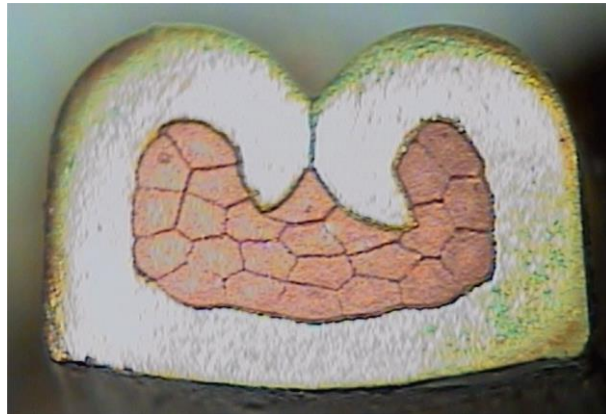
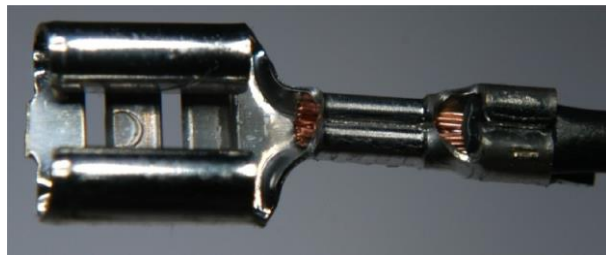


# Principles of Crimping Technology

## Open Crimp Barrel

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# 1. CONTENT

<b>1. Content</b> .....	<b>2</b>
<b>2. Important Notes on this Documentation</b> .....	<b>6</b>
2.1 Crimppedia .....	6
2.2 Update .....	6
2.3 Service Offers related to Cable Processing.....	6
2.4 Partners and Sources.....	7
<b>3. The Basics</b> .....	<b>8</b>
3.1 Terms & Definitions .....	8
3.2 Open Crimp Barrels .....	8
3.3 Advantages and Disadvantages of Open Crimp Sleeves .....	9
3.4 The Wire Crimp of an Open Crimp Sleeve .....	10
3.5 Compression Ratio for Open Crimp Sleeves.....	11
3.6 What does „Gas-Tightness“ mean? .....	12
3.7 Cross-Section Filling – The Effects of Missing Wire Strands .....	13
3.8 Soldering Crimp Connections .....	14
3.9 Processing Open Crimp Sleeves.....	16
3.9.1 Embossings in the Wire Crimp Area.....	16
3.9.2 Taped Crimp Contacts.....	16
3.9.3 Single Contacts .....	17
3.9.4 The Roll Crimp.....	17
3.10 Overview of Crimp Shapes.....	20
3.11 Assignment.....	21
3.11.1 Assignment Crimp Contact – Nominal Cross Section – Tooling .....	21
3.11.2 Assignment: Conductor Nominal Cross Section – Crimp Contact .....	22
3.11.3 Assignment: Insulation Diameter – Crimp Contact.....	23
3.12 Mechanical Play of the Crimped Contact in the Housing .....	24
3.12.1 Effects of Lacking Cavity Play.....	25
3.13 Overview of the Crimp Connection Areas .....	26
<b>4. Wire and Wire Positions</b> .....	<b>27</b>
4.1 The Stripping Length.....	27
4.2 Inserting and Positioning the Stripped Wire into the Crimp Contact.....	28
4.2.1 Conductor End / Conductor Protrusion.....	28
4.2.2 Position of Conductor and Seal in the Crimp Contact .....	28
4.2.3 Seal Positions.....	29
4.2.4 Wire Insertion: Crimp Applicators .....	29
4.2.5 Wire Insertion: Crimp Applicators in Fully Automatic Crimp Machines.....	31
4.2.6 Wire Insertion: Hand Crimp Tools .....	32
<b>5. The Wire Crimp Area</b> .....	<b>34</b>
5.1 Wire Crimp: Creating a Crimp Connection .....	35
5.2 Crimp Dimensions.....	36
5.2.1 Wire Crimp Height .....	36

5.2.2	Tolerances.....	37
5.2.3	Wire Crimp Height and Properties of Crimp Connections .....	38
5.2.4	The Crimp Height – A Compromise.....	38
5.2.5	Crimp Dimensions & Micrograph.....	39
5.2.5.1	Wire Crimp Width .....	40
5.3	The Rear Bellmouth .....	41
5.3.1	Task & Origin.....	42
5.3.2	Wire Crimper & Bellmouth.....	43
5.3.3	Size of the Rear Bellmouth .....	43
5.3.4	Adjusting the Bellmouth: Sidefeed Crimp Applicator .....	44
5.3.5	Adjusting the Bellmouth – Endfeed Crimp Applicator.....	45
5.3.6	Bellmouth Formation – Hand Tools .....	46
5.3.7	Variations in Bellmouth Size and Execution.....	47
5.3.7.1	Crimp Applicator Sidefeed .....	47
5.3.7.2	Crimp Applicator Endfeed .....	47
5.3.8	Effects of a Missing Rear Bellmouth.....	48
5.3.9	Causes for the Lack of a Bellmouth.....	49
5.3.10	Effects of an Excessive Rear Bellmouth .....	49
5.4	The Front Bellmouth.....	51
5.5	Burr Height and Width at the Crimp Base .....	52
5.6	Number of Captured Wire Strands and the Stripping Result.....	53
5.7	Crimp Flank Design.....	53
5.7.1.1	Crimp Flank Symmetry .....	55
5.7.1.2	Position and Location of the Crimp flank Tips.....	55
5.7.1.3	Material Thickness of the Crimp Contacts Base .....	55
5.7.1.4	Supporting Height.....	55
5.7.1.5	Supporting Angle.....	55
5.7.1.6	Error Description – Curling of the Crimp Flanks.....	56
<b>6.</b>	<b>The Insulation Crimp .....</b>	<b>62</b>
6.1	Insulation crimp Shapes and Requirements.....	62
6.1.1	Overview – Insulation Crimp Shapes.....	62
6.1.2	Determining the Insulation Crimp Dimensions .....	63
6.1.3	Bending Test .....	63
6.1.4	Wrapping Test .....	64
6.1.5	B/F-Shape Insulation Crimp .....	65
6.1.6	B/F-Shape Insulation Crimp: Common Errors.....	65
6.1.7	B/F -Shape Insulation Crimp: Special Variant.....	66
6.1.8	Overlap Crimp (OV) .....	66
6.1.9	Formation of an Overlap Crimp.....	66
6.1.10	Overlap Crimp: Common Errors.....	67
6.1.11	The Asymmetric O-Crimp.....	68

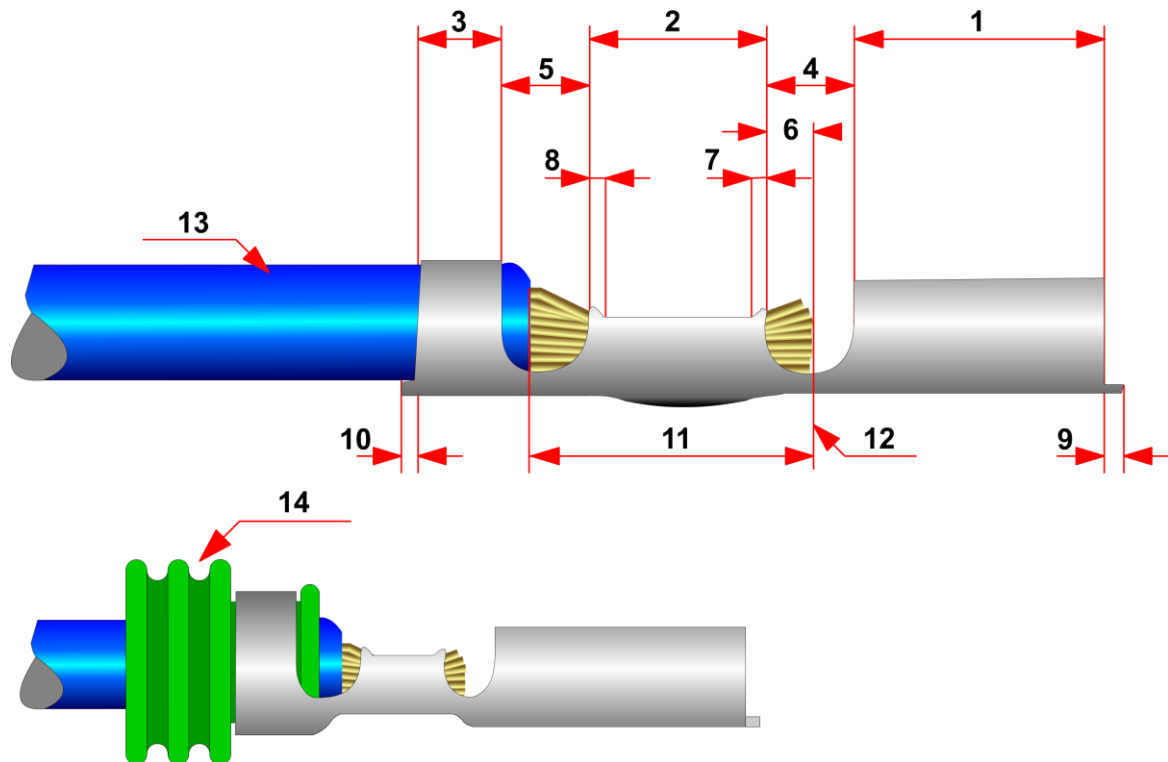
6.1.12	Asymmetric O-Crimp: Common Errors .....	68
6.1.13	Asymmetric O-Crimp with Seal .....	69
6.1.14	Asymmetric O-Crimp with Seal: Common Error.....	69
6.1.15	Symmetric O-Crimp with Seal .....	69
6.1.16	Symmetric O-Crimp with Seal: Common Errors.....	69
6.1.17	Insulation Crimp: Position Deviation and Contact Geometry .....	70
6.2	Positional Deviation (Tilting) of the Insulation Crimp Flanks .....	71
<b>7.</b>	<b>Single Wire Seal Assembly – Conductor Sealing.....</b>	<b>72</b>
7.1	The Seal .....	72
7.2	Assignment of the Seal to the Crimp Contact.....	73
7.3	Singulation - Feeding of the seal .....	73
7.4	Putting Seals on a Wire.....	75
7.5	Automatic Control of the Seal Position.....	76
7.6	Insulation Crimp Shapes for Seal Processing .....	77
7.7	Assembly of Sealed Crimp Contacts.....	77
7.8	Transition or Connection of the Wire Crimp to the Functional Area .....	78
<b>8.</b>	<b>The Functional Area.....</b>	<b>79</b>
8.1.1	Positive-Locking Connection .....	79
8.1.2	Spring-Loaded Contact Surfaces .....	80
8.1.1	The Contact Area .....	81
8.1.2	The Connector Thickness .....	82
8.1.3	Mating Force – Tensile Force.....	82
8.1.4	Latching Function – Latches .....	83
8.1.5	Damage due to Functional Tests.....	84
<b>9.</b>	<b>Symmetries in the Crimp Connection .....</b>	<b>85</b>
9.1.1	Symmetry: Position Deviation (Bending) WC/IC .....	85
9.1.2	Position Deviation Contact Area to Crimp Area .....	87
9.1.3	Distorsion between Crimp Area and Contact Area.....	88
<b>10.</b>	<b>The Cut-off Tab – Connection to the Carrier Strip.....</b>	<b>90</b>
10.1.1	Cut-Off Tab Length .....	90
10.1.2	Cut-Off Tab Length in Sealed Contacts.....	90
10.1.3	Setting The Cut-Off Tab length in an Endfeed Applicator.....	90
10.1.4	Cut-Off Tab Length in Sidefeed Applicators.....	91
10.2	Error Description: Cut-Off Tab Length .....	92
10.2.1	Sidefeed – Rear Cut-Off Tab Too Long .....	92
10.2.2	Endfeed – Rear Cut-off Tab Too Long .....	93
10.2.3	Sidefeed – Rear Cut-off Tab too Short .....	94
10.2.4	Endfeed - Rear Cut-off Tab Too Short.....	95
10.2.5	Variations in the Length of the Cut-Off Tabs.....	96
10.3	Cut-off Tab – The Burr .....	97
10.3.1	Cut-Off Tab Burrs – Common Errors .....	97
10.3.2	Sidefeed Crimp Applicator .....	97



10.3.3	Endfeed Crimp Applicator .....	97
10.3.4	Contact Separation for Hand Crimping Pliers .....	98
<b>11.</b>	<b>The Clip .....</b>	<b>99</b>
11.1	The „Shark Tooth“ Wire Pin.....	99
11.2	The Multi-Element Clip .....	100
11.2.1	The Multi-Element Clip – Wear Parts .....	101
11.3	The Clip – With or Without Insulation Crimp.....	102
<b>12.</b>	<b>Measuring and testing .....</b>	<b>103</b>
12.1	Visual Inspection.....	103
12.1.1	The Visual Inspection Protocol.....	103
12.1.2	Visual Inspection – Overview .....	104
12.1.3	Visual Inspection - Insulation crimp .....	105
12.2	Measuring Crimp Dimensions.....	130
12.2.1	Wire Crimp Height – Open Crimp Barrel.....	130
12.2.2	Measuring Tools– Open Crimp Barrel .....	130
12.2.3	Measurement Procedure – Open Crimp Barrel.....	132
12.2.4	Wire Crimp Width – Open Crimp Barrel.....	133
12.3	Pull-out Test.....	134
12.3.1	General .....	134
12.3.2	Requirements for a Pull-Out Tester .....	134
12.3.2.1	Pull-Out Tester Types.....	134
12.3.2.2	Receptacle for Crimp Contacts .....	135
12.3.2.3	Clamping Device for the Wire .....	136
12.3.3	Test Preparations .....	137
12.3.4	Pull-Out Test – Procedure.....	137
12.3.5	Visual Evaluation During the Pull-Out Test.....	138
12.3.6	Pull-Out Values Open Crimp Barrel.....	139
12.4	Micrograph Preparation.....	140
12.4.1	Principles.....	140
12.4.2	Position of the Microsection .....	142
12.4.3	Separating and Polishing the Crimp Contact .....	142
12.4.4	Cleaning the Microsection.....	143
12.4.5	Measuring the Crimp Geometry .....	143
12.4.6	Errors in Micrograph Evaluation .....	143
12.4.7	Example of a Micrograph Documentation.....	144
12.4.8	The Insides of a Crimp – Open Crimp Barrel.....	146
12.4.9	The Limits of Crimping Technology – Open Crimp Barrel .....	147
12.4.10	Evaluation Criteria for Micrographs .....	148
12.4.11	Micrographs of Faulty Samples.....	149

### 3. THE BASICS

#### 3.1 TERMS & DEFINITIONS



- |                                  |                           |
|----------------------------------|---------------------------|
| 1 Contact area                   | 8 Bellmouth (rear)        |
| 2 Wire crimp (conductor crimp)   | 9 Cutoff tab at the front |
| 3 Insulation crimp               | 10 Cutoff tab at rear     |
| 4 Transition to contact area     | 11 Stripping length       |
| 5 Transition to insulation crimp | 12 Conductor end          |
| 6 Conductor protrusion           | 13 Conductor              |
| 7 Bellmouth (front)              | 14 Seal                   |

#### 3.2 OPEN CRIMP BARRELS



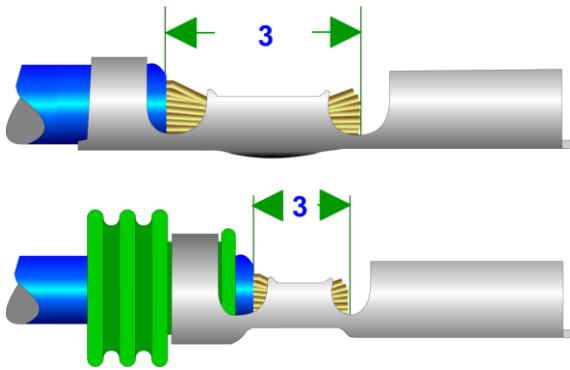
Cross-sections of up to approx. 50 mm<sup>2</sup> can be processed in open barrel crimp sleeves. The stripped conductor can be inserted from "above" into the open crimping area.

The areas of application for this contact variant include cable harnesses for the automotive, household appliance and aircraft industries. This contact variant is suitable for processing in large quantities. Wherever crimp connections have to be produced in large quantities, this contact variant is used. Processing is carried out on special production equipment which ensures almost 100% reproducibility of the processing quality, while at the same time producing large quantities.



## 4. WIRE AND WIRE POSITIONS

### 4.1 THE STRIPPING LENGTH

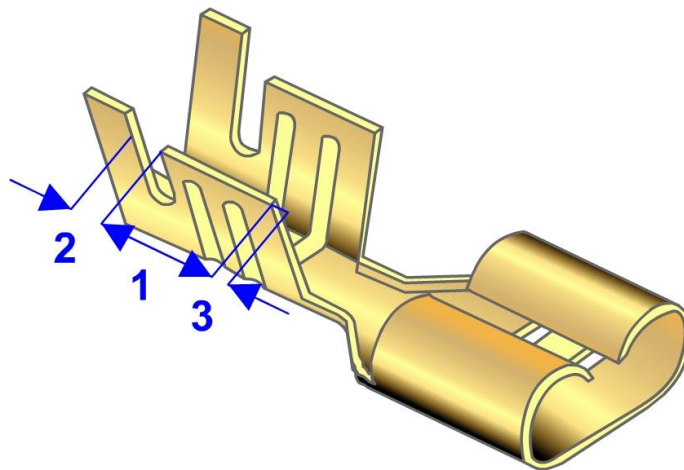


The stripping length depends on the design of the crimp contact. The tolerances are defined according to the geometry of the crimp contact. When defining the tolerance, the position from the end of the insulation in the area between the insulation crimp and the wire crimp as well as the conductor protrusion must be taken into account (3). This also determines the maximum permissible tolerance.

The stripping length is a specification given by the contact manufacturer.

**Attention:** Due to the contact pressure of the grippers and/or the feed rollers, the stripping length to be set may change according to the stretching behavior of the insulation. The correct stripping length must be checked by making samples and adjusted if necessary. Since the stripping properties of the insulation influence the stripping result, the stripping length must be checked regularly during ongoing production.

#### Calculating the stripping length



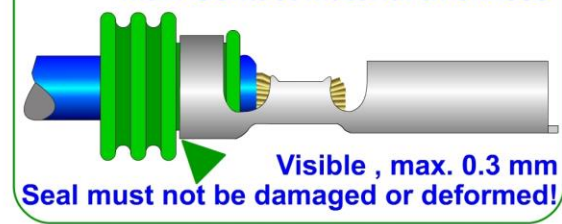
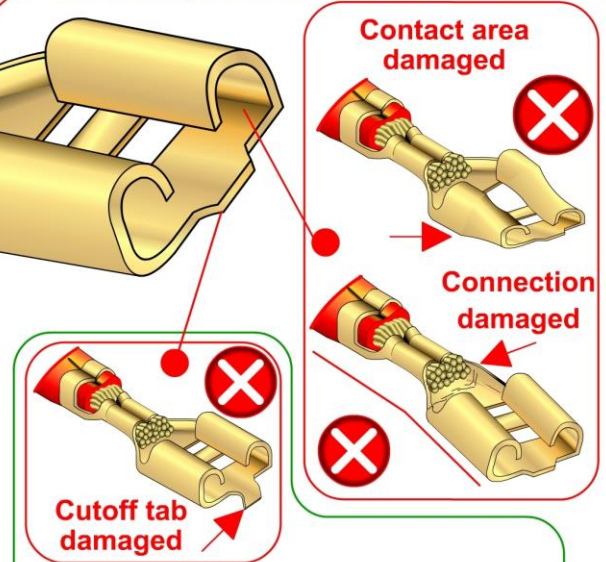
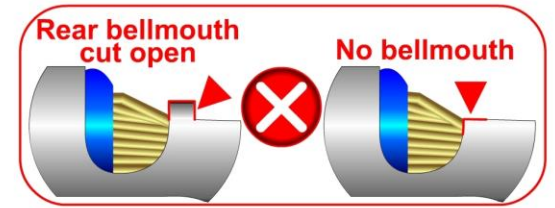
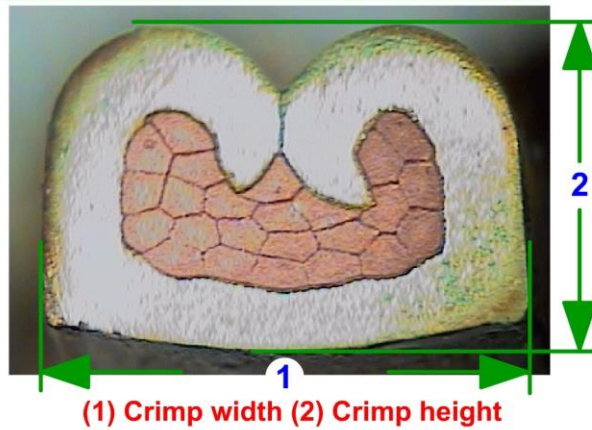
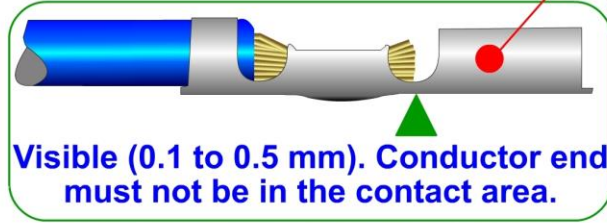
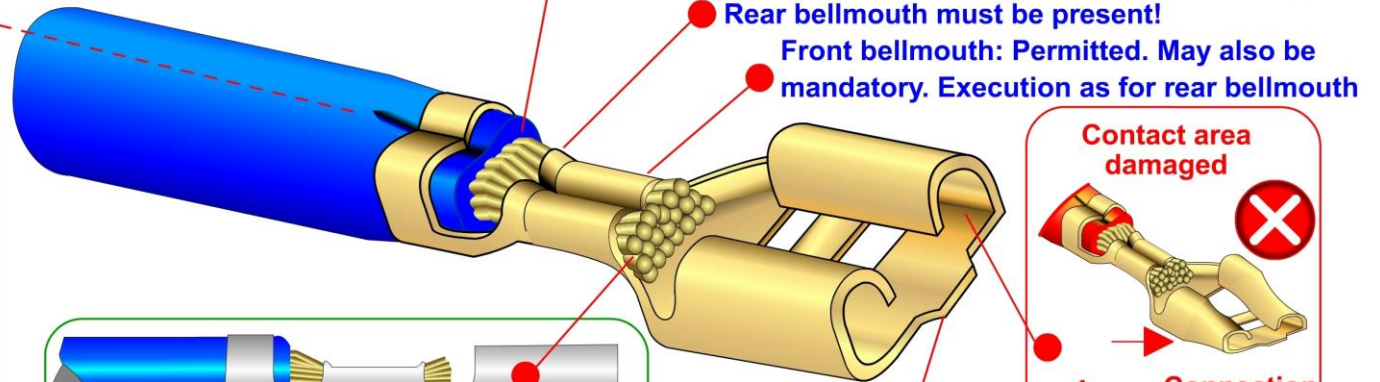
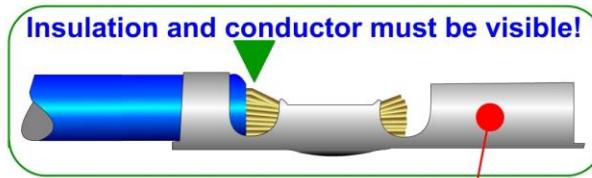
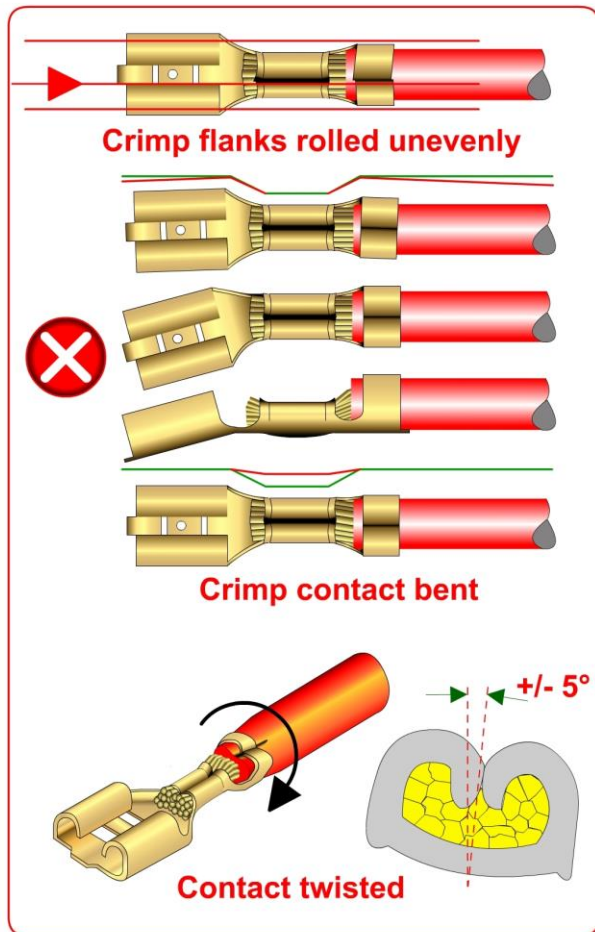
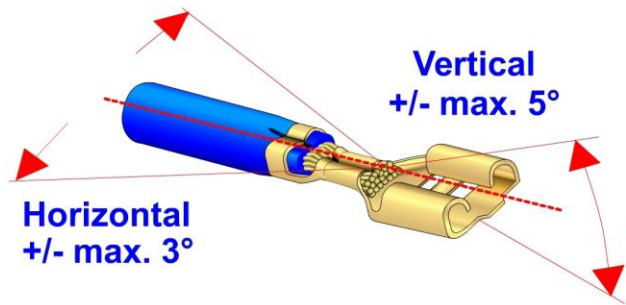
(1) Length of the wire crimp area (e.g.): 5.0 mm	<b>5,00</b>
(2) Distance between wire crimp (WC) and insulation crimp (IC): (e.g.) 2.0 mm: 2 = 1 mm. We know that in the gap between DC and IC insulation and stranded conductor must be visible. This means we take half of the distance between WC and IC.	<b>+ 1,00</b>
(3) The conductor protrusion after the wire crimp must be in a range of 0.1 mm to max. 0.5 mm. This means we add another 0.2 mm to our stripping length.	<b>+ 0,20</b>
<b>Calculated stripping length in mm:</b>	<b>6,20</b>
<b>Adjustment:</b>	<b>+ X,XX</b>



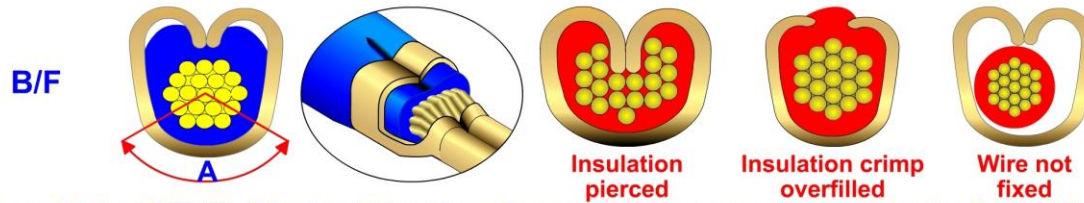
**Important:** The actual setting of the stripping length depends on the stripping behavior of the insulation. This corrective value (adjustment) must be determined in a stripping test and also adjusted during ongoing production if necessary!



12.1.2 VISUAL INSPECTION – OVERVIEW

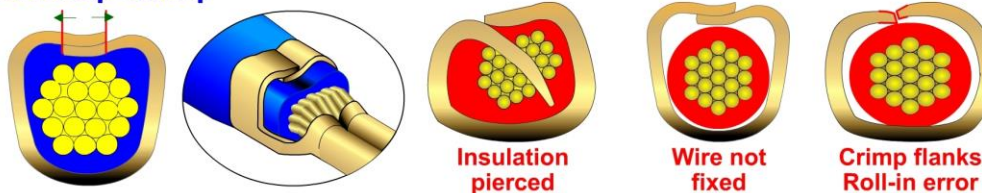


### 12.1.3 VISUAL INSPECTION - INSULATION CRIMP



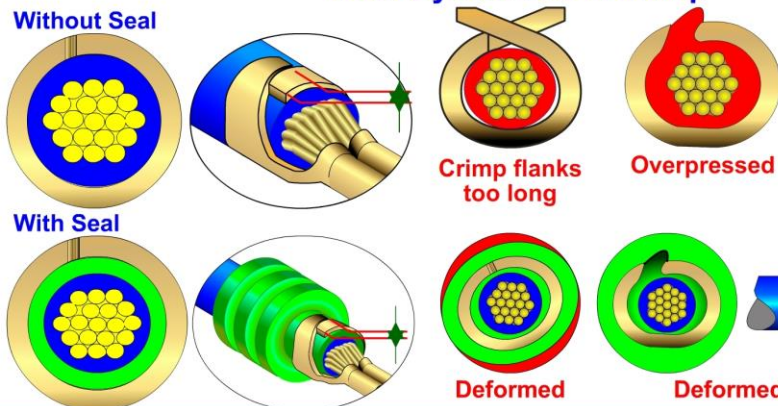
At least one third or 120° (3) of the insulation circumference must be covered by the crimping flanks. The ends of the crimping flanks may penetrate the insulation but not pierce it. No individual wire strands may be damaged

#### Overlap Crimp



The overlap of the crimp flank ends (3) must at least equal the contact material thickness.

#### The Asymmetric O-Crimp

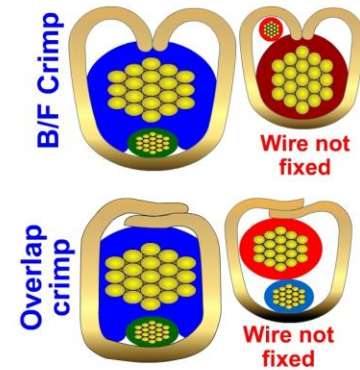


The overlap of the crimp flank ends (3) must at least equal the contact material thickness.

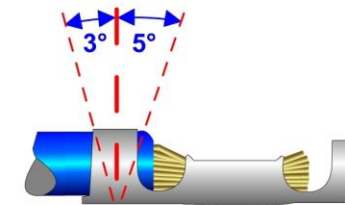
#### Symmetric O-Crimp with Seal



Overlapping of the crimp flanks (3) is not permitted. The circumference of the crimp flanks must not exceed 360°.



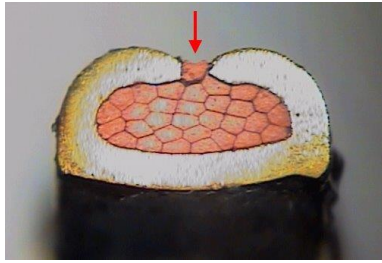
In case of double crimping with different cross sections and/or outer diameters, the "smaller" cable must ALWAYS be at the bottom!



Positional Deviation (Tilting) of the Insulation Crimp Flanks

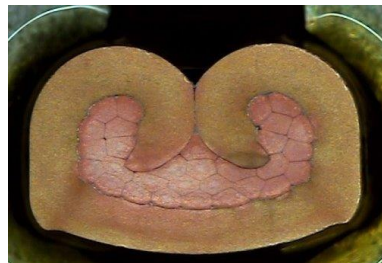


12.4.11 MICROGRAPHS OF FAULTY SAMPLES



**Example:** If a crimp contact is not closed, there is of course no support height or support angle as a result. In the following pictures, the main error is mentioned and not the resulting consequential errors.

The crimping area is overfilled! Wrong assignment of crimp contact to conductor cross-section. The crimp contact is too small!



**Crimp connection OK**

No voids and completely, uniformly filled wire crimp area. Complete, non-uniform, honeycomb deformation of the individual wires. Pressure points and deformations on the inner surface of the crimp flanks and the crimp base.

Fig. 1

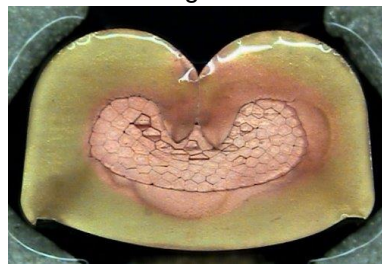


Fig. 2

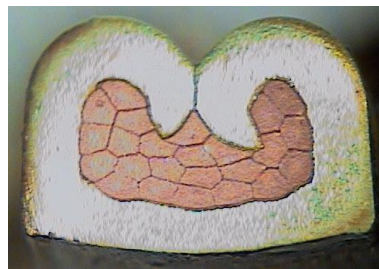


Fig. 3

**Error:** Crimp flanks roll in too far

**Assignment error:** The nominal cross-section of the wire is **too small** for the crimp contact!

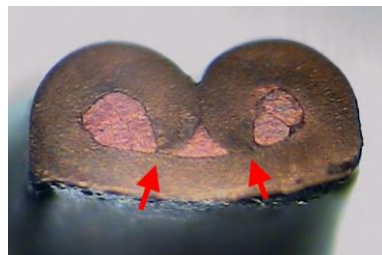


Fig. 4

The crimp flanks are too long and too close to the crimp barrel wall, touching or penetrating the crimp barrel wall.



Fig. 5

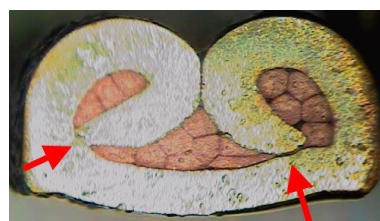


Fig. 6

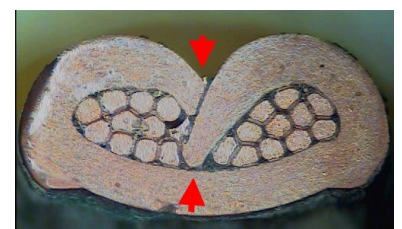


Fig. 7

**Error:** Crimping area open and overfilled

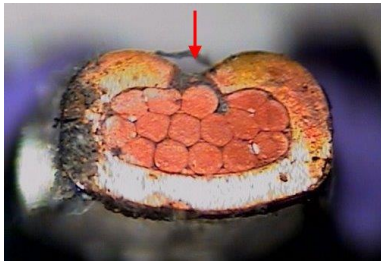


Fig. 8

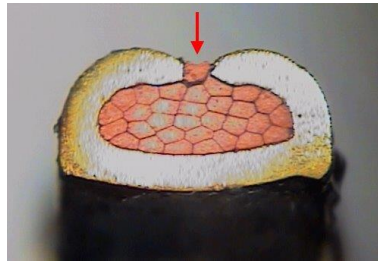


Fig. 9

**Assignment error:**

The nominal cross-section of the wire is **too large** for the crimp contact!

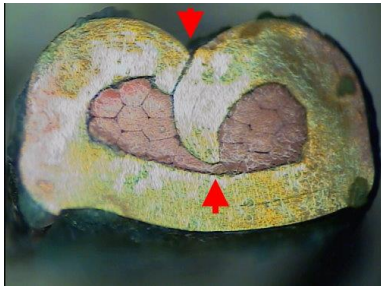


Fig. 10

**Error: No support height - No support angle**

Since the crimp contact is twisted on the anvil, the right crimp flank rolls in much earlier than the left crimp flank and almost touches the crimp base. If both crimp flanks rolled in at the same time, the crimp connection would be OK in terms of the cross-section.

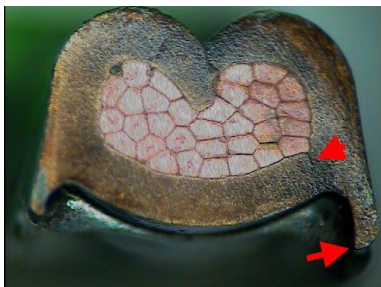


Fig. 11

**Error: Severe burr formation - cracking in the crimp base.**

Crimp flanks that are not rolled in properly indicate a worn wire crimper. Before rolling in the crimp flanks, they are compressed.

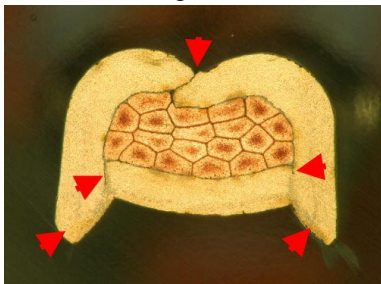


Fig. 12



Fig. 13

**Error: No supporting height**



Fig. 14

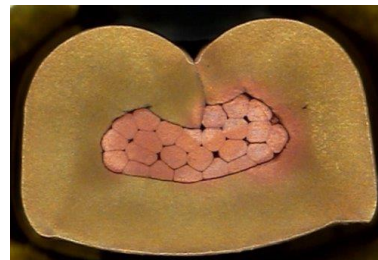


Fig. 15

**Assignment error:**

The nominal cross-section of the wire does not match the crimp contact.