

**Instruction Manual**

Products: Spray Nozzles
<b>KD Series</b>

Thank you for purchasing this product.

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

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

After reading, keep this manual handy for quick reference.

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

H. Ikeuchi & Co., Ltd.

## 1. Precautions

### (1) Ceramic Parts

The ceramic parts used in spray nozzles feature high chemical and wear resistance, but the following restrictions need to be considered:

- Use of hydrofluoric acid and concentrated alkali will lead to corrosion.
- While the material is hard, it is also brittle which can cause chipping.
- The ceramic will crack if abruptly cooled from high temperatures (100°C). Check that the other parts are also heat resistant to the expected operating conditions.

### (2) Installation Instructions

- Be sure to flush the pipes before installing the nozzle to remove any dirt and foreign matter.
- Apply a sealant or sealing tape to the pipe-threaded end of the adaptor. (As the connection between the cap and adaptor is a metal-to-metal seal, no sealant or sealing tape is required on that side.)
- Avoid installing the nozzle immediately on or after a bend in the pipe or an elbow. Turbulence may affect the nozzle performance.
- The caps are shipped hand-tightened. After attaching the adaptor to the equipment or piping, tighten the cap before use. Refer to Table 1 for the recommended tightening torque.

Table 1. Recommended tightening torque

Nozzle Thread Size (Connection Size)		Tightening Torque (N·m)
Adaptor	R1/4	15
Cap	G3/8B	10

### (3) Operation

- Start spraying at a water pressure of 0.05–0.1 MPa to avoid water hammer and then gradually increase to operating pressure.
- After spraying chemical solution, spray clean water for a while to clean the nozzle orifice and the inside of the nozzle.
- To prevent the nozzle from clogging, install filters or use a water treatment system, depending on the water quality.

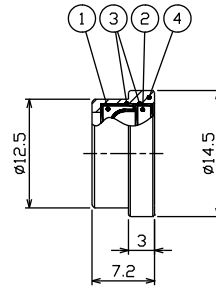
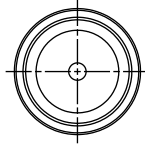
### (4) Handling Instructions

- Do not damage or scratch the nozzle.
- Do not poke the ceramic orifice disc or the ceramic whirler with hard objects such as metal rods, nails, or needles.
- Do not apply any strong force, shock or vibration to the nozzle.
- The maximum operating pressure for the KD series is 2 MPa. To prevent a water hammer, avoid a sudden increase in liquid pressure. The maximum allowable temperature is 60°C. However, the heat resistance of spray nozzles varies widely depending on the operating conditions, environment, liquid sprayed, etc.
- Store the nozzle in a clean, dust-free place.

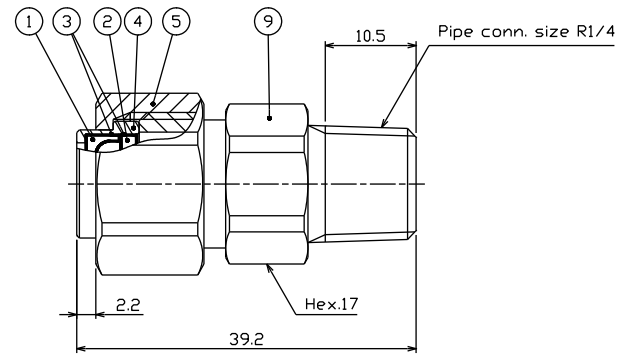
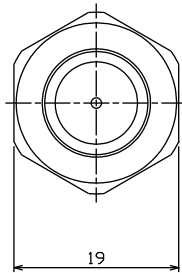
## 2. Component of Nozzle

### (1) Components and Materials

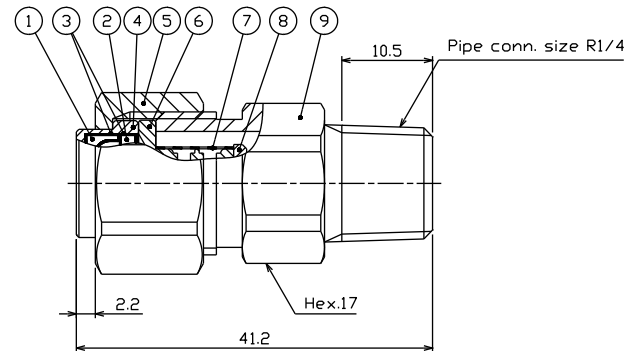
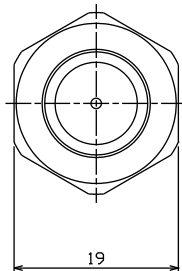
Nozzle Tip



Complete Assembly  
Without Strainer



Complete Assembly  
With Strainer



Note: Shapes may differ depending on nozzle codes.

No.	Component	Material <sup>*1</sup>	Remarks
1	Orifice Disc	Ceramic	The nozzle tip (Part Nos. 1–4) is factory-assembled and not designed to be disassembled.
2	Whirler	Ceramic	
3	Adhesive	Araldite (epoxy resin)	
4	Tip Retainer	S303 <sup>*2</sup>	
5	Cap	S303 <sup>*2</sup>	
6	Strainer Holder	S303 <sup>*2</sup>	Strainer parts (No. 6–8) are optional. KD nozzles with spray capacity codes 03, 033, and 042 are supplied with or without a #50 mesh strainer.
7	Strainer Screen	S316	
8	Strainer Cap	S303 <sup>*2</sup>	
9	Adaptor	S303 <sup>*2</sup>	

<sup>\*1</sup> In our material code, "S" represents "stainless steel". For example, S303 stands for stainless steel 303.

<sup>\*2</sup> Optional material: S316

## (2) Weight

Nozzle tip	3 g
Complete Assembly Without Strainer (1/4MKD *** S303)	39 g
Complete Assembly <u>With Strainer</u> (1/4MKD *** S303 <u>W</u> )	43 g

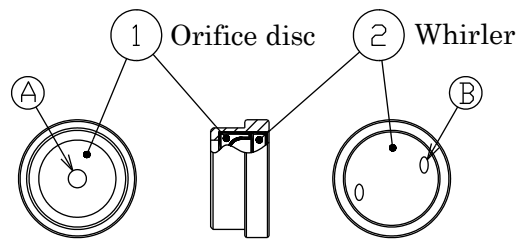
## 3. Disassembly

- Strainer parts (No. 6 to 8) are optional. They are not included in models without a strainer.
  - Disassemble the product in a clean, dust-free environment. Always clean the nozzle surface before disassembly to prevent any dust and dirt from entering the nozzle.
- Be careful not to lose any parts.

Procedure	Diagram	Caution
1. Loosen and remove the cap (#5).		
2. Remove the nozzle tip (#1–#4) and the strainer (#6–#8).		Part Nos. 1–4 cannot be disassembled.
3. Hold the knurled portion of the strainer cap (#8) with pliers to loosen it. Detach the strainer screen (#7).		Be careful not to dent or damage the strainer screen (#7).

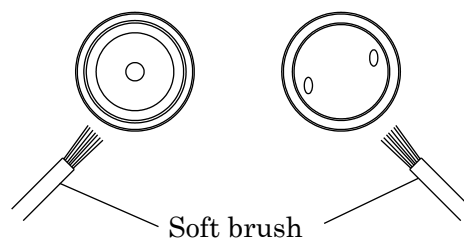
Note: Shapes may differ depending on nozzle codes.

## 4. Maintenance

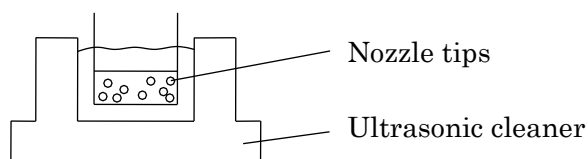


### (1) Clogging

- Any deposits in (A) on the outlet side of the nozzle tip or in (B) on the liquid inlet side may disturb the spray. Remove deposits with compressed air or a soft brush.
- Do not use metal rods, nails, needles, or other hard objects; these may chip or crack the ceramic components.



- Use a small ultrasonic cleaner for frequent cleaning or when cleaning a large number of nozzles. Use clean water or a mild detergent. Do not use solvents or chemicals.



- Clean the inside of the nozzle with compressed air or rinse it with water to remove any foreign matter.

## 5. Reassembly

Strainer parts (No. 6 to 8) are optional. They are not included in models without a strainer.

Procedure	Diagram	Caution
<p>1. Mount the strainer screen (#7) onto the strainer holder (#6). Hand-tighten the strainer cap (#8), then grip its knurled portion with pliers to further tighten.</p>		<p>The recommended tightening torque for the strainer cap is approximately 2 N·m when using a torque wrench.</p>
<p>2. Insert the nozzle tip (#1-#4) and the strainer (#6-#8) into the cap (#5).</p>		<p>Before assembly, confirm that the surfaces indicated with ☆ are clean and undamaged.</p>
<p>3. Screw the cap (#5) onto the adaptor (#9), and tighten it to a torque of 10 N·m.</p>	<p>Pipe, fitting, etc.</p>	<p>Before assembly, confirm that the surface indicated with ☆ is clean and undamaged.</p>

Note: Shapes may differ depending on nozzle codes.

## 6. Troubleshooting

If there is a problem, please check the following items first. If the problem persists, please replace the nozzle.

Problem	Possible reason	Solution
Nozzle not spraying or irregular spray pattern	Liquid pressure is too low.	Check the pressure in the pipe and apply the proper pressure.
	Nozzle and/or strainer is clogged.	Clean with ultrasonic cleaner and air blower.
Water leakage	Sealant or sealing tape is damaged or worn.	Replace or change the sealant or sealing tape.
	Nozzles are not screwed in tight enough.	Tighten the nozzles properly with the recommended torque shown on page 1.

## 7. Warranty

There is a one year warranty from the date of our shipment.

Seller shall be responsible for any damage due to design or production and will replace the item free of charge.

Neither this warrant nor any implied warranty applies to damage or harm caused by any or all of the following: 1. Damage due to misapplication and/or misuse, 2. Improper repair and/or modification, 3. Natural disasters, 4. Normal wear-and-tear of consumable parts including clogged nozzles.