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		Issue No.	Rev.
Title of Document:	Title of Document: HANDLING MANUAL		6
Customori		Issue date:	
Customer.		June 26, 2000	
Title aubicat:	ACH Connector	Revision date:	
The subject.		April 10, 2020	

This manual describes important and required points of handling about AGH connector. Be sure to read this manual thoroughly before using AGH connector.

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Prepared by: Chec	ked by: Reviewe	ed by: Appi	roved by:
Y.Takamatsu	M.Matsunaka	-	N.Amemiya

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1. Part Name and Model Number

Part na	ame	Model No.
	Contact	SAGH-002GU-P0.3
AGH connector	Housing	AGHR-03V-1-H

2. Applicable Wire

Item	Applicable range
Wire size	AWG #30 ~ AWG #26
Wire insulation outer dia.	$\phi 0.7 \sim \phi 1.0 \text{ mm}$
Conductor spec.	Annealed copper stranded wire with tin plating
Recommended UL style	UL1571 and its equivalent wire

Note₁: Special wires such as bare one, solid one, tin-coated one and shielded one other than the above wires cannot be used in principle.

3. Crimping Tool

Product name	Model No.
Semi-automatic press	AP-K2()
Crimping applicator	MKS-L-10-3
Die set (Type 003)	MK/SAGH-002-03

Note₂: When the crimping operation is conducted by using other than the above applicator and the die set, JST cannot guarantee the connector's performance.

4. Storage

4-1 Connector storage

Recommended storage condition: Temperature: 5 - 35 °C, Relative humidity 60 % or less (Under packaging like the state of JST shipment)

Keep off direct sunlight, places exposing to such corrosive gas as industrial gas (generate from a stove and whatnot) and ammonia gas (generate from a toilet and whatnot), dusty place and condensation.

Note that the resin molding part may break due to transportation and handling, such as processing and mating, under dry or low temperature condition. After unpacking, return products in the original package to store.

4-2 Storage of the crimped contacts

Not leaving the crimped contact to stand in a place exposed to high humidity and direct sunshine, and not placing them directly on the ground, keep them in a clean storage room.

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5. Crimping Operation

Before crimping operation, be sure to check that the combination of the contact, wires, and the crimping die is correct.

As the gold-plated contact tends to cause more troubles such as biting into the face of the crimper dies rather than the tin-plated contact, lubricate JST specified oil to the contact as shown below in crimping. (Oil: Nihon Kohsakuyu Co., Ltd.-made blanking oil, G6316)

In lubricating oil, use a JST-specified lubricator and coat oil throughout the barrel bottom surface and the carrier of the contact. At this time, be careful not to loose the coating brush of the lubricator which coats oil, because coating becomes insufficient.

Moreover, in case that an interval is made due to pause until crimping after oil lubrication, lubricate oil before crimping.



5-1 Wire strip

When a wire is stripped, do not damage or cut off wire conductors.

Strip wires referring to the reference value shown below.

As the wire strip length differs depending on wire type and crimping method, etc., decide the best wire strip length considering the processing condition.





Note₃: After stripping, do not expose the wire conductors for a long time, because the oxidation of the conductor's surface advances, which may result in the fluctuation of the contact resistance. So, complete the crimping as soon as possible after wire stripping.

5-2 Crimping

Check the below points for correct crimping at beginning, middle and end of crimping operation.

5-2-1 Measurement of crimp height



A: The crimp height at the wire barrel should be set to the pre-determined dimensions.

B: Adjust the crimp height of the wire insulation barrel to the extent that the wire insulation is slightly pressed, and set it not to crimp it excessively.

H: Measure the crimp height at the center of the barrel using a specified micrometer.

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- 5-2-2 Measurement timing of crimp height
 - ① When operation starts at morning and afternoon, starts after pausing and finishes.
 - ^② When the contact reel is exchanged.
 - ③ When the applicator is adjusted. (After trouble-shooting, etc.)
 - ④ When the crimping dies are exchanged.
- 5-2-3 Crimping condition at the wire insulation barrel part



Insufficient crimping (pressed weak) When tension is applied to a wire, the wire insulation easily comes off the contact.



Good



Excessive crimping (pressed excessively) The barrel bites wire too much and may damage the wire conductors.

5-2-4 Check of crimping condition at the wire insulation barrel

Cut only wire insulation barrel, remove wire insulation and check if wire conductors are not damaged.

Cut the insulation barrel







Table of crimp height

W	/ire (UL1571)	Crim	p height (mm)
Wire size	Insulation O. D. (mm)	Conductor part	Insulation part (Ref. value)
AWG #26	1.00	0.55 ~ 0.60	1.30
AWG #28	0.93	0.52 ~ 0.57	1.27
AWG #30	0.70	0.47 ~ 0.52	1.09

Note₄: The crimp height at the insulation part shown in the table is reference when using UL1571 style wire.

It depends on the wire insulation's outer diameter and the material, so check and set it in crimping according to item 5-2.

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5-3 Tensile strength at the crimped part

After adjusting the crimp height, check the tensile strength using the test samples, and then, start the continuous crimping operation. In case the tensile strength greatly differs from the normal tensile strength (actual value), check if there is a defect. Even though the wire size is same, the actual value sometime varies depending on the difference of the wire strength.

Table of tensile strength at crimped part

Wire size	Requirement	Actual value
AWG #26	20 N min.	40N ~ 43N
AWG #28	10 N min.	28N ~ 33N
AWG #30	5 N min.	15N ~ 18N

5-4 Crimping appearance

Check the crimping appearance visually for correct crimping with equipment such as a loupe.

5-4-1 Part name of the crimped contact



5-4-2 Examples of defective crimping



Protruded wire brush length is long.



Wire insulation is not crimped sufficiently.

Wire barrel bites wire insulation.



Stray wire conductors

Protruded wire brush length is short.

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5-5 Precautions for crimping operation

- ① Conduct the crimping operation properly and inspect the crimping appearance of the crimped product with loupe.
- ② Do not crimp with no terminal and twice, because they may cause an outstanding burr at the crimped part and may lead to the abrasion of the crimping die quickly.
- ③ As cutting residues (powder), etc. adhered to the crimping die part affects the life of the dies, clean the crimping part occasionally and conduct the appropriate crimping.
- ④ When chips or excessive roughness are observed on the crimping die, replace it without delay.
- S Abrasion of the crimping die and insufficient adjustment of the applicator may cause defective crimping appearance. Do not fail to conduct daily inspection.
- [©] When the crimping operation is conducted with the wire-holding spring damaged or extracted, the wire conductors may come off or the wire barrel may bite the wire insulation.
- 5-6 Precautions for the storage and the handling of the crimped contact

Because the crimped contact is subject to the deformation by external forces before inserting into the housing, pay careful attention to the following 4 points for the storage and the handling:

- ① Protect the contacts by wrapping with paper to prevent the deformation and the adhesion of foreign substances, and keep them in an adequate box.
- Do not place the contacts in humid area, under direct sunshine and directly on the floor.
 Store them in a clean room with ordinary temperature (5 ~ 35°C) and humidity (45 ~ 85%).
- ③ Do not overstack too much quantity of the crimped contacts or place anything on them, because the weight may cause the deformation of the contact and troubles such as defective contacting.
- ④ When the crimped contact is taken out of the bundle, do not pull a wire but hold the wire near the crimped section and take it out.

6. Harness Assembly Operation

The harness assembly operation is a very important process for the connector performance and the harness quality. Careful operation is required for the harness assembly.

- 6-1 Before inserting the crimped contact into the housing
 - ① Do not place other things on or near the working table and do not conduct any other works on the same working table.
 - ② Do not stain the contact with household goods such as oils, detergent, seasoning, fruit juice and insecticide. If stained, never use the stained contact.
 - ③ Do not use the poor crimping contact and the deformed one.
 - ④ The rough handling of the crimped contacts in binding may cause the deformation.
 - S When the bound harnesses are loosened, do not pull the crimped contacts by force even if they get entangled.

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- 6-2 Inserting the crimped contact into the housing
 - ① Hold the contact with the lance part up and insert it in a straight in the housing without prying.
 - ② Insert the contact into the housing without stopping to the innermost. When the contact is fully inserted into the housing, the housing lance clicks and there is the feeling of the response.
 - ③Check secure locking per each insertion by pulling a wire softly in order to check that the contact does not come off the housing. Besides, check visually that each contact lance is securely caught with the housing one as shown below.



Proper insertion





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Insufficient insertion

- Note₅: When a wire is pulled with too much force, the housing lance may be deformed, resulting in the disconnection of the contact.
- 6-3 Extracting the contact from the housing in case of mis-insertion

When the crimped contact is inserted into an improper circuit hole, conduct the following points.

- ① Raise the housing lance with a sharp-pointed tool such as needle and jig, and unhook the housing lance.
- ② Pull out a wire softly and extract the contact from the housing.



③ Do not use the housing whose lance has been raised but use the new one.

As a rule, do not use the extracted contact but use the new one. When you can't help using the extracted contact, pay attention to the following items:

- Only a specified person conducts the operation.
- Fully check that the extracted contact is free form deformation. If such an abnormality as deformation is found, replace it with the new one.
- After the repair completes, be sure to check secure locking as shown in item 6-2. When the contact comes off the housing, use the new housing and contact.

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7. Check Points of Crimping Operation and Harness Assembly

The operations of crimping and assembly affect the reliability of the connector.

It is recommended that crimping and assembly operations and the finished products be controlled concentrating upon the following check points:

Process	Check point	Description		
Crimping	Appearance	Check that the model Nos. of the contact and the applicator are adequate for wires to be used. Check that the wires are crimped at the normal position. Check that the crimped configuration is normal and excessive burr does not appear. Check that uncrimped wires are not left behind. Check that the contact is not bent, deflected or deformed. Check that the contact is free from dirt, scratches, stains or discoloration.		
	Tensile strength	① Check that the crimp height and the tensile strength are adequate.		
Harness assembly	Appearance	 Check that the contact is properly inserted into the housing. Check that the contact is securely locked with the housing. Check that the housing is free from dirt and foreign matters. 		
Finished product	Appearance	① Follow all descriptions stated above in "Appearance."		
(Harness)	Continuity	 ① Check no electrical discontinuity on the connector. ② Check no miss-wiring. 		

Note₆: We recommend using microscope or loupe in the appearance inspection. Note₇: When conducting electrical continuity, observe the following items and do the operation.

- 8. Inspection of Finished Product (Continuity Check)
 - ① Simple wiring inspection using a tester, etc.
 - Do not insert a tester stick into the mating part. Inadequate diameter of a tester stick and prying a tester stick may deform the mating part.
 - Contact a tester stick with the wire insulation side inserting it from the connector contact entrance of the housing, and conduct the inspection.



- 2 Wiring inspection using an inspection jig
 - Use the header applicable to the housing for inspection.
 Do not remove the housing wall of the header. If removed, the contact may be pried easily during the inspection and poor contact may be caused.
 - Check that the header is free from deformation, damages and stains. When they are found, replace with a new one. Periodical replacement of the header should be conducted as well.
 - Mate and unmate the connector with care, holding the housing without prying.
 When an inspection board is used, design it so that mating and unmating works are conducted smoothly.

Applicable header

Part nam	Part No.			
	Normal type	BM03B5.6-AGHS-GG		
AGH connector header	Low profile type	BM03B3.9-AGHS-GH		

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9. Mating and Unmating the Connector

9-1 Mating the connector

Mate the socket connector with the header on the same axis. Be sure to push the "PUSH" part of the socket housing as shown in the figure below to check secure mating of the connector.





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9-2 Unmating the connector

Hold 3 wires of the socket connector together and pull them up. At that time, do the operation at the wire angle of 30° or less.



10. Handling Precautions

- ① Handle wires with care not to apply to the connector tension which is caused by bending wires.
- Insert the connector in line with the mating axis as much as possible. At that time, do not angle the connector and mate it by force, because the housing may be damaged and the contact may be deformed.
- ③ Do not mate the deformed header with the socket, because the socket may be damaged.