2p} kA	l_1	l_2
3,2	280	595
3,5	400	710
4	280	595
4,5	400	710

5 Cooling water circuit

The cooling water circuit shall conform to ISO 7284:1993, 7.2.

6 Secondary connections

Dimensions and arrangement of secondary connections shall be as shown in figure 1 and as given in table 3.

7 Primary connections

7.1 Cables and terminals

These items shall conform to ISO 7284:1993, 7.4.1.

7.2 Cable input

The position of the threaded holes for the cable inputs shall be covered by figure 1. The size of the threads is given in ISO 7284:1993, table A.1.

7.3 No-load current

The value of the no-load current shall not exceed the values given in table 4.

Table 4 — Limit values of the no load current, I_0

I_{2p}	U_1 V						S_p	S_{50}	S_0
	230	400	(415)	500	550	690			
kA	I_0 A						kVA	kVA	kVA
3,2	20,5	11,3	10,8	9	8,2	6,8	23	32	4,5
3,5	29,5	16,3	15,7	13	11,8	9,8	35	50	6,5
4	24,5	14	13,5	11,2	10,2	8,1	28	40	5,6
4,5	36,3	20,5	19,8	16,2	14,9	12	45	63	8,2

8 Tests

Transformers covered by this International Standard shall be tested in accordance with the requirements of ISO 5826 unless otherwise specified in this International Standard.

9 Colour of exterior finish

The colour of the exterior finish shall be green for transformers with U_{20} = 7,1 V and yellow for transformers with U_{20} = 10 V.

10 Designation

Transformers covered by this International Standard are designated noting in order:

a) reference to this International Standard;

b) the arrangement of the secondary connections (see figure 1);

c) number of taps according to table 2;

d) the secondary no-load voltage U_{20} (see tables 1 and 2);

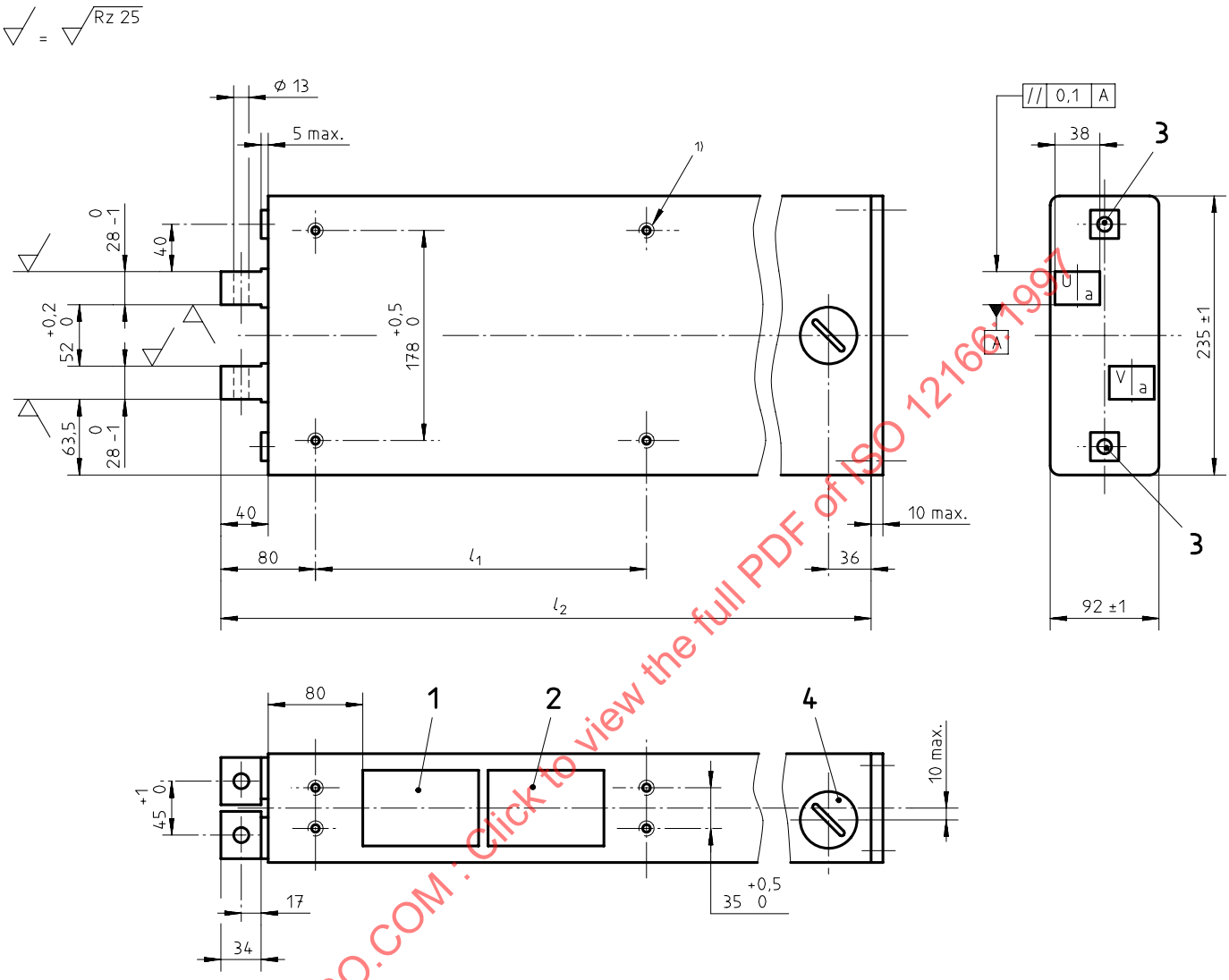
e) the permanent power S_p (see tables 1 and 2);

f) the primary voltage U_1.

EXAMPLE

Transformer ISO 12166 - B/2 - 4 - 10 - 35 - 400

Dimensions in millimetres
Surface roughness in micrometres



Key

1 Type plate
2 Earthing plate
3 Water inlet-outlet Rp 1/4"
4 PG 36 (4 x)

1) Allround 4 x M12 – 18 deep

Figure 1 — Dimensions of transformers

Annex A
(informative)

Bibliography

[1] ISO 669-1:—[2], *Resistance welding equipment — Part 1: Mechanical and electrical requirements*.

[2] ISO 1302:1992, *Technical drawings — Method of indicating surface texture.*

[3] ISO 2768-2:1989, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications.*

[4] IEC 423:1973, *Outside diameters of conduits for electrical installations and threads for conduits and fittings*.

2) To be published. (Revision of ISO 669:1981)