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# International Standard



# 5828

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

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## Resistance welding equipment — Secondary connecting cables with terminals connected to water-cooled lugs — Dimensions and characteristics

*Équipements de soudage par résistance — Câbles de raccordement secondaires avec extrémités raccordées à des plages refroidies par eau — Dimensions et caractéristiques*

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[ISO 5828:1983](#)

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Descriptors : welding equipment, resistance welding machines, electric cables, connections for welding, dimensions, specifications.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 5828 was developed by Technical Committee ISO/TC 44, *Welding and allied processes*, and was circulated to the member bodies in December 1981.

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

Belgium	Germany, F.R.	Romania
Brazil	India	Spain
Bulgaria	Italy	Sri Lanka
Canada	Korea, Dem. P. Rep. of	Sweden
Egypt, Arab Rep. of	Korea, Rep. of	Switzerland
Finland	New Zealand	USA
France	Norway	USSR

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

Ireland  
Japan  
United Kingdom

# Resistance welding equipment — Secondary connecting cables with terminals connected to water-cooled lugs — Dimensions and characteristics

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## 1 Scope and field of application

[ISO 5828:1983](#)

This International Standard specifies dimensions and characteristics of secondary connecting cables which are air-cooled over their length and with terminals connected to water-cooled lugs.

The secondary connecting cables are used for connection between the secondary terminals of a welding transformer and the electrode holders.

## 2 Reference

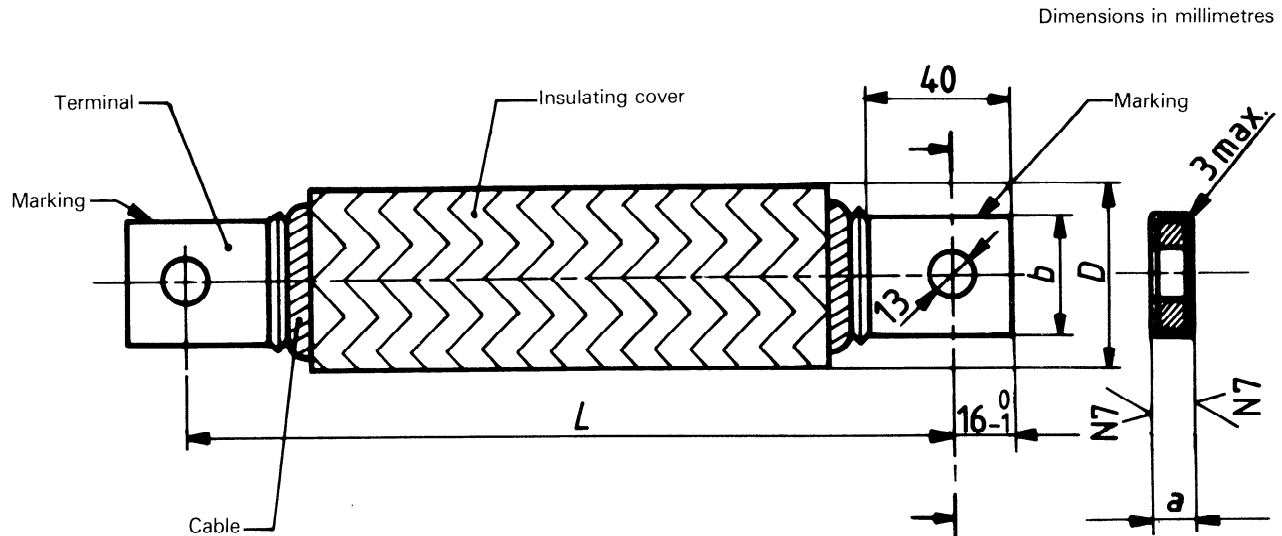
ISO 1337, *Wrought coppers (having minimum copper contents of 99,85 %) — Chemical composition and forms of wrought products.*

## 3 Classification

The secondary connecting cables are classified into flexible (F) and highly flexible types (HF) depending on diameter of wire (see clause 7).

4 Dimensions

The dimensions of the secondary connecting cables shall be as given in figure 1 and the table.



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 Figure 1 – Dimensional layout  
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 Table – Dimensions

Dimensions in millimetres

	Section, mm <sup>2</sup>						
	200	250	315	400	500	630	800
<i>a</i>	11	13	16	20	24	24	32
<i>b</i>	32	32	32	32	32	38	38
<i>D</i>	36	38	40	45	50	55	65
<i>L</i> *	Permissible permanent current <i>I</i> <sub>2p</sub> , A**						
160	2500	2800	3150	3550	4000	—	—
(180)	2360	2650	3000	3350	3750	—	—
200	2240	2500	2800	3150	3550	—	—
(224)	2120	2360	2650	3000	3350	3750	—
250	2000	2240	2500	2800	3150	3550	4000
(280)	1900	2120	2360	2650	3000	3350	3750
315	1800	2000	2240	2500	2800	3150	3550
(355)	1700	1900	2120	2360	2650	3000	3350
400	1600	1800	2000	2240	2500	2800	3150
(450)	1500	1700	1900	2120	2360	2650	3000
500	1400	1600	1800	2000	2240	2500	2800
(560)	—	—	—	1900	2120	2360	2650
630	—	—	—	1800	2000	2240	2500

\* Preferred numbers according to series R 20; values in between according to series R 40 may be chosen.

\*\* The permissible secondary current *I*<sub>X</sub>, at a given duty factor *X*, may be calculated from

$$I_X = I_{2p} \sqrt{\frac{100}{X}}$$

The figures in this table are based on a temperature rise of 60 °C and terminals connected to water-cooled lugs.

NOTE — Values in brackets should be avoided as far as possible.

## 5 Designation

The designation of a secondary connecting cable shall consist, in order, of the words "secondary connecting cable", the number of this International Standard, the cross-sectional area of the cable in square millimetres, the length in millimetres and the type of flexibility.

Example of the designation of a secondary connecting cable with cross-section of 400 mm<sup>2</sup>, a length of 500 mm, of flexible type (F) :

**Secondary connecting cable ISO 5828 - 400 × 500 - F**

## 6 Materials

The material used shall be Cu-ETP or Cu-FRHC according to ISO 1337.

The external insulating cover protecting the connecting cable shall be resistant to common industrial chemical agents and possible spatter, and shall also withstand, without deterioration, a maximum temperature of 100 °C.

## 7 Construction

Flexible = F, Diameter of wire < 0,16 mm.

Highly flexible = HF, Diameter of wire < 0,08 mm.

Twist of cable 1/2 revolution minimum on length *l*.

## 8 Endurance test (type test)

### 8.1 Test conditions

The secondary connecting cables shall be connected to the cooled secondary terminals of the transformer and to the cooled electrode holders, in accordance with the assembly diagram and dimensions indicated in figure 2, for double series spot welding, the centre of the connecting cables being unsupported.

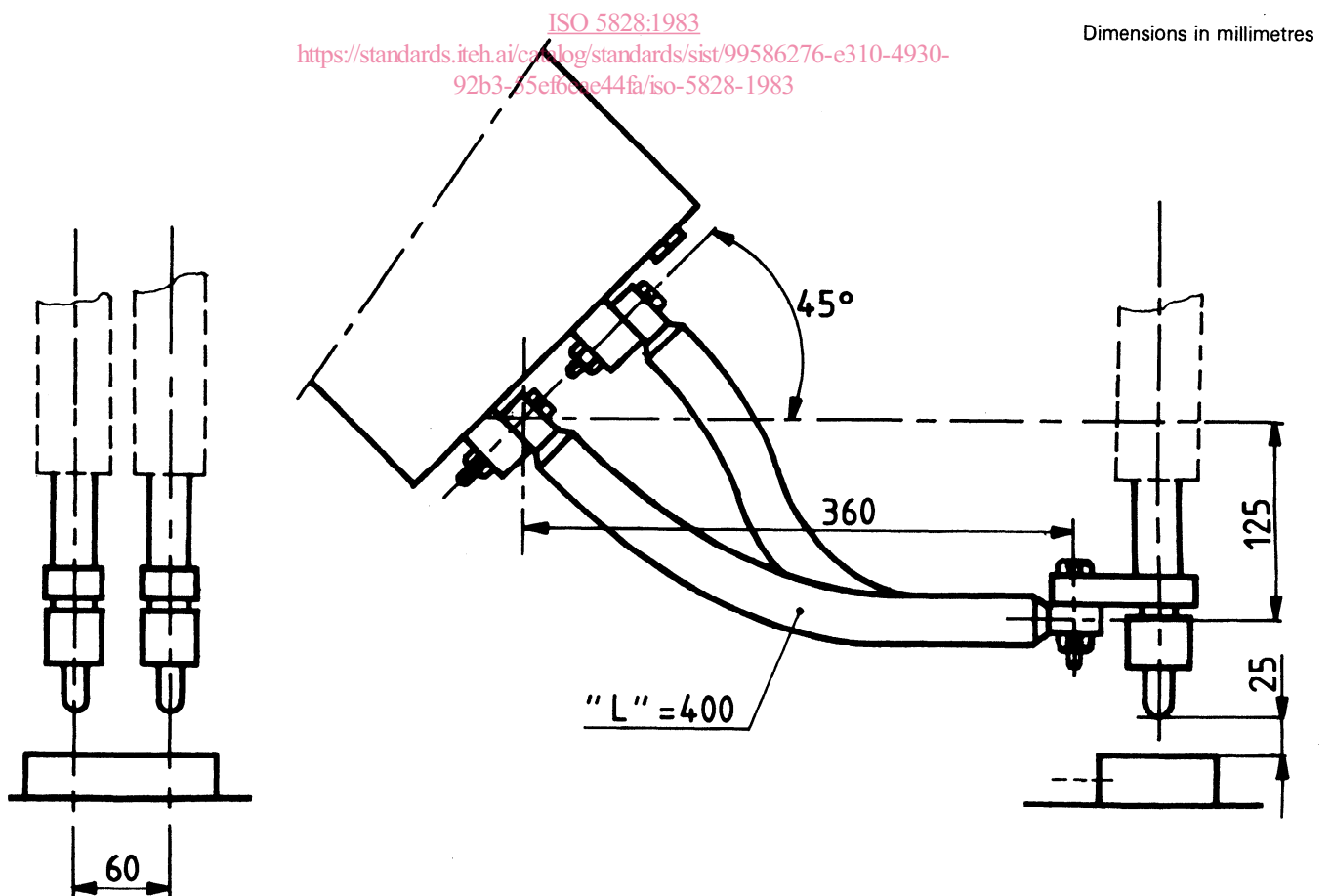


Figure 2 — Test arrangement for endurance test

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Rate of 20 strokes/min at 4 % duty cycle for a minimum duration of 8 h without interruption.

The applicable welding current shall be calculated from the figures given in the table. Under this condition the connecting cable shall withstand 300 000 mechanical and electrical operations.

### 8.2 Interpretation of results

At the beginning and at the end of the endurance test, a precise measurement of the resistance shall be carried out at a temperature of 20 °C. The final resistance shall not exceed the initial resistance by more than 15 %.

## 9 Marking

Connecting cables to this International Standard shall be marked on the edges of both terminals with the figures of cross-section × length and the letter F or HF, for example : **400 × 500 - F**.

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