CERJET®

NKS1666-4E

# Instruction Manual
# for
# SETOJet Series Pneumatic Spray Nozzles

## SETOV Series with SP-adaptor

## SETOV Series with SN-adaptor



H. Ikeuchi & Co., Ltd.

## Preface

Thank you for purchasing the Spray Nozzle 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 product for optimal 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 is firmly installed.

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

## 1. Cautions

(1) Screw threads, edges and corners may be sharp. Wearing safety gloves is recommended.

(2) Operate the nozzles under the specified pressures.
If the pressure is not specified, refer to the provided flow-rate diagram.

(3) Avoid damaging or scratching the nozzles. When replacing a nozzle tip or disassembling the nozzle for maintenance, always use a spanner and milling vice.
DO NOT use a pipe vice, pipe wrench or pliers.

(4) Spray ON/OFF control

Type SP

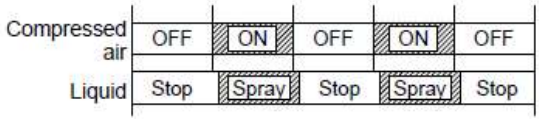
This type has a built-in shutoff piston that operates on pilot air pressure. The spray is turned ON/OFF by turning the pilot air ON/OFF. Use with pilot air pressure of 0.2 MPa or higher.

Timing diagram


Type SN

This type has a built-in shutoff piston that operates on compressed air (spray air) pressure. The spray is turned ON/OFF by turning the compressed air ON/OFF. Use with compressed air pressure of 0.2 MPa or higher.

Timing diagram




Stop the liquid supply when not spraying for a long time.

(5) Air and liquid piping

- Use piping and valves large enough to prevent the pressure from dropping.
- Use new stainless steel pipes as dust and debris in old pipes may clog the nozzles. Never use pipes that can rust.
- Even new pipes may have chips, seal tape or other debris inside. ALWAYS flush pipes thoroughly before installing nozzles to remove any debris that could cause clogging.
- Install pressure gauges in front of the nozzle to adjust air and liquid pressures appropriately. Installation of a valve is also recommended.
- Install strainers to prevent clogged nozzles. Clogging will impact nozzle performance.

**Type SP**

Only stopping the pilot air will not purge air from the pipe and thus will not lower the pressure enough to stop the spraying. To prevent this, use a 3-way solenoid valve for the pilot air pipe.

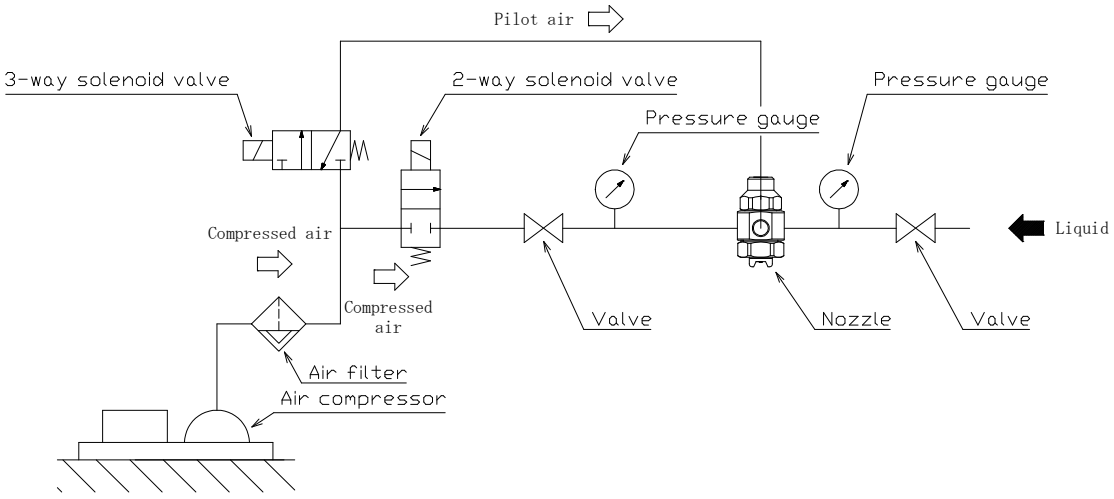



Fig. 1 Piping example using 3-way solenoid valve for the pilot air pipe

**Type SN**

Use a 2-way solenoid valve for the compressed air pipe.

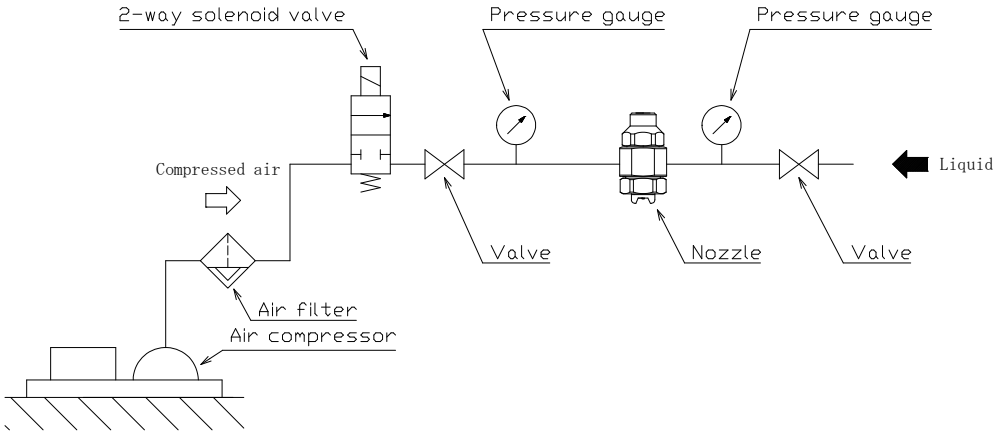
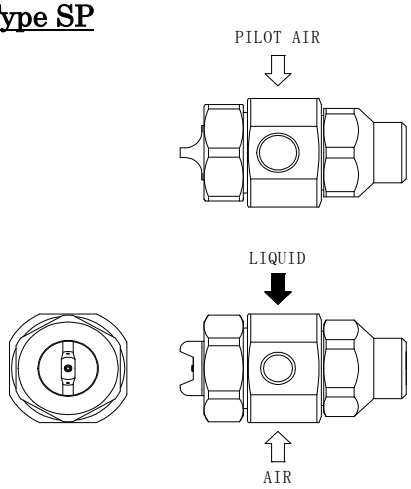



Fig. 2 Piping example using 2-way solenoid valve

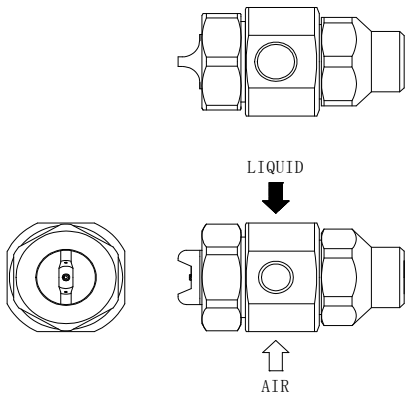
## 2. Components of Nozzle

(1) Nozzle Assembly

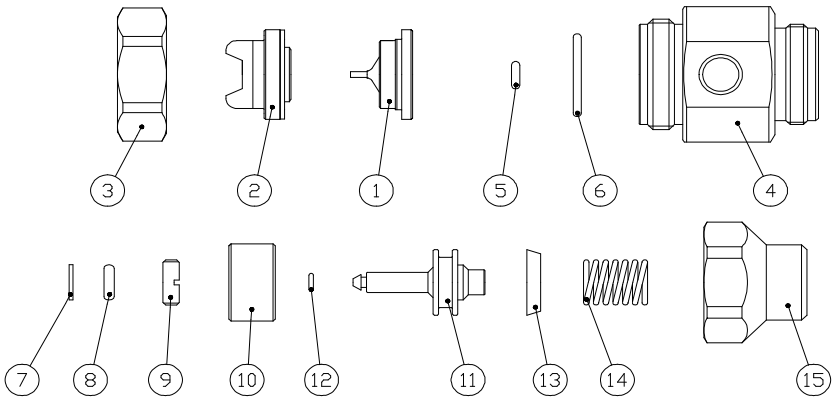
<u>Type SP</u>




<u>Type SN</u>




(2) Component Parts and Materials




| No. | Component | Material | Remark | No. | Component | Material | Remark |
|---|---|---|---|---|---|---|---|
| 1 | Nozzle Tip | S303 | Consumable | 9 | Lock Nut | S303 | |
| 2 | Nozzle Body | S303 | Consumable | 10 | Sleeve | PTFE | Consumable |
| 3 | Cap | S303 | | 11 | Piston | S303 | |
| 4 | Adaptor | S303 | | 12 | O-ring* | FKM | Consumable |
| 5 | O-ring (S3) | FKM | Consumable | 13 | Y-packing | NBR | Consumable |
| 6 | O-ring (S14) | FKM | Consumable | 14 | Spring | S304 | |
| 7 | Backup Ring | PTFE | Consumable | 15 | Spring Cap | S303 | |
| 8 | O-ring (P4) | FKM | Consumable | | | | |

*Part #12: O-ring cross section φ1.0 x inner diameter φ1.6 mm

Note:

(1) Consumables
The lifetime of a nozzle varies depending on the operational conditions.
Replace consumable parts when corrosion or pitting corrosion of a nozzle tip or other parts is found and/or nozzle performance significantly deteriorates.

(2) Dimensions and materials may differ depending on product codes.

(3) In the material code, "S" represents "stainless steel". For example, S303 stands for stainless steel 303.

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

(1) Hold the adaptor (part #4) in a milling vice and unscrew the spring cap (#15) with a spanner, then take out the spring (#14), piston (#11), O-ring (#12), and Y-packing (#13).

Necessary tools:
Milling vice,
Spanner 22 mm

Tightening torque for spring cap (#15) is 40 N•m.

Next, unscrew the lock nut (#9) with a flathead screwdriver and remove the O-ring P4 (#8) and backup ring (#7).

Necessary tool: Flathead screwdriver

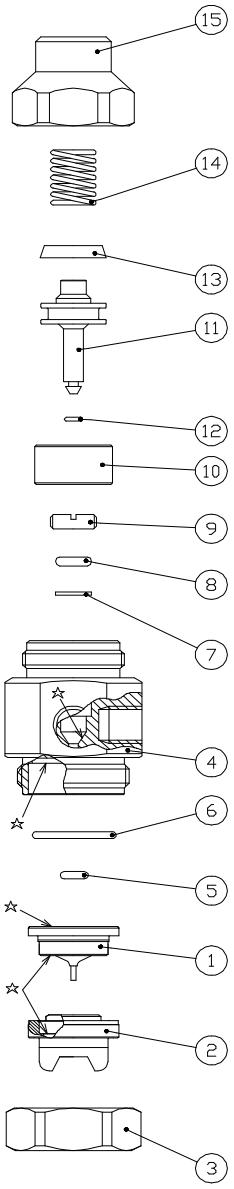
If any of the backup ring (#7), O-ring P4 (#8), O-ring (#12), and Y-packing (#13) is damaged, replace it with a new one.

(2) Hold the adaptor (#4) in a milling vice and unscrew the cap (#3) with a spanner. Then remove the nozzle body (#2) and nozzle tip (#1).

Necessary tools:
Milling vice,
Spanner 24 mm

Tightening torque for cap (#3) is 10 N•m.

If any of O-ring S3 (#5) and O-ring S14 (#6) is damaged, replace it with a new one.




Note: Make sure not to drop, damage or lose any of the small parts.

## 4. Cleaning

After the disassembly inspect each part for damages of any kind.
Sealing parts include O-ring P4 (#8), O-ring (#12), and Y-packing (#13).
Any damage or surface scratches on these parts may cause the nozzle to malfunction.
Remove any dirt on the surface with a soft cloth.
Using a brush, carefully remove dirt and debris from the metal parts. Take special care not to scratch or damage the nozzle orifice when cleaning the nozzle tip.

How to clean the inside of the nozzle

a. Impurities are most likely to adhere to the orifice of the nozzle tip (#1). Pay special attention to check the condition of this part.
b. If you find any dust or debris in the orifice, carefully remove them with a brush, toothpick, or bamboo skewer. Clean the inside of each part thoroughly from any dirt and debris to maintain performance.

## 5. Assembly

Assemble in the reverse order of 3. Disassembly.
Note:
(1) Before assembling, ensure that the sealing surfaces, indicated with ☆ (see the previous page), and the orifice are clean and undamaged.
(2) Pay attention to the orientation of the Y-packing (#13) when installing it to the piston (#11). Fit the Y-packing with the groove side facing the tip of the piston as shown in Fig. 3.

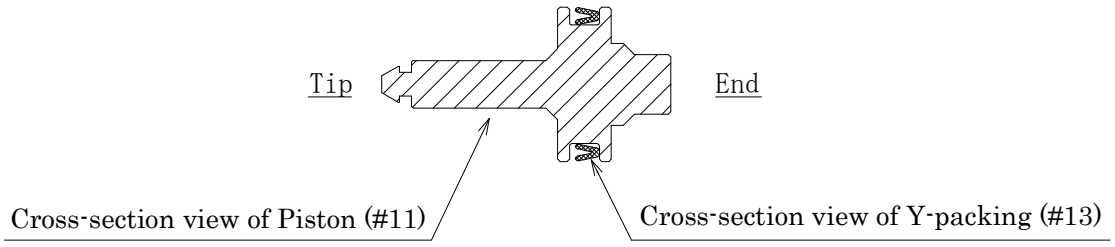



Fig. 3 Correct orientation of Y-packing

## 6. Maintenance

| Check | Item | Check points |
|---|---|---|
| Daily | Spray | Visually check the spray pattern. If the nozzles are inside the equipment and cannot be seen, confirm that the spray pressure is normal. |
| | Pressure gauges and flow meters | Confirm that the air and liquid pressures and flow rate are correct during operation. |
| Periodically | Spray | Visually check the spray pattern. |
| | Appearance | Confirm that there is no corrosion or dust adhesion to the nozzle tip and orifice. |
| | Connection | Confirm that the cap and adaptor are screwed together tightly. |

## 7. Troubleshooting

| Troubles | Probable causes | | Solutions |
|---|---|---|---|
| No spray is being created | Control | ・Controller is not switched on.<br>・Valves are not opened. | ・Switch it on.<br>・Open the valves. |
| | Nozzle | ・Nozzle or pipe is clogged.<br>・Nozzle or pipe is clogged due to damage.<br>・Liquid orifice and/or air orifice is clogged.<br>・Piston does not work. | ・Check and clean the nozzle and pipe.<br>・Replace the damaged part.<br>・Clean the clogged part.<br>・For SP type, increase the pilot air pressure to 0.2 MPa or higher.<br>・If increasing the compressed air pressure does not yield any results, replace the pipe and solenoid valve with larger ones to ensure an adequate air supply.<br>・Replace the worn-out Y-packing. |
| Air leaks<br>Liquid leaks | ・Dust or debris on the piston or the sealing surfaces.<br>・Damage or wear on the piston or the sealing surfaces.<br>・Spring (part #14) is missing. | | ・Disassemble and clean the inside of nozzle.<br>・Replace the damaged part.<br>・Insert spring. |
| | ・Some parts are loose or not tightened. | | ・Tighten the connections. |
| | ・Nozzle or pipe is cracked.<br>・Nozzle or pipe is corroded. | | ・Replace the cracked part.<br>・Replace the corroded part. |
| Intermittent spray | ・Air leaks due to the damage and/or foreign particles adhered on the sealing surface.<br>・Seal failure between the nozzle body (#2) and nozzle tip (#1).<br>・Seal failure between the piston and O-ring. | | ・Clean the sealing surface or replace the part.<br>・Disassemble and clean the parts before re-assembly.<br>・Disassemble and clean the parts before re-assembly. |
| Irregular spray pattern | ・Nozzle or pipe is clogged.<br>・Nozzle tip is deformed.<br>・Nozzle tip is corroded.<br>・Dust or foreign particles adhered on the orifices. | | ・Check and clean the nozzle and pipe.<br>・Replace the deformed part.<br>・Replace the corroded part.<br>・Clean the part. |

## 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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