NKS1133-3E

Instruction Manual

on

SCBIM series with SP-adaptor

SCBIM series with SN-adaptor

"The Fog Engineers"
いけうち H. IKEUCHI & CO., LTD.

Preface

Thank you for purchasing our CERJET® Spray Nozzle from H. Ikeuchi & Co., Ltd.
This manual gives detailed instructions for the basic handling, maintenance and cautions of the CERJET® Spray Nozzle.
Please take note that due to our continuous efforts to improve our products, the details in this manual may differ slightly from the actual product.
After reading, keep this manual handy for quick reference.

Safety Precautions

Prior to use, read this manual to 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.

The screw threads or sharp edges and corners may cause injury.

CAUTION

Ensure that the nozzle is firmly installed.

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

1. Suggestions & Cautions

(1) The screw threads, edges and corners may be sharp.
Wear safety gloves to protect hands.

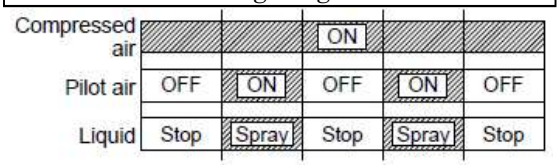
(2) Operate the nozzle under the specified pressures.
If the pressures are not specified, refer to our flow-rate diagram.

(3) Do not damage or scratch the nozzles and pipes. When replacing a nozzle tip or disassembling for maintenance, use a spanner, hexagon socket wrench, and milling vice. Never use a pipe vice, pipe wrench, or pliers.

(4) Cautions for preventing back-flow of liquid
To start operation: Start the air supply first, then liquid.
To stop operation: Stop the liquid first, then air.

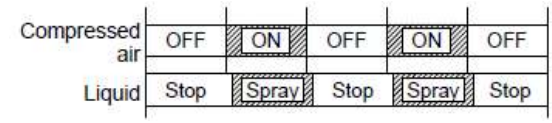
SP-adaptor
Spray ON/OFF can be regulated by switching the pilot air ON/OFF.
The pilot air actuates an internal piston to regulate the spray. (Pilot air pressure must be 0.2 MPa or higher.)

Timing diagram



SN-adaptor
Spray ON/OFF can be regulated by turning the compressed air ON/OFF.
Compressed air pressure must be 0.2 MPa or higher in order to start the spray.

Timing diagram



(a) Pilot air supply (for SP-adaptor only)
Set the pilot air pressure to 0.2 MPa or more.
If the pilot air pressure is less than 0.2 MPa, spray will not start.

(b) Liquid supply
I) Liquid pressure type
Set the liquid pressure to 0.1 MPa or more.
If the liquid pressure is less than 0.1 MPa, irregular and intermittent spray may be caused.
II) Liquid siphon type
Set the siphon height to 500 mm or less.
If the siphon height is more than 500 mm, irregular and intermittent spray may be caused.

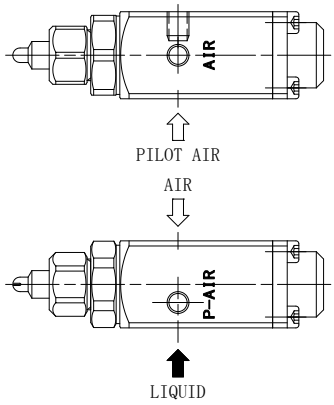
(5) Air and liquid piping

- Use larger size pipes and valves to prevent the pressure drop.
- Use new stainless steel pipes. Dust and foreign particles in old pipes may clog the nozzles. Never use pipes that may rust.
- Even new pipes may have chips or seal tapes inside. Before installing the nozzles, clean the air and liquid pipes by flushing the pipes thoroughly to remove any foreign particles inside.
- Install pressure gauges just before the nozzle to adjust air and liquid pressures appropriately. Installation of valve is also recommended.
- If a nozzle is clogged, the nozzle performance deteriorates. Install strainers to help prevent nozzle clogging.

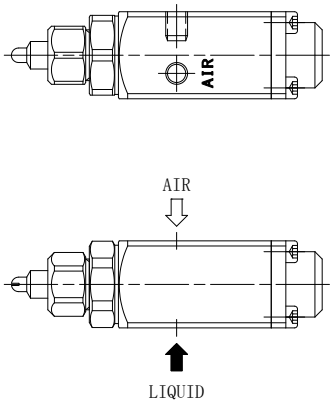
2. Components of Nozzle

(1) Nozzle Assembly

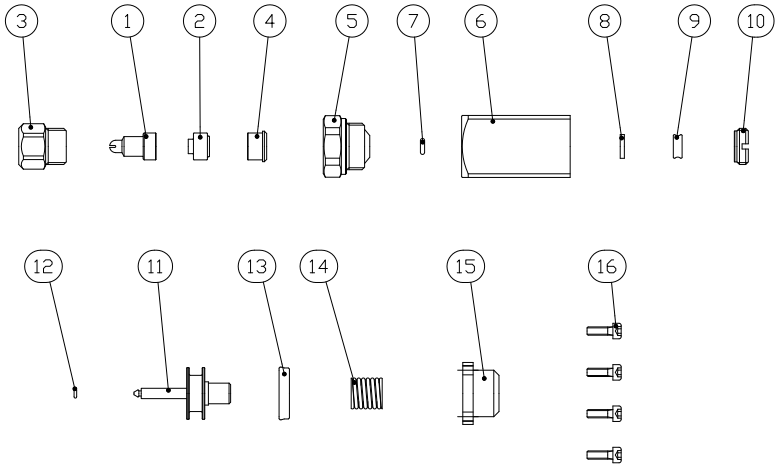
Adaptor type: SP



Adaptor type: SN



(2) Component Parts and Materials



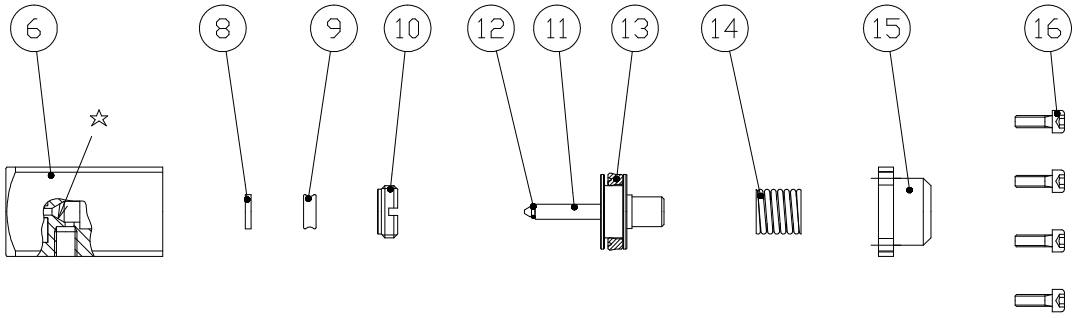
No.	Component	Material	Remark	No.	Component	Material	Remark
1	Nozzle tip	S303	Consumable	9	X-ring	FKM	Consumable
2	Core	S303	Consumable	10	Lock nut	S303	
3	Cap	S303		11	Piston	S303	
4	Orifice disc	S303		12	O-ring	FKM	Consumable
5	Connector	S303		13	Y-packing (MY7)	FKM	Consumable
6	Adaptor	S303	Consumable	14	Spring	S304	
7	O-ring	FKM	Consumable	15	Spring cap	S303	
8	Backup ring	PTFE	Consumable	16	Hex. socket screw (M1.6x5)	S304	

Note: (1) Consumables
Lifetime of a nozzle varies depending on operational conditions.
Replace consumable parts when corrosion or a corroded pit on a nozzle tip or core is found and the nozzle performance deteriorates.
(2) Dimensions and materials may differ depending on part number of the nozzle.
(3) In our material code, "S" represents "stainless steel".
(Example) S303 represents stainless steel 303.

3. Disassembly

(1) Fix the Adaptor (component #6) with a milling vice and unscrew the Hex. socket screw (#16) with a hexagon wrench. Then take out the Spring cap (#15), Spring (#14), and Piston (#11).
Necessary tools: Milling vice, Socket wrench 1.5 mm

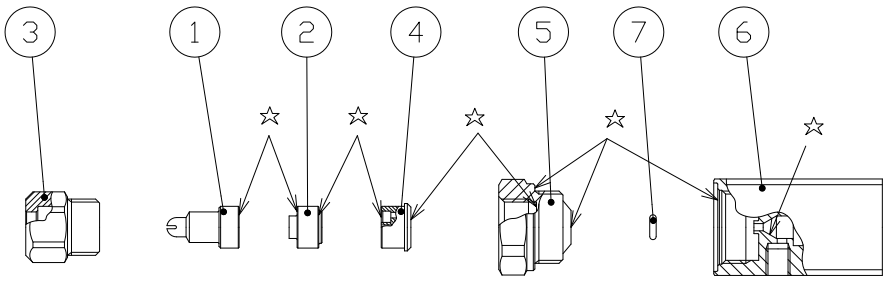
Note: If the Backup ring (#8), X-ring (#9), Lock nut (#10), O-ring (#12), and/or Y-packing MY7 (#13) are damaged, replace them with new ones.



(2) 1. Fix the Adaptor (#6) with a milling vice and unscrew the Connector (#5) with a spanner.
2. Fix the Connector (#5) with a milling vice and unscrew the Cap (#3) with a spanner.
3. Remove the Nozzle tip (#1), Core (#2), and Orifice disc (#4).

Necessary tools:
Milling vice
Spanner 11 mm for Connector (#5), recommended tightening torque: 6 N m
Spanner 8 mm for Cap (#3), recommended tightening torque: 3 N m

Note: Be careful not to lose or damage these small parts.



4. Cleaning

Visually check the conditions of each component and confirm they are not damaged or deformed.
Sealing parts include X-ring (#9), O-ring (#12), and Y-packing MY7 (#13).
If these parts are damaged or have a surface flaw, it may cause a malfunction.
Remove any dirt on the surface with a soft cloth.
Use a brush to remove any impurities on the surface of other metal parts.
Be careful not to scratch or damage the orifice of nozzle tip.

- Impurities most likely adhere to the middle (air orifice) of the Adaptor (#6). Pay special attention to check the condition of this part.
- Use a brush, bamboo skewer, or toothpick to remove any foreign particles from the orifices.
  Clean the inside of each part completely to maintain maximum nozzle performance.

5. Assembly

Assemble in the reverse order of "3. Disassembly".

Note:
(1) Before assembly, confirm that the sealing surfaces marked with ☆ (see the previous page) and orifice parts are clean and without flaw.
(2) Grease the X-ring (#9) and the Y-packing MY7 (#13).

6. Maintenance

Check	Item	Check points
Daily	Spray	Have a visual check of the spray pattern. Confirm that the spraying pressure is normal, when spray pattern cannot be seen because nozzles are in equipment.
	Pressure gauges and flow meters	Confirm that the air and liquid pressures and flow rate are correct during operation.
Periodically	Spray	Have a visual check of the spray pattern.
	Appearance	Confirm that there is no corrosion or dust adhesion to the nozzle tip and orifice.
	Connection	Confirm that the cap, connector, and adaptor are tightened properly.

7. Troubleshooting

Troubles	Probable causes		Solutions	Remarks
No spray is being created	Control	・Controller is not switched on. ・Valves are not opened.	・Switch it on. ・Open the valves.	
	Nozzle	・Nozzle or pipe is clogged. ・Nozzle or pipe is clogged due to damage. ・Liquid orifice and/or air orifice is clogged. ・Piston does not function properly.	・Check and clean the nozzle or pipe. ・Replace the damaged part. ・Clean them. a) Increase the pilot air pressure to 0.2 MPa or higher.* b) If (a) is not effective, change the pipe and solenoid valve to larger size ones to supply enough amount of air. c) Replace the Y-packing.	*SP-adaptor only
Liquid leaks from the nozzle tip	・Dust/foreign particles adhered to the piston and/or sealing surface**. ・Damage or wear on the piston, O-ring, or the sealing surface**. (**Area marked with ☆ on page 5) ・The spring is missing.		・Disassemble and clean the inside of nozzle. ・Replace the parts. ・Set the spring.	
Air leaks Liquid leaks	・Some parts are loose or not tightened.		・Tighten the connections.	
	・Nozzle or pipe is cracked. ・Nozzle or pipe is corroded.		・Replace the cracked part. ・Replace the corroded part.	
Intermittent spray	・Seal failure between the nozzle tip, core, and adaptor (air or liquid leaks due to dust/foreign particles adhered on the sealing surface). ・Either air pressure is too high or liquid pressure is too low. ・Seal failure between the orifice disc, connector, and adaptor. ・Seal failure between the piston and O-ring.		・Clean the sealing surface and replace the part. ・Adjust the pressures. ・Disassemble and clean the parts before re-assembly. ・Disassemble and clean the parts before re-assembly.	
Irregular spray pattern	・Nozzle or pipe is clogged. ・Nozzle tip is deformed. ・Nozzle tip is corroded. ・Dust or foreign particles adhered on the orifices.		・Clean the nozzle or pipe. ・Replace the deformed part. ・Replace the corroded part. ・Clean the parts.	

8. Disposal

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

9. Inquiries

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

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