

## ESV-PTFE series — Rotating Cleaning Nozzles for Tanks/Containers —

## Instruction Manual

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## Introduction

Thank you for purchasing the spray nozzle product from H. Ikeuchi & Co., Ltd.

This manual gives detailed instructions for the basic handling, maintenance and cautions of the product.

Please be aware that due to continuing efforts to improve our products, some details in this manual may differ from the actual product.

After reading, keep this manual handy for quick reference.

## Safety Precautions

Prior to use, read this manual carefully and familiarize yourself with the proper operation of the nozzle for best performance.

H. Ikeuchi & Co., Ltd. takes no responsibility for any accidents and/or injuries resulting from improper handling, installation and/or operation.



CAUTION

**Wear safety gloves.**

Screw threads, edges and corners may be sharp and could cause injury.



CAUTION

**Ensure that the nozzle/product is firmly installed.**

Loose screws may cause the nozzle to come off during operation and lead to serious accidents.



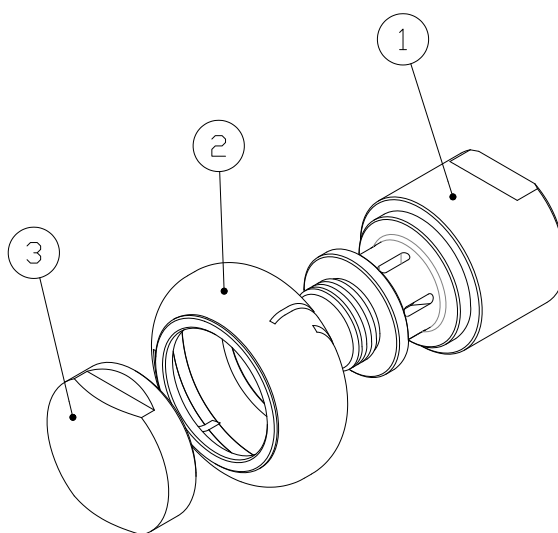
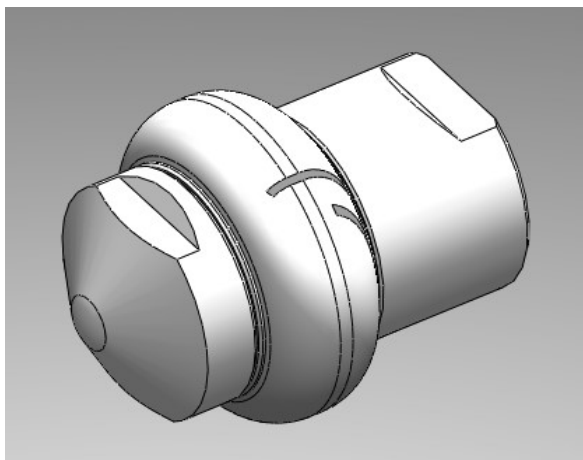
CAUTION

**Be aware of the nozzle temperature and do not perform maintenance until it has cooled down enough to avoid burns.**

## 1. Suggestions & Cautions

- (1) Installing the nozzle should be done after the piping system is completely installed and flushed.
  - Never install a nozzle during installation work of the plant or equipment.
  - Use piping and valves large enough to prevent the pressure from dropping.
  - Even new pipes may have chips, seal tape or other debris inside. ALWAYS flush the pipe system thoroughly before installing nozzles to remove any debris that has collected during the construction and assembly to avoid clogging. This flushing should be done at or near the maximum flow rate, before the nozzle is attached to the piping, to thoroughly clean the system.
  - If a nozzle is clogged, its performance is impacted. Installing strainers help prevent nozzle clogging.  
Regardless of the type of cleaning liquid, whether it is one-time use or recirculated, it should always run through a #100 or finer mesh strainer.
- (2) Screw threads, edges and corners may be sharp. Wearing safety gloves is recommended.
- (3) Operate the nozzle under the specified pressures. If the pressure is not specified, refer to the provided flow-rate diagram.
- (4) Avoid damaging or scratching the nozzles. When disassembling the nozzle for maintenance, always use a spanner, adjustable wrench, and milling vice.
- (5) When installing the nozzle, use a spanner/wrench on the flats of the connecting adaptor (part #1) and tighten. Never hold the hub (#3) to tighten. (See Note (2) of 4. Assembly on page 4 for details.)

## 2. Components of Nozzle



No.	Component	Material	Remark
1	Connecting adaptor	PTFE	
2	Nozzle body	PTFE	
3	Hub	PTFE	

**Note:**

The lifetime of nozzle components varies, depending on the operational conditions.  
Replace consumable parts when corrosion or wear of components is found and/or the nozzle performance deteriorates.

### 3. Disassembly (Please see the parts list on the previous page)

- (1) Loosen the connecting adaptor (part #1) with an adjustable wrench or spanner and remove the nozzle from the piping.
- (2) Secure the connecting adaptor (#1) with a milling vice and unscrew the hub (#3) with a spanner or an adjustable wrench.
- (3) Detach the nozzle body (#2) from the connecting adaptor (#1).

Note:

- (1) Be careful not to lose or damage these small parts.
- (2) Nozzle orifices and sliding surfaces are the most important parts. Take extreme care when handling them.
- (3) Disassembled parts should be kept free from dust and dirt. Do not expose them to physical shocks and/or vibration.

### 4. Assembly

- (1) Insert the connecting adaptor (#1) into the larger opening side of the nozzle body (#2). They can only be fitted in the correct side.
- (2) Screw the hub (#3) into the connecting adaptor (#1) by hand, then tighten it additionally for 15–30 degrees with a spanner/wrench.

Note:

- (1) Remove dust and foreign particles from the nozzle orifices and sliding surfaces with a soft brush. Be careful not to damage them.
- (2) When installing the nozzle, screw in the nozzle by hand first. Then hold the flats of the connecting adaptor (#1) with a spanner/wrench and tighten the nozzle for a quarter turn with tightening torque of 3 N m.  
DO NOT hold the hub (#3) to tighten. Tightening by holding the hub (#3) may cause damage to the nozzle.
- (3) When installing the nozzle, screw in the nozzle properly and firmly.

## 5. Maintenance

- (1) Visually inspect the nozzle for deformation and distortion.
- (2) Manually rotate the nozzle body/rotating part (#2) lightly to check the rotation.
- (3) If something is wrong with the rotation in (2), the most common cause is foreign particles on the sliding surfaces. Follow steps (4) and (5) below to remove foreign particles on sliding surfaces.
- (4) According to the procedure of 3. Disassembly in the previous page, check the sliding surfaces with a magnifying glass and confirm they are free from foreign particles.
- (5) Use a soft brush or tweezers to carefully remove any foreign particles from the nozzle orifices and sliding surfaces.

Note: Trouble/malfunction of ES nozzles are caused mostly by foreign particles such as grit, dust, debris, scale, chips, and small metal cuttings.

## 6. Troubleshooting

Problems	Probable causes		Solutions
No spray is being created	Control	<ul style="list-style-type: none"> <li>• Controller is not switched on.</li> <li>• Valves are not opened.</li> </ul>	<ul style="list-style-type: none"> <li>• Switch it on.</li> <li>• Open the valves.</li> </ul>
	Nozzle	<ul style="list-style-type: none"> <li>• Nozzle or pipe is clogged.</li> <li>• Nozzle or pipe is clogged due to damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Check and clean the nozzle or pipe.</li> <li>• Replace the damaged part.</li> </ul>
Liquid leaks	<ul style="list-style-type: none"> <li>• Nozzle or pipe is cracked.</li> <li>• Nozzle or pipe is corroded.</li> </ul>		<ul style="list-style-type: none"> <li>• Replace the cracked part.</li> <li>• Replace the corroded part.</li> </ul>
Rotation failure	<ul style="list-style-type: none"> <li>• Dust/foreign particles, damage on the nozzle.</li> <li>• Nozzle is clogged.</li> </ul>		<ul style="list-style-type: none"> <li>• Clean the sliding surfaces, replace the damaged parts.</li> <li>• Clean the nozzle.</li> </ul>
Irregular spray pattern	<ul style="list-style-type: none"> <li>• Nozzle or pipe is clogged.</li> <li>• Nozzle is corroded.</li> </ul>		<ul style="list-style-type: none"> <li>• Clean the nozzle or pipe.</li> <li>• Replace the corroded part or nozzle.</li> </ul>

## 7. Disposal

Disposal should be practiced according to the regulations and codes of local authorities, or ask a disposal professional.

## 8. Inquiries

For spare parts or any trouble, contact your supplier or the following:

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