

FUJITSU Component Connector

Standard Operating Instruction of Contact

Crimping for FCN-360 Connector

FUJITSU COMPONENT LIMITED

Introduction

For cable wire termination to connectors, there are various type in connection method. FUJITSU FCN-360 series connector has "crimping connection" type product to connect wire to the connector contact.

This method is also called "pressure connection". Applying mechanical force to two conductors makes tight metal contact, that secures permanent connection by maintaining contact due to residual stress or bonding force between metals.

Crimping connection has an advantage to have uniform quality in wire connection. To keep this superior feature, it is important to operate crimping work under proper conditions. Failing to carry out work management might cause unexpected defect.

This operating instruction mainly focuses on check of crimped contact. Have a read through it before starting crimping work, and use it for the work management as a standard operating instruction.

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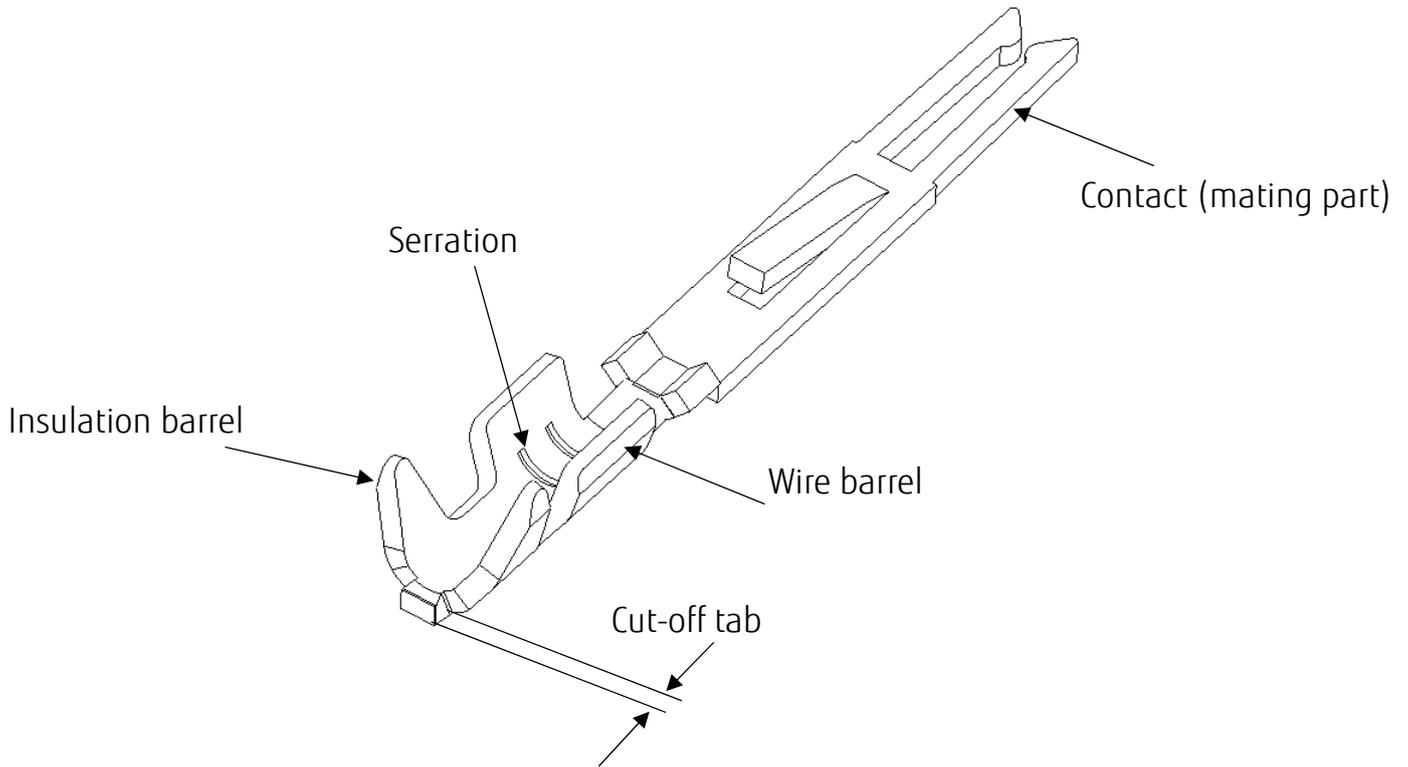
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1. List of Tool, Wire, Crimp height

Hand crimping tool part number	Contact part number	Crimp height (mm)	Wire size (AWG#)	Section area (mm ²)	Strip length (mm)	Outer diameter (φ)
FCN-363T-T005/H (for standard wire)	FCN-363J-AU	1.25~1.30 1.20~1.25 1.15~1.20	#24 #26 * #28	0.20~0.24 0.13~0.16 0.088~ 0.096	3.0~4.0	1.2
FCN-363T-T011/H (for thick wire)	FCN-363J-AU/S	0.85~0.95 0.75~0.85 0.73~0.81 0.66~0.74	#22 #24 #26 * #28	0.30~0.40 0.20~0.24 0.13~0.16 0.088~ 0.096	3.0~4.0	1.0~1.6

The hand crimping tools, when delivered, have been already adjusted for use with the specified contacts and asterisked (*) wires.

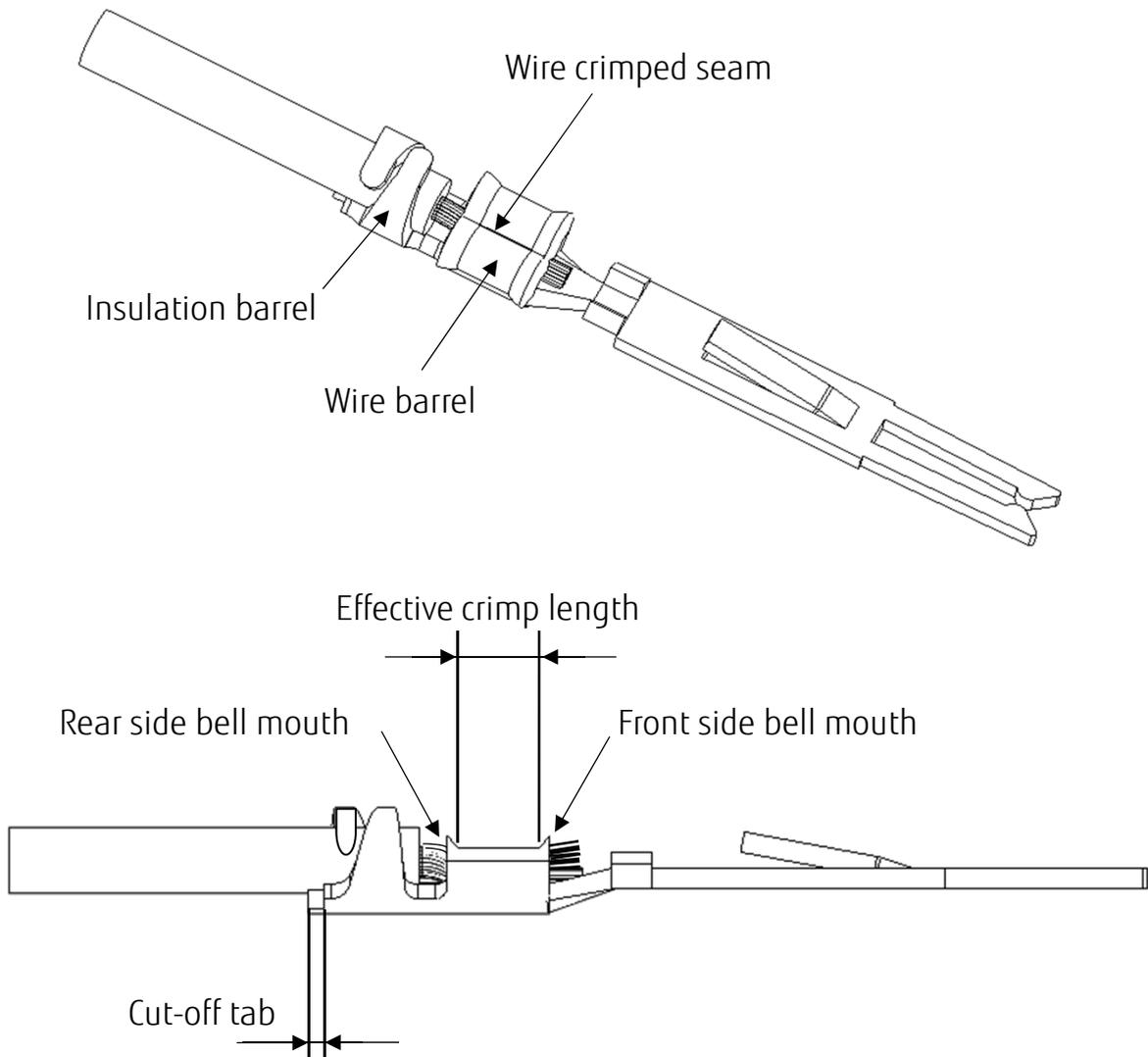
2. Contact configuration and description



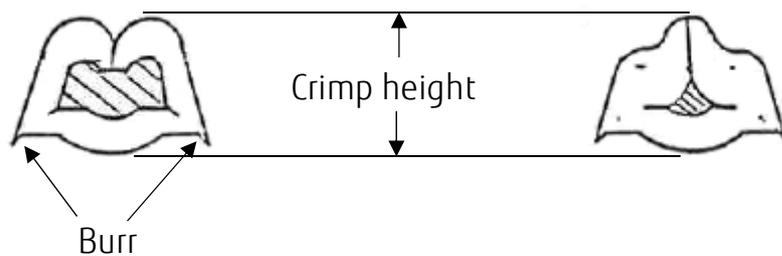
Insulation barrel	:	Wire insulation holding part
Wire barrel	:	Wire crimping part
Cut-off tab	:	Remains after the contact cut-off
Serration	:	Concave portion inside the wire barrel

3. Crimped contact configuration and description

3.1 Crimped contact configuration and description



3.2 Cross section of crimped contact

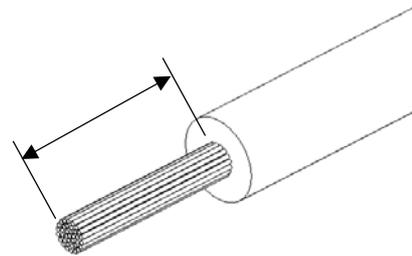


4. Wire strip

4.1 Strip length

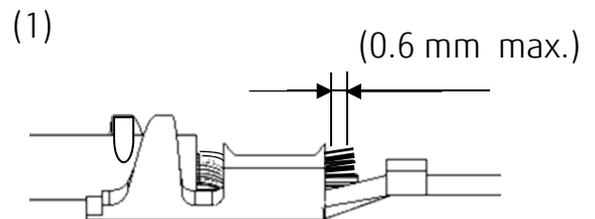
To determine wire strip length, use the wire barrel length as the base and check results in crimped contact shape

[Rough Indication] Strip length : 3.0~4.0mm

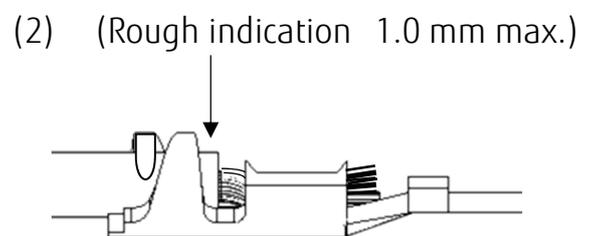


[Crimped contact shape]

(1) Wire should be visible from above



(2) Insulation should protrude from the barrel



4.2 Stripped condition

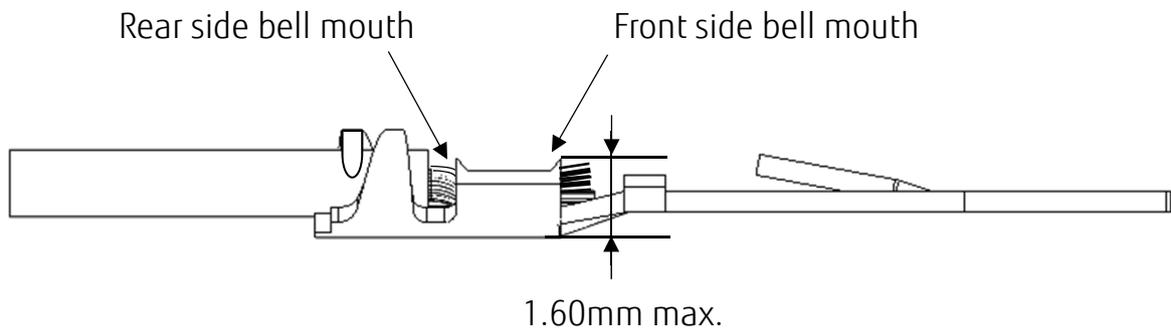
[Good item] Wire has no flaws, and is aligned cleanly

[Inferior item] Do not use wire that has breaking nor scraggly alignment

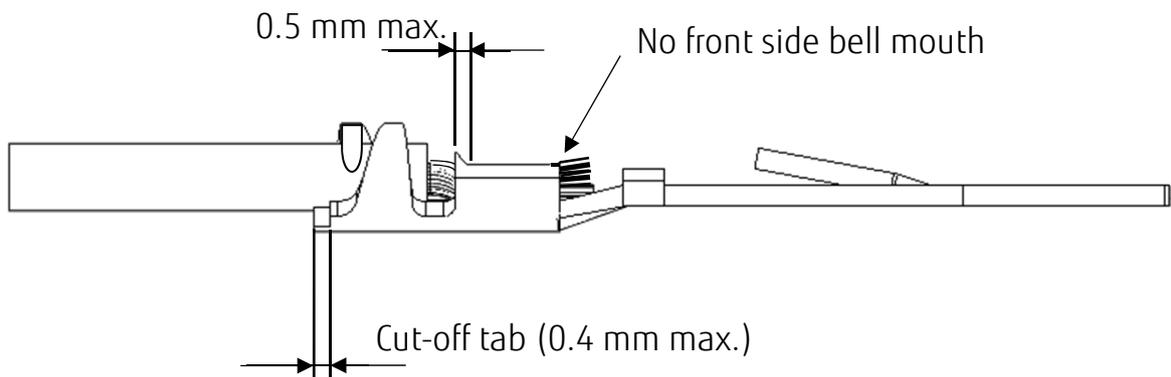


Inferior item

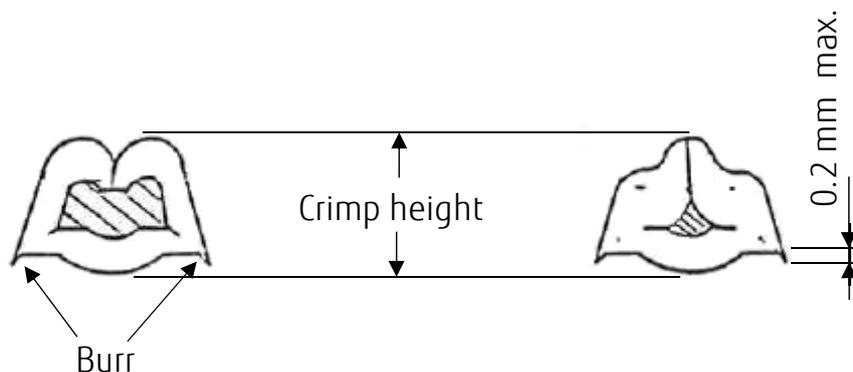
5. Bell mouth, Cut-off tab, Burr



- (1) Size of bell mouth at both sides should be same, or rear side should be bigger
- (2) Height of bell mouth at front side should be 1.60mm max. otherwise it would interfere with housing and contact retention might get lower
- (3) Be sure to make rear side bell mouth to avoid wire breaking
- (4) Even if no front bell mouth, it is good item. In this case, size of rear side bell mouth should be 0.5mm max.



- (5) Size of cut-off tab should be referred to above dimension as a rough indication.
- (6) Concerning to burr size, one side should not get too big



6. Tensile strength and measurement method

6.1 Tensile strength management

Tensile strength has close relation with crimp height. If crimp height is within standard specification, tensile strength should also conform to the specification.

Tensile strength after crimping gets lower than that of wire itself because crimping work makes cross section of the wire smaller, also the wire gets off due to a gap between the barrel and the wire in case crimping is insufficient.

Tensile strength becomes different even with the same crimp height depending upon wire configuration, wire constituent and so on even in the same wire gauge (AWG). Following table shows standard specification (reference) of tensile strength for each wires.

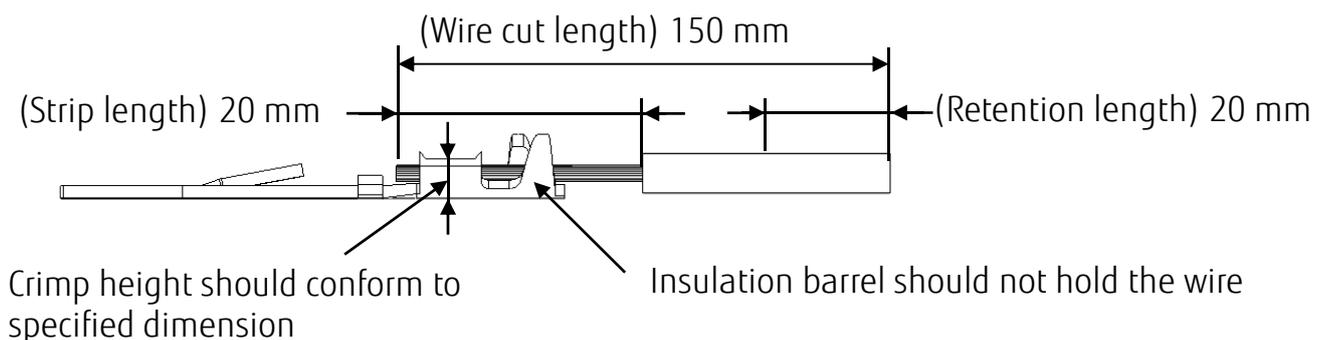
(Reference value)

Wire gauge	Tensile strength (Kg max.)	
	FCN-363J-AU (for standard wire)	FCN-363J-AU/S (for thick wire)
AWG#22	-	3.5
AWG#24	3.18	3.18
AWG#26	2.04	2.04
AWG#28	1.36	1.36

6.2 Measurement method

Measure tensile strength when the wire breaks or comes off crimped part, by attaching following test sample to a tensile tester and pulling it at specified speed (25.4mm/min., or 100mm/min.). Use a spring scale when the tensile tester is not available. Number of the test sample should be 10pcs min.

Test sample



7. Crimp height and measurement method

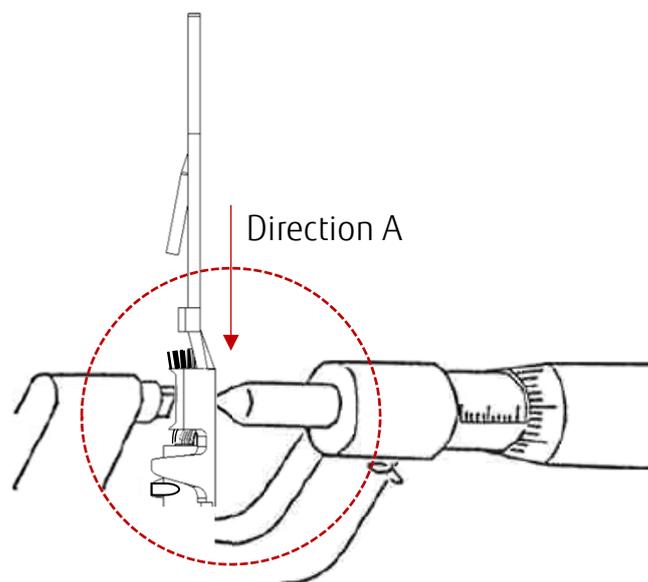
7.1 Crimp height management

Crimp height has close relation with tensile strength. If crimp height is within standard specification, tensile strength should also conform to the specification.

Crimping work operator and manager should make measurement periodically to make sure crimp height is appropriate. Be sure to check crimp height to keep good operation and to avoid breakage of instruments

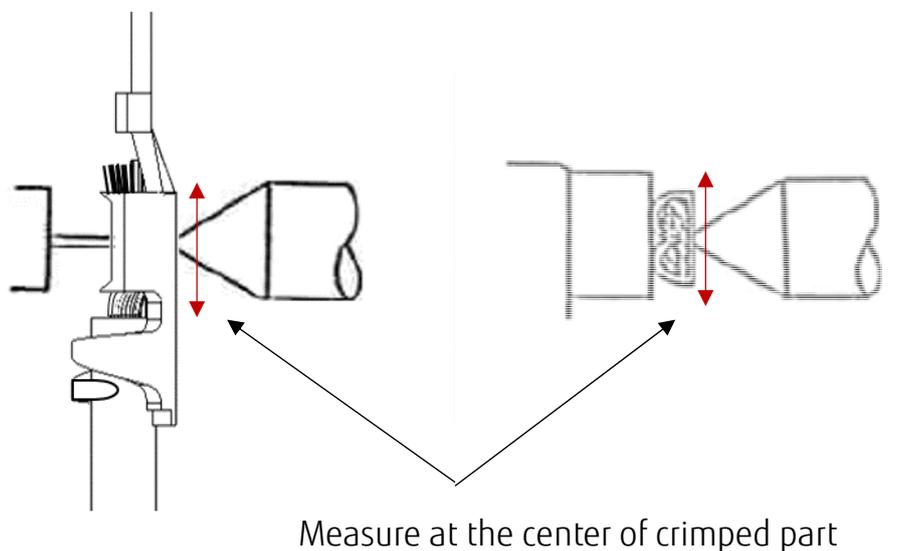
7.2 Measurement method

Measure crimp height at the center of crimped part by using a micrometer as below.



○ Enlargement

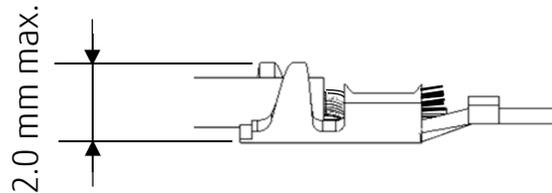
○ Enlargement (direction A)



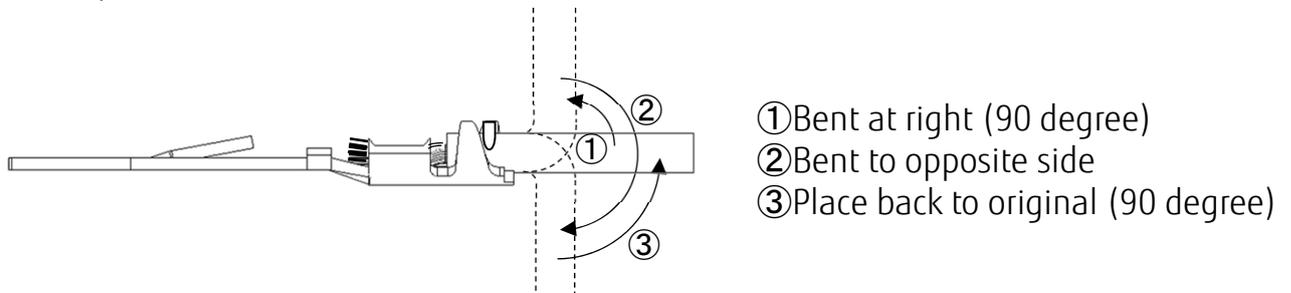
8. Insulation barrel shape and check method

Determine height of insulation barrel by checking followings.

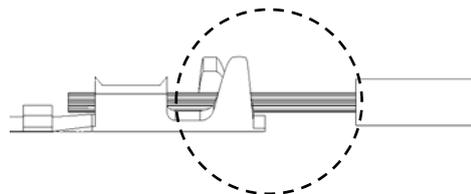
- (1) Max. height of insulation barrel crimped is determined by dimension of the area on the housing, where the contact is loaded to



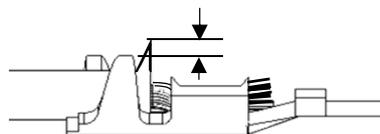
- (2) Insulation should not go out of alignment (not move to right in following figure) when the crimped wire is bent as below



- (3) Confirm the insulation barrel does not make any damage on the wire by crimping it with longer strip length.



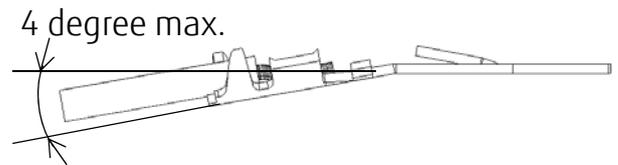
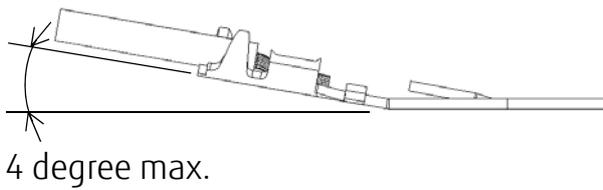
- (4) Confirm the crimped wire does not break in the insulation barrel when the contact is fixed and the cable wire is pulled.
(5) Too much crimping might break the wire in the insulation barrel.
(6) When the insulation tip is at higher position than the insulation barrel, it might get hard to load the crimped contact into the housing.



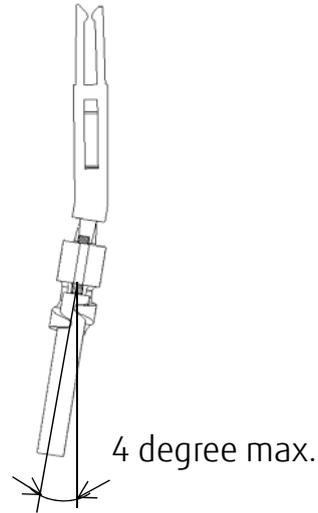
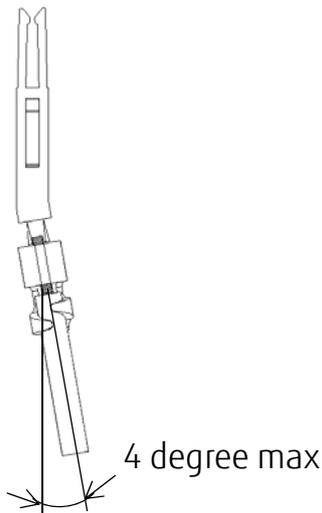
9. Crimped contact shape

Use these standard specifications below just as rough indications for crimping operation since they are not uniform depending upon type of wires. Basically the crimped contact should be judged good item if it can be loaded lightly to the housing and does not have any deformation on it after loading

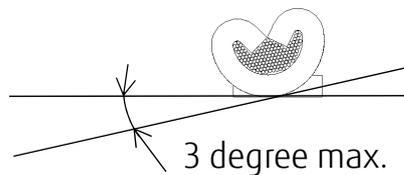
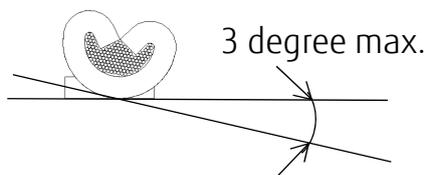
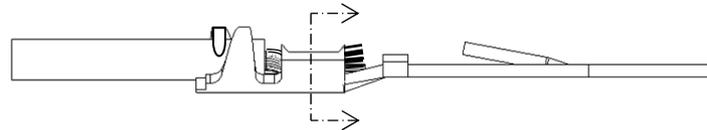
(1) Bend-up, Bend-down



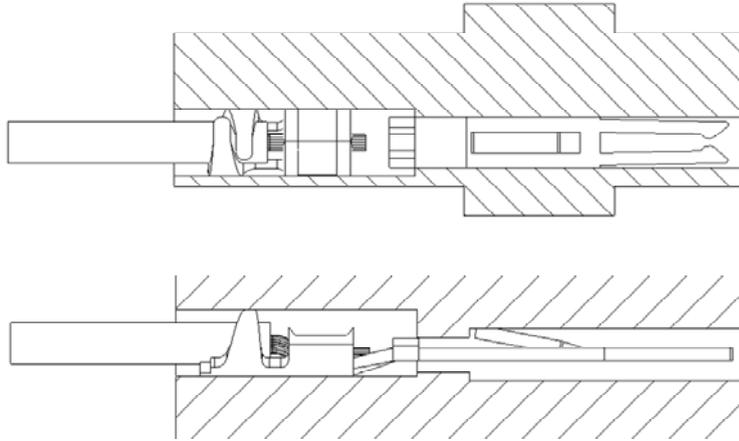
(2) Twist



(3) Rolling



10. Cross section of housing with the contact loaded



11. Check points

Check following points on the crimped contact before starting the crimping operation and also during this operation periodically.

- (1) There is no deformation on the contact (mating part)
- (2) Crimp height conforms to the standard specification
- (3) Bell mouse is made properly
- (4) Wire is visible at both sides of wire barrel
- (5) Wire protruded dimension is appropriate
- (6) There is no core wire drop nor protrusion at the wire barrel portion
- (7) Wire insulation is visible at between the wire barrel and the insulation barrel
- (8) Wire barrel does not have gig burr
- (9) Cut-off tab size is appropriate
- (10) There is no flaws, that might affects function, at the wire barrel and the insulation barrel
- (11) Crimped contact can be loaded lightly into the housing
- (12) Tensile strength conforms to the standard specification

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