



One-Way Polyethylene Connector

USE (One - Port Type)

Operation Manual

Surpass Industry Co., Ltd.

Read Before Use

WARNING

- Before using this product, check the compatibility of the type of liquid to use and the wetted parts material in this product.
- All users are required to carefully read and understand this manual before operation of the product.
- Keep this manual in good condition, and retain it close at hand for quick consultation whenever necessary.
- Use the product only as intended, and only as directed in this manual.
- Cautionary notes in this manual must be fully understood and complied with at all times.

Be sure to follow these instructions. Failure to follow the instructions may result in personal injury or accident.

<About this Operation Manual>

- The contents of this manual are subject to change without prior notice, due to improvements in product functionalities and / or performance.
- No part of this manual may be reproduced in any form or by any means.
- If this operation manual is lost, please download it from our website or contact us.
- Although this manual has been prepared with all possible care, please do not hesitate to contact Surpass Industry about errors, omissions, or any other points of doubt.

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Important Safety Instructions

<Symbols in This Operation Manual>

Warnings and cautionary notes are provided in this manual to ensure this product is used correctly and to prevent personal injury and property damage. The meaning of the **DANGER**, **WARNING** and **CAUTION** symbols in this manual are as described below. Read and understand these notes before reading the rest of this manual.

In particular, fully understand and obey the instruction of DANGER mark.

 DANGER	This symbol indicates warnings against impending danger which, if not observed, may cause death or severe injury to the user.
 WARNING	This symbol indicates warnings which, if not observed, may cause death or severe injury to the user.
 CAUTION	This symbol indicates warnings which, if not observed, may physically impair the user or damage surrounding objects.
	Provides important notices and indications to operate the product correctly.

DANGER and WARNING Statements

Read and observe the following DANGER / WARNING and instructions carefully before using this product.

○ General Instructions on Storage

 **WARNING**

- Store indoor (in a dark place) within the operating temperature range. Avoid storing in a way that degrades polyethylene material. If the product is damaged, there is a possibility of bodily injury due to leakage or other causes.

○ General Instructions on Mounting

 **DANGER** Mandatory Instruction!!

- **Whenever using this product for hazardous chemical fluids or solvents, wear anti-chemical protective gear (protective gloves, protective mask, and protective clothing) that completely protects your body. Exposure of chemical fluids may result in personal injury.**

 **WARNING**

- Install and pipe the plug and socket according to the correct procedure and method. Using the wrong method or procedure may result in personal injury due to leakage of chemical fluids.
- Make sure that there is no tension on the pipe at the end of the socket when the socket is connected to the plug. Otherwise, leaks could occur and cause personal injury.

○ Instructions on Handling

 **WARNING**

- Do not damage the connecting part (wound with seal-tape) of plug and socket. Damage of product may result in personal injury due to leakage of chemical fluids.
- Do not contact this product to any rigid material. Damage of product caused by contact may result in leakage and cause personal injury.
- This product (plug side only) is a disposable type. This plug has been designed to be used within **one week after it is connected to the socket**. Avoid excessive use. If the product is damaged, there is a possibility of bodily injury due to leakage or other causes.

○ Instructions on Using

**DANGER** Mandatory Instruction!!

- Release pressure from the piping before attaching/detaching the connector. A pressurized condition may cause spouting of chemicals, resulting in personal injury.
- Always wear anti-chemical protective gear (protective gloves, protective mask, and protective clothing) that protects your entire body when attaching/detaching the connector. A contact with chemicals may cause personal injury.
- Attach/detach the connector in a clean place with no dust. Degradation of sealing performance due to adhesion of dust may cause liquid leakage, resulting in personal injury.
- Always attach/detach the connector at right angle to the surface of container. Attaching/detaching the connector at an angle may cause spouting of chemicals, resulting in personal injury.
- When the connector is connected, make sure that the connector is fully connected. The chemicals may splash and personal injury may be caused.
- Use out of the operating pressure range may result in slip-off. Be sure to use within the operating pressure range.
- Do not apply the connector to rotary joint or other rotary application. Lower tackiness caused by the wrong application may result in personal injury due to leakage of chemical fluids.
- This product is made of resin. Excessive load or excessive vibration may cause the product to be deformed or damaged, making it impossible to use properly and may result in chemicals adhering to the body, resulting in injury.

**WARNING**

- Follow the instructions provided by the manufacturer of your coupling to tighten a nut (Rotor) securely.
- To prevent leakage from the coupling part, inspect it periodically. If any leakage detected, tighten nuts more firmly according to the appropriate brochure or instruction manual provided by the manufacturer of your coupling.
- When tubing, use tubes of the specified size. Using other tubes may result in personal injury due to fluid leakage.
- Refrain from excessive tightening of the connector parts. Otherwise, damage to the body and connector may occur and result in liquid leakage. The use of dangerous chemicals, solvents, and gases may cause physical impairment.



- Apply operating fluid or pure water to the O-Ring of the socket (inner) or O-Ring sliding part of the plug (sealing part) when connecting the socket or plug to prevent the O-Ring from being damaged and to reduce the slide resistance (insertion load).
- Do not use abrasive compound or fluid that is easy to clot as they may impair normal function.

○ Instructions on Maintenance and Inspection

**CAUTION**

- Surpass Industry is not liable to any failure or leakage of the product due to O-Ring replacement and/or disassembly performed by any parties other than Surpass Industry.

1. Product Description

<Applications>

- USE-type Quick Connector is a disposable quick connector used to transfer high-purity EL chemicals. It is designed for containers with the capacity of 200L, such as a CHEMICAL DRUM, POWER DRUM, which are commonly used in the semiconductor industry.

<Features>

- Surpass original "Super one-touch method" enables the connection of the USE connector by one single push.
- Proprietary key type system prevents incompatible or incorrect connection thus preventing mixing of different chemicals.
- The plug has a mechanism to prevent liquid spouting, ensuring safety without any valve on the plug side.
- Siphon tube is integrated into the connector, facilitating installation.
- It is a mechanism to prevent liquid dripping.
- Socket on the fluid side has a prevention mechanism of liquid leakage. Supply can be done by one port due to having a flow channel for liquid and gas on the socket side and the plug side.

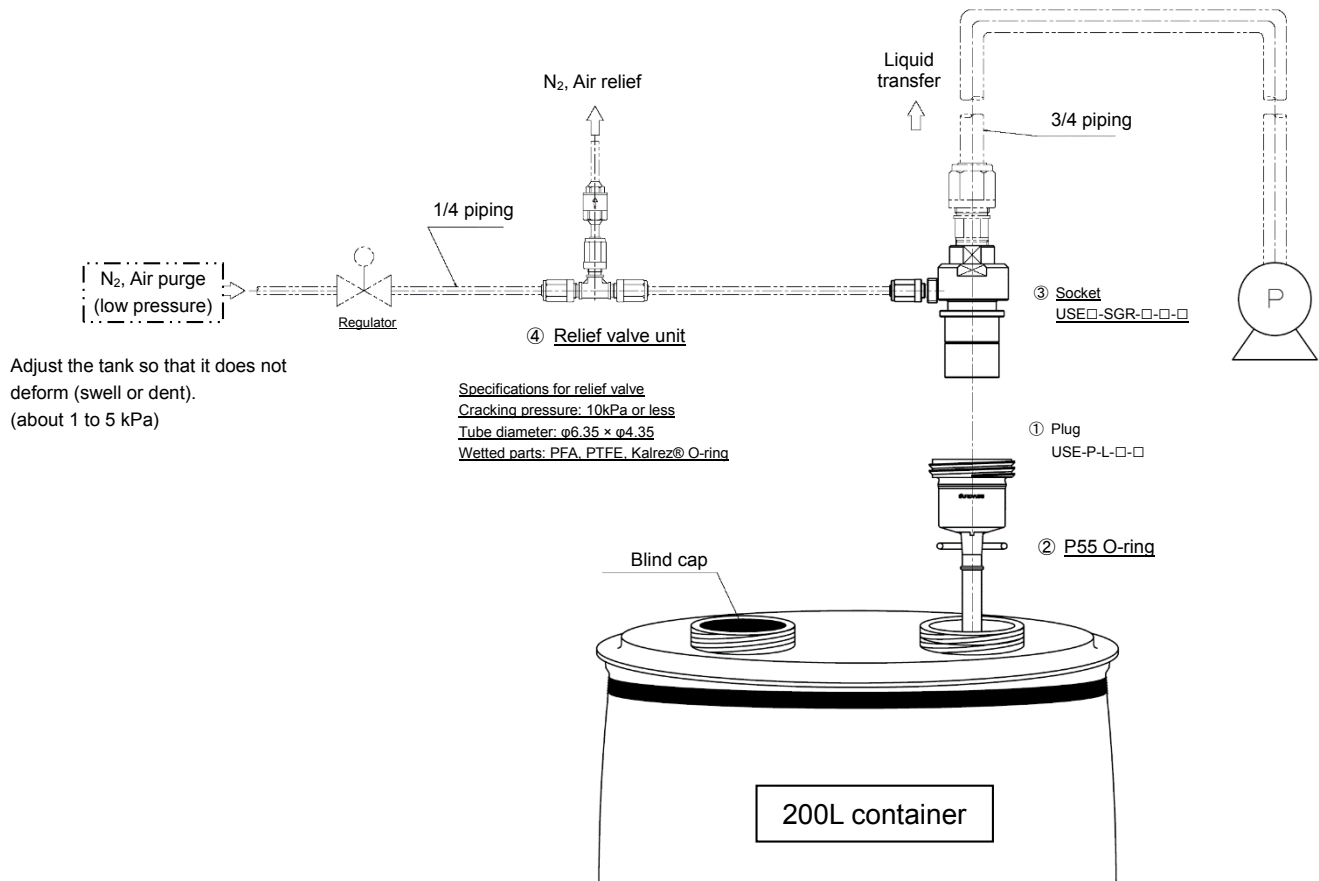
2. Specification

- | | | |
|---------------------------------------|---|--|
| ■ Operating Fluid Pressure | : | 0 to 250 kPa (36.25 psi) |
| ■ Operating Environmental Temperature | : | 5 to 40°C (41 to 104°F) |
| ■ Operating Fluid Temperature | : | 5 to 60°C (41 to 140°F) |
| ■ Wetted parts | : | Plug side····· HDPE, O-rings
Socket side · USE: PCTFE, PTFE, PFA,
Various O-rings
USE6F: PFA, PTFE, various O-rings |




Please be careful when use abrasive compound or fluid that is easy to clot as they may impair normal function.

4. Reference Example




④ Relief valve unit "CK-UNIT" is optional.

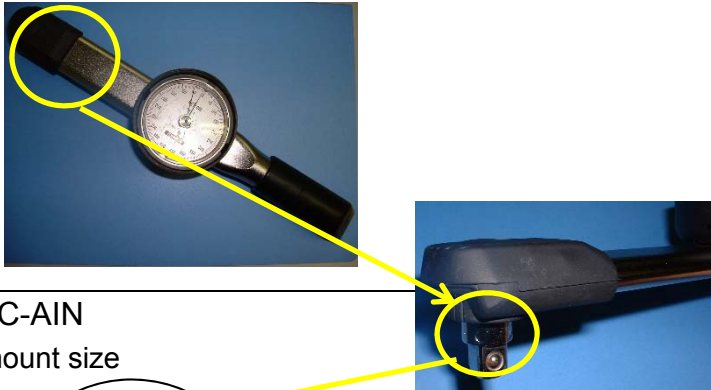
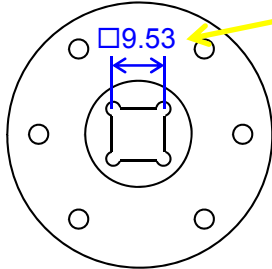
5. List of Jigs Used

	<p>Jigs are optional.</p> <p>Please contact us and order your desired jig by its product name and designation listed in the table below.</p>
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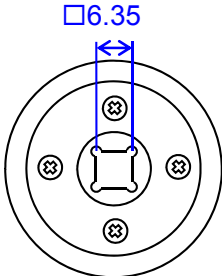
- ① Jig used to mount/remove the USE plug to / from the drum.

	Product name: Bracket attaching/removing jig
	Designation: PDC-AIN
	Application: <ul style="list-style-type: none"> • Mounting of the USE plug to the drum • Removing of the USE plug from the drum



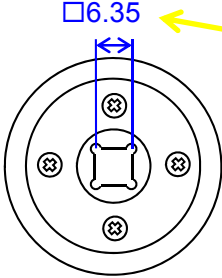
- ② **PRELIMINARY** Torque wrench (The following can be used.)

Application: Mounting of the USE plug	
DB50N-S (Tohnichi Mfg. Co., Ltd.)	
	
PDC-AIN A mount size	
Mounting standard: For torque wrench of the standard head size is □9.53.	

③ Jig used to attach / remove the cap

	Product name: Cap attaching/removing jig
	Designation: USE-TOOL
	Application: <ul style="list-style-type: none"> ▪ Attaching the cap to the bracket-embedded plug ▪ Removing the cap from the bracket-embedded plug
USE-TOOL A mount size	

④ **PRELIMINARY** Torque wrench (The following can be used.)

Application : Mounting and removing of the cap	
DB3N4-S (Tohnichi Mfg. Co., Ltd.)	
	
USE-TOOL A mount size	
Mounting standard : For torque wrench of the standard head size is □6.35.	

6. Installation



DANGER Mandatory Instruction!!

- Whenever using this product for hazardous chemical fluids or solvents, wear anti-chemical protective gear (protective gloves, protective mask, and protective clothing) that completely protects your body. Exposure of chemical fluids may result in personal injury.

6-1 Unpacking

Be careful not to damage the plug and socket when unpacking.

6-2 Preparing a container

- ① Prepare a container with the capacity of 200 liters (See the photo below.)
(Showing the container with the caps being attached.)



* Prepare for the installation after confirming that the screws of the container and USE are compatible.
(Please contact our sales staff for any questions.)

- ② Remove the caps from the container. (See the photo below.)



- ③ Check the bracket mounting part of the container for adhesion of foreign substances.
If any foreign substance is found adhered, remove it.

6-3 Mounting the Plug

⚠ DANGER Mandatory Instruction!!

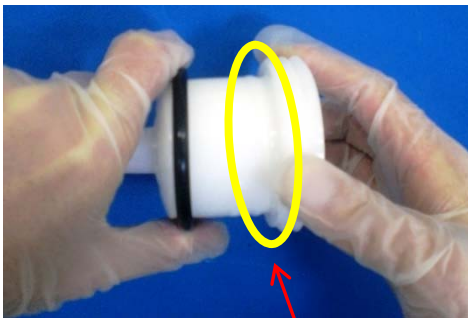
- Attach the plug in a clean place with no dust. Degradation of sealing performance due to adhesion of dust may cause liquid leakage, resulting in personal injury.

⚠ WARNING

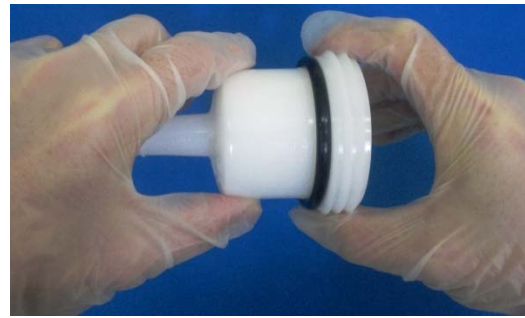
- Follow the procedures provided in this manual when mounting the plug. An improper way or wrong procedure of mounting the plug may cause an accident such as liquid leakage, resulting in personal injury.

- ① Install a drum O-ring into the bracket of the plug.
(See the photo and Figure 1 below.)

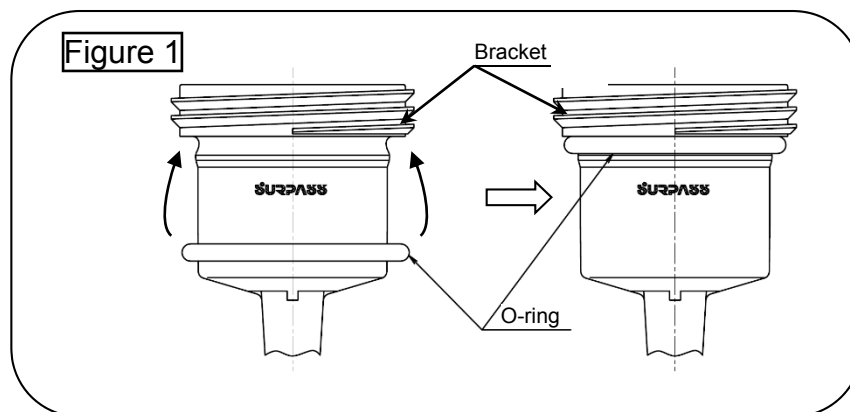
(1)



(2)



O-ring attaching location



⚠ WARNING

- When attaching the O-ring, make sure it is not twisted and there is no dust. Otherwise, it could cause leaks and result in personal injury.
- Make sure there is no scratch at the above O-ring attachment location. Otherwise, it could cause leaks and result in personal injury.
- Do not contact this product to any rigid material. Damage of product caused by contact may result in leakage and cause personal injury.

② Mount the plug in the container. (See the photo and Figure 2 below.)

Torque : 20~25[N·m]



Insert the special jig into the plug's bracket and tighten it with a torque wrench to **20 to 25 [N·m]**.

⚠ CAUTION

- Use a drum O-ring which is made of rubber (size: P55) and tighten it with 20 to 25 [N·m] torque. Excessive or inadequate tightening may cause breakage or liquid leakage.
- Do not tighten excessively. Excessive tightening can cause the bracket to deform making it impossible to connect the socket and may cause breakage or liquid leakage.

(1)



(2)



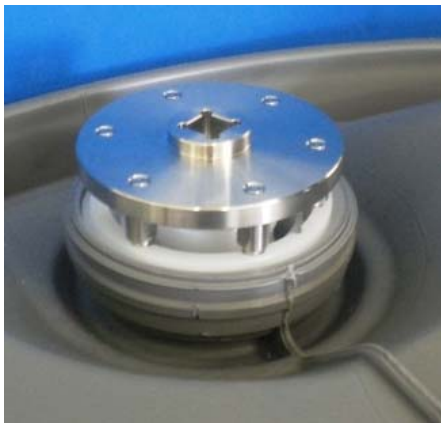
(3)



(4)



(5)

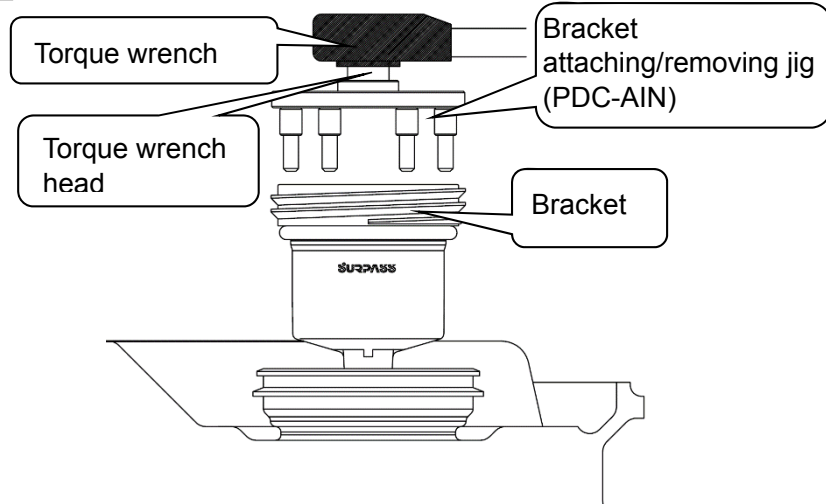


(6)



Tighten with **20 to 25 [N·m]** torque.

Install the jig and turn it clockwise.

Figure 2

* The exclusive clamp jig for USE plugs is available at Surpass. If you wish to purchase, please order it by its designation "PDC-AIN".
(Use torque wrench with head size □9.53 when tightening the plug with

7. Piping with the Socket

Wrap PTFE sealing tape around the connecting part (male thread) three or four times, and screw it into the NPT female thread of the socket.

WARNING

- Install and pipe the plug and socket according to the correct procedure and method. Using the wrong method or procedure may result in personal injury due to leakage of chemical fluids.
- Make sure that there is no tension on the pipe at the end of the socket when the socket is connected to the plug. Otherwise, leaks could occur and cause personal injury.



- Always use a NPT male thread since the female thread of the socket for piping is compliant with the American standard pipe taper thread (NPT). Always use NPT male thread.
 - For a male thread, use one that is made of the resin (PTFE, PCTFE, PFA, PE, or PP) but rigid materials such as metallic. Using a male thread made of rigid materials may break the female thread, resulting in liquid leakage.
- Taper thread specifications —
Socket: NPT 3/4
- Tighten the male thread with the correct value of torque. Excessive tightening may break the product.
 - After screwing the male thread, perform the leakage test to confirm that the connecting part has no leakage.

8. Attaching Procedure



DANGER

Mandatory Instruction!!

- **Release pressure from the piping before attaching/detaching the connector. A pressurized condition may cause spouting of chemicals, resulting in personal injury.**
- **Always wear anti-chemical protective gear (protective gloves, protective mask, and protective clothing) that protects your entire body when attaching/detaching the connector. A contact with chemicals may cause personal injury.**
- **Attach/detach the connector in a clean place with no dust. Degradation of sealing performance due to adhesion of dust may cause liquid leakage, resulting in personal injury.**
- **Always attach/detach the connector at right angle to the surface of container. Attaching/detaching the connector at an angle may cause spouting of chemicals, resulting in personal injury.**
- **When the connector is connected, make sure that the connector is fully connected. The chemicals may splash and personal injury may be caused.**
- **Use out of the operating pressure range may result in slip-off. Be sure to use within the operating pressure range.**
- **Do not apply the connector to rotary joint or other rotary application. Lower tackiness caused by the wrong application may result in personal injury due to leakage of chemical fluids.**
- **This product is made of resin. Excessive load or excessive vibration may cause the product to be deformed or damaged, making it impossible to use properly and may result in chemicals adhering to the body, resulting in injury.**



WARNING

- Follow the instructions provided by the manufacturer of your coupling to tighten a nut (Rotor) securely.
- To prevent leakage from the coupling part, inspect it periodically. If any leakage detected, tighten nuts more firmly according to the appropriate brochure or instruction manual provided by the manufacturer of your coupling.
- When tubing, use tubes of the specified size. Using other tubes may result in personal injury due to fluid leakage.
- Refrain from excessive tightening of the connector parts. Otherwise, damage to the body and connector may occur and result in liquid leakage. The use of dangerous chemicals, solvents, and gases may cause physical impairment.



- Apply operating fluid or pure water to the O-Ring of the socket (inner) or O-ring sliding part of the plug (sealing part) when connecting the socket or plug to prevent the O-ring from being damaged and to reduce the slide resistance (insertion load).
- Do not use abrasive compound or fluid that is easy to clot as they may impair normal function.

8-1 Removing the Cap

- ① Confirm that the container is not pressurized (with no pressure applied).



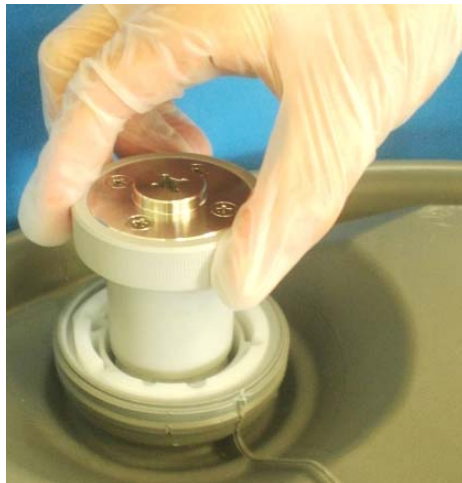
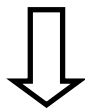
DANGER Mandatory Instruction!!

- Release pressure from the piping before removing the cap. A pressurized condition may cause spouting of chemicals, resulting in personal injury.

- ② Slowly remove the cap by turning it counterclockwise. (See the photo and Figure 3 below.)



* Torque wrench is not necessary when the cap is removed.



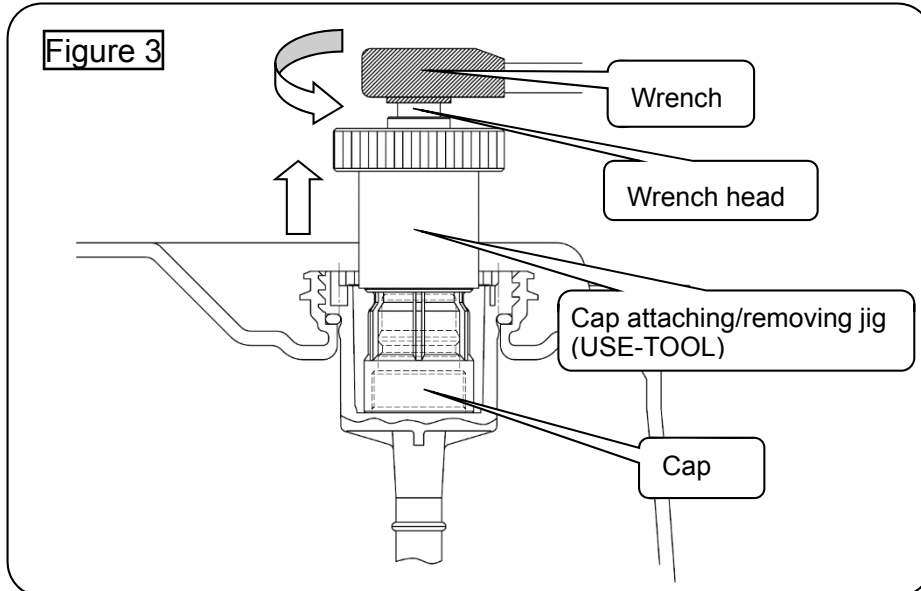
When depressure sound and gas discharge sound can be heard in a cap at the time of removal work, please interrupt work and resume work after checking that depressure sound and discharge sound have disappeared.



Sealing with the socket

⚠ WARNING

- Do not damage the connecting part (wound with seal-tape) of plug and socket. Damage of product may result in personal injury due to leakage of chemical fluids.
- Do not contact this product to any rigid material. Damage of product caused by contact may result in leakage and cause personal injury.



* Surpass Industry provides our special tightening jig designed for mounting the cap. Please contact us or our distributor specifying the model "USE-TOOL".
(Use torque wrench with head size □6.35 when tightening the plug with "USE-TOOL".)



When depressure sound and gas discharge sound can be heard in a cap at the time of removal work, please interrupt work and resume work after checking that depressure sound and discharge sound have disappeared.

8-2 Attaching the socket

- ① Confirm that the container is not pressurized (with no pressure applied).



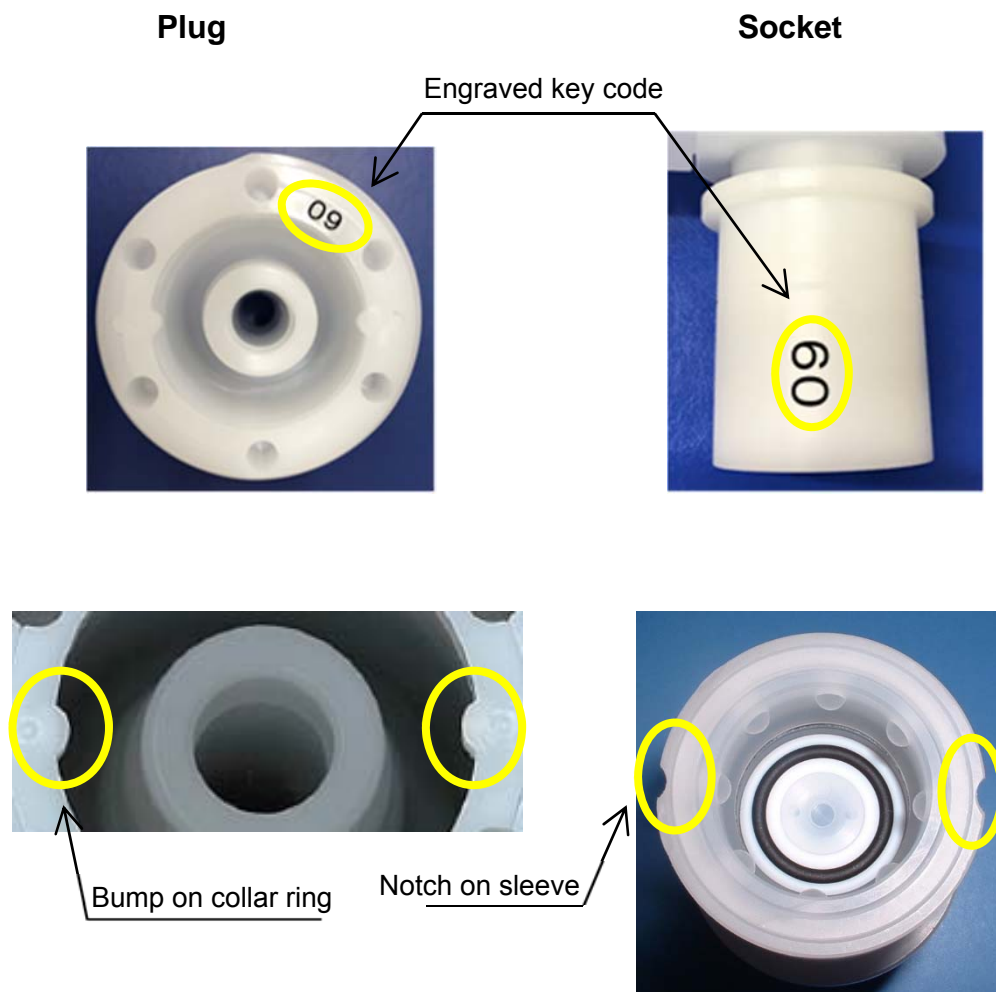
DANGER Mandatory Instruction!!

- Release pressure from the piping before attaching the connector. A pressurized condition may cause spouting of chemicals, resulting in personal injury.
- Connect the tube without any moment or tension to bend the joint portion. The chemicals may splash and personal injury may be caused.

With connection error prevention mechanism

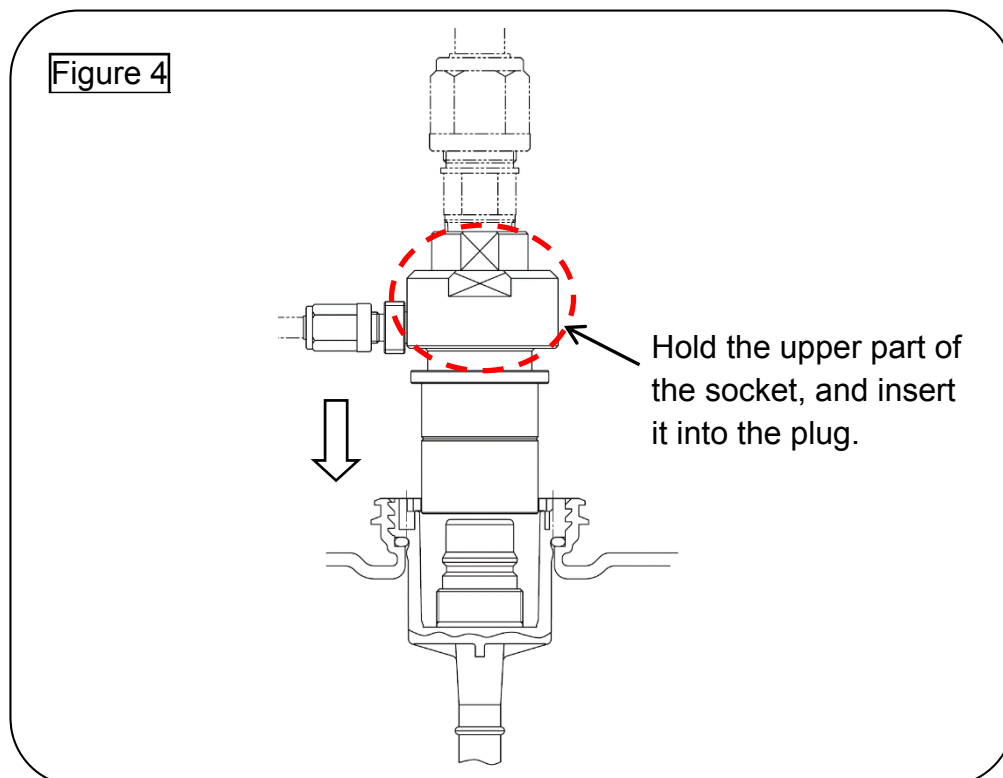
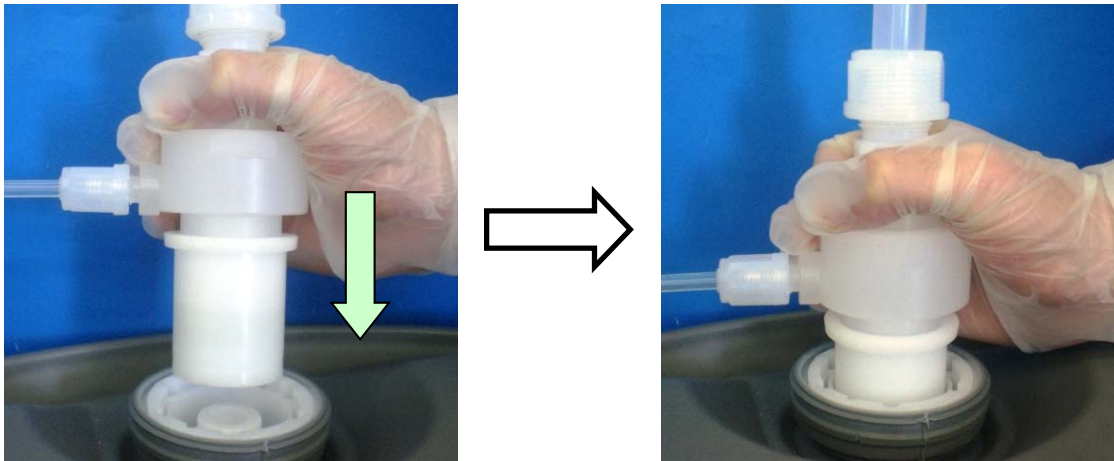
Make sure the key code on the sleeve of the socket is the same as the key code on the collar ring of the plug. (See the photo below.)

Example) When key code of the connection error prevention mechanism is 09



* If the key code engraving on the sleeve is the same as the key code engraving on the collar ring, the notch on the sleeve and the bump on the collar ring are at the same angle.

- ② Hold the socket and insert it into the plug straightly. (See the photo and Figure 4 below.)
In the case of the connection error prevention mechanism, push straight in while aligning the key position of the sleeve with the key position of the collar ring. (See the photo below.)





Never pull in the sleeve when connecting the socket, or the socket cannot be connected.

A good example



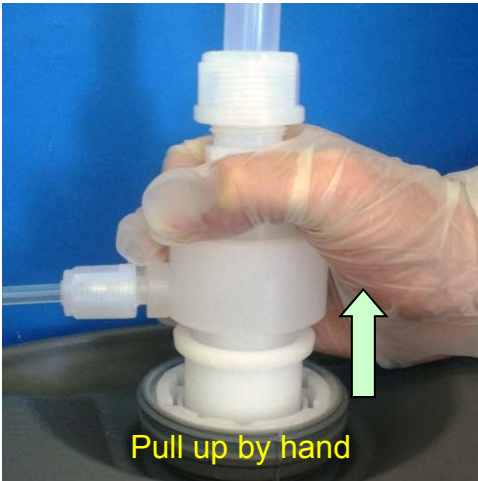
A bad example




③ Confirm that the socket is connected securely. (See the photo below.)



Confirm that the V-notch of the sleeve is aligned with the upper surface of the bracket.



* Be careful not to hold the brim of the sleeve while pulling up the plug to avoid releasing the connection.

	Pull in the upper part of the socket by hand and, if the socket does not come off, the connection is complete.
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8-3 Transferring liquid

Start transferring liquid when all procedures for connecting the connector are successfully complete.



DANGER Mandatory Instruction!!

- Use out of the operating pressure range may result in slip-off. Be sure to use within the operating pressure range.

8-4 USE connector operation

When used with the connector connected, it is designed assuming that the pumping of the container will be completed within approximately one week, so if using it for more than one week, perform maintenance on the connector and check the connections.



WARNING

- Install and pipe the plug and socket according to the correct procedure and method. Using the wrong method or procedure may result in personal injury due to leakage of chemical fluids.
- Make sure that there is no tension on the pipe at the end of the socket when the socket is connected to the plug. Otherwise, leaks could occur and cause personal injury.
- This product (plug side only) is a disposable type. This plug has been designed to be used within **one week after it is connected to the socket**. Avoid excessive use. If the product is damaged, there is a possibility of bodily injury due to leakage or other causes.

8-4-1 Using the cleaning plug

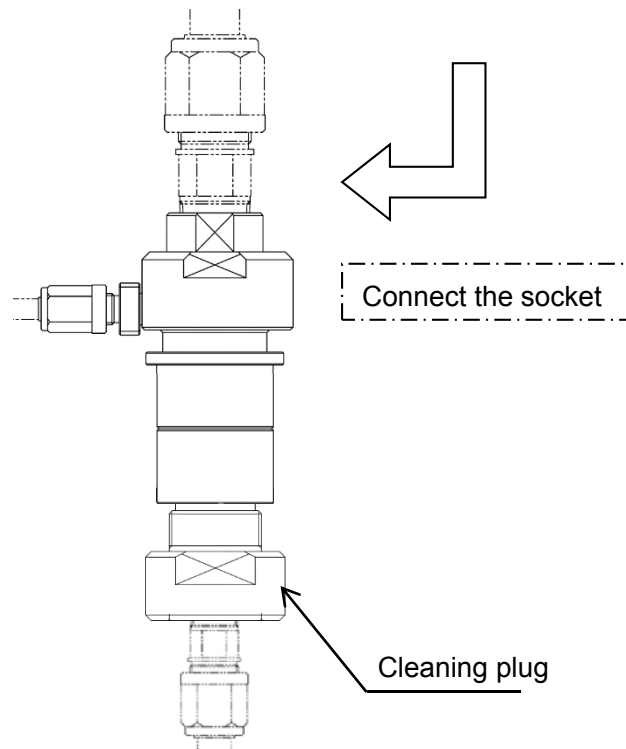
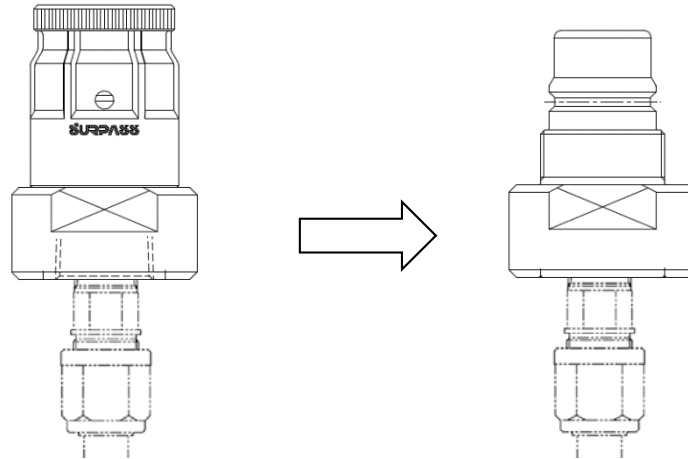
When using with highly viscous or adherent chemicals, regularly clean the socket using the recommended "Cleaning Plug" as described below.

* When reusing a cleaned socket, make sure to use a new plug.

* The cleaning plug is reusable.

Connect to cleaning plug so that pure water flows through.

Remove the cap.



WARNING

- The cleaning plug is of valveless specification. Install an ON/OFF valve at the front of the pipe. Otherwise, the fluid will erupt and may cause personal injury.
- Reusing the plug can cause an unstable connection to the socket, causing leaks and personal injury.
- Even if the socket has been cleaned, if there is any chemical residue on the locking section (ball) that could interfere with the operation, the connection will be unstable, so be sure to check the connection. Otherwise, it can separate unexpectedly, causing leaks and physical injury.

9. Detaching Procedure

9-1 Detaching the socket

- ① Confirm that the container is not pressurized (with no pressure applied).

⚠ DANGER Mandatory Instruction!!

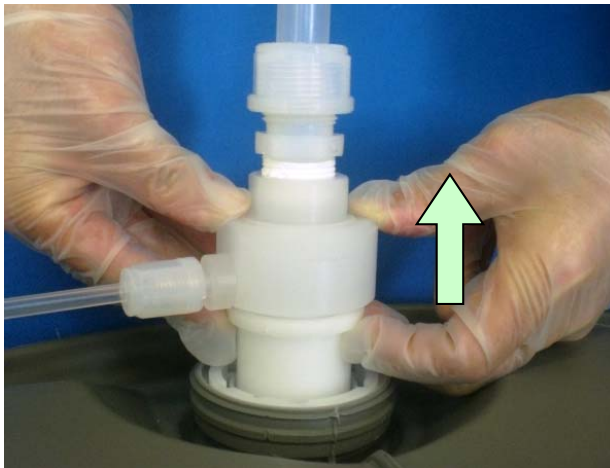
- Release pressure from the piping before detaching the connector.
A pressurized condition may cause spouting of chemicals, resulting in personal injury.
- Do not detach in a way that cause bending stress or tensile stress.

- ② Be sure to straightly pull out the socket while pulling in the sleeve with both hands.
(See the photo and Figure 5 below.)

⚠ DANGER Mandatory Instruction!!

- Always detach the connector along a straight line.
Attaching/detaching the connector at an angle may cause spouting of chemicals, resulting in personal injury.

- (1) Pull in the sleeve with both hands.



- (2) Be sure to straightly pull out the socket while pulling in the sleeve with both hands.

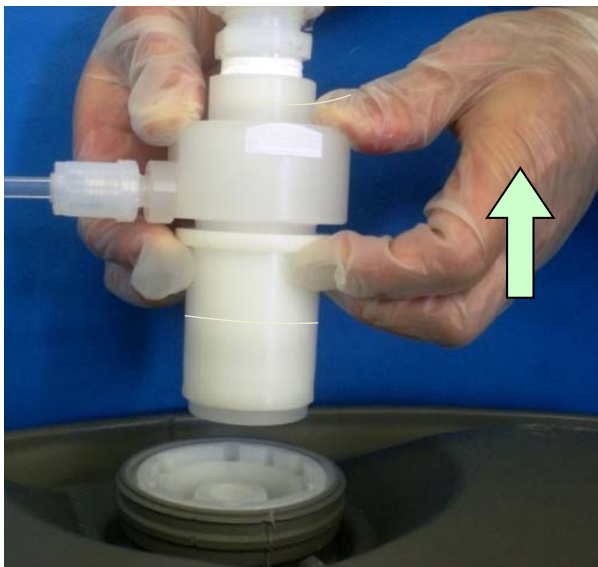
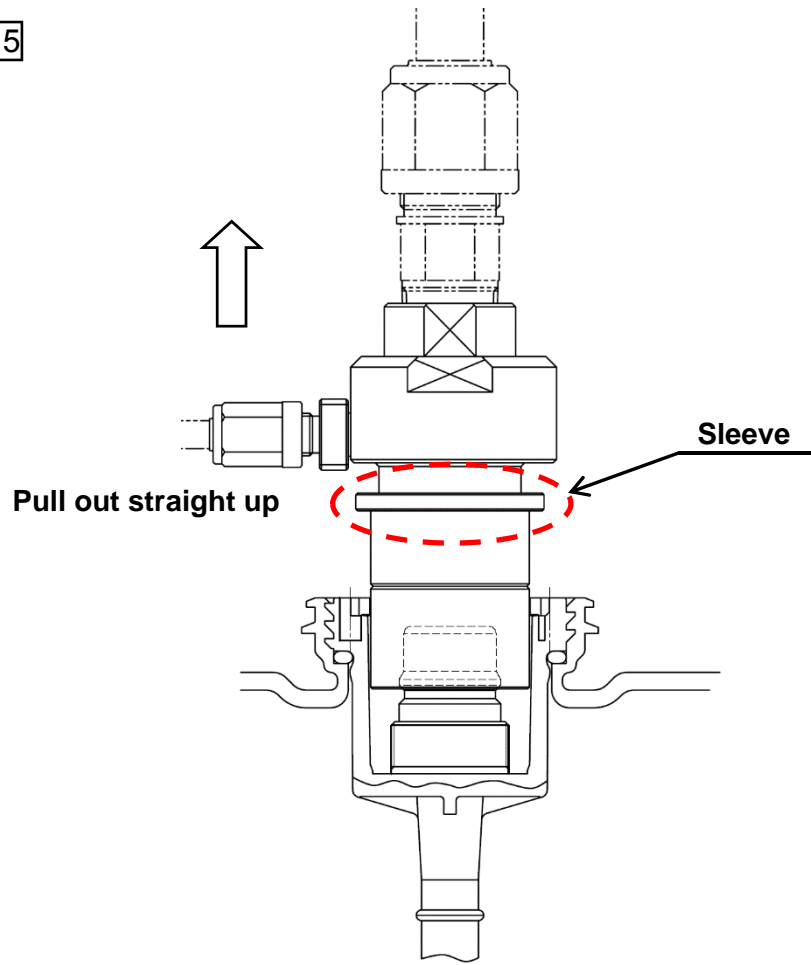


Figure 5



9-2 Attach the cap

- ① Attach the cap to the plug using the special tightening jig with the following torque values.
(See the photo and Figure 6 below.)

Torque : 2.5 [N·m]



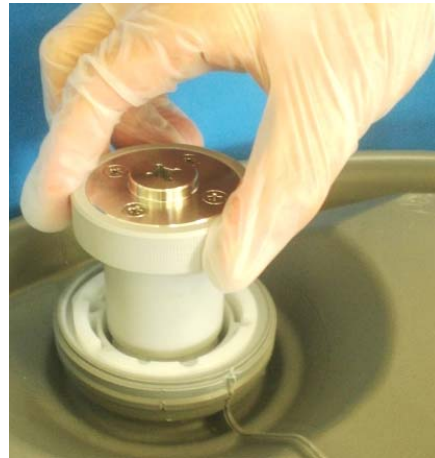
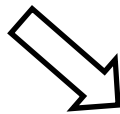
The above torque values are for reference only. When you tighten the cap. Please check top surface of the cap for being alignment with the top surface of the bracket.

CAUTION

- Put the special jig into the cap and tighten it with a torque wrench. Excessive or inadequate tightening may cause breakage or liquid leakage.

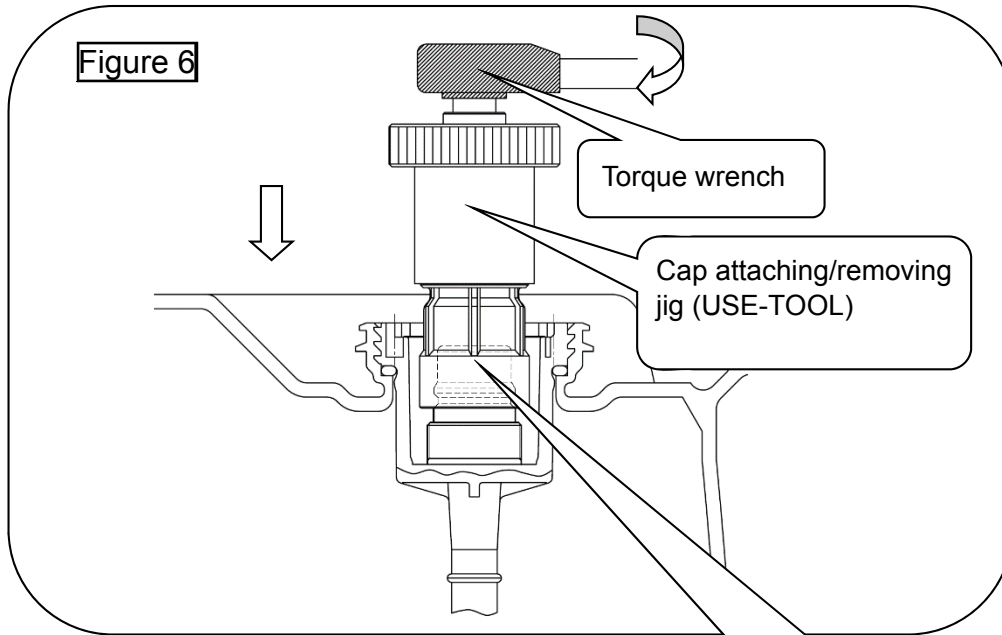


Using a jig, make three rotations clockwise and then tighten with a torque wrench.

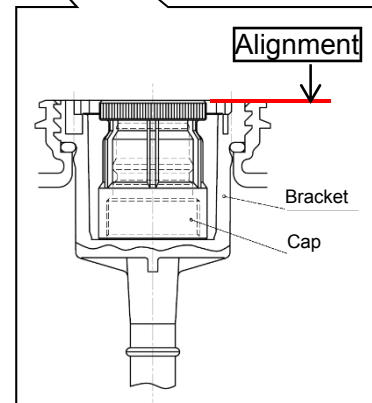


Tighten the with **2.5 [N·m]** torque.





* Screw down the plug so that the upper surfaces of the plug bracket and the cap become in the same plane with no floating of the cap as shown in the right figure.



Note that this product is made of resin, and excessive tightening may cause damage to the product.

* Surpass Industry provides our special tightening jig designed for mounting the cap. Please contact us or our distributor specifying the model "USE-TOOL". (Use torque wrench with head size □6.35 when using "USE-TOOL".)

10. Maintenance and Inspection

10-1 Daily Inspections

Inspect the following items every day before and after the operation. Whenever the inspection detects any abnormality, take a corrective action.

- Adhesion of coarse particles, dust or dirt
- Liquid leakage from the piping or connecting part
- Looseness of bracket
- Liquid leakage from the O-ring area (consumable)

CAUTION

- Surpass Industry is not liable to any failure or leakage of the product due to O-Ring replacement and/or disassembly performed by any parties other than Surpass Industry.

11. In Case of Breakdown

Symptom	What to check	Countermeasures
The socket cannot be connected to the plug.	<ul style="list-style-type: none"> ① Check if you pull in the sleeve of the socket when connecting. ② Check if the socket is compatible with the plug. ③ The key code on the socket and the plug are different. ④ The plug is tightened excessively. 	<ul style="list-style-type: none"> ① Connect the socket without pulling in its sleeve. ② Conform the compatibility. (Please contact us.) ③ Connect the socket and plug with the same key code number. ④ Remove the plug and replace it with a new one.
Liquid does not flow.	<ul style="list-style-type: none"> ① Check if the socket is connected securely. ② Check if it is shut in the position other than the socket. ③ Container is not pressurized or pumped up. 	<ul style="list-style-type: none"> ① Insert the socket completely into the plug to connect. ② Check the tube. If it is shut, make it open. ③ Apply proper pressure. The socket cannot be detached.
The socket cannot be detached.	<ul style="list-style-type: none"> ① Check if you pull in the sleeve of the socket when detaching. 	<ul style="list-style-type: none"> ① Pull out the socket while pulling in the sleeve with both hands.
There is a leak	<ul style="list-style-type: none"> ① The seal to the socket is scratched. ② The plug is damaged. ③ Operating outside of the specification. ④ There's damage to the O-ring on the socket. 	<ul style="list-style-type: none"> ① Replace it with a new plug. ② Replace it with a new plug. ③ Operate within specification. ④ Replace it with a new socket.

Notify your nearest sales office for problems not listed above.

12. Warranty

This product has different product warranties for plugs and sockets. The warranties are as follows

- Plug warranty -

Surpass products have been developed for one-way use (disposable) and are intended to be used within one week after connection to the socket. Therefore, we do not warrant the product that has been recycled and will not be responsible for secondary damages.

- Socket warranty -

The warranty runs for one year after the day when Surpass Industry products are delivered from Surpass factory in Japan. In case Surpass Industry should agree in writing that the defects in performance or material were caused by faulty design or workmanship of Surpass Industry, replacement products will be supplied free of charge. This warranty shall not be applied to any defects caused by misuse, alteration, neglectful treatment, and neglect of our recommendations or instructions.

In addition, we are not be liable to any direct or consequential loss, damage, and personal injury due to an unauthorized usage in combination with other products and an improper usage outside of the specifications. Our product warranty shall be limited to replacement of product.

Replacement with expense to the purchaser shall be applied to the followings:

- Any defective products caused by usage that is not described in the Operation Manual.
- Any defective products caused by neglectful treatment.
- Any defective products caused by decomposition, alteration, and improper adjustment or repair.
- Any defects of products caused by acts of God including natural disaster or fires.
- Consumables and accessories.

<Contact>



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