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Hand crimping tools - Tools for the crimp termination of electric cables and wires for low frequency and radio frequency applications - Part 2-4: Particular requirements for centre contacts of RF connectors, series SMZ

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Handcrimpwerkzeuge - Werkzeuge für den Crimpanschluß von elektrischen Leitungen und Drähten für Niederfrequenz- und für Hochfrequenzanwendungen -- Teil 2-4: Spezielle Anforderungen für Mittelkontakte von Hochfrequenzsteckverbindern, Reihe SMZ

Outils de sertissage manuels - Outils pour sertir les câbles et fils électriques basse fréquence et radio-fréquence -- Partie 2-4: Contacts centraux des connecteurs radio-fréquence modèle SMZ

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English version

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Part 2-4: Particular requirements for centre contacts of RF connectors, series SMZ

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Handcrimpwerkzeuge
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Foreword

This European Standard was prepared by the British Electrotechnical Committee.

The text of the draft was submitted to the Unique Acceptance Procedure (UAP) in November 1992 and was approved by CENELEC as EN 50109-3-2 on 1993-09-22. It was later renumbered EN 50109-2-4.

NOTE: Finland has no obligation to implement this European Standard.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1995-12-15
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1995-12-15

For products which have complied with the relevant national standard before 1995-12-15, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-12-15.

Contents

Introduction

Part 1 of this European Standard provides general requirements and tests for hand crimping tools for the termination of electrical cables and wires for low frequency and radio frequency applications.

Part 2 of the Standard covers hand crimping tools for radio frequency crimped type connectors such as those listed in radio frequency connector detail specifications based on CECC 22 000 and is subdivided as follows:

Part 2-1 covers hand crimping tools with fixed dies, sizes A to E, V and W.

Part 2-2 covers hand crimping tools with removable and interchangeable dies, sizes A to G, Q to T, V and W.

Part 2-3 covers hand crimping tools for contacts of electrical connectors.

Part 2-4 covers hand crimping tools for centre contacts of RF connectors, series SMZ.

Part 2-5 covers hand crimping tools for the termination of twin-ax cable for databus applications.

1 Scope

Part 2-4 of this European Standard specifies detail requirements, limiting dimensions and operating forces for hand crimping tools incorporating a system of multiple indentors of the 8-indent type, commonly known as 'Octodent'. It includes test requirements for the tool crimping action, under load, using a test-piece.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to, or revisions of, any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 50109-1	1994	Hand crimping tools - Tools for the termination of electrical cables and wires for low frequency and radio frequency applications - Part 1: General requirements and tests
EURONORM 31, 61, 83, 84, 85, 86, 87, 88 or 95		Specification for wrought steels for mechanical and allied engineering purposes (Required: specific reference to steel 210M15 quoted in annex C, figure C.2)
ISO 468		Assessment of surface texture: Methods and instrumentation
ISO 4287/1		Glossary of surface roughness terms: Surface and its parameters
ISO 286		ISO system of limits and fits
CECC 22 000		Generic Specification: Radio frequency coaxial connectors (Parts I, II and III)

3 Definitions

For the purpose of this Part 2-4, the definitions given in Part 1 apply.

4 Requirements

4.1 General

Crimping tools shall comply with the requirements of clause 4 of Part 1, except for the requirements of 4.9 of that standard; they shall also comply with the requirements of this Part 2-4, as stated in 4.2 to 4.11, as follows.

4.2 Indentor operation

The design of the crimping tool shall be such that, under load, all indentors travel with uniform and simultaneous movement, to meet the final tolerances prescribed in figure A.2.

4.3 Contact positioner

A spring-loaded positioner shall be provided for the proper location of the centre contact assembly during the crimping operation. The contact shall remain correctly positioned during the complete crimping cycle. See figure A.4, for dimensions, displacement and spring-thrust requirements.

4.4 Connector locator

A means of supporting the connector, perpendicular to the plane of the tool, shall be provided. See figure A.4.

4.5 Outline dimensions and mass

Crimping tools shall conform to the dimensions and mass specified in figure A.1, although they need not necessarily be of the physical configuration depicted.

4.6 Operating force (crimping cycle)

The crimping tool shall be designed such that it will pass the Operating Force (crimping cycle) test as given in 6.7 of Part 1 and 5.2.5 of this Part 2-4.

4.7 Overload force

The crimping tool shall be designed such that it will pass the Overload force test as given in 6.8 of Part 1, but uprated to 200 % of the maximum operating force, and 5.2.7 of this Part 2-4.

4.8 Indentors

The dimensions and arrangement of the indentors shall be in accordance with figure A.2, when tested using the gauges prescribed in figure B.1. Surface texture shall be assessed as described in ISO 468 and ISO 4287/1.

4.9 Crimped joints

The crimping tool shall be designed such that it will ultimately produce crimped joints complying with the requirements of the appropriate connector specification.

However, to eliminate the possibility of variable test results, the crimping tool is tested independently of any connector piece parts, according to the procedures given in 6.7 of Part 1 and 5.2.5 and 5.2.6 of this Part 2-4.

4.10 Ratchet and tool stop adjustment

4.10.1 The manufacturer shall adjust the tool such that the positional accuracy of the indentors in relation to both ratchet release and tool stop-point shall comply with the requirements detailed in the following procedure.

4.10.2 The tool shall be closed on the NOT GO gauge pin detailed in annex B WITHOUT ACTUALLY CRIMPING IT NOR ATTEMPTING TO DO SO. The gentle force applied to the NOT GO gauge pin by the indentors shall be sufficient to retain the gauge without allowing the tool to return to the fully-open position, i.e. the ratchet shall not release on the NOT GO gauge.

4.10.3 Subsequently, to confirm the accuracy of the indentor positioning, the tool shall meet the gauging requirements detailed in 5.2.4.

4.11 User access

The crimping tool shall be designed NOT to allow easy user adjustment or dismantling of the ratchet and stop mechanisms nor the indentor assembly. Any adjustment facilities required by the manufacturer shall be sealed from user intervention, such that unauthorized adjustment would be readily detectable.

5 Test and acceptance requirements

5.1 Type approval

A manufacturer shall obtain Type Approval before supplying tools in accordance with this Part 2-4. Application for Type Approval shall be made to the National Supervising Inspectorate.

5.2 Design acceptance requirements

5.2.1 General

The requirements of clauses 5, 6 and 7 of Part 1, with the exception of 6.6, 6.10 and 6.11, apply.

5.2.2 Application

Application for Design Acceptance shall be accompanied by the requisite number of specimens (see 6.2 of Part 1) and the information listed under a), b) and c) below, details of which shall form part of the manufacturer's own documentation:

a) detail dimensions and drawings where applicable;

b) details of materials and finish;

c) evidence, in the form of a report, shall be submitted, justifying the potential for successful completion of the Design Acceptance test programme.

5.2.3 Sample size and test sequence

The sample size and test sequence shall be in accordance with the requirements of 6.1 and 6.2 of Part 1. One of the samples shall have the contact locator removed to permit the Mechanical Endurance test 5.2.8 to be carried out.

5.2.4 Gauging

For the requirements of the gauging procedure referred to in 6.4c of Part 1, the space between the opposing closed indentors shall be measured with a gauge which conforms to the requirements of figure B.1 of this Part 2-4, using the following procedure.

The tool shall be gauged in the fully closed position, i.e. when the tool stop is encountered. The specified GO GAUGE shall pass cleanly through the closed indentors and the specified NOT GO gauge shall not pass through.

5.2.5 Operating force (crimping cycle)

For the requirements of the test specified in 6.7 of Part 1, the test shall be carried out with the test piece and locator jig specified in figures C.1 and C.2. The force applied to the crimping tool during this test shall be not greater than 200 N when applied to the handles at a point between 30 mm and 35 mm from the remote (distal) ends of the handles.

5.2.6 Run-out

After successfully crimping a test piece, the run-out (axial alignment) shall be measured in accordance with figure C.3. The run-out shall not exceed 0,28 mm Total Indicator Reading (TIR); this includes a manufacturing tolerance of 0,13 mm TIR for the test piece.

5.2.7 Overload force

For the requirements in 6.8 of Part 1, a force shall be applied to the handles of the crimping tool at a point between 30 mm and 35 mm from their remote ends. This force shall be increased at a rate not exceeding 25 N/s until it reaches 400 N. This 400 N force shall be maintained for a period of not less than 30 s.

5.2.8 Mechanical endurance

a) for the requirements of the mechanical endurance test described in 6.9 of Part 1, the crimping tool shall be subjected to 50 000 cycles of operation at a rate of between 10 and 20 cycles per minute. During this test the tool shall be continually fed with test wire, meeting the requirements of C.3. It will be necessary for the tool manufacturer to remove the spring-loaded contact locator, to enable the test wire to pass right through the tool. A guide tube of appropriate diameter shall be substituted to keep the wire central. The guide tube shall be designed to ensure minimal production of metallic swarf from the test wire as it passes through. The test wire shall be advanced sufficiently after each cycle so that a new surface is presented to the indentors for each crimp. The force on the handles shall be as specified in 5.2.5 of this Part 2-4.

b) no adjustments, repairs nor lubrication shall be permitted during the 50 000 cycles of this test. However, extraneous foreign matter shall be removed at 10 000 cycle intervals.

c) after the completion of each 10 000 cycles during the mechanical endurance test, the crimping tool shall be loaded with a test piece conforming to the requirements of C.1 and the tool manually operated. The test piece shall be subsequently examined and measured for compliance with the requirements of figure A.3.

d) after completion of the 50 000 cycles of the mechanical endurance test and the tests detailed in 5.2.8c above, the crimping tool shall be tested for compliance with the requirements of 6.9a, 6.9b and 6.9d of Part 1. For the gauging operation, the gauge specified in 5.2.4 of this Part 2-4 shall be used. The run-out requirements of 5.2.6 shall be met by a manually crimped test piece.

5.3 Certification

All manufacturers supplying crimping tools to this Part 2-4, shall be in possession of a valid Type Approval Certificate issued by the National Supervising Inspectorate. Consideration to awarding Type Approval will be given by the National Supervising Inspectorate on successful completion of clause 5.