Instruction Manual

Products: Spray Nozzles QB Series

INQB Series



Note: Shape and color differ depending on the product code.

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. Safety Precautions

Prior to use, please read these "Safety Precautions" and use the nozzles properly. Improper use may result in injury and damage to the nozzle.



Do not use nozzles beyond the maximum liquid pressure of 0.4 MPa.



Do not use nozzles outside of the temperature range of 5-80 °C.



Do not use nozzles in freezing cold environments.



Only connect products to pipes that meet the specifications in Table 3 on Page 4.



To prevent a water hammer, avoid a sudden increase in liquid pressure.



Firmly attach the spring clip type mounting bracket (part #8) to the pipe. See Page 4.



Do not apply water pressure to the nozzles while the cap (part #5) is loose.



In order to avoid any unexpected accidents or injuries, do not stand near or in front of the nozzle and keep your face away.

2. Before Use (Instructions & Cautions)



Be sure to flush the pipes before installing the nozzle to remove any dirt and foreign matter.



Avoid installing the nozzle immediately on or after a bend in the pipe or an elbow. Turbulence may affect the nozzle performance.



To prevent the nozzles from clogging, install strainers or use a water treatment system, depending on the water quality.



Do not scratch the nozzle. Do not use nails, metal pins or other hard objects to touch or clean the nozzle orifices, which may damage the nozzle.



Do not apply any strong force, shock or vibration to the nozzles. Unlike metal nozzles, resin nozzles are breakable and must be handled with care.



Store the nozzle in a clean, dust-free place.



When spraying liquid other than water, consider the chemicals in the liquid and the resistance of the nozzle and pipe to these chemicals. See Table 1 on Page 3 for nozzle materials.



As the nozzle tip is quick-detachable, maintenance is easy. Be sure to fully understand the procedure of detaching and attaching the nozzle tip before use.

3. Structure, Material, Dimension, and Weight



Note: Shape and color differ depending on the product code.

Table 1. Components and Material

		No.	Components	Material ^{*1}	Remarks
Α	Nozzle	1	Nozzle Tip	PP	
	Tip	2	Packing	FEPM	
в	Dall	3	Ball Adaptor	FRPP	
	Section	(4)	O-ring	NBR	
		(5)	Сар	FRPP	
С		6	Adaptor	FRPP	
	Adaptor	\overline{O}	O-ring	NBR	
		8	Spring Clip	S304	
		9	Spring Lock	S304	Optional

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

Table 2. Dimensions and Weight

INQB for Metal Pipes

Pipe size	Outer dimensions (mm)					Weight	
$(inch)^{*2}$	$L1^{*4}$	L2	L3	L4	øD1	øD2	$(g)^{*5}$
1	111	93	76	59	34	48	54
1 1/4	120	102	80	59	42.7	48	55
1 1/2	126	108	83	59	48.6	48	56
2	138	120	89	59	60.5	48	58

*2) Use stainless steel pipes compliant with JIS G 3459.

INQB for PVC Pipes

Pipe size	Outer dimensions (mm)						Weight
(ND)*3	$L1^{*4}$	L2	L3	L4	øD1	øD2	$(g)^{*5}$
25A	109	91	75	59	32	48	54
30A	115	97	78	59	38	48	54
40A	126	108	83	59	48.6	48	56
50A	138	120	89	59	60.5	48	58

*3) Use PVC pipes compliant with JIS K 6742.

40A, 50A adaptors for PVC pipes are the same as 1 1/2", 2" adaptors for metal pipes. *4) Without optional spring lock (part #9), L1 is reduced by 2 mm.

*5) With optional spring lock (#9), add 5–7 g to the listed weight.

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4. Operation

4-1. Piping compatible with QB series nozzles

Use stainless steel pipes compliant with JIS G 3459 or PVC pipes compliant with JIS K 6742.

Pipe material	Stair	nless steel	PVC		
Standard	JIS	S = G = 3459	JIS K 6742		
Туре	SUS-HTP, TP SGP (JIS G 3452)		VP and HIVP pipes		
	1	$34.0{\pm}0.5$	25A	32.0 ± 0.2	
Size (mm)	1 1/4	$42.7{\pm}0.5$	30A	38.0 ± 0.3	
Size (mm)	1 1/2	48.6 ± 0.5	40A	48.0 ± 0.3	
	2	60.5 ± 0.5	50A	60.0±0.4	

rabie of Standard I iping Diameters	Table 3.	Standard	Piping	Diameters
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4-2. Installation

- 4-2-1. Drill a hole into the pipe with a size of ø14.3– ø14.8 mm. If the hole is smaller, the nozzles will not be installed correctly. If it is larger, it may cause leakage.
- 4-2-2. Deburr the hole properly to prevent clogging and liquid leakage.
- 4-2-3. Avoid making chamfers or scratches around the hole. Any damage in the sealing area may cause leakage, because the O-ring (placed there) will not be able to maintain a firm seal.



The sealing area with a diameter of 20 mm must be free of burrs, chamfers, or any scratches.

- 4-2-4. Be sure to flush the pipes before installing the nozzle to remove any dirt and foreign matter.
- 4-2-5. Attach the spring clip securely to the piping.



Note: Shape and color differ depending on the product code.





4-2-7. To avoid water hammer, start spraying at a water pressure of 0.05–0.1 MPa, and then gradually increase to operating pressure.

4-3. Adjusting the spray direction

- 4-3-1. Be sure to stop the pump before positioning the nozzle. Do not apply water pressure to the cap when it is loose.
- 4-3-2. Slightly loosen the cap.
- 4-3-3. Adjust the direction of the ball adaptor with the nozzle tip attached.
- 4-3-4. When the direction is set, tighten the cap firmly by hand. DO NOT use any tool such as a spanner/wrench.
- 4-3-5. Always make sure that the cap is firmly tightened before starting to spray.

5. 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.
- \bullet When replacing the nozzle tip only, refer to steps 4 and 5.

	No.	Procedure	Diagram
Adaptor	1	Disengage the optional spring lock (#9) by shifting it off the adaptor (#6)'s catch.	Shift 6 3 Catch
	2	Detach the spring clip (#8) from the pipe.	® Pipe
	ວວ	Remove the O-ring (#7) from the adaptor (#6). Note: If it is stuck, carefully use a soft stick (bamboo skewer, toothpick, or such) to dislodge it.	
Nozzle Tip	4	Looking at the nozzle from the orifice side, turn the nozzle tip (#1) about 60° to the left, and pull it off the ball adaptor (#3).	Turn left to detach
	5	Hook the packing (#2) with fingers to pull it out as shown in diagram.	Pinch or hook with finger(s)
Ball Section	6	While supporting the ball adaptor (#3), remove the cap (#5).Note: You can remove the cap (#5) only after removing the nozzle tip, as shown in step 4.	
	7	Remove the O-ring (#4) from the ball adaptor (#3). Note: If it is stuck, carefully use a soft stick (bamboo skewer, toothpick, or such) to dislodge it.	
			Note: Shapes may differ depending on pozzle code

6. Reassembly

- Do not use hard objects such as metal pins, nails, or needles, as they may damage the packing and O-ring, leading to water leakage.
- •Assemble the nozzle in a clean, dust-free environment. Always clean the nozzle surface before assembly to prevent any dust and dirt from entering the nozzle. Be careful not to lose any parts.
- •When replacing the nozzle tip only, refer to steps 3 and 4.

	No.	Procedure	Diagram
Ball Section	1	Attach the O-ring (#4) to the ball adaptor (#3). Note: Using a new O-ring is recommended.	
	2	Attach the ball adaptor (#3) and cap (#5) to the adaptor (#6). Note: The cap cannot be attached if the nozzle tip is already assembled with the ball adaptor.	
Nozzle Tip	3	Place the packing (#2) into the nozzle tip (#1). Start inserting the packing (#2) from one side of the edge as shown in diagram and press it down around the edge until it sits tightly on the nozzle tip (#1). Note: Be sure the packing is positioned correctly. Incorrect placement of the packing can cause leakage.	Insert starting from one side
	4	Align the guide of the nozzle tip (#1) with the groove in the ball adaptor (#3), push it in, and turn the nozzle tip (#1) to the right about 60° until it clicks. Note: If the nozzle tip is not twisted on fully, it may fall off. The tabs on the nozzle tip and ball adaptor will align as shown on the right when assembled correctly.	Turn right Turn right Tab (of ball adaptor) Tab (of nozzle tip) Tab (of nozzle tip)
Adaptor	5	Attach the O-ring (#7) to the adaptor (#6). Note: Using a new O-ring is recommended.	
	6	Attach the spring clip (#8) securely to the piping.	Refer to step 4-2-5 of <u>4-2</u> . Installation on page 4.
	7	Firmly engage the optional spring lock (#9) into the adaptor's catch until it clicks.	Refer to step 4-2-6 of <u>4-2</u> . Installation on page 5.

Note: Shapes may differ depending on nozzle codes.

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7. Maintenance

Impurities are most likely to adhere to the orifice of the nozzle tip. Pay special attention to check the condition of this part.

Carefully remove any dust and dirt with compressed air or a soft brush. Clean each part thoroughly from foreign particles to maintain performance.

8. Troubleshooting

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

Problem	Probable cause	Solution
Nozzle not spraying, or the spray pattern is	Liquid pressure is too low.	Check the pressure in the pipe and apply the proper pressure.
irregular	Nozzle tip (#1) and/or strainer are/is clogged.	Clean both the nozzle and strainer (ultrasonic cleaning, air blowing, etc.).
Water leakage between piping and nozzle	O-ring (#7) for adaptor (#6) is missing, or damaged.	Set or replace the O-ring.
	Spring clip is not correctly attached.	Attach it firmly on the pipe.
	Problem with the mounting hole	Deburr the hole (see Page 4). If necessary replace the pipe.
Water leakage from cap	O-ring (#4) for ball adaptor (#3) is missing, or damaged.	Set or replace the O-ring.
	Cap (#5) is loose.	Tighten the cap.
Water leakage from nozzle tip	Packing (#2) is missing, or damaged.	Set or replace the packing.

Table 4. Troubleshooting

9. Warranty

There is a one year warranty from the date of 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 nozzle tips.