

Instruction Manual
for
SETOJet series Pneumatic Spray Nozzles
SETO 0204 S303+CSP S303

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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. Suggestions & 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

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					
Compressed air			ON		
Pilot air	OFF	ON	OFF	ON	OFF
Liquid	Stop	Spray	Stop	Spray	Stop

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. Dust and foreign particles in old pipes may clog the nozzles. Never use pipes that may 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 just before 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.
- 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.

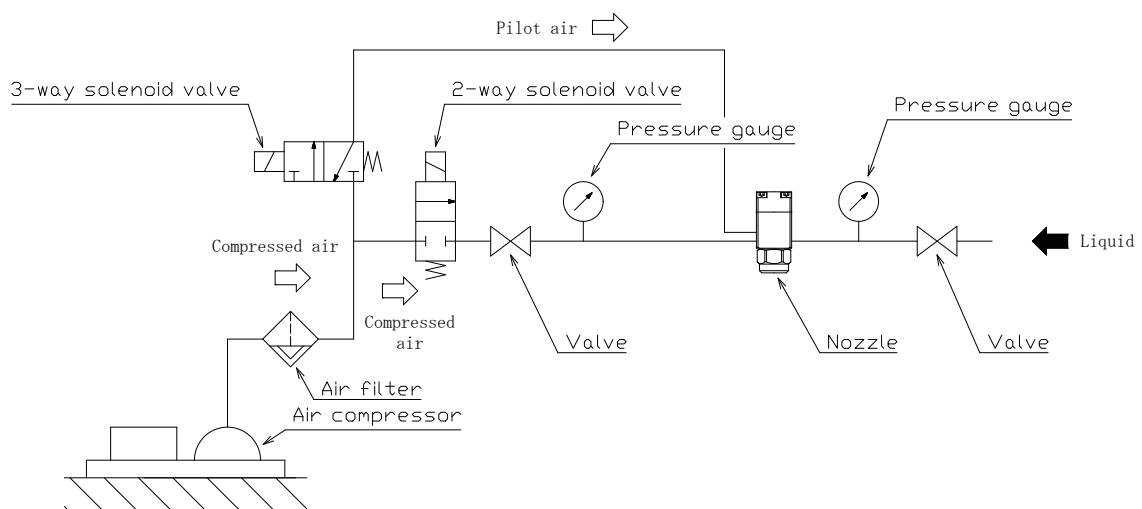


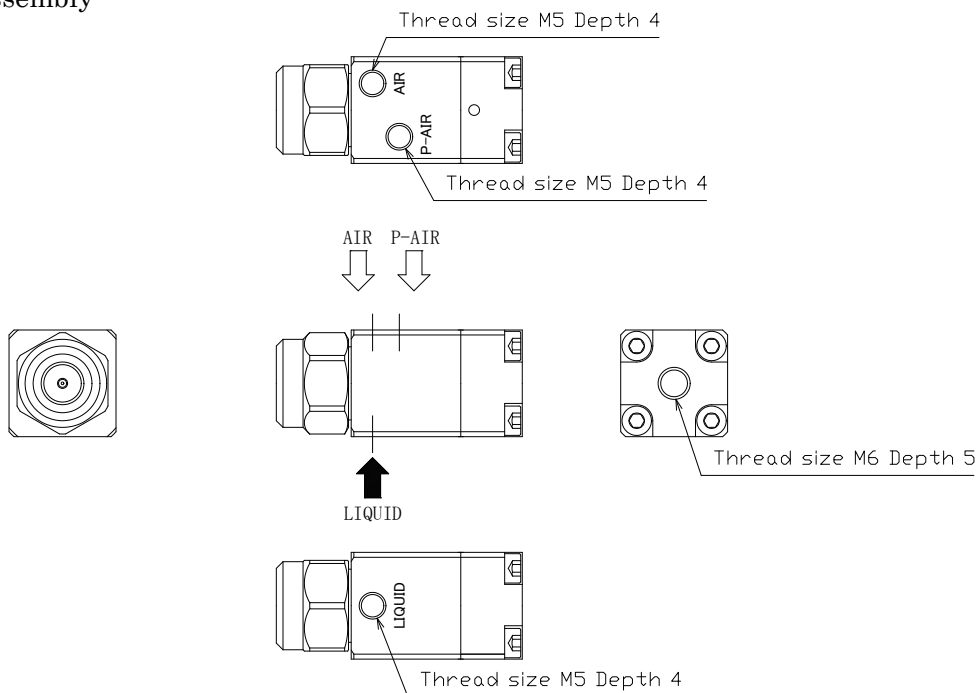
Fig. 1 Piping example using 3-way solenoid valve for the pilot air pipe

(6) Tube fittings for connection

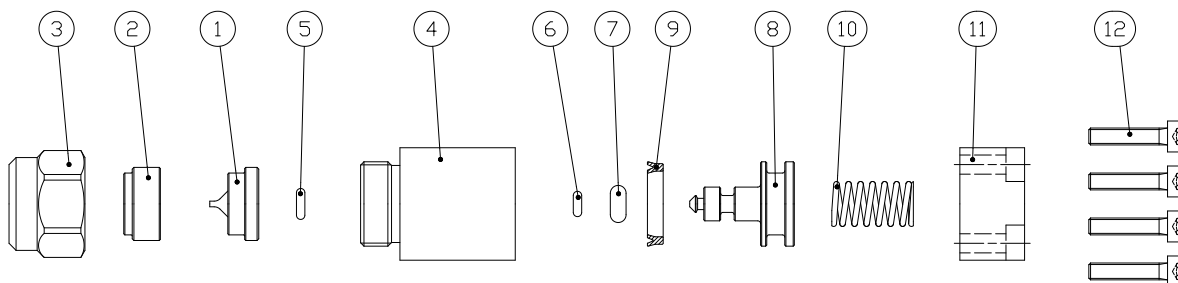
For both the air supply and pilot air supply ports on this nozzle, use M5 screw-in fittings with a thread depth of 4 mm or less and an outer diameter of 10 mm or less. Fittings with a larger diameter cannot be installed due to the close spacing of the two ports. (Refer to the drawing on the next page. AIR = air supply port, P-AIR = pilot air supply port)

2. Components of Nozzle

(1) Nozzle Assembly



(2) Component Parts and Materials



No.	Component	Material	Remark	No.	Component	Material	Remark
1	Nozzle Tip	S303	Consumable	7	O-ring (P3)	FKM	Consumable
2	Nozzle Body	S303	Consumable	8	Piston	S303	
3	Cap	S303		9	Y-packing (MY11)	NBR	Consumable
4	Adaptor	S303		10	Spring	S304	
5	O-ring (S3)	NBR	Consumable	11	Spring Cap	S303	
6	O-ring (S2)	NBR	Consumable	12	Hexagon Socket Head Bolt (M3x14)	S304 equivalent	

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) In our material code, "S" represents "stainless steel".

For example, S303 stands for stainless steel 303.

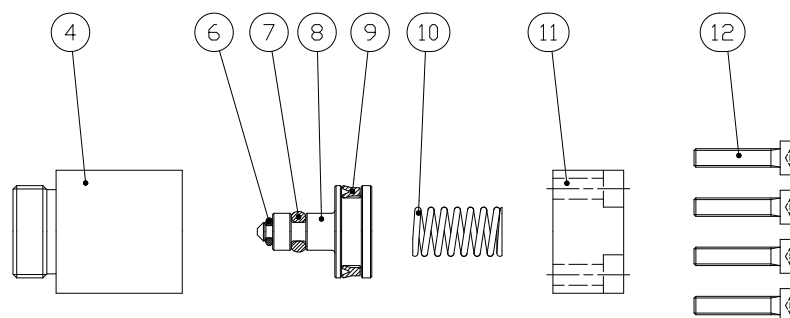
3. Disassembly

- (1) Hold the adaptor (part #4) in a milling vice and unscrew the hexagon socket head bolts (#12) with an Allen wrench. Then remove the spring cap (#11), spring (#10) and piston (#8). If any of the O-ring S2 (#6), O-ring P3 (#7), and Y-packing MY11 (#9) is damaged, replace it with a new one.

Necessary tools:

Milling vice,

Allen wrench 2.5 mm



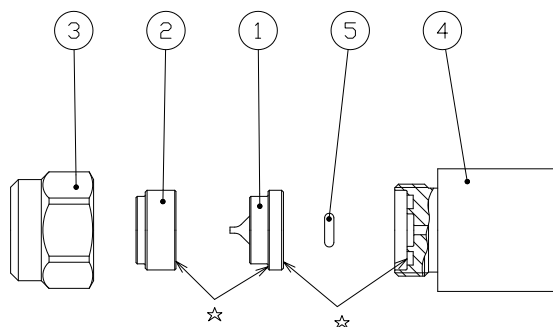
- (2) Hold the adaptor (#4) in a milling vice and unscrew the cap (#3) with a spanner to remove the nozzle body (#2), nozzle tip (#1), and O-ring S3 (#5).

Necessary tools:

Milling vice,

Spanner 17 mm

Note for Re-assembly: Tightening torque for cap (#3) is 10 N•m.



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 S2 (#6), O-ring P3 (#7), and Y-packing MY11 (#9).

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 other 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) Grease the O-ring P3 (#7) and the Y-packing MY11 (#9).
- (3) Pay attention to the orientation of the Y-packing MY11 (#9) when installing it to the piston (#8).
Fit the Y-packing with the groove side facing the tip of the piston as shown in Fig. 2.

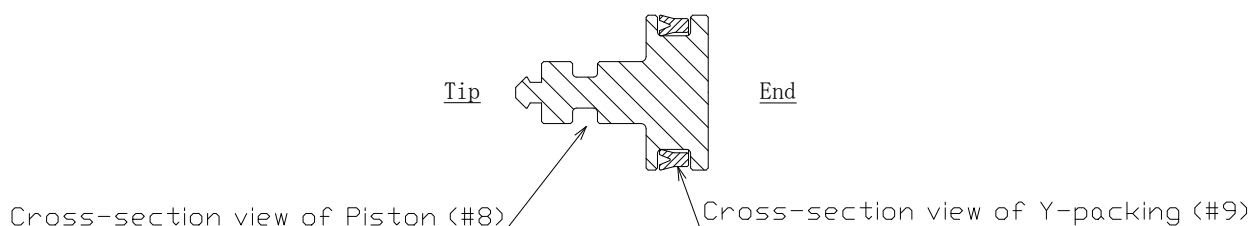


Fig. 2 Correct orientation of Y-packing

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 there is no looseness in any of the threaded connections.

7. Troubleshooting

Troubles	Probable causes		Solutions
No spray is being created	Control	<ul style="list-style-type: none"> • Controller is not switched on. • Valves are not opened. 	<ul style="list-style-type: none"> • Switch it on. • Open the valves.
	Nozzle	<ul style="list-style-type: none"> • Nozzle or pipe is clogged. • Nozzle or pipe is clogged due to damage. • Liquid orifice and/or air orifice is clogged. • Piston does not work. 	<ul style="list-style-type: none"> • Check and clean the nozzle and pipe. • Replace the damaged part. • Clean the clogged part. • Increase the pilot air pressure to 0.2 MPa or higher. • 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. • Replace the worn-out Y-packing.
Air leaks Liquid leaks	<ul style="list-style-type: none"> • Dust or debris on the piston or the sealing surfaces. • Damage or wear on the piston or the sealing surfaces. • Spring (part #10) is missing. 		<ul style="list-style-type: none"> • Disassemble and clean the inside of nozzle. • Replace the damaged part. • Insert spring.
	<ul style="list-style-type: none"> • Some parts are loose or not tightened. 		<ul style="list-style-type: none"> • Tighten the connections.
	<ul style="list-style-type: none"> • Nozzle or pipe is cracked. • Nozzle or pipe is corroded. 		<ul style="list-style-type: none"> • Replace the cracked part. • Replace the corroded part.
Intermittent spray	<ul style="list-style-type: none"> • Seal failure between the nozzle tip and adaptor (air or liquid leaks due to dust/foreign particles adhered or damage on the sealing surface). • Cracked or damaged O-ring, or resulting clogging. • Seal failure between the piston and O-ring. 		<ul style="list-style-type: none"> • Clean the sealing surface or replace the part. • Replace O-ring. • Disassemble and clean the parts before re-assembly.
Irregular spray pattern	<ul style="list-style-type: none"> • Nozzle or pipe is clogged. • Nozzle tip and/or body is deformed. • Nozzle tip and/or body is corroded. • Dust or foreign particles adhered on the orifices. 		<ul style="list-style-type: none"> • Check and clean the nozzle and pipe. • Replace the deformed part. • Replace the corroded part. • 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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Fax: +81-6-6538-4022

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<https://www.dry-fog.com/en/>