No. KKS039590-3E

Instruction Manual

Products: Spray Nozzles

K Series
(1/4M K***N S303W)

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 down from high temperatures (100°C).

(2) Installation Instructions

- Be sure to flush the pipes before installing the nozzle to remove any dirt and foreign matter.
- Apply sealant or sealing tape to the nozzle threads.
- Avoid installing the nozzle immediately on or after a bend in the pipe or an elbow. Turbulence may affect the nozzle performance.
- Install the nozzle with a tightening torque of 15 N·m.

(3) Operation

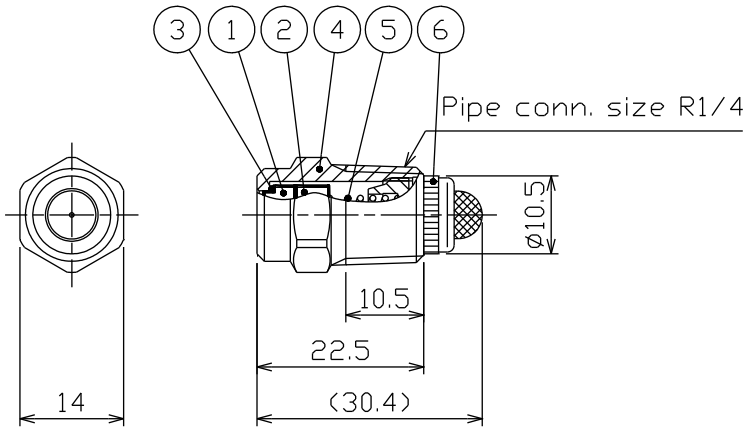
- Start spraying at a water pressure of 0.05–0.1 MPa to avoid water hammer and then gradually increase to operating pressure.
- After spraying chemical solution, spray clean water for a while to clean the nozzle orifice and the inside of the nozzle.
- To prevent the nozzle from clogging, install filters 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 and closer with nails, metal pins or other hard objects.
- Do not apply any strong force, shock or vibration to the nozzle.
- The maximum operating pressure for the K series is 2.5 MPa and the maximum allowable temperature is 100°C. To prevent a water hammer, avoid a sudden increase in liquid pressure.
- Store the nozzle in a clean, dust-free place.

2. Component of Nozzle

(1) Components and Materials



(Unit: mm)

Note: Shapes may differ depending on nozzle codes.

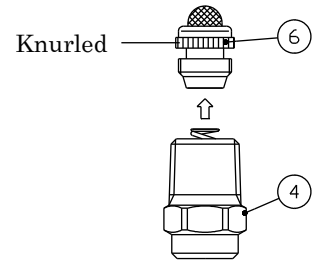
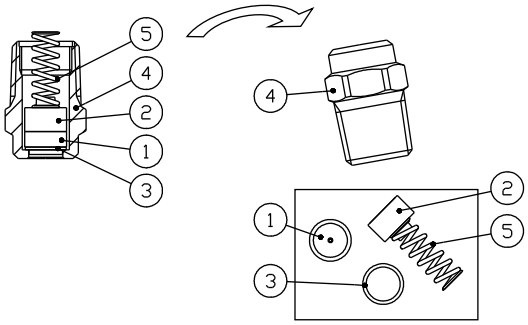
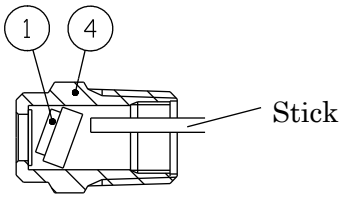
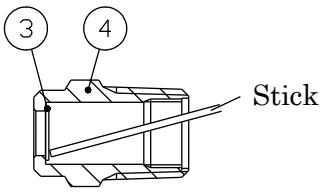
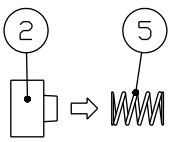
No.	Component	Material[*1]	Remarks
1	Orifice Disc	Ceramic	
2	Closer	Ceramic	
3	Packing	PTFE	
4	Nozzle Body	S303[*2]	
5	Spring	S316	
6	Strainer	S303, S304, and S316[*2]	Spray capacity code: 006, 008 (Strainer mesh size: #150)
		S303 and S304[*2]	Spray capacity code: 010 to 180 (Strainer mesh size: #50, #100)

[*1] In our material code, "S" represents "stainless steel". For example, S303 stands for stainless steel 303.

[*2] Optional material: S316

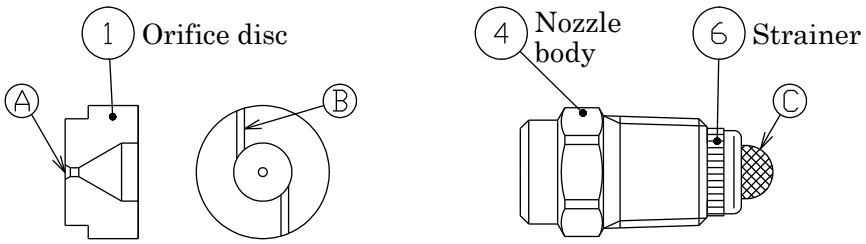
3. Disassembly

Disassemble the nozzle 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.

No.	Procedure	Diagram	Caution
1	Loosen and remove the strainer (#6). If the strainer cannot be removed by hand, hold the knurled portion of the strainer (#6) with pliers to loosen it.		Be careful not to dent or damage the strainer mesh.
2	Turn the nozzle body (#4) over into a clean container and remove the internal parts.		Be careful not to lose any parts.
3	If the orifice disc (#1) is stuck inside the nozzle body (#4), straighten it out by using a small straight, not too hard stick (bamboo skewer, toothpick or such) and then remove it.		Do not use metal rods, nails, needles, or other hard sticks as those may chip/crack the orifice disc (#1).
4	If the packing (#3) is stuck to the nozzle body (#4), carefully dislodge it with a small, not too hard stick (bamboo skewer, toothpick, or such).		Do not use metal rods, nails, or needles as they may damage the sealing surface of the packing (#3) and nozzle body (#4), resulting in water leakage. Since the packing is as thin as 0.5 mm, be careful not to damage it. Replace any bent or deformed packing with new ones to prevent water leakage.
5	Detach the spring (#5) from the closer (#2).		

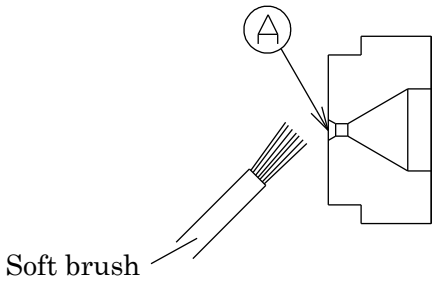
Note: Shapes may differ depending on nozzle codes.

4. Maintenance

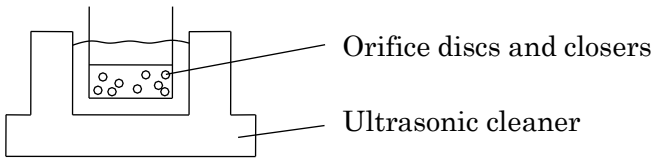


(1) Clogging

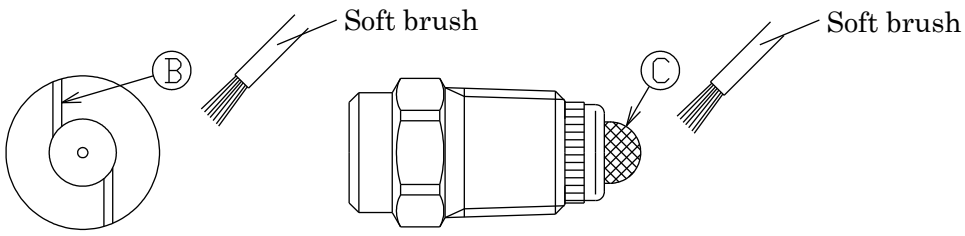
- Any deposits on the outlet side (A) of the nozzle orifice may disturb the spraying. Clean with compressed air or a soft brush to remove any dirt.



- Use a small ultrasonic cleaner for frequent cleaning or cleaning large quantities of nozzles. Disassemble the nozzle, then clean the orifice disc (#1) and closer (#2).

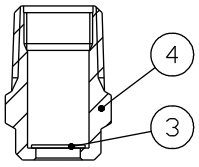
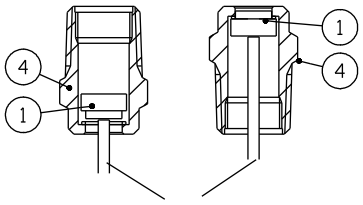
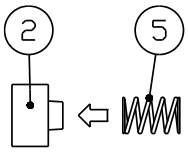
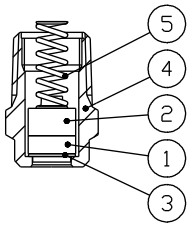
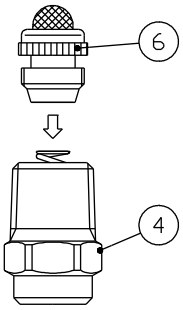


- Remove any dirt/deposits on the liquid inlet side (B) and (C) as well, using compressed air, a soft brush or such.



Note: Shapes may differ depending on nozzle codes.

5. Reassembly

No.	Procedure	Diagram	Caution
1	Insert the packing (#3) into the nozzle body (#4). Make sure it is set all the way at the bottom.		Packing (#3) can get caught and stuck at an angle on the way down the nozzle body (#4).
2	Insert the orifice disc (#1) into the nozzle body (#4), using a wooden or resin stick to push it straight up.		Pay attention to the orientation of the orifice disc (#1). If the orifice disc (#1) gets stuck, correct it carefully with a wooden/resin stick from the front or back. Do not use a metal rod, nail, needle or such as it can damage the orifice disc (#1).
3	Attach the spring (#5) to the closer (#2).		
4	Put the closer (#2) with spring (#5) on the orifice disc (#1).		
5	Hand tighten the strainer (#6) onto the nozzle body (#4). (Reference tightening torque: 0.2 to 0.5 N・m)		

Note: Shapes may differ depending on nozzle codes.

- If water leaks during spraying, the packing (#3) may be broken, missing or dirty.

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	Liquid pressure is too low.	Check the pressure in the pipe and apply the proper pressure.
	Nozzle and/or strainer (#6) is clogged.	Clean with ultrasonic cleaner and air blower.
Water dripping from the nozzle	Liquid pressure is too low.	Check the pressure in the pipe and apply the proper pressure.
	Dust/foreign matter adhered to the nozzle orifice.	Clean with ultrasonic cleaner and air blower.
	Residual pressure remains in the piping.	Take measures to remove residual pressure, such as securing a bypass for residual pressure removal.
	Packing (#3) is not in place.	Set the packing (#3).
Does not form a hollow cone spray pattern	Liquid pressure is too low.	Check the pressure in the pipe and apply the proper pressure.
	Orifice disc (#1) is clogged at (A) and/or (B) shown on page 4.	Clean with ultrasonic cleaner and air blower.
Straight line spray (not forming a hollow cone spray)	Orifice disc (#1) is installed backwards.	Disassemble the nozzle and install it correctly.
	Closer (#2) is not included or closer used is not correct.	Ensure closer (#2) is installed correctly.
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 a torque wrench.

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.