

Tip Exchanger (Dual Head)

# MANUAL

(DH-B-F)



KYOKUTOH CO., LTD

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## 【B type Tip Dresser Capabilities】

Model	Power	Freq Hz	Current	RPM	Torque (N.m)	Output (W)	Rated Time	Mass (kg)
DH-B-F-400	AC200V	50 Hz	1.7A	72.0rpm	38.5N.m	300W	5 Minutes	12 kg
				10.0rpm	229N.m			
	AC380V		1.0A	56.8rpm	45.3N.m			
				7.7rpm	317N.m			
	AC400V		1.05A	57.3rpm	44.9N.m			
	7.8rpm			315N.m				
	AC415V		1.1A	57.7rpm	44.6N.m			
	7.8rpm			313N.m				
	AC200V	60 Hz	1.5 A	80.0rpm	28.4N.m			
				12.0rpm	275N.m			
	AC400V		0.85A	68.9rpm	37.4N.m			
				9.4rpm	262N.m			
	AC440V		0.9A	69.7rpm	36.9N.m			
				9.5rpm	259N.m			
AC460V	0.95A		69.9rpm	36.8N.m				
			9.5rpm	258N.m				
AC480V	1.0 A	70.1rpm	36.7N.m					
		9.5rpm	257N.m					

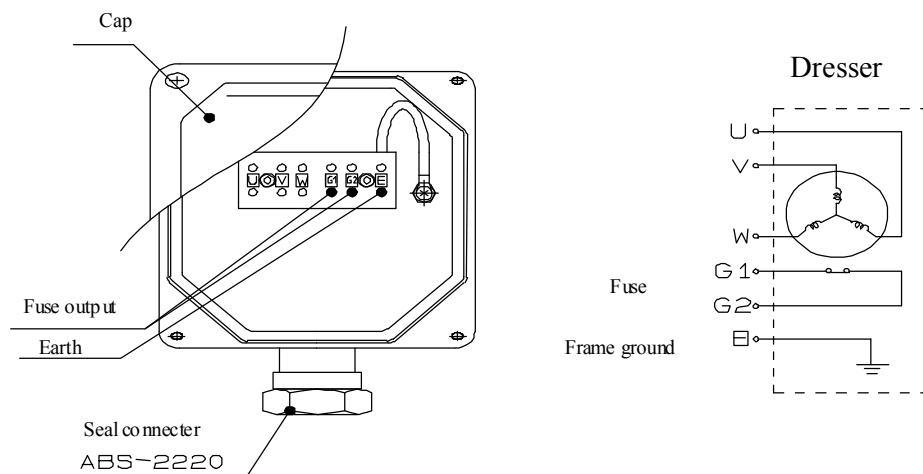
The Model NO. of AC 200V is DH-B-F

## 【Specification of Tip Dresser & Tip Remover】

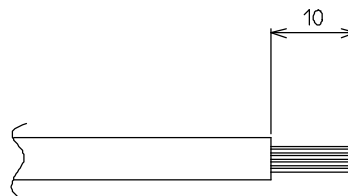
- 1) **Dual Head Tip Exchanger** (Model DH-B-F-400)
- Power source — 3 phase Above seven power. (200V special)
  - Isolate type — E type
  - Thermostat fuse ability — Error signal ON 120°C±5°C、Error signal OFF 76°C
  - Thermostat fuse ability — Normal Close(NC)、AC277V — 8.0A、  
AC115V — 22A、DC 16V — 20A。
  - Type of Electrode — φ16 Strait Cap tip
  - Dressing Time — 6 ~ 20(sec)
  - Dressing Pressure (Max) — 3,920 (N)
  - Tip Removing Time — 6 ~ 8 (sec)(Min 50Hz-6sec , 60Hz-5sec)
  - Color — 7.5YR 7.5/9.5
  - Accessories — Limit Switch (Confirm position)  
—Limit Switch (Confirm Cap tip)  
—Cylinder for Break (0.5Mpa)

## 【Terminal Box】

### 1) Seven voltage

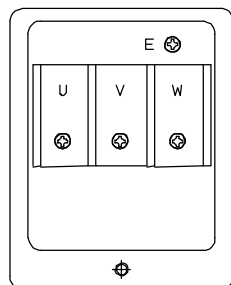


- ◆ Use over 2sq power wire. (AWG Gauge NO 24)
- ◆ When wiring, peel skin for 10mm and wire.



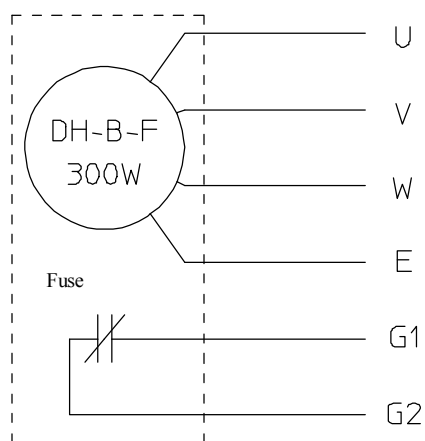
- ◆ Do not wire when the switch is on. Be sure to turn the switch off.
- ◆ The operator must have the certification approved as an electrical worker.  
Please take the cable's change into consideration when wiring because the floating standard mechanism is installed in B-type dresser.
- ◆ Because the floating standard mechanism is installed make sure the screw bolt of terminal is tightened.  
(We recommend that you make the circle with cable beside the dresser in order to absorb the vibration)
- ◆ Please wire power cord and thermostat fuse output cord separately for your safety.

## 2) 200V、220V Box



Fuse Spec: Active temp 120 C  
Recovery temp 76 C

AC277V : 8A  
AC115V : 22A  
DC16V : 20A



- Use over 2 sq power wires.
- When wiring the power cord, use the solder less terminal R type. (AC200V only)
- Do not wire when the switch is on. (Be sure to turn the switch off)
- The operator must have the certification approved as an electric worker.
- Please take the cable's change (shrinkage or slack) into consideration when wiring because the floating standard mechanism is installed in DH-B-F.
- Please wire power cord and thermostat fuse output cord separately for your safety.
- When using thermostat fuse, make the side hole on the terminal box of DH-B-F.

## 【Features】

1. Dressing top and bottom simultaneously, dressing time is greatly reduced.
2. To dress not necessary to reduce gun force when it is approximate 3,920N  
(for  $\phi$  16, approximate 400[kg/f])
3. Because the floating mechanism is installed, while dressing, the loading of welding gun will be decreased.
4. The ability is greatly improved compared with other Dresser.
5. The circuit of overloading output is installed in the mainframe.
6. Possible to use with different voltage model.
7. Durable powder coated finish. ( 7 . 5 Y R 7 . 5 / 9 . 5 ) .
8. The structure for protecting motor and terminal box(ICE STANDARD IP-54 Approved)

## 【 Specifications of Tip Setter 】

- 2) Tip Setter : (Type TS-LW、 Weight 8.0 Kg)
- Tip feeding : Cartridge type (spring)
- Tip type : 1 6 x 2 3 mm
- Quantity of tips: 11 each for upper and lower (diameter 16  $\phi$ )
- Others. : Photoelectric sensor for the remaining tip equipped  
Power source DC24V (Output NPN Transistor)

## 【Features】

- ◆ Replacement of electrode tip is made easy with our “ Cartridge system”.
- ◆ It can carry eleven ( $\phi$  16) Tips in the cartridge.
- ◆ The spring automatically re-supplies cap tips.
- ◆ A sensor detects when the last tip is used.
- ◆ Stainless steel construction and chrome plating provide superior corrosion resistance.



## Criteria for Dressing & Replacement Gun

An applicable tip is made the eccentric cap tip of  $\phi 13$ ,  $\phi 16$ ,  $\phi 19$ .

But, a standard is  $\phi 16^* 23\text{mm}$ .

(Applicable to both X-guns and C-guns; See figure 1 and 2)

1. A dimension  $\geq 34\text{mm}$ . If A dimension is less than 34mm, it cannot be dressed by this dresser because it may contact on the dresser gear box.  
<Notice> The required tip opening angle may differ depending on the blade used
2. B dimension  $\geq 46\text{mm}$ . If B dimension is less than 46 mm, it cannot be dressed by this dresser because it may contact on the dresser gear box.
3. Concentric tip with angled arm (Angle C)  $\leq 15^\circ$ .  
When using the eccentric tip, dressing & replacement becomes the outside of the object.  
When using the eccentric tip, please contact us.
4. 4. The base tip type requires a particular blade and replacement is impossible.  
So we will customize the blade if we are provided the gun drawing. (figure E)
5.  $2,450 \text{ N} \leq \text{Recommended gun pressurization force} \leq 3,430\text{N}$   
The tip cannot sufficiently be dressed when the force is less than 2,450 N. (The blade for low pressure is available) Depending on the shape of tips, when the force is over 3,430 N the dresser may stop. If this occurs, reduce the pressure. If it cannot be reduced, please contact us.  
We will customize blade to make dressing feasible.
6. Our A-type dresser suited to particular mechanism dresser.



Figure 1

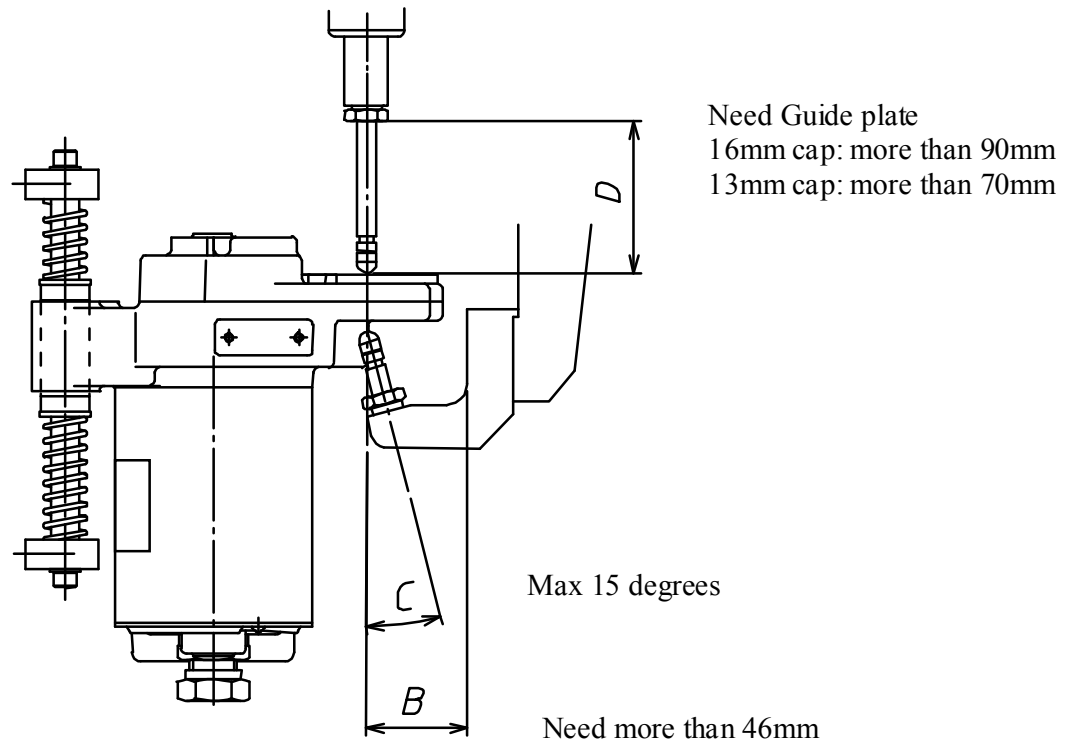
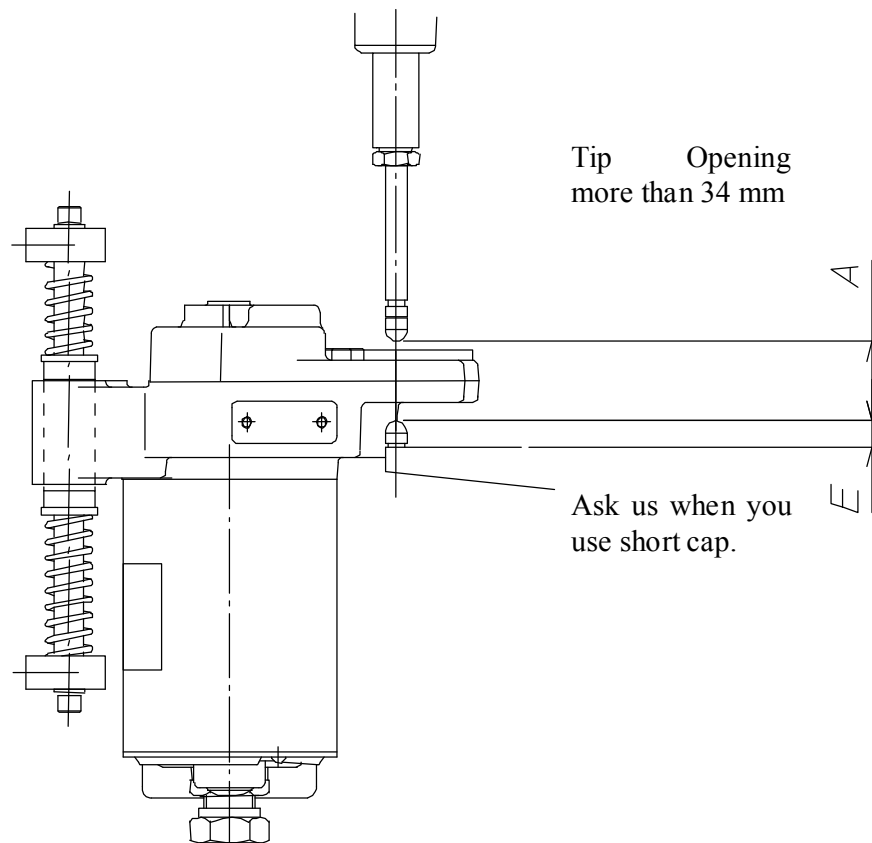


Figure 2



### Cautions for Positioning The Dresser:

1. Set the gun (with the tips to be dressed) perpendicular to the dresser floating.  
(See figure 3.)
2. For X-type guns, dresser should be located as close as possible to pressure point.  
(See figure 4.)
3. For C-type guns, dresser location should be slightly above ( or below, depending on which arm if fixed ) fixed arm. Too much distance will result in premature mechanical failure. (See figure 5.)
4. Although the floating mechanism is installed on the dresser we recommend that you position the dresser as accurately as possible.

Figure 3

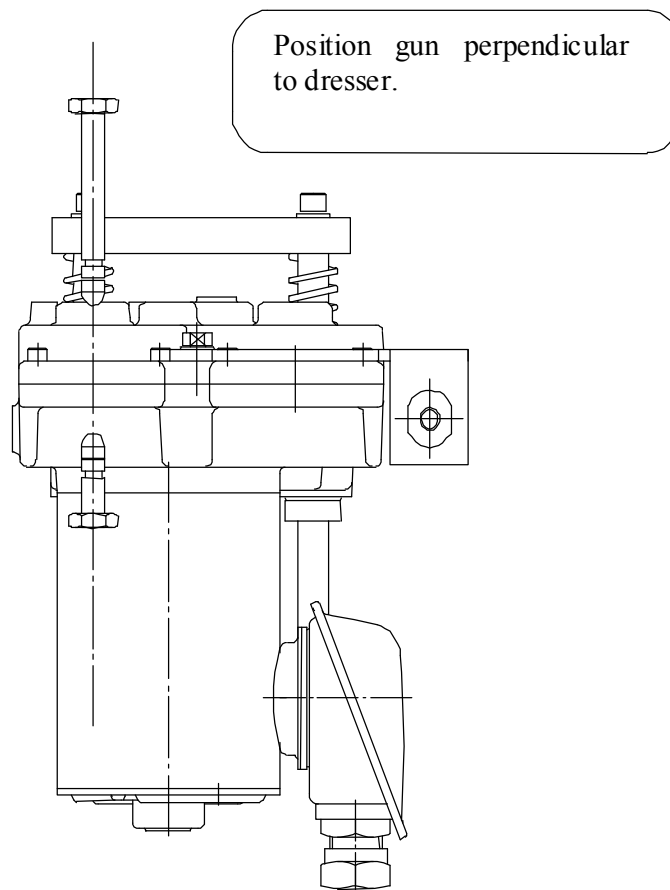


Figure 4

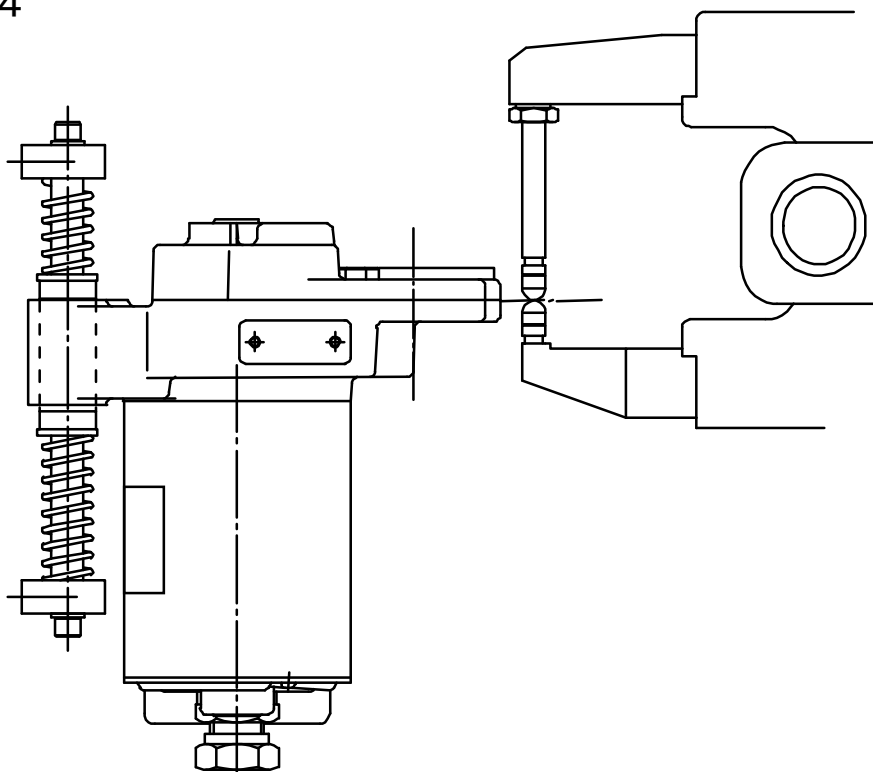
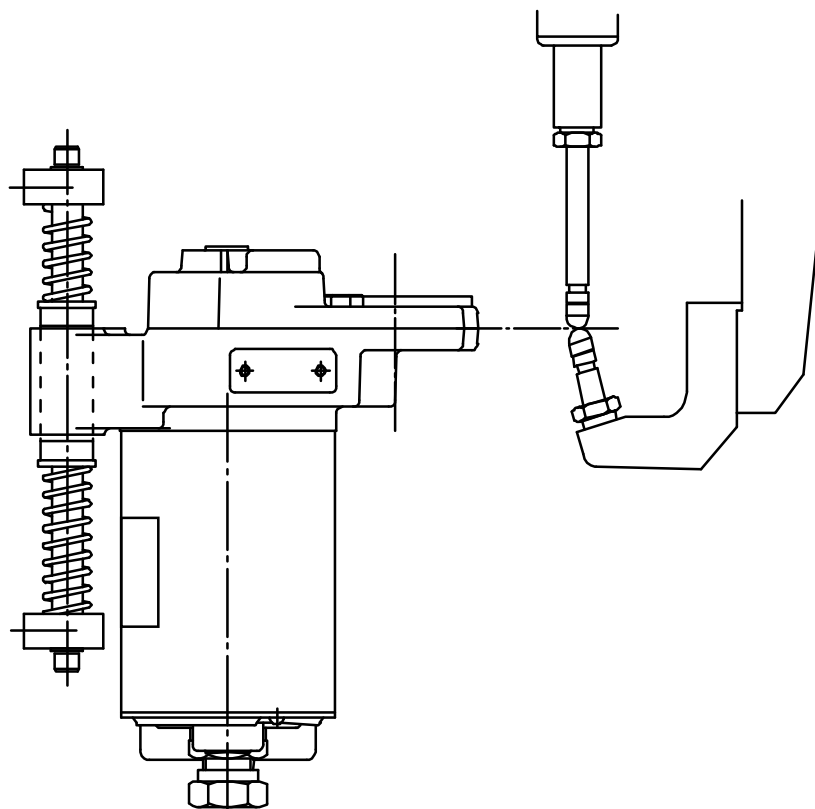
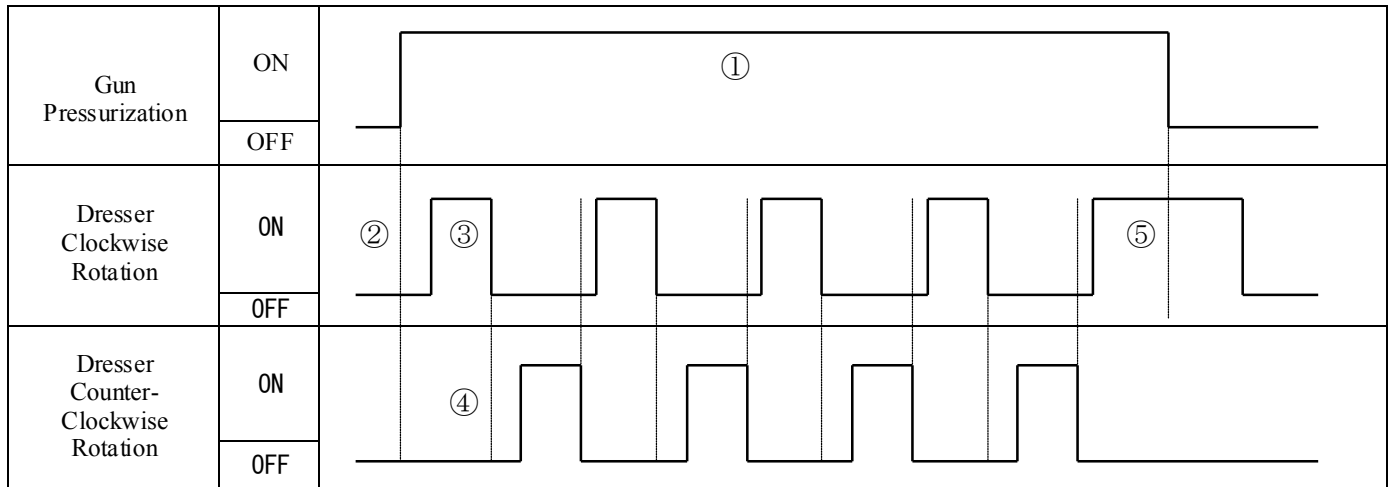


Figure 5



## Timing Chart:

### 1) The Circuit of Cw. and Ccw. Rotation(H type & HA type)

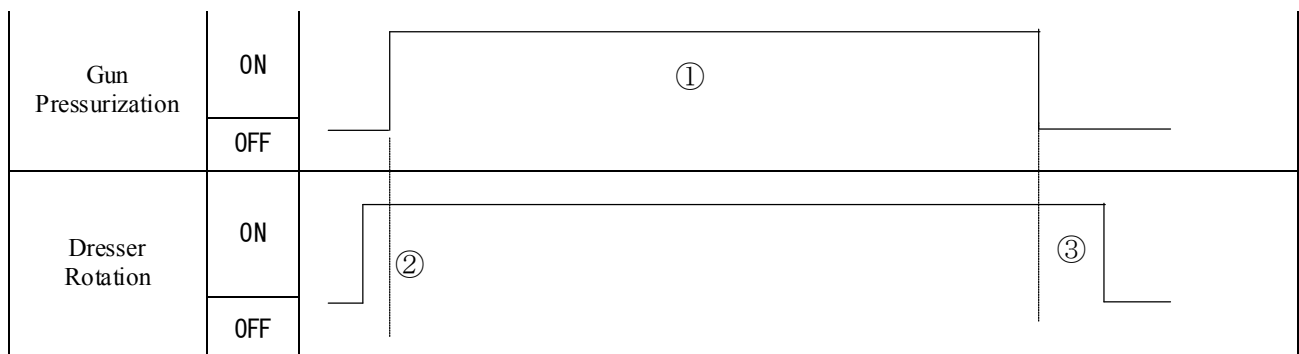


- ① Set the dressing time according to your tip condition and its dia.
- ② After the gun has been pressurized, start to dress.(Recommended time 0.2~0.5 sec)
- ③ Set the timer to reverse the direction of dresser rotation at every blade rotation.
- ④ When the dresser reverses direction, recommended time between stop rotating and start rotating is from 0.2 to 0.5sec.
- ⑤ After the gun has been opened, stop the dresser. (Both rotation is possible.)

◆Before operating the above, make sure that the form of blade and tip are conformed.

### 2) The Fixed Rotating Direction of Dresser (KTW Type Cutter)

When using the Cutter type KTW, according to Gun and Shank shape of the Tip after dressing a tip point is sometimes shaved in the polygon. At that time do pressure at the following timing chart.



- ① Set the dressing time according to your tip condition and its dia.
- ② After the gun has been pressurized, start to dress.(Recommended time 0.2~0.5 sec)
- ③ After the gun has been opened, stop the dress.
- ④ Because the direction of dressing rotation is fixed, confirm the direction of rotation.

◆Before operating the above, make sure that the form of blade and tip are conformed.



## Estimated Dressing Time and The Ability of Blade

### 1. Estimated dressing time

\*Dressing time may be varied under various conditions , about 5 seconds to 3 seconds. And, as for the data on the next as the necessary condition to make the diameter of a used tip from  $\phi$  8 to  $\phi$  6.

Tip material of Electrode. : Cr-Cu  
 Type of Electrode. : CT1623-A (Our new model)  
 Type of Blade. : RR-6-8R & KTW-12  
 Number of Revolution. : 60 [rpm]  
 Gun Pressure : 250kg/f

◇The graph shown above should be considered for reference only. It may be varied under various conditions.

EX) Tip material.  
 · Welding steel plate.  
 · Blade form.

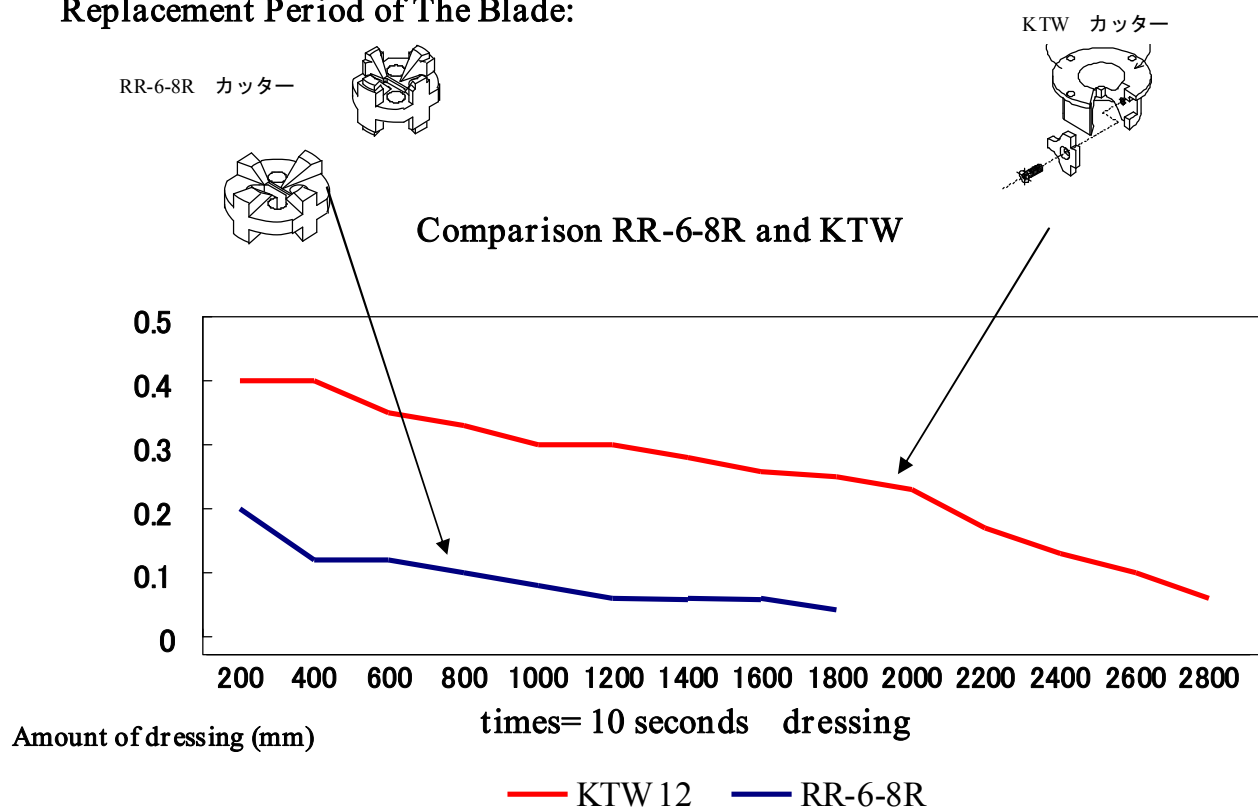
### 2. The ability of blade

Expecting for dressing more efficiently, we also provide various type of blade and treating surface.

Please contact us for more details.



## Replacement Period of The Blade:



When the amount of dressing get half comparing with initial time, it is considered as the life of blade.

Tip material of Electrode	: Cr-Cu (New)
Type of Electrode	: CT1623-A (Our New Model)
Type of Blade.	: H12 (RR-6-8R)
Gun Force.	: 2,450[N]
Number of Revolution	: 60 [rpm]

The Dressing Conditions : The one cycle is clockwise 1 sec., stop 0.2 sec., counter clockwise 1 sec and stop 0.2 sec. The one time of the dressing is defined as 5 cycles repeated.(approx.10 sec.) 50 times of dressing and pressurizing are repeated for one tip. The dressing capacity of one time is checked by measuring the length (L) before and after the dressing.

$$\langle L \text{ before dressing} - L \text{ after dressing} \rangle \div 50 = \text{the dressing capacity of one time.} \rangle$$

∴The result of above experiment : initial dressing amount, KTW cutter about 0.4mm, RR-6-8R Cutter about 0.2mm.

★ In the above case, the bright-new tip was continuously dressed so replacement period of blade will be different in the condition dressing the finished welding tip and also different from dressing top of tip or not either.

To lengthen the replacement period of the blade we recommend increasing pressurization and extending dressing time. After all , it is necessary to select a proper blade for each dresser.



## Cautions and Confirmation before The Operation

### ○Tip Dresser

1. Confirm the specification again.(voltage, option, etc...)
  2. Make sure of the conformity between the forms of the blade and tip.
  3. Install the dresser in the place where the operator cannot touch it directly during the operation.
  4. Make sure the installing bolt of dresser and stand tightened firmly and also the anchor bolt of stand is firmly fixed on the floor.
  5. When connecting the wires to dresser, operation procedures must be followed with the electric construction standard and also make sure that it is protected from cooling water or spatter.
  6. Connect the dresser to the earth without fail.
  7. Make sure the installing space protected from cooling water and spatter.
  8. In the teaching, check the blade one more. (In case of different forms of the upper and lower tips, it frequently occurs to install them reversely.)
  9. In the teaching, make sure that nothing interfering into the dresser but dressing tip. And also make sure that have no abnormal sound any more.
  10. When the gun is pressurized, make sure that the current is not applied, and pressure is in usable limits.
  11. Make sure that the finished tip is good condition.
    - The causes of the failure in dressing.
      - ① The gun is not released during the revolution of the dresser.
      - ② The pressure is too high or too low.
      - ③ The forms of the tip and blade are not conformed.
      - ④ The dressing time is too short.
      - ⑤ The teaching is not applicable.
      - ⑥ The forms of the tip after and before the dressing is too different.
- ◇If the dressing is in failure due to the cause other than those described above, please contact with us without hesitation.



### Operation Process(for tip exchanging)

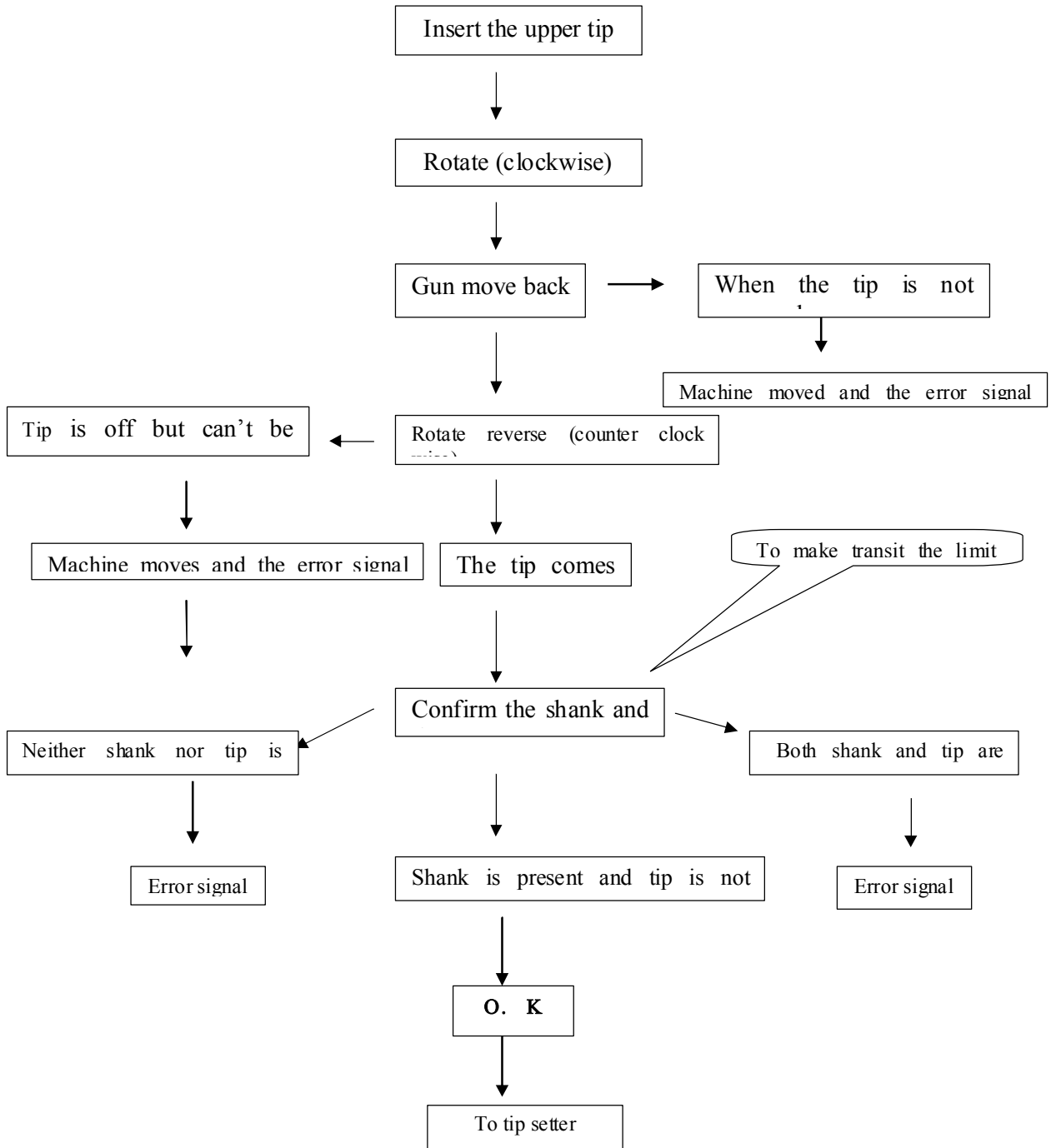
1. Start the tip exchange.
2. Forced discharge of the cooling water or stop water supply. 'Note 1'
3. Confirm the remaining tip. 'Note 2'
4. To robot tip removal position after the completion of forced discharge of cooling Water (stop of water supply).
5. Remove a tip (either upper or lower).  
Rotate to tip removing direction. (Clock-wise) 'Note 6'
6. Set the operation timer. (3~6 sec.)
7. Move to robot tip coming off / setting check position.
8. Motor stop after robot moved.
9. Rotate to tip discharging direction. (Counter clockwise) 'Note 6'
10. Set the operation timer. (3~6 sec.)
11. Motor stop.
12. Confirm the limit sensor switch for coming off / setting tip.
13. Robot moves to the tip setting position. (Set the removed tip side at process 5)
14. Robot sets tip by gun pressure. 'Note 3'
15. Robot confirms the tip setting.  
(By tip removal / setting limit sensor) 'Note 6'
16. Robot moves to the removal tip position again.
17. Remove the un-exchanged side tip. Motor rotate to the tip  
Removal direction. (Clockwise) 'Note 6'
18. Rotate to the removal direction, set operation timer. (3~6 sec.)
19. Move to the robot tip coming off / setting check position.
20. Motor stop.
21. Rotate to tip discharging direction. (Counter clockwise) 'Note 6'
22. Set operation timer. (3~6 sec.)
23. Motor stop.
24. Confirm the limit sensor switch for coming off / setting tip.
25. Robot moves to tip setting position.  
(Set the removed tip side at process 17)
26. Robot sets tip by gun pressure. 'Note 3'
27. Robot confirms tip setting. (By tip removal / setting limit sensor) 'Note 4'
28. Robot gun pressurizes. 'Note 5'
29. Supply the cooling water (supply water).
30. The tip exchange is finished.

\* Be sure that the original position sensor is on, to the finish from the beginning of the tip exchanging operation (the sensor will be off as it moves to the top to the bottom by equal to or more than 15mm).

\* Stop the tip exchanging operation when the sensor is off, considering any troubles of tip removal.



## A flow chart of Auto Tip Exchanger



Note. 1

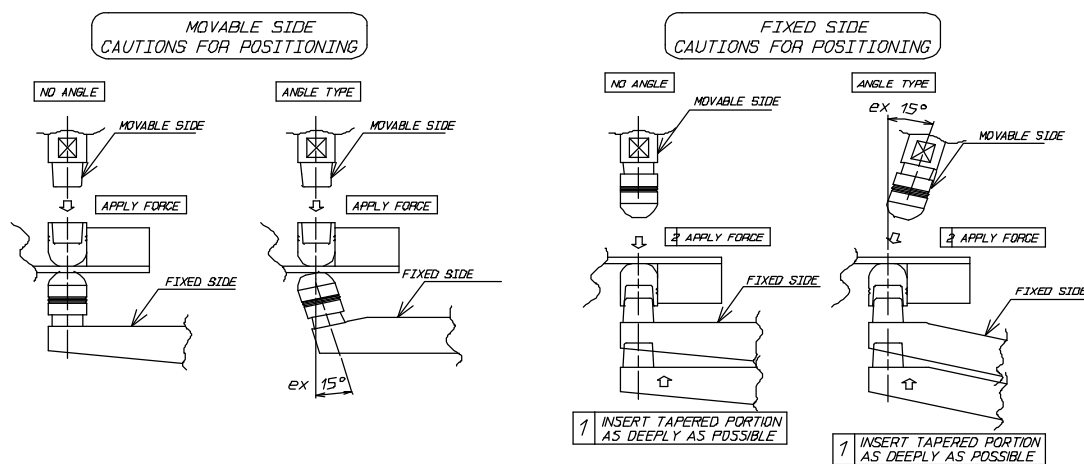
When you need to stop water supply, do it near the electrode of welding gun. Residual water in a long laying pipe will cause the inside line stained or other troubles.

Note. 2

Check the presence of tip-by-tip remaining sensor and start the operation.

Note. 3

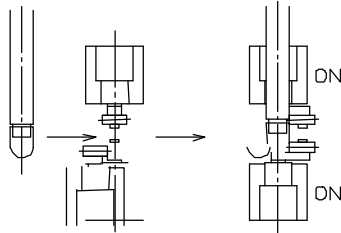
Pressurize with less than 2,500 (N) (250Kgf) at setting tip.



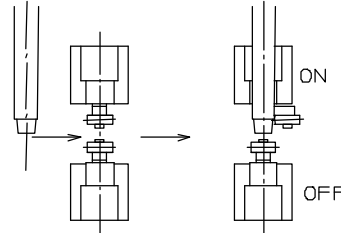
Note. 4

Use the tip removal limit sensor. It is available to equip it separately. Choose the most efficient operation method.

Confirm the limit sensor  
Switch for setting tip



Confirm the limit sensor  
Switch for coming off.

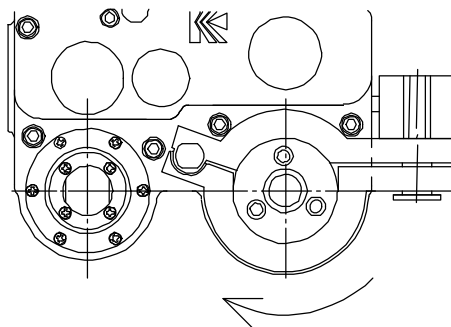
Note. 5

In the note 3, when the tip setting is done in lower pressure, revert to the original pressure and pressurize again at least one time. Especially in case of using new shank the tip may come off.

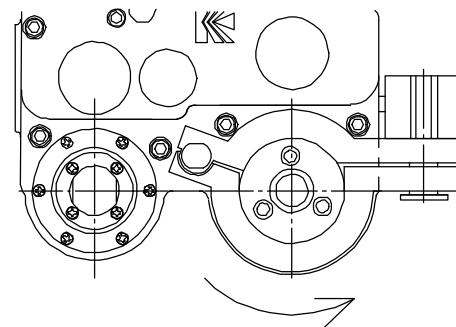
Note. 6

Figures: Tip removal rotation, Tip discharging rotation

1. Insert the tip deeply until it can't be seen completely.
2. Rotate to tip removal direction
3. Pull out shank from tip
4. Rotate to tip discharging direction



Rotate to tip removing direction.

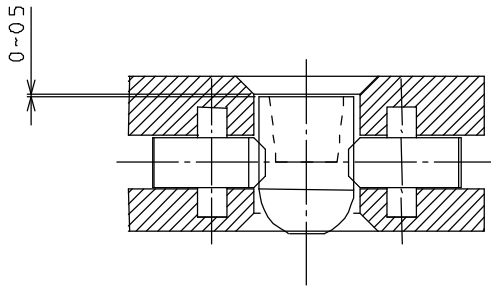


Rotate to tip discharging direction.

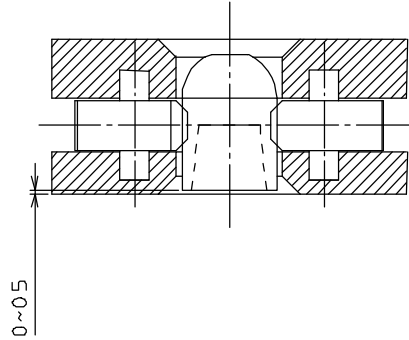
Note. 7

\* Tip Remover nail and related to the position of the Tip.(In case of  $\phi 16$ )

Position of upper tip for removing



Position of lower tip for removing

Note. 8

\*A limit switch for the original position confirmation is to work in the space from the Tip exchange start to the completion.

(Original position error is being taken by the movement of up-down 15mm and more.)

\* In case of an original position error, stop a Tip exchange motions for the abnormal Tip removing.

#### 4. Cautions of Tip Replacement

1) Part of the tip remover

Because this part of the machine is not waterproof, install it as far away from the water and welding spatter as possible.

Please don't use it for another purpose and avoid empty operation at most.

\* To remove the tip is to fasten the nails around the electrodes and remove it.

\* Object of this machine is for  $\phi$  16 X 23 mm or its equivalent.

Make contact to our company Engineering Department when you want to use

$\phi$  13X20mm ,  $\phi$  19X25mm. Some far different diameter tips may be unable to remove.

\* As a Tip outside diameter, as for the dimension

In case of  $\phi$  13 type Tip , use  $\phi$  12.8~13.1

In case of  $\phi$  16 type Tip , use  $\phi$  15.8~16.1

In case of  $\phi$  19 type Tip , use  $\phi$  18.8~19.1

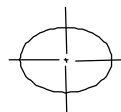
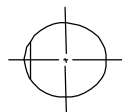
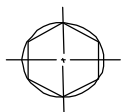
\*We recommend the cylindrical tip. Don't use the polygonal, one side lacked, deformed tip as below. These shapes will cause the nail damage.

\*

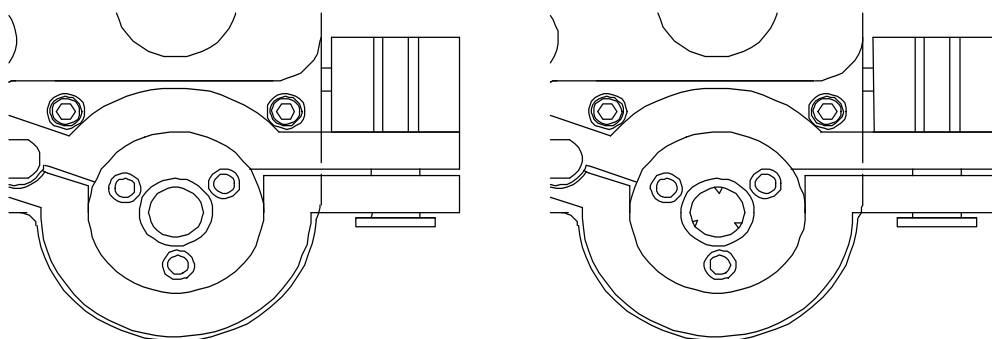
Polygonal

One side lacked

Deformed



\*Insert the electrode into the part of tip remover as the nails are inside. If you insert the electrode as the nails are outside, it will cause the nails or other damage.



Nail in

Nail out

\*Do not put fingers into the part of electrode insert to prevent any injury.

#### Replacement Trouble

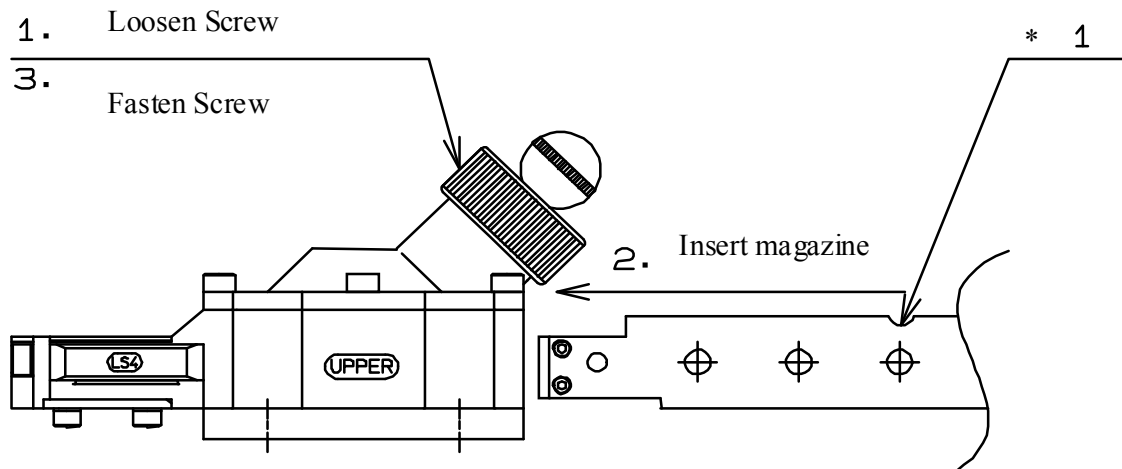
\* Set Limit Switch and Sensors and make sure it does work.

- ① Q: Tip Remover positional trouble.(when PLC get LS1 signal off)  
Tip Remover is off to up or down in order that robot hung tip remover.  
When robot comes to remove tip, robot pushes down tip remover in order that former cap tip is stacking.  
A: Please stop robot and Remover as soon as PLS receives trouble signal.
- ② Q: Tip removing trouble. (when PLC get LS2 and LS3 both signal after tip remove)  
Cap Tip is still with gun.(Tip Remove is failed)  
A: Confirm inside of tip removing system in order that cap tip is stacking in it.
- ③ Q: Tip Setting trouble. (when PLC get just one signal from LS2 or LS3)  
Tip set is failed.  
A: Confirm cap tip magazine.

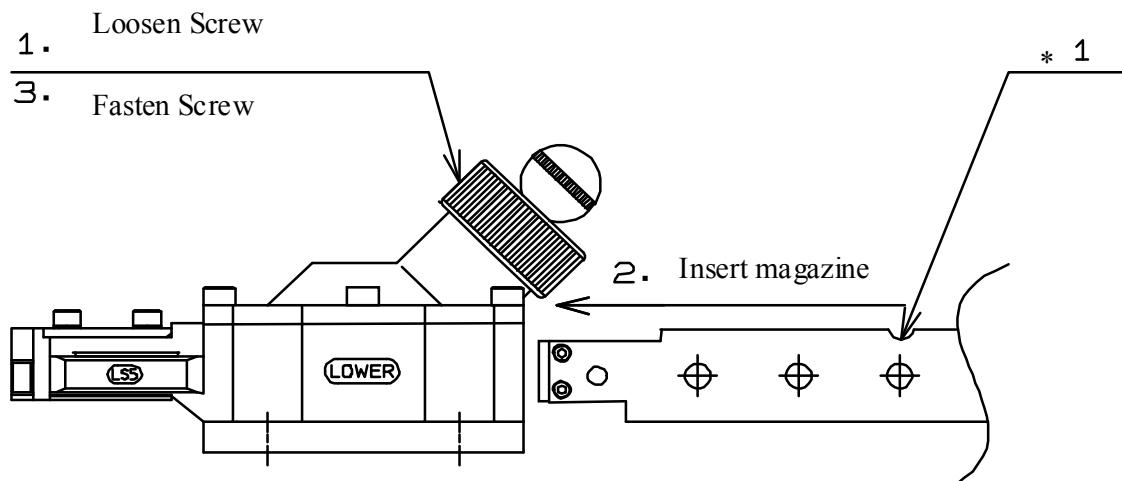
## 2) Part of tip setting

- A) Because this part of the machine is not water proof, install it as far away from the Water or welding spatter as possible.
- B) Clean it at regular intervals to prevent the adhered stain in the tip cartridge that will cause the malfunction of tip feeding.
- C) Wipe the lens of tip remaining sensor regularly.
- D) The cartridge for upper and lower are different. Be sure to set the cartridge at correct direction as the drawings.

## FOR UPPER TIP



## FOR LOWER

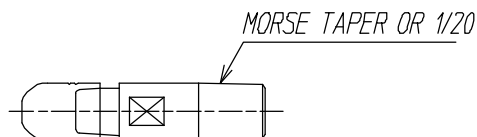


Note 1 Insert a mark cartridge into the fixed screw side.



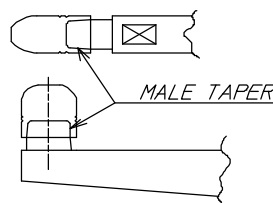
## 3) Other attentions

- A) This machine is fit for the put-in taper tip, when you use it in the shank type, be careful Of the angle of the male taper. Also when you use new shank be sure that tip may drop out because of the loose fitting tapered parts.



- \*B) Use the male taper whose material is beryllium copper 25 alloys or its equivalent.  
We have many reasonable (lower cost) consumption articles, such as Tip Base type,  
For example, whose male tapered part only is processed or re-processed by beryllium copper 25 alloys. We are ready to carry out your orders. Please don't hesitate to contact us.

\*



\*

- C) Some extra time will be required when you try to exchange the tip, which was changed by hand, with Auto Tip Changer.

※ For Servo Gun User  
Tip Setting by Servo Gun

There is a possibility that cap tip drop off by limit switch when checking tip set in order that cap tip is not enough set to taper because of servo system.



### Abnormality and How to repair:

Abnormal Condition	Cause and Countermeasure
1 ) Dresser does not rotate.	<ul style="list-style-type: none"> <li>* The power switch is OFF. → Check the power source.</li> <li>* Wire is cut-off or poor contact. → Check the junction box and control panel.</li> <li>* the thermostat fuse of motor side is working. → Check the motor and reset it after cooling down.</li> <li>* The gun pressure is higher than specified by our company. → Set gun pressure under 3,920 N.</li> <li>* Motor has seized. → Replace the motor.</li> <li>* The blade is not suitable for the tip. → Check the blade shape and replace the blade if the shape is not suitable for the tip.</li> </ul>
2 ) The motor is running but the blade does not rotate.	<ul style="list-style-type: none"> <li>* Gear in the gear box is broken. → Remove the gear from the gear box and repair it.</li> </ul>
3 ) The diameter of the dressed tip is not according to specification.	<ul style="list-style-type: none"> <li>* Dressing time is insufficient → Set the dressing time to the tip that has been crushed most.</li> <li>* The cutting capability of the blade has deteriorated or the blade has been damaged. → Replace the blade and check the gun pressure.</li> <li>* The tip is not at the proper position for dressing. → Re-do programming.</li> <li>* The blade is not suitable for the tip. → Check the blade shape and replace the blade if the shape is not suitable for the tip.</li> </ul>
4) Make abnormal sound and noise during dressing.	<ul style="list-style-type: none"> <li>* Gear in the gear box is broken. → Remove the gear from the gear box and repair it.</li> <li>* The tip is not at the proper position for dressing. → Re-do programming.</li> <li>* The blade has been damaged. → Replace the blade and check the gun pressure.</li> </ul>
5) The dressed tip has burrs.	<ul style="list-style-type: none"> <li>* The control method is wrong. → while dresser is rotating, gun has opened. Set the control to stop the dresser.</li> <li>* The blade is not suitable for the tip. → Check the blade shape and replace the blade if the shape is not suitable for the tip.</li> <li>* The blade has been damaged. → Replace the blade and check the gun pressure.</li> </ul>

## Abnormality and Countermeasure:

Abnormal Condition	Cause and Countermeasure
● 6) The tip diameter is not at the center or the designated location.	<ul style="list-style-type: none"> <li>* The tip is loose in the blade because the shank is too long. → Replace with a concentric guide for long shank.</li> <li>* The whole length of the tip is too short. Not the same in the initial position. → Replace with a new tip.</li> <li>* The bushing in the gear box has been worn out. → Replace the part.(bushing: TDR-GA-008)</li> <li>* The tip is not at the proper position for dressing. → Re-do programming.</li> </ul>
7) The tip is not a true circle but an oval.	<ul style="list-style-type: none"> <li>* The tip is loose in the blade because the shank is too long. → Replace with a concentric guide for long shank.</li> <li>* The bolts that fasten the motor and the gear box are loose. → Tighten the bolts</li> </ul>
8) The tip dressing is not completed in the set time.	<ul style="list-style-type: none"> <li>* The cutting capability of the blade has deteriorated or the blade has been damaged. → Replace the blade and check the gun pressure.</li> <li>* Dressing time is insufficient. → Set the dressing time to the tip that has been crushed most.</li> <li>* Because of frequently dressing of tip, its hardness is decreased, broken area is increased. → Increase the dressing pressure gradually according to the time of dressing a tip when it is with gun variable voltage valve.</li> </ul>
9) Unable to remove the tip.	Refer to next page 「In case of freak circumstance」
<p>&lt;Remarks&gt; ▪ please be sure the switch is off when you are repairing, checking or replacing parts or blades of dresser.</p> <p>▪ When the dresser is out of order, please contact us immediately and do not take the dresser apart. We can not repair it if you disassemble it.</p>	



### Abnormality and Countermeasure NO3 (Dressing time)

**Q1** Unable to remove the tip.

**A 1** Does the rotating direction correct? The rotating direction unable to remove a tip in case of an opposite.

**A 2** Is a brake working? This machine is doing a clamp of a tip by power of a brake. This brake is adopted the a one way direction pulled cylinder, and a brake works with solenoid controlled pilot operated valve. Action cylinder in tip replacement.

And, confirm that air pressure is in beyond the regulation value 0.5 (MPa).

**A 3** When Tip remover made it work the rotating direction, have 3 nails worked up? Adopt a method, which does a clamp of a tip at 3 nails.

When the nail does not work up、

① It makes garbage, which the tip circumference has in the nail stick, and it makes movement of a nail stick.

② Adhesion the garbage's and oil to the brake, and brake is slipping.

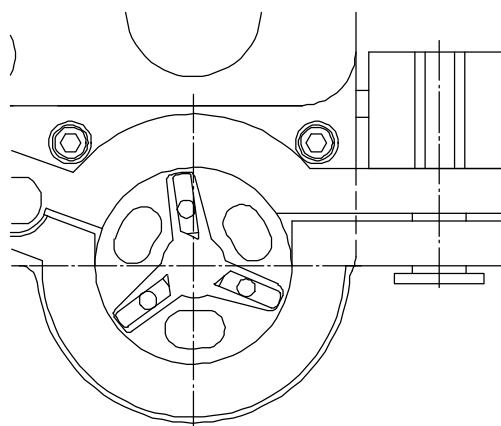
It is thought a cause of 2 kinds of above mentioned about.

In case of the ①, please remove the brake and the pointed cover, and remove the garbage which stuck to a nail, do it move smoothly. On the installation time please be careful about a direction of a nail. On the installation time, please be careful the garbage and the oil do not adhere to the friction surfaces of a brake and a cover.

In case of the ② please remove the brake, and wipe off a brake and a garbage which adhered to a friction surface and oil of a cover. On the installation time, please be careful the garbage and the oil do not adhere to the friction surfaces of a brake and a cover.

**A 4** . Does a direction of the nail fit? To a direction of the ditch of the gear, cover, if for installation of the nail differs, do not possess、 by the case, it causes damage of a part. When it was break up with the customer please be careful in assemble. Refer to the below drawing.

「The directions of a nail to the driven gear」



**A 5** Is there a 3 nail? Isn't the nail damaged? In case of three lengths of a nail is the inequality, in case of no 3 nails, it is though damage and loss of the part. As in this case part replacement is necessary, replace the nail. In case of replacement 3 nails replace at the same time. Please be careful about the directions of a gear and a nail on the occasion of assembly.

**A 6** When the tip does not go by the cause except the above mentioned, please don't hesitate to contact our company.


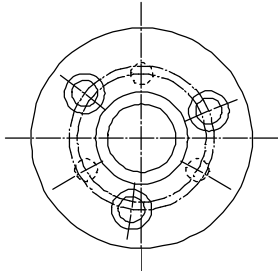
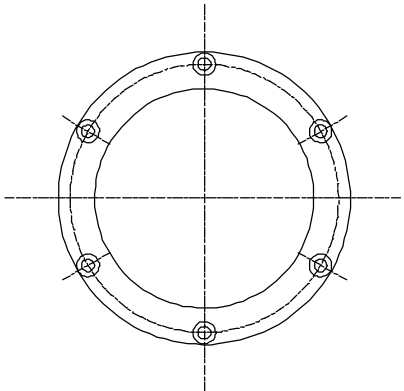
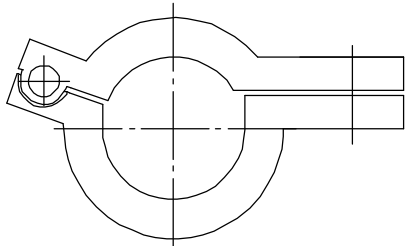


## A periodic maintenance place

Maintenance place	How to maintain
<b>To the gearbox, grease injection</b>	<ul style="list-style-type: none"> <li>* Remove screw (1/8) on gear box and put grease.</li> <li>* one time/, on every month, 20g inject. Prevent from trash in case of inject.</li> </ul>
<p><b>Cleaning of the Removing inside</b></p> <p>In structure, The spatter stuck to the Tip side is scraped. It sticks to the nail, and has a bad influence on the movement of the nail.</p>	<ul style="list-style-type: none"> <li>* Confirm that nails goes in and out smoothly when a cover is moved under the condition of which a brake doesn't work.</li> <li>* When it doesn't move smoothly, a brake point cover (M5) is removed, Get rid of the trash which stuck to the nail, and make a nail move smoothly. Pay attention to the direction of the nail at the time of the install. On the installation time, please be careful the garbage and the oil do not adhere to the friction surfaces of a brake and a cover.</li> <li>* Put into effect one time/ on every week</li> </ul>
<p><b>Cleaning of the brake frictional side</b></p> <p>As for the brake and the frictional side of the cover, while it is used, it worn down, and brake ability lower by the spatter.</p>	<ul style="list-style-type: none"> <li>* Confirms that nails goes in and out smoothly when a motor is turned under the condition which the brake is put on to.</li> <li>* In case that break doesn't work smoothly or Cap tip doesn't take out but just scratch, remove break cover (M5) and clean inside.</li> <li>* On the installation time, please be careful the garbage and the oil do not adhere to the friction surfaces of a brake and a cover.</li> <li>* Don't put any liquid for being smooth.</li> <li>* Put into effect one time/ on every week.</li> </ul>

## Consumption articles

### 1) The part of tip remover

	<p>* Tip remover nail: <b>ATCD-GA-011-1</b></p> <p>Quantity to replacement 3 pcs</p> <p>Replacement cycles 3 Month</p> <p>※Drawing DH-B-F Drawing No. 000610-001-001 Number ⑫</p>
	<p>* <b>Tip Remover Cover : ATCD-GA-009-1</b></p> <p>Quantity to replacement 1 set(up and down)</p> <p>Replacement cycles 6 month</p> <p>※Drawing DH-B-F Drawing No. 000610-001-001 Number ⑬</p>
	<p>* <b>Tip Remover Bush : ATCD-GA-008-1</b></p> <p>Quantity to replacement 2 pcs</p> <p>Replacement cycle 6 month</p> <p>※Drawing DH-B-F Drawing No. 000610-001-001 Number ⑪</p>
	<p>* <b>Tip Remover Break : ATDH-B-001-2 ATDH-B-002-2</b></p> <p>Quantity to replacement R/L 1 each</p> <p>Replacement cycle 6 month</p> <p>※Drawing DH-B-F Drawing No. 000610-001-001 Number ⑭・⑮</p>

### Tip Exchanger Assembly

