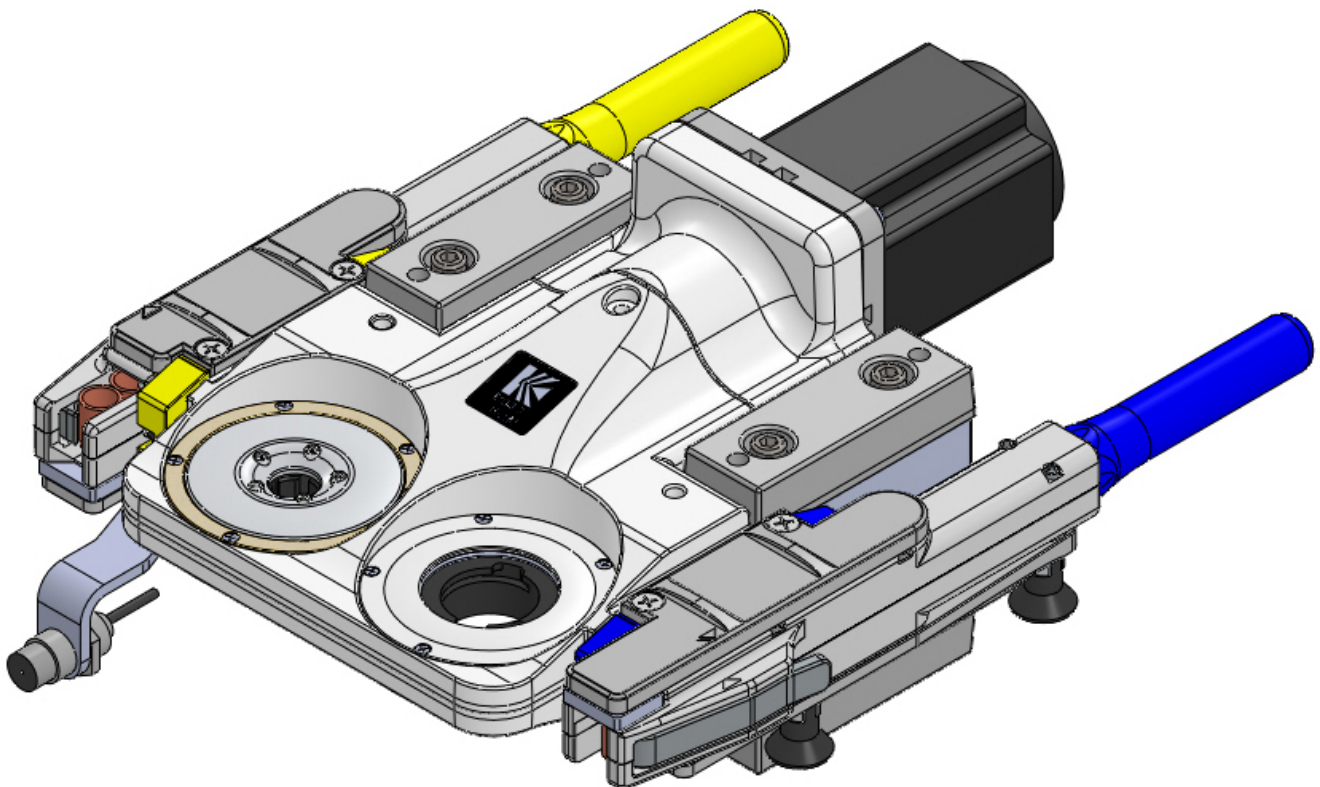




First Edition: 25.04.2019
Revised Edition: 28.03.2023

Dual Head Servo Tip Changer DH-SVR2S (w/o servo motor specification) Instruction Manual

Please read this instruction manual carefully
before operating this unit and use our product correctly.
After reading this instruction manual, be sure to keep it in a place where a person
who uses or manages the equipment can check it at any time.



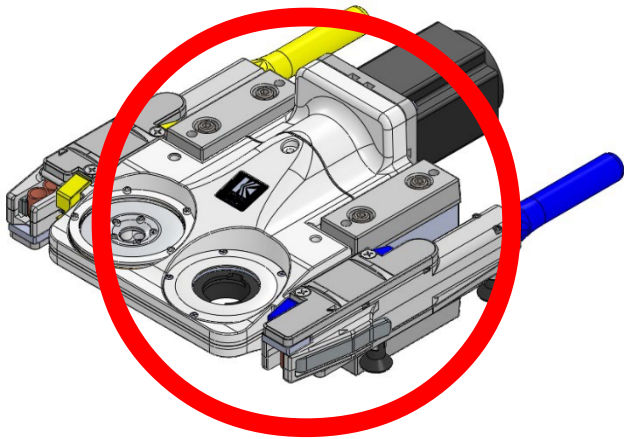
Cautions When Setting Up

Our Servo Tip Changer “DH-SVR2S” is not designed to be mounted incorrectly such as <NG> position in picture below.

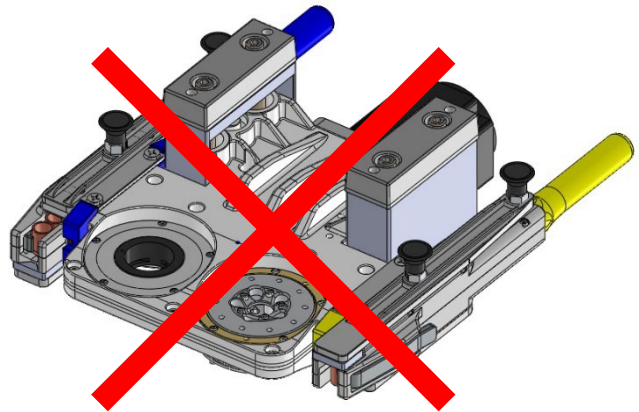
If it is mounted with <NG> position the product may get damaged.

Please kindly install it with correct position.

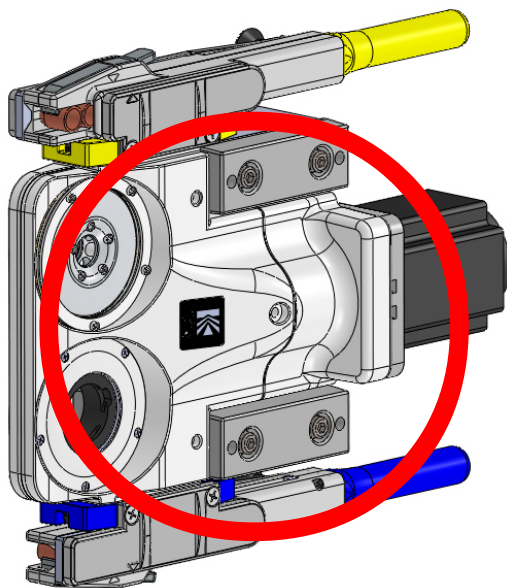
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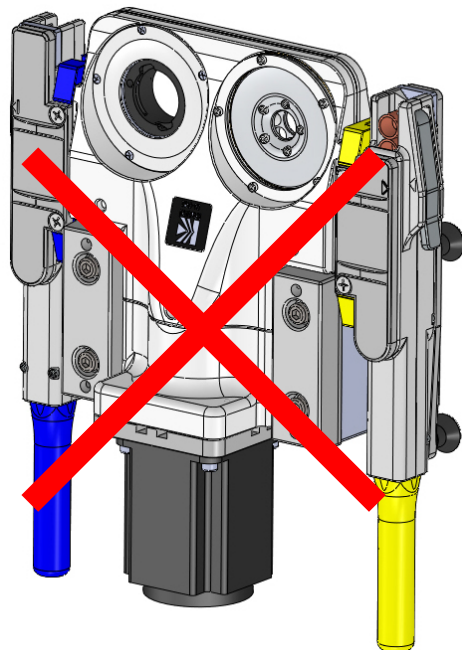
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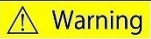

Attention to Safety

■Please read the “Attention to Safety” carefully before using the device.



This product is intended for dressing and changing damaged cap tips in the welding line. This product is not to be used in any manner other than that which is specified within. We will not be held responsible for damage or injury caused as a result of misuse of this product.

■SYMBOLES

This following symbols “Warning” and “Caution”, are used indicate possible hazards and to prevent their occurrence.








 Warning	It indicates contents informing possibilities of death or serious injury in case of incorrect handling.
 Caution	It indicates contents informing possibilities of injury due to handling error or occurrence of material damages.

■The following symbols are explained below.

	This symbol indicates operations that should not be done.
	This symbol indicates operation that should be done.

※After reading, please the manual to the place where you can check the manual.

 **Warning**

	Absolutely never disassemble or reconfigure this machine or its parts. ○ This could result in operation malfunction, ignition, or injury.		Do not insert a finger or hand into gear opening while in operation. ○ This will result in serious injury.
	Avoid as much contact with water as possible. ○ This could result in operation malfunction (short), electrical shock or ignition.		Remove the spatter, which covers the tip dresser periodically. ○ Spatter build-up can cause operation malfunction or ignition resulting in injury.
	Be sure to switch off the power supply, when removing or repairing wiring. ○ Will cause electrical shock.		Do not use acidic or chlorine detergents for maintenance purposes. ○ Poisonous gas may be generated from the detergents, causing a possible health risk.
	Remove any oil that may accumulate on the tip dresser. ○ Spatter could cause ignition and possible Injury.		

 **Caution**






	Firmly fix tip dresser to stand. ○ If the Tip Dresser is not fixed tightly in operation, poor dressing and other problems could occur.		Be sure that the motor is not locked up. ○ This could result in overheating and possible ignition.
	Do not use any cutter or holder other than that which is intended and specified. ○ Use of an unspecified cutter or holder, could result in damage.		Do not install near the thermal generation source of the welding machine. ○ This could cause trouble and accidents.
	Do not install between a welding machine and a transformer. ○ Strong magnetic forces and heat can be dangerous and possibly cause malfunctions or ignition.		

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Servo Motor Specification

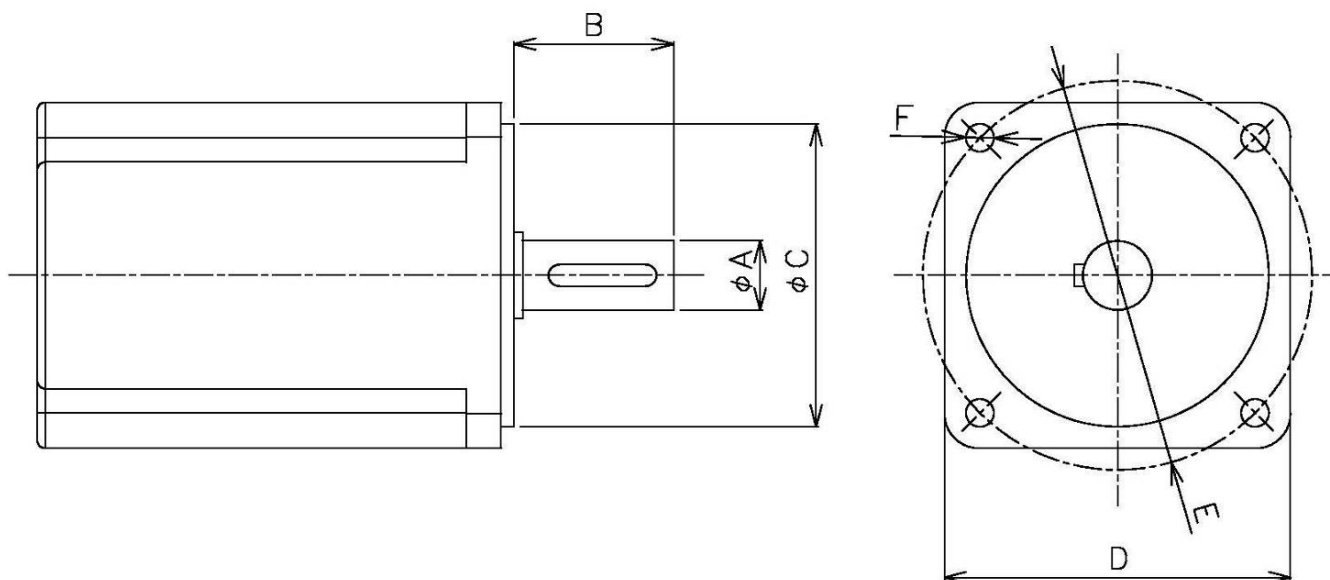
■Servo Motor Condition

Rated Rotation Speed	More than 3,000rpm
Rated Torque	2.4N · m ~ 3.1N · m
Maximum Torque	More than 7N · m
Recommendation Control Method	Speed Method
Other	With Key / Straight Shaft

⚠ Caution

**Set servo motor torque lower than 7N · m, rpm lower than 3,000.
Too high torque and rpm may cause damage on the unit.**

■Servo Motor Dimension

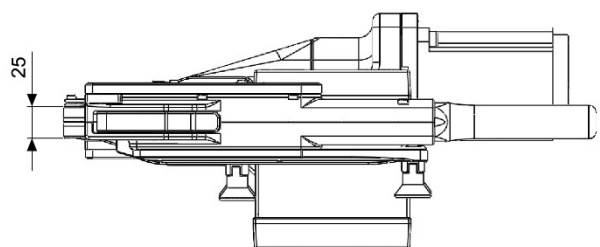
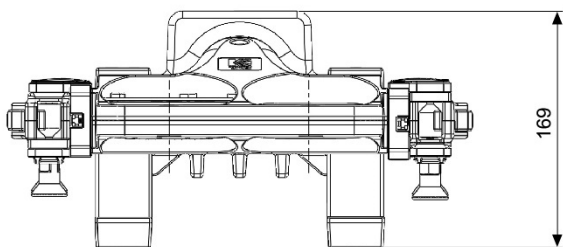
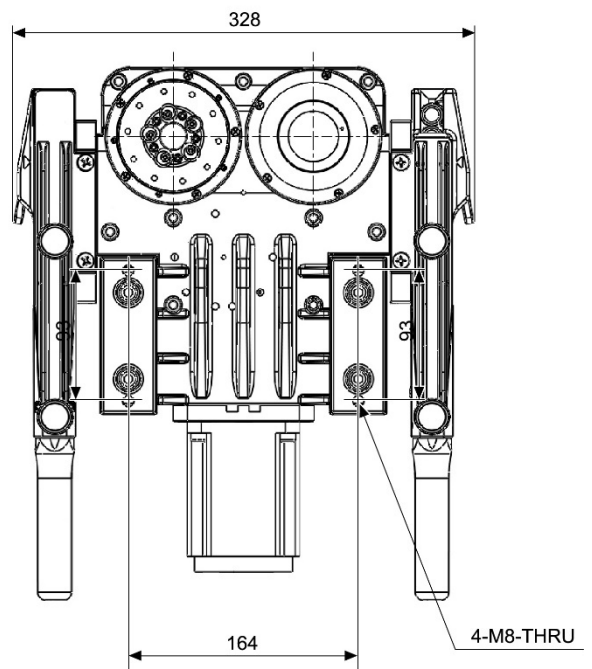
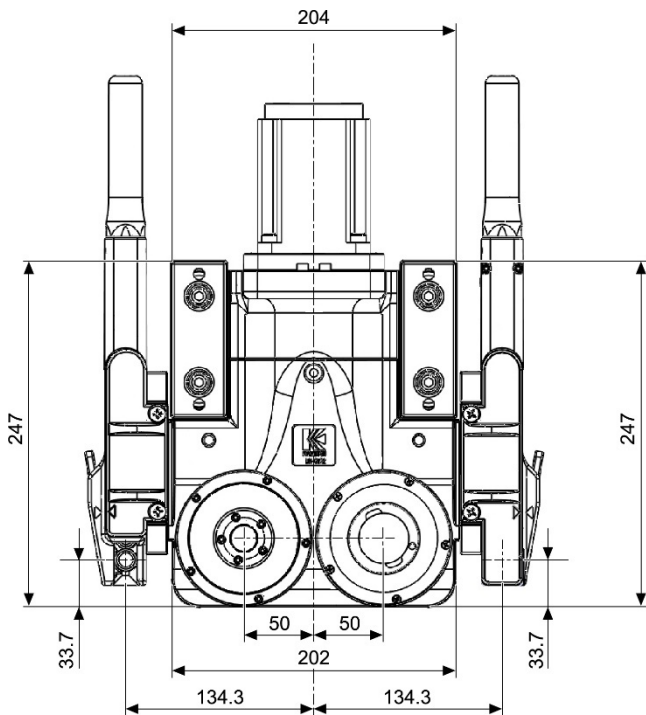


φA	φ14, φ16, φ19
B	30~40
φC	φ70, φ80
D	Less than 100 × 100
E	P.C.D. φ90, φ100
F	M5 or M6

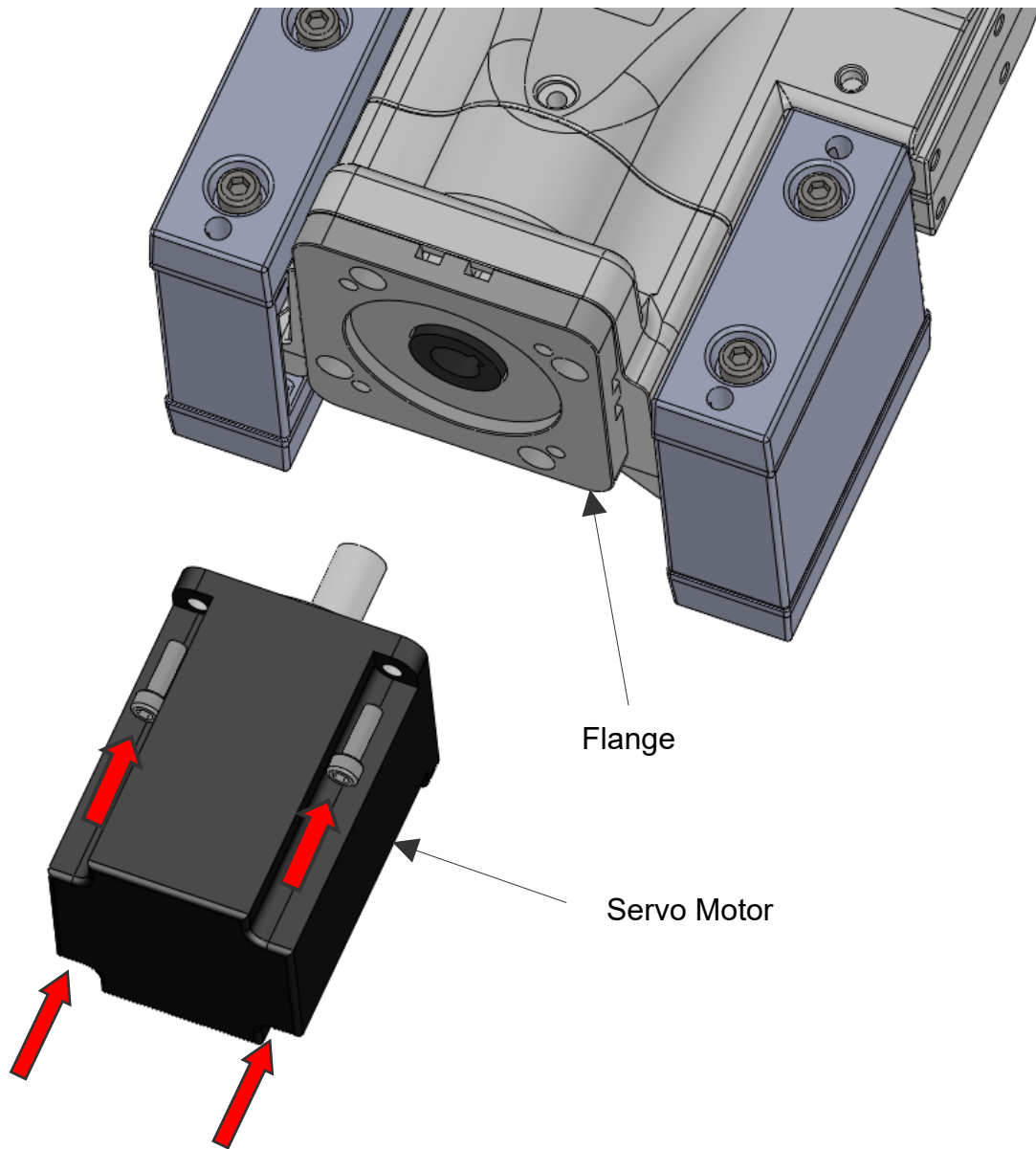
※If another servo motor is requested to be used, please contact us to confirm.

Specification

Reduction Ratio	1 : 11.7	
Dresser Rotation Speed	Output Rotation Speed	Approx. 300rpm (Recommended)
Tip Changer Rotation Speed	Output Rotation Speed	Approx.30rpm (Recommended)
Weight	Gross Weight	12.36kg
	Main Unit	9.7kg
	Adapter Block	2×800g=1.60kg
	Cartridge	2×530g=1.06kg
	※Servo motor is not included in the gross weight.	



Servo Motor Installation



Mount a motor on a flange with 4 cap bolts as picture shows.
Please make sure the screw won't be inserted more than 10mm.

- M6 required torque : $9.1\text{N} \cdot \text{m}$
- M5 required torque : $5.4\text{N} \cdot \text{m}$

※Loctite (middle level) is recommended to be used.

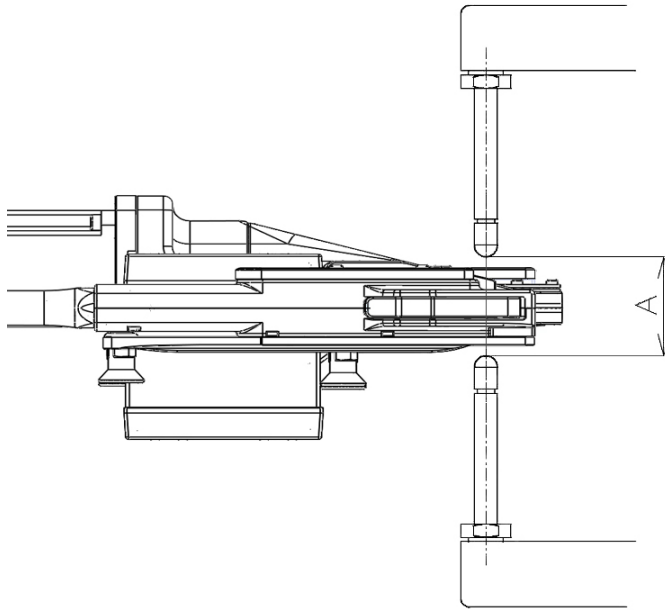
Selecting Guns

■Conditions that can be dressed

(Same procedure for both X-gun and C-gun. Refer to diagram 1, 2)

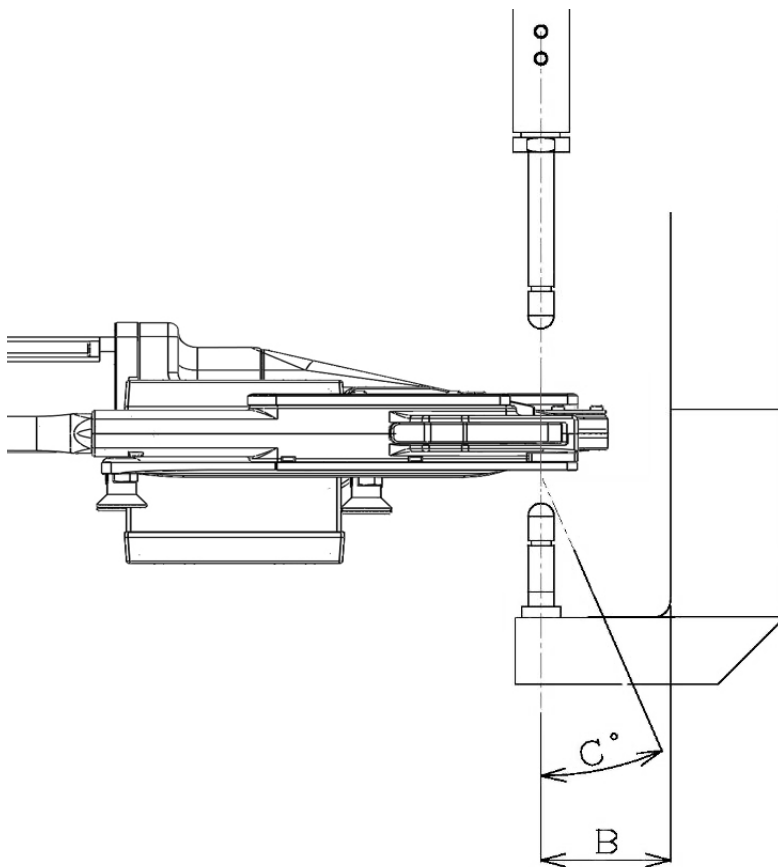
1. Measurement A must be 30mm or more.
Tip opening smaller than 30mm might interfere with the gear box of the main body.
※Some cutter require more than 35mm for tip opening.
2. Measurement B must be more than 54mm.
Smaller than 54mm: Possibility of interfering with the gear box of main body.
3. Tips with angles : Angle C = up to 15°
Please contact our sales department for special cap tips, angled guns, etc.
4. Recommended gun pressure for dressing is from 1470[N]~1960[N](150kgf~200kgf)
When set under 1078[N], the decrease in dressing amount can lead to welding problems.
Down pressuring is needed in above cases.
Please contact our sales department for special cutters, etc.

Diagram 1



A: Tip opening must be larger than 30mm.

Diagram 2



B: Must have more than 54mm, due to the interference with the gun.

C: Maximum up to 15° can be dressed

Cautions When Setting Dressing Position

■ATTENTION

1. Set the tips vertically to the equalizing. (Refer to Diagram 3)
2. With X guns, set the pressuring position like it is shown in diagram 4.
3. As shown in diagram4, please set the dressing point horizontal to the pressuring point. If the requirements above are not fulfilled, it may lead to poor dress or putting eccentric load to the output gear causing a seizure of bearing or the gear to wear down on one side.
4. The equalizing unit is equipped standardly, but please set the dressing position as properly as possible.
5. Since the pressuring point of changes when using a vertically set C-gun which has an equalizer, please confirm the pressuring point when teaching the robot. (Refer to Diagram 4)

Diagram 3

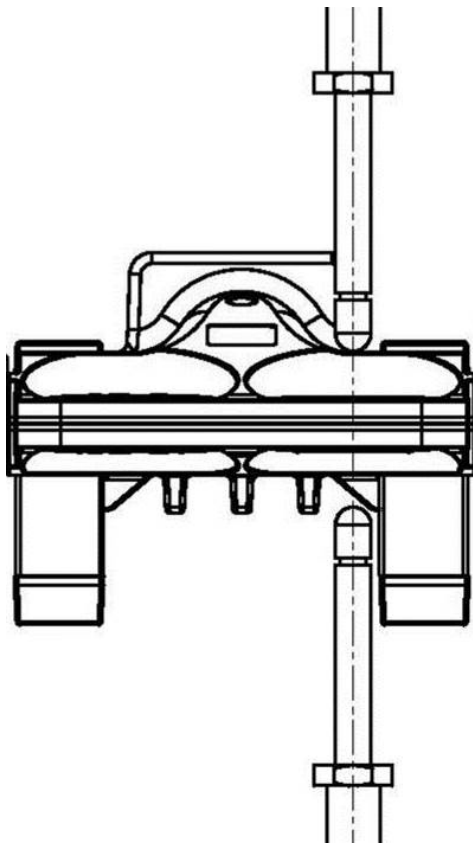
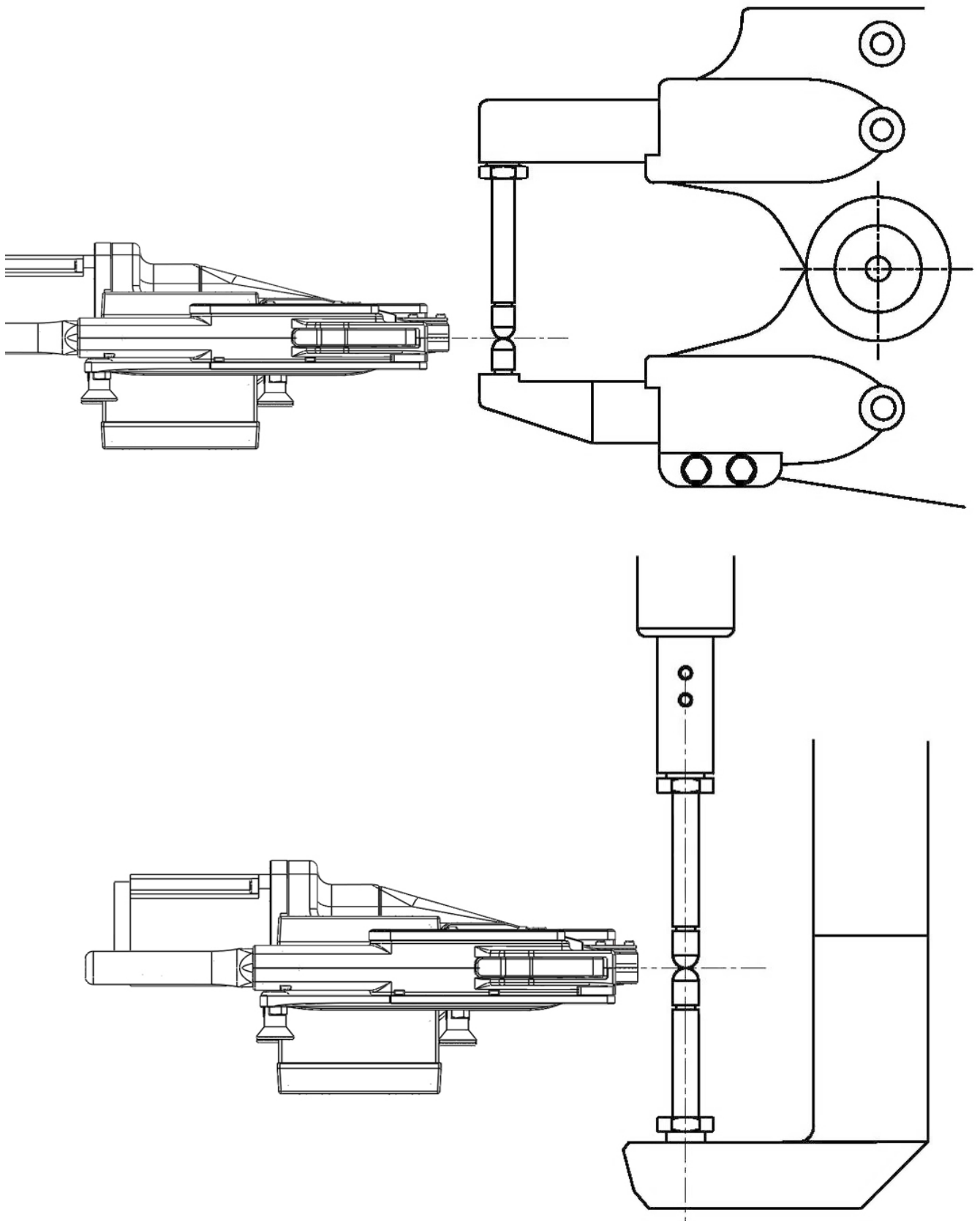



Diagram 4



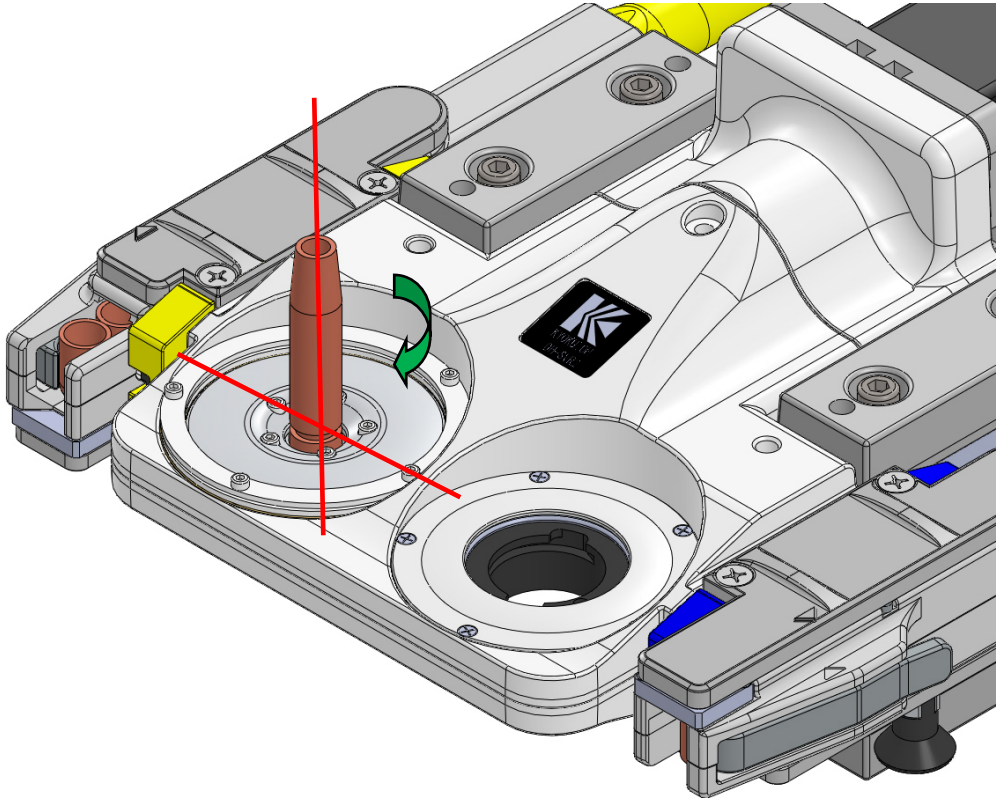
Tip Changing Procedure (Teaching)

Process	Contents
Startup Preparation	<p>About rotation direction notation</p> <p>Clockwise Rotation → Clockwise viewed from above the main body</p> <p>Counterclockwise Rotation → Counterclockwise viewed from above the main body</p>
Tip Removing Process (Lower)	<p>Tip Remaining (Proximity Sensor) ON Confirm</p> <p>* When Proximity Sensor is OFF, stop operation due to the absence of cap tips</p> <p style="text-align: center;">↓</p> <p>「Counterclockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p>After more than 2sec 「Counterclockwise Rotation」 OFF</p> <p style="text-align: center;">↓</p> <p> Caution Hold coolant water in a weld gun</p> <p style="text-align: center;">↓</p> <p>Entering of lower tip (To changing position REFER to P.15)</p> <p style="text-align: center;">↓</p> <p>「Clockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p>After about 0.5sec, move the gun 3mm below</p> <p>* Set in a speed of about 100mm/sec</p> <p style="text-align: center;">↓</p> <p>Move the gun 10mm below</p> <p>* Set in a speed of under 200mm/sec (Stop operation when unusual factor is found)</p> <p style="text-align: center;">↓</p> <p>Move the gun below (Escape)</p> <p style="text-align: center;">↓</p> <p>「Clockwise Rotation」 OFF</p> <p style="text-align: center;">↓</p> <p>Set the gun in front of the device</p> <p style="text-align: center;">↓</p> <p>「Counterclockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p>After more than 2sec 「Counterclockwise Rotation」 OFF</p>
Tip Setting Process (Lower)	<p>Move the gun in front of lower tip setting position</p> <p style="text-align: center;">↓</p> <p>Set the NEW cap tip by pressuring (Recommendation 1000N)</p> <p style="text-align: center;">↓</p> <p>(Make sure the cap tips are set properly by using simple gun search)</p>

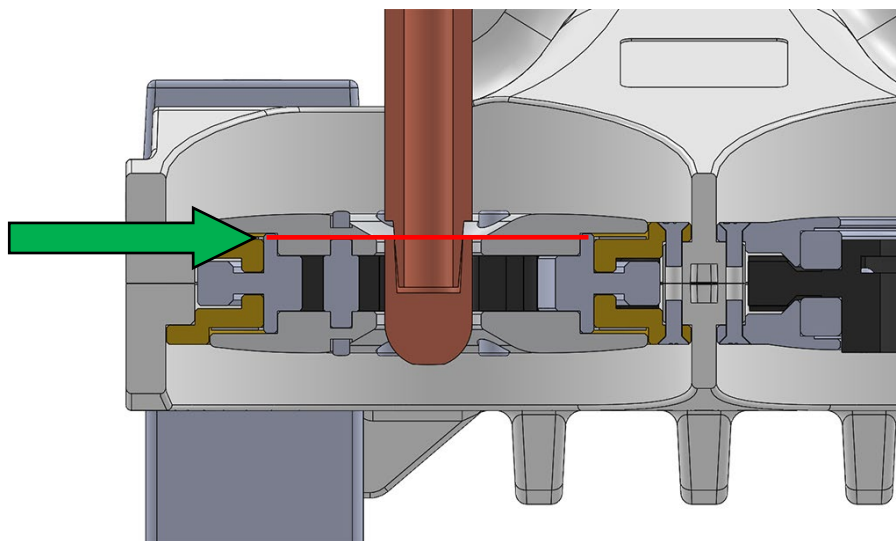
<p>Tip Removing Process (Upper)</p>	<p style="text-align: center;">「Counterclockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">After more than 2sec 「Counterclockwise Rotation」 OFF</p> <p style="text-align: center;">↓</p> <p style="text-align: center;"> Caution Hold coolant water in a weld gun</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Entering of upper tip (To changing position REFER to P.15)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">「Clockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">After about 0.5sec, move the gun 3mm above</p> <p style="text-align: center;">* Set in a speed of about 100mm/sec</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Move the gun 10mm above</p> <p style="text-align: center;">* Set in a speed of under 200mm/sec (Stop operation when unusual factor is found)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Move the gun above (Escape)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">「Clockwise Rotation」 OFF</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Set the gun in front of the device</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">「Counterclockwise Rotation」 ON (Output Rotation speed 30rpm/Servo Motor Rotation speed 350rpm)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">After more than 2sec 「Counterclockwise Rotation」 OFF</p>
<p>Tip Setting Process (Upper)</p>	<p style="text-align: center;">Move the gun in front of upper tip setting position</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Set the NEW cap tip by pressuring (Recommendation 1000N)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">(Make sure the tis are set properly by using simple gun search)</p>

■Supplement

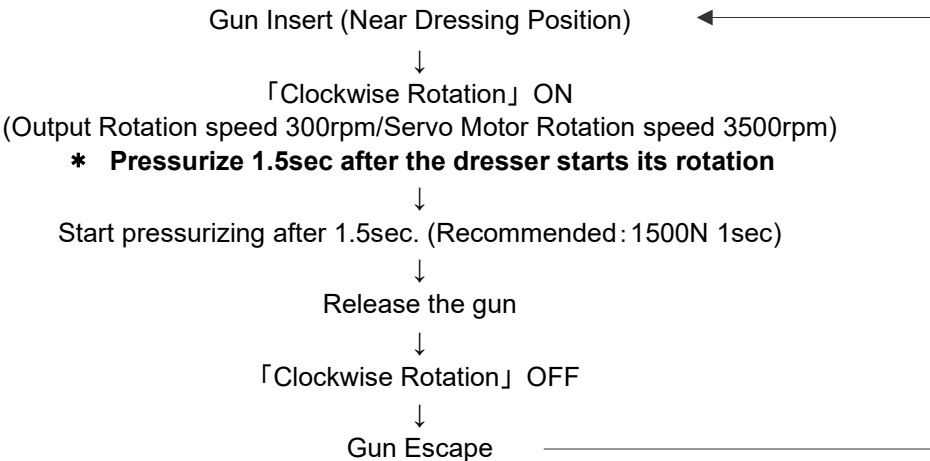
1. When removing tips, please make sure the shank is inserted vertically and horizontally. Inserting with tilt may cause the changer to not remove the tip properly.



2. Set a cap tip position so that end of cap tip and lower end of taper on remover unit are horizontally aligned to be removed properly.(So does lower side)

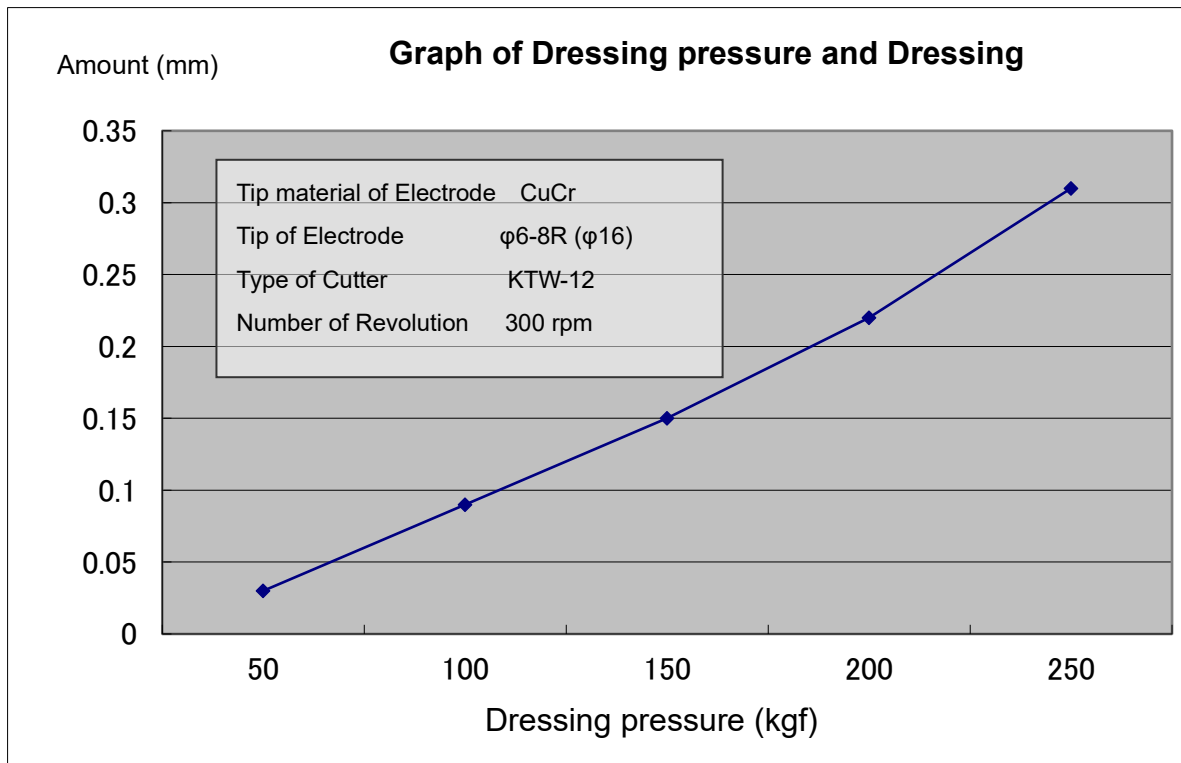


Tip Dressing Procedure (Teaching)

Process	Contents
Startup Preparation	<p>About rotation direction notation</p> <p>Clockwise Rotation → Clockwise viewed from above the main body Counterclockwise Rotation → Counterclockwise viewed from above the main body</p>
Dressing Cycle	 <pre> graph TD A[Gun Insert (Near Dressing Position)] --> B["「Clockwise Rotation」 ON (Output Rotation speed 300rpm/Servo Motor Rotation speed 3500rpm) * Pressurize 1.5sec after the dresser starts its rotation"] B --> C["Start pressurizing after 1.5sec. (Recommended: 1500N 1sec)"] C --> D[Release the gun] D --> E["「Clockwise Rotation」 OFF"] E --> F[Gun Escape] F --> A </pre> <p style="text-align: center;">Gun Insert (Near Dressing Position) ←</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">「Clockwise Rotation」 ON (Output Rotation speed 300rpm/Servo Motor Rotation speed 3500rpm) * Pressurize 1.5sec after the dresser starts its rotation</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Start pressurizing after 1.5sec. (Recommended: 1500N 1sec)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Release the gun</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">「Clockwise Rotation」 OFF</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">Gun Escape</p>

Cutter Ability and Dressing Time

■In the case of KTW



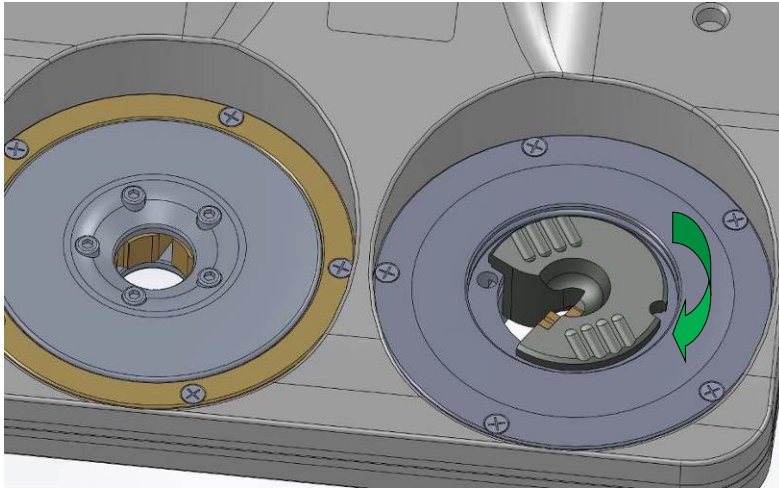
■Reference of Dressing Time

The graph above shows the amount dressed with 1 sec (length wise) of a new cap tip.

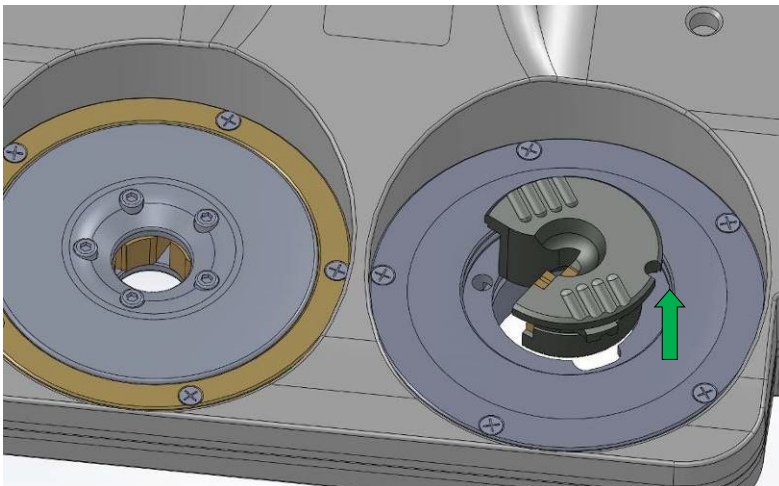
- Refer to the table above and set the pressure, time, and amount of dress.
 - Adjusting by Pressure, If aiming 0.1mm by 1ssec dress, Set pressure to 110kgf.
 - Adjusting by Time, If aiming 0.1mm dress with a pressure of 150kgf, Set dressing time to 0.7sec.
- Time written above is a reference of an initial dressing time.
When improper dressing is seen after use, please reset to a proper welding condition.
- ◆ Usually, when dressing a ca tip that has finished 200 points of welding, it can be dressed in about 1~2seconds using a KTW series cutter.

How to Change Cutters

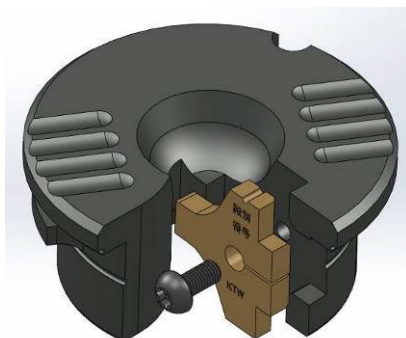
1. Rotate the holder clockwise.



2. Remove cutter & holder from the dresser.



3. Unscrew the M3 torque screw from the cutter/holder and remove the cutter.



4. Set the cutter.

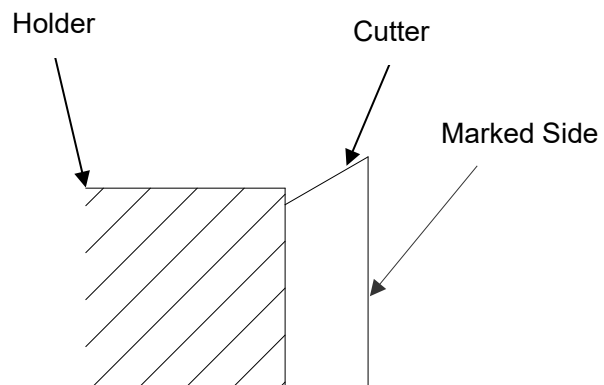
Please be careful of the way the cutter is facing.

The angle which is going towards the holder must be facing the holder.

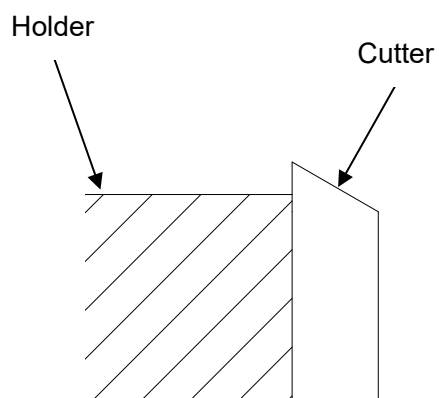
(The face with mark must be facing the front)

(Recommended screwing torque of the screw is 10-12kgf • cm)

OK



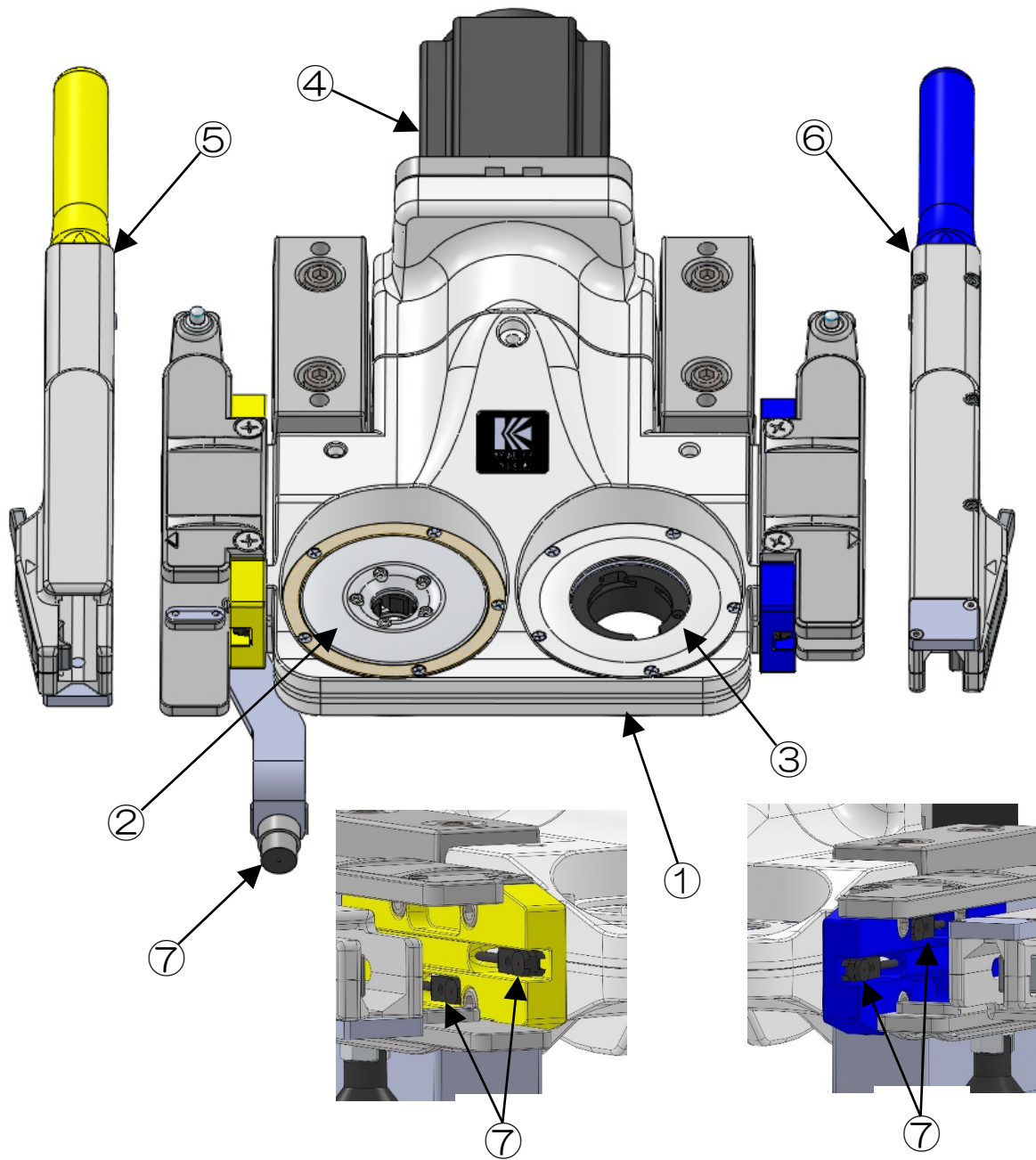
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5. Set the holder to the dresser by doing #1-2 reverse.

Parts List

No.	Name	Type	QTY	Notes
1	Main Body	DH-SVR2S-R**-S**-F**	1	
2	Changer Unit	DH-SVR2-R**-SET	1	
3	Dressing Unit	DHSVR2-H-SET	1	
4	Servo Motor		1	
5	Upper Cartridge	STC-****-U	1	Refer to STC Instruction manual
6	Lower Cartridge	STC-****-L	1	Refer to STC Instruction manual
7	Proximity Sensor	DHSVR2S-SE-Pac-NPN	1	Option







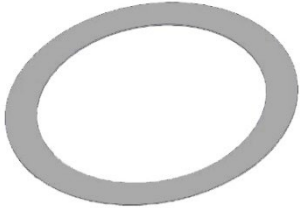
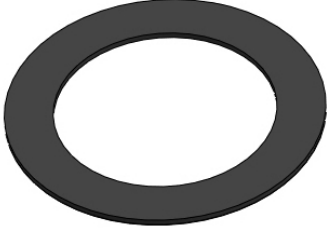
Troubleshooting

Abnormal Condition	Cause and Countermeasure
Dresser does not rotate.	<ul style="list-style-type: none"> * Servo motor is not rotating → Check the power source. * The gun pressure is higher than specified by our company. → Set gun pressure under 1960N(200kgf). * The shapes of the cutter and the cap tip are not fitting, and cling each other. → Check the cutter shape and replace it if necessary.
The motor is running but the cutter does not rotate.	<ul style="list-style-type: none"> * Gear in the gear box is broken. → Need repair to replace the gear.
The diameter of the dressed cap tip is different from the setting.	<ul style="list-style-type: none"> * Dressing time is too short. → Set the dressing time to the tip that has been crushed most. * The cutting capability of the cutter has deteriorated or the cutter has been damaged. → Replace the cutter and check the gun pressure. * Dressing point is not proper. → Re-do teaching. * The cutter is not suitable for the cap tip. → Check the cutter shape and replace it if necessary. * Gear in the gear box is broken. → Need repair to replace the gear. * The screw which fastens the cutter to the holder is loosen. → Tighten the screw.
Abnormal sound during dressing.	<ul style="list-style-type: none"> * Dressing point is not proper. → Re-do teaching. * The cutter has been damaged. → Replace the cutter and check the gun pressure.

Abnormal Condition	Cause and Countermeasure
Dresser leaves burr on the cap tip.	<ul style="list-style-type: none"> * The control method is not proper. → Release the gun while dresser is revolving, and then stop the dresser. * The shapes of the cutter and the cap tips are not fitting. → Check the cutter shape and replace it, if necessary. * The cutter has been damaged. → Replace the cutter and check the gun pressure. * The screw which fastens the cutter to the holder is loosen. → Tighten the screw.
The tip diameter is not at the center or the designated location.	<ul style="list-style-type: none"> * The cap tip has got too short. → Replace the cap tip to new one. * Dressing position is not proper. → Re-do teaching.
The point of the cap tip is an oval, not a circle	<ul style="list-style-type: none"> * The bolts that fasten the motor and the gear box are loosen. → Tighten the bolts. * The bolts that fasten the dresser to the stand are loosen. → Tighten the bolts
Dressing does not complete in the set time	<ul style="list-style-type: none"> * Dressing time is too short. → Set the dressing time to the cap tip that has been crushed most. * The cutting capability of the cutter has deteriorated or the cutter has been damaged. → Replace the cutter and check the gun pressure. * The cap tip is soften after welding, the point of the cap tip gets widened. → Increase the dressing pressure gradually according to the time of dressing a cap tip when it is with gun voltage valve.
<p><Remarks></p> <ul style="list-style-type: none"> ◆ Please be sure the switch is off when you are checking or replacing parts or the cutter. ◆ When the dresser is out of order, please contact us immediately. Do not take the dresser apart. It would not be able to repair if you disassemble it. 	

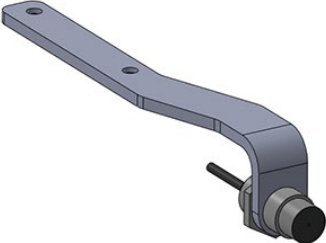

Consumption Parts List

<div style="border: 1px solid black; padding: 5px; display: inline-block;"> Outsourced Product </div>	<p>For Dresser : Bearing Type Name : 6810-2NS Qty. Needed : 2</p> <p>■ Changing Cycle 2 years</p>
	<p>For Dresser : Output Gear Type Name : DHSVR2-GA-001-EUR3 Qty. Needed : 1</p> <p>■ Changing Cycle 2 years</p>
	<p>For Changer : Output Gear Type Name : DHSVR2-GA-002 Qty. Needed : 1</p> <p>■ Changing Cycle 2 years or 5,000 times</p>
	<p>For Changer : Nails Type Name : SRV-P-N** ※ ** = Diameters of using tip. (For φ16 : SRV-P-N-16) Qty. Needed : 5</p> <p>■ Changing Cycle ※2000 times.</p>
	<p>For Changer : Bush Type Name : DHSVR2-P-005 Qty. Needed : 2</p> <p>■ Changing Cycle ※When nails are changed</p>

	<p>For Changer : Wave Washer Type Name : WW-60 Qty. Needed : 2</p> <p>■ Changing Cycle ※2000 times.</p>
	<p>For Changer : O type Bush Type Name : SRV-O-5679 Qty. Needed : 2</p> <p>■ Changing Cycle ※2000 times.</p>

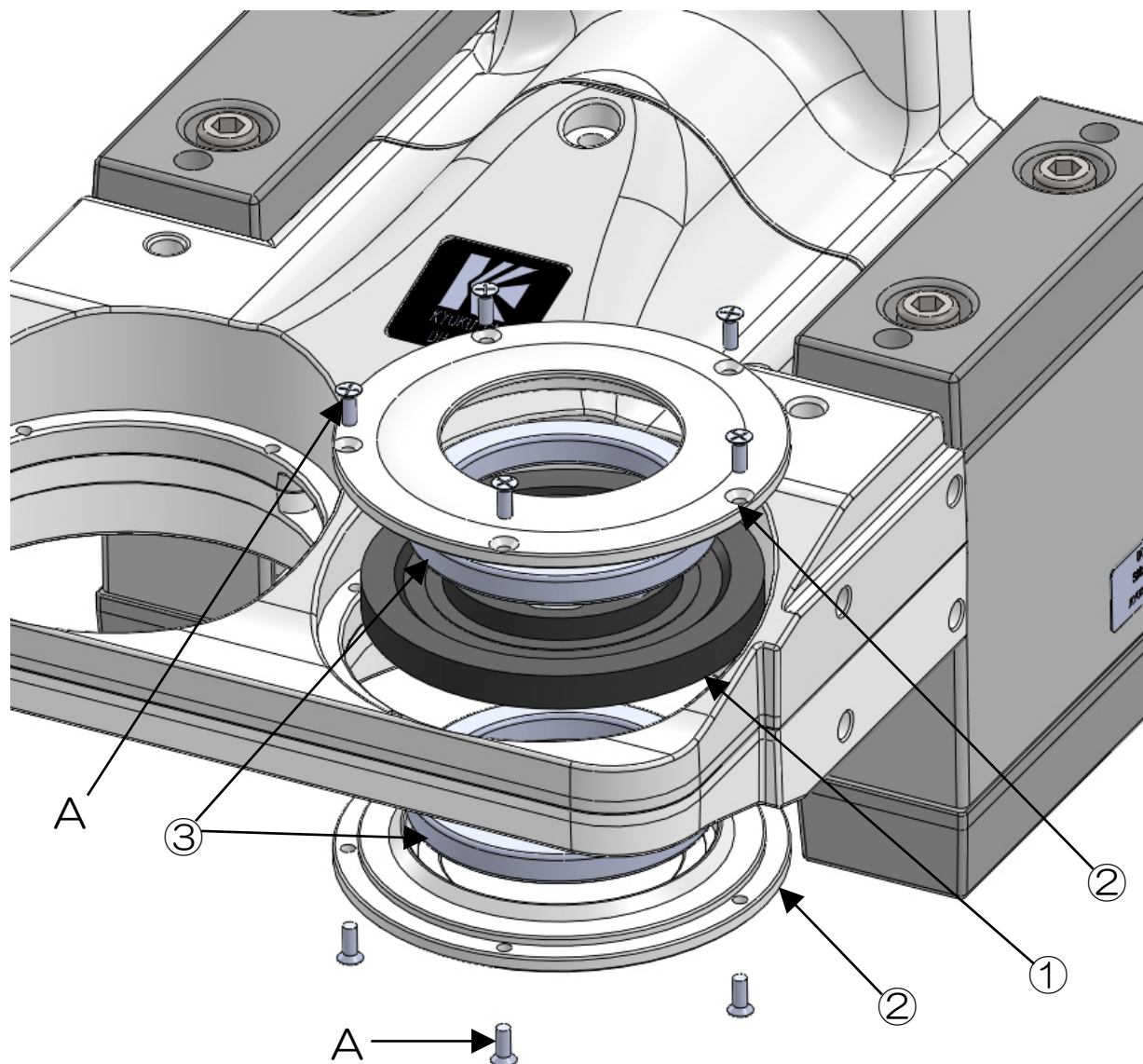
※When left without using for a long time, the gris put on the bush may start separating.
Please spray grease when using after leaving it un-operate for a long time.

Option

	<p>Sensor Pack Type Name : DHSVR2S-SE-Pac-NPN Qty. Needed : 1</p> <p>■ Single item GX-18MLU (for main body) DHSVR2-SBR-01-001 (for GX-18 bracket)</p> <p>GX-F8A (for adapter block) GX-F8B (for adapter block)</p>
	

Dressing Unit Configuration Diagram

No.	Name	Type	QTY
1	KTWH-EUR Output Gear	DHSVR02-GA-001-EUR3	1
2	Dresser Bush	DHSVR02-P-004	2
3	Bearing	6810-2NS	2
A	S SUS Countersunk Screw	M3×8L	10



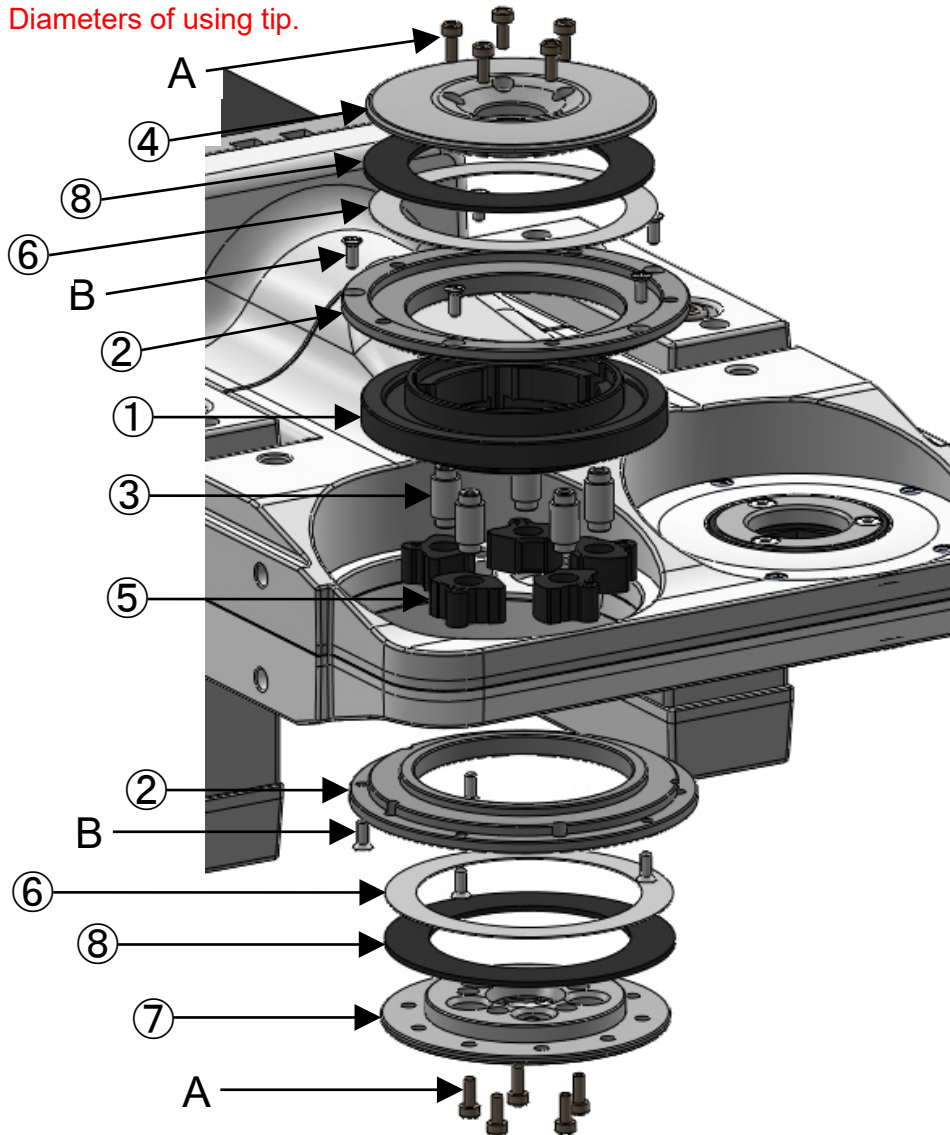
■ Replacement Procedure of Bearing and Output Gear

1. Remove the 5 screws of A (upper side).
2. Remove the cover (bush) parts. ②
3. Remove the output gear/bearing. (Part #1, 3)
4. Assemble the replacing parts and put ② back into its original position.
5. Replace the 5 screws of A. (Screwing Torque 0.95N · m · with Loctite)

Changer Unit Configuration Diagram

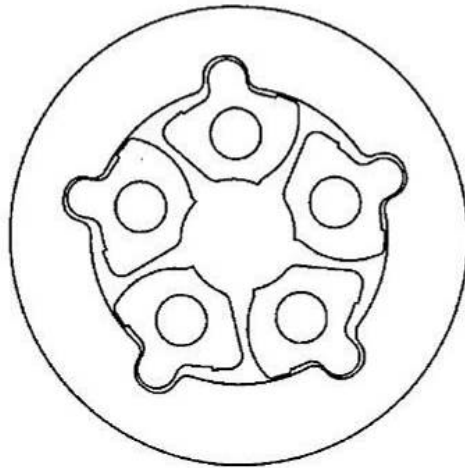
No.	Name	Type	QTY
1	Output Gear for Changer	DHSVR02-GA-002	1
2	Bush	DHSVR02-P-005	2
3	Shaft	SRV-P-S****-OLS	5
4	Cover	SRV-P-C**-OLS	1
5	Nail	SRV-P-N**	5
6	Wave Washer	WW-60	2
7	Cover	SRV-P-C**-L-OLS	1
8	O Type Bush	SRV-O-5679	2
A	SUS Cap Bolt	M3×8L	10
B	SUS Countersunk Screw	M3×8L	10

※ ** = Diameters of using tip.



■Nail Changing Procedure

1. Remove the upper 5 screws of A. (DO NOT remove the lower 5 screws)
✘Please hold a bottom cover not to drop it when screws are taken out.
2. Remove the upper cover ④.
3. Change the 5 nails ⑤, and return the cover to its original position.



4. Screw the upper 5 screws. (Recommended Screwing Torque 0.95N · m with Loctite)

■Parts Changing Procedure

1. Remove the upper 5 screws of A. (DO NOT remove the lower 5 screws)
2. Remove the upper cover ④.
3. Remove the upper 5 screws of B.
4. Remove the output gear. (When changing only the output gear, the procedures below is needless. Return the cover ④ to its position and screw the upper 5 screws.)
5. Remove the bush (Upper) ②.
6. Unscrew the 5 screws of A (Bottom).
7. Remove the cover ④.
8. Remove the lower 5 screws of B.
9. Remove the bush parts ② (Lower).
10. Assemble in the reverse order.

Type Name

■ Model variation

DH-SVR2S-□□-□□-□□-□□-□□



left side	Right side	Motor shaft Dia.	Flange Dia.	Manufacture name																				
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<table border="1"> <tr><td>R13</td></tr> <tr><td>R16</td></tr> <tr><td>R19</td></tr> <tr><td>R20</td></tr> <tr><td>HL(KTWHL用)</td></tr> <tr><td>H(KTWH-EUR用)</td></tr> </table>	R13	R16	R19	R20	HL(KTWHL用)	H(KTWH-EUR用)	<table border="1"> <tr><td>HL(KTWHL用)</td></tr> <tr><td>H(KTWH-EUR用)</td></tr> <tr><td>R13</td></tr> <tr><td>R16</td></tr> <tr><td>R19</td></tr> <tr><td>R20</td></tr> </table>	HL(KTWHL用)	H(KTWH-EUR用)	R13	R16	R19	R20	<table border="1"> <tr><td>S14</td></tr> <tr><td>S16</td></tr> <tr><td>S19</td></tr> </table>	S14	S16	S19	<table border="1"> <tr><td>F70</td></tr> <tr><td>F80</td></tr> </table>	F70	F80	<table border="1"> <tr><td>F(FANAC)</td></tr> <tr><td>N(NACHI)</td></tr> <tr><td>Y(YASUKAWA)</td></tr> </table>	F(FANAC)	N(NACHI)	Y(YASUKAWA)
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※Please contact us for servo motor since the motor specification is different by manufactures.

<For example>

- Left side → 16φ Changer
- Right side → Dresser (Output : KTWH-EUR)
- Motor shaft φ19
- Flange φ80

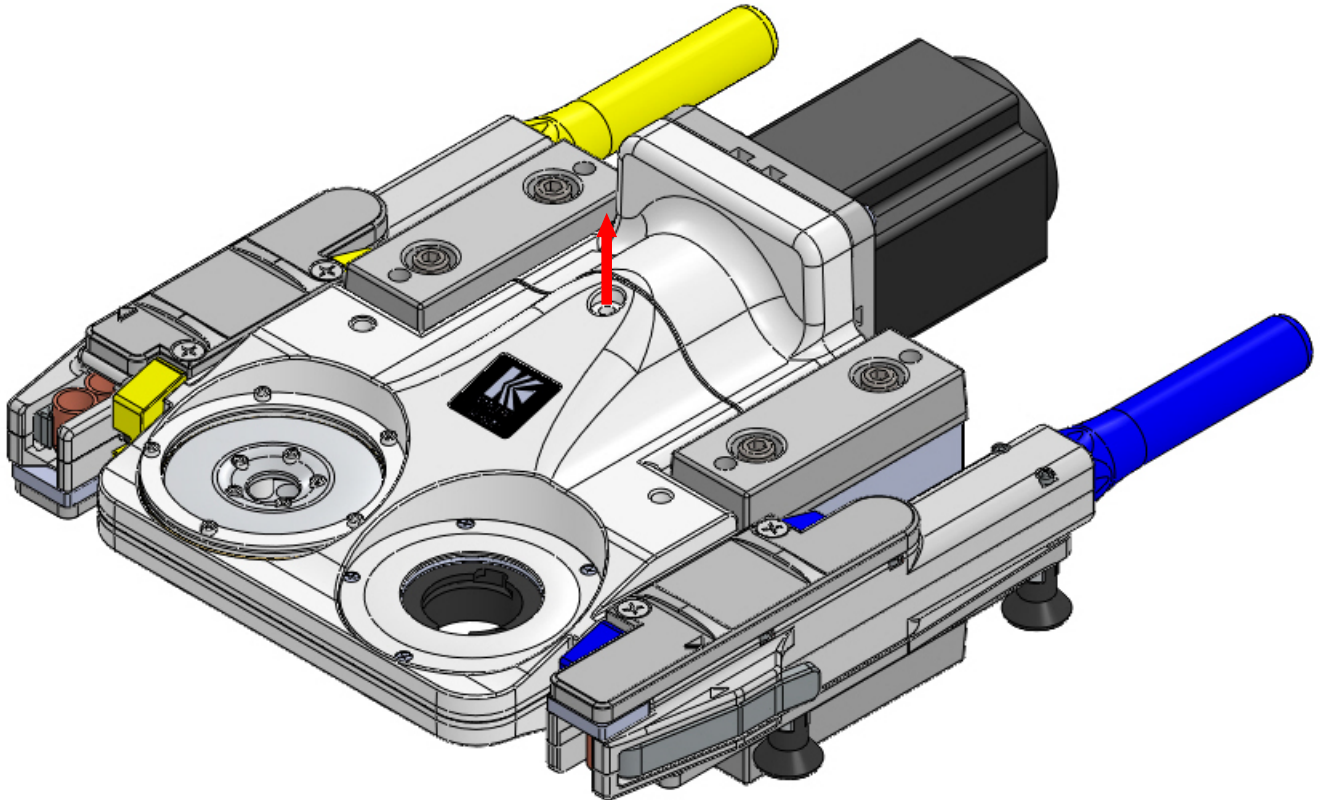
Item No. for the specification above is **【DH-SVR2S-R16-H-S19-F80-**】** .

※This manual doesn't show motor list since this is a manual for no motor specification.

Maintenance

■Greasing Procedure

It is recommended to grease 20 g once every half years.



1. Take off a cap bolt M6*6 on a gear case.
2. Set a grease nipple (M6*P=1.0) on the gear case.
※Grease nipple is not included.
3. Feed grease into the gear head by a grease gun.
※Grease: Water-resistant industrial grease, NLGI No.1
(that has excellent anti-corrosion and water resistance, which is suitable to be used in wet and damp environments.)
Lubricate once half year with 20 g (approx. 0.8 oz) for each.
Prevent foreign matter (e.g., cut pieces of wire, sputtering welding materials, iron chips, wire, and dust) from entering the equipment.
4. Take off the grease nipple.
5. Put back the cap bolt M6*6.

Contacts

Contact us if there is any damage or machine defects in our products.



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