

## 9,5 x 1,2 mm Tab Terminal System – Crimp Processing

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## 1. SCOPE

This specification covers the special guidelines for the application of the 9,5×1,2 mm Tab terminal system. The instructions are intended primarily for automatic or semi-automatic application of all versions for both wires and single-wire sealing. The terminals are listed by their wire ranges, crimp data and application tools in table 1 & 2. AMP® Crimping Tools shown in these tables must be used for application of the 9,5×1,2 mm Tab terminal.

The instructions can also be applied with restrictions for the application with manual crimp tools. Because of the better forming due to the slower crimp sequence the crimp heights and their tolerances as well as the crimp tensile strengths can be different against the automatic application. The loose piece terminals are listed by their wire ranges, crimp data and manual crimp tools in table 3 & 4.

For housing specific application extents, e.g. secondary locking features, the corresponding tab housing application specification is valid.

## 2. APPLICABLE DOCUMENTS

### 2.1 Customer Drawings

There is a customer drawing showing the dimensions and materials for each part number. In the case of a conflict between this document and a customer drawing the customer drawing takes precedence.

### 2.2 Application Specifications

The general guidelines laid down in Application Specifications 114-18022 and 114-18018 also apply to the crimp quality.

### 2.3 Customer Information

409-5128	Contains information about crimping machines for Miniature-Quick-Change (MQC) crimping tools
412-18103-1	Describes the Miniature-Quick-Change crimping tool
408-7424	Instruction sheet, explains how to measure the crimp height
411-18087	Instruction sheet, ERGOCRIMP™ hand tool
411-18136	Instruction sheet, ERGOCRIMP™ die-set for hand tool

### 2.4 Standards

A. DIN EN 60352-2: 2002-10	Solderless electrical connections, crimp connections, general requirements, test procedure and application notes
B. DIN ISO 6722-1 to -3	Road vehicles – Stranded conductors FLK
C. DIN 72551 T2	Road vehicles - Low Tension Cables FLK

### 3. DESCRIPTION

The terms shown below are used in the specification.

#### 3.1 Terminals with Insulation Crimp

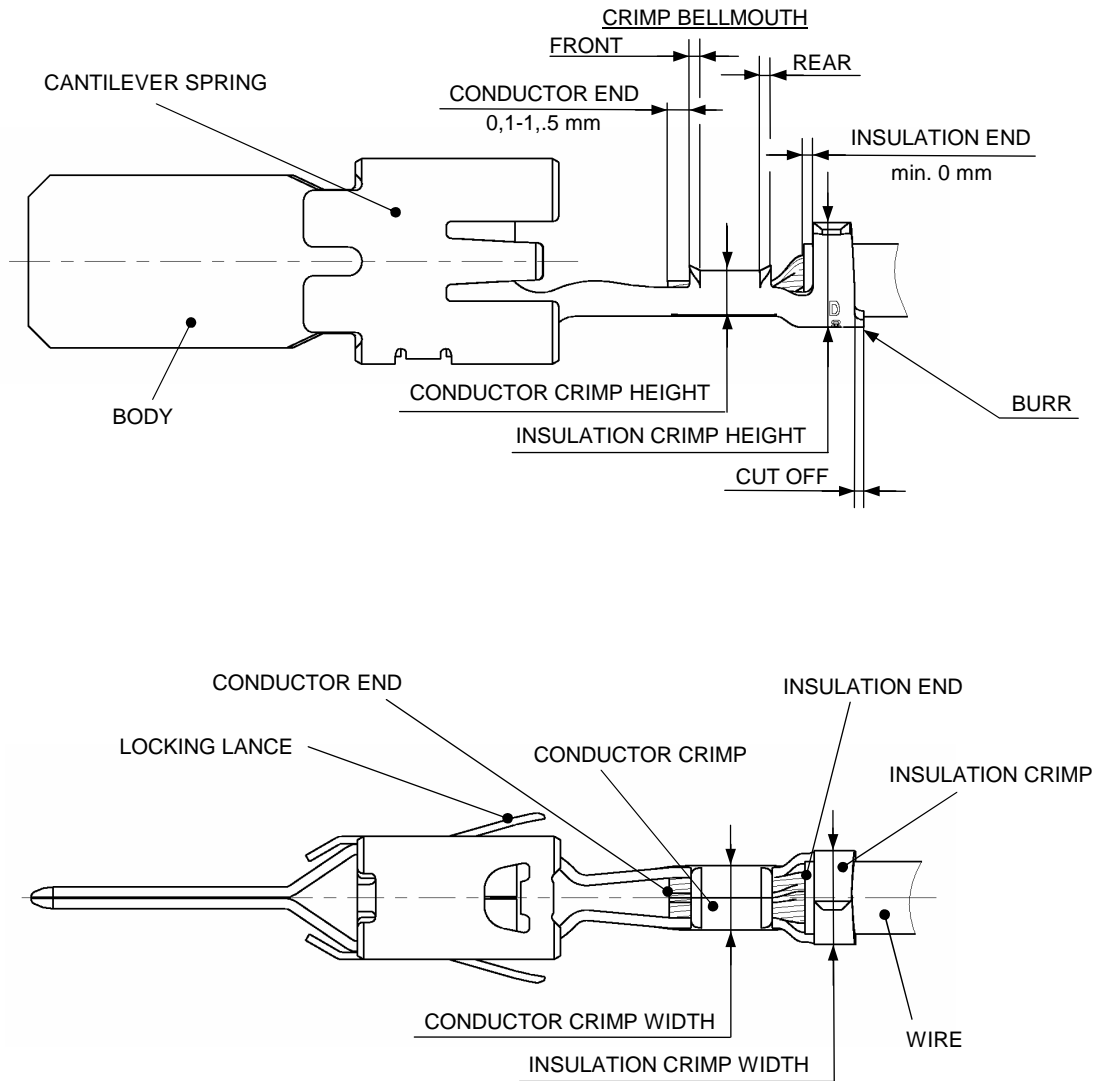


Figure 1

### 3.2 Terminals with Crimp for Single Wire Seal

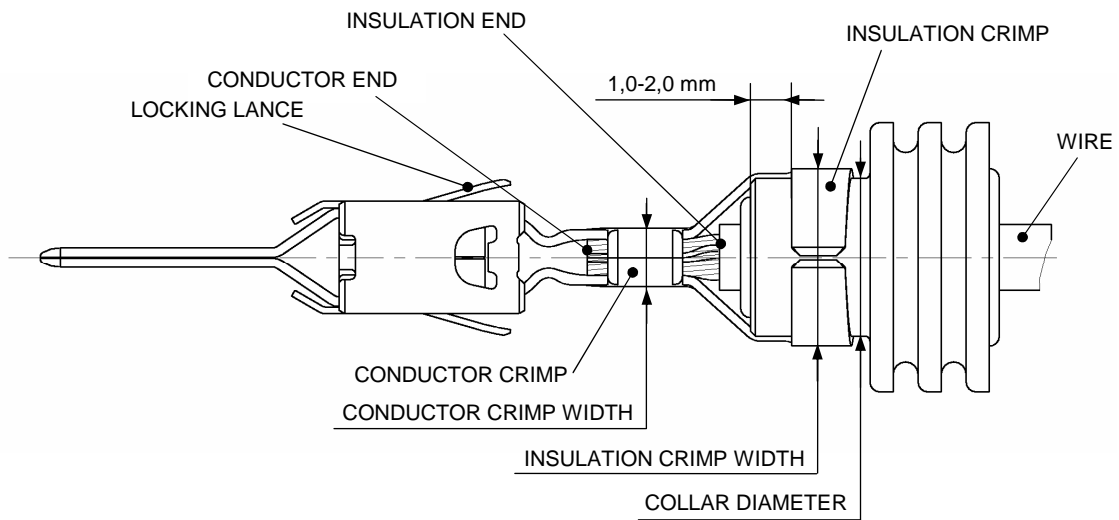
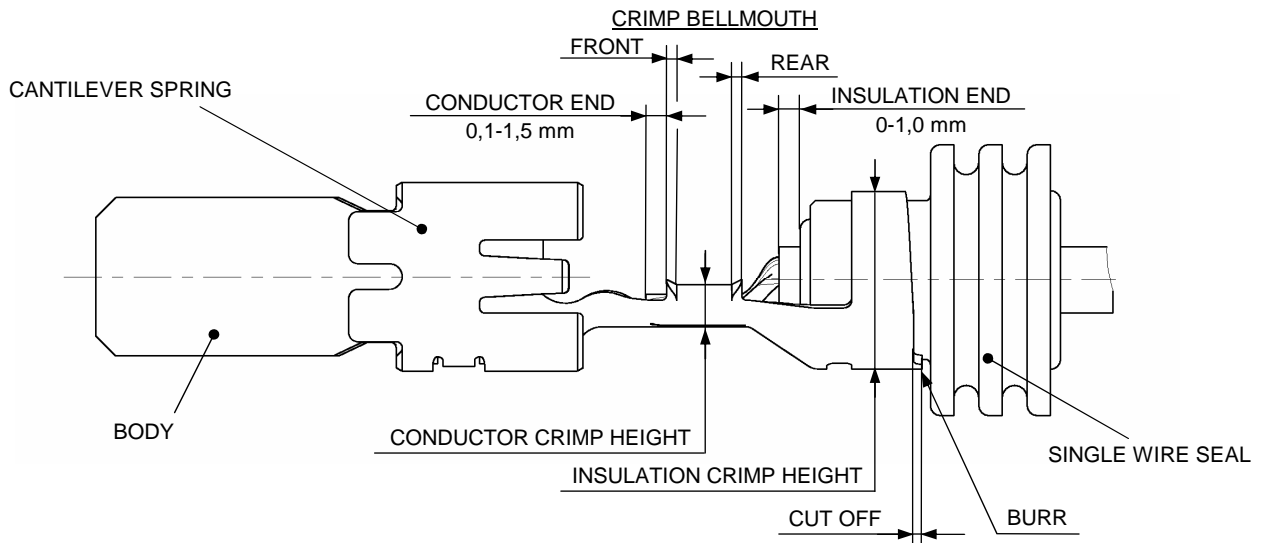


Figure 2

### 3.3 Identification of Terminals

Part number, texts and barcodes are printed on the label placed on each corrugated reel and on the corrugated shipping box.

## 4. REQUIREMENTS

### 4.1 Wires

#### A. Selection

The contacts and single-wire seals are designed for FLK conductors to DIN ISO 6722 Part 1-3 (formerly DIN 72551 Part 2). Other wires require the approval of the Engineering Department. Single terminations are preferred. Double terminations within the wire range are possible with restrictions only.

#### B. Preparation

The wire must be stripped to the length shown in tables 1 & 2. Take care that the individual strands of the wire are not bent or cut off. For single wire seal application the insulation of the wire in the sealing area may not be damaged, compressed or deformed. The insulation must be clean and free of contamination.

### 4.2 Cut-off and Burr

The cut-off must be visible after crimping process. The maximum length is 0,5 mm. Any burrs at the shearing edge may not exceed 0,03 mm.

### 4.3 Conductor Crimp

#### A. Conductor Position

After crimping the end of the wire must extend 0,1 ... 1,5 mm beyond the front edge of the conductor crimp.

#### B. Crimping Data

The shape, height and width of the crimp and its wire ranges are shown in chapter 5 & 6.

#### C. Tensile Strength of Crimp Connection

The tensile strength of crimp connection must fulfil the requirements of DIN EN 60352-2. Measuring of the tensile strength is done without insulation crimp.

#### D. Crimp Bellmouth

The size of the rear bellmouth depends on the wire range:

2,5 – 6,0 mm <sup>2</sup>	:	0,6 ± 0,3 mm
6,0 – 10,0 mm <sup>2</sup>	:	0,8 ± 0,4 mm

A front bellmouth is permissible with maximum same size as the rear bellmouth.

#### 4.4 Insulation Crimp or Crimp for Single Wire Seal

##### A. Position of the Insulation End

In the case of terminals for crimping on wires the insulation end must be visible in the transition between the conductor crimp and the insulation crimp.

On one end the insulation may in no case be crimped in the conductor crimp; on the other end the insulation must extend at least to the front edge of the insulation crimp.

##### B. Crimping Data

The shape and width of the crimps and the insulation diameters are shown in table 1 & 3. Due to the large tolerances of the insulation diameters, no crimp height is specified. The tight fit of the support is to be verified by the winding test in accordance with 16h of DIN IEC 60512-8 (as specified in DIN EN 60352-2). Because of the simple handling the bend test in accordance with old standard DIN 41611-3 is recommended. For both methods, the conductor crimp is rendered inoperable.

##### C. Position of the Single Wire Seal

The insulation end of the stripped wire must be flush with the front of the single wire seal or may extend up to 1 mm. In no case the single wire seal may be crimped in the conductor crimp.

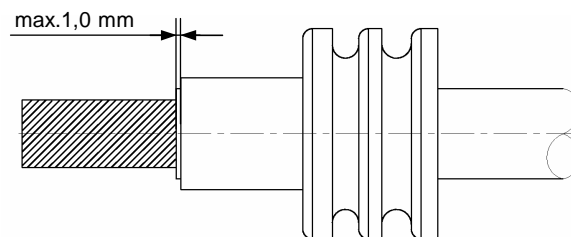


Figure 3

##### D. Crimp Data for Single Wire Seals

The shape and width of the crimps and the part number of the single wire seals are shown in Table 2 & 4. The crimp height is correctly adjusted if the crimp encloses the seal in the shape of a circle. Oval enclosure as the result of differing insulation diameters is permissible.

Tight fit is ensured when the single wire seal doesn't displace after once inserting and extracting the terminal from the housing cavity.

The single wire seal may be pressed by the crimp wings only in a way that tearing is excluded for long term.

#### 4.5 Contact Area

After crimping process neither the cantilever spring, the locking lances nor the contact body may be bent or deformed.

#### 4.6 Shape and Position Tolerances of the Crimped Terminal

##### A. Contacts with Insulation Crimp (see Figure 4)

###### Parallelism

The bottom of the conductor and insulation crimp must be parallel within a tolerance of 0,3 mm referring to the mean axis of terminal body.

###### Symmetry

The width of the insulation crimp must be symmetrical within a tolerance of 0,8 mm referring to the mean axis of the terminal body.

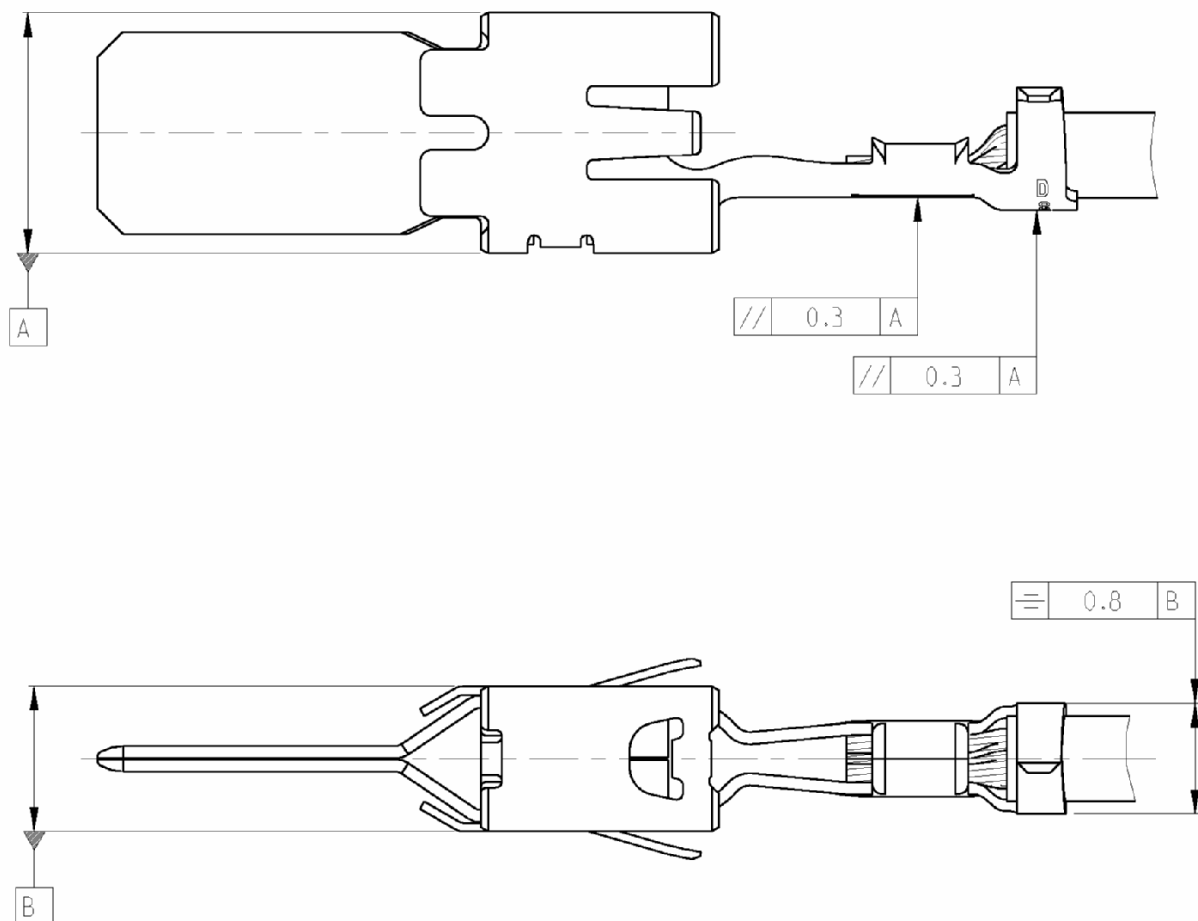


Figure 4

**B. Terminals with Crimp for Single Wire Seal (see Figure 5)**

**Parallelism**

The bottom of the conductor and insulation crimp must be parallel within a tolerance of 0,3 mm referring to the mean axis of terminal body.

**Symmetry**

The width of the insulation crimp must be symmetrical within a tolerance 0,8 mm referring to the mean axis of terminal body.

The single-wire seal must be symmetrical in both directions within a tolerance of 1,5 mm referring to the mean axis of terminal body.

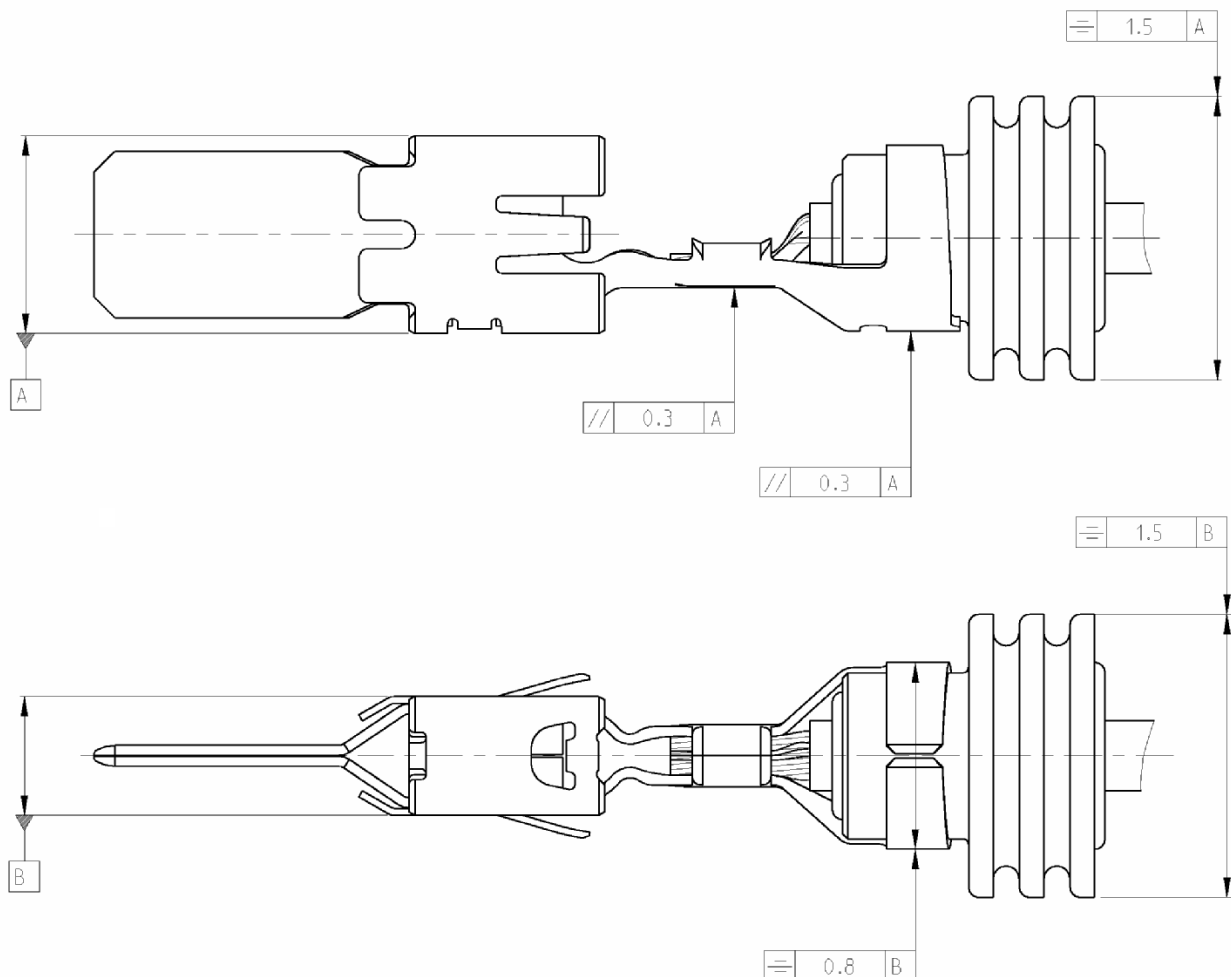


Figure 5



5. CRIMP DATA FOR AUTOMACHINE APPLICATION

Table 1

CRIMP DATA FOR TERMINALS WITH INSULATION CRIMP

ORDER NO.	WIRE SIZES [m m <sup>2</sup> ]	WIRE TYPE	INSULATION- DIA [mm]	STRIPPING LENGTH [mm]	CONDUCTOR CRIMP			INSULATION CRIMP		APPLICATOR
					WIDTH [mm] (inch)	HEIGHT [mm]	SHAPE	WIDTH [mm] (inch)	SHAPE	
					CB <sub>1</sub>	CH <sub>1</sub>		CB <sub>2</sub>		
963764	2,5	FLK	3,3-4,5	6,3±0,3	3,56 (.140")	2,41±0,05	F	5,34 (.210")	F	2-878979-2
	3,0					2,52±0,05				
	4,0					2,74±0,05				
963766	4,0 <sup>1)</sup>	FLK	4,0-5,2	7,4±0,3	4,57 (.180")	2,55±0,05	F	6,35 (.250")	F	2-878731-2
	5,0					2,72±0,05				
	5,5					2,81±0,05				
	6,0					2,90±0,05				
963768	6,0 <sup>1)</sup>	FLK	4,6-6,8	8,8±0,3	5,08 (.200")	2,98±0,05	F	7,11 (.280")	F	2-878732-2
	6,5					3,06±0,05				
	8,5					3,37±0,05				
	10,0					3,60±0,05				

1) This wire range shall be used preferred

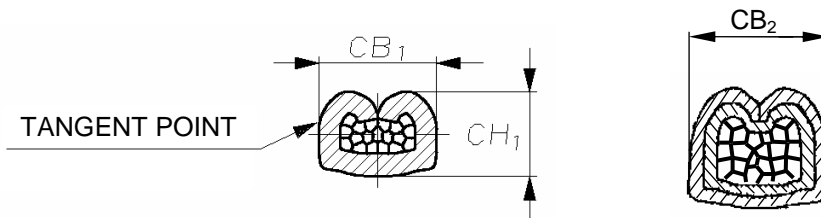


Figure 6

Table 2

**CRIMP DATA FOR TERMINALS WITH SINGLE WIRE SEALS**

ORDER NO.	WIRE SIZES [m <sup>2</sup> ]		WIRE TYPE	INSULATION DIA [mm]	STRIPPING LENGTH [mm]	CONDUCTOR CRIMP			SEAL CRIMP		APPLIKATOR	SINGLE WIRE SEAL		
						WIDTH [mm] (inch)	HEIGHT [mm]	SHAPE	WIDTH [mm] (inch)	SHAPE 1)				
						CB <sub>1</sub>	CH <sub>1</sub>		CB <sub>2</sub>					
963770	2,5	FLK	3,3-4,5	7,3±0,3	3,56 (.140")	2,41±0,05	F	10,95 (.430")	O SWS	2-878980-2	INSULATION DIAMETER	SEAL-SELECTION ACC. TO INSULATION DIA		
	4,0					2,74±0,05							4,0-4,5	VW No. 357972744
963772	4,0 <sup>2)</sup>	FLK	4,0-5,2	8,5±0,3	4,57 (.180")	2,55±0,05	F	10,95 (.430")	O SWS	2-878734-2			4,6-5,2	1355437-1 1355307-1
	6,0					2,90±0,05							5,8-6,6	1355437-2
963774	6,0 <sup>2)</sup>	FLK	4,6-6,8	10,0±0,3	5,08 (.200")	2,98±0,05	F	10,95 (.430")	O SWS	2-878735-2				
	10,0					3,60±0,05								

- 1) Crimp-shape: O SWS = O-crimp for single wire seal
- 2) This wire range shall be used preferred

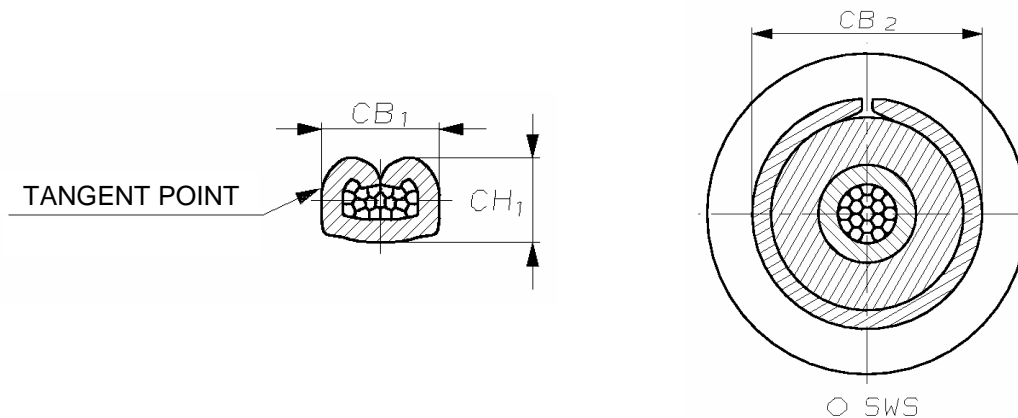


Figure 7

## 6. CRIMP DATA FOR AUTOMACHINE APPLICATION

Table 3

## CRIMP DATA FOR TERMINALS WITH INSULATION CRIMP

ORDER NO.		WIRE SIZES [mm <sup>2</sup> ]	WIRE TYPE	INSULATION DIA [mm]	STRIPPING LENGTH [mm]	CONDUCTOR CRIMP			INSULATION CRIMP		HAND TOOL
( STRIP TYPE)	LOOSE PIECE					WIDTH [mm] (inch)	HEIGHT [mm]	SHAPE	WIDTH [mm] (inch)	SHAPE	
						CB <sub>1</sub>	CH <sub>1</sub>		CB <sub>2</sub>		
(963764)	963765	2,5	FLK	3,3-4,5	6,3±0,3	3,56 (.140")	2,41±0,05	F	5,34 (.210")	F	734531-1
		3,0					2,52±0,05				
		4,0					2,74±0,05				
(963766)	963767	4,0 <sup>1)</sup>	FLK	4,0-5,2	7,4±0,3	4,57 (.180")	2,55±0,05	F	6,35 (.250")	F	734532-1 (only for 6 mm <sup>2</sup> ) (nur für 6 mm <sup>2</sup> )
		5,0					2,72±0,05				
		5,5					2,81±0,05				
		6,0					2,90±0,05				
(963768)	963769	6,0 <sup>1)</sup>	FLK	4,6-6,8	8,8±0,3	5,08 (.200")	2,98±0,05	F	7,11 (.280")	F	734533-1 (only for 10 mm <sup>2</sup> ) (nur für 10 mm <sup>2</sup> )
		6,5					3,06±0,05				
		8,5					3,37±0,05				
		10,0					3,60±0,05				

1) This wire range shall be used preferred

See Figure 6

Table 4

**CRIMP DATA FOR TERMINALS WITH SINGLE WIRE SEALS**

ORDER NO.		WIRE SIZES [m m <sup>2</sup> ]	WIRE TYPE	INSULATION DIA [mm]	STRIPPING LENGTH [mm]	CONDUCTOR CRIMP			SEAL CRIMP		HAND TOOL	SINGLE WIRE SEAL
( STRIP TYPE)	LOOSE PIECE					WIDTH [mm] (inch)	HEIGHT [mm]	SHAPE	WIDTH [mm] (inch)	SHAPE 1)		SEAL- SELECTION ACC. TO INSULATION DIA
						CB <sub>1</sub>	CH <sub>1</sub>		CB <sub>2</sub>			
(963770)	963771	2,5	FLK	3,3-4,5	7,3±0,3	3,56 (.140 <sup>u</sup> )	2,41±0,05	F	10,95 (.430 <sup>u</sup> )	O SWS	-	Isolations- Ø / INSULATION DIA 4,0-4,5 4,6-5,2 5,8-6,6 VW No. 357972744 1355437-1 1355307-1 1355437-2
		4,0					2,74±0,05					
(963772)	963773	4,0 <sup>2)</sup>	FLK	4,0-5,2	8,5±0,3	4,57 (.180 <sup>u</sup> )	2,55±0,05	F	10,95 (.430 <sup>u</sup> )	O SWS	-	
		6,0					2,90±0,05					
(963774)	963775	6,0 <sup>2)</sup>	FLK	4,6-6,8	10,0±0,3	5,08 (.200 <sup>u</sup> )	2,98±0,05	F	10,95 (.430 <sup>u</sup> )	O SWS	-	
		10,0					3,60±0,05					

1) Crimp-shape: O SWS = O-crimp for single wire seal

2) This wire range shall be used preferred

See Figure 7

## 7. DEAD END PLUGS ASSEMBLY

Dead end plugs are available to seal cavities which are not occupied by terminals. The position of the dead end plug in the terminal's cavity is shown in Figure 8:

Order-No: 1355437-4

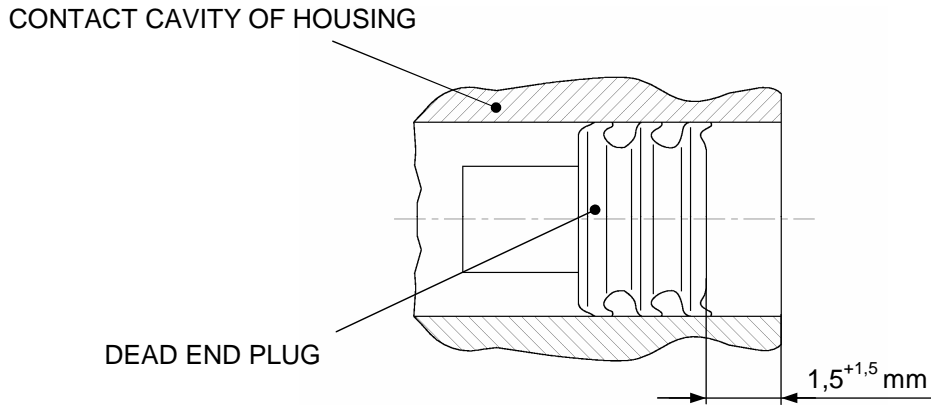


Figure 8

## 8. AUXILIARY TOOLS

### 8.1 Extraction Tool

To extract the terminals from housing cavity.

Order-no.: 726551-1

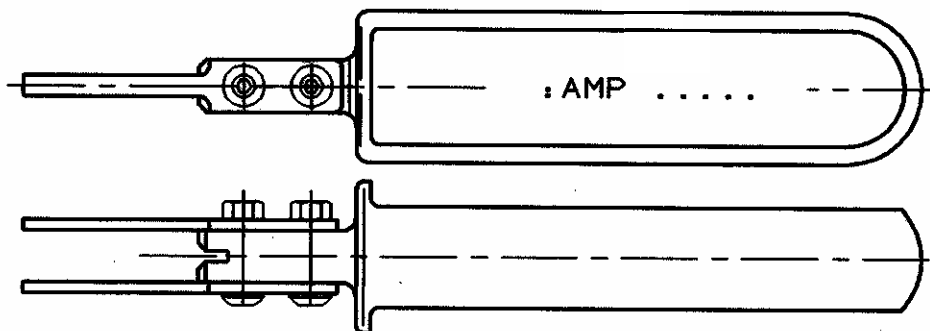


Figure 9