No.089E

# *TUBE CUTTER ISTEC340*

# *INSTRUCTION MANUAL*

## ATTENTION

- To operate this equipment properly and safely, it is recommended to carefully peruse this Instruction Manual to gain a complete understanding of its content before engaging in the operation of the equipment.
- After reading this Instruction Manual, this Instruction Manual should to filed so as to be readily accessible to the operator of the equipment whenever he should require it.
- Refrain from unauthorized disassembling or undertaking modification. The user of the equipment shall be responsible for any accident that may result from unauthorized modification.
- This Instruction Manual does not contain all matters related to operational and safety contingencies. Contact the distributor of this equipment for any ambiguity or questions. The distributor should also be contacted in case the equipment becomes inoperative or for mechanical problems.
- The specification of this equipment may be revised without notice whenever any modification is make on the equipment.

August,2011

*IHARA SCIENCE CORPORATION*

## Important Safety Information

| NOTE | Please read Important Safety Information first |
|---|---|

It is pertinent that all operators who engage in the operation of this equipment have a comprehensive understanding of all the possible danger involved in the operation of this equipment.
Prior to engaging in the operation of the equipment, the operator should carefully peruse these Important Safety Information and duly operate the equipment accordingly.
Inadvertency during operation of this equipment or operating the equipment by an inexperienced operator or layman can result in serious consequences.
It is pertinent that all operators and maintenance personnel familiarize themselves with contents of this Instruction Manual as well as other material issued by the manufacturer.
All cautions and warnings must be duly observed.
The manufacturer should be consulted especially when adjustment to the equipment is required.

Direct all questions regarding safety and maintenance to the manufacturer.
The manufacturer shall not be responsible and does not provide any guarantee for any accidents that may result from not observing the Safety Information cautions that are listed below.

Cautions listed below relate to important safety matters and must be carefully observed.

| | |
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| **WARNING** | Indicates a situation where there is latent danger that could result in death, serious injury※1 or serious physical damage※2 when not able to avert. |

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| **CAUTION** | Indicates a situation where there is a risk of a minor injury※3 or medium degree physical damage ※2 that could be caused when not able to avert. |

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| **NOTE** | Indicates cases where information is suggested to the operator as exceptional condition, as matter requiring caution regarding function and performance, and for prevention of physical damage in the operating procedure and explanation provided. |

※1 : "Serious injury" refers to injury where sequela such as blindness, injuries, burns, electric shock, bone fracture or intoxication results and hospitalization and prolong medical treatment are required.
※2 : "Physical damage" refers to expanded damage that include property damage such as buildings, household effects, livestock and pets but exclude products.
※3 : "Minor injury" refers to injury that do not require hospitalization for treatment nor prolonged medical treatment.

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| **WARNING** | ・When replacing the cutter blade, resetting the drive belt or changing the cutting size, the main switch must be turned off and the plug disconnected from the outlet. Should the switch be inadvertently turned on, injury to the fingers could result.<br>・The cover must never be removed while in operation. If short cut tube is to be removed without stopping the equipment, the finger could contact the cutter blade and result in cutting the finger. |

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| **CAUTION** | ・Care must be exercised when replacing the cutter blade to prevent cutting the fingers. |

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| **NOTE** | ・When any irregularity occurs, immediately stop the operation by turning off the main switch and disconnecting the plug from the outlet.<br>・When it is necessary to preform work on any rotating part, the main switch must first be turned off. |

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## 1. Summary

With the ISTEC200 it was possible to cut up to 1/2" (diam. 12.7), but with this equipment even larger size tubes can be cut and automatic welding performed without requiring any special washing.

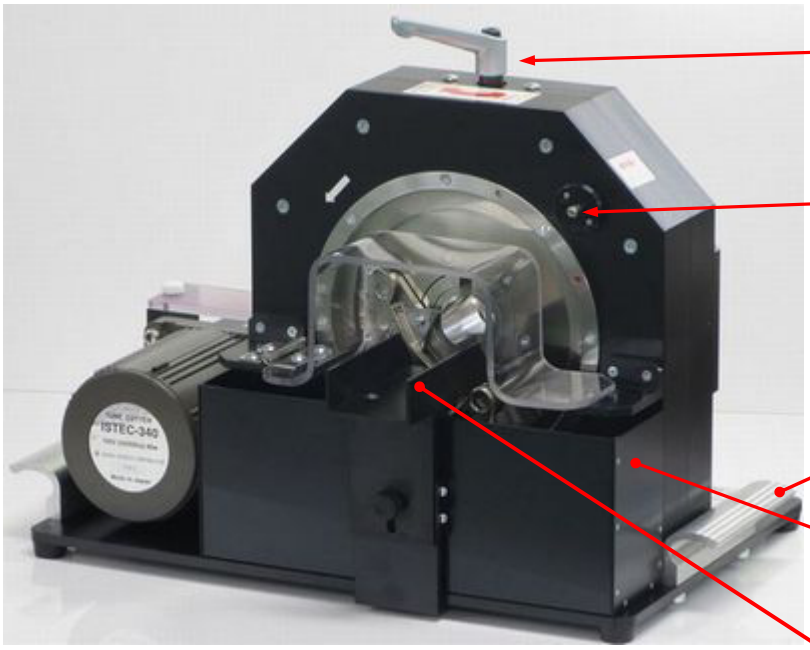
Cutting is performed without contaminating the inside surface of the tube by dry cutting and by performing cutting as if peeling a thin skin from the outer surface.

## 2. Specification

| | |
|---|---|
| Applicable tube sizes | 3/4"( OD 19.05 mm), 1" ( OD 25.4 mm)<br>10A( OD 17.3 mm), 15A( OD 21.7 mm)<br>20A( OD 27.2 mm), 25A( OD 34.0 mm) |
| Maximum cutting wall thickness | 2.1 mm |
| Applicable tube material | SUS316L (SUS316, SUS304, SUS 304L) |
| Equipment | |
| ・Outside dimension | 420 width x 330 height x 252 length |
| ・Weight | 20 kg |
| ・Power source voltage | AC 100 V ±10% (AC110V/115V or 200V) |
| ・Power source frequency | 50/60 Hz |
| ・Power consumption | 40 W |
| ・Temperature range | −10℃～+40℃ |

## 3. Designation of parts and their function

### 3.1 Front



**Clamp lever**
Performs chucking of the work piece.

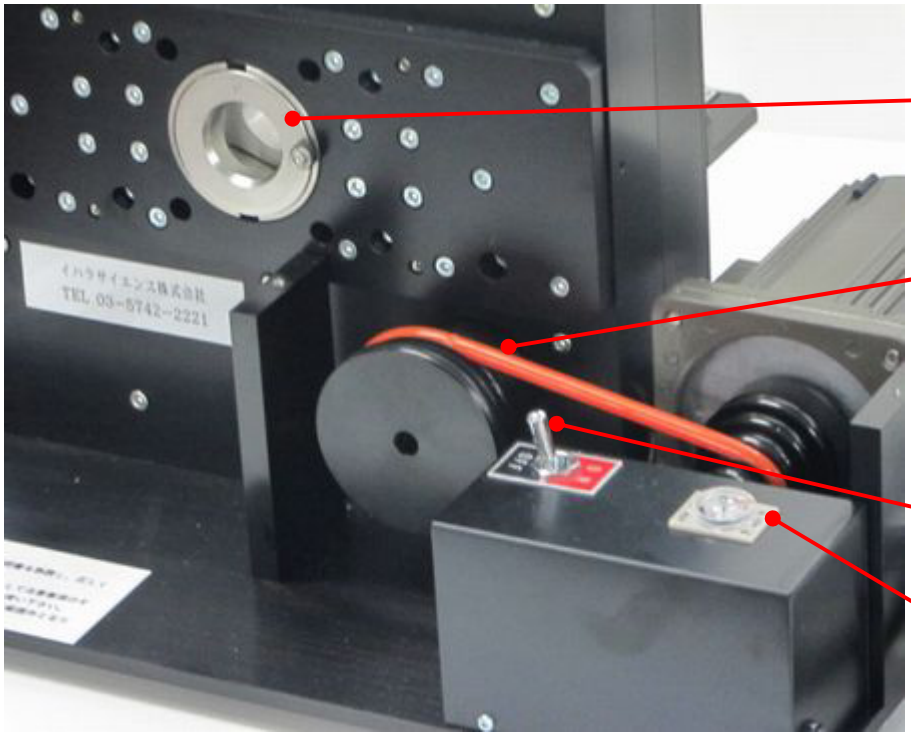
**Resetting button**
Returns cam to the home position.

**Carrying handle**
Used for carrying the equipment.

**Chip collector box**
Collects chips.

**Tube holder**
Prevents the cut tube from dropping.

### 3.2 Rear



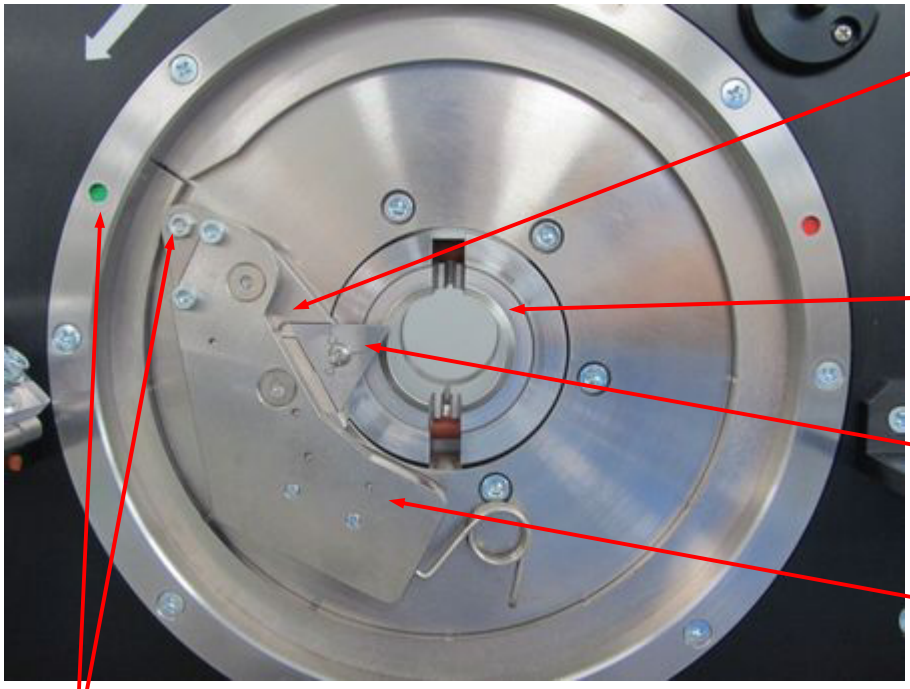
**Tube collet**
Fixes the tube without scratching the outside surface.

**Drive belt and pulley**
Change the Rotating speed by sizes.

**Main Switch**
Start the motor

**Timer**
Stops the equipment at a predetermined time.

## 3.3 Details



**Blade holder**
Fixes the cutter blade.
Replaced according to the size of the tube to be cut.

**Tube collet**
Clamps the tube.

**Special cutter blade**

**Main holder**

**Home position marks**

## 4. Operating procedure

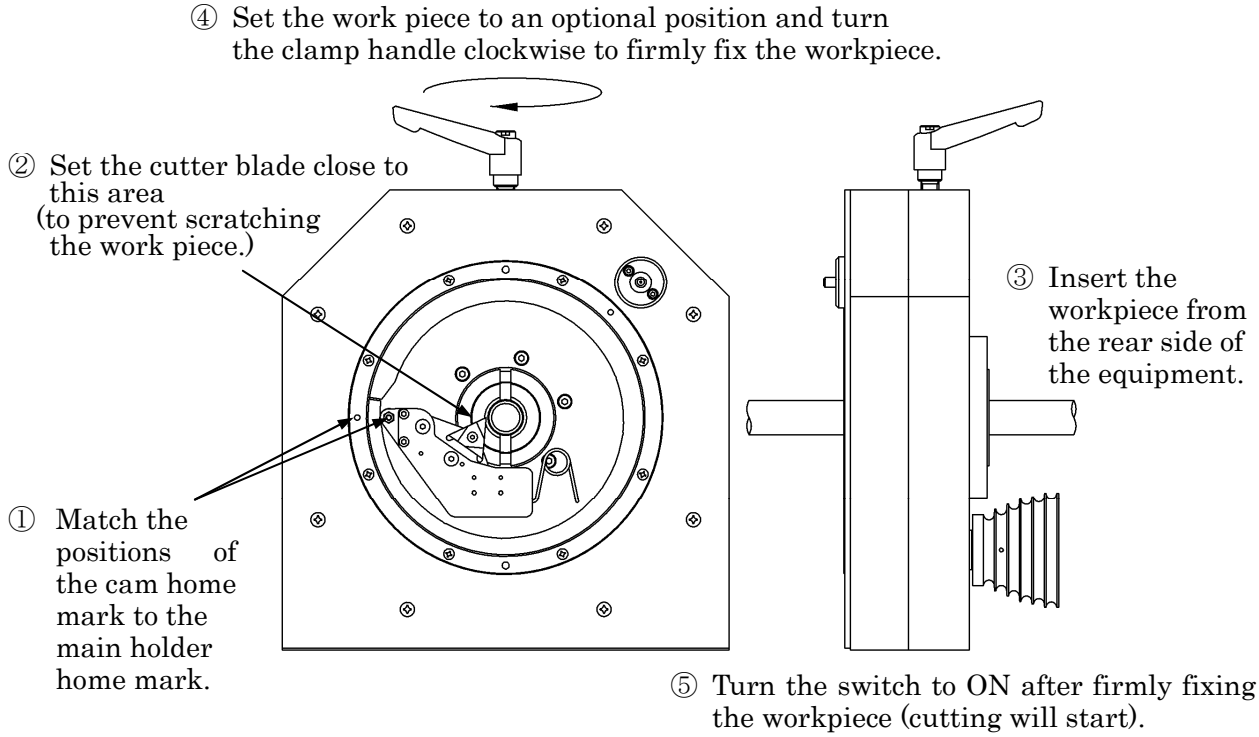
| Note | Prior to engaging in the operation of the equipment, carefully read this Instruction Manual and undertake the operation with a complete understanding of the operating procedure. |
|---|---|

### 4. 1 Check before operating

Check the following before setting the tube on the equipment.

- Do the cutter blade holder and tube collet match the size of the tube to be cut? ⇒ Confirm by checking the markings on the cutter blade holder and the tube collet, and if not, replace in accordance to par. 5.7.
- Is the special purpose cutter blade correctly attached? ⇒ If the figures 1,2,3 cannot be seen on the cutter blade surface, attach in accordance with par. 6.
- Is the cutter blade returned to its home position? ⇒ Refer to "Procedure to match home position marks" in sub-par 4.2.
- Is the cutter blade at its proper position? ⇒ Refer to notation ② in the drawing of sub-par.
- Is the drive belt set at the proper position? ⇒ Refer to par. 8.

### 4. 2 Setting the tube to the equipment and cutting




**Precaution** : **When a long tube is to be cut, provide supports before and after the collet to hold the tube approximately horizontally.**

## Operating procedure

① Press the reset button and rotate the cam so that the home positions of the cam and the main holder match.

② Rotate the main holder to the cut starting position. (Movement will be rather heavy but this is not out of order.)

③ Insert the workpiece (tube) in from the rear side of the equipment.

④ Set the workpiece to an optional position and firmly fix the workpiece by turning the clamp handle clockwise.

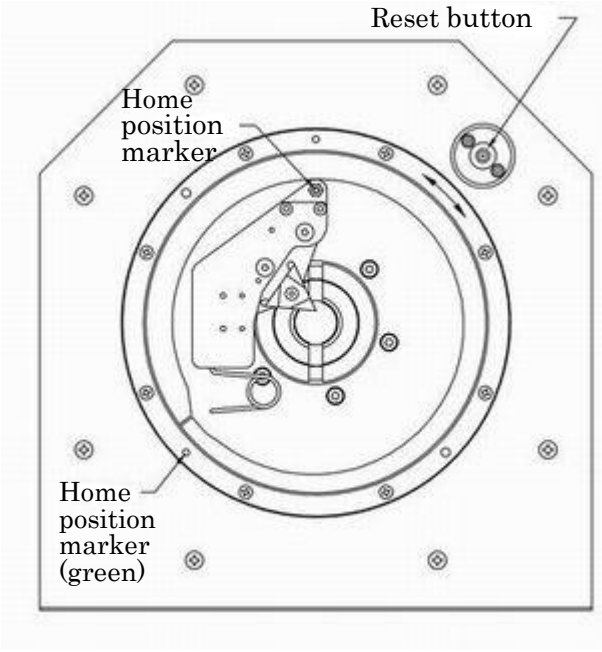
⑤ After fixing the workpiece, turn the switch to ON. (The cutting operation will start.)

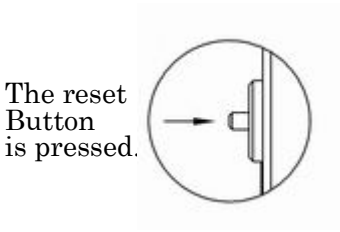
⑥ Turn the switch to OFF when the cutting operation is completed. (The operation will automatically stop when the timer is set to a preset time.)

⑦ Loosen the clamp handle and remove the workpiece

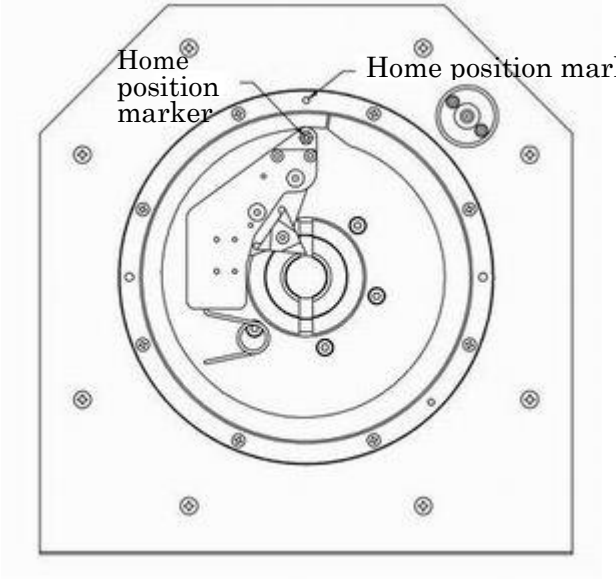
.To repeat cutting, repeat the procedure from ① above.

## Procedure to match home position marks




When the reset button is pressed the cam can be rotated.

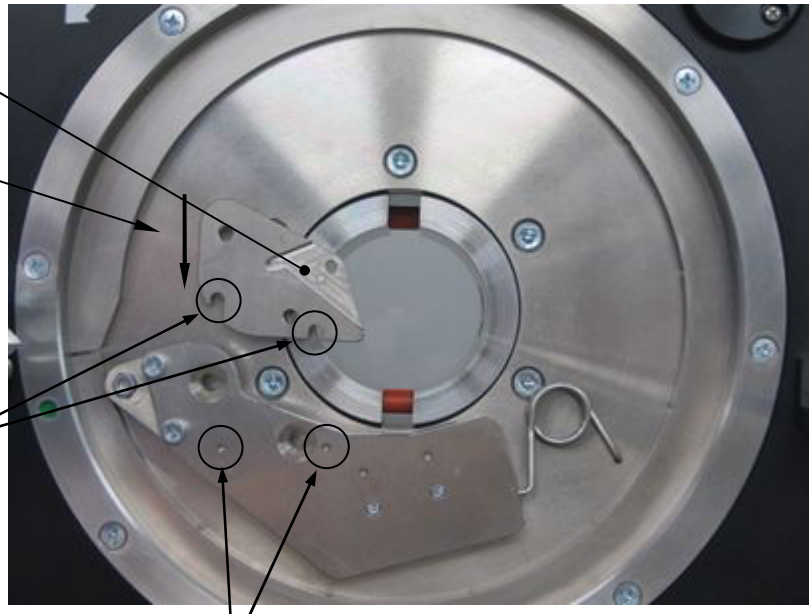


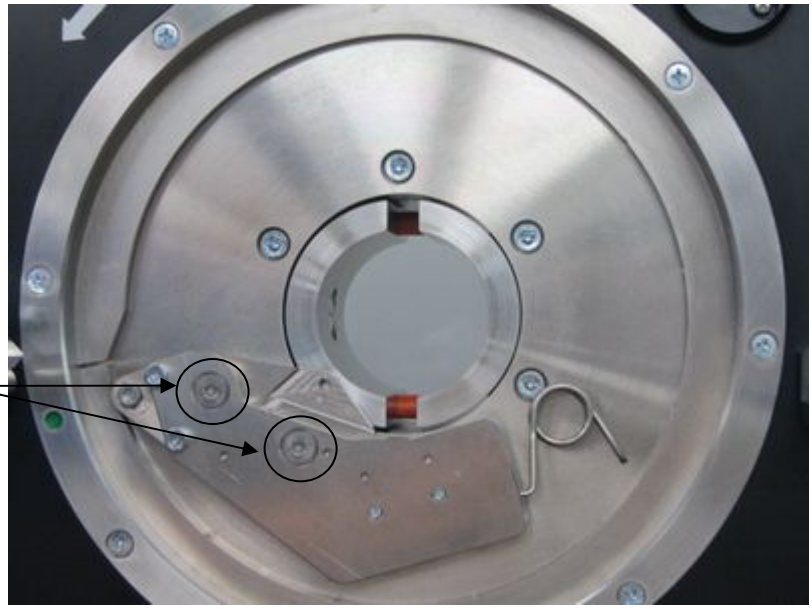

Rotate the cam until the cam home position marker and the main holder home position marker match and are at the same position.

## 5. Attaching the cutter blade holder and replacing

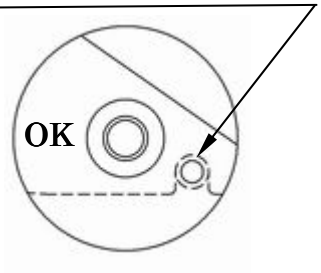
Remove the tube collet from the equipment.

Attach a blade holder matching the size of the tube to be cut (the size is indicated on the surface of the holder.)

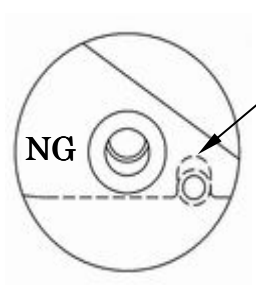



Locating pins in two places and the grooves are matching.



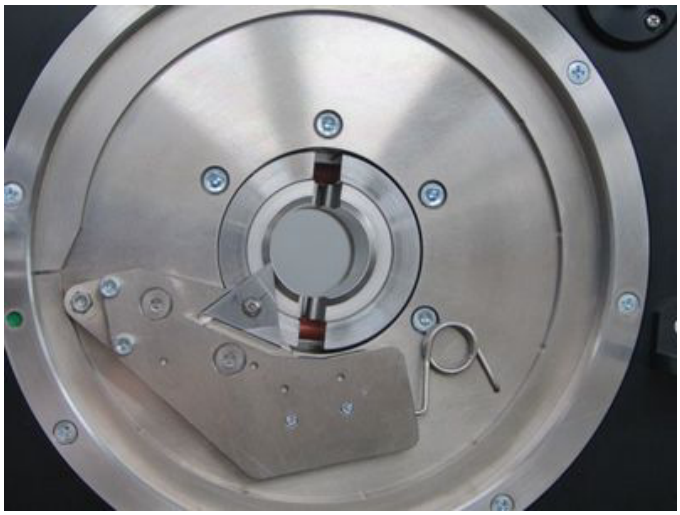

There is a gap between the locating pins and the grooves in two places.




When there is a gap between the hole and the tap, the cutter blade holder cannot be set to the proper position.
In such case check for foreign matter such as chips being caught.

## 6. Attaching the cutter blade

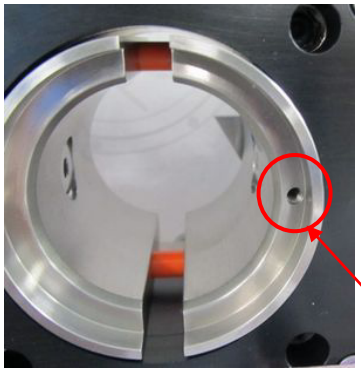
Fit the cutter blade into the cutter blade holder groove so that the surface with the numbers is visible, and tighten down with the button bolt. Check and ascertain the front side and back side of the cutter blade (the side with the numbers is the front side.)

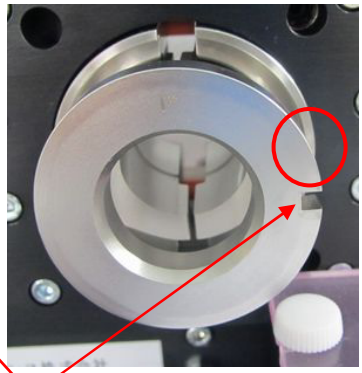


| | |
|---|---|
| **CAUTION** | Turn off the power when attaching and replacing the cutter blade.<br>When attaching and replacing cutter blade, inadvertently cutting the finger can occur and care should be exercised. |

## 7. Installing the tube collet

Install a tube collet matching the size of the tube to be cut. (The size is shown on the edge surface.)





Match the position of the collet notch to the tap hole position, and then insert the collet.

Finger tighten the bolt to fix the collet.

## 8. Drive belt adjustment

Reset the belt to match the size of the tube to be cut.


| Tube size | Belt position | |
|---|---|---|
| | 50Hz | 60Hz |
| 10A (OD 17.3mm) | 1－1 | 2－2 |
| 3/4" (OD 19.05mm) | 3－3 | 4－4 |
| 15A (OD 21.7mm) | 3－3 | 4－4 |
| 1" (OD 25.4mm) | 4－4 | 5－5 |
| 20A (OD 27.2mm) | 4－4 | 5－5 |
| 25A (OD 34.0mm) | 5－5 | 6－6 |

The revolving speed will change according to the power source frequency. The above table should be considered a criteria.

When the revolving speed is increased the cutting time decreases but the life of the cutter becomes shorter.

And when the revolving speed is decreased the life of the cutter increases but the cutting time becomes longer.

Appropriate changes should be made in accordance with the operating conditions. (The higher the figure indicated on the belt position, the lower the revolving speed.)

| | |
|---|---|
| **WARNING** | The main switch must be set to OFF and the plug disconnectedfrom the outlet when resetting the drive belt position.<br><br>If the switch is inadvertently turned on when resetting the position of the drive belt on the speed change pulley, injury to the fingers can happen. |

## 9. Setting the timer

This equipment is not equipped with a device to detect completion of cutting and to automatically stop the equipment.

The equipment is stopped either by manually turning off the switch after confirmed completion of cutting or by setting the timer to the time required for cutting after timing the cutting time.

The cutting time shown below are approximate time and varies according to the outside diameter, material and wall thickness of the tube to be cut, and the timer should be adjusted and set accordingly to the actual cutting time.

Reference: Tube material SUS316L

| Wall thickness | 50Hz region | | 60Hz region | |
|---|---|---|---|---|
| | Belt position | Cutting time | Belt position | Cutting time |
| 1.65mm | 1－1 | 1’40” | 1－1 | 1’20” |
| | 2－2 | 2’05” | 2－2 | 1’40” |
| | 3－3 | 2’30” | 3－3 | 2’ |
| | 4－4 | 3’40” | 4－4 | 2’55” |
| | 5－5 | 4’30” | 5－5 | 3’40” |
| | 6－6 | 5’35” | 6－6 | 4’25” |

## 10. Attaching and detaching chip collector

Bore a hole on the base plate for attaching the chip collector and provide a boss on bottom of the chip collector box bottom surface.

### Detaching

① Loosen the tube holder adjustment screw and lift all the way up, and then fix.

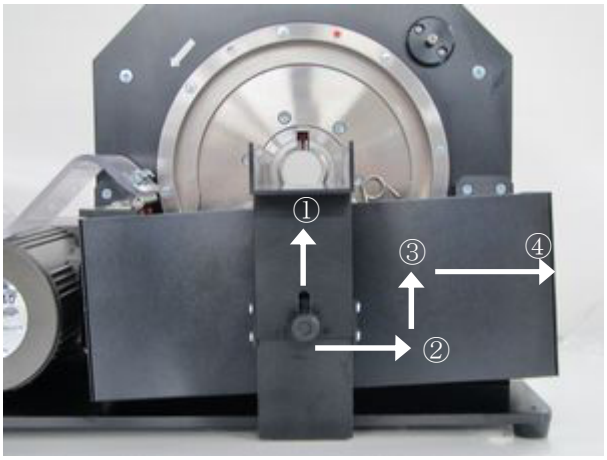
② Slide the chip collector box to the right.

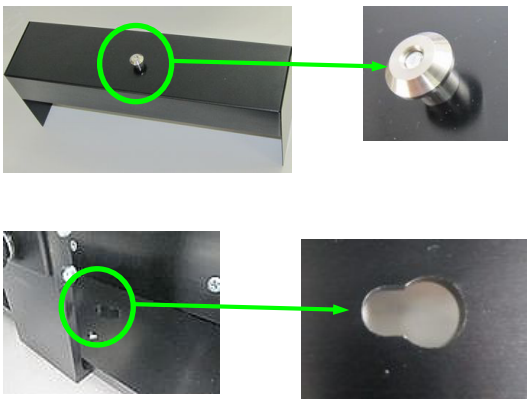
③ Lift the right side of the chip collector box up.

④ Then slide to the right.

### Attaching

Insert from the right side and set the boss in the hole. Then slide to the right.



## 11. Troubleshooting

| Problem | Cause | Corrective measure |
|---|---|---|
| Cutter does not rotate. | No electric power. | Check connection to power source.<br><br>Check whether switch is turned on. |
| | Belt is slipping. | Replace belt. |
| | Bearing is damaged. | Contact the distributor. |
| Cutting cannot be performed. | Cutter blade is chipped. | Replace the cutter blade. |
| Irregular noise during cutting. | Cutter blade is broken. | Switch off the power and stop the equipment. Return to home point and replace the cutter blade. |
| | Bearing is damaged. | Contact the distributor. |
| Odor and smoke issuing from equipment | Irregularity in the internal part of the equipment. | Immediately turn off the switch and disconnect the plug from the outlet.<br>Contact the distributor. |
| | | |
| | | |

## 12. Party to be contacted

The party to be contacted regarding this equipment and for ordering of consumable parts (replacement cutter blades) and replacement parts is the distributor where the equipment has been purchased.

## 13. Parts

**Accessory parts**

| Parts | Quantity |
|---|---|
| Blade holder | One set of specified size |
| Tube collet | |
| Special purpose cutter blade | 3 blades |
| Drive belt (spare) | One belt |
| Hex wrench 2.5mm | One piece |

**Optional parts**

- Cutter blade holders and tube collets for sizes other than the specified size.
- Chip collector
- Tube holder

**Consumable parts**

- Special purpose cutter blade: 1 set of 10 blades
- Drive belt