

ZE064W Series

Handling Manual




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1. SCOPE

This harness operation manual describes the procedures for wiring, assembling and disassembling the ZE064W connectors.

It also details the crimping information and common practices of general crimps for the ZE064 terminals.

All measurements are in millimeters and Forces in Newtons unless otherwise specified.

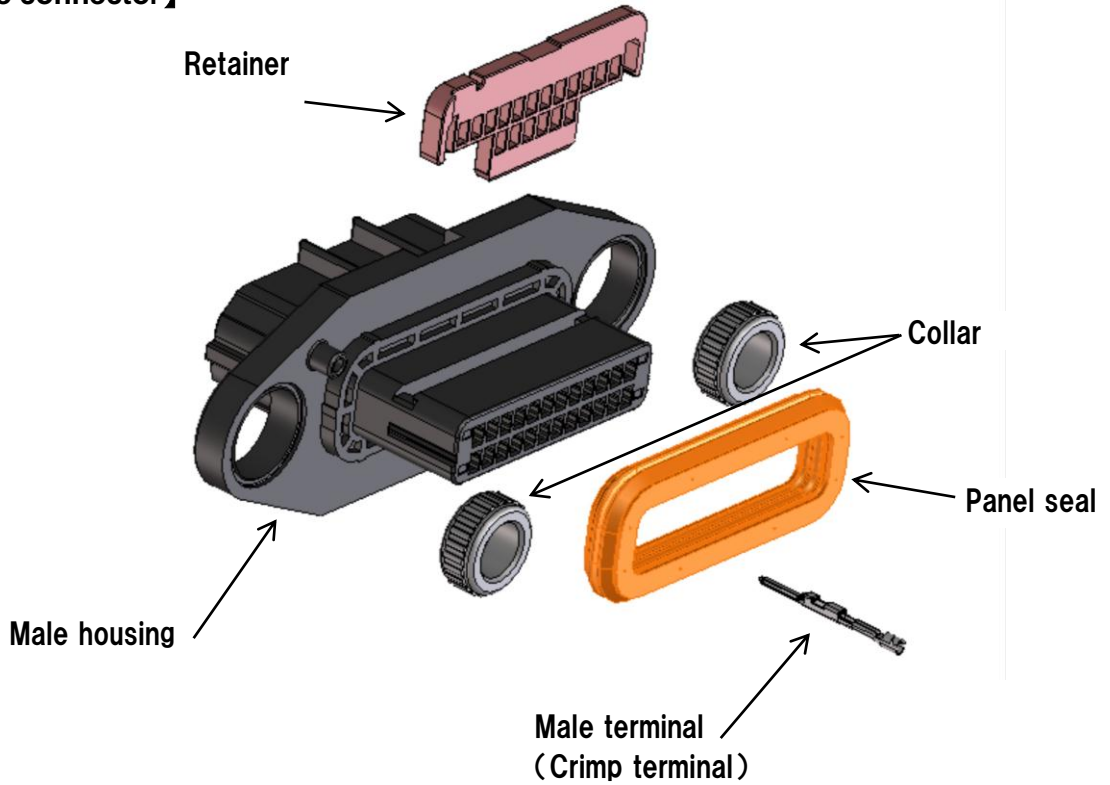
In addition, photographs and illustrations described are representative products of HRS ZE064W series, so they differ depending on products.

Information of this manual is subject to change without notices.

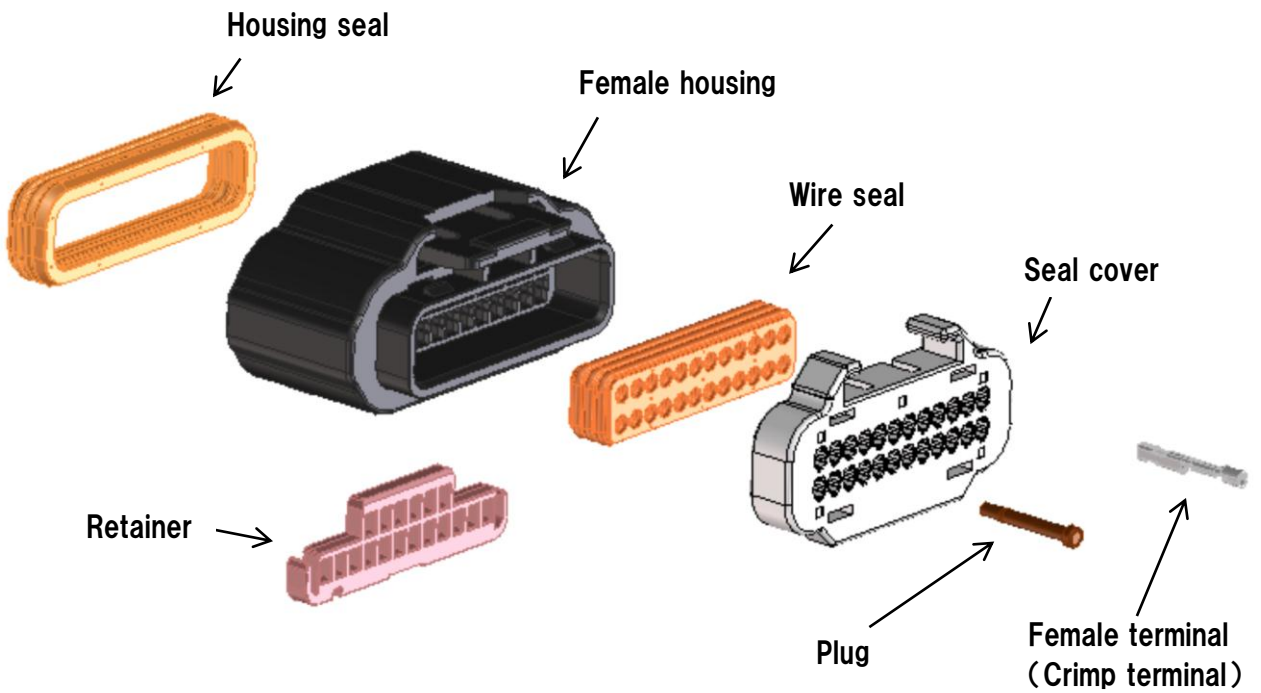
2. PARTS DESCRIPTION

2.1 DESCRIPTION

【Male connector】



【Female connector】



2.2 PART NUMBERS

Description	Part Number
Male terminal	ZE064-2022PCF
Female terminal	ZE064-2022SCF
Female connector X positions (coding A or B)	ZE064W- <u>X</u> DS-HU/R(Y)
Male connector X positions (coding A or B)	ZE064W- <u>X</u> DP-HU/R(Y)
Plug	ZE064W-WCP(2022)

Note 1: please check with Hirose Sales department for the availability of all part numbers.

2.3 MATERIALS

Part	Sub part	Material
Female connector	Female housing	PA
	Retainer	PA
	Housing seal	Silicone
	Wire seal	Silicone
	Seal cover	PBT
Male connector	Housing	PA
	Retainer	PA
	Panel seal	Silicone
	Collar	Carbon steel Surface: Nickel plating: 5 μ m min
Female terminal		Metal thickness: 0.2 \pm 0.05 mm Copper alloy Surface: Tin plating: 1 μ m min Under: Copper plating: .0.3 μ m min
Male terminal		Metal thickness: 0.2 \pm 0.05 mm Copper alloy Surface: Tin plating: 1 μ m min Under: Copper plating: .0.3 μ m min
Plug		PBT

3. PACKAGING

Designation	HRS P/N	Carton box dimensions LxWxH (mm)	Type of packaging	Quantity of parts per unit
Female connector 8P	ZE064W-8DS-HU/R (A) or (B)	495 x 315 x 200	Tray	120 pcs/tray x 5 layers = 600 pcs
Female connector 14P	ZE064W-14DS-HU/R (A) or (B)	495 x 315 x 200	Tray	96 pcs/tray x 5 layers = 480 pcs
Female connector 24P	ZE064W-24DS-HU/R (A) or (B)	495 x 315 x 200	Tray	55 pcs/tray x 5 layers = 275 pcs
Male connector 8P	ZE064W-8DP-HU/R (A) or (B)	495 x 315 x 200	Tray	70 pcs/tray x 5 layers = 350 pcs
Male connector 14P	ZE064W-14DP-HU/R (A) or (B)	495 x 315 x 200	Tray	60 pcs/tray x 5 layers = 300 pcs
Male connector 24P	ZE064W-24DP-HU/R (A) or (B)	495 x 315 x 200	Tray	50 pcs/tray x 5 layers = 250 pcs
Male terminal	ZE064-2022PCF	570 x 570 x 55	Reel	15000 pcs/reel
Female terminal	ZE064-2022SCF	570 x 570 x 55	Reel	13000 pcs/reel
Plug	ZE064W-WCP(2022)	According number of plugs to be sent	Bag	1000 pcs/bag

4. MECHANICAL PERFORMANCES

The main mechanical characteristics are as follow:

Test	Value
Tensile strength of the Wire-Terminal link	AWG20: 70N min
	AWG22: 50N min
Terminal insertion force	4N max for female terminals 3N max for male terminals
Terminal polarization force	9N min for female terminals 30N min for male terminals
Terminal retention force with TPA inactive	25N min
Terminal retention force with TPA active	85N min for female terminals 86N min for male terminals
Connector mating force	27.5N ~ 31.3N (8 terminals)
	44.3N ~ 48.0N (14 terminals)
	78.4N ~ 85.0N (24 terminals)
Connector unmating force	15.0N ~ 22.4N (8 terminals)
	34.0N ~ 40.4N (14 terminals)
	50.0N ~ 55.5N (24 terminals)
Connector retention force	230N min
Connector polarization force	150N min
Mating / unmating cycles number	30 times
TPA insertion force with all terminals fully inserted	20N max
TPA insertion force with one terminal incorrectly positioned	70N min
TPA opening force	10N min
TPA pull-out force	10N min

5. STORAGE - HANDLING OF COMPONENTS

5.1 STORAGE CONDITIONS

- Store in a well ventilated environment with the following relative temperature and humidity range: -10° to 60°C ; 85% HR maximum.
- Store without contact with the ground, on a pallet or platform, a clean dry surface until the packages are retrieved for production.
- Store packages away from water and direct UV rays.
- Store packages away from heat and areas with high temperature variations.
- Keep away from high temperature or hygrometry variations to avoid condensation inside the packages.
- Store packages away from dust to keep the components clean.
- Keep packages as they are delivered, without undoing the adhesive ribbon until use.
- Do not walk or place heavy objects on packages.
- Where packages are stored in racks, place the heavier cartons below and the lighter ones above not to damage the parts.

5.2 HANDLING OF COMPONENTS

- Do not touch the terminal contact points or the interior of the barrel.
- In the event that the terminal must be handled, please wear gloves in order to prevent corrosion.
- Placing items on top of a terminal or dropping a terminal may result in shape deformities or contamination. Please handle terminals with care.
- In the event of terminals becoming tangled, please do not forcibly pull or bend them apart, but disentangle them carefully.
- Use caution when handling terminals so as to avoid deformation.
- Make sure that the terminals of crimped cables do not become entangled. When bundling or stacking cables, please prevent the terminals from being subjected to any external force.
- Use caution to ensure that the part is not subjected to any large impacts.

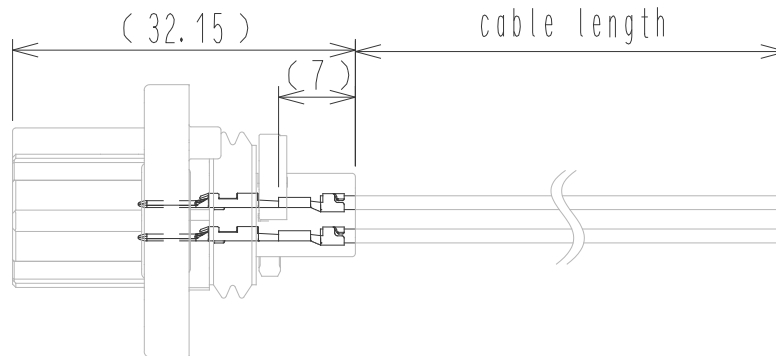
- Do not place wire harnesses on the floor.
- Refrain from any handling that may result in terminal damage or deformation.
- Do not use the housing in case it drops.

6. ASSEMBLY PROCESS

6.1 CRIMPING OF TERMINALS

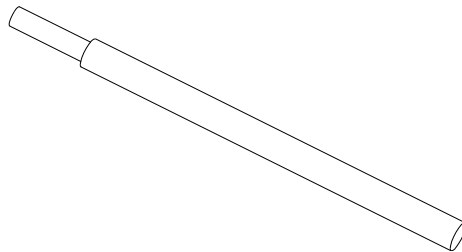
1 – Cut the cable

Set the cable length with reference to the dimensions shown below.



Approximate cable cut length = above cable length + 7mm

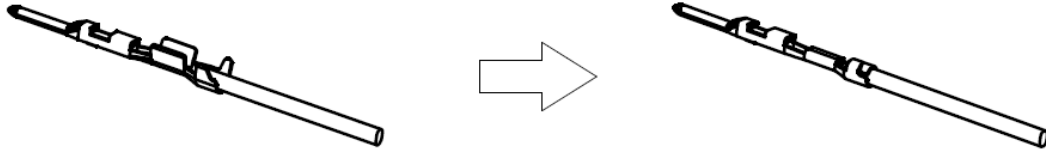
2 - Strip the cable



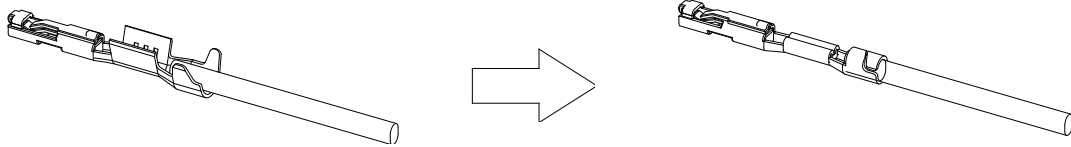
Please refer to the Crimp Quality Standard (§11) for details on strip length.

3 – Crimp wire in terminal

Male terminal:



Female terminal:



Note 1: Please use the Hirose crimp tool.

Note 2: Please refer to the Crimp Quality Standard (§11) to confirm terminal compatibility and check crimp condition.

Note 3: Please refer to the Crimp parameters (§12) for the crimp parameters to be used.

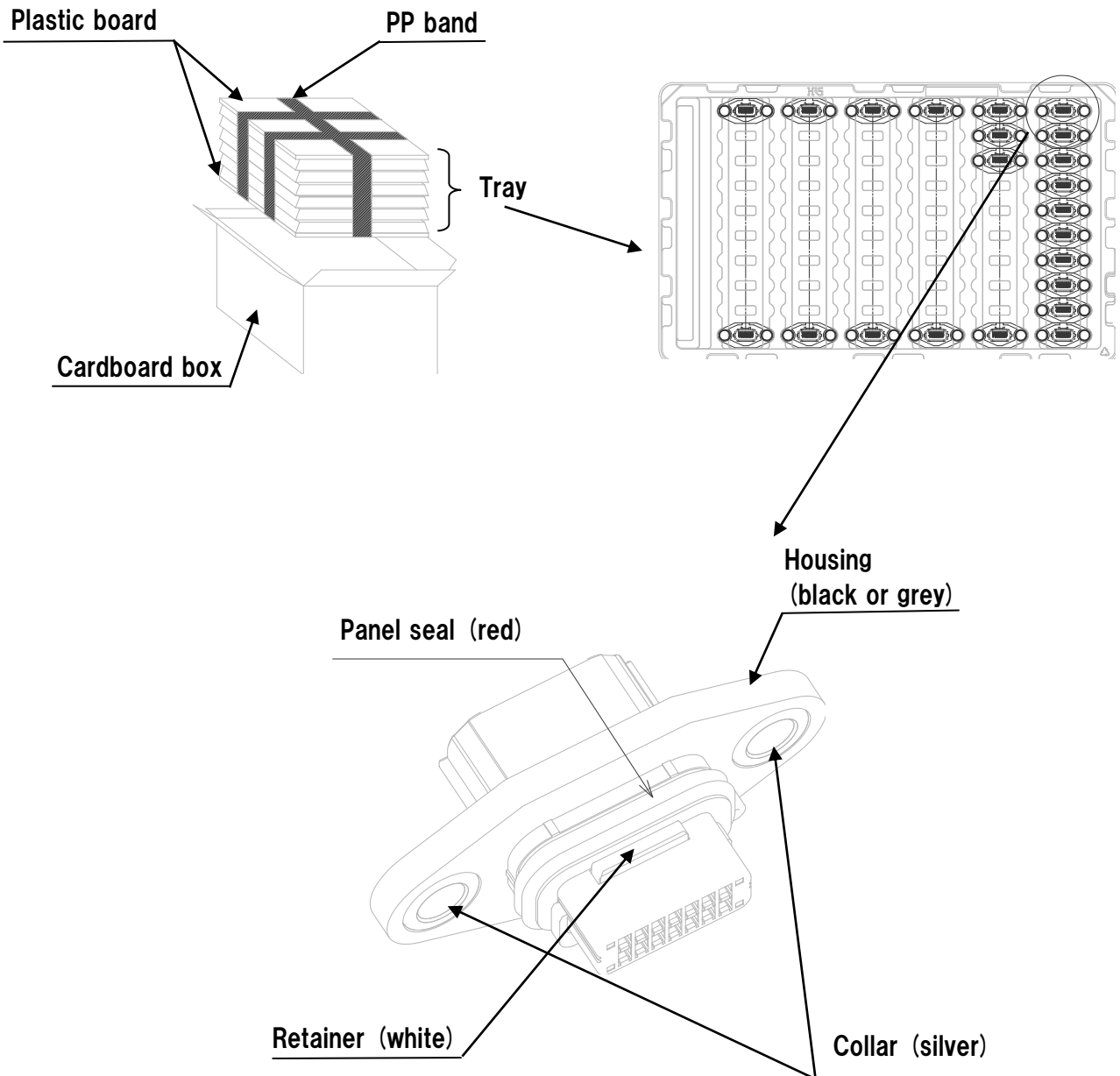
6.2 CONNECTOR ASSEMBLY INSTRUCTIONS

Male connector:

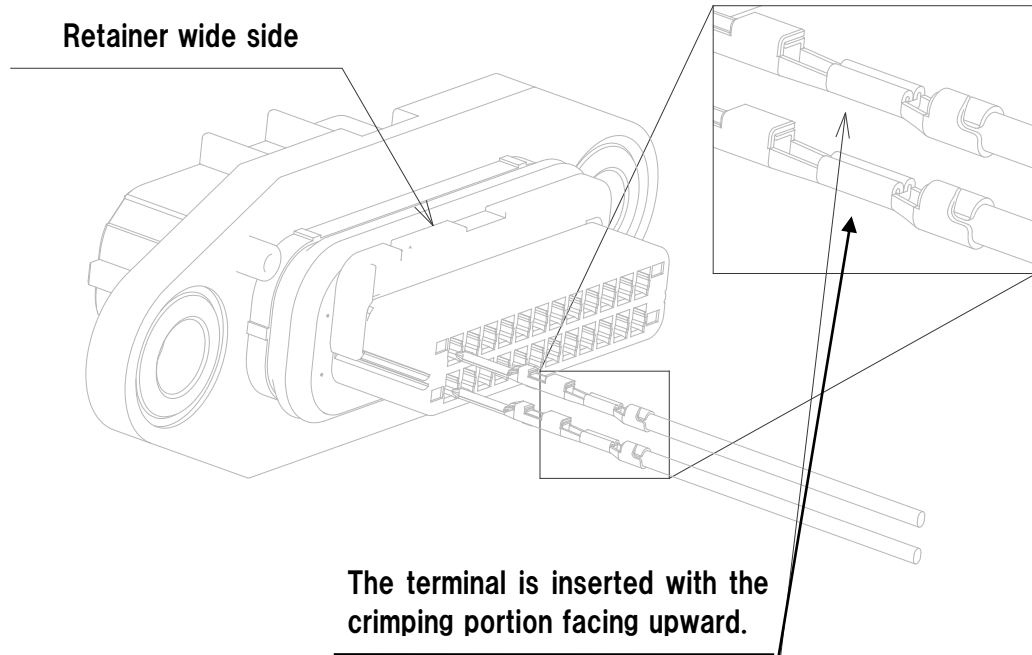
1 – Pick a connector from the tray.

Please hold connectors except panel seal part.

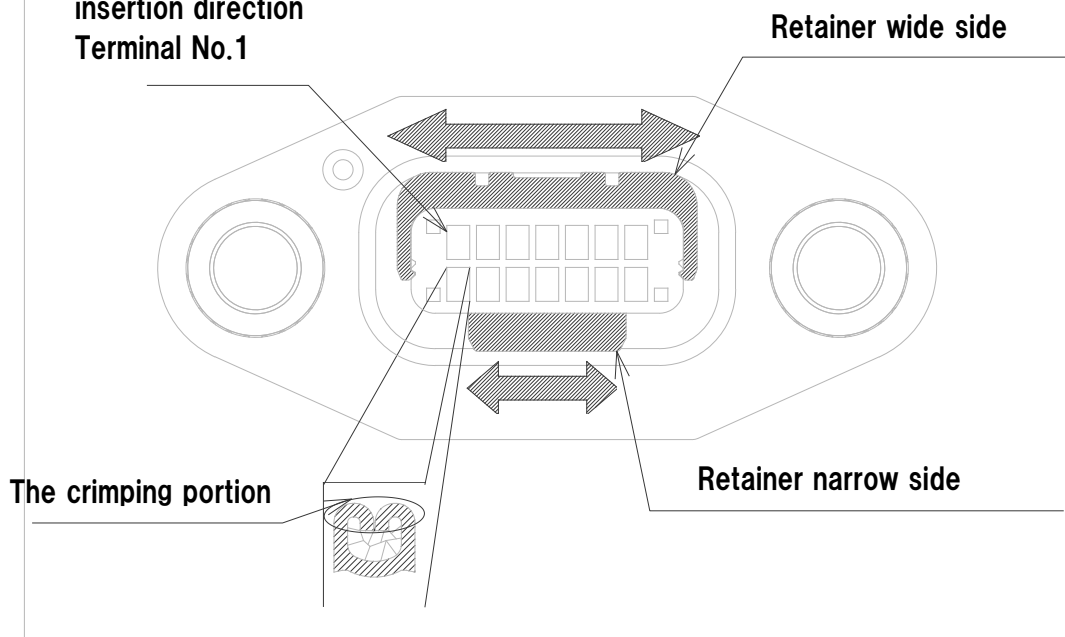
And also be careful that the oil of the panel seal not to be touched with other objects except connector housing and retainer.



2 - Insert the terminal straight to the housing (refer to below direction) until a click by the lance is heard.

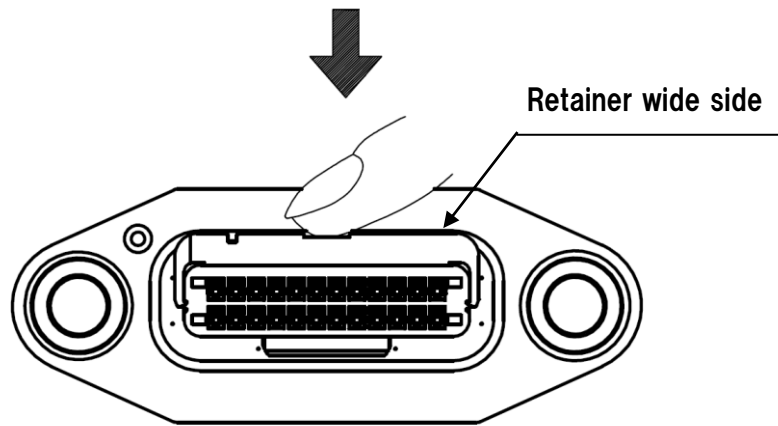


Supplementary figure of terminal
insertion direction
Terminal No.1

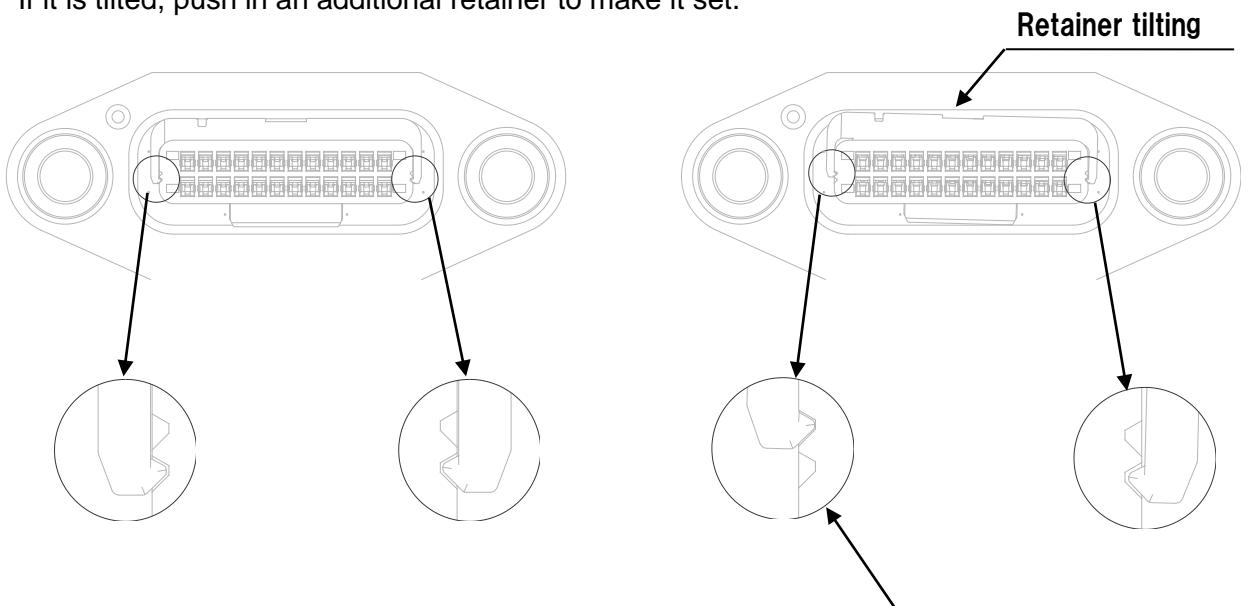


3 – Push the pre-set retainer from wide side until it clicks.

Please don't touch the panel seal more than necessary.



After setting the retainer, please make sure the retainer is not inclined as seen from the front. If it is tilted, push in an additional retainer to make it set.



*Set condition of retainer

*One side of the retainer not installed.
(Even in the case of this left-right reversal.)

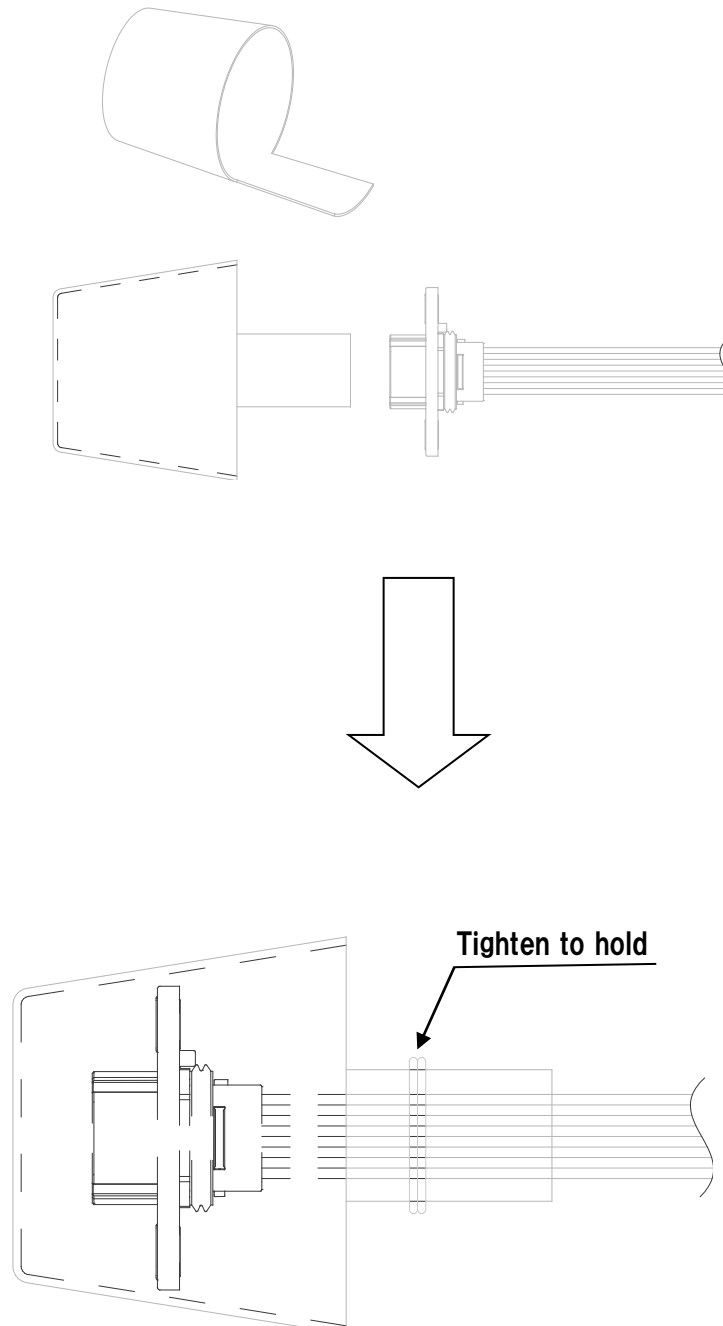
OK

NG

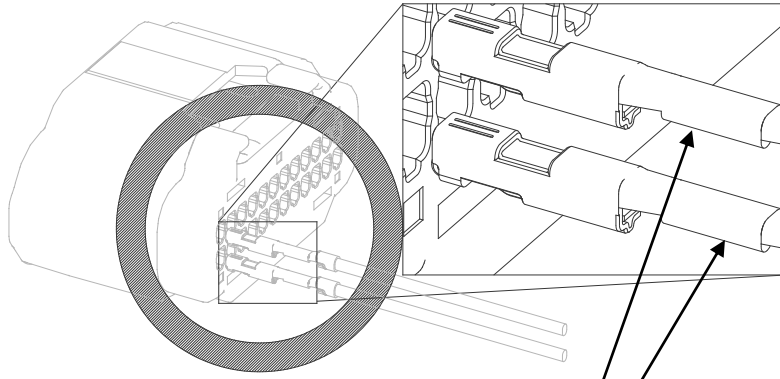
4 – Please protect the panel seal not to be touched with other objects.

The protector is required not to be deformed excessively during packaging, shipping and being stored.

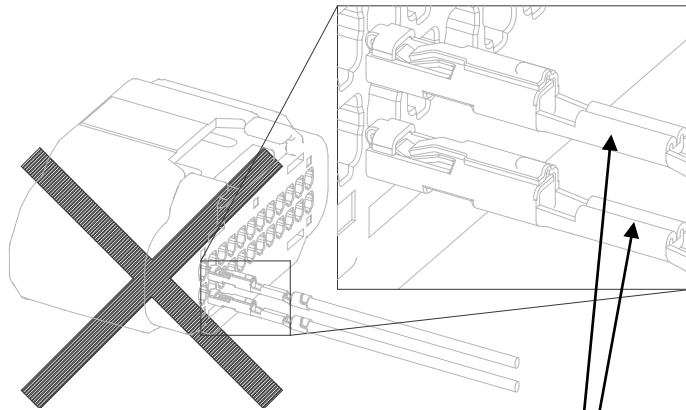
e.x.) Cover the whole part of connector with plastic cup and tighten the cables to hold.



Female connector:



At both the upper row and the lower, the terminal is inserted with the crimping portion facing upward.

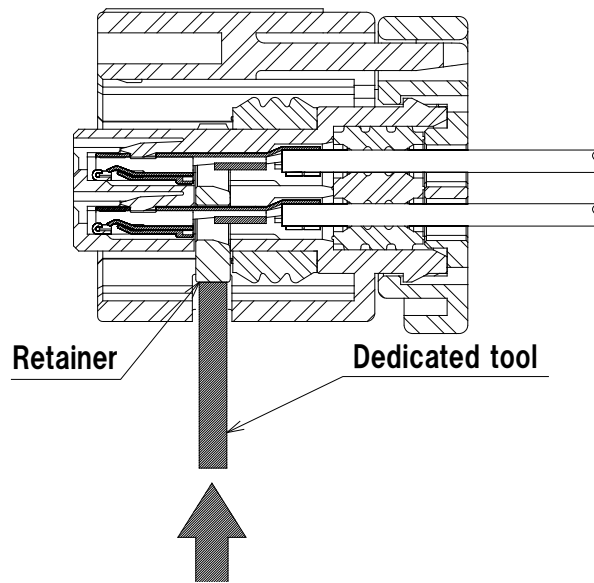
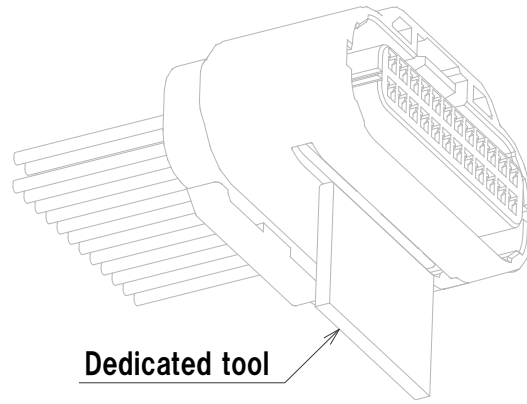


The terminal is inserted with crimping portion facing downward.

Note: Hold the cable and insert it straight.

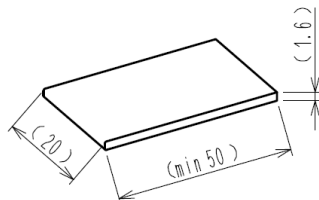
2 – Push the pre-set retainer until it clicks.
Please use a dedicated tool for the set of retainer.

Dedicated tool can be substituted as long as the following dimensions (Plastic recommended).



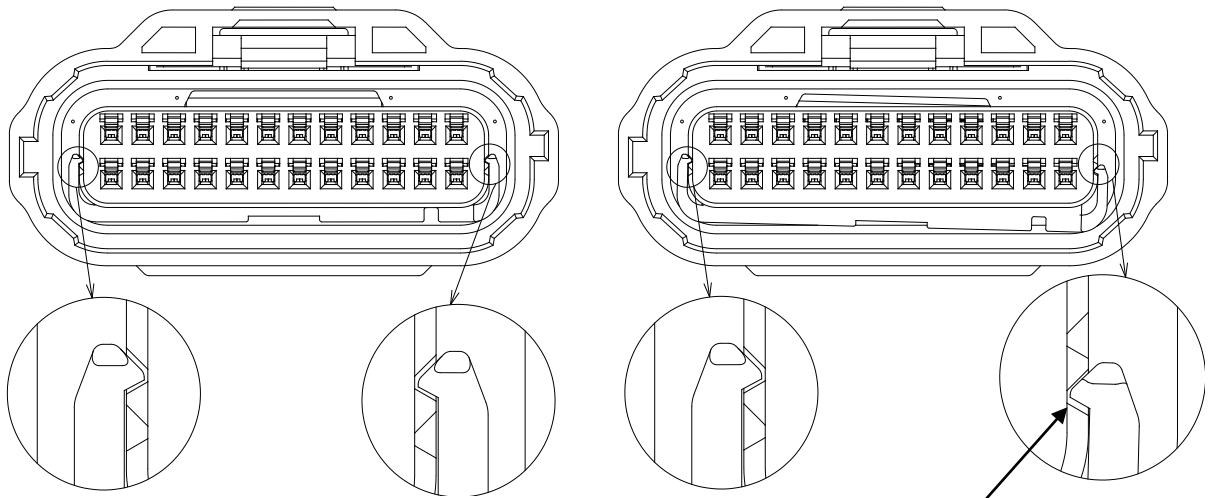
Push the dedicated tool
in the direction indicated by the arrow.

Tool dimensions:



Set condition of retainer

After setting the retainer,
please make sure the retainer is not inclined as seen from the front.



*Set condition of retainer

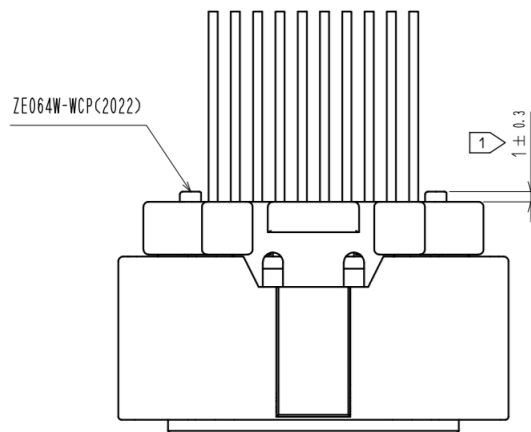
*One side of the retainer not installed.
(Even in the case of this left-right reversal.)

OK

NG

In case of cavities where terminals are not inserted, please use plugs to ensure waterproofness of connectors.

Below dimension should be respected to ensure correct position of plugs:



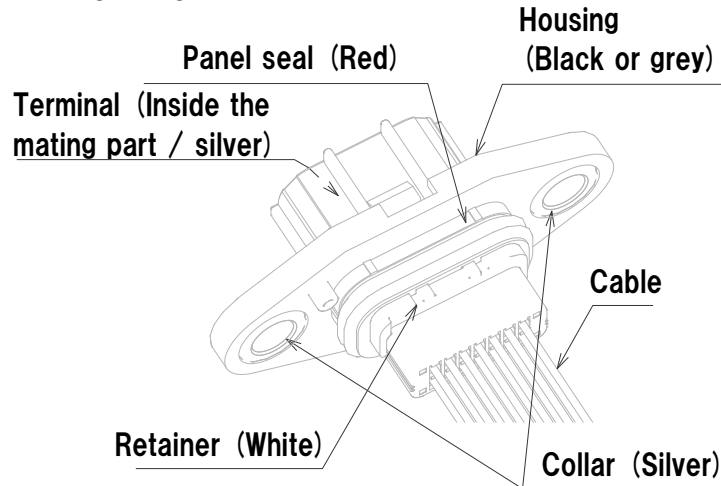
7. WIRING HARNESS ASSEMBLY RECOMMENDATIONS

- Deformed or damaged parts have to be replaced by a new one.
- Apply tape so that every individual wire is subjected to an equal amount of tensile force to avoid any effect on terminals (like disengagement).
- The distance to apply tape from the end of connector is 35mm minimum.
- The bending radius for wires should be at minimum 3 times its outer radius to ensure normal use of our connectors.

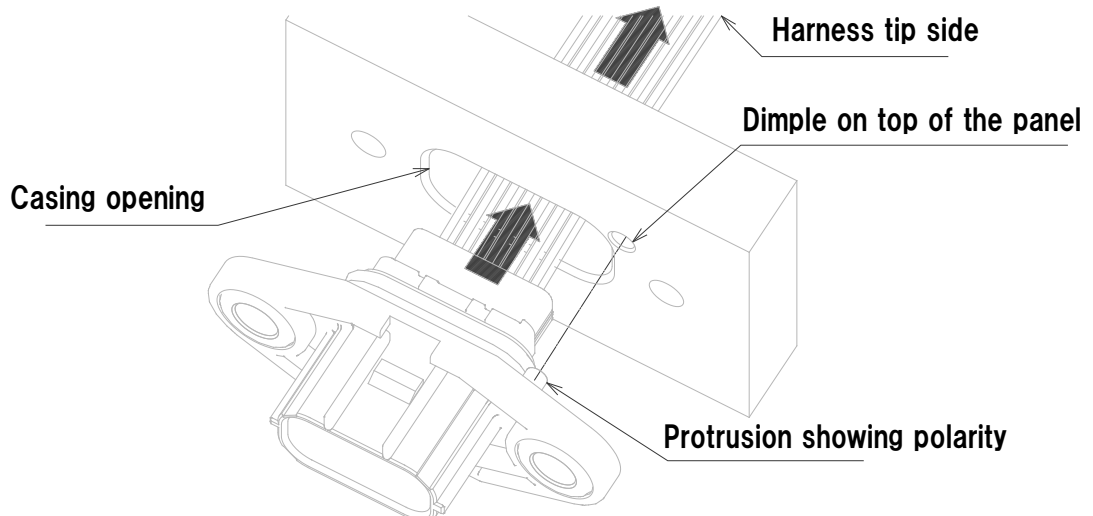
8. ASSEMBLY PROCESS TO THE PANEL

1 – Pick a harness assembly from packaging.

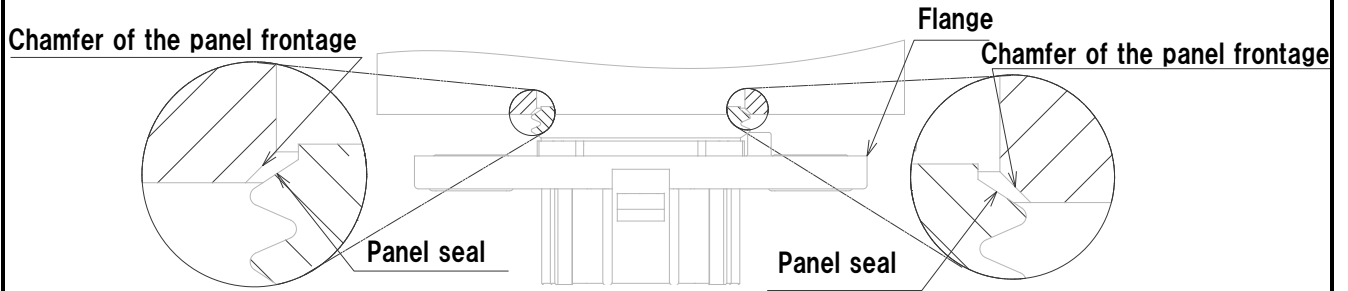
In the harness state, it is recommended to hold the cable and housing. Do not touch the terminals or the male connector panel seal or retainer. Also, make sure that oil is smeared over the entire surface of the panel seal. Excessive loss of oil on the surface of the panel seal will result in insufficient slippage when installed on the panel, causing it to not install properly and compromising air tightness.



2 – With the orientation of the polarity protrusions on the housing aligned with the indentations on the enclosure, insert the harness end side through the enclosure opening until the male connector panel seal touches the enclosure opening.



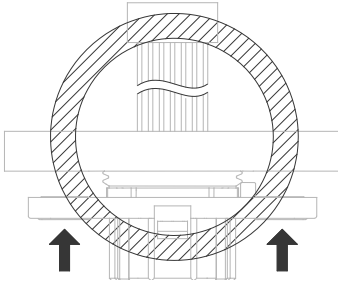
3 – Lightly press the panel seal against the chamfer of the panel frontage to position the male connector.



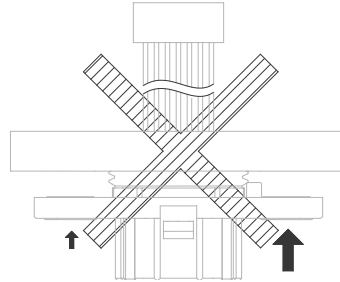
While in this position, press on the male connector housing or collar and push the male connector straight into the enclosure opening. Push straight in until the male connector flange touches the panel.

Pushing the male connector diagonally or pulling the harness side into the enclosure opening may cause excessive load on the male connector, which may result in damage.

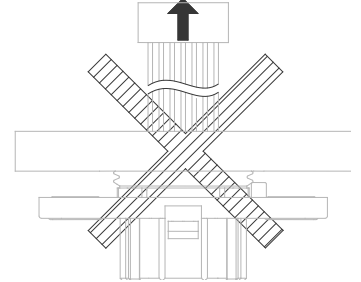
OK: Press both sides of the collar evenly



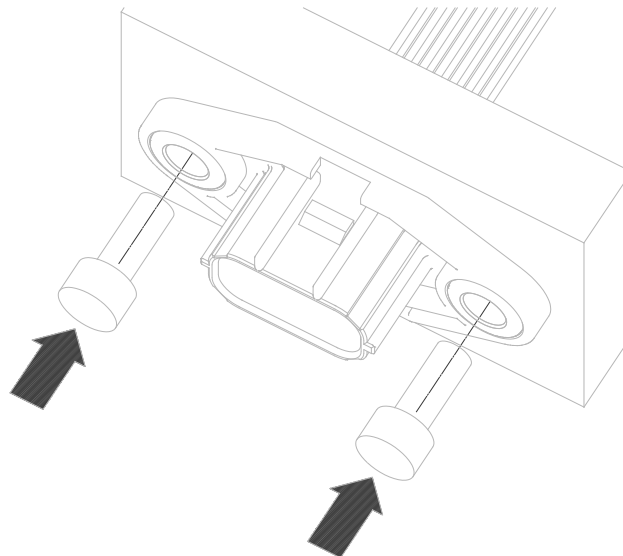
NG1: Press the collar unevenly



NG2: Pull on the end of the harness

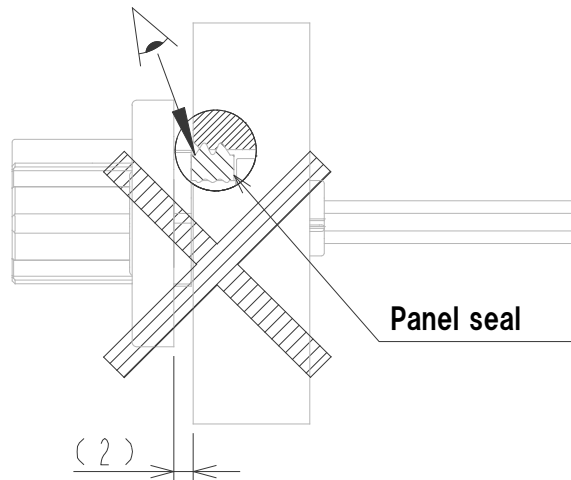


4 – Remove your hand from the male connector. Insert M5 size screws through the two collars and tighten the screws to a tightening torque of 5.5Nm max to secure the unit to the panel.



Make sure that the male connector does not rise excessively above the surface of the panel when you take your hand off the male connector. If it floats up excessively, something may have gone wrong. In that case, pull the male connector out of the panel and start the process all over again.

Approximate amount of lift: 2mm or less or no panel seal is visible through the gap.



Do not reattach the male connector to the panel more than once and only do so consecutively to the same panel.

Before reattaching the harness, check the appearance of the panel seal and if it is damaged or deformed, use a new harness.

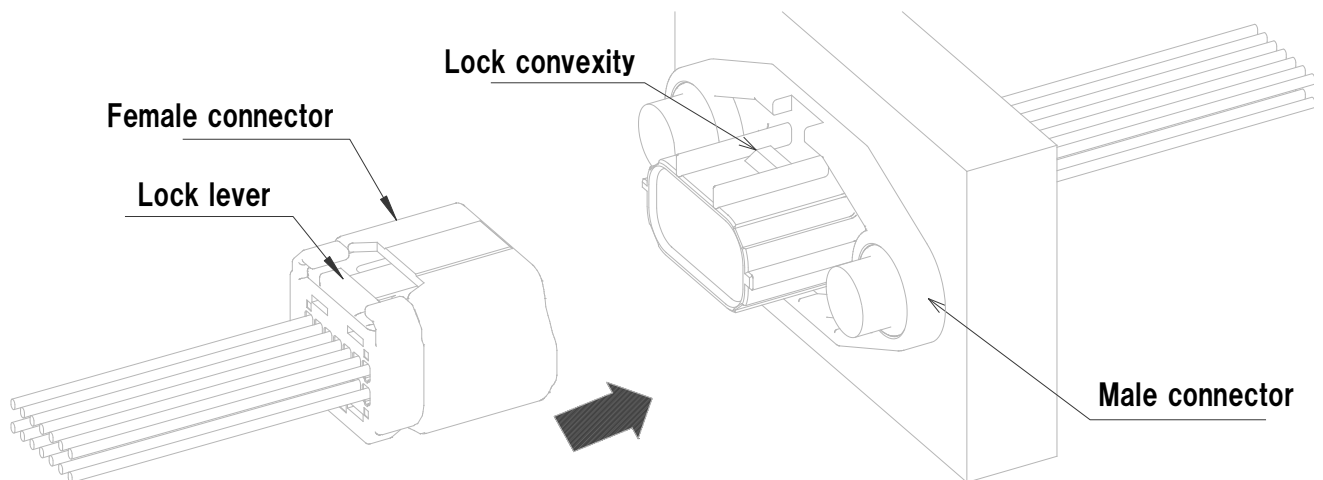
Also, reattaching the male connector more than once or reattaching it to a different panel may cause excessive load on the panel seal, so please use a new harness in such cases.

9. MATING OPERATING PROCESS

1 – Prepare a panel with a male connector attached and a female connector harness product.

Make sure that the male and female connector key codings are the same.

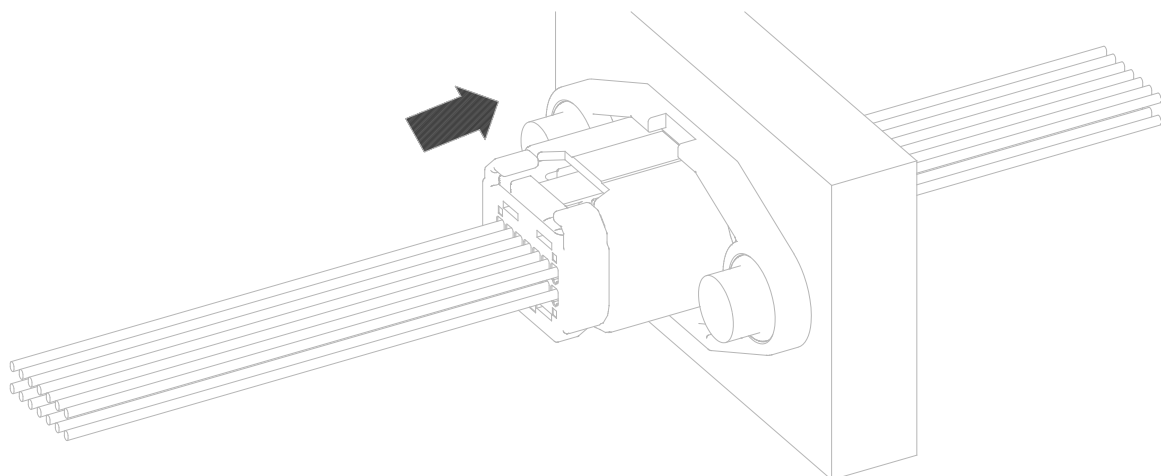
Align the locking direction of the male and female connectors and insert them straight along the mating direction.



2 – Please insert the connectors until they butt against each other. The connector will be locked.

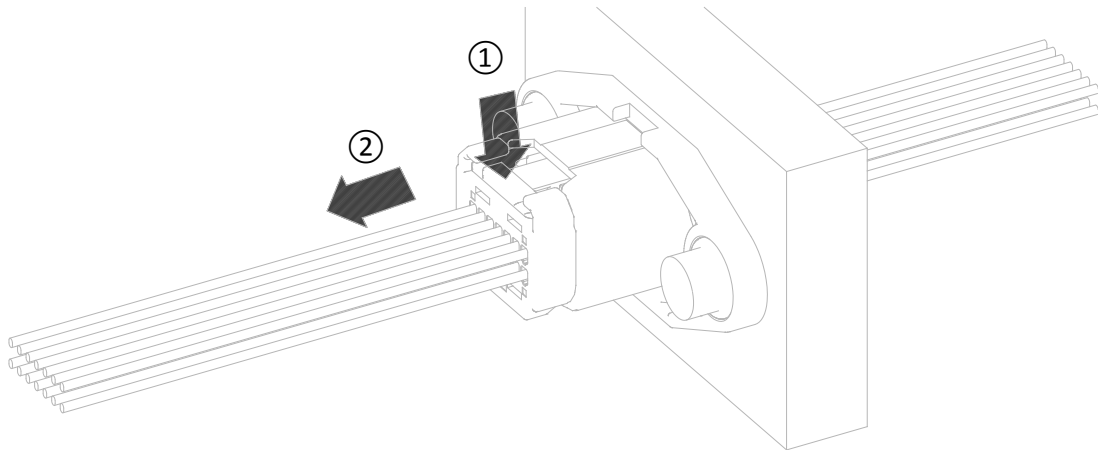
Do not touch the female connector lock lever when inserting the connector.

This makes it difficult to recognize the lock feeling and may cause half insertion.



3 – When disconnecting the connector, push down the female connector until the locking lever of the female connector is pushed against it, then grasp the female connector housing and pull it straight against the mating direction.

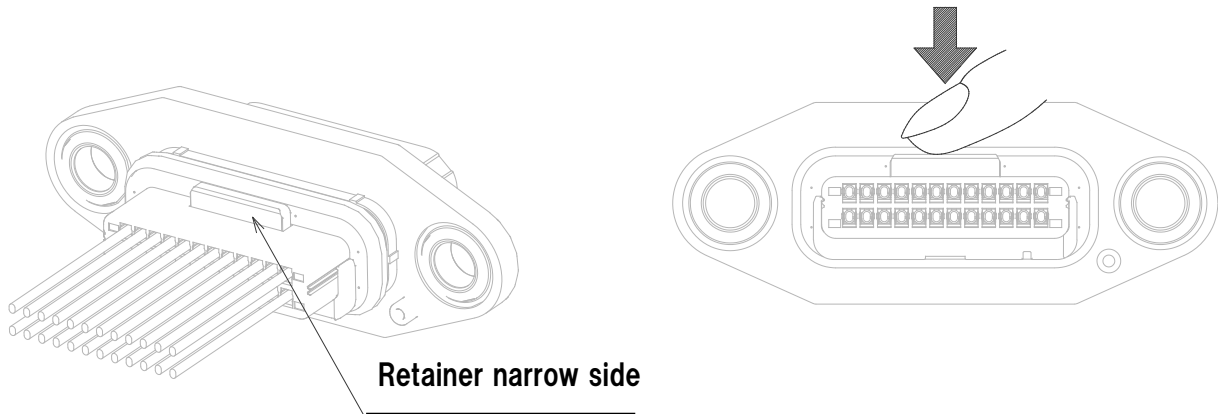
If the female connector is removed while the lock lever is not pushed down enough, it may cause damage to the lock lever.



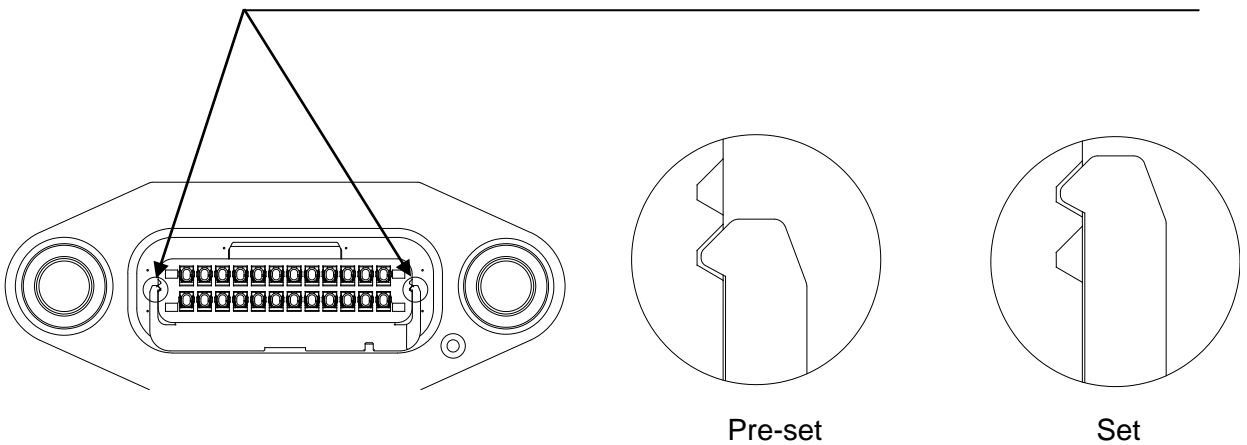
10. REPAIR PROCESS

Male connector:

1 – Release the retainer with your fingers, to return to the pre-set state.



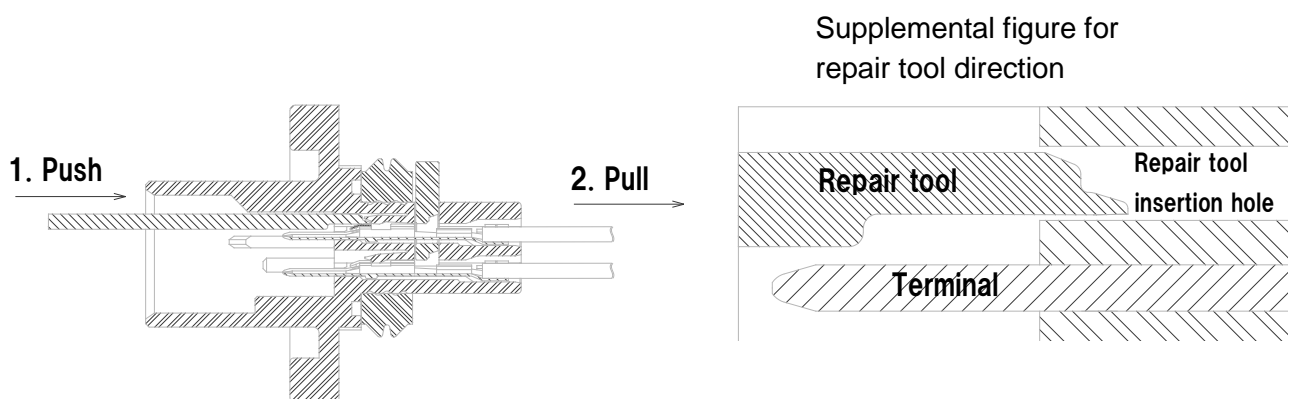
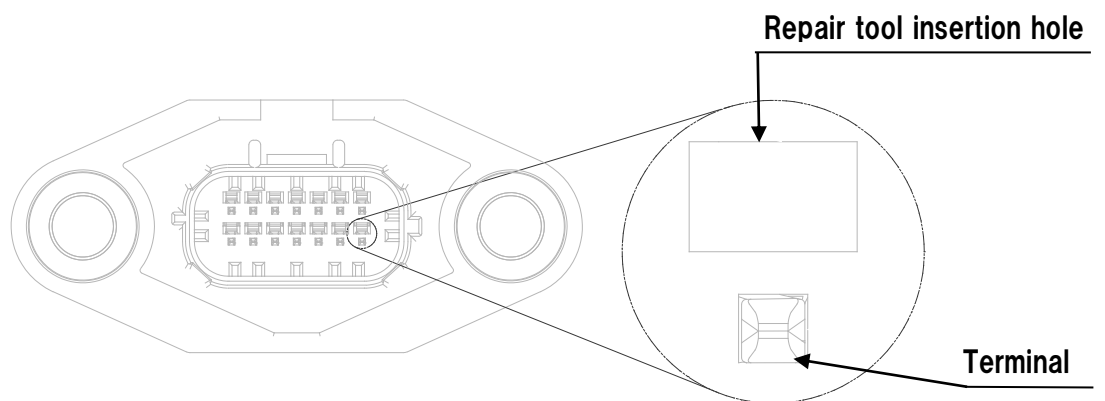
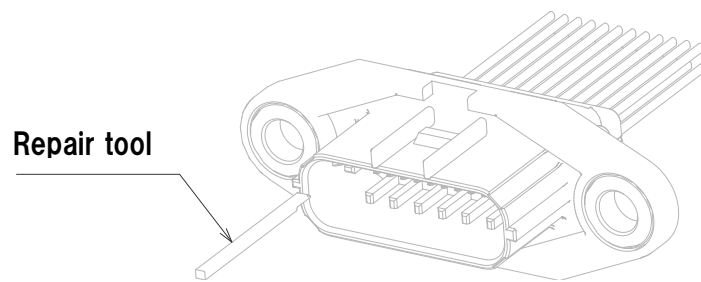
Make sure that the retainer is in the pre-set state for both left and right.



Note: Please return to the pre-set state position from retainer wide side when the retainer drops out.

2 – Insert the repair tool into the terminal hole, and push until it hits.
After pushing in, please remove the terminal while maintaining that state.

Note: Please refer to the next section (§9) for details on the repair tool.

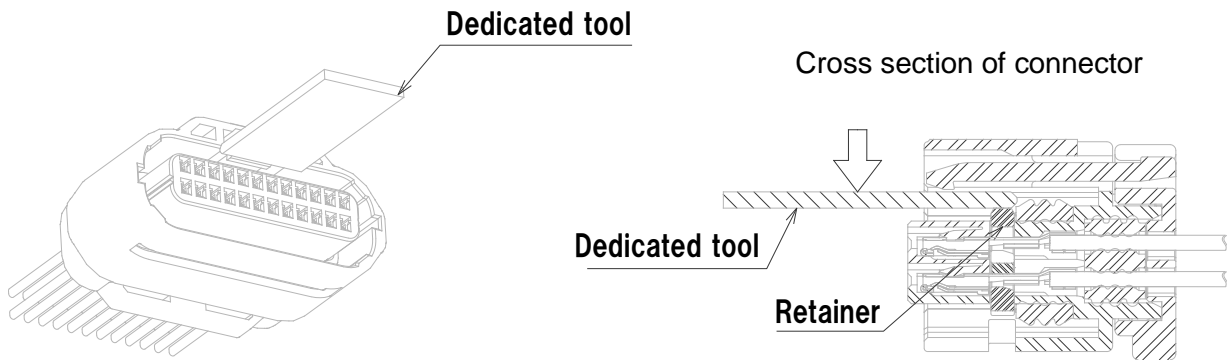


Note: Please be careful not to touch the terminal when inserting a repair tool.

Note: Repaired connector cannot be used. Please replace it with new one.

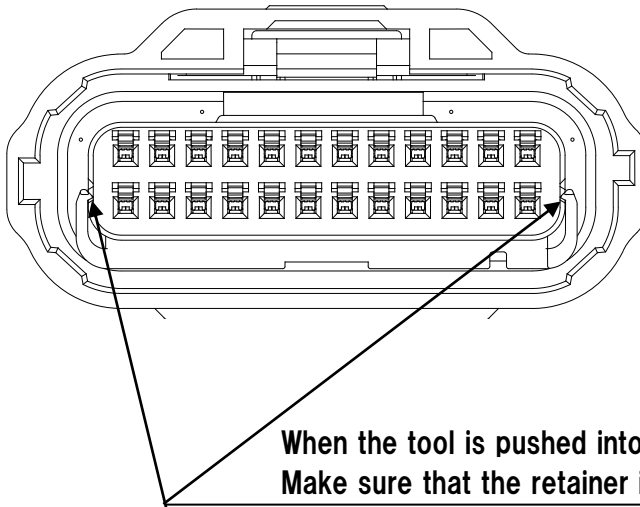
Female connector:

1 – Using the dedicated tool, release the lock of the retainer and return to the pre-set state.



Insert the dedicated tool to housing (lock lever side).

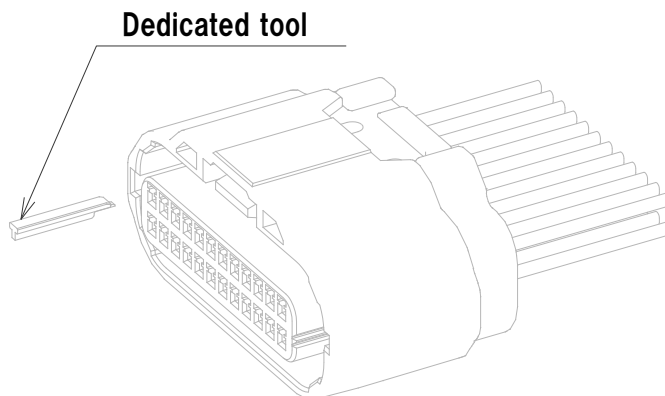
Place the tool on the retainer and push in the direction indicated by the arrow



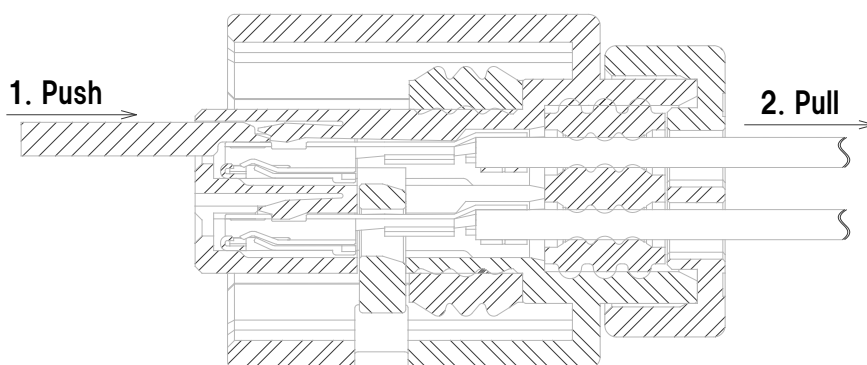
When the tool is pushed into, the retainer returns to the pre-set state. Make sure that the retainer is in the pre-set state for both left and right.

Note: Please return to the pre-set state position when the retainer drops out.

2 – Insert the dedicated tool into the terminal hole, and push until it hits.
After pushing in, please remove the terminal while maintaining that state.



Note: Insertion into the same terminal hole is limited to 2 times.
Please use the new housing after the third time.



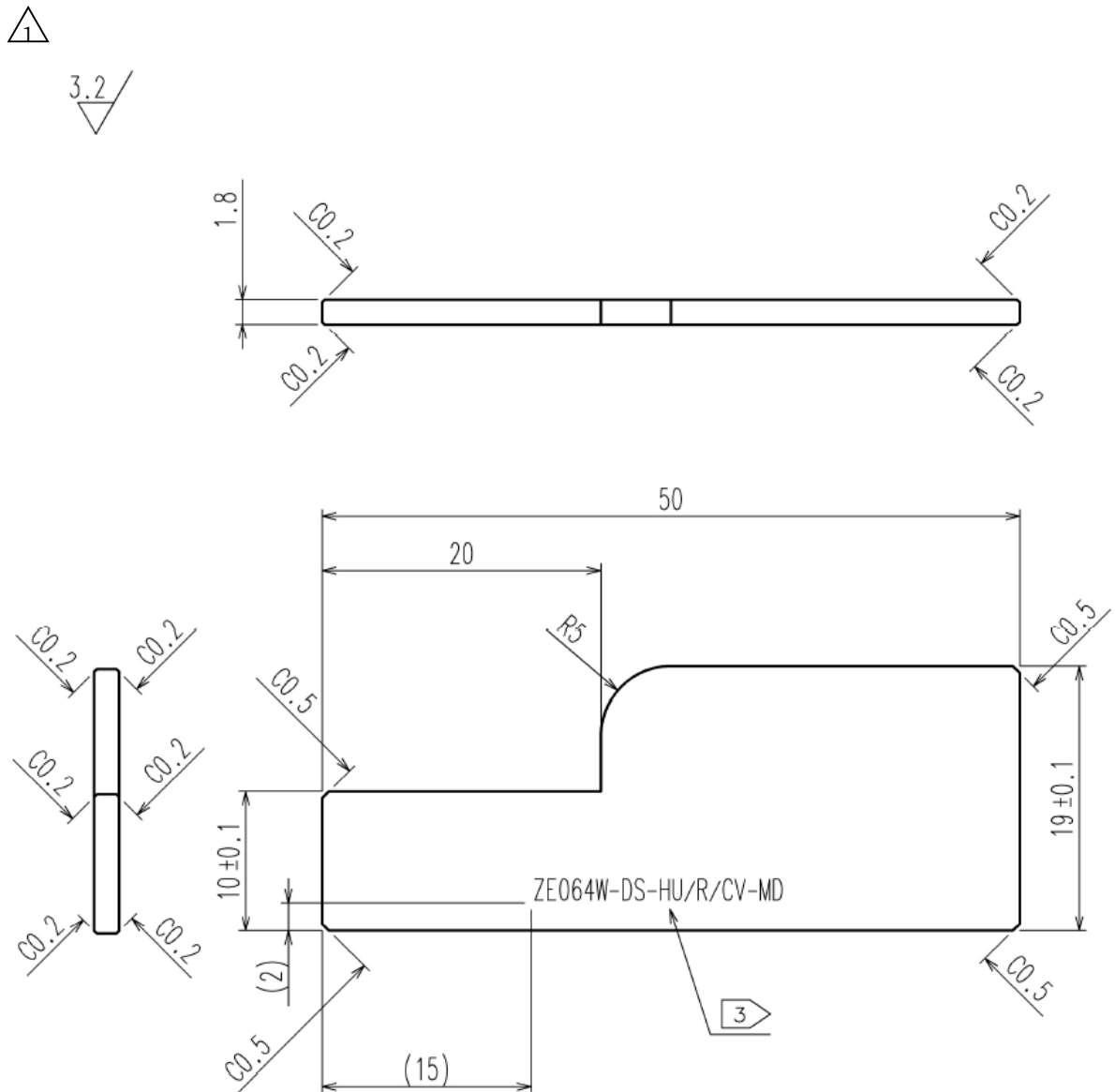
11. REPAIR TOOLS

11.1 REPAIR TOOL FOR RETAINER

Part number summary for retainer repair tools:

Applicable parts	Repair tool name	Repair tool part number
ZE064W-XDS-HU/R(Y)	ZE064W-DS-HU/R/CV-MD	902-5151-0

The following drawing shows definition of tool for retainer release for female connector.



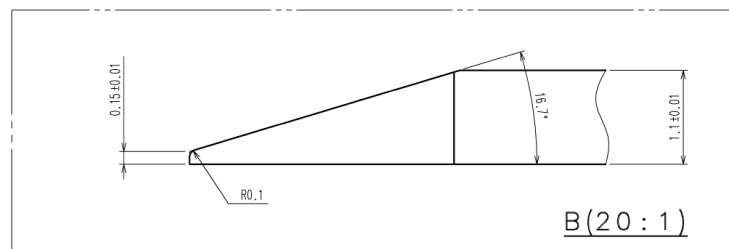
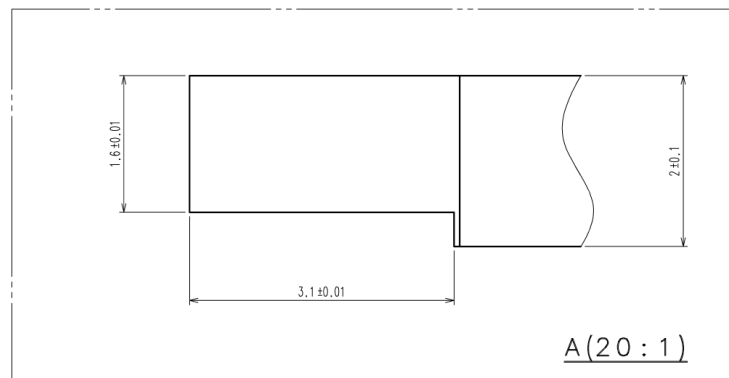
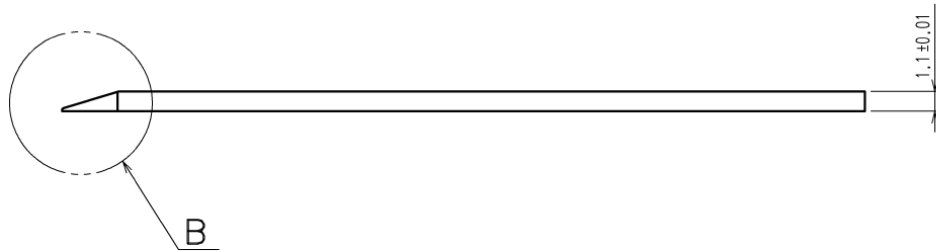
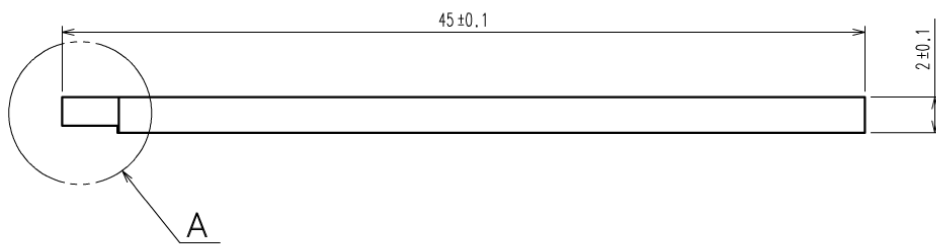
11.2 REPAIR TOOL FOR TERMINAL

Part number summary for terminal repair tool:

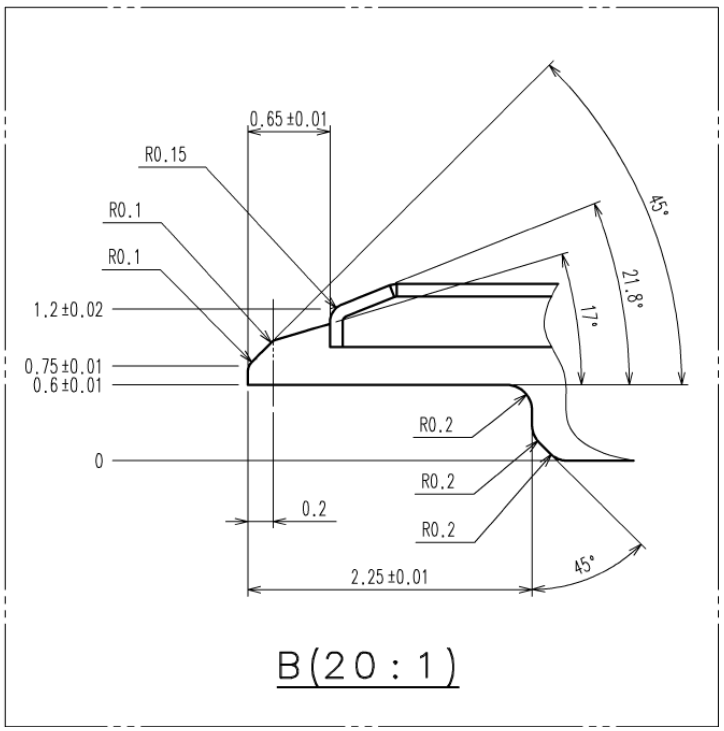
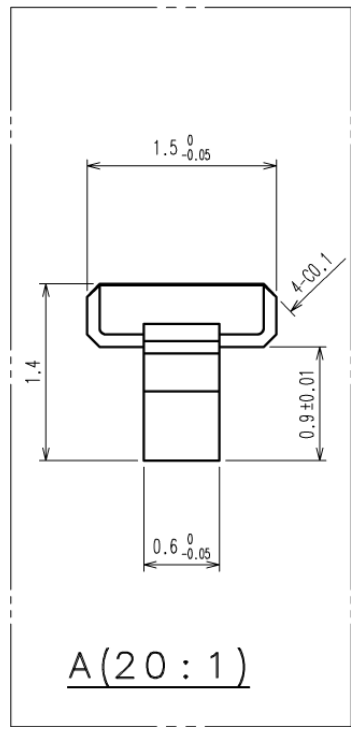
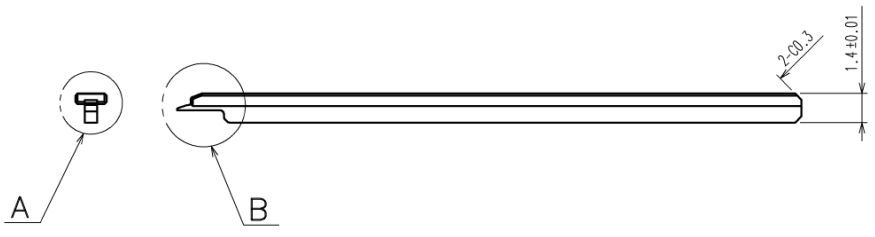
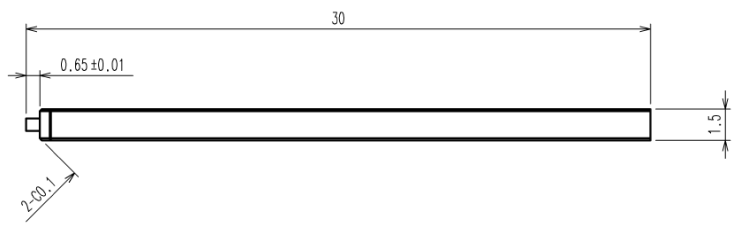
Applicable part	Repair tool name	Repair tool part number
ZE064-2022PCF	ZE064-P/RE-MD	902-5150-0
ZE064-2022SCF	ZE064-S/RE-MD	902-5149-0

The following drawings show definition of tools for terminal repair.

Terminal repair tool for ZE064-2022PCF:



Terminal repair tool for ZE064-2022SCF:

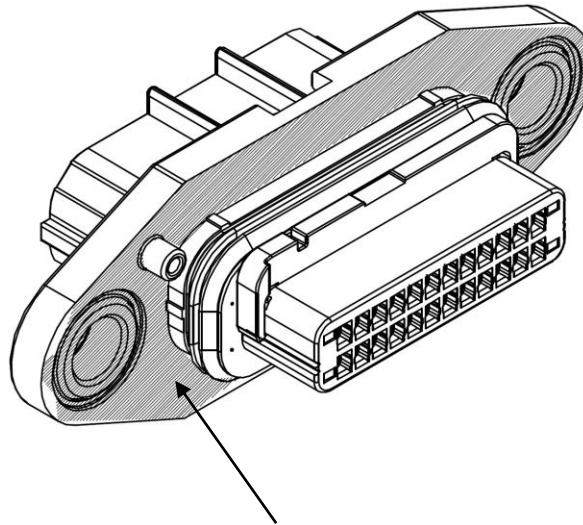


12. ELECTRICAL TEST

12.1 CLAMPING AREAS OF CONNECTORS

During electrical tests, connectors can be clamped in the following areas: (examples with ZE064W-24DP-HU/R(A) and ZE064W-24DS-HU/R(A))

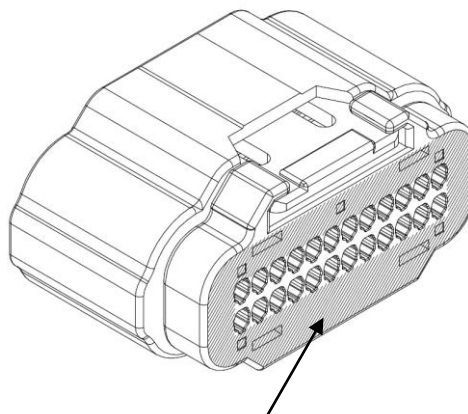
Male connector: (example with ZE064W-24DP-HU/R(A))



Areas to clamp the male connector

Note: Please pay attention to not touch panel seal

Female connector: (example with ZE064W-24DS-HU/R(A))



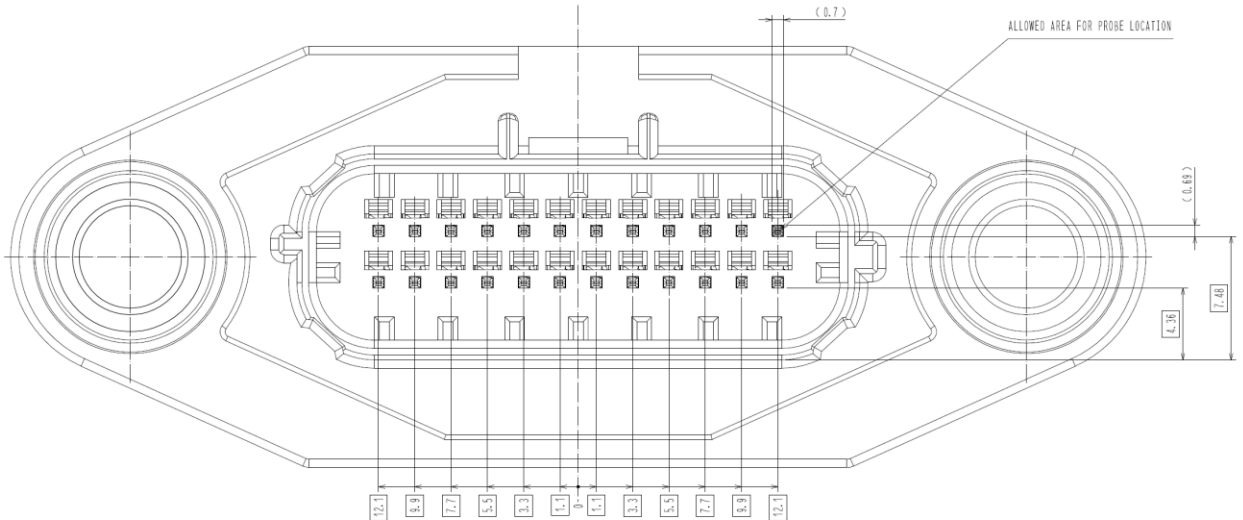
Areas to clamp the female connector (around cavities)

12.2 LOCATION OF TEST PROBES

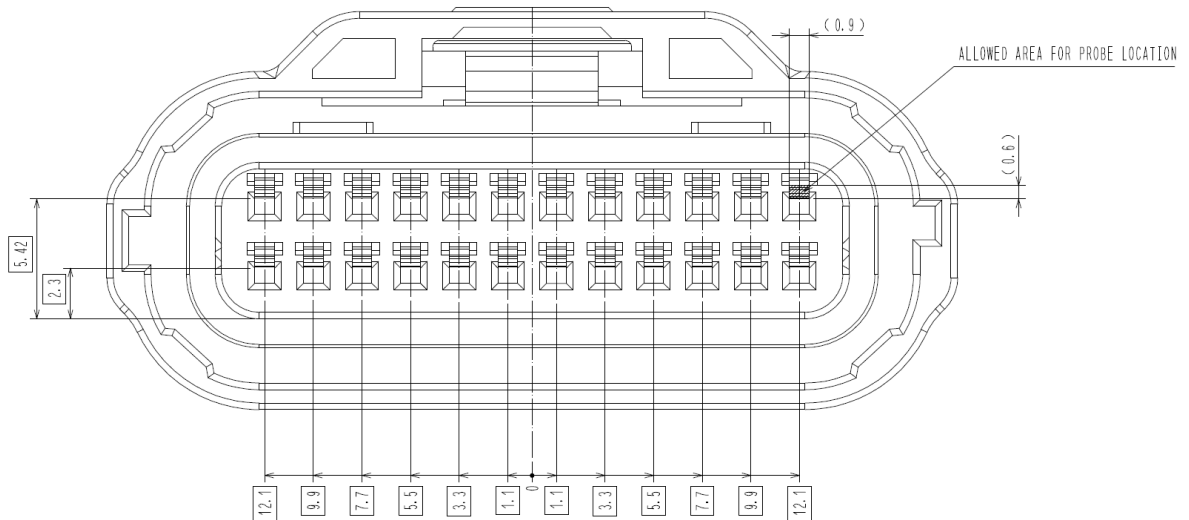
The test probes should be located in front face as described below:

(Example with the 24P)

Male connector:



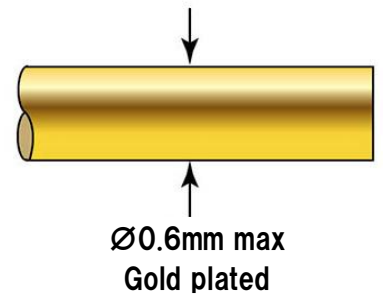
Female connector:



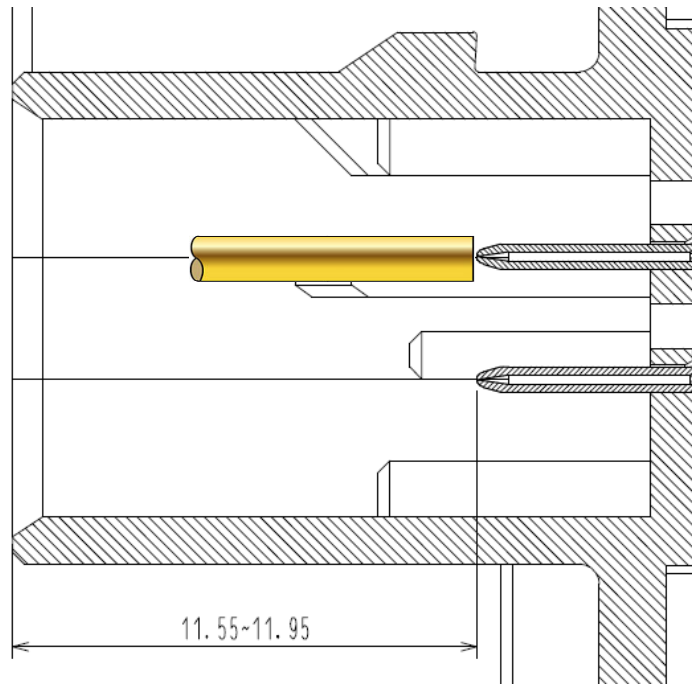
12.3 DEFINITION OF TEST PROBES

The recommended probe should have the following characteristics:

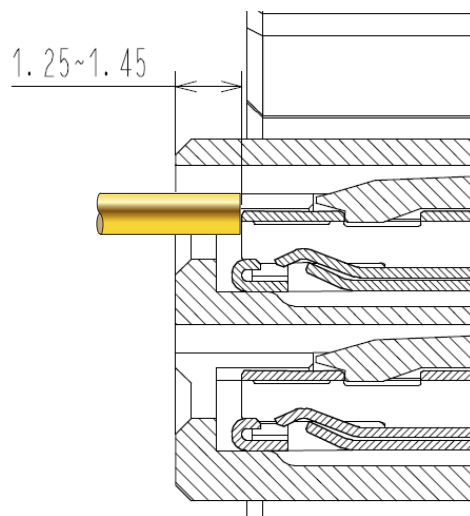
- Diameter: $\varnothing 0.60\text{mm}$ maximum
- Plating: Gold plated
- Spring force: 1N maximum
- Stroke: see section below



Male connector:



Female connector:



12.4 RECOMMENDATIONS FOR ELECTRICAL TESTS

- Perform test after insertion of terminals and closing of retainer.
- Avoid any deformation on housing or terminal during electrical test.
- Replace any damaged housing or terminal or panel seal with a new one.

13. CRIMP QUALITY STANDARD

13.1 SCOPE

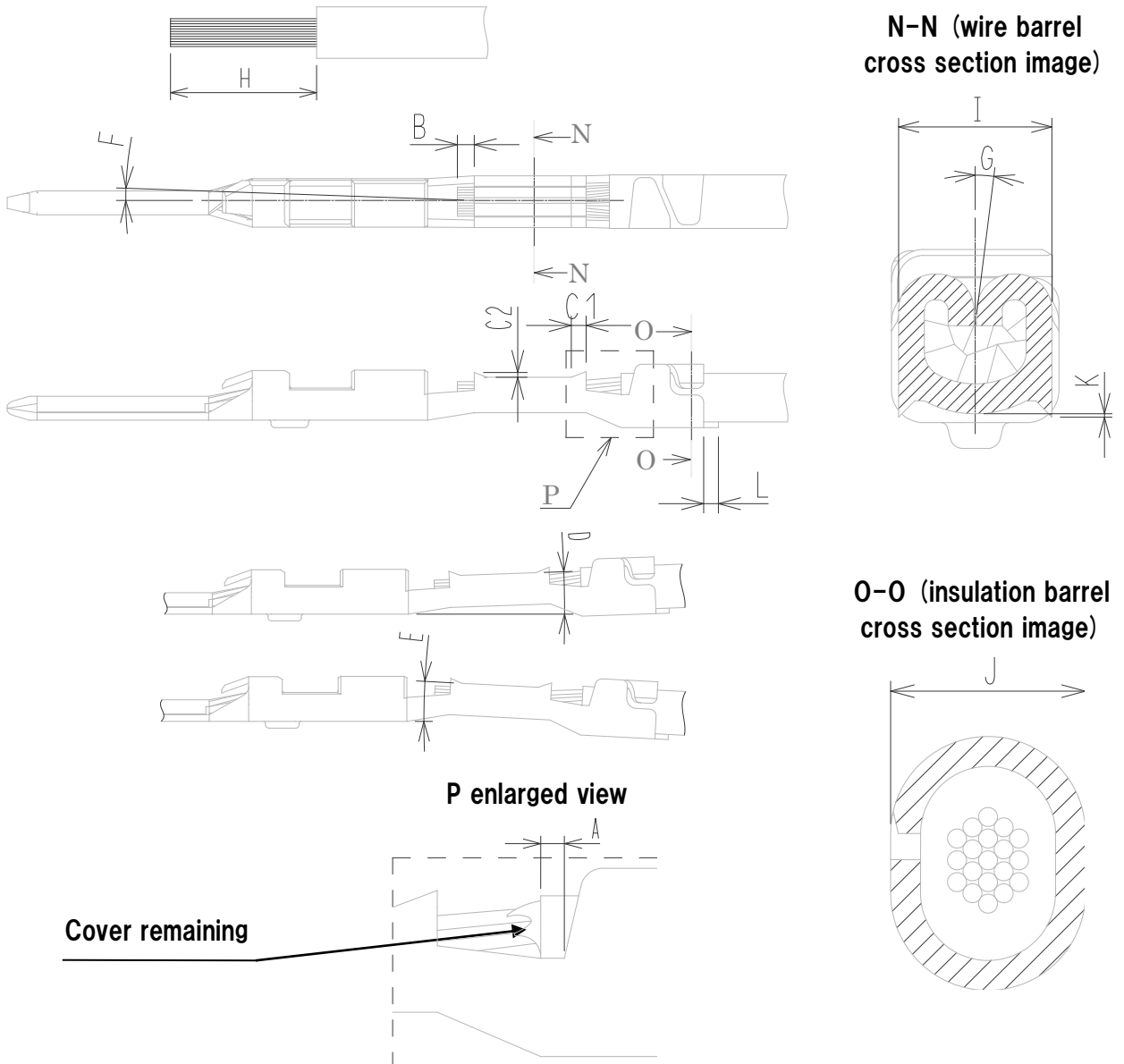
This technical specification prescribes crimp condition of ZE064-2022PCF and ZE064-2022SCF.

13.2 APPLICABLE WIRE

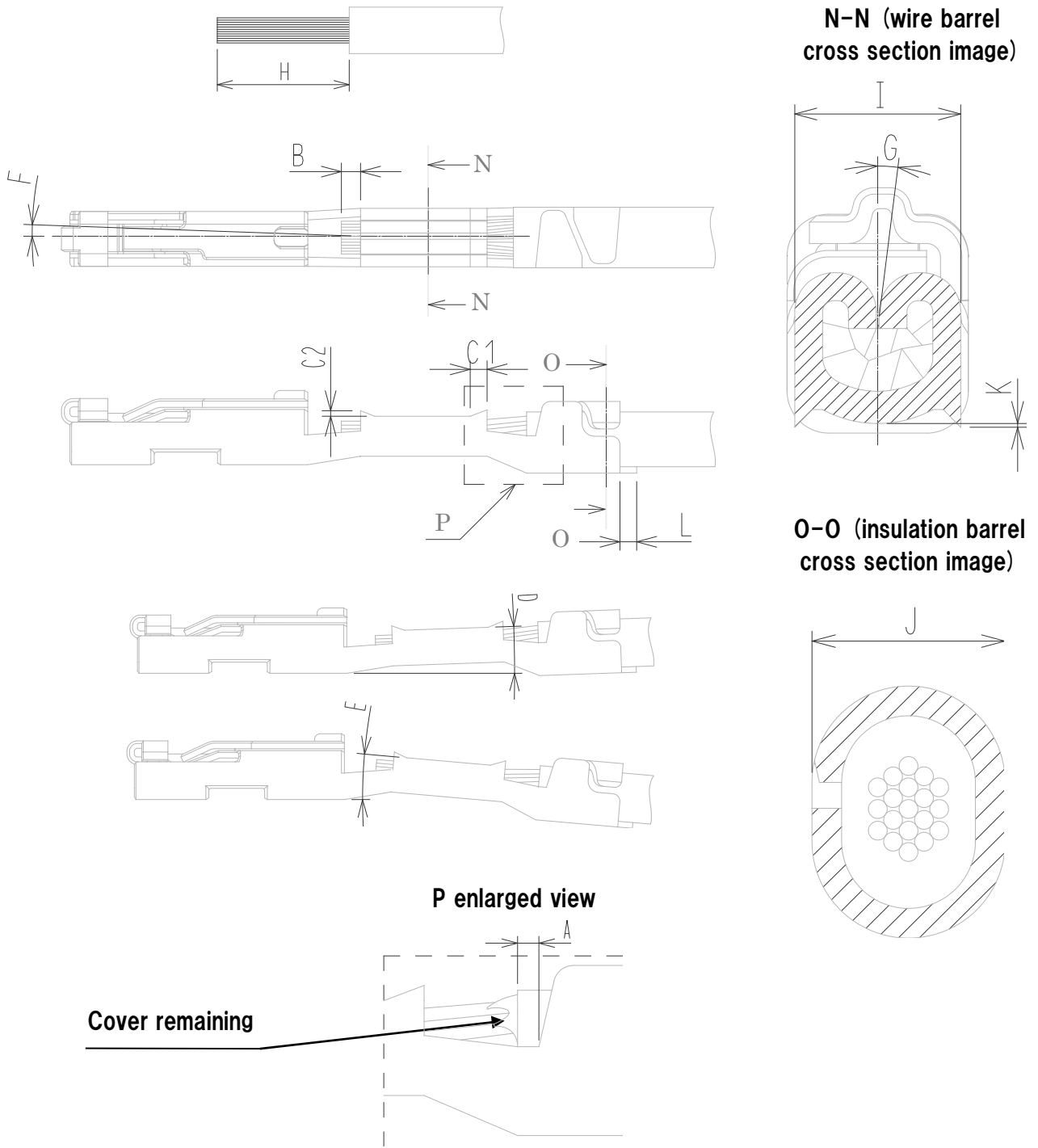
- Applicable wire size: 0.3mm² ~ 0.5mm²
- Applicable insulation size: ϕ 1.4mm ~ ϕ 1.7mm

13.3 QUALITY STANDARD

Related dimensions for ZE064-2022PCF:



Related dimensions for ZE064-2022SCF:



CHECK POINT		MEASURE (mm)	
Cover location		A	0.3 ~ 0.8
Location of tip of the core		B	0.1 ~ 0.6
Bell-mouth		C1	0.1 ~ 0.5
		C2	0.5 max
Bend-up		D	2° max
Bend-down		E	3° max
Twist		F	±2° max
Rolling		G	±5° max
Strip length		H	4.0 ~ 4.3
Width	Wire barrel	I	1.5 max
	Insulation barrel	J	1.8 max
Height of metal cut-out teeth		K	0.12 max
Cut-off tab		L	0.1 max

Note 1: Refer to a Crimping condition list for the crimp height.

Note 2: There is a possibility that a terminal is involved in covering and crowded by the crimping, but it's no problem on the product function.

Note 3: Please confirm that the terminal which did crimp enters a housing.

14. CRIMP PARAMETERS

Crimp parameters for terminal ZE064-2022PCF:

WIRE TYPE	SEC AREA (mm ²) / AWG	CONDUCTOR		INSULATION		Tensile strength of the wire-terminal link (minimum)
		C/H	C/W	C/H	C/W	
AESSX0.3f	0.3821 / 22	0.83 ~0.89	1.5 max	1.90 ~ 2.00	1.8 max	50N
AESSX0.5f	0.5387 / 20	0.90 ~0.96	1.5 max	2.00 ~ 2.10	1.8 max	70N

Crimp parameters for terminal ZE064-2022SCF:

WIRE TYPE	SEC AREA (mm ²) / AWG	CONDUCTOR		INSULATION		Tensile strength of the wire-terminal link (minimum)
		C/H	C/W	C/H	C/W	
AESSX0.3f	0.3821 / 22	0.84 ~0.90	1.5 max	1.90 ~ 2.00	1.8 max	50N
AESSX0.5f	0.5387 / 20	0.92 ~0.98	1.5 max	2.00 ~ 2.10	1.8 max	70N