

Jet Attacker JA3 series  
Rotating Nozzles for 3-Dimensional Cleaning

Instruction Manual

	Preface	
	Safety Precautions	
1.	Suggestions & Cautions	P. 1
2.	Components of nozzle	P. 2~P.6
3.	Disassembly	P. 7
4.	Assembly	P. 7
5.	Maintenance	P. 8
6.	Troubleshooting	P. 8
7.	Disposal	P. 9
8.	Inquiry	P. 9

## Preface

This instruction manual describes the correct usage and maintenance of JA3 series.

Before use, be sure to read this manual thoroughly and follow the instructions to allow the best use of this product.

After reading, keep this manual in a safe, handy place.

For purposes of product improvement, part dimensions or design are subject to change without notice.

Please note that in such cases, the contents of this manual may differ from the product.

## 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.



Wear safety gloves.

The screw thread or nozzle edges may cause injury.



Ensure that the nozzle is firmly installed.

Untightened or loose screws may cause the nozzle to detach or fall off during operation and lead to serious accidents.



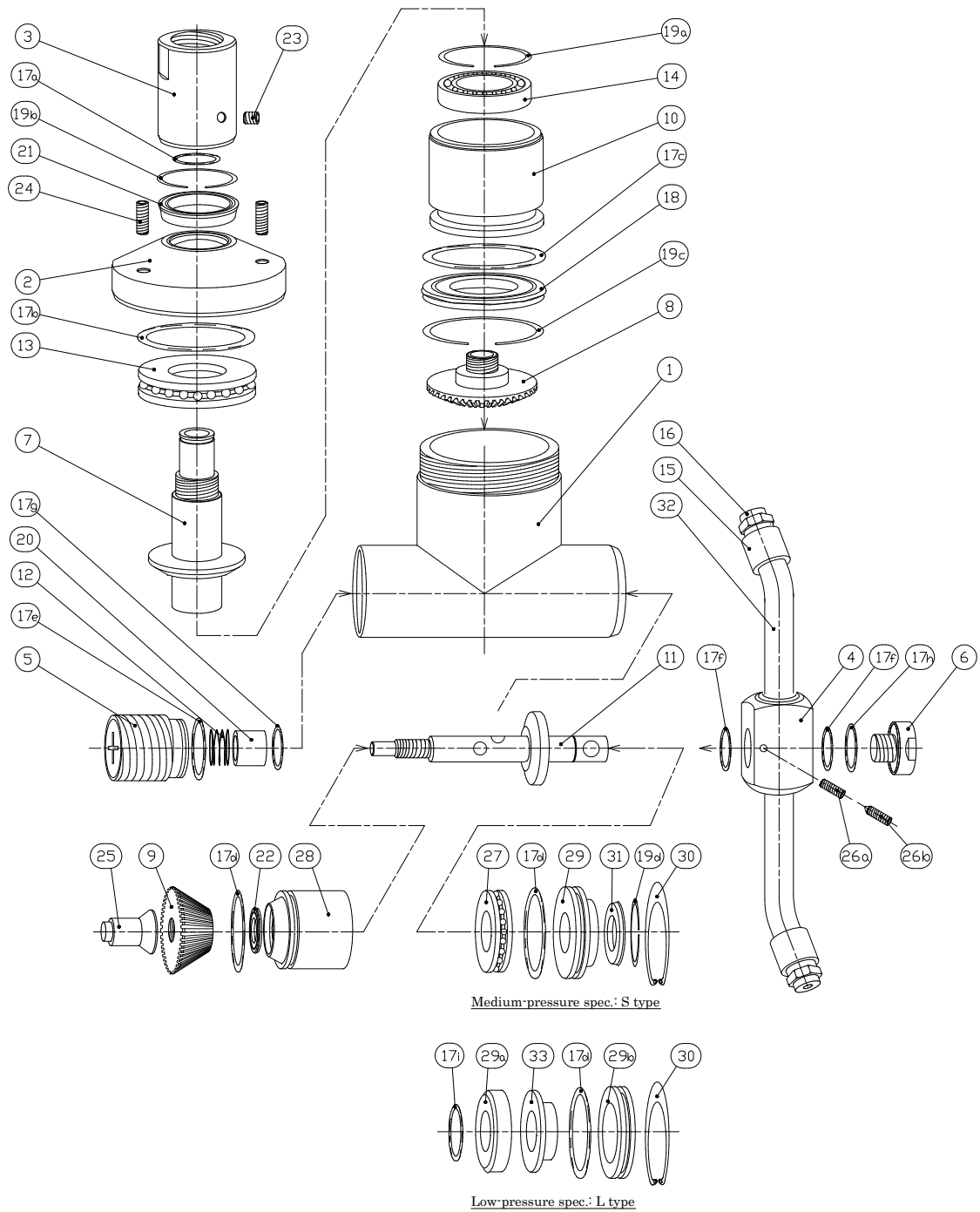
Maintenance shall be done after the nozzle cools down to avoid risk of burns.

## 1. Suggestions & Cautions

- (1) Install nozzles as the final installation step after all piping installation is completed and the entire piping system is cleaned .
  - Never install a nozzle during installation work of the plant or equipment.
  - Use larger size pipes and valves to prevent pressure drop.
  - Use new stainless steel pipes. Dust and foreign particles in old pipes may clog nozzles.
  - Chips or seal tape inside a pipe may also clog nozzle. Purge all pipes before installing nozzles. Flush the pipes thoroughly to purge foreign particles before installing nozzles. Flushing should be at or near the maximum flow rate, such that turbulent flow occurs in the piping to promote cleaning.
  - Use of strainers is recommended to prevent nozzles from clogging. Liquid should be supplied to a nozzle after it runs through a strainer, regardless of whether cleaning liquid is in a recirculating system or not.
- (2) Nozzles may be relatively heavy. Be careful in handling.
- (3) The edges of threads or some parts may be sharp. Wear safety gloves to protect hands.
- (4) Operate nozzle under the specified pressures. If the pressures are not specified, refer to our published flow-rate diagram.
- (5) Do not damage or scratch nozzles. When disassembling nozzles for maintenance, use a spanner, adjustable wrench and milling vice.
- (6) Don't rotate the nozzles in the reverse direction. Normally the horizontal shaft and nozzles rotate counterclockwise. If nozzle rotation direction is reversed, it can loosen the gear and may result in improper rotation.
- (7) Never make a rapid and/or large change in the operation pressure. Such changes may cause water hammer phenomena.

## 2 . Components of Nozzle

### (1) Illustrated parts breakdown



\*The above diagram is of JA3-2S or JA3-2L. (JA with 2 nozzle arms)  
JA3-4S is equipped with 4 nozzle arms.

Medium-pressure spec.: S type

No.	Component	Material	Code No.	Quantity		Remark
				JA3-2	JA3-4	
1	Body casing	S304	#211882	1		
2	Adjusting cap	S304	#211891	1		
3	PT connector	S304	#211892	1		
4	Nozzle connector	S304	JA3-2:#209744(2pcs.) JA3-4:#211120(4Pcs.)			
5	Horizontal shaft screw (rear)	S304	#211894	1		
6	Plug (Front)	S304	#235994	1		
7	Vertical shaft tube	S304	#213181	1		
8	Vertical shaft gear	S304	#249034	1		Consumable
9	Horizontal shaft gear	S304	#249032	1		Consumable
10	Vertical shaft mechanism box	S304	#209734	1		
11	Horizontal shaft tube	S304	#235990	1		
12	Spring	S304	#212717	1		
13	Vertical shaft thrust bearing	S440C	#218703	1		
14	Vertical shaft radial bearing	S440C	#218704	1		
15	Socket (1/8)	S304	JA3-2:#209740(2pcs.) JA3-4:#209740(4Pcs.)			
16	Nozzle (1/8)	S303	-	2	4	
17a	O-ring (S-14)	FKM	#200902	1		Consumable
17b	O-ring (S-32)	FKM	#210313	1		Consumable
17c	O-ring (G-35)	FKM	#108719	1		Consumable
17d	O-ring (S-25)	FKM	#210314	2		Consumable
17e	O-ring(P-22)	FKM	183818	1		Consumable
17f	O-ring(S-12)	FKM	192625	2		Consumable
17g	O-ring(S-18)	FKM	210804	1		Consumable
17h	O-ring(S-14)	FKM	200902	1		Consumable

Medium-pressure spec.: S type

No.	Component	Material	Code No.	Quantity		Remark
				JA3-2	JA3-4	
18	High-pressure seal	Special PTFE, FKM	#244896	1		Consumable
19a	C-shaped ring(φ 26)	S304	#254636	1		
19b	C-shaped ring(φ 20)	S304	#254637	1		
19c	C-shaped ring(φ 15)	S304	#254638	1		
19d	C-shaped ring(φ 13)	S304	#254639	1		
20	Cylindrical bearing	Special PTFE	#209732	1		Consumable
21	Top seal	Special PTFE, S304	#210048	1		Consumable
22	Horizontal shaft high-pressure seal	Special PTFE, FKM	#248843	1		Consumable
23	Fixing screw (M4, L=4)	S304	#192900	2		
24	Fixing screw (M4, L=10)	S304	#210412	3		
25	Shaft bracket	S304	#209733	1		
26a						
26b	Fixing screw (M3, L=4)	S304	#210413	2		
27	Horizontal shaft thrust bearing	S440C	#218705	1		
28	Horizontal shaft mechanism box	S304	#209743	1		
29	Seal for horizontal shaft load	S304	#209742	1		
30	Retaining ring (28)	S304	#210803	1		
31	Horizontal shaft front seal	Special PTFE, S304	#210049	1		Consumable
32	1/8" bending pipe	S304	JA3-2:#209741 (2pcs.) JA3-4:#209741 (4pcs.)			

## Note: (1) Consumables

Lifetime of nozzle components varies depending on operational conditions. Replace consumable parts when corrosion or wear of components is found to significantly affect nozzle performance.

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

(Example) S304 represents stainless steel 304.

(3) No. 4, 15, 32 are welded together.

The Code No. for the assembled units are as follows.

JA3-2S:#212919, JA3-4S:#212920

(4) If the arm length is special, the part No. 32 is different.

Low-pressure spec.: L type

No.	Component	Material	Code No.	Quantity	Remark
1	Body casing	S304	#211882	1	
2	Adjusting Cap	S304	#211891	1	
3	PT Connector	S304	#211892	1	
4	Nozzle Connector (low-pressure spec.)	S304	#245124	1	
5	Horizontal shaft screw (rear)	S304	#211894	1	
6	Plug (Front, low-	S304	#217217	1	
7	Vertical shaft tube (low-pressure spec.)	S304	#218055	1	
8	Vertical shaft gear	S304	#249034	1	Consumable
9	Horizontal shaft gear	S304	#249032	1	Consumable
10	Vertical shaft mechanism box	S304	#209734	1	
11	Horizontal shaft tube	S304	#217220	1	
12	Spring	S304	#212717	1	
13	Vertical shaft thrust bearing	S440C	#218703	1	
14	Vertical shaft radial bearing	S440C	#218704	1	
15	Socket (1/4)	S304	#215128	2	
16	Nozzle (1/4)	S303	-	2	
17a	O-ring(S-14)	FKM	#200902	1	Consumable
17b	O-ring(S-32)	FKM	#210313	1	Consumable
17c	O-ring(G-35)	FKM	#108719	1	Consumable
17d	O-ring(S-25)	FKM	#210314	2	Consumable
17e	O-ring(P-22)	FKM	#183818	1	Consumable
17f	O-ring(S-16)	FKM	200903	4	Consumable
17g	O-ring(S-18)	FKM	210804	1	Consumable
17h	O-ring(S-16)	FKM	200903	1	Consumable
17i	O-ring(S-16)	FKM	200903	1	Consumable

Low-pressure spec.: L type

No.	Component	Material	Code No.	Quantity	Remark
18	High-pressure seal	Special PTFE, FKM	#244896	1	Consumable
19a	C-shaped ring(φ 26)	S304	#254636	1	
19b	C-shaped ring(φ 20)	S304	#254637	1	
19c	C-shaped ring(φ 15)	S304	#254638	1	
19d	C-shaped ring(φ 13)	S304	#254639	1	
20	Cylindrical bearing	Special PTFE	#209732	1	Consumable
21	Top seal	Special PTFE, S304	#210048	1	Consumable
22	Horizontal shaft high-pressure seal	Special PTFE, FKM	#244897	1	Consumable
23	Fixing screw (M4, L=4)	S304	#192900	2	
24	Fixing screw (M4, L=10)	S304	#210412	3	
25	Shaft bracket	S304	#209733	1	
26	Fixing screw (M3, L=4)	S304	#210413	1	
27	—				
28	Horizontal shaft mechanism box (low-	S304	#215127	1	
29a	Seal A for horizontal shaft	S304	#215125	1	
29b	Seal B for horizontal shaft	S304	#215126	1	
30	Retaining ring (28)	S304	#21803	1	
31	—				
32	1/4" bending pipe	S304	#215123	2	
33	Horizontal shaft bearing	Special PTFE	#215129	1	Consumable

## Note : (1) Consumables

Lifetime of nozzle components varies depending on operational conditions. Replace consumable parts when corrosion or wear of components is found to significantly affect nozzle performance.

(2) Only components with No. field colored are different from components of S- type for medium-pressure spec.

(3) No. 4, 15, 32 are welded together.

The Code No. for the assembled units are as follows.  
JA3-2L:#217218

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

(Example) S304 represents stainless steel 304.



**[It is recommended to ask the manufacturer (IKEUCHI) to do disassembly and assembly as they are difficult task.]**

### 3. Disassembly (Please refer to parts list on previous page)

- (1) First, disassemble the vertical shaft line. Loosen Fixing screw (24) with a hex wrench and turn Adjusting cap (2) counterclockwise to remove it from Body casing (1).
- (2) Loosen Fixing screw (23) with a hex wrench and turn PT connector (3) counterclockwise with a 27mm wrench to remove it.
- (3) Fixing Vertical shaft tube (7), turn Vertical shaft gear (8) counterclockwise and remove it.
- (4) Pull out Vertical shaft tube (7) from Vertical shaft mechanism box (10).
- (5) Bend C-shaped ring (19) inward to remove, then take out Vertical shaft radial bearing (14), High-pressure seal (18) and Top seal (21).
- (6) To disassemble the horizontal shaft line, remove Plug (6) by turning clockwise, then loosen Fixing screw (26) to pull out Nozzle connector (4).
- (7) Turn Horizontal shaft screw (5) counterclockwise to remove it.
- (8) Remove Retaining ring (30) with pliers and pull out Horizontal shaft tube (11).
- (9) [This step for S-type only] Bend C-shaped ring (19) inward to remove, and remove Horizontal shaft front seal (31).
- (10) Remove shaft bracket (25) and Horizontal shaft gear (9) by turning clockwise.

Note: (1) Be careful not to damage or lose small parts.

(2) Be careful not to scratch or damage the sealing and sliding surfaces.

(3) Disassembled parts should be stored free from dust and not subjected to physical shock.

### 4. Assembly

- (1) Clean all components completely and dry them with compressed air. Visually check the condition of each component and confirm they are not damaged or scratched before assembling them.
- (2) Assemble in the reverse order of "3. Disassembly".
- (3) Finally, when assembling Adjusting cap (2) with Body casing (1), keep screwing the Adjusting cap (2) until Vertical shaft gear (8) in the cap contacts Horizontal shaft gear (9), and make a half turn backward, which should be the best position. It depends on the gear status, so mesh adjustment is required. If turning Adjusting cap (2) counterclockwise, the gear mesh interval becomes closer. If turning Adjusting cap (2) clockwise, the gear mesh interval becomes wider.

Note: (1) Remove dust or foreign particles on the sliding surfaces with a brush.

(2) Be careful not to scratch or damage the sealing and sliding surfaces.

(3) Screw in the nozzle by hand at first then tighten with a spanner.

### 5. Maintenance

- (1) Visually confirm that the nozzle is not distorted or deformed.
- (2) Rotate the nozzle arms by hand counterclockwise 1 or 2 times to check the rotation condition.
- (3) If rotation is not smooth and/or it does not rotate after starting spray, maintenance is required.  
Do maintenance according to "3. Disassembly" on page 7, or contact the manufacturer (IKEUCHI).

### 6. Troubleshooting

Trouble	Probable Cause		Solution	Remarks
No spray is being created	Control	<ul style="list-style-type: none"> <li>• Controller is not switched on.</li> <li>• Valves are not opened.</li> </ul>	<ul style="list-style-type: none"> <li>• Switch it on.</li> <li>• Open valves.</li> </ul>	
	Nozzle	<ul style="list-style-type: none"> <li>• Nozzle or Pipe is clogged.</li> <li>• Nozzle or Pipe is clogged due to damage.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean nozzle or Pipe.</li> <li>• Replace damaged part.</li> <li>• Clean them.</li> </ul>	
Liquid leak	Connection	<ul style="list-style-type: none"> <li>• Some parts are not firmly screwed.</li> </ul>	<ul style="list-style-type: none"> <li>• Screw in each part firmly.</li> </ul>	
	Handling	<ul style="list-style-type: none"> <li>• Nozzle or Pipe is cracked.</li> <li>• Nozzle or Pipe is corroded.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace cracked part.</li> <li>• Replace corroded part.</li> </ul>	
	Seal wear	<ul style="list-style-type: none"> <li>• O-ring/seal are worn.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace worn O-ring/seal.</li> </ul>	
Irregular spray	Improper rotation	<ul style="list-style-type: none"> <li>• Dust/foreign particles, flaws.</li> <li>• Nozzle is clogged.</li> <li>• Seal/bearing are worn.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean seal area, replace the parts.</li> <li>• Clean nozzle.</li> <li>• Replace worn seal/bearing.</li> </ul>	
	Not spraying normally	<ul style="list-style-type: none"> <li>• Nozzle or Pipe is clogged.</li> <li>• Nozzle tip is corroded.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean nozzle or pipe.</li> <li>• Replace corroded part.</li> </ul>	

## 7. Disposal

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

## 8. Inquiry

For parts or troubles, contact our local sales office or the following.



“The Fog Engineers”

**H. IKEUCHI & CO., LTD.**

Daiichi Kyogyo Bldg., 1-15-15, Awaza, Nishi-ku,  
Osaka 550-0011 Japan

Tel: +81-6-6538-4015 Fax: +81-6-6538-4022

e-mail: [overseas@kirinoikeuchi.co.jp](mailto:overseas@kirinoikeuchi.co.jp) <http://www.kirinoikeuchi.co.jp/eng/>