KYOKUTOH

First Revision: 13.10.2023
Revised Edition: 11.03.2024

High Speed Auto Tip Dresser (CDF)
Instruction Manual

Please read this manual before using KYOKUTOH's High Speed Tip Dresser.

KYOKUTOH CO.,LTD.

Revision

Revision History

Version	Date	Contents
First edition	13.10.2023	First edition issue
Revised Edition	11.03.2024	P.9 Wiring pattern correction

Attention to Safety

Please be sure to read ATTENTION TO SAFETY before using CDF.

This product is intended only for the dressing of specified electrodes. 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.

Symbols

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

⚠ Warning	Be careful to follow directions as specified, as an error could lead to possible injury or death.
⚠ Caution	Be careful to follow direction as specified, as an error could lead to malfunction and serious damage.

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.**	Do not insert metallic articles such as a pins or needles in gear or terminal box opening. **This could result in operation malfunction or electrical shock.**
Be sure to switch off the power supply, when removing or repairing wiring. **Will cause electrical shock.**	Be sure that spatter does cover any wiring. **This will prevent the melting of wire membrane and a potential shock hazard.**
Remove the spatter, which covers the tip dresser periodically. **Spatter build-up can cause operation malfunction or ignition resulting in injury.**	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.**	Do not use voltage other than that which is specified. **Excess heat could cause operation malfunction and ignition.**
Be sure wire from power supply is of correct capacity. **Incorrect wiring could result in operation malfunction or ignition.**	Do not allow power supply wiring to become damaged. **Wiring damage could result in operation malfunction and ignition.**

⚠ 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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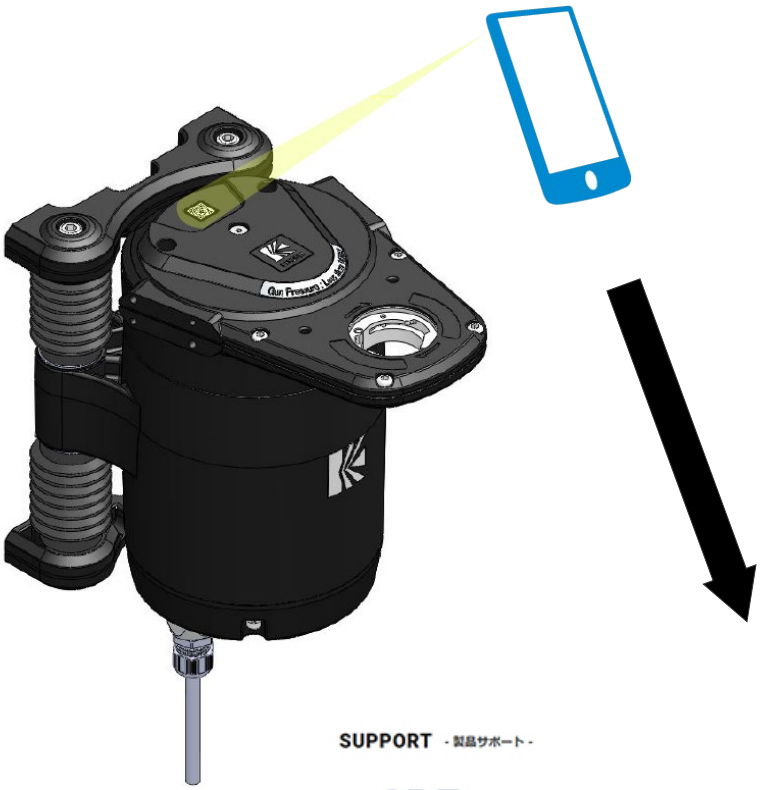
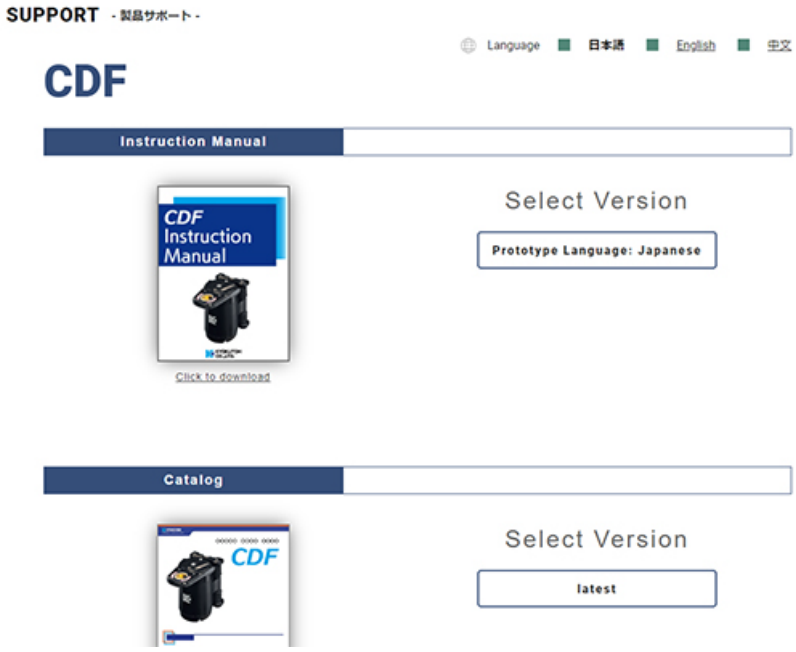
Before Using

About QR Code

The high-speed auto tip dresser ″CDF″ has a QR code pasted on the top of the main body.
When you scan this QR code with your smartphone, you will be redirected to the product support page with the latest instruction manual, catalog, teaching videos, etc.





Tip Dresser Capability

Model	Power	FREQ	Current	RPM	Torque	Power	Rated Time	Weight
CDF-200	AC200V	50 Hz	4.8 A	363 rpm	29.1 N.m	1kW	RATED OUTPUT CONTINOUS USE TIME 5 MINUTES	16kg
	AC200V	60 Hz	4.6 A	435 rpm	25.5 N.m			
	AC220V		4.2 A	435 rpm	24.4 N.m			
CDF-400	AC380V	50 Hz	3.0 A	363 rpm	28.3 N.m			
	AC400V		3.3 A	363 rpm	28.1 N.m			
	AC415V		3.6 A	363 rpm	27.9 N.m			
	AC400V	60 Hz	2.5 A	435 rpm	24.0 N.m			
	AC440V		2.7 A	435 rpm	23.2 N.m			

Feature

1. Dress upper and lower tips simultaneously, therefore, dressing time is reduced.
2. Exclusive cutter enables cap tips to be dressed with the pressure 1,470N.
3. Floating mechanism greatly reduces stress on welding gun and dresser.

Criteria for Dressing Guns

Conditions that can be dressed

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

1. If A dimension is less than 22mm, this dresser is not suitable, because it may contact gearbox.
   ※Some special cutters require up to 25 mm.

2. If B dimension is less than 47mm, this dresser is not suitable, because it may interfere with gearbox.

3. Cap tip with "C" angle up to 15 degrees can be dressed.
   When using the eccentric tips or guns with angle, please contact us.

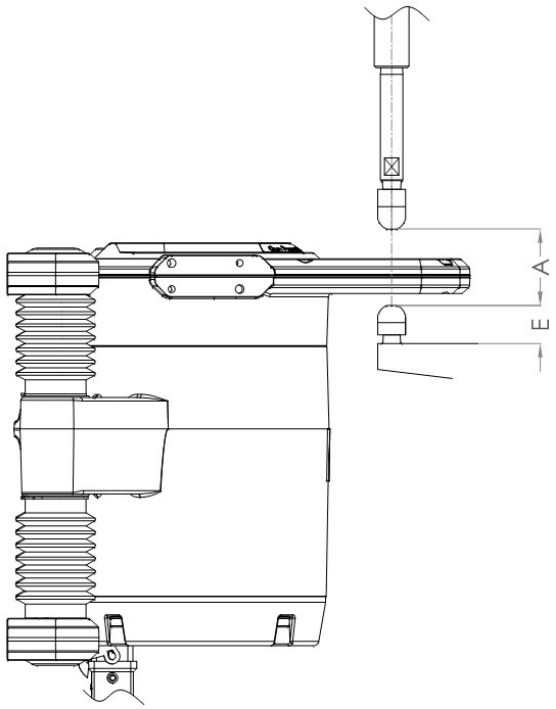
4. When the length of shank of D dimension is long, contact us for solution.

5. The base tip and insert electrode require a particular cutter. (E dimension)
   We will customize the cutter if you could provide us the gun and tip drawings.

6. Recommended dressing force is 1,470N.
   High dressing pressure from 1,470N might make the dresser stop or damage the cutter and holder, depending on the shape of cap tips. In this case, please reduce the dressing pressure. If it is impossible to reduce the pressure, please contact us.

7. Select a cutter well suited to the tip shape.

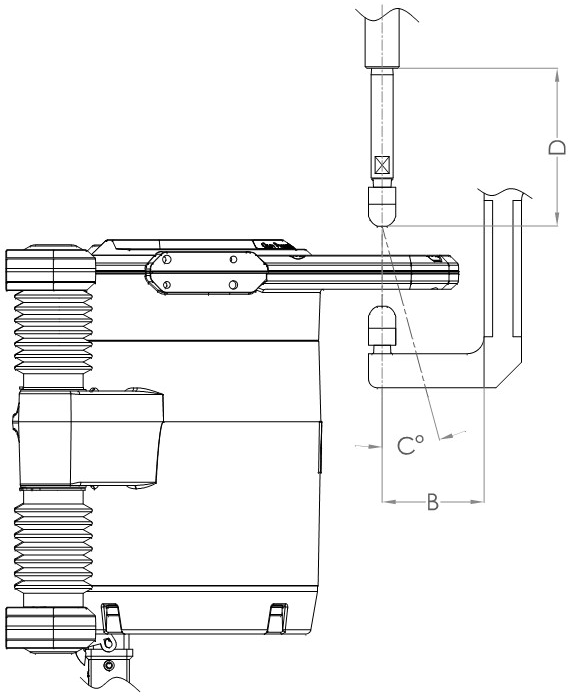
Figure 1



A: Tip opening needs over 22mm.

E: The special cutter should be used for the shorter tips.

Figure 2



D: Concentricity guide required,
If this is over 90mm－ϕ16
70mm－ϕ13

C: Maximum 15 degrees is acceptable.

B: To avoid interference with gearbox, 47mm.

Cautions for Positioning the Dressing

Attention

1. The tip should be set parallel to floating mechanism. (See figure 3)

2. For X-guns, set the dressing location to the pressurization location. (See figure 4)

3. For C-guns, set the dressing location even level with pressurization location, otherwise it might cause poor dressing or damage gears and bearings.

4. Although the floating mechanism is installed in dresser, we also recommend that you locate the dressing position as closely as possible.

5. Dressing horizontally C-Guns vertically set with equalizing mechanism is difficult to keep weight balance of springs, and pressurization point could easily change. So in this case, please make sure of pressurization point very well when you teach robots. (See figure 4 and 5)

Figure 3

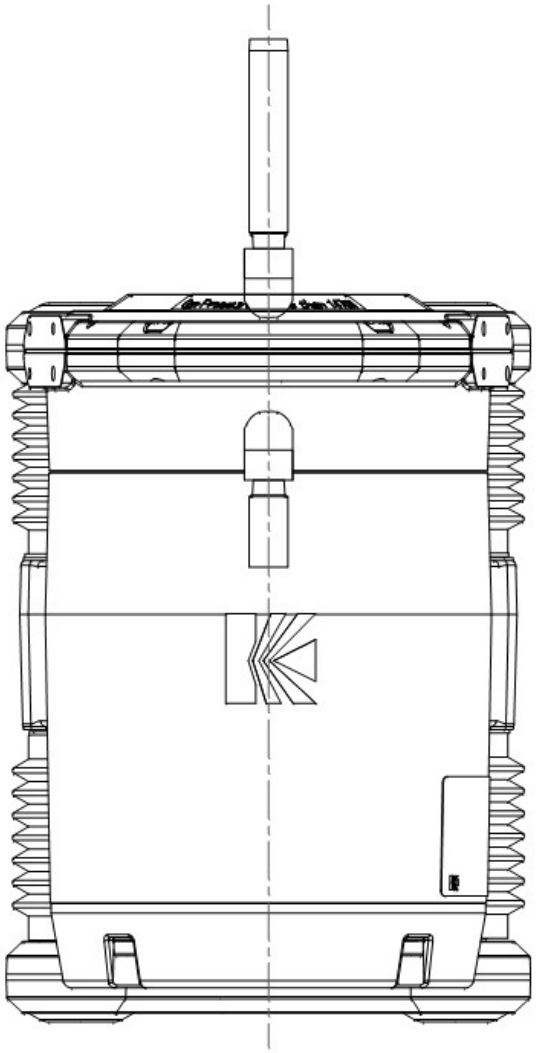


Figure 4

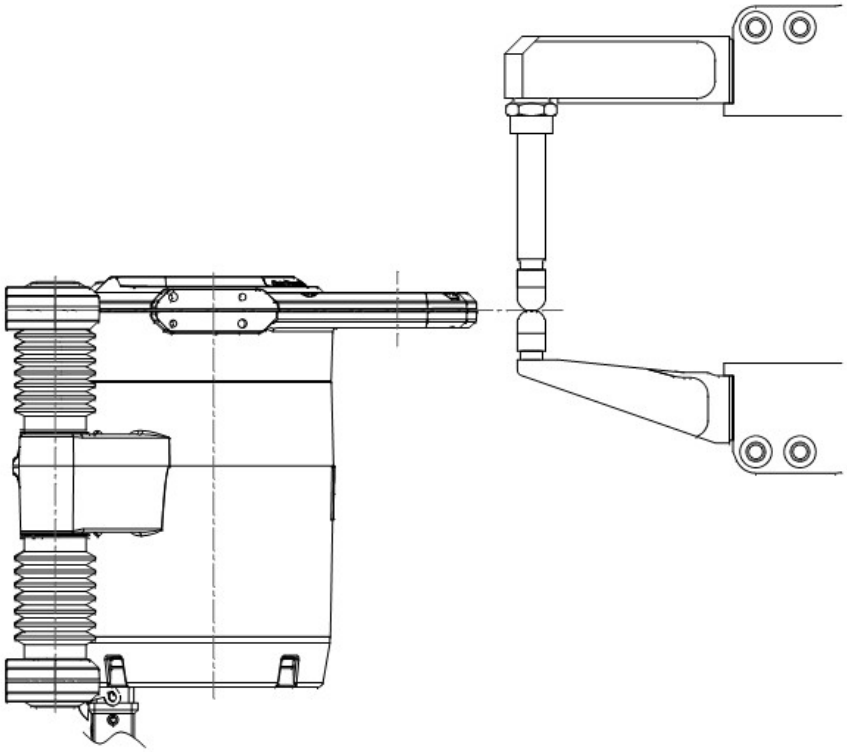
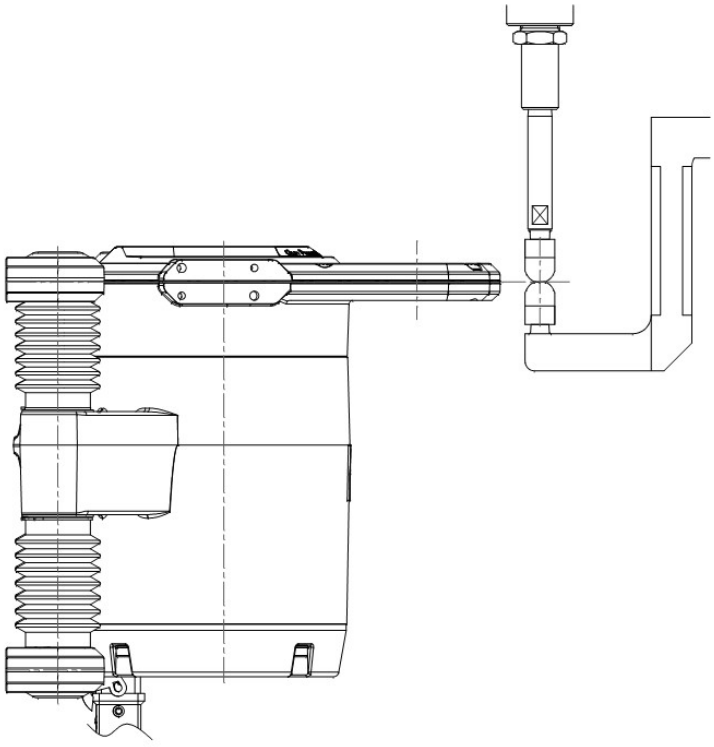


Figure 5

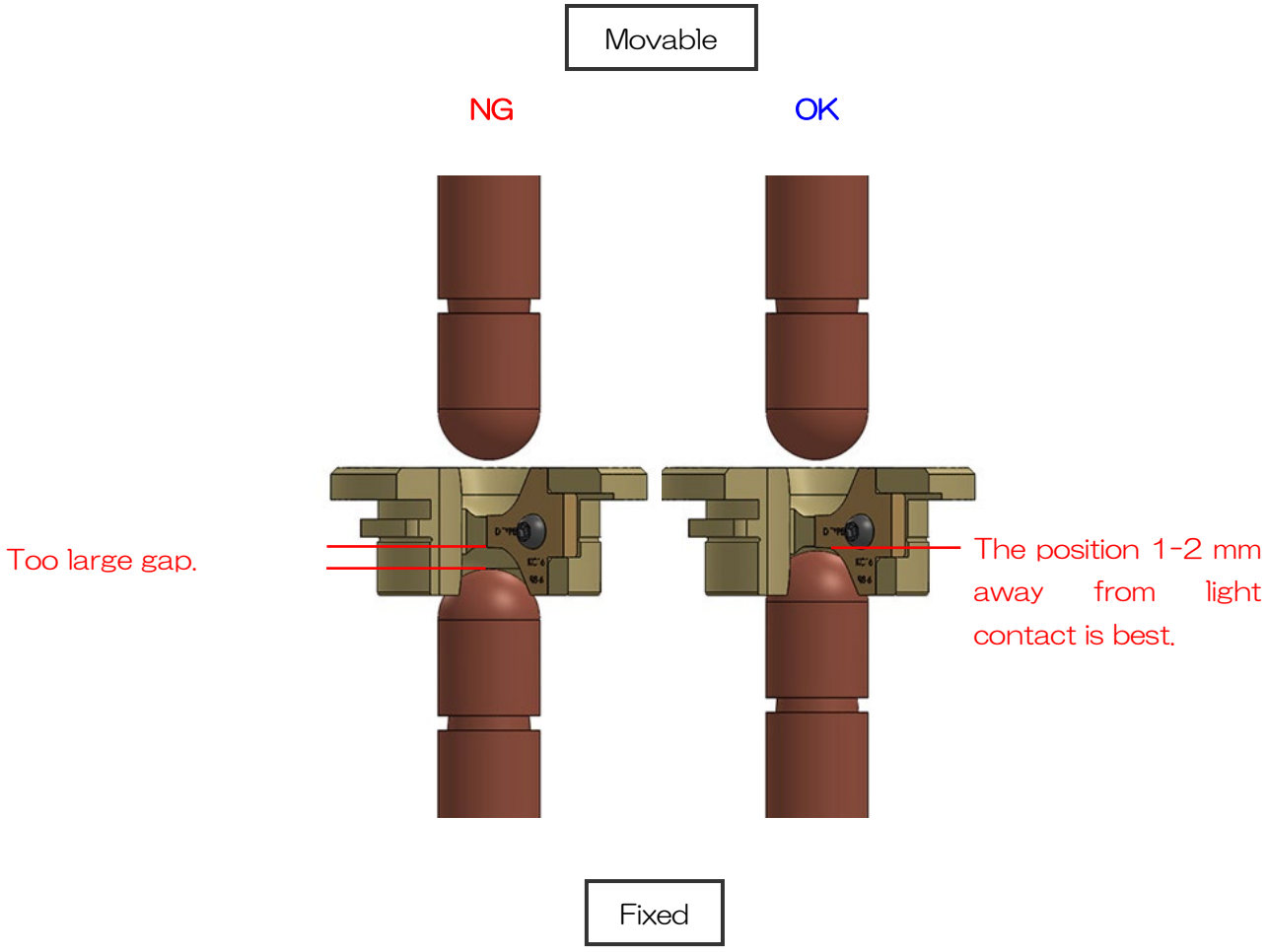


Precautions when pressurizing

Attention must be paid to the starting position of pressure on the bottom side of the holder.

If there is a distance between the tip of the fixed tip and the cutter, there is a possibility that there will be a large difference in the amount of dressing between the top and bottom tips.

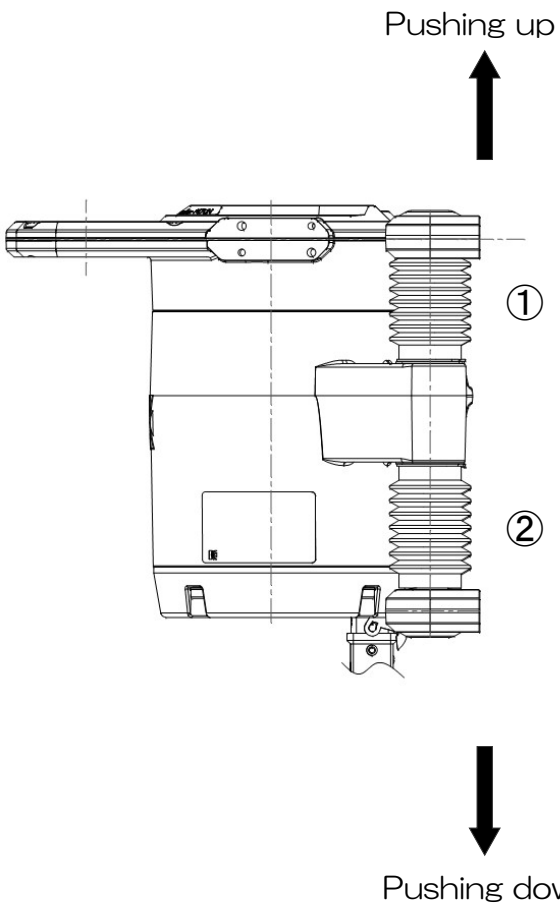
The starting position of the pressurization should be set at the very end of the contact between the tip of the fixed tip and the cutter.



Dresser Floating Amount

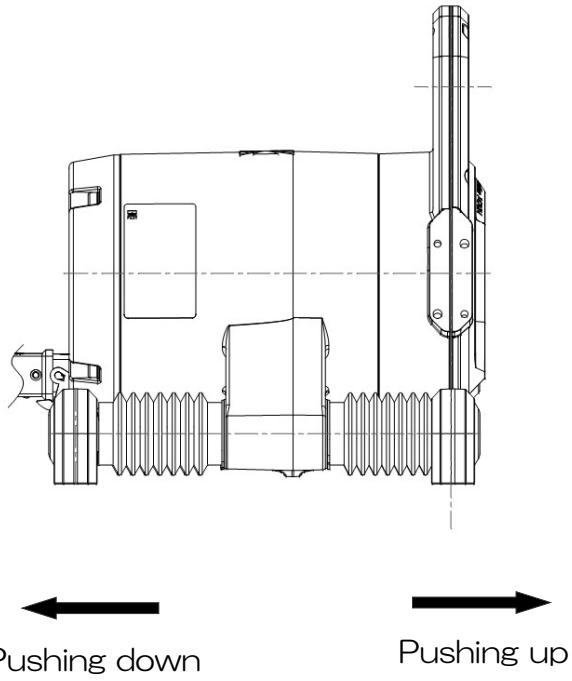
※Vertical to Floor

<Floating amount>
- Pushing up→18.5mm
- Pushing down→22.5mm



※Horizontal to Floor

<Floating amount>
- Pushing up→14.5mm
- Pushing down→26.5mm



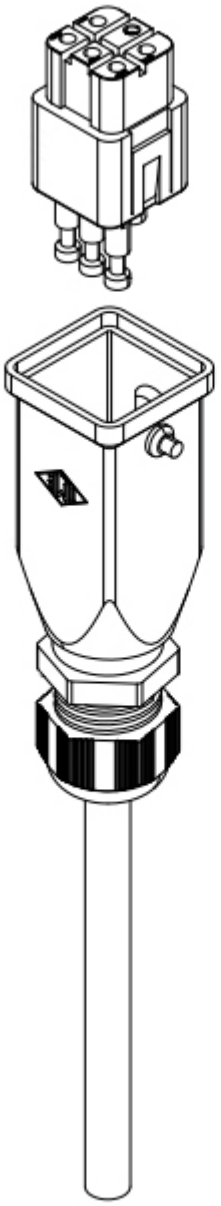
Vertical to floor

Because of gravity on ②, use longer spring than ①.

※For use of up-side-down, please replace ①,② springs.

Cautions for Wiring

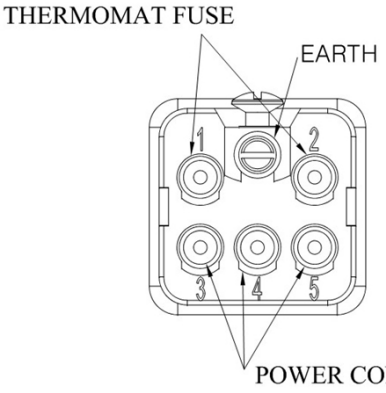
Connector



Cable must be 4-core cable
with outer diameter 10~11 mm.

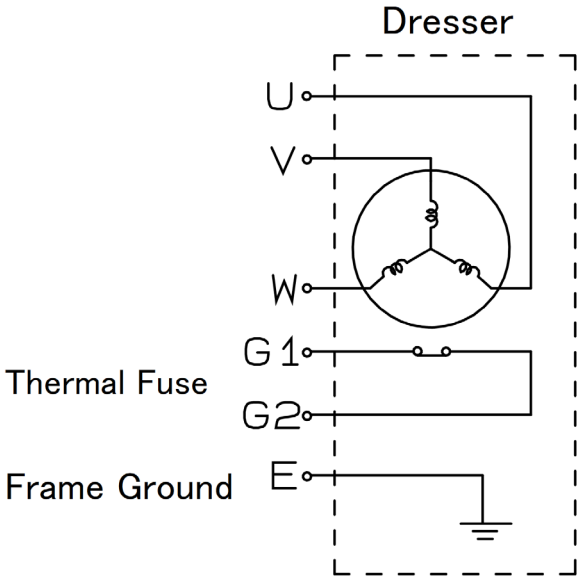
- 2.5sq
- 1.5M

Opposite side of the connector
must be stripped wire
approx 100mm.



Wiring pattern
3pin — R
4pin — S
5pin — T
Earth — FG

Motor Circuit Diagram



- Do NOT operate while the line is live. Shut off the power supply.
- Wiring must be performed by a person authorized to handle electrical work in accordance with electrical work standards.
- CDF dresser has a floating device as a standard. Mind the expansion /contraction when wiring.
- Since the dresser has a floating device, be careful not to loosen the screws on the wiring terminals.、(Creating a loop with cables near the dresser is effective in absorbing shocks.)

Install external thermal or other overload protection devices.

Timing Chart

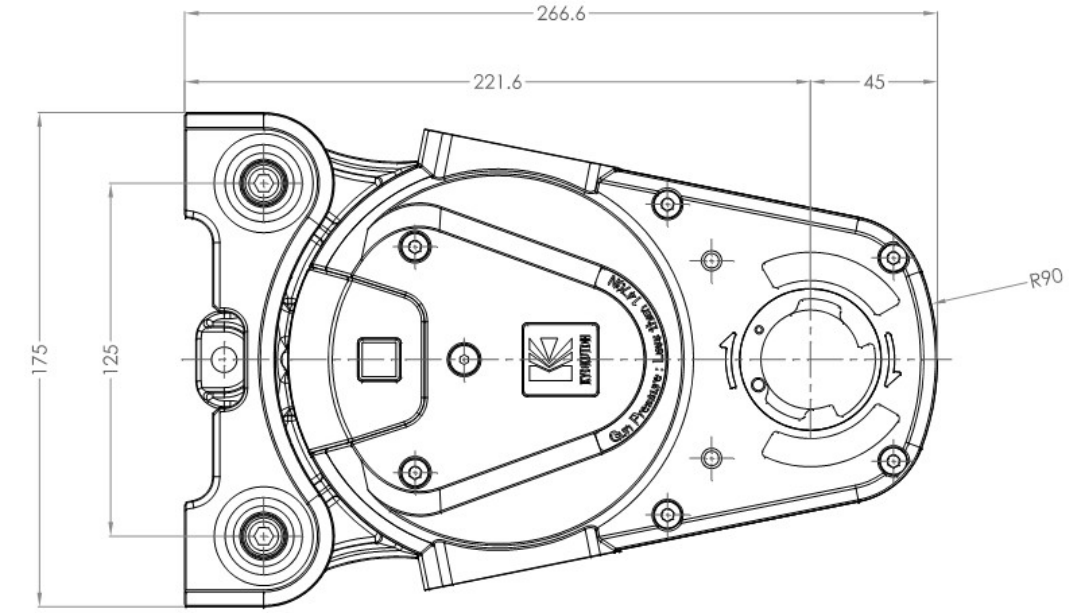
KC type cutter (Only clockwise rotation)

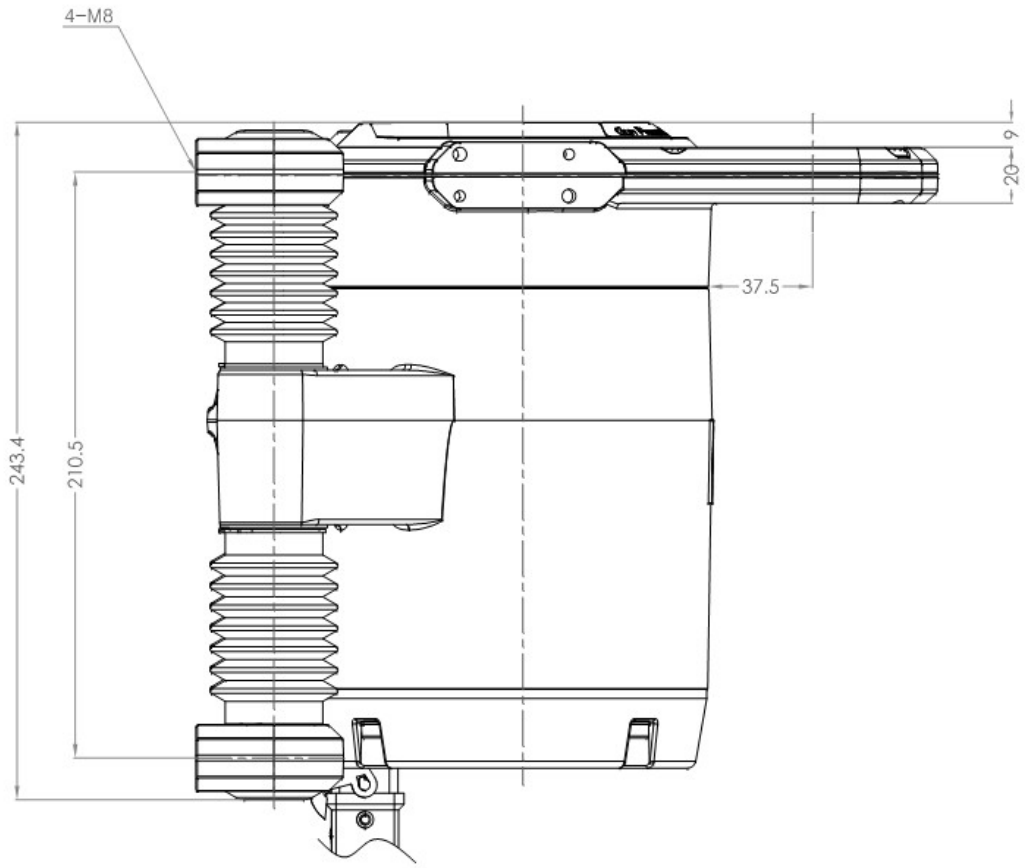
1. Start motor to clockwise before Gun press.
2. Set the dressing time according to your tip condition. Approximately 0.8sec.
3. Confirm rotate direction (clockwise).
4. To finish dressing, release the gun pressure while dresser is revolving.

◆Before operating, make sure that the forms of cutter and tip are fitting.

◆When dressing is finished and small scrapes are left on the cap tips, both upper and lower tips should be touched with the cutter of revolving dresser before returning to original position.

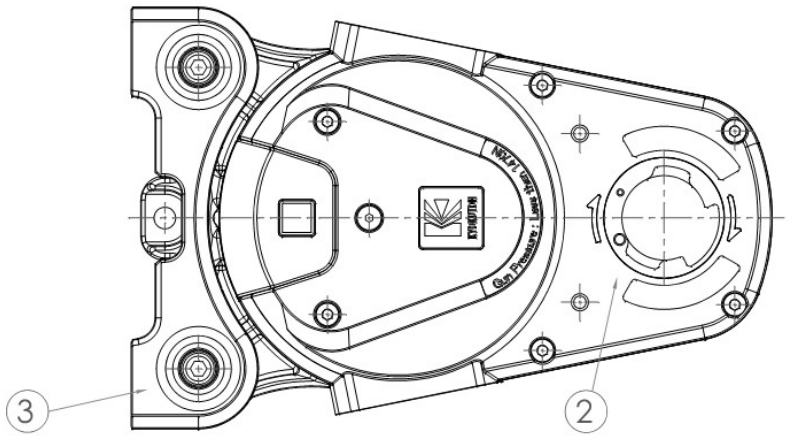
Drawing

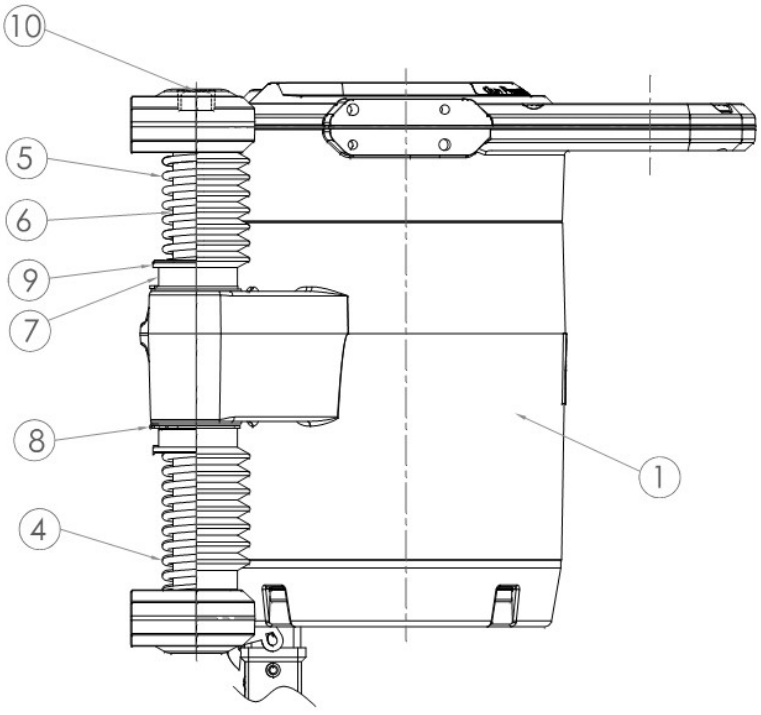




Parts List

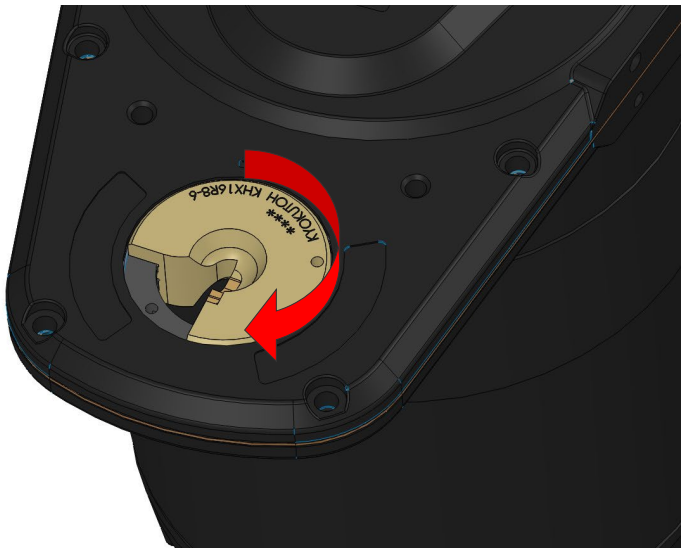
NO.	Part Name	Type or Size	QTY
1	Tip Dresser	CDF-***	1
2	Output Gear Bearing	6210 2RS	2
3	Shaft Plate	CDF-FP	2
4	Spring for Vertical Type	CDK－R－002	2
	Spring for Horizontal Type	CDK－R－003	2
5	Upper Spring	CDK－R－003	2
6	Shaft	CDK－R－004	2
7	Slide Bearing	LM20LUU	2
8	C-Ring for Bearing	For 32 Axis	4
9	Flat Washer	For M20	4
10	Cap Screw	M8×20	4



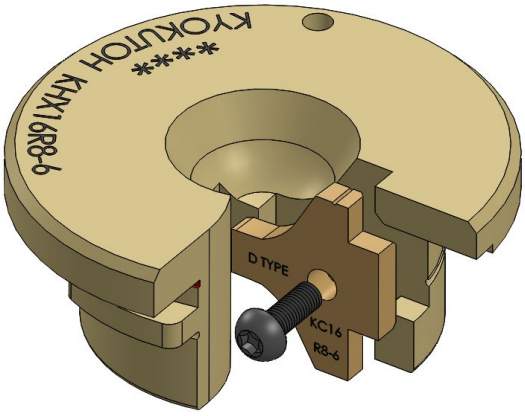


How to Change the Cutter

1. Remove the cutter holder from the dresser.

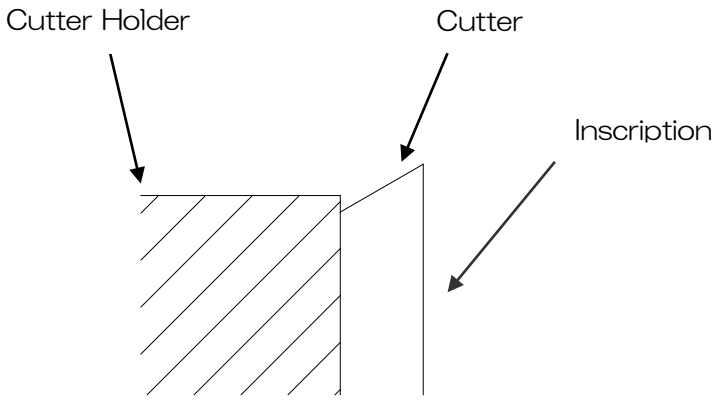


2. To remove the cutter from the cutter holder, loosen the M3 torque screw.
   (With a torque wrench T-10)
   ※Recommended tightening torque: 0.95N • m

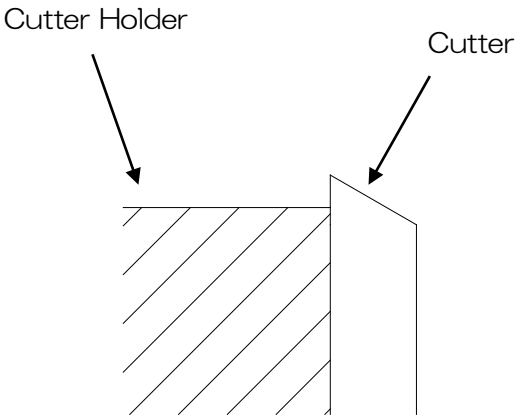


3. Replace a new cutter.
   Confirm cutter is replaced in the proper direction.
   Please install the angle narrows on the side where touches the holder.
   ※Inscription faced up.
   ※Recommended torque for M3 screw is to 1.0～1.2N・m.

OK



NG



4. Install the cutter holder for the dresser.

Cautions and Confirmation before the Operation

1. Confirm the specification again. (Voltage, option, etc)
2. Make sure of the conformity between the forms of cutter and cap tips.
3. Install the dresser in the place where the operator cannot touch it directly during the operation.
4. Make sure dresser and stand bolts are tightened firmly. Also, confirm stand is fixed securely to the floor.
5. When connecting wires to the dresser, operation procedures must be followed with the electric construction standard and also make sure that it is protected from cooling water and spatter.
6. Be certain dresser is grounded.
7. Make sure dresser is installed in a location with no spatter and cooling water directly.
8. Confirm the forms of the cutter and cap tips once again before robot teaching, Confirm that cutter and holder are securely fastened.
9. Confirm the rotation direction of the cutter is clockwise.
10. Make sure there is neither interference to the dresser except for the cap tips, nor any allophone when robot teaching.
11. When the gun is pressurized, make sure that the electric current is not applied and pressure is within the setting range.
12. Confirm the quality of the dressed tip. Be sure that the shank is stable and not shaking during dressing.

◆The causes of the failure in dressing.

① The gun is not released while the dresser is revolving.
(Scrapes are left on the cap tips)
② The pressure is too high or too low.
③ The forms of the cap tip and the cutter are not fitting.
④ The dressing time is too short.
⑤ The teaching point differs from the dressing one.
⑥ The shape of used cap tips differs from new ones too much.

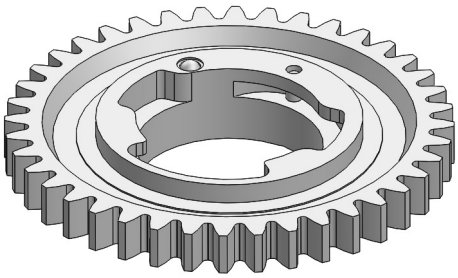
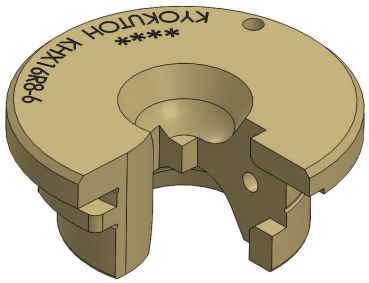
◆If the cap tips can't get dressed properly with any other reason, please contact us.

Abnormality and How to Repair

Abnormal Condition	Cause and Countermeasure
Dresser does not rotate.	＊ The power switch is OFF. → Check the power source. ＊ Wire is cut-off or poor contact. → Check the terminal box and control panel. ＊ The gun pressure is higher than specified by our company. → Set gun pressure under 1,470N. ＊ Motor is broken. → Motor is broken. ＊ 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.	＊ 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.	＊ 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 noise during dressing.	＊ 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.	＊ 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.	＊ The cap tip has got too short. → Replace the cap tip to new one. ＊ Dressing position is not proper. → Re-do teaching. ＊ チップの加圧位置がズレている。 → 摩耗検知（ガンサーチ）を行って下さい。
The point of the cap tip is an oval, not a circle.	＊ 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.	＊ 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.
〈Remarks〉 ◆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.	

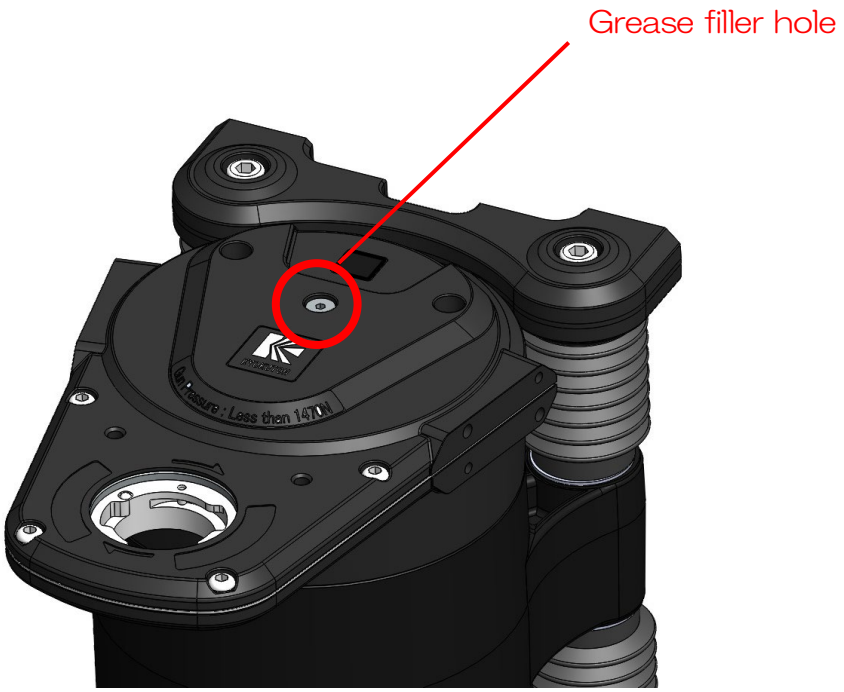
Consumption Parts List

Outsourced Product	Bearing for tip dresser (KHX output gear) Model: 6810LLU Replacement QTY: 1pc Replacement cycle: 3 years
	Flange type bushing for output gear Model: GFM-5055-7 Replacement QTY: 1pc Replacement cycle: 3 years
	Output gear for KHX holder Model: T40-M20-KHX-ZB-SET Replacement QTY: 1pc Replacement cycle: 3 years
	Cutter Model: KC＊＊＊ Replacement QTY: 1pc Replacement cycle: Total dressing time, 10,000sec. ※The replacement cycle may be shorter depending on the polishing conditions and chip condition.
	Holder Model: KHX＊＊＊ Replacement QTY: 1pc Replacement cycle: Total dressing time, 30,000sec. ※The replacement cycle may be shorter depending on the polishing conditions and chip condition.

Periodic Maintenance

Maintenance Position

Place	How to maintenance
To the gearbox, grease supply	Remove filler screw from the upper side of the gearbox. Install grease nipple (M6 * P1.0). Supply the greased with grease gun. Grease type: Water-resistant industrial grease, NLGI No.1 Lubricate once a 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.



MEMO

Contacts

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

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