

**TOKINARC®**

*User's Manual for*  
**Nozzle Cleaning Station**  
*(TKS-Z series)*

**TOKIN CORPORATION**

Please send this manual to the end user.

Document number: TS1011M01\_6



## **MANDATORY**

- This user's manual contains important information about safety issues, mechanical specifications, and maintenance that are required when you operate the wire cutter, the nozzle cleaner, and the anti-spatter sprayer. Read this manual thoroughly to obtain a clear understanding before proceeding to any work.



## **CAUTION**

- Drawings in the manual may be shown without a cover or an enclosure for explanation purposes. Be sure to return the cover or the enclosure in place before operating this unit.
- Drawings and photos attached to the manual are representative and may differ from the actual product.
- The manual is revised as appropriate, when the product is updated and the specification is changed, for the purpose of improving manual's usability. The revision is controlled by the document number on the front or last page.
- If the manual was damaged or lost and you need to have a new one, please contact us by the address on the last page and let us know the document number on the front or last page.
- Do not modify the product. Our warranty does not cover the customer side modification, and we are not liable for any accidents caused by the customer-side modification.

# SAFETY PRECAUTION

Read this manual and all attached documents thoroughly before proceeding to any work (i.e. installation, operation, maintenance). Make a clear understanding of the mechanical, safety and other precautionary issues, and follow the instructions.



**DANGER**

: indicates that there is a risk of death or serious injury if handled erroneously.



**CAUTION**

: indicates that there is a risk of injury if handled erroneously.



**MANDATORY**

: indicates that it is absolutely necessary.



**PROHIBITED**

: indicates that it must not be done.

Items in the “CAUTION” can cause serious accidents depending on the situation. These signs all introduce important instructions that you must follow.

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# 1. PRODUCT SUMMARY

This product performs wire cutting, nozzle cleaning, and anti-spatter spraying.  
This product is intended for use with a welding robot.

# 2. PRODUCT CONTENTS

Check that the following items are included in the package.

	Part Name	Qty.	TKS-Z1	TKS-Z2	TKS-Z3
1	Station assembly	1	x	x	x
2	Waste bottle	1	x	x	x
3	Anti-spatter (nozzle coat) solution	1	x	x	x
4	Holed bottle cap	1	x	x	x
5	Trash container	1	x	x	x
6	Nozzle cleaner head	1	x	x	x
7	Column	1	---	x	x
8	L-bracket	6	---	x	x
9	Cage nut	6	---	x	x
10	Hexagon bolt (M8 x 20)	6	---	x	x
11	Hexagon bolt (M8 x 15)	3	---	x	x
12	Spring washer (M8)	9	---	x	x
13	Flat washer (M8)	9	---	x	x
14	Bottle holder	1	---	---	x
15	Regulator	2	---	---	x
16	Solenoid valve (EXA-C6-02GSB-3)	1	---	---	x
17	Solenoid valve (3GA110-C6-E2-3)	1	---	---	x
18	Cage nut	2	---	---	x
19	Hexagon bolt (M8 x 15)	2	---	---	x
20	Spring washer (M8)	2	---	---	x
21	Flat washer (M8)	2	---	---	x

Column type: TKS-Z2, Z3

No-column type: TKS-Z1

### 3. TECHNICAL SPECIFICATIONS

	Items	Specifications
Nozzle cleaner	Pneumatic pressure	0.2 to 0.5 [MPa]
	Applicable nozzle diameter	Inside diameter: $\varnothing 16$ (standard) Cleaner heads are available in various diameters to suit your nozzle size.
Wire cutter	Cutting ability	Solid wire: $\varnothing 1.6$ max Flux wire: $\varnothing 3.2$ max (When air pressure is 0.6 Mpa)
	Pneumatic pressure	0.3 to 0.8 [MPa]
	Wire cutter power source (Solenoid valve)	24 VDC, 75 mA max
Anti-spatter sprayer	Pneumatic pressure	0.2 to 0.4 [MPa] 0.2 MPa is recommended.
	Applicable nozzle diameter	Outer diameter: $\varnothing 16$ to 26

## 4. SETTING UP

### 4.1 Installation of the Nozzle Cleaning Station



- Turn off the power of the robot controller before installing the nozzle cleaning station, otherwise bodily injury or equipment breakdown may occur.
- Install the nozzle cleaning station properly and firmly so as not to fall, otherwise bodily injury or equipment breakdown may occur.

#### 4.1.1 Installation site of the nozzle cleaning station

Install the main unit of the nozzle cleaning station to the place that satisfies the following conditions.

- (1) The torch tip of the robot can reach the main unit.
- (2) There is no interference between the main unit and other hardware (jigs, works, etc).
- (3) A relative position between the main unit and the robot is not changed by external factors such as vibration.
- (4) The main unit does not receive oil and spatters.

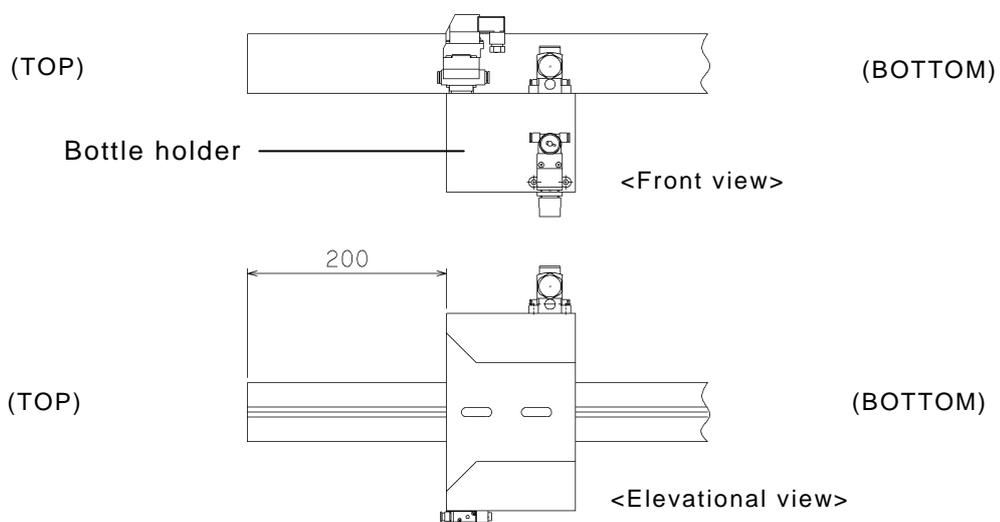
### 4.1.2 Main unit assembly

The TKS-Z series nozzle cleaning station has three models: TKS-Z1, TKS-Z2, and TKS-Z3.

If you purchased TKS-Z2 and TKS-Z3, follow the next instructions for setup.

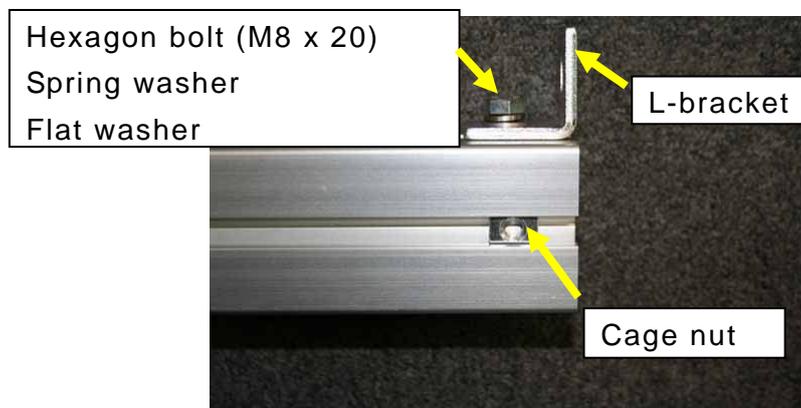
1) Attach the bottle holder to the left side as you see the column's sticker face in the front. (TKS-Z3)

The bottle holder should be fixed to about 200 mm from the column's top end. Parts to be used: Two hexagon bolts (M8 x 15), two spring washers, two flat washers



2) Fasten the supplied L-bracket to the column. (6 places total: top and bottom)

Parts to be used: Hexagon bolts (M8 x 20), spring washers, flat washers, cage nuts



3) Fasten the station plate to the column.

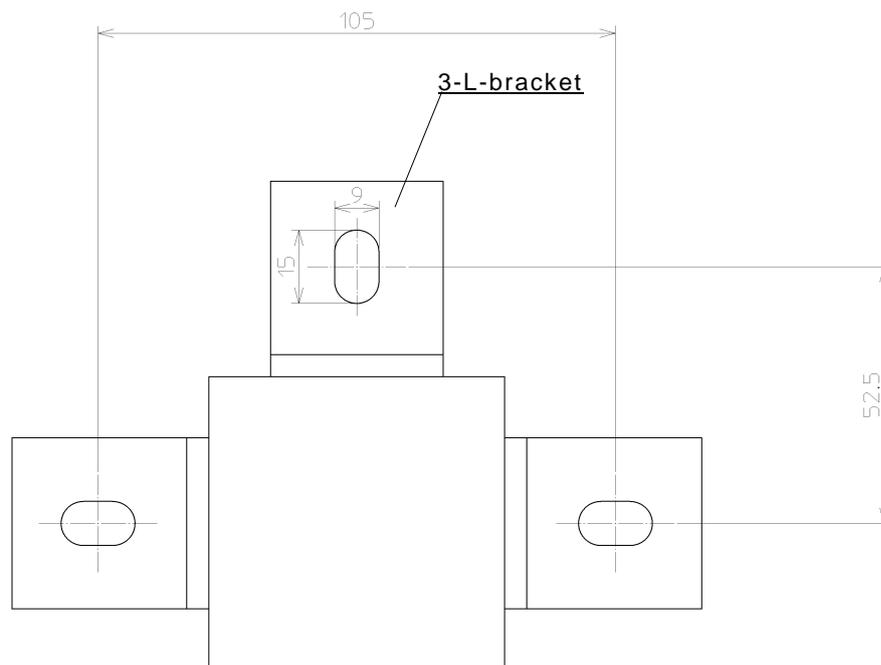
Parts to be used: Hexagon bolts (M8 x 15), spring washers, flat washers

### 4.1.3 Main unit installation

<Column type (TSK-Z2 and TKS-Z3)>

Securely fasten the column, which you put brackets on, to the facility foundation base with M8 anchor bolts etc. (3 places)

#### Dimensions

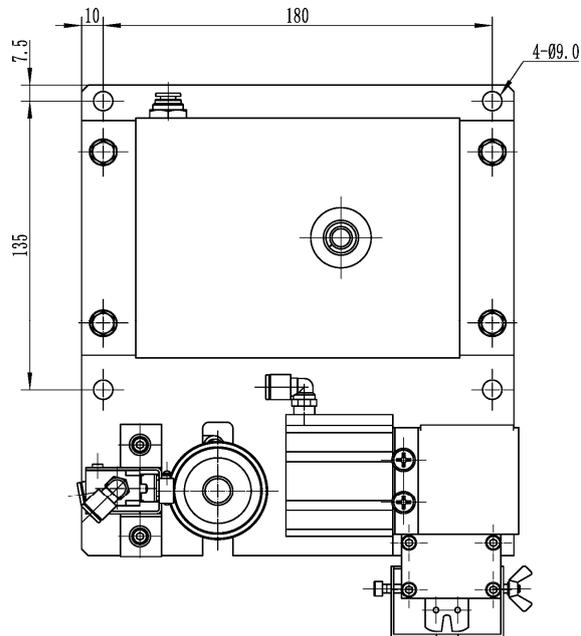


<Top plan view>

<No-column type (TKS-Z1)>

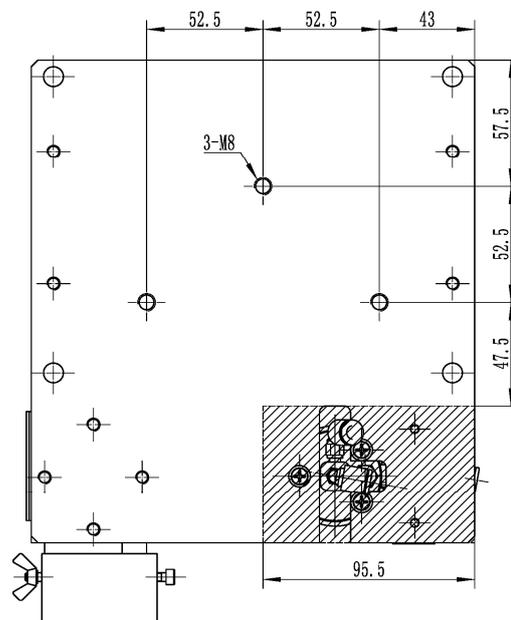
1) Fasten the station plate by using four bolt-holes in the station plate.

Dimensions



2) Use three M8 bolt holes to fix station onto a stand.

A stand should not interfere with the shaded area.

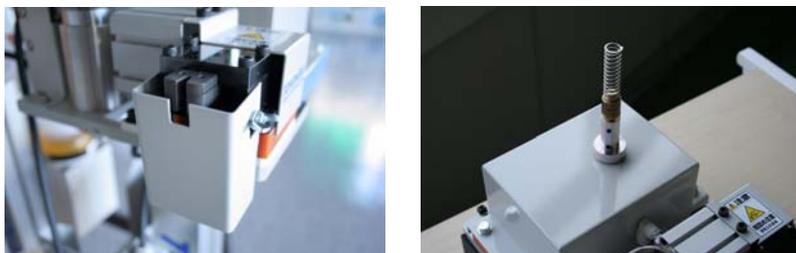


Be sure that the main unit is installed firmly. If the installation is loose, operations such as wire cutting, nozzle cleaning, anti-spatter spraying cannot be performed normally.

#### 4.1.4 Part installation

After the main unit is properly installed, install other parts by the following manner.

- 1) Attach the trash container and nozzle cleaner head.

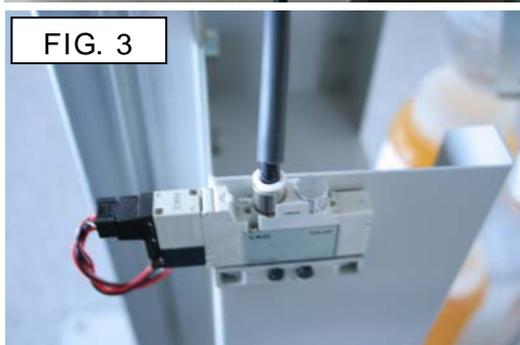
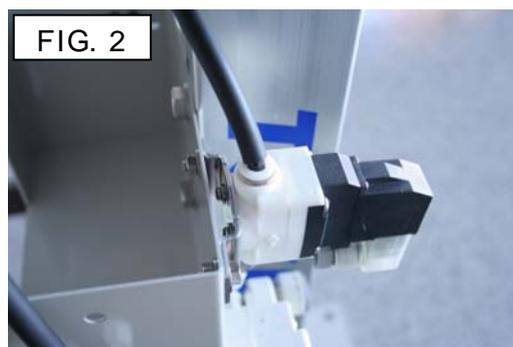


\*Follow the next setup procedures if you purchased TKS-Z3.

- 2) Place the anti-spatter bottle and the waste bottle into the bottle holder.  
Connect the waste tube to the waste bottle, and the feeding tube to the anti-spatter bottle. (See the label on the tube.)

\*Place the holed bottle cap (supplied) onto the anti-spatter bottle.

- 3) Connect the nozzle cleaner's air tube to the quick pipe fitting of the solenoid valve (EXA-C6-02GSB-3).  FIG. 1
- 4) Connect the wire cutter's air tube to the quick pipe fitting of the solenoid valve (3GA110-C6-E2-3).  FIG. 2
- 5) Connect the anti-spatter sprayer's air tube to the quick pipe fitting of the regulator.  FIG. 3



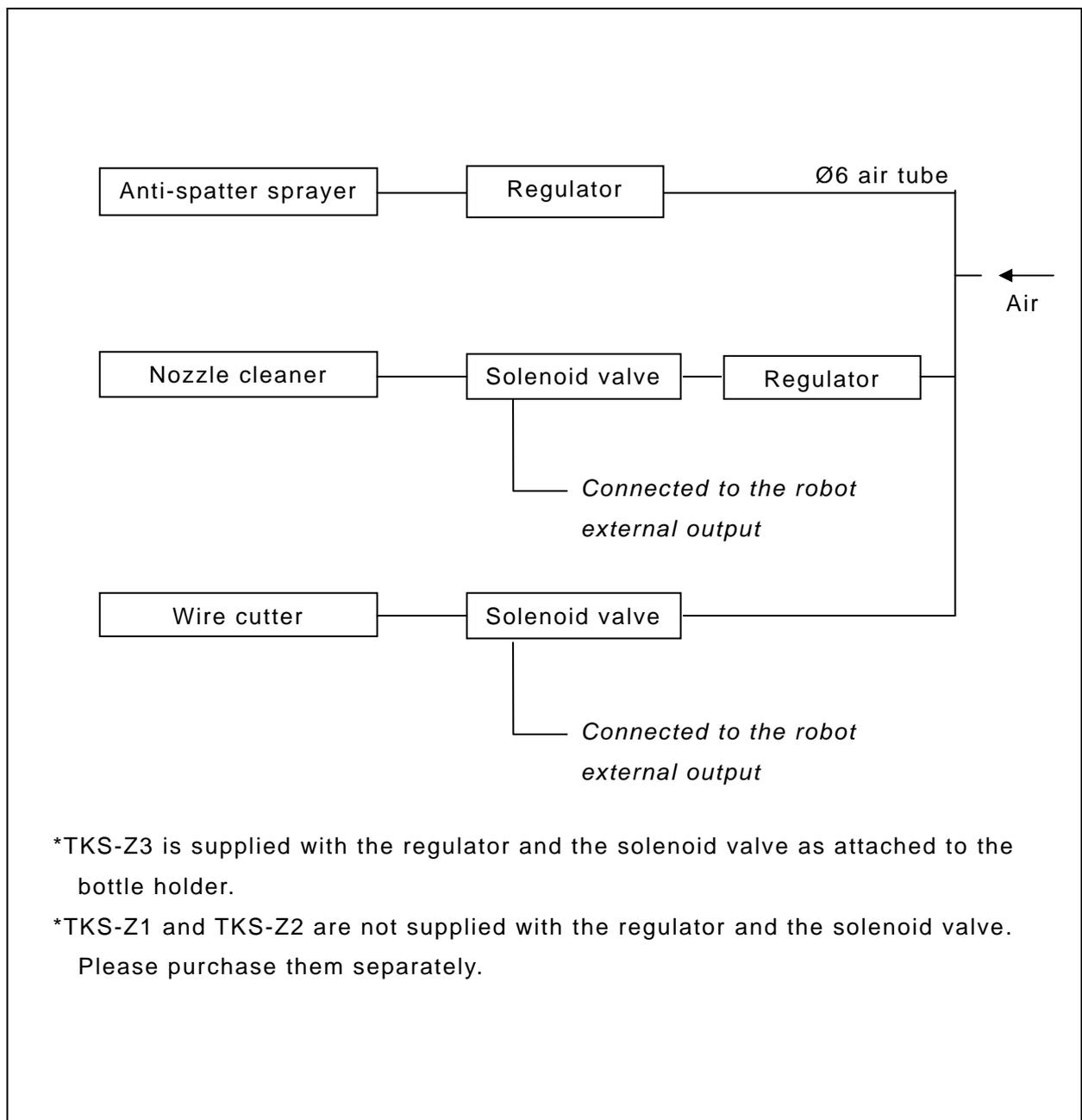
## 4.2 Air Tube Connection and Electric Wiring



### CAUTION

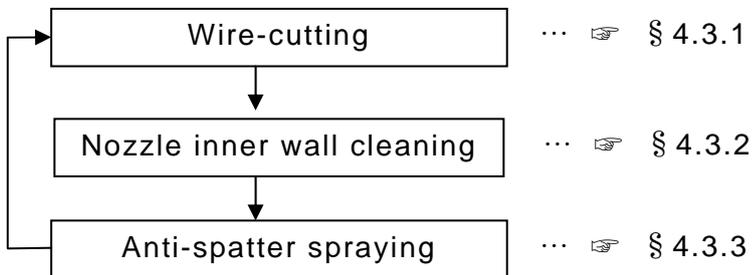
- Be sure to use clean air.
- Air tubes are flammable. Do not arrange air tubes to the place where they receive weld spatters or high heat.

Arrange the air tube connection and the electric wiring according to the following diagram.



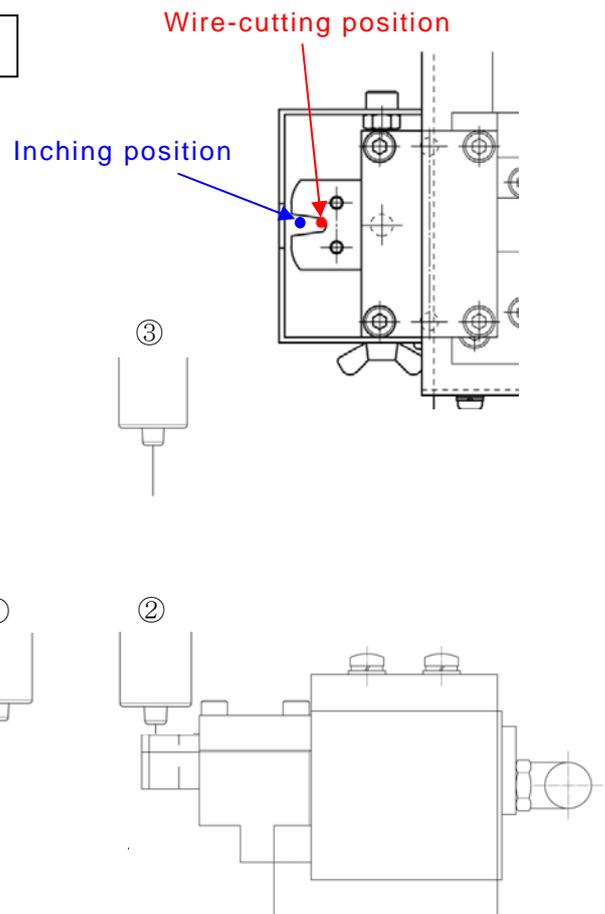
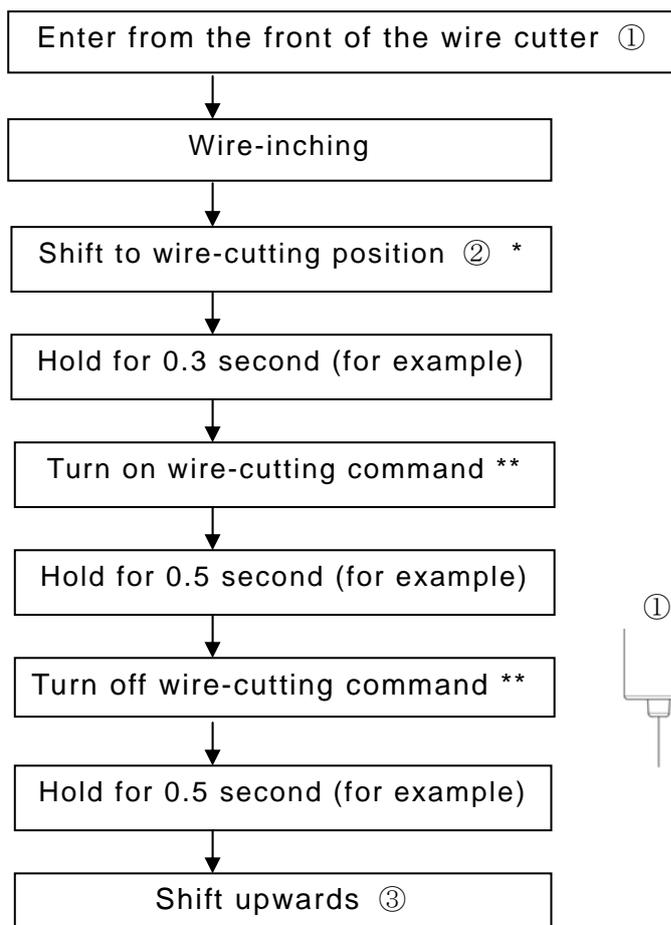
### 4.3 Nozzle Cleaning Workflow

Nozzle cleaning is performed in the following order. Teach your robot each event sequence by referring to an example of the corresponding section.



#### 4.3.1 Wire-cutting

This operation removes the bead formed on the wire tip. See the following sequence, and create a robot program in your robot controller.



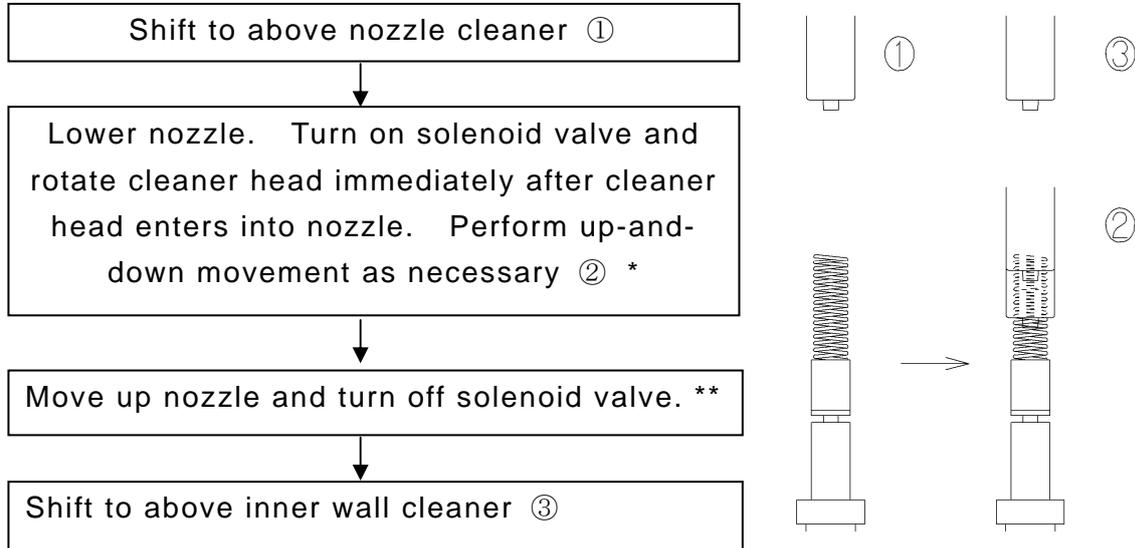
\* Set the cutting position to the left backside of the upper blade.

\*\* Carry out the wire-cutting command by the ON/OFF operation of the solenoid valve.

### 4.3.2 Nozzle inner wall cleaning

Spatters accumulated inside the nozzle are removed.

See the following sequence and create a robot program in your robot controller.

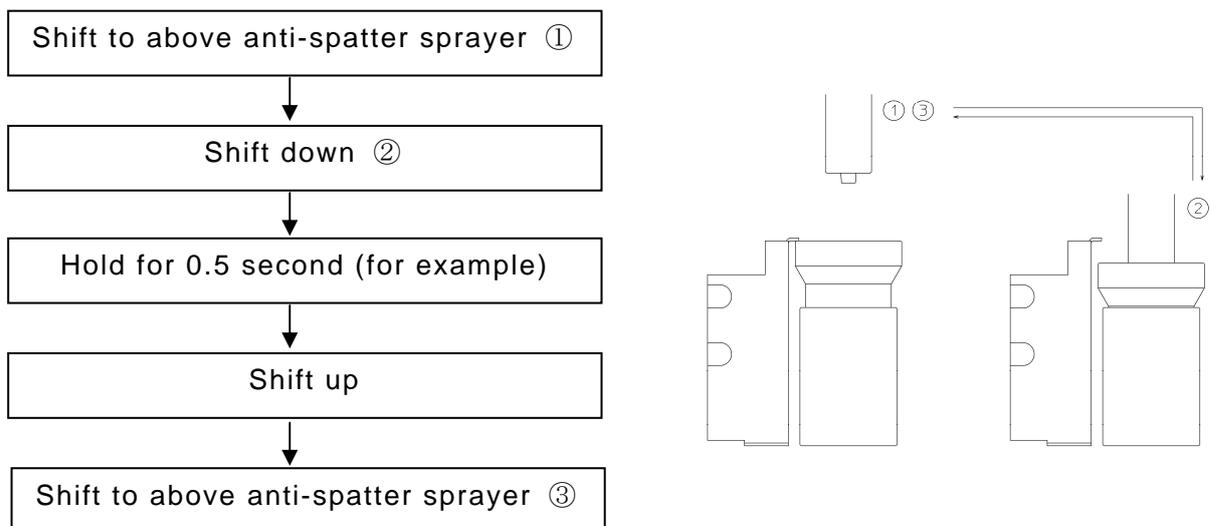


\* Pay particular attention to the positional relationship between the cleaner tip and the nozzle orifice so as not to damage them.

\*\* Repeat ② and ③ as necessary

### 4.3.3 Anti-spatter spraying

Anti-spatter solution is sprayed to the nozzle so that spatters are prevented from accumulating. See the following sequence and create a robot program in your robot controller.



#### 4.4 Danger/Caution in use of Nozzle Cleaning Station



### **DANGER**

- Do not touch or approach the cleaner head while the cleaner head is in operation. Bodily injury or equipment breakdown may occur. If you must touch the cleaner head in need of checking or replacing the blade, be sure to turn off the air and check that the cleaner head never moves.
- Be sure that the nozzle cleaning station is securely fixed to the facility foundation by anchor bolts or foundation bolts. If the attachment is loose, the nozzle cleaning station may fall and cause bodily injury and equipment breakdown.
- Periodic maintenance must be performed by the person who has been properly trained. Otherwise, bodily injury or equipment breakdown may occur.



### **CAUTION**

Keep the pneumatic pressure of the wire cutter between 0.3 and 0.8 Mpa. Otherwise, the wire may not be cut normally and the device may be damaged.

#### 4.5 Maintenance

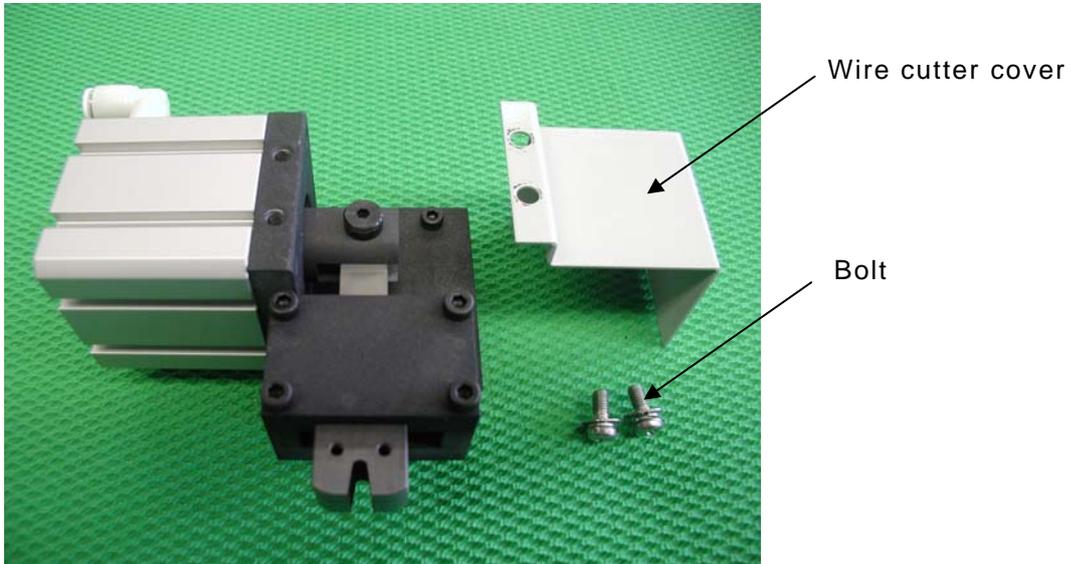
##### 4.5.1 Replacement of wire-cutting blade



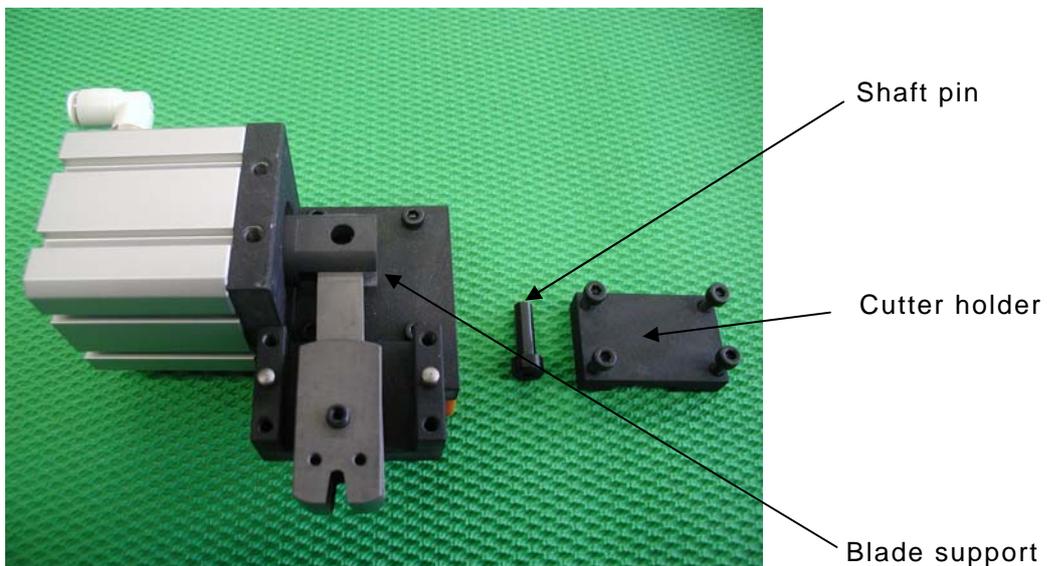
### **DANGER**

Turn off the air supply before blade replacement. Do not perform blade replacement until you check that the blade never moves.

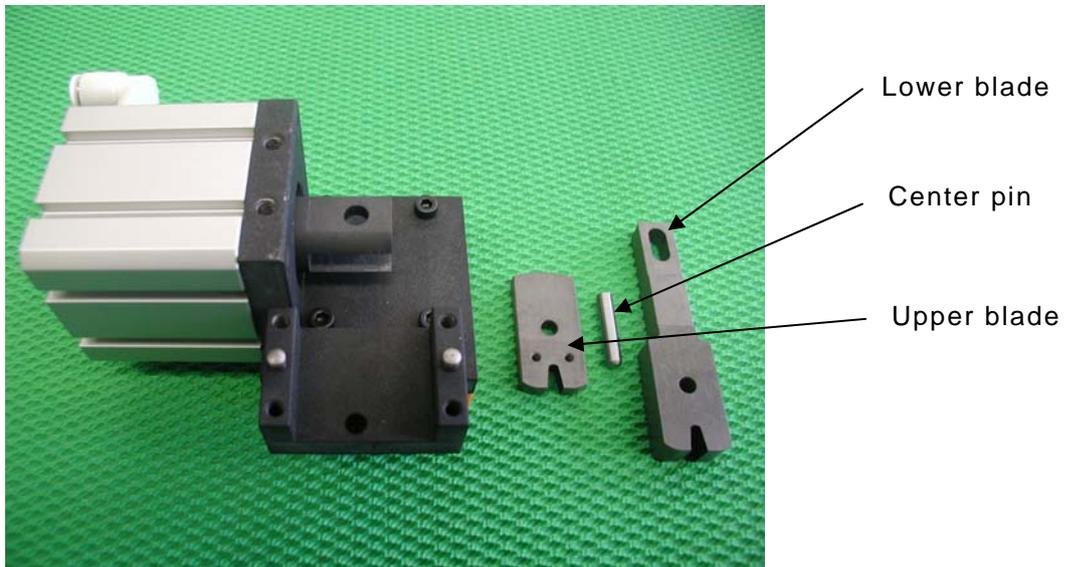
1) Unscrew two bolts, and remove the wire cutter cover.



2) Remove the shaft pin that holds the lower blade, and unscrew four hexagon socket head cap bolts that fasten the cutter holder. Then, remove the cutter holder by pulling it straight up.



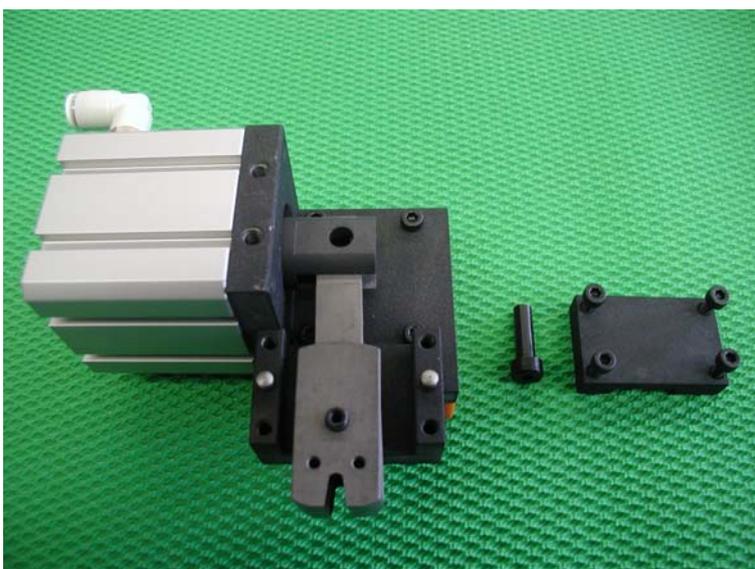
3) Remove the upper blade, the center pin, and the lower blade in this order.



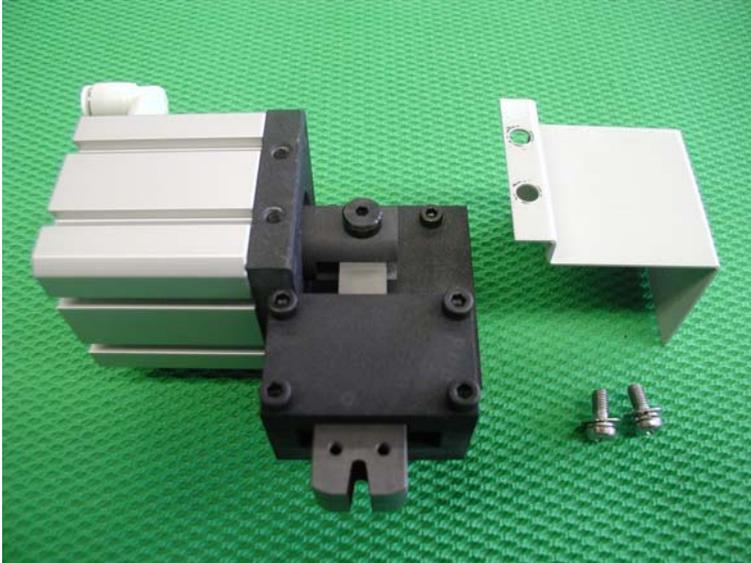
4) Change the lower and upper blades with the new ones, and put them back together in the order of the lower blade, the pin, and the upper blade.

\*A cutting edge is formed on both sides.

If both sides have not been used, turn the blade upside down for another use.



5) Insert the shaft pin and fasten the lower blade. Return the cutter holder to the original place and fasten them firmly with four bolts.



6) Return the cutter cover to the original place.

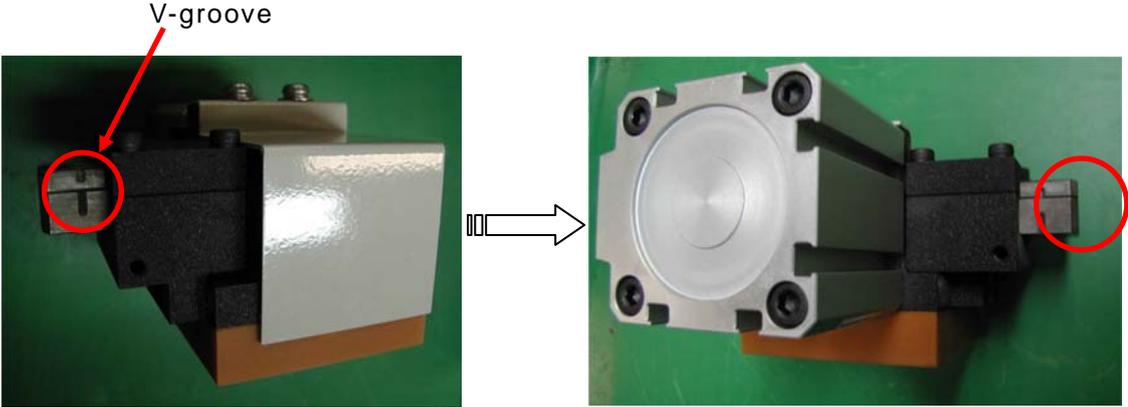


Now, replacement of the wire-cutting blade is complete.

**NOTE:**

A cutting edge is formed on both sides. If both sides have not been used, turn the blade upside down for another use.

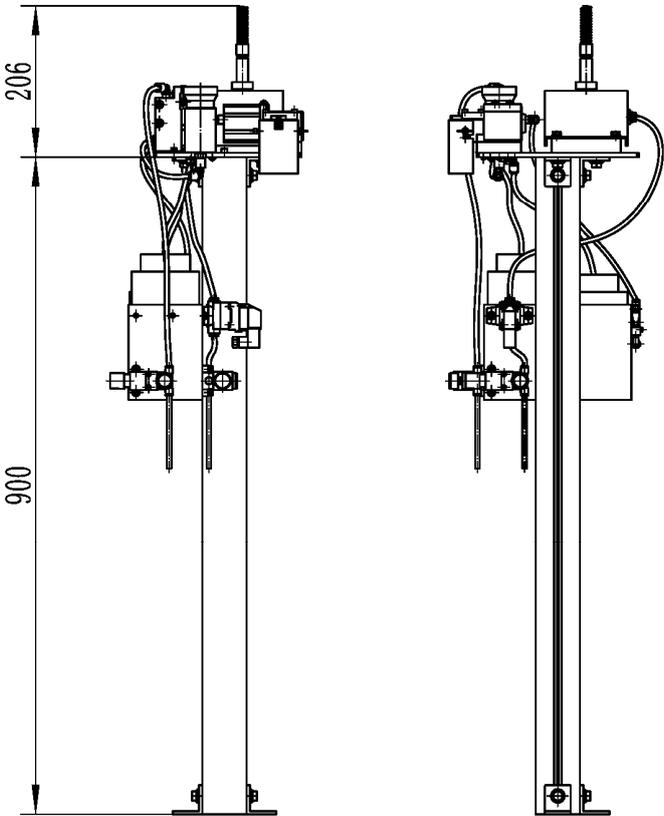
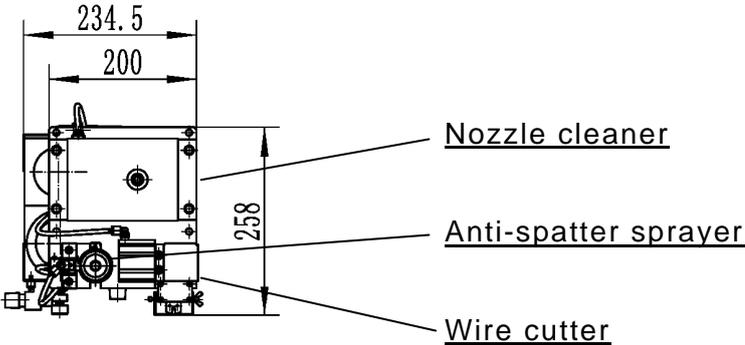
V-groove is directed to the right side as a factory-shipping mode.



After you have turned the blade upside down, the V-groove faces the left side. Change the blade with a new one if it does not cut well in this state. Be sure to replace the upper blade and the lower blade both at the same time.

# 5. Dimensions

## 5.1 Mechanical Construction and Dimensions



## 5.2 Consumable Parts

Part no.	Part name	Qty.	Maker	Note
046211	Nozzle cleaner head	1	TOKIN	*
046253	Wire cutter (upper blade and lower blade in pair)	1	TOKIN	
046114	Anti-spatter (nozzle coat) solution	1	TOKIN	

\* Please specify the nozzle's inner diameter when placing an order.

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