

APPLICATION SPECIFICATION

Pico-Lock 1.5mm PITCH W/B CONN. H=2mm R/A TYPE

This application specification is written in English and Japanese.

本取扱説明書は、英文及び和文で記載されております。

English 英文 : Page 1~25

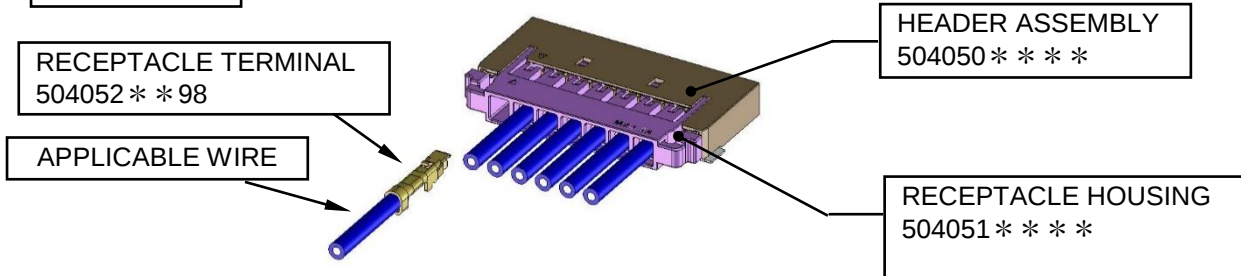
Japanese 和文 : Page 26~50

[1.APPLICATION]

	Product Name		Part Number
HARNESS SIDE	RECEPTACLE HOUSING		504051 series PKG : Plastic Bag
	RECEPTACLE TERMINAL		504052 series PKG : Reel
	APPLICABLE WIRE (※)	504052 series	AWG#24~32
	APPLICABLE CRIMP DIE MODEL No. (※)		5781163000
ONBOARD SIDE	HEADER ASSEMBLY	R/A TYPE	504050 series PKG : Embossed Tape

Structure

※ Please refer to Application Tooling Specification (ATS) for further details.



— Before using —

- Be sure to read the following precautions before using connector.
- Keep this manual handy for later reference.
- The displays and illustrations shown in this manual are for illustrative purposes only, and may differ somewhat from the actual items they represent.
- The contents of this manual are subject to change without notice.

THIS DOCUMENT CONTAINS INFORMATION THAT IS PROPRIETARY TO MOLEX ELECTRONIC TECHNOLOGIES, LLC AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION

REVISION DESCRIPTION				APPLICATION SPECIFICATION FOR PICO-LOCK 1.5 W/B SINGLE-ROW R/A SMT GOLD PLATING					
CHANGE NO.	767520								
REVISED BY	TOMOMY	DATE	2023/10/26	DOC TYPE	DOC TYPE DESCRIPTION		DOC PART	SERIES	
REV APPR BY	AIDA	DATE	2023/11/01	PS	APPLICATION SPECIFICATION WORD		001	504051	
INITIAL RELEASE				CUSTOMER		DOCUMENT NUMBER		REVISION	SHEET
INITIAL DRWN	THANYU	DATE	2012/03/29	GENERAL MARKET		AS-504051-001		C	1 OF 50
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[2.Instructions]**2-1. Product exterior**

- ① There is no influence in the product performance though the black spots or bubbles etc. might be confirmed to the plastic part of this product and the shade might be different (discoloration by secular distortion etc.).
- ② This product has some gold plating areas and marks can sometimes appear in gold plating, but this has no impact to the function of this product.
- ③ Resin and terminal plating can have some changes in color after reflow but this has no negative impact to the function of this product.
- ④ Connectors may be damaged by certain mounting machines. Please confirm before use.

2-2. Applicable wire and crimp tooling

- ① Guarantee is void when product is used with wire not conforming with product specifications.
- ② Guarantee is void when product is used with tooling not specified by Molex.
- ③ The recommended electric wire is tinned plating. Please confirm separately about the use of other electric wires.

2-3. About safekeeping before harness process and the surface mount process

- ① Please keep product with the delivery being in a state. And please safekeeping it under normal temperature and humidity where avoid direct sunlight.
- ② Please do not allow external force to be applied during product storage.
- ③ During handling avoid shocking or dropping products as it may result in product damaging.
- ④ First use of older manufacturing lots is recommended.
- ⑤ Keep product in original packaging before using.
- ⑥ This product should be inspected for appearance and solder performance when used after expiration date.

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2-4. Harness process and surface mount process instruction.

- ① Please confirm products and crimp machine, crimp condition, an applicable wire are equal to product drawing, crimp specifications before work.
- ② Beware of unintended damage caused by dust, debris, or foreign objects before using this product. It cause that cannot satisfy the insertion performance to the housing and electric performance.
- ③ Please do not touch the terminal by a direct hand.
- ④ When a terminal gets twisted or tangled before or after crimping, please do not pull it forcibly. The terminal may become damaged.
- ⑤ Avoid damaging product during work in process or in finishing goods. Product can get damaged and cannot function properly as a connector.
- ⑥ Please do not put a product and an harness half-finished goods in the following condition.
 - Garbage
 - Corrosive material
 - Corrosive gas
 - High temperature and high humidity
 - Direct sunlight

The above-mentioned condition causes poor contact and the corrosion of the terminal and the insulation performance deterioration of the housing.
Please keep for kind attention of the safekeeping to boxes.
- ⑦ Please do not add loads to connector and harness half-finished goods during production, packaging, transportation, or storage. It may cause damage and result in poor connector performance.
- ⑧ When pulling the electric wire of harness half-finished goods, it may cause contact defectiveness by adding load to contacts, crimp parts and lock parts. When performing the guidance wiring of the electric wire, don't exceed forces the connector can't withstand.
- ⑨ Do not damage receptacle crimp housing and a crimp terminal intentionally. Product performance can be affected by this condition.
- ⑩ When opened packing, please use it up on the day. Moisture absorption or drying cause the deterioration of materials by neighboring atmospheres. When cannot use it up, please do sealing of a bag again, and keep it in a box.
- ⑪ Please be careful to injuries in the edges part such as metal parts when handling a connector.
- ⑫ To avoid injury please be careful in handling of paper between terminals and metal carrier on reels.
- ⑬ Our evaluation is with the use of standard rigid PCB. When to be used on flexible printed circuits (FPC) please evaluate first.
- ⑭ Please solder it in all terminal departments and the nail part. A non-soldered part may become a cause of defect.
- ⑮ In the case of changing our recommended board pattern size or design, please consult in advance because such changes may cause defects.

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- ⑩ Please do not load the connector. For example, movement of PCB in the state where connector mating was carried out causes damage.
- ⑪ Please do not stack PCB after connector has been soldered to PCB.
- ⑫ Please follow the conditions of specifications, when connecting connector with a soldering iron. For conditions beyond specifications, the connector may be damaged.
- ⑬ When use solder iron, please do not use excessive solder and flux. It cause poor in contact performance by solder rise and flux rise.
- ⑭ There may be changes in color of the resin part and the case that occurs due to twisting in the terminal plating parts due to flow conditions, but there no degradation in product performance.
- ⑮ Do not coil electric wires around the housing or the gap of the housing lock during harness processing and harness product packing. In addition, please do not pull an electric wire by force when an electric wire has coiled itself around the housing and the gap of the housing lock. If wire becomes tangled this may cause terminal damage. Please remove wires in such a way that load is not applied to housing lock.

2-5. About use in the machinery.

- ① Vibration of an electric wire or printed circuit board due to machinery vibration or rotation must be avoided to prevent connector damage at the connector point of contact. Decrease in contact performance due to abrasion may be caused. Therefore, please fix electric wires and printed circuit boards in machinery and arrange for measures to hold resonances in check.
- ② Do not fix printed circuit boards only using connectors. They must be fixed or supported by other means.
- ③ Please do not touch a terminal, fitting nails in board mount front and back.
- ④ Please perform the connector an insertion withdrawal along a fixed axis. The diagonal insertion withdrawal causes the damage of the connector.
- ⑤ After mating, do not intentionally apply force to or rotate a connector. Such force may cause connector destruction or solder cracking.
- ⑥ If an electric wire is pulled after mating a connector, it may damage contact or crimping points or the lock region and result in contact defectiveness. When performing the guidance wiring of the electric wire, the external force that it is impossible for a connector to do please do not increase it. Keep wire loose to avoid excessive stress.
- ⑦ When withdrawing the connector, please hold wire lightly and remove the lock securely using the entire finger.
- ⑧ Plastic lances can be damaged after removing crimp terminals. Without fail please use a new crimp housing when repairing a connector.

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2-6. About rating / a performance standard.

- ① Please use it within the rating / the standard of product specifications.
- ② Product is not designed for usage in “hot-plug” applications where power is on.
- ③ When considering use of the connector, please confirm that machinery design standards are satisfied.
- ④ In order to avoid short circuits, please do not allow connectors to contact metal objects.
- ⑤ Current more than the rated amount should not be used.

2-7. About for use.

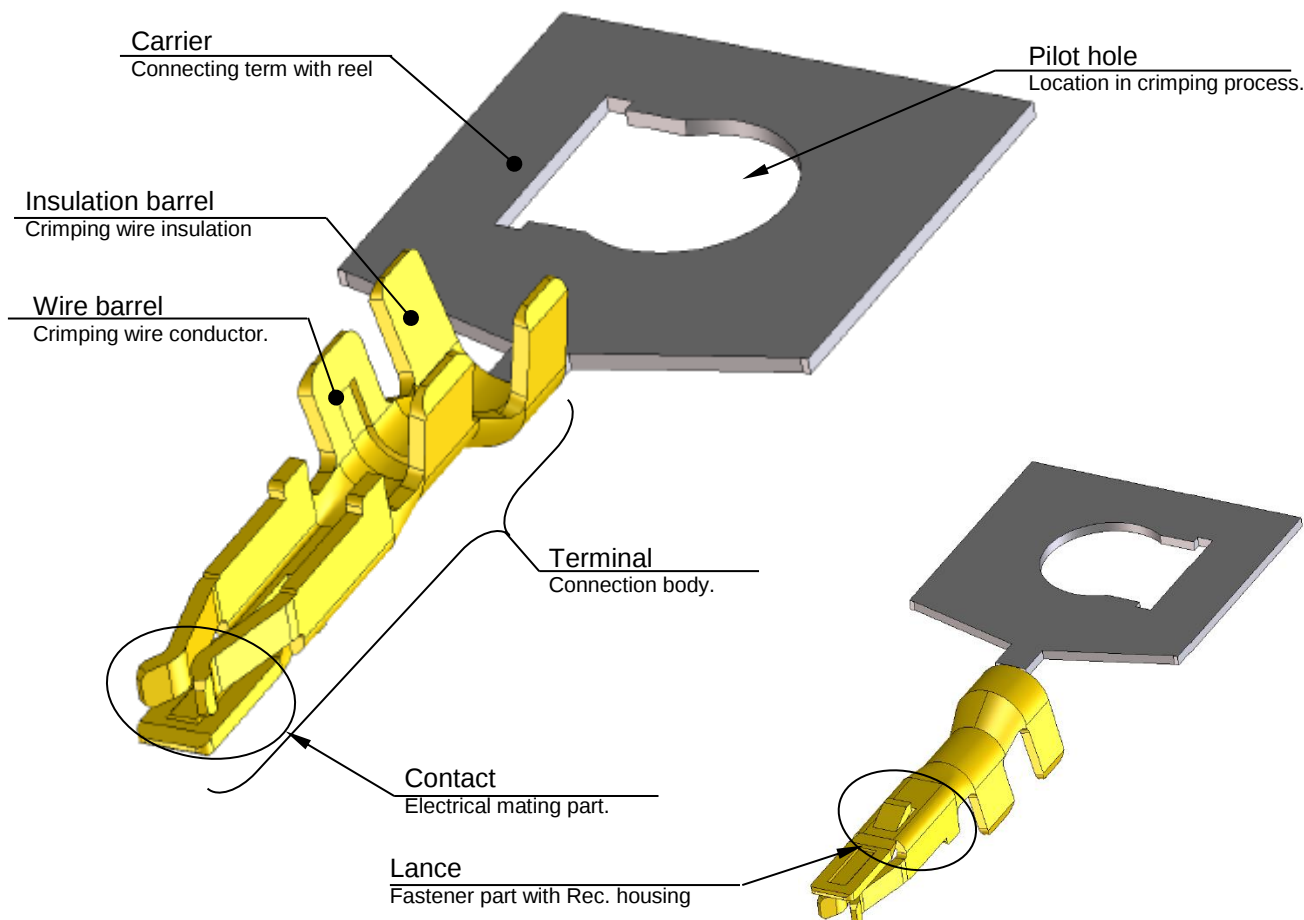
- ① This product is not designed and produced for the machine used under the condition concerning life or for using to system. If you use this product for special use for example medicine, aeronautics space and atomic power etc., please confirm us before using.
- ② Please contact us without fail before using if you plan to using to automobile and ship etc. (We will consider that the product can be applied to specification condition.)
- ③ Please avoid using outside the room or under similar environment.

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【3. The name of each part & explanation】
3-1. Receptacle crimp terminal: 504052 series.

Shows Reel state



※ Please refer to sales drawing for product form and its dimensions.

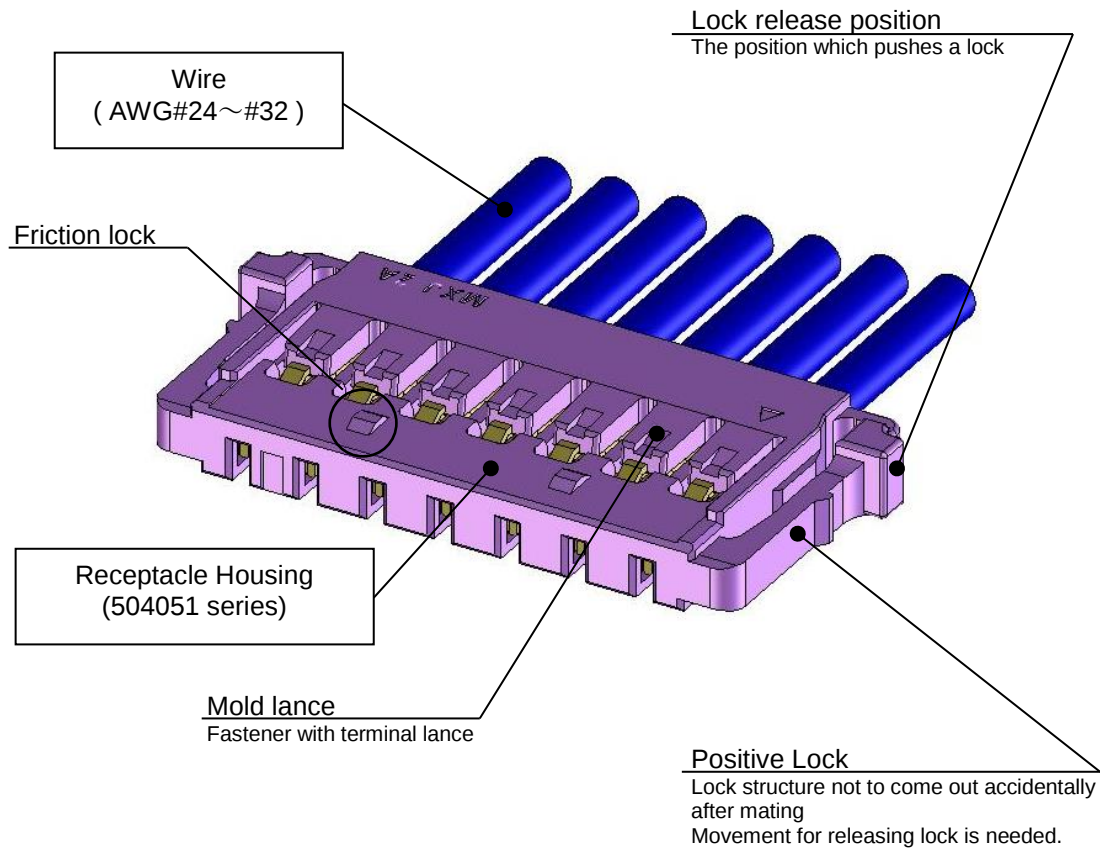
—APPLICABLE WIRE AND APPLICABLE CRIMP DIE MODEL—

Part Number	WIRE SIZE	CONDUCTOR SPEC.
5040520098	AWG#24~28	TINNED COPPER WIRE
5040520298	AWG#30~32	
APPLICABLE CRIMP DIE MODEL No.		5781163000

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3-2. Recptacle housing: 504051 series

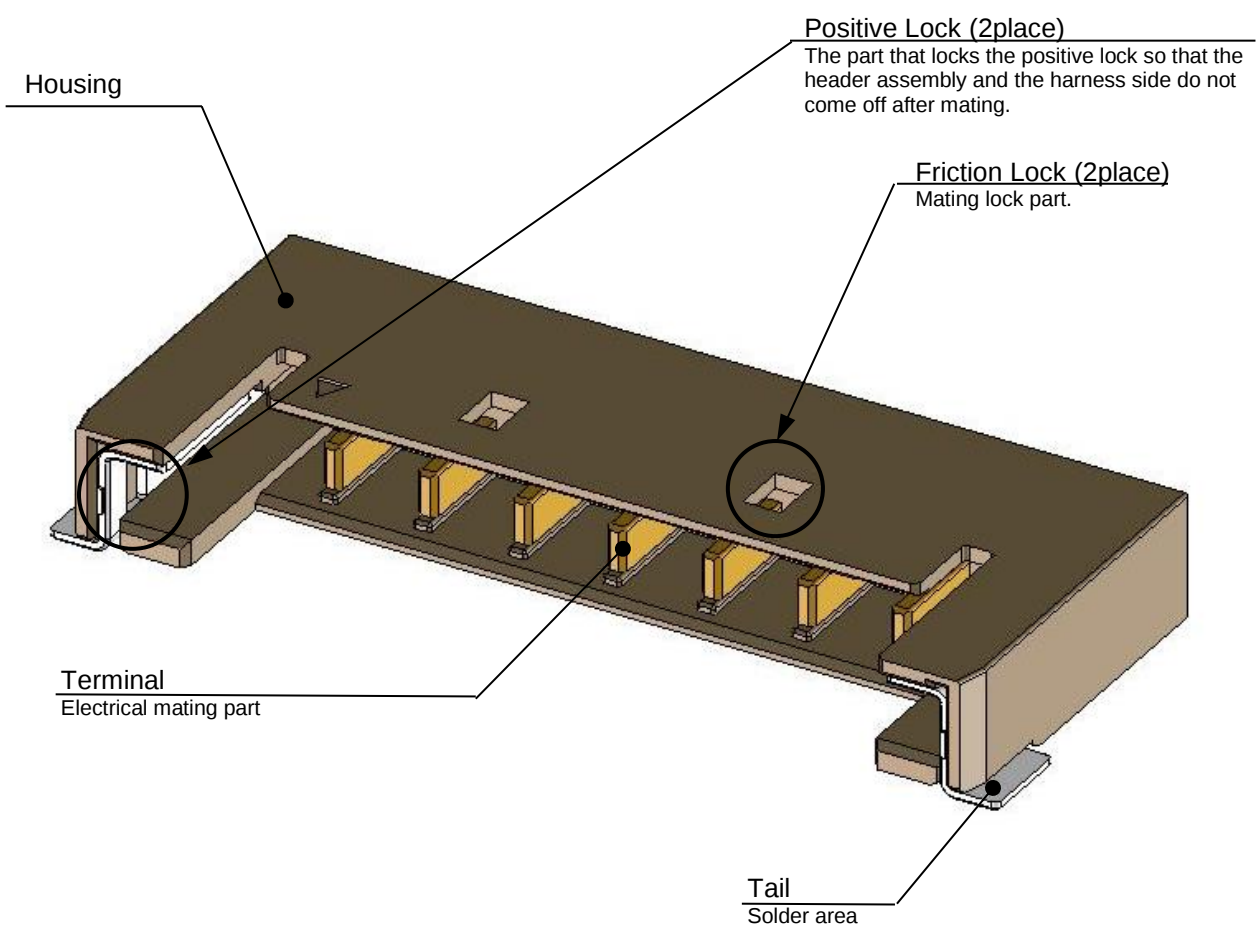


※ Please refer to sales drawing for product form and its dimensions.

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3-3. Header Assembly: 504050 series(RIGHT ANGLE TYPE)



※ Please refer to sales drawing for product form and its dimensions.

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【4. The confirmation item of crimping wire】
4-1. The appearance before crimping.

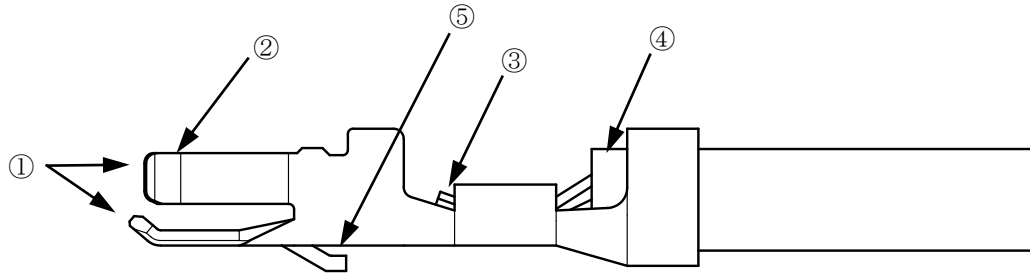
When using the loose terminals products before crimping, please make sure that there is no deformation of the crimp Terminal.

If you have something caught between the terminals, please do not remove them forcibly.

Please refer to sales drawing for product form and its dimensions.

4-2. The appearance after crimping.

Shows the after crimping confirmation item as follows. Please refer to ATS for specified crimp height, pull testing, and applicable wire specifications.



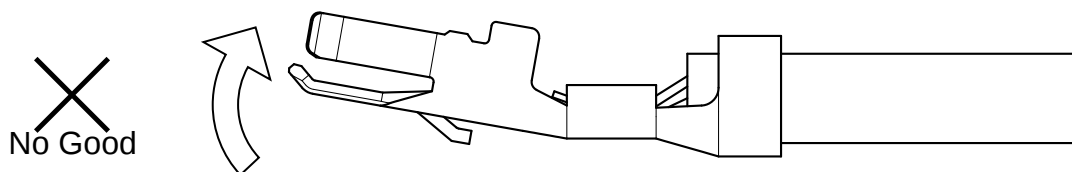
- ① No visible terminal damage.
- ② No visible spring contact area damage or deformation.
- ③ All wire strands are in conductor barrel.
- ④ The insulator part of the electric wire is located wire barrel and insulation barrel midway.
- ⑤ No damage with terminal lance.
- ⑥ No damage with appearance. (Dirt / foreign objects)

4-3. The non-conformity item.

Please warn the arrival crimping delinquent to show as follows in particular.
It affect the insertion work and affect a product function.

① Bend up

This makes difficult to insert the terminal into the housing and may cause terminal butting, decrease of terminal retention force or contact failure.

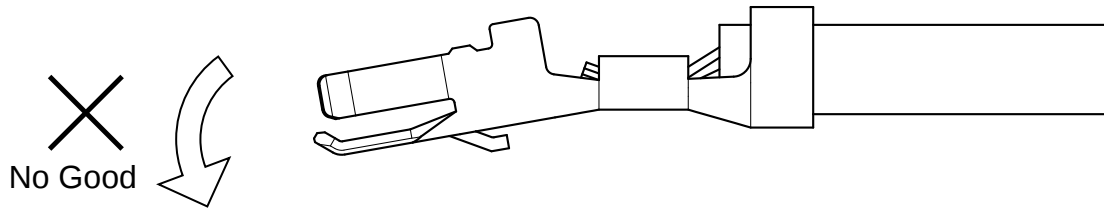


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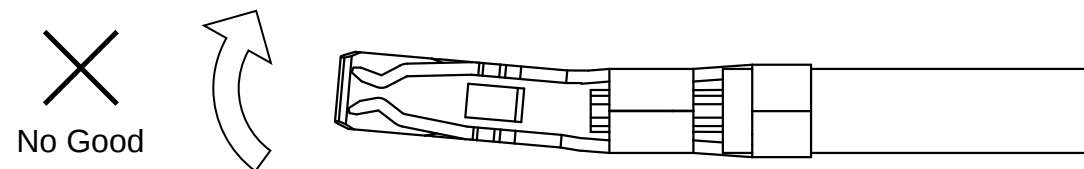
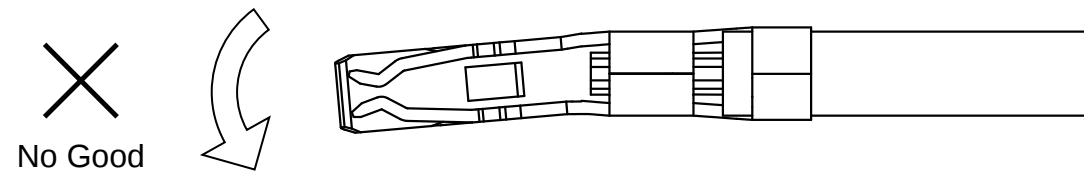
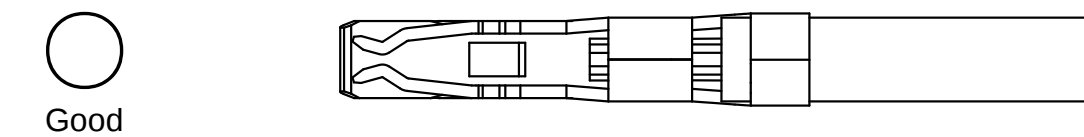
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② Bend down

This makes difficult to insert the terminal into the housing and may cause terminal butting, decrease of terminal retention force or contact failure.


③ Twist

This makes difficult to insert the terminal into the housing and may cause terminal butting, decrease of terminal retention force or contact failure.

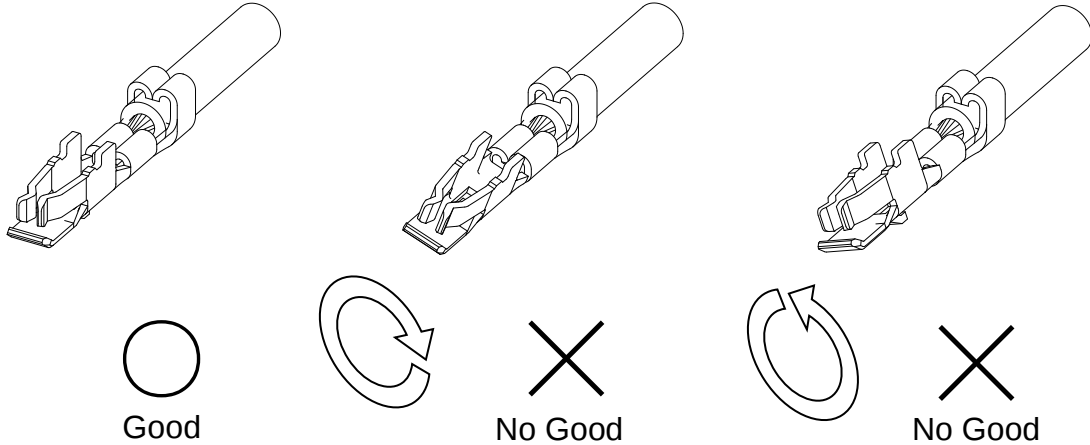


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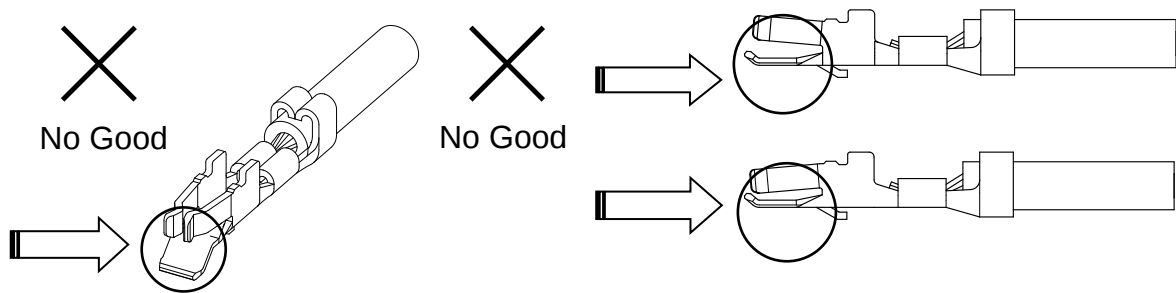
④ Rolling

This makes difficult to insert the terminal into the housing and may cause terminal butting, decrease of terminal retention force or contact failure.



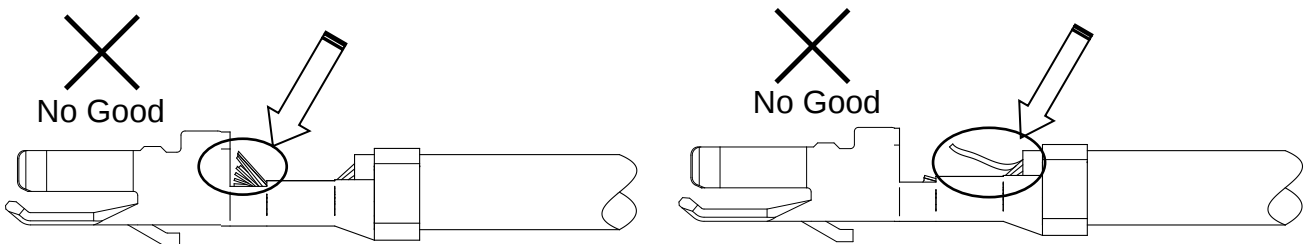
⑤ Smashed and transformation with contact box

This makes difficult to insert the terminal into the housing and may cause terminal butting, decrease of terminal retention force or contact failure.



⑥ Wire strands are not in conductor barrel

This makes difficult to insert the terminal into the housing and may cause contact failure.



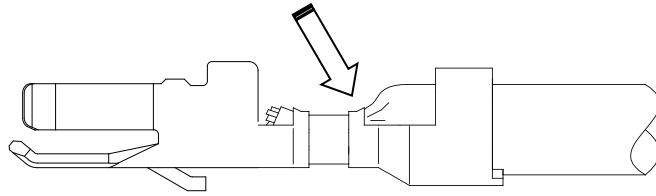
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⑦ Crimping position: Too front

This caused cutting conductor, decrease Wire crimping strength and disconnection by crimping insulator.

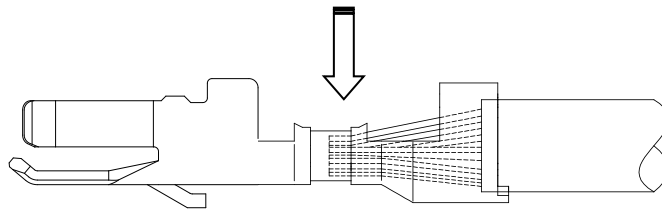
✗
No Good



⑧ Crimping position: Too back

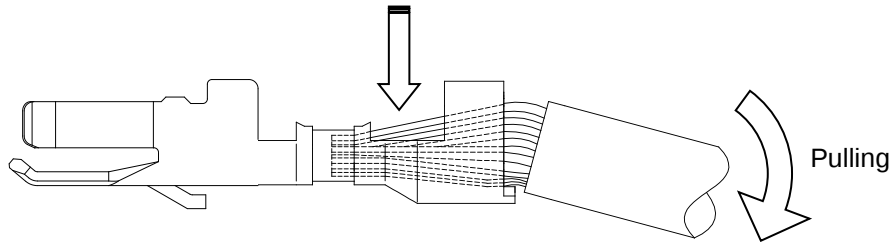
This caused decrease wire crimping strength and disconnection by not crimping margin.

✗
No Good



Wire Insulation is not crimping completed, wire insulation fall out easily when wire is pulled.

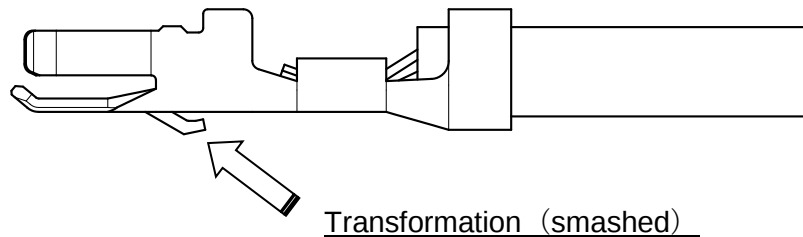
✗
No Good



⑨ Not transformation with terminal lance

Fastener tension of the terminal become insufficient and causes the fall of the terminal retention -force.

✗
No Good



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INITIAL RELEASE				CUSTOMER	DOCUMENT NUMBER		REVISION	SHEET
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[5. Package for over crimping-wire and package]

Please check for damaged terminal and wire insulation. When bundle up wires.
Please do enough examination about quantity of packing per 1packing-box.
Do not over pack crimped wires in box as there is risk of damaging terminals.

Instruction

- ※When bundling wires, please be careful wire is not added excessive force constantly.
- ※When packing bundle of harness after processing in package box, in order that force etc. is not added to connector for long time by pile, please put product on the other side alternately (cross shape) fitting box. (Fig.5-2)
- ※ Please lay buffer etc. on package box underside. In order that force by piling package boxes etc. is not added to connector for long time, please lay buffer etc (Fig.5-2)

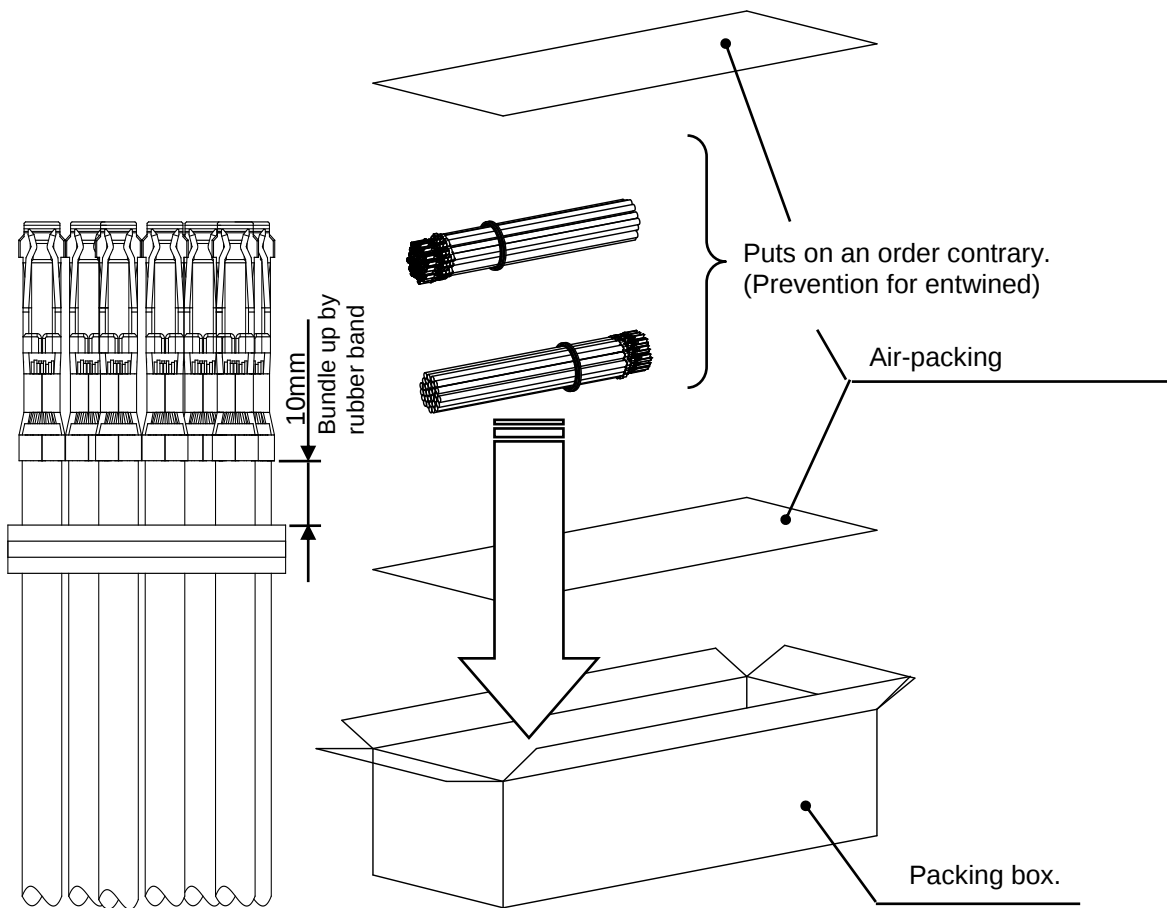


Fig. 5-1

Fig. 5-2

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【6. Harness processing (crimping wire insertion method in Receptacle housing)】

Show insertion procedure and instructions (※) of the crimping wire as follows.

6-1. Insertion crimping wire

- ① Hold receptacle housing by pinching right and left side.
- ② Please pick up the cable at about 10mm position from the crimp-end with a finger lightly.

Instruction

- ※ It might be hard to insert terminal so that wire is easy to bend if wire is picked at distance from terminal.
- ※ Distance value depends on wire guage, UL, etc. Please confirm it with the wire that you chosen before you use it.

- ③ Picking with terminal lance part toward center of receptacle housing, please insert terminal slowly and straightly till the tip of terminal touch housing (with force of around 1.6~2.4N). **(Fig.6-1)**

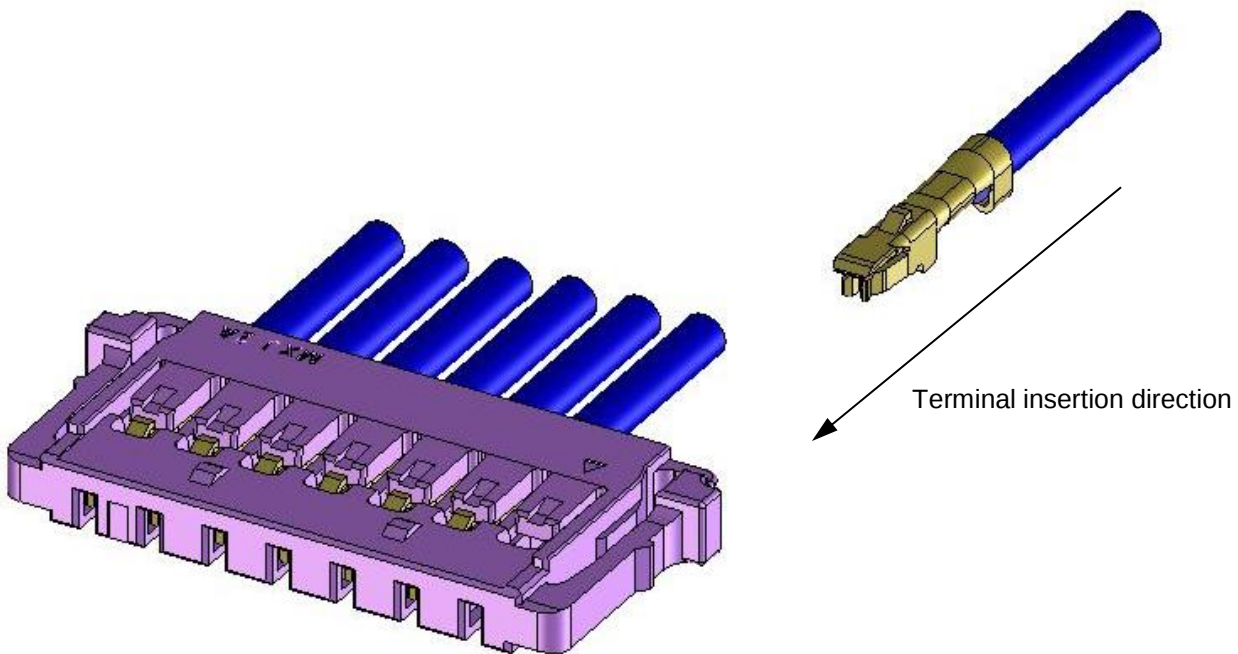


Fig. 6-1

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Instruction

- ※ If crimping height and width are too large, there is a problem for the terminal insertion.
Please work by prescribed crimping height.
(Please refer to Application Tooling Specification (ATS))
- ※ If you feel unusual characteristics such as scratches on the way to insertion, please do not attach it forcibly. After confirming there is no damage of terminal or receptacle housing, it can be inserted again. If damaged, do not use the terminal and receptacle housing.
- ※ Please be careful of the terminal directions of insertion to receptacle housing. **(Fig.6-2,6-3)** Please be careful that the terminal is not upside down, not having angle, or not rotated to receptacle housing. These cause terminal deformation or receptacle housing damage.

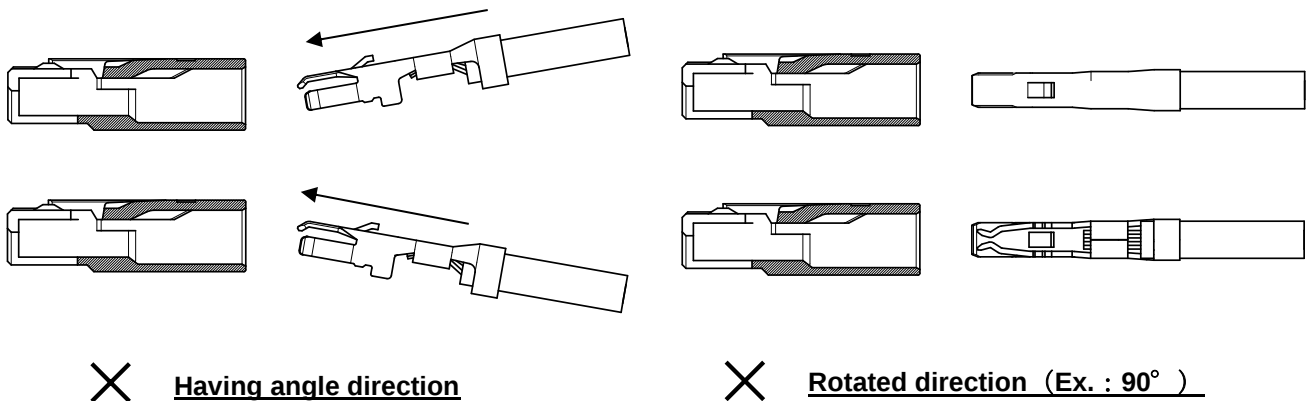
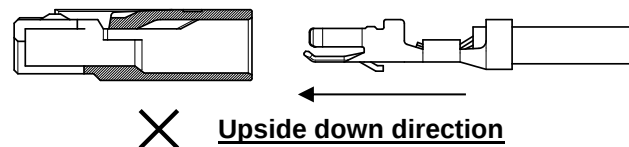
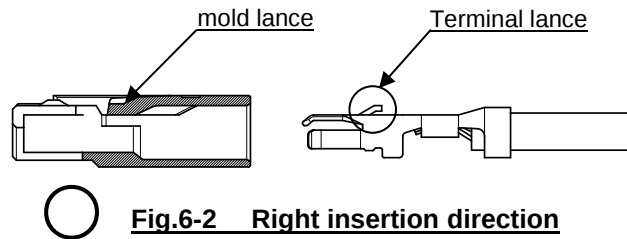


Fig.6-3 Inappropriate insertion direction

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- ④ After inserting terminal, please confirm by pulling wires lightly (with about 100g force) if terminals don't pull out from receptacle housing.
(Confirmation by excessive tension might break connector.)
- ⑤ After inserting all terminals, please confirm the position of terminal lance part by seeing through window of receptacle mold lance. If they are inserted correctly, terminal lance is at the position where terminal lance get over mold lance properly and you can confirm clearance by shaking them insertion axially lightly.
(Fig.6-4,6-5,6-6)

The case of terminal insertion reached back

mold lance get back completely.

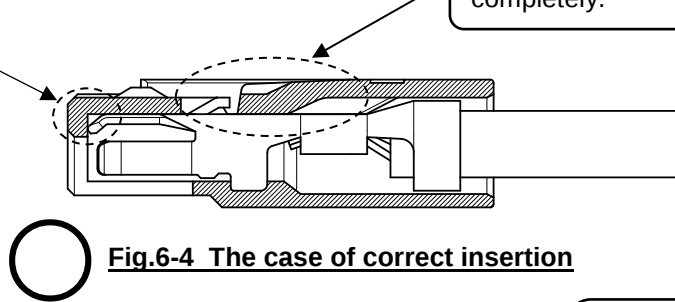


Fig.6-4 The case of correct insertion

The case of terminal insertion not reached back

As not being inserted completely, mold lance transforms and doesn't fasten with mold lance.



Fig.6-5 The case of incomplete insertion

※If they are inserted correctly, terminal lance is at the position where terminal lance get over mold lance properly and you can confirm clearance by shaking them insertion axially lightly.

Instruction

※If terminal is inserted incompletely, terminal lance doesn't fasten with mold lance and terminal is not retained.

※In the state of incomplete insertion(see **Fig.6-5**), terminal lance is transforming utmost. Therefore the retention of harness neglected in this situation might decline although you re-insert the terminal because terminal lance has transformed and not returned to correct position. In this case, please be sure to change new terminal.

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- ⑥ When checking harness after processing, please avoid bending wire excessively or using under tension. That might be reason for contact failure because force was added to terminal crimping part or receptacle housing lance part.
- ⑦ After conductivity testing, do not attach anything besides applicable mating connector. That might be reason for contact failure because of transformation of terminal etc.

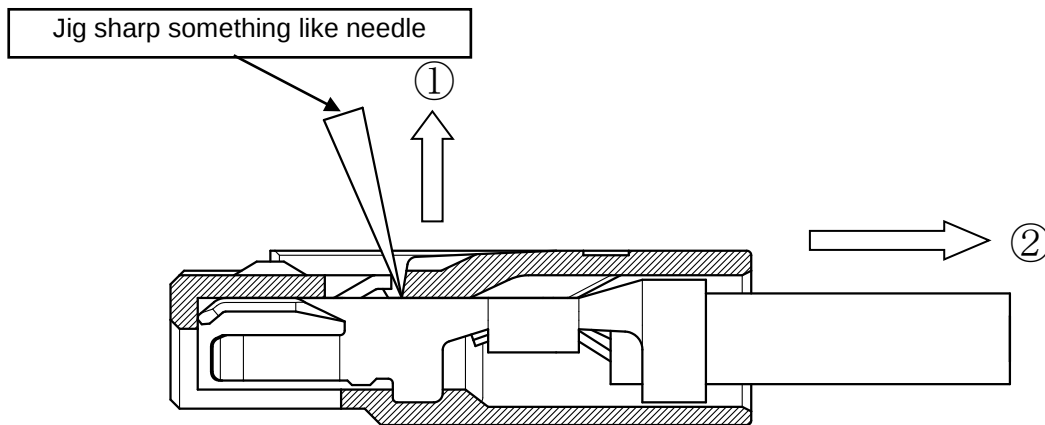
6-2. Repair of crimp terminal

When you withdraw the crimp terminal inserted once, please withdraw it raising mold lance with a sharp something like needle.

However, mold lance transforms by being raised. As strength of the transformed lance decreases extremely, the terminal might come out easily from housing if you insert it again. **Therefore please be sure to change the receptacle housing to new one when you repair crimp terminal.** And use an appropriate magnifying glass, please repair with caution.

※Please be sure to avoid with drawing terminal by force.

※When repairing, please be careful not to transform or scratch terminal lance.



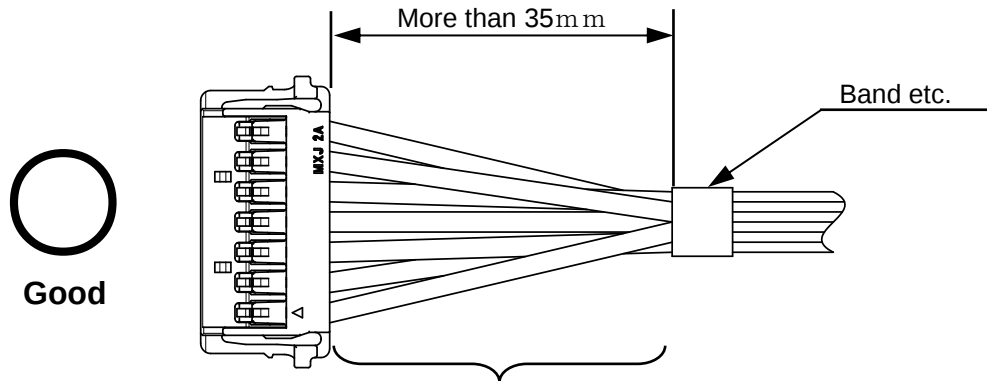
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【7. Banding of harness】

When banding harness after processing, please be careful with the following point.

- ① Please band the wires at more than 35mm length from connector and equalize the force to each wires (**Fig.7-1**)
- ② Concerning harness, please consider that only one wire (or particular a few wires) is not added force. (**Fig.7-2**)



Condition that the force is equalized to each wire

Fig.7-1 Condition that harness is banding properly

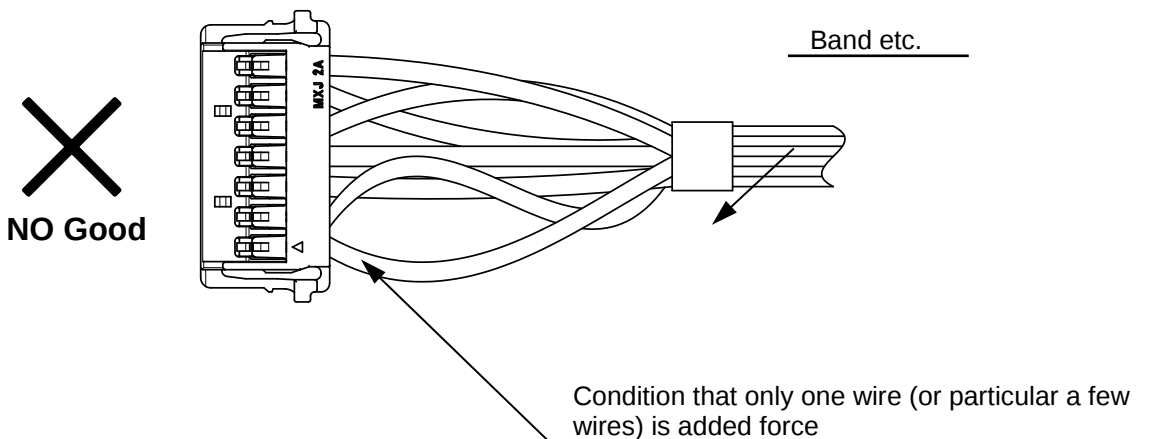


Fig.7-2 Condition that harness is banding improperly

Instruction

- ※When harness is in a tangle with each other, please do not pull them excessively. That might cause break of connector because extreme force is added to terminal and it comes out from connector.
- ※Please do not drop the product or hit it against other things.

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【8. Harness Packaging】

When packing harness after processing, procedure and instruction(※) are shown below.

- ① Band harness after processing. Please band at most about 20 in one bunch.

Instruction

※When banding them, in order that wire is not added excessive force constantly please do not use something to constrict strongly, ex. rubber band. Please band the center (one place) with vinyl string. Please take measure to protect connector from shock or load by wrapping each bunch of connector with air packing. (Fig.8-1)

When some harness is banded, each connector contact and part of lock might be loaded. In that case, conformation of lock part etc. might cause defective performance because of the situation that lock is down all time.

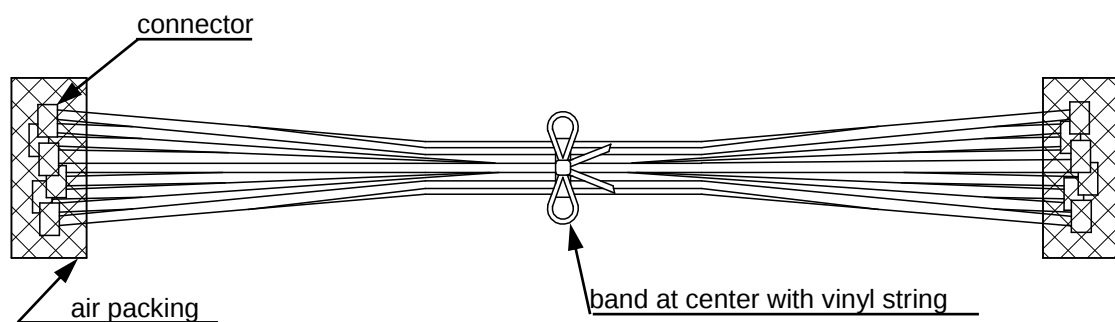


Fig.8-1 1bunch of harness

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- ② Put banded harness into exterior carton.

Below figure(**Fig 8-2**) is one of examples recommended reference. Please take measure not to add force to connector for long time by stacking if you pack with another packing method for long harness.

Instruction

※When packing bundle of harness after processing in package box, please follow suggested packaging order and avoid applying excessive weight or force to harnesses. (cross shape) (**Fig.8-2 ①**)

※Please lay air packing etc. on package box underside. In order that force by piling package boxes etc. is not added to connector for long time, please lay air packing etc. (**Fig.8-2 ②**)

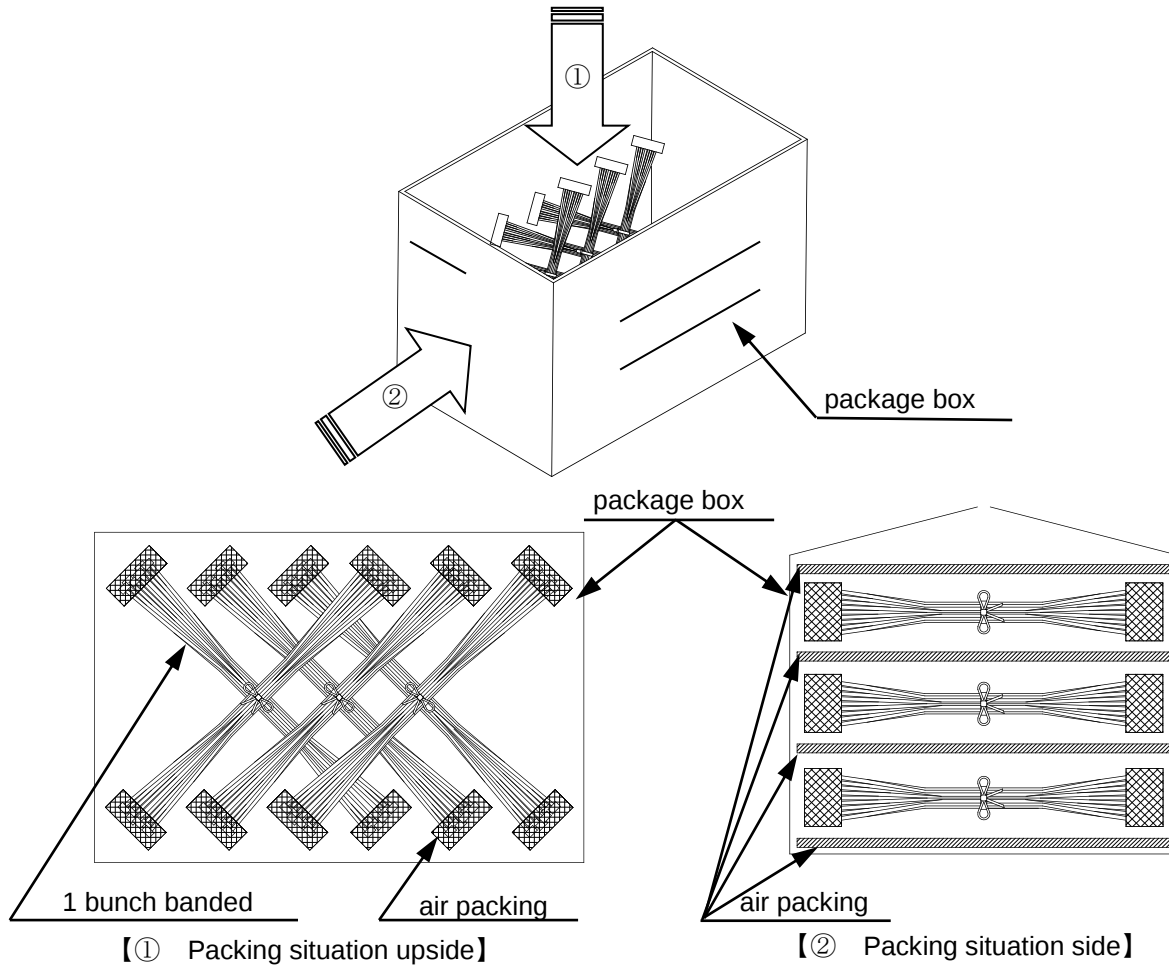


Fig.8-2 Packing situation

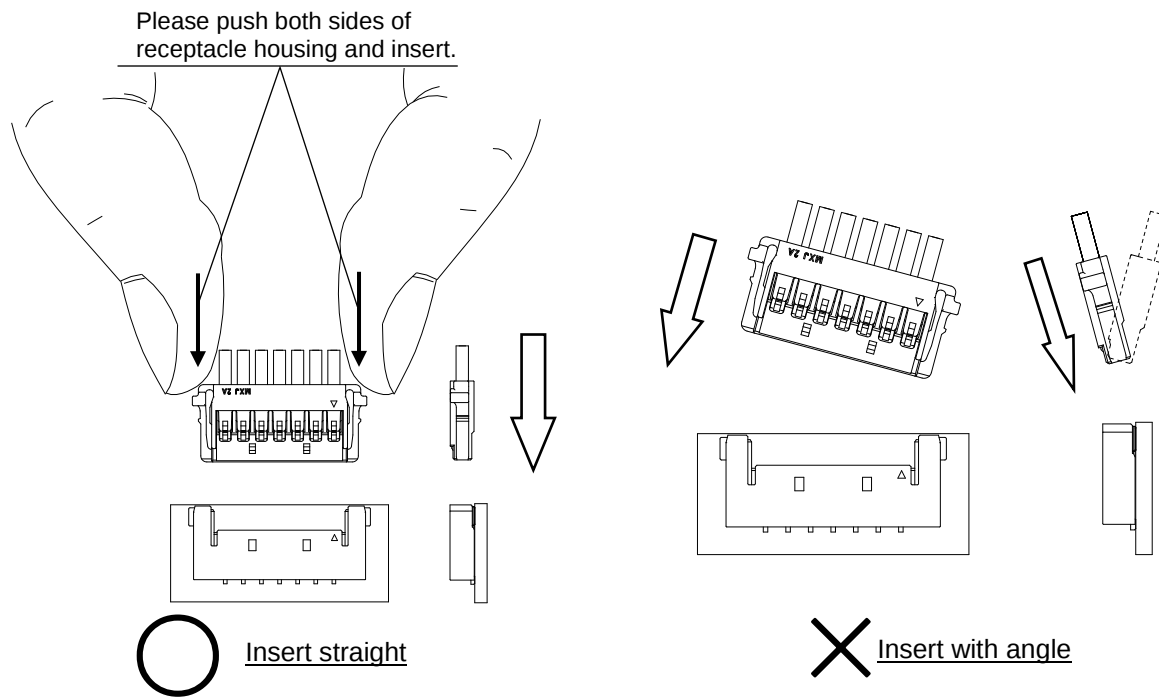
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【9. Instruction when mating with header assembly】

9-1. Mating process method

Please meet both mating direction of receptacle housing (harness side) and plug housing (header side), and push receptacle housing both sides of pitch direction (part shown with arrows) **until both connectors strikes each other (complete mating position)**. And after mating, please confirm that 2 friction locks are fastened completely.



Instruction

※When mating, please do not push positive lock of receptacle housing. It might cause damage by excessive load as correct movement that lock part get over catching part of mating is avoided.

※Please push receptacle housing and insert it straightly until they strike each other. This product is designed as follows. Connectors mating should end up in straight direction even if started insertion with an angle. However if you insert it gradually with angle and maintaining the situation artificially, this situation might make the case that only one side lock is fastened because elastic receptacle housing is inserted conformed. (Especially in multiple circuits)

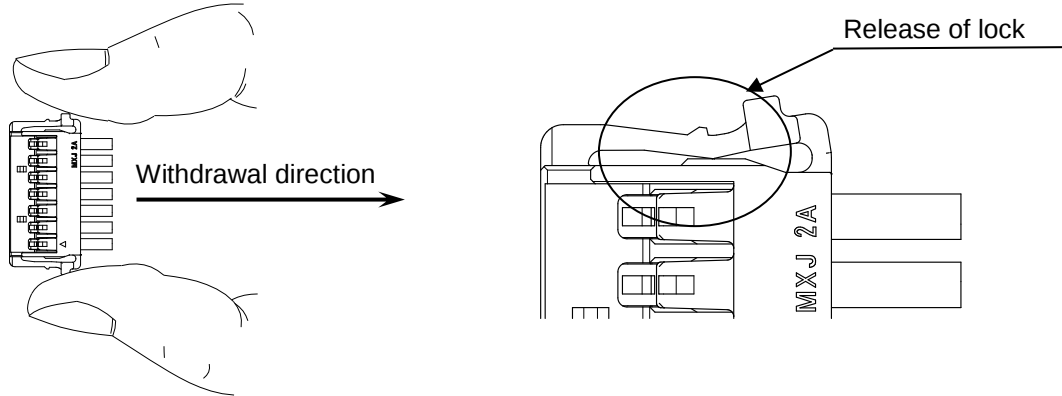
※If you cannot insert smoothly, please insert again after confirming transformation of terminal and receptacle housing etc.

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9-2. Un-mating process method

Please hold wires all together lightly. After releasing lock completely attaching fingers at pushing both bar for releasing lock using flat part of finger, please withdraw receptacle housing gradually, axially and straightly. And please avoid withdrawing them diagonally and roughly. That might cause break of connector.



Instruction

※Please do not withdraw with holding only particular a few wires. As excessive force concentrates at particular terminals, connector might be damaged or terminal might come out.

※When releasing lock, Please push bar for releasing lock with flat part of finger not only fingertip(nail tip). If nail is long, nail might catch lock protection wall.

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9-3. Consideration after mating

Instruction

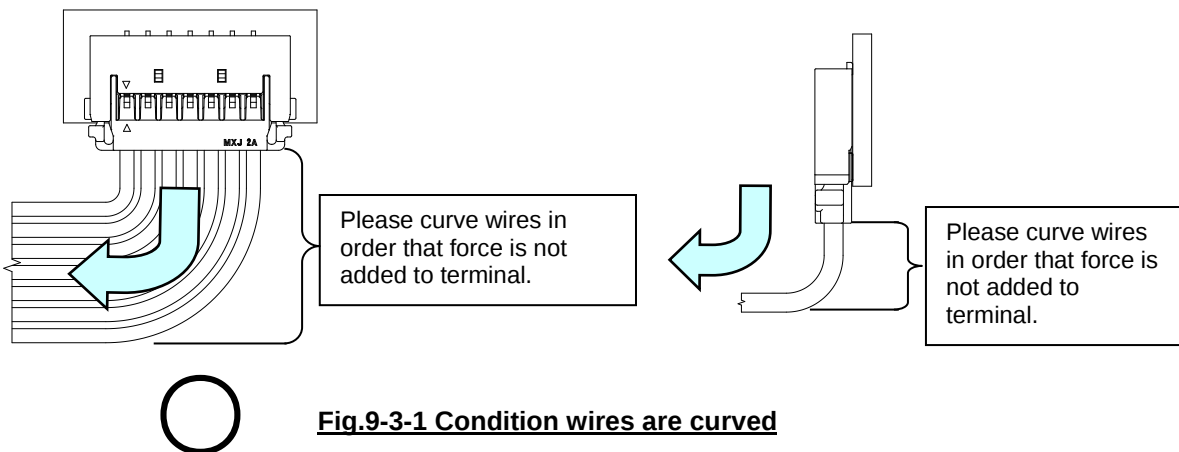
※If you plan pulling around wires inside machine, please take measures to it for example wires have enough curve, and be careful force is not added to connectors directly. **(Fig.9-3-1)**

※When pulling wires around inside actual machine, please do not use under the condition that wires are bent excessively or tension is added. That might be reason for terminal pull out because force is added to terminal crimping zone or terminal insertion portion of receptacle by wire tension. Especially, please be careful force is not added to only particular wire. **(Fig.9-3-2)**

※If force is added to one particular wire, wire(crimp terminal) might pull out.

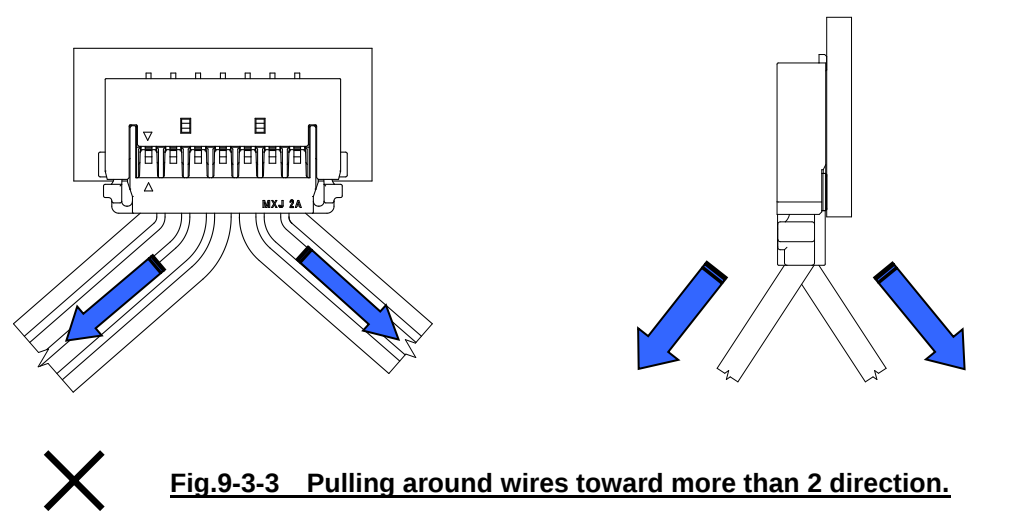
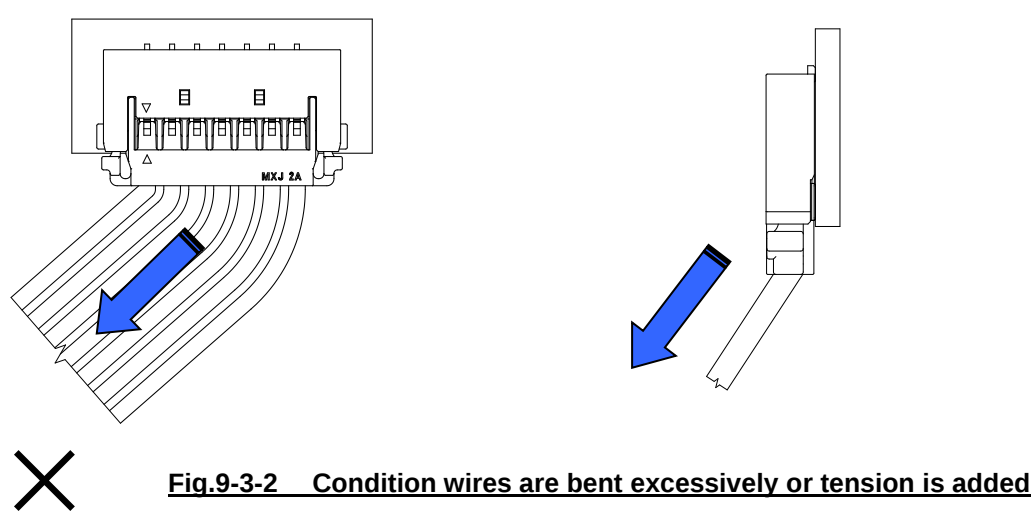
※Wire routing inside customer's device needs to avoid excessive stress. Please avoid pulling them toward more than 2 direction. **(Fig.9-3-3)**

※If wire routing specially inside customer's device, please confirm our company before using. **(Fig9-3-2/9-3-3 etc.)**



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コネクタ 取扱説明書

Pico-Lock 1.5 mm PITCH W/B CONN. H=2mm R/A TYPE

This application specification is written in English and Japanese.
本取扱説明書は、英文及び和文で記載されております。

[English 英文 : Page 1~25](#)

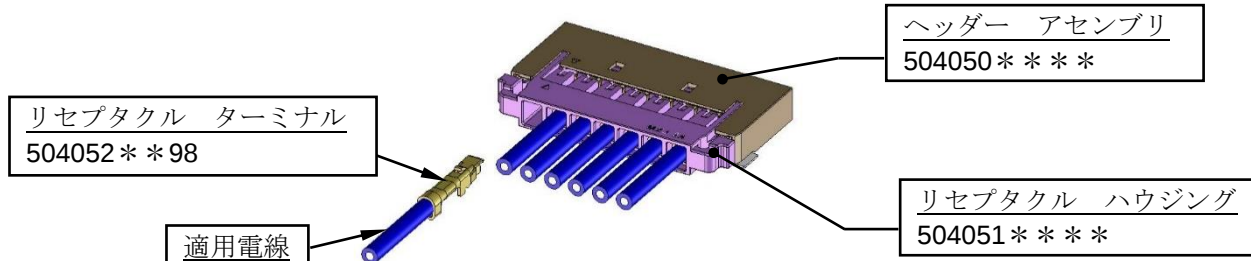
[Japanese 和文 : Page 26~50](#)

【1.適用製品】

	製品名称		製品型番
ハーネス側	リセプタクル ハウジング		504051 series 梱包形態：ビニール袋
	リセプタクル ターミナル		504052 series 梱包形態：リール
	適用電線 (※)	504052 series	AWG#24~32
	適用圧着機 (※)		5781163000
基板側	ヘッダー アセンブリ	R/A TYPE	504050 series 梱包形態：エンボステープ梱包

製品構成

※ 圧着仕様書(ATS)を参照願います。



—はじめに—

- ・本コネクタを御使用頂く前に必ず御一読頂き十分に理解した上、正しくご使用下さい。
- ・本書はいつでも参照できるように、お手元に大切に保管して下さい。
- ・本書中の表示及びイラストは印刷の為、実物と異なることが御座います。
- ・本書の内容に関しては、予告無しに変更する場合がございます。
- ・本書の内容については、万全を期して作成致しておりますが、万が一御不審な点や誤りなど、お気づきのことが御座いましたら弊社担当まで御連絡下さい。

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【2.使用上の注意事項】

2-1. 製品外観について

- ① 本製品のプラスチック部に黒点、気泡等が確認される場合や色合いが異なる場合（経年変化によるハウジングの変色を含む）がありますが、製品性能には影響御座いません。
- ② 本製品のめっき部外観に摺動痕がつく場合が御座いますが、製品性能に影響は御座いません。
- ③ フロー条件によっては、樹脂部の変色や端子めっき部にヨリが発生する場合が御座いますが、製品性能に影響は御座いません。
- ④ 実装機によってコネクタに負荷が加わると変形、破損する場合が御座いますので事前に御確認下さい。

2-2. 適用電線及び工具について

- ① 適用範囲外（電線サイズ、絶縁被覆径など）の電線を御検討される場合、保証の対象外となるため事前に御相談下さい。
- ② 当社指定工具（圧着工具等）以外の御使用における不具合発生に関しては、保証の対象外とさせていただきます。
- ③ コネクタの適用電線は、原則として錫めっき付軟銅撚り線です。
その他の電線の使用については別途ご確認ください。

2-3. ハーネス及び実装作業前の保管について

- ① 製品は弊社箱詰め梱包状態にて直射日光の当たらない屋内、年間を通じ、常温常湿の条件化での保管をお願いします。材料劣化による破損、変色等の原因となります。
- ② 製品保管の際には外力が掛からないよう保管願います。（納入状態からの詰め替え等）製品の噛み込み、変形等の原因となります。
- ③ 製品の移動時及び搬送時には落下や衝撃による外力を加えないように御注意願います。製品の噛み込み、変形等の原因となります。
- ④ 在庫品は先入れ・先出しを実施して下さい。
- ⑤ 使用前まで弊社実施の梱包形態を維持して下さい。
- ⑥ 推奨保管条件での保管をお願いします。推奨保管条件を超えた場合は外観、はんだ付け性を確認の上ご使用下さい。

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2-4. ハーネス及び実装作業時に於ける注意事項

- ① リセプタクルハウジング及び端子、圧着条件、適用電線が弊社製品図面、圧着仕様書に合致しているかを事前に確認して下さい。(弊社製品図面、圧着仕様書が揃っていない場合は、弊社営業に御要求下さい。)
- ② 本製品を使用する上で端子コンタクトボックス等に変形、汚れ(異物付着)等のあるものは使用しないで下さい。リセプタクルハウジングへの挿入性や電氣的な性能を満足出来なくなる原因となります。
- ③ 端子には直接手で触れること無きよう、御注意願います。(皮脂、汗等の汚れがめっき面に悪影響を与え、電氣的な性能が満足出来ない原因となります。)
- ④ 圧着前後において端子が絡まっている状態で、無理に端子を引っ張らないで下さい。端子を変形させる原因となります。
- ⑤ リセプタクルハウジング及び端子、加工工程品や加工品(ハーネス等)には、外力を加えないで下さい。製品が変形し、コネクタの性能を満足出来なくなる原因となります。
- ⑥ リセプタクルハウジング及び端子、加工工程品や加工品(ハーネス等)は、ゴミ(埃等)、腐食性物質、腐食性ガス、高温多湿及び直射日光に曝さないで下さい。接触不良や端子の腐食及びハウジングの絶縁性能劣化等の原因となり、機器の動作不良の原因となります。箱等への保管の御配慮をお願い致します。
- ⑦ 本製品及び加工工程品(仕掛品)や加工品(ハーネス等)の梱包及び輸送・保管時にはコネクタに負荷が加わらないようご注意ください。変形、破損などの原因となり、コネクタの性能不良の原因となります。
- ⑧ ハーネス加工品の電線の引き回しの際、引張りによる力が加わりますと、接点部、結線部(圧着部)やロック部(端子ロック部)が損傷を受け、接触不良の原因となります。電線の引回し配線をされる場合、コネクタに無理な外力が加わらないように、電線に緩みを持たせ、余裕を持たせる処置をして下さい。
- ⑨ リセプタクル ハウジング及び端子を故意に変形させないで下さい。製品性能が満足出来ない原因となります。
- ⑩ 袋詰め梱包の製品を開封した際には当日に使い切るようお願い致します。周囲の雰囲気による過度な乾燥や吸湿等、材料の劣化の原因となる恐れがあります。(使い切ることが無理な場合は、袋の口を再度シーリングし、箱に保管を行う等のご配慮をお願い致します。)
- ⑪ 本コネクタを取り扱う際、金属部などのエッジ部での怪我には御注意願います。
- ⑫ リール端子を取り扱う際、端子やリールの間紙などで手を切るなどの怪我には御注意願います。
- ⑬ 本製品の一般性能確認はリジット基板にて実施しております。フレキシブル基板等の特殊な基板へ実装する場合は事前に実装確認等を行った上でご使用願います。
- ⑭ はんだ実装部の未はんだは、ピン抜け、ピン間ショート、ピン座屈、またコネクタの基板からの外れが懸念されます。従って全てのソルダーテールにはんだ付けを行って下さい。
- ⑮ 弊社の推奨基板パターン寸法を変更して設計を行なう際は、致命的な不良の原因にもなりますのであらかじめご相談下さい。
- ⑯ コネクタ嵌合状態で基板の持ち運び等コネクタに負荷が掛かる作業は行わないようにして下さい。コネクタ破損等の原因となる場合が御座います。

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- ⑰ 基板実装後に基板を直接積み重ねない様に注意して下さい。
- ⑱ 実装後においてははんだごてによる手修正を行う際は、必ず仕様書掲載の条件以内で行って下さい。条件を超えて実施した場合、ピン抜け、モールドの変形、溶融等、破損の原因になります。
- ⑲ はんだごてによる手修正を行なう際、過度のはんだやフラックスを使用しないで下さい。はんだ上がりやフラックス上がりにより接触、機能不良に至る場合があります。
- ⑳ フロー条件によっては、樹脂部の変色や端子めっき部にヨリが発生する場合がありますが御座います、製品性能に影響はございません。
- ㉑ ハーネス加工時及びハーネス品梱包時にハウジングとロックの隙間に電線が絡まない様に注意して下さい。また、ハウジングとロックの隙間に電線が絡んだ場合には電線を無理矢理引っ張らないで下さい。ロックが変形する場合があります。電線が絡んだ際にはロックに負荷が掛からない様注意して外して下さい。

2-5. 機器内での使用について

- ① 本製品をご使用時に取り付けられた電線・プリント基板の共振や、機器の回転構造や可動部分の動作によりコネクタ嵌合部(接点部)が常に動いてしまう状態での御使用は避けて下さい。接触部の摺動磨耗等による接触不良の原因となります。従って、機器内で電線・プリント基板を固定し、共振を抑える等の処置をお願い致します。
- ② コネクタのみで基板を支えることは避け、コネクタ以外での基板固定対策を行って下さい。
- ③ 基板実装前後にピンに触れないで下さい。
- ④ コネクタは極力嵌合軸に沿って挿入抜去を行ってください。斜め挿抜はコネクタ破損等の原因になる場合があります。
- ⑤ 嵌合後、コネクタピッチ方向、スパン方向及び回転方向への負荷がかかるような動作またはセットはしないで下さい。コネクタ破壊やはんだクラックを引き起こします。
- ⑥ コネクタ嵌合後の電線の引き回しの際、引張りによる力が加わりますと、接点部、結線部(圧着部)やロック部(端子ロック部)が損傷を受け、接触不良の原因となります。電線の引回し配線をされる場合、コネクタに無理な外力が加わらないように、電線に緩みを持たせ、余裕を持たせる処置をして下さい。
- ⑦ コネクタの嵌合を取り外す際は、必ずロックを解除して行って下さい。
電線はまとめて軽く掴み、指全体で確実にロックを解除し、取り出して下さい。
- ⑧ 治具等を使用し、圧着端子を抜いた場合には、ランスが変形し強度が低下し端子を再装着後の端子保持力が低下します。そのため、圧着端子のリペアの際には新しいハウジングを必ず使用して下さい。

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2-6. 定格・性能規格について

- ① 製品仕様書の定格・規格の範囲内で御使用下さい。
- ② 活電状態の電気回路で、挿入、抜去ができることを前提に作られておりません。
スパーク等による危険の発生、性能不良につながりますので、活電状態での挿入、抜去はしないで下さい。
* 活電状態：電気を流したまま挿抜を行うこと。
- ③ 実使用時には、その機器に関する設計基準を満足することを確認の上、御使用下さい。
- ④ 予測できないショート（短絡）の発生を防ぐため、コネクタに金属製のパネルや金属片等が接触しないように御配慮願います。
- ⑤ 本製品をご使用時には、1PIN当りの定格以上の電流を複数の回路に分岐しての使用は避けて下さい。

2-7. 使用用途

- ① 本製品は人命に関わるような状況下で使用される機器、あるいはシステムに用いられることを目的として設計、製造されたものではありません。本製品を医療用、航空宇宙用、原子力等の特殊用途への組み込みの御使用については当社に確認の上、御使用下さい。
- ② 自動車、船舶等への御使用を検討される場合は、必ず事前に御連絡下さい。（仕様条件によって使用可能であるか検討させていただきます。）
- ③ 室外またはそれに相当する環境下での御使用は避けて下さい。

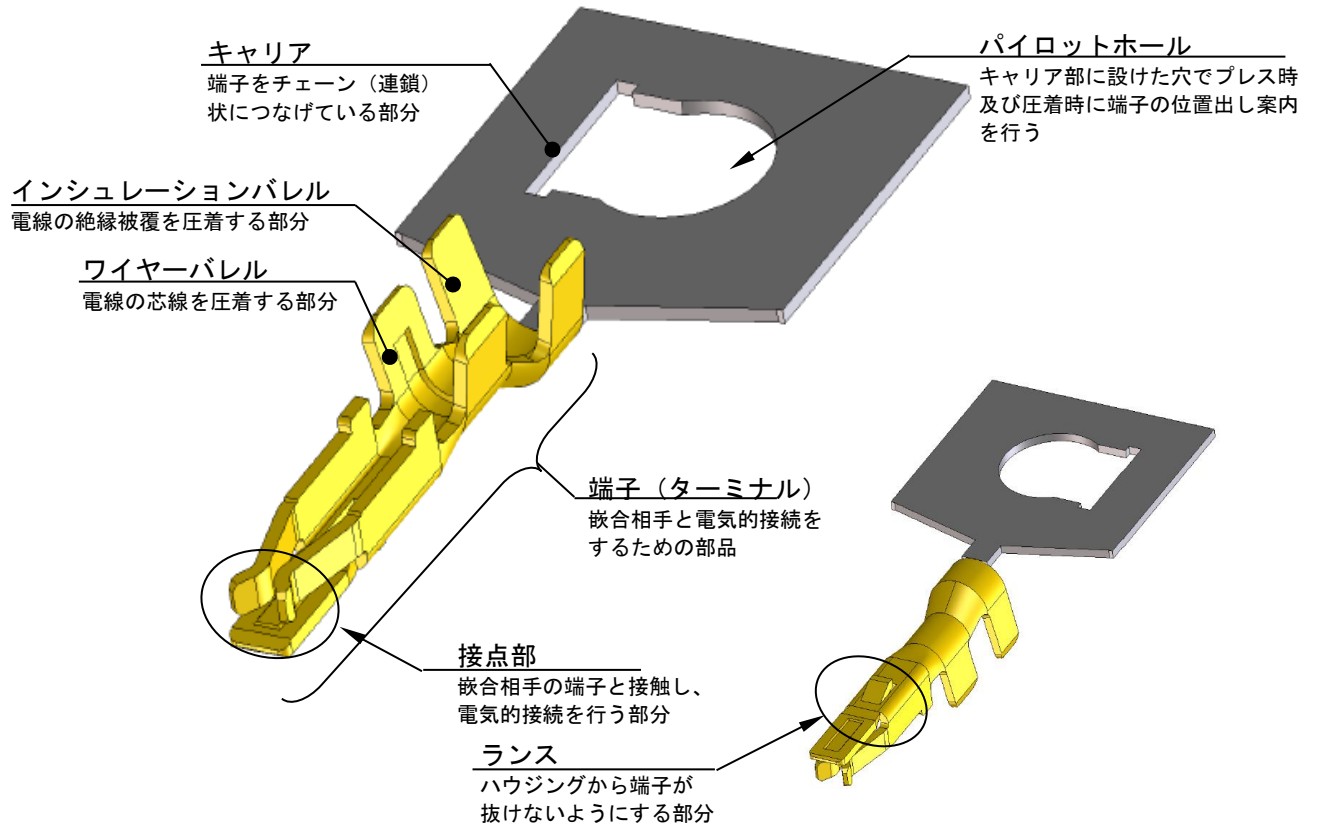
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【3. 各部の名称及び説明】

本端子形状は連鎖状を示します

3-1. リセプタクルターミナル(圧着端子)各部の名称及び機能: 504052 series.



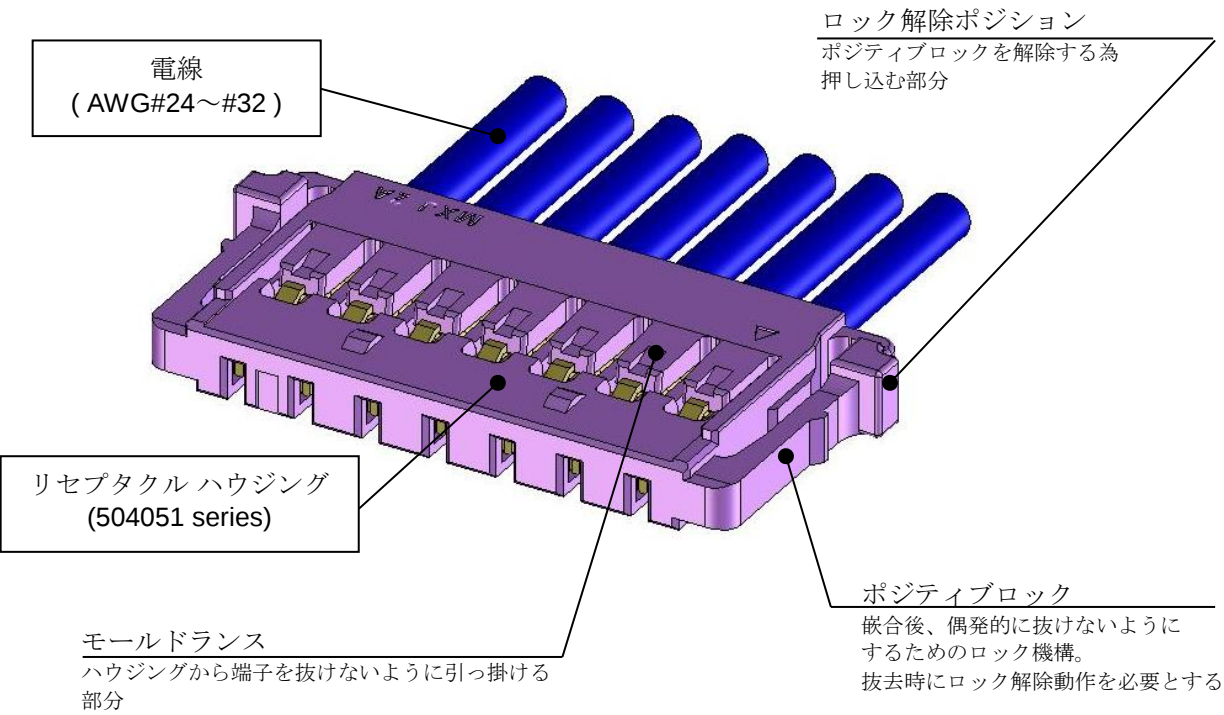
※ 製品形状及び寸法については弊社製品図面を参照願います。

—適用電線及び圧着機—

製品番号	電線サイズ	導体仕様
5040520098	AWG#24～28	錫めっき軟銅線
5040520298	AWG#30～32	
適用圧着機		5781163000

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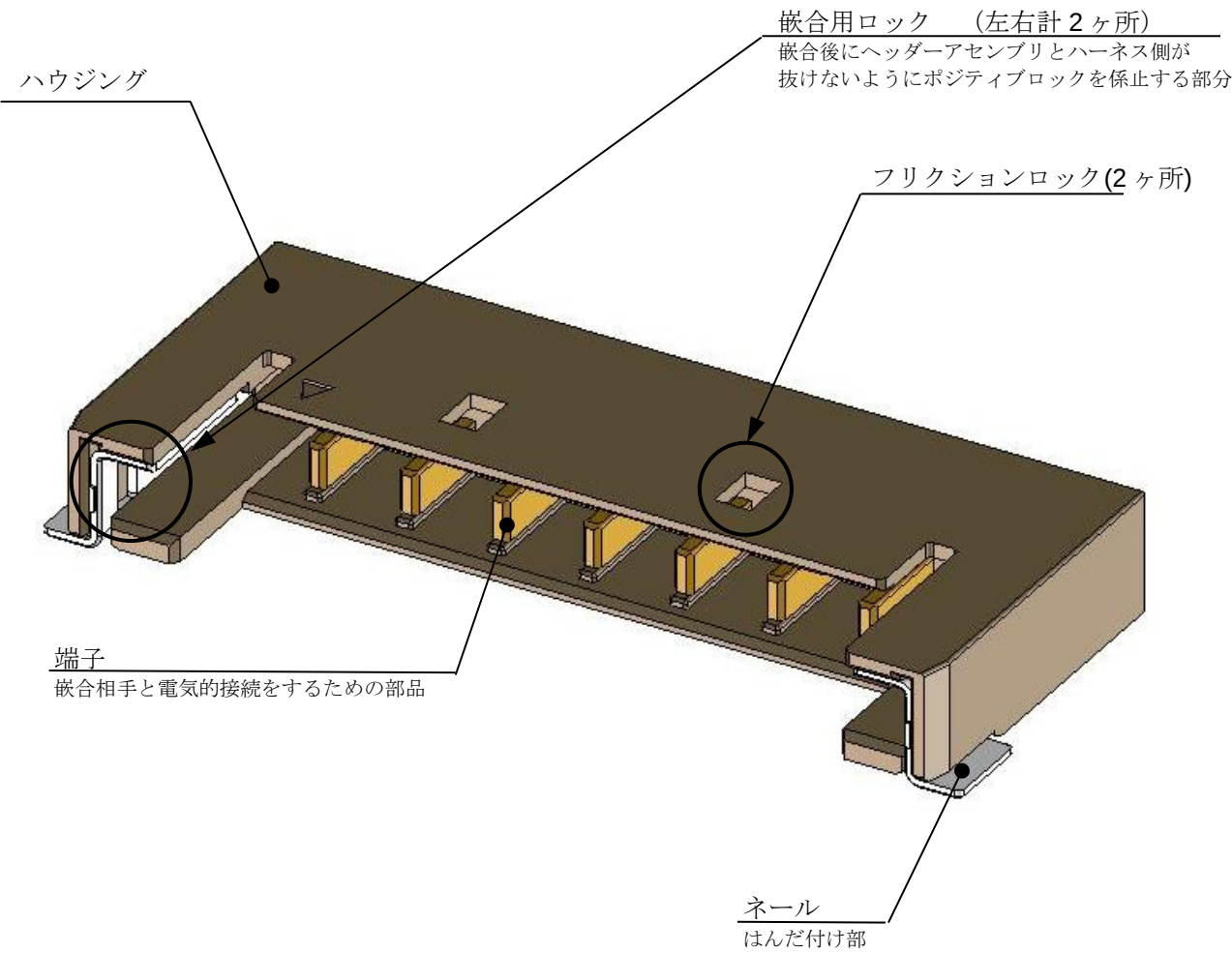
3-2. ハーネス各部の名称及び機能:504051 series



※ 製品形状及び寸法については弊社製品図面を参照願います。

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3-3. ヘッダー各部の名称及び機能:504050 series (R/A TYPE)



※ 製品形状及び寸法については弊社製品図面を参照願います。

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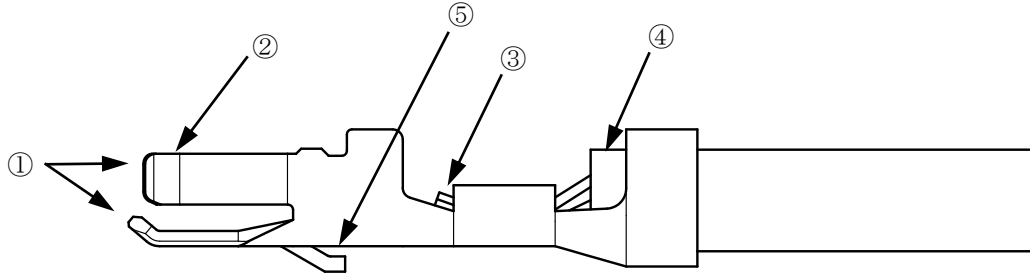
【4. 端子圧着加工について】

4-1. 圧着前の外観確認項目

圧着前のバラ品において、外観の変形、コンタクトボックスの潰れ等が無いことを確認し、御使用下さい。
また、端子同士が絡んでいる場合、無理に引き剥がさないで下さい。変形等の原因となります。
尚、製品形状及び寸法については弊社製品図面を参照願います。

4-2. 圧着後の外観確認項目

圧着加工後の外観確認項目及び圧着不良について、下記に示します。圧着時の参考として下さい。
尚、圧着高さ、状態、適用電線等の詳細は、弊社圧着仕様書(ATS)を参照願います。



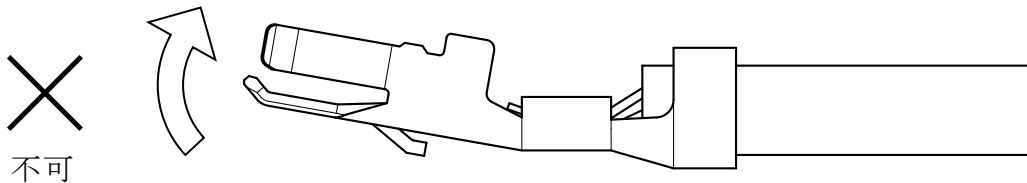
- ① 変形が無く、真っ直ぐになっている。
- ② 接点部及びコンタクトボックスの潰れ、変形が無い。
- ③ 芯線がワイヤーバレルより出ている、端子の外側に飛び出していない。
- ④ 電線の絶縁被覆ストリップ部分がワイヤーバレルとインシュレーションバレルのほぼ中間に位置している。
- ⑤ ランス部に変形が無い。
- ⑥ その他、外観に異常なきこと。(汚れ／異物付着など)

4-3. 圧着不良について

下記に示す圧着不良はリセプタクルハウジングへの挿入作業及び製品機能に影響を与えますので、特に御注意願います。

① ベンドアップ

ハウジングへの挿入性及び保持力の低下、また電氣的に接触しないなどの接触信頼性低下の原因となります。

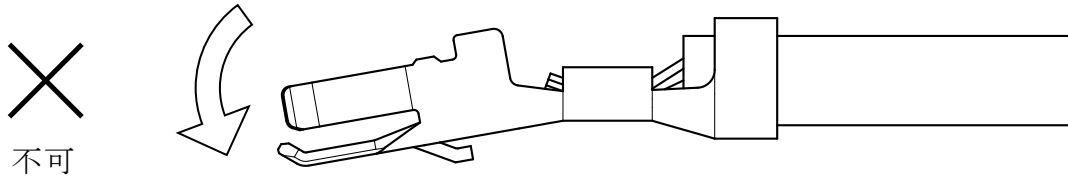


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② ベンドダウン

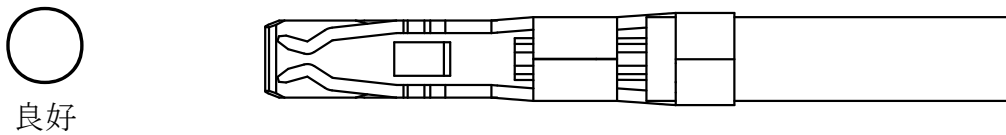
ハウジングへの挿入性及び保持力の低下、また電氣的に接触しないなどの接触信頼性低下の原因となります。



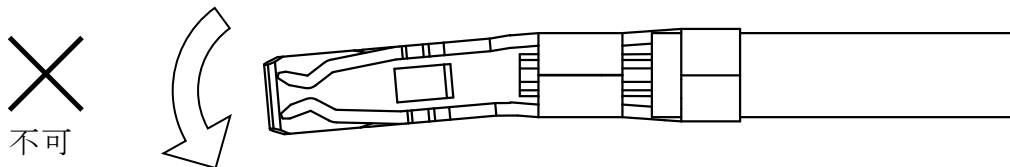
不可

③ ツイスト

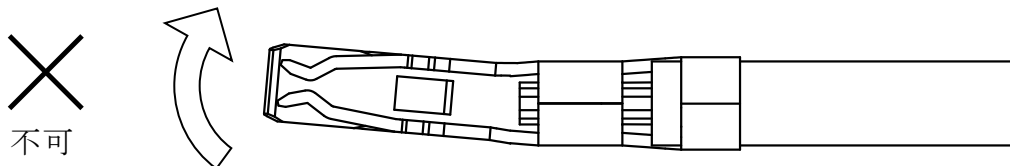
ハウジングへの挿入性及び保持力の低下、また電氣的に接触しないなどの接触信頼性低下の原因となります。



良好



不可



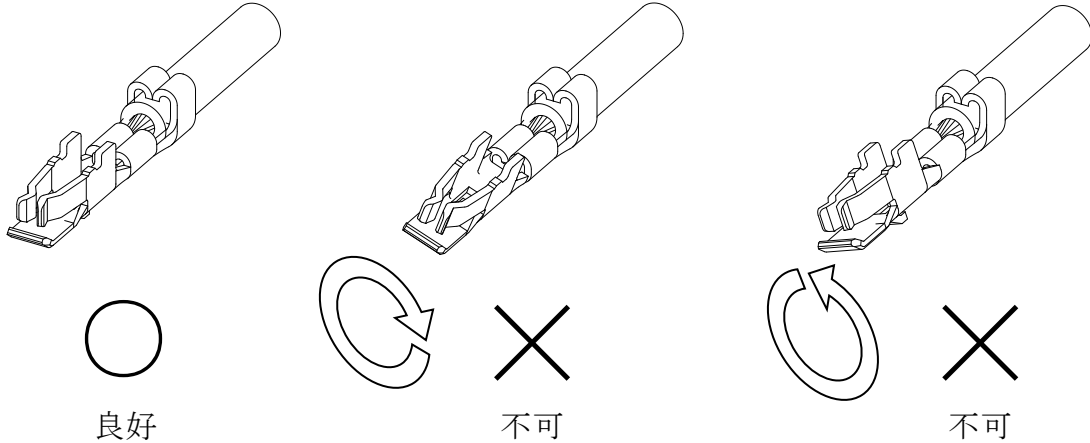
不可

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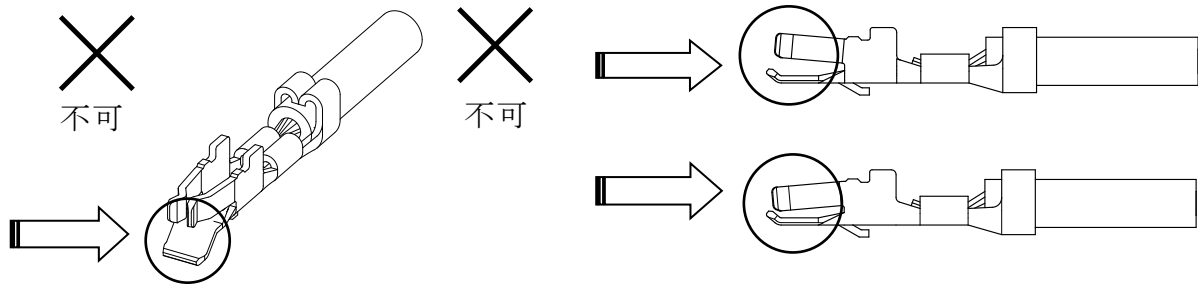
④ ローリング

ハウジングへの挿入性及び保持力の低下、また電氣的に接触しないなどの接触信頼性低下の原因となります。



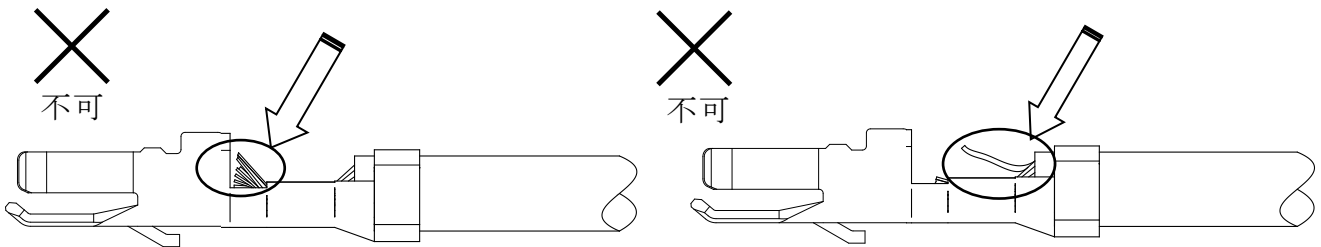
⑤ 接点部及びコンタクトボックスの潰れ、変形

ハウジングへの挿入性及び保持力の低下、また電氣的に接触しないなどの接触信頼性低下の原因となります。



⑥ 芯線はみだし

ハウジングへの挿入時に於ける作業性の低下、接触信頼性の低下の原因となります。



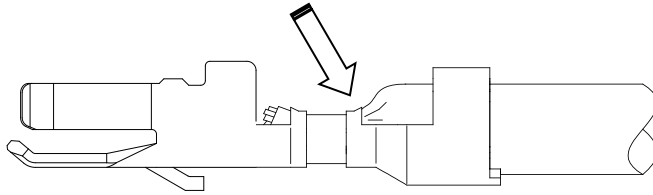
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⑦ 電線圧着位置—前過ぎ

断線、圧着部の引張り強度の低下や、ワイヤーバレルにて電線被覆を圧着した場合、電氣的に通電しないなど性能を満足出来なくなる原因となります。

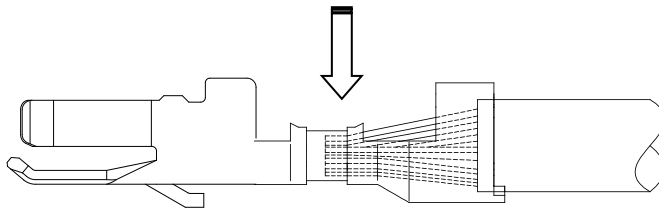
×
不可



⑧ 電線圧着位置—後ろ過ぎ

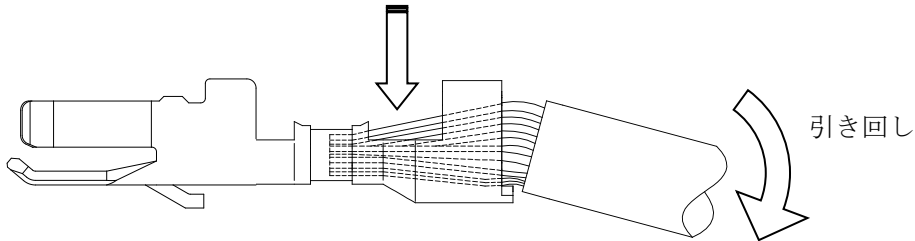
圧着がバレル内側で行われるため、圧着部の引張り強度が低下してしまう恐れや、また、電氣的に通電しないなど性能を満足できない原因となります。

×
不可



被覆がインシュレーションバレル全体で保持されていないため、電線を軽く引き回した際、芯線が容易に露出してしまう。

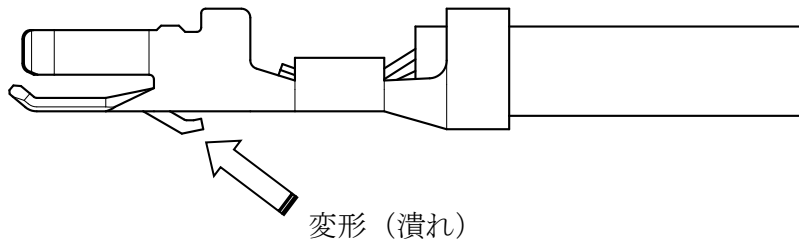
×
不可



⑨ ターミナルランスの変形(潰れなど)

ハウジングの係止が不十分となり保持力の低下の原因となります。

×
不可



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【5. 圧着後の電線結束および梱包について】

圧着後の電線加工品を束ねる際には絡みによる端子の変形・傷・電線の被覆破れ等が発生しないよう御配慮をお願いします。

(輪ゴム等で結束する際には端子圧着部から 10mm 程度の位置にての結束を推奨いたします。**Fig.5-1**)

又、加工後梱包箱への詰込みを行う際には詰込み過多による製品変形等も考えられますので1箱あたりの梱包重量についても御配慮願います。

注意事項

※加工品の束を梱包箱に入れる際、積み重ねによる荷重等の負荷が端子へ直接長時間加わらない様、交互に重ねるなどして下さい。(Fig.5-2)

※梱包箱底面および上面には、緩衝材等を敷いて下さい。また、段積みによる荷重等の負荷が端子へ直接長時間加わらない様に、緩衝材を敷く等の御配慮をお願い致します。(Fig.5-2)

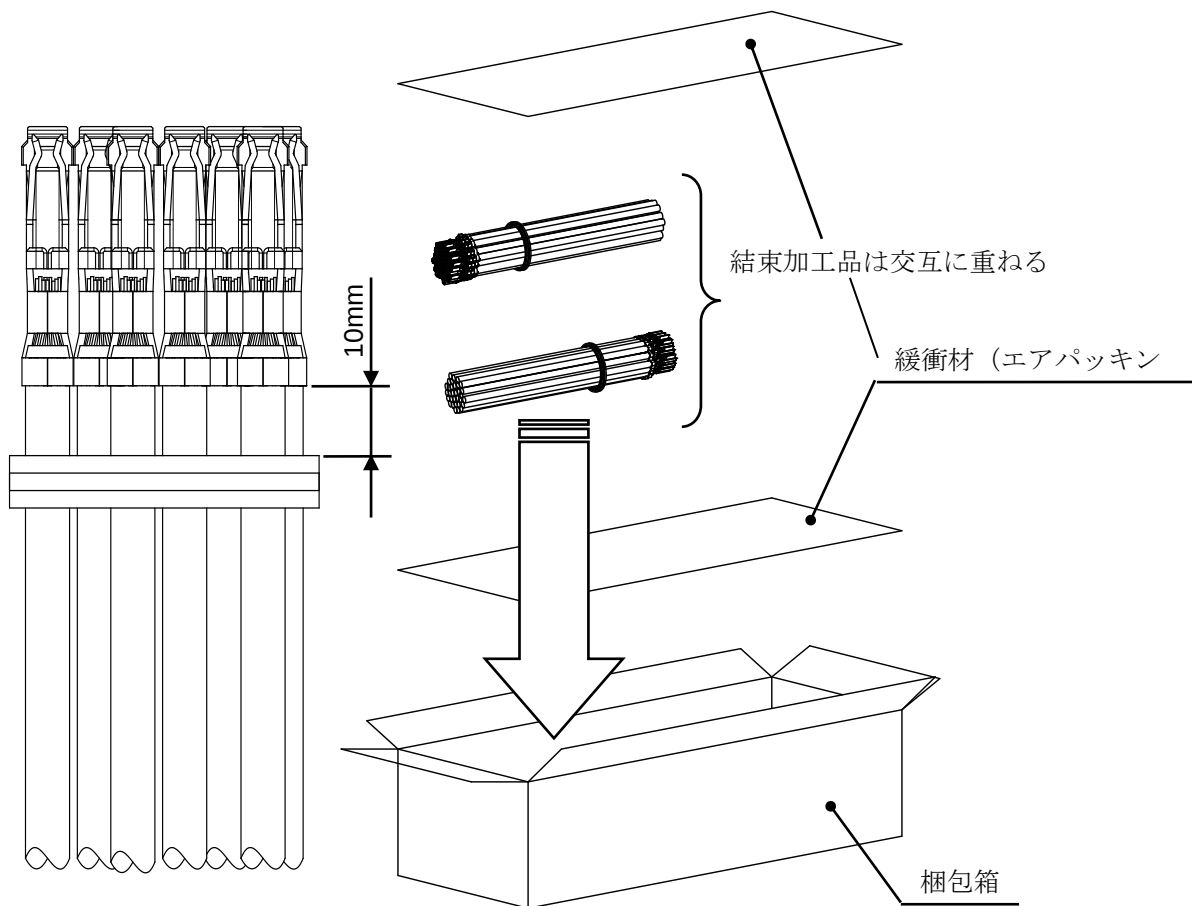


Fig. 5-1

Fig. 5-2

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【6. リセプタクル ハウジングへの圧着端子装着(ハーネス作業)方法】

圧着端子装着およびリペアの手順と注意事項(※)を下記に示します。

6-1. 圧着端子装着について

- ① リセプタクル ハウジングの左右を挟むように、軽く持って下さい。
- ② ケーブルは、端子圧着部から約 10mm の位置を指で軽く摘んで持って下さい。

注意事項

※端子から離れた位置で持ち過ぎますと、電線が曲がり易くなり、挿入しづらくなる場合が御座います。

※数値は目安です。使用する電線の種類、材質により数値は異なりますので、使用前に御確認下さい。

- ③ 端子ランス部が、リセプタクル ハウジングの中央に向かうように持ち、端子が突き当たる位置まで(1.6~2.4N 程度の力で)ゆっくりと真っ直ぐ装着して下さい。(Fig.6-1)

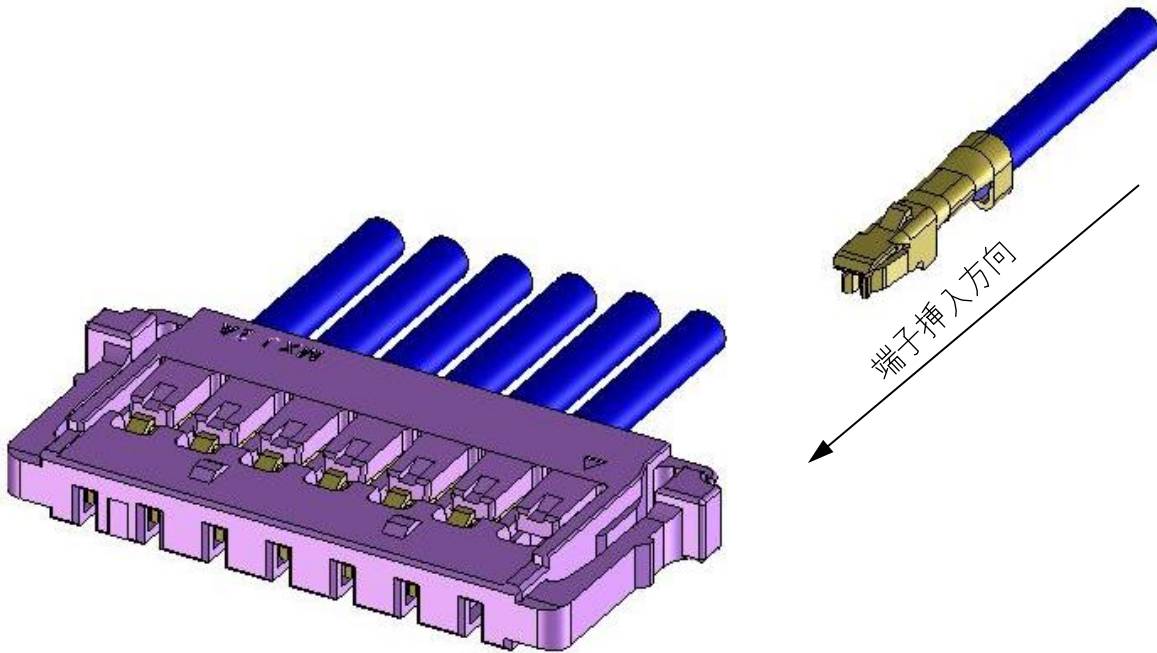


Fig. 6-1

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注意事項

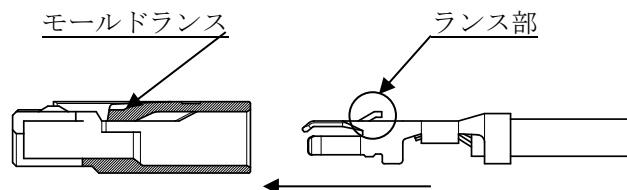
※圧着高さ及び幅が大きいと端子挿入に問題がある場合があるため、規定の圧着高さにて作業を行って下さい。(弊社圧着仕様書(ATS)を参照願います。)

※リセプタクルハウジングに対して端子を装着する向きにご注意下さい。

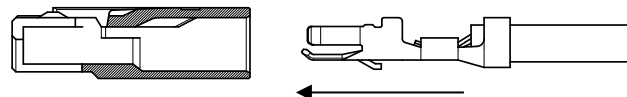
装着時、端子がリセプタクルハウジングに対して上下逆、斜め、回転した状態にならないように御注意下さい。端子変形、リセプタクルハウジング破損の原因となります。(Fig.6-2/6-3)

※装着途中で引っ掛かり等の異常を感じた際には無理に装着せず、端子やリセプタクルハウジングの変形などが無いことを確認し、再度装着し直して下さい。

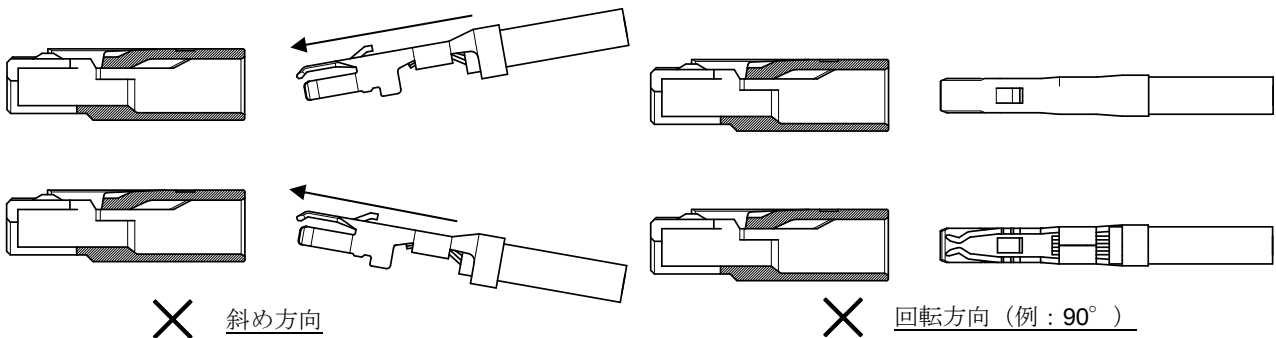
変形などが確認された場合、その端子やリセプタクルハウジングは、再使用しないで下さい。



○ Fig.6-2 正しい挿入方向



× 上下逆方向



× 斜め方向

× 回転方向 (例: 90°)

Fig.6-3 不適切な装着方向

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- ④ 端子装着後、軽く(100g 程度の力で)電線を引張り、端子が抜け出さないか確認を行って下さい。
(過度の引張りでの確認はコネクタを破損させる場合がございます。)
- ⑤ すべての端子の装着後、リセプタクルハウジングのモールドランスを間口より覗き、モールドランス部の位置を確認して下さい。正しく装着されている場合は、端子ランス部がきちんとモールドランスを乗り越えた位置にあり、挿入軸方向に軽く振ると隙間が確認出来ます。(Fig.6-4/6-5/6-6)

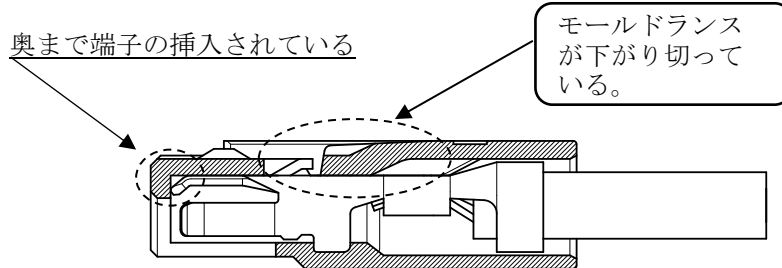


Fig.6-4 正しく装着されている場合

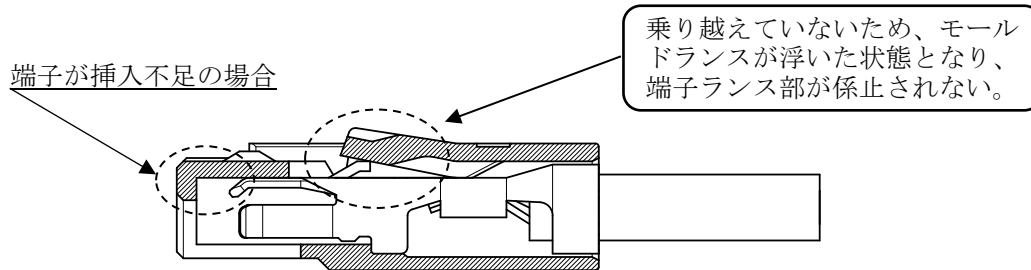


Fig.6-5 不完全装着の場合

※挿入が完全に挿入されている状態では端子ランス部がモールドランスを乗り越え、ケーブルを軸方向に軽く振ると隙間があることを確認出来ます。

注意事項

※端子が不完全装着の場合、端子のランス部にモールドランスが引っ掛からない状態になり、端子が保持出来なくなります。

※モールドランスが正規の位置に戻っていない箇所(不完全装着状態: Fig.6-5 参照)では、モールドランスが最も変形している状態です。そのため、この状態のハーネス品は、端子を再挿入したとしても、モールドランスが変形し、正規の位置に戻らず、保持力が低下する場合がございます。

このような場合は、必ずリセプタクルハウジングを取り替えて頂くよう、お願い致します。

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- ⑥ ハーネス加工後のチェック時には、電線を極端に曲げる、または突っ張る状態での使用は避けて下さい。電線の張力により端子圧着部やリセプタクルハウジングの端子装着部に力が加わり、接点不良の原因となります。
- ⑦ ハーネス加工後における導通チェックの際には適合する嵌合相手以外のものに挿入しないで下さい。端子の変形等による接触不良の原因となります。

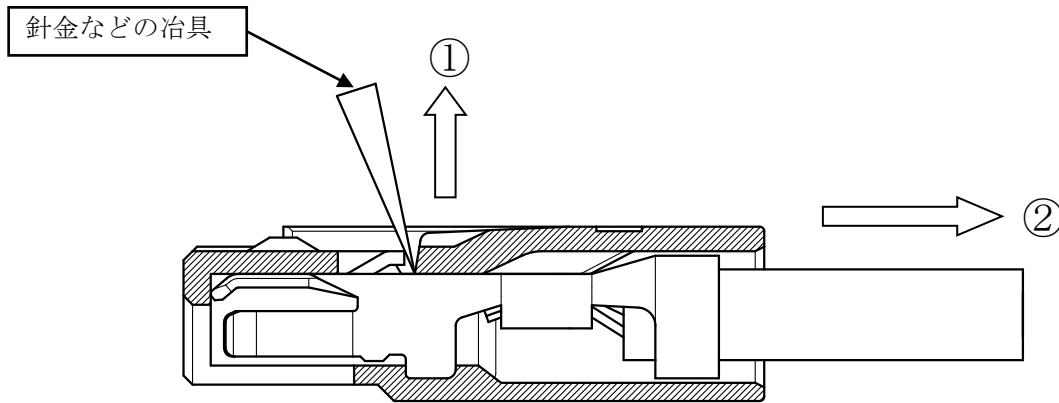
6-2. 圧着端子のリペアについて

一度挿入した圧着端子を抜く時は、先の尖った針等を使いモールドランスを持ち上げながら引き抜いて下さい。但し、モールドランスを持ち上げると変形します。変形した箇所のランス強度は極端に低下するため、端子を再装着したとしても直ぐに抜けてくる可能性が御座います。

そのため、**圧着端子のリペアの際には新しいリセプタクルハウジングを必ず使用して下さい。**
また、拡大鏡等を使うなどして、十分御注意の上、作業を行って下さい。

※端子を無理に引き抜くことは、必ず避けて下さい。

※リペアの際、端子のランス部の変形や傷を付けないように御注意下さい。



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【7 ハーネス結束について】

ハーネス後の結束の際、下記の点に御配慮願います。

- ① 電線の結束は、コネクタから 35mm 以上のところで、電線に加わる力が均一になるようにして下さい。(Fig.7-1)
- ② ハーネス品で、電線一本(又は特定の数本)に力が加わらない様にして下さい。(Fig.7-2)

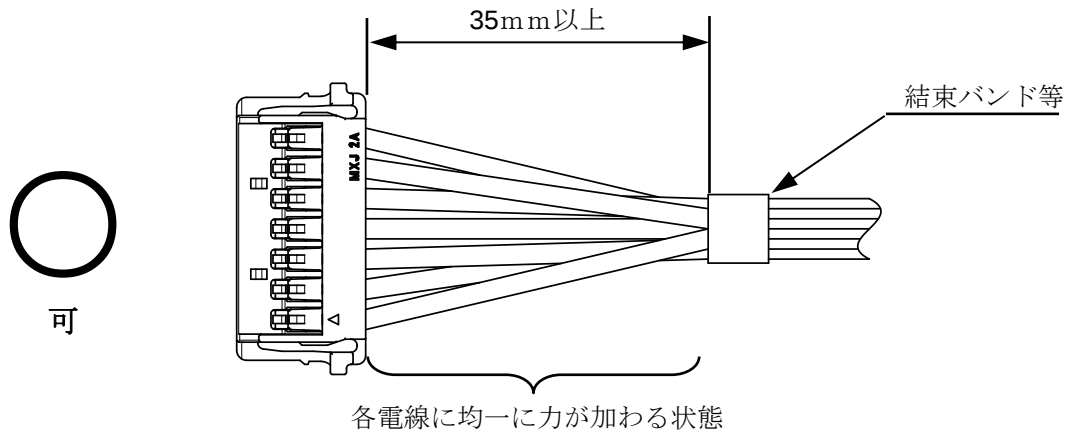


Fig.7-1 適切なハーネス結束状態

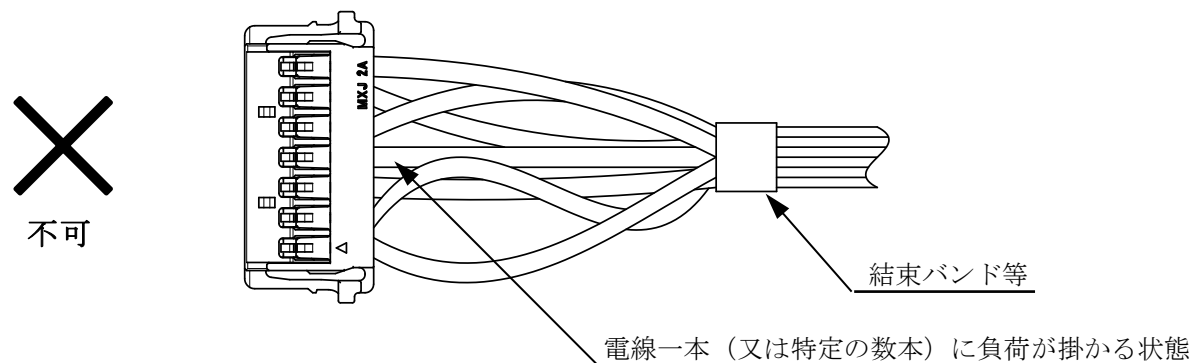


Fig.7-2 不適切なハーネス結束状態

注意事項

※ハーネス品同士が絡まっている場合、無理に引っ張らないで下さい。
過度な力が加わり端子が抜ける等の不具合が生じ、コネクタが破損する場合があります。

※製品を落したり、他のものにぶついたりしないで下さい。

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【8. ハーネス梱包について】

ハーネス加工品を梱包する際の手順と注意事項(※)を下記に示します。

- ① ハーネス加工品を束ねる。一束で最大20本を目安として束ねるようにして下さい。

注意事項

※ 束ねる際に、常時無理な力が電線に加わらない様に、輪ゴムのような締め付けの強いものは使用せず、ビニール紐で中央部(一箇所)を束ねて下さい。また、各束のコネクタにエアパッキンを巻き、衝撃や荷重からコネクタを保護する処置をお願い致します。(Fig.8-1)複数のハーネスを束にした際、コネクタ同士が接触し、ロック部に負荷が加わる場合があります。その場合、ロックが常に下がった状態になることで、ロック部変形等による性能不良の原因となります。

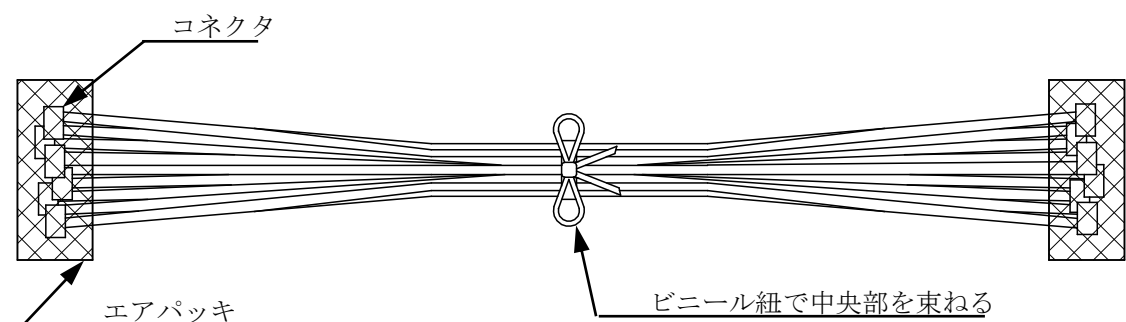


Fig.8-1 ハーネス加工品一束の状態図

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② 梱包箱に束ねたハーネス加工品を入れる。

尚、下図(Fig 8-2)は推奨参考例ですが、ハーネス長が長いなどの理由で他の梱包方式で御使用される場合にも段積みによる加重等の負荷がコネクタに長時間加わらない様御配慮をお願い致します。

注意事項

※ハーネス加工品の束を梱包箱に入れる際、積み重ねによる荷重等の負荷がコネクタに長時間加わらない様に、箱に合わせた形で製品を交互(十字型)に重ね合わせて下さい。(Fig.8-2 ①)

※梱包箱底面には、緩衝材等を敷いて下さい。また、段積みによる荷重等の負荷がコネクタに長時間加わらない様に、緩衝材を敷く等の御配慮をお願い致します。(Fig.8-2 ②)

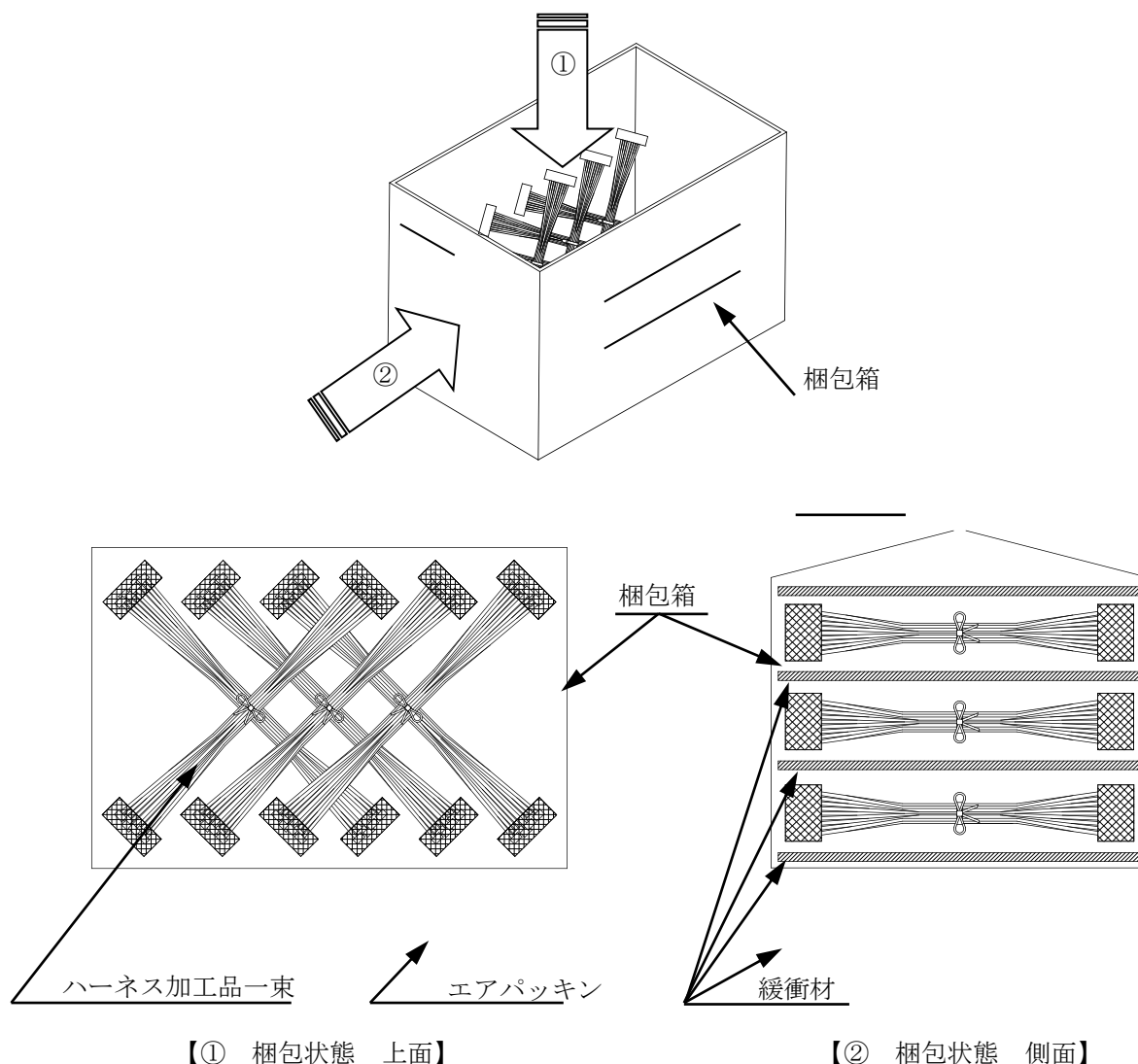


Fig.8-2 梱包状態図

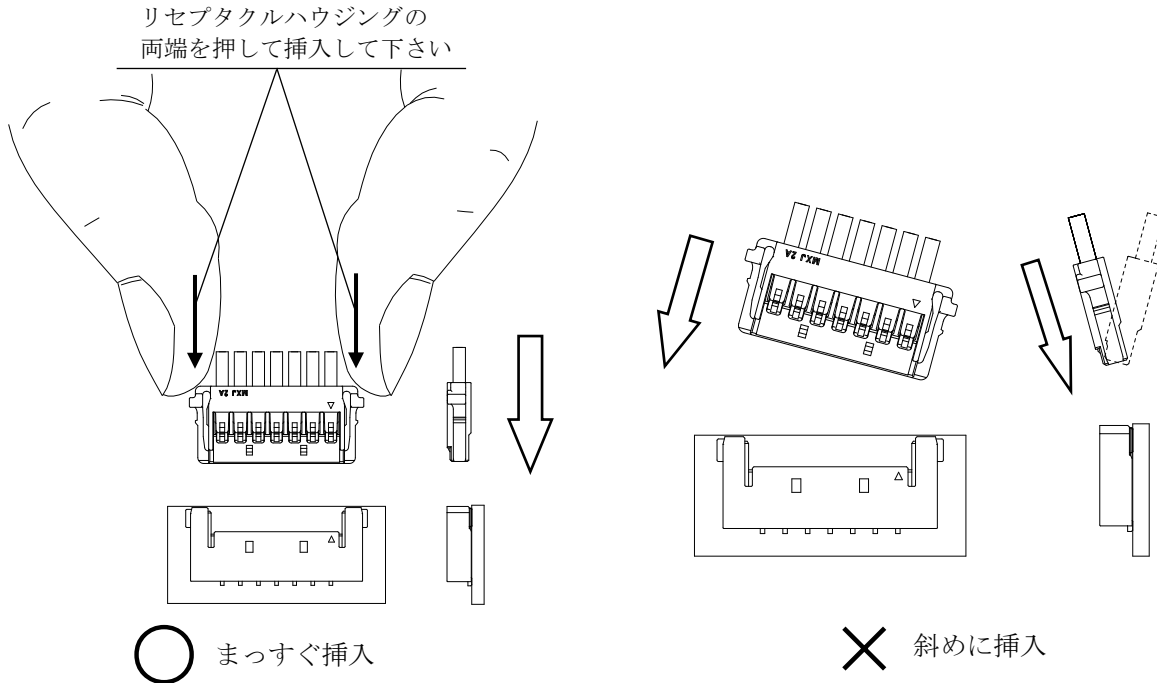
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【9. 基板側コネクタとの嵌合時に於ける注意事項】

9-1. 推奨挿入方法

プラグ ハウジング（基板側）とリセプタクル ハウジング（ハーネス側）の嵌合方向を合わせ、嵌合時にリセプタクルハウジングのピッチ方向の両端（矢印で示す部位）を押し、**コネクタ同士が突き当たる（完全嵌合位置）まで、真っ直ぐ押し込んで下さい。**また、嵌合後、2箇所フリクションロックが完全に掛かっていることを御確認下さい。



注意事項

※嵌合時、リセプタクルハウジングのポジティブロック部を押さないようにして下さい。

ロック部が嵌合相手の引っ掛かり部を乗り越える正規の動作が妨げられて、過度の負荷が加わり破損する恐れが御座います。

※リセプタクル ハウジングを押して、まっすぐに突き当たるまで挿入して下さい。

本製品は、嵌合間口を深く設定し、斜め挿入しても間口で矯正され、挿入されるようにしておりますが、人為的に斜め状態を維持させて、ゆっくり挿入させた場合、弾性力のあるリセプタクルハウジングは変形しながら挿入されるため、片側しかロックされない状態を作り出す場合が御座います。

（特に多極品の場合）

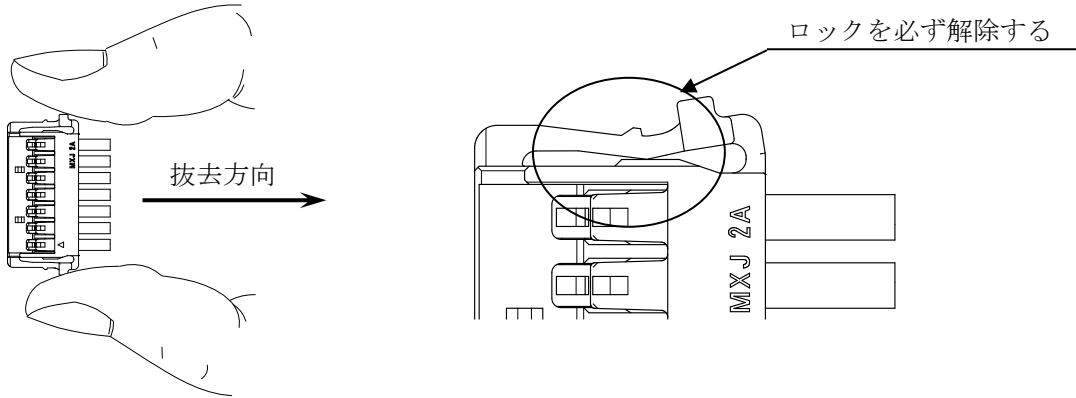
※スムーズに挿入できない場合は、端子やリセプタクル ハウジングの変形などを確認して、嵌合方向マークを確認した上でもう一度挿入して下さい。

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9-2. 推奨抜去方法

電線はまとめて軽くつかみ、リセプタクルハウジングのロックに指を添え、指の平を用いて、ロック解除用バーを両側共に押してロックを完全に解除してから、ゆっくり、軸方向にまっすぐに引き抜いて下さい。また、斜めにこじりながら抜くことは避けてください。コネクタを破損させる恐れが御座います。



注意事項

※特定の数本のみ電線を摘んで抜去しないで下さい。

限定された端子に過度な負荷が集中し、コネクタの破損及び端子が抜ける可能性が御座います。

※抜去時は、ロックを完全に解除して下さい。本製品は、コネクタの抜け防止をポジティブロックに依存している構造となっております。ロックが完全に解除していない状態で、無理に抜こうとした場合コネクタが破損します。

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9-3. 嵌合後の電線の引き回しについて

注意事項

※機器内の引き回しを検討される際には、電線に十分なたわみを持たせる等の処置を検討頂き、直接コネクタに力が加わらないようにして下さい。(Fig.9-3-1)

※嵌合後、機器内での電線の引き回しの際には、電線を極端に曲げる、または突っ張る状態で使用しないで下さい。電線の引っ張り力、突っ張り力により端子圧着部やリセプタクルハウジングの端子装着部及び基板側のコネクタに力が加わり接点不良の原因となります。特に、特定の電線のみに力が加わることは避けて下さい。(Fig.9-3-2)

※特定の電線一本に対して負荷が加わると電線(圧着端子)が抜ける可能性があります。

※嵌合後、機器内での電線の引き回しの際、2方向以上での引き回しは避けて下さい。(Fig.9-3-3)

※特殊な電線の引き回し(Fig.9-3-2/9-3-3等)を行う際には、事前に当社へ確認の上ご使用下さい。

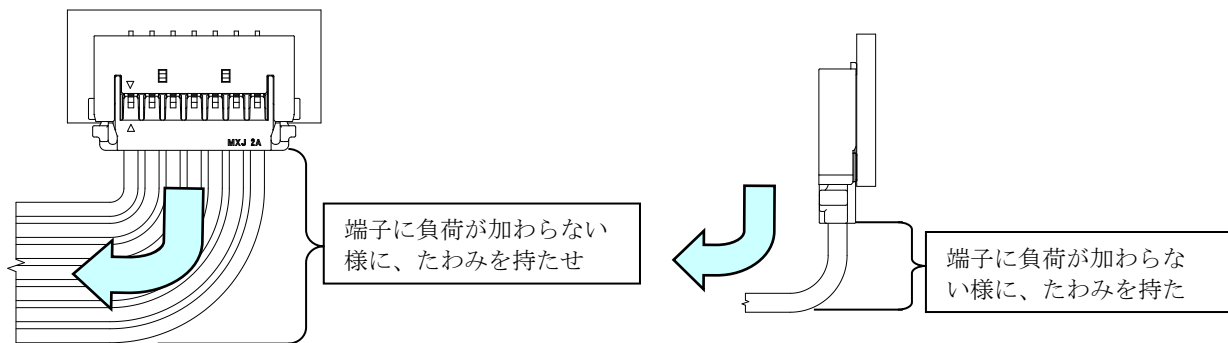


Fig.9-3-1 電線にたわみを持たせた状態

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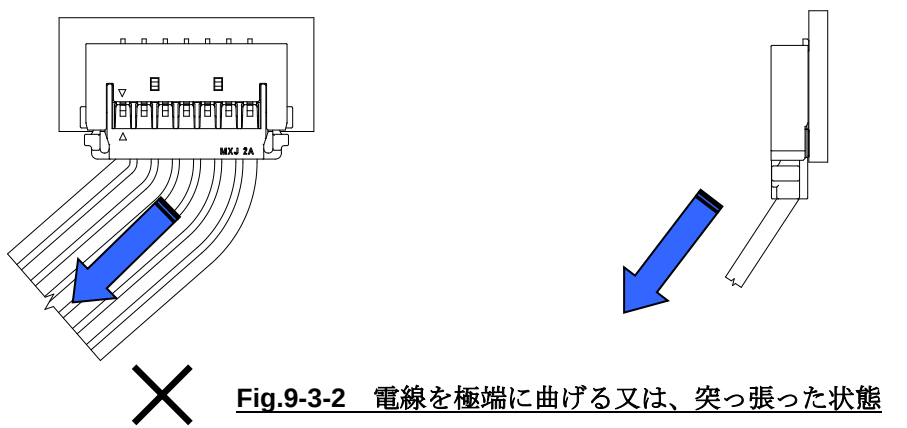


Fig.9-3-2 電線を極端に曲げる又は、突っ張った状態

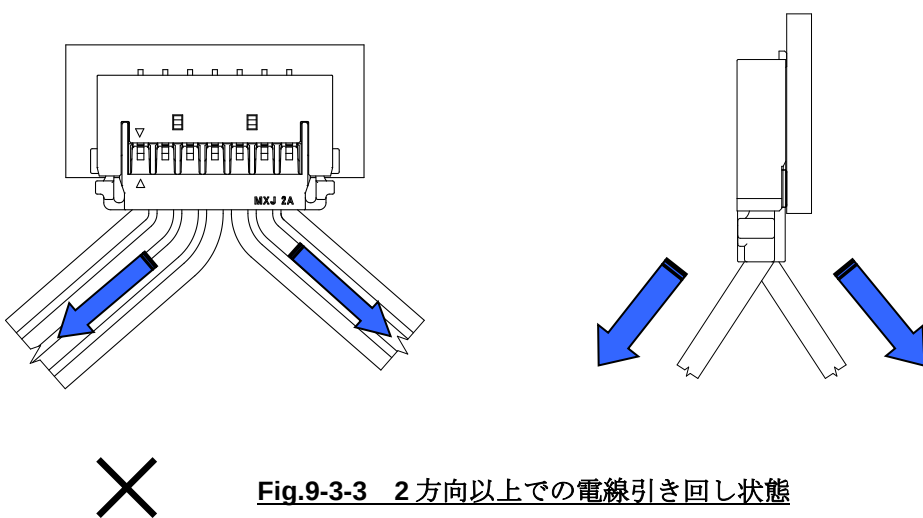


Fig.9-3-3 2方向以上での電線引き回し状態

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