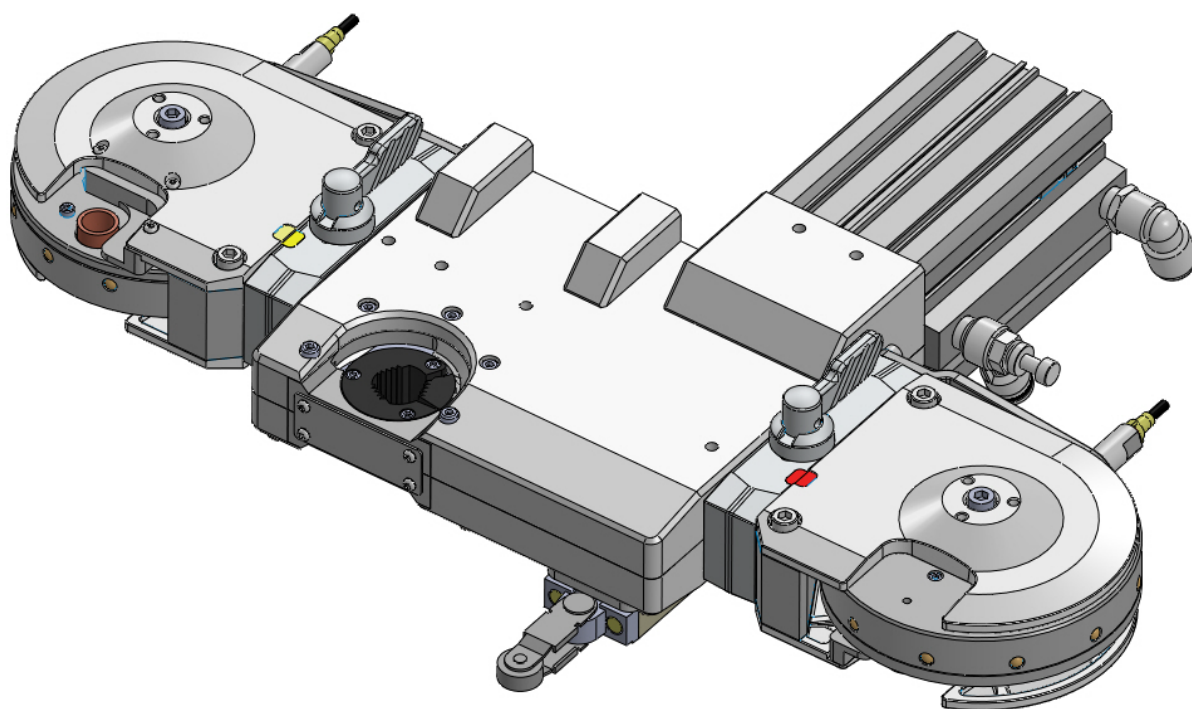




First Edition 2016-03-05
Revised Edition 2023-03-30

Tip Changer KIKK-SG User's Manual

PLEASE READ THIS MANUAL CAREFULLY
BEFORE USING THE DEVICE.



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ATTENTION TO SAFETY

This Tip Changer, KIKK-SG, is designed to exchange damaged electrodes (hereinafter called tips) for new tips in car production line. Please do not use for any purpose other than described in this manual. We are not be able to take a responsibility for any damage or injury caused by results other than specified in this document.



This symbol indicates operations that should not be done.



This symbol indicates operation that should be done.

Handling Precautions



Prohibitions

Absolutely never disassemble or reconfigure this machine.



This could result in malfunction, ignition or injury.

Do not put this unit in liquid or spill too much liquid (over 70 ml/min, longer than 10 min) such as water.



This could result in malfunction.

Stop air supply before machine teaching.



Manual tip inserting cause injury.

Do not insert anything other than the welding tip to the rotating part.



Can be a cause of malfunction and injury.

Do not rotate in a way that is not described.



Can be a cause of damage and injury.



Prohibitions

Be sure to protect air pipe from any kinds of damages.



Damaged pipe could result in malfunction.

Keep hands away from opening part during operation.



May be a cause of injury.

Do not insert metallic articles such as a pins or needles in rotating part or opening part during operation.



This could result in operation malfunction or electrical shock.

Do not use acidic or chlorine detergents for maintenance.



This will generate poisonous gas.

Do not put undersigned tips in magazine.



Incorrect tips type will cause malfunction and damage.

Stop air supply before exchanging cylinder, spring or nails or removing this unit.



This could result in serious injury.

CAUTION

Firmly fix this unit to stand.



Unstable installation causes imbalance tip setting or accident.

Remove alcohol or thinner properly after maintenance.



The flying sparks can cause fires or explosions.

Protect air pipe from spatter.



The flying spatter causes air leak due to melting pipe.

Remove spatter which covers tip remover periodically.

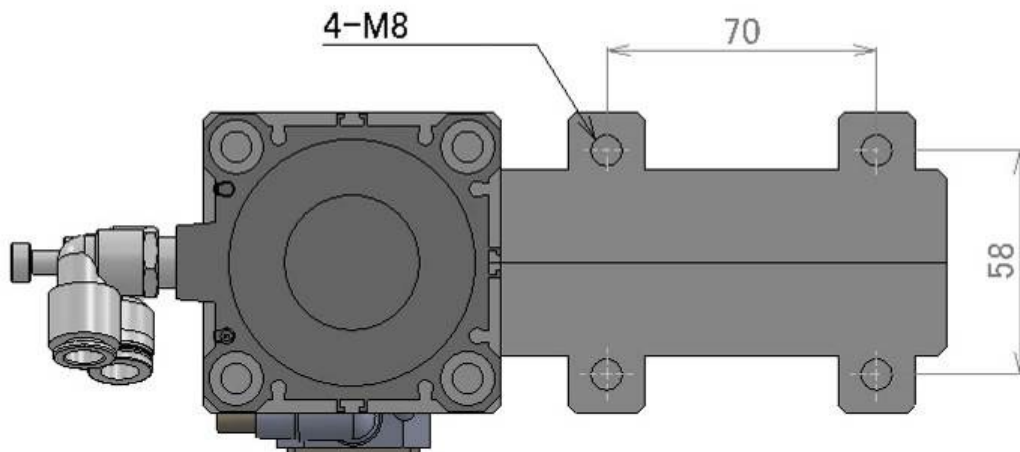


Spatter build-up can cause operation malfunction.

1. Preparations & Requirements

<How to Set>

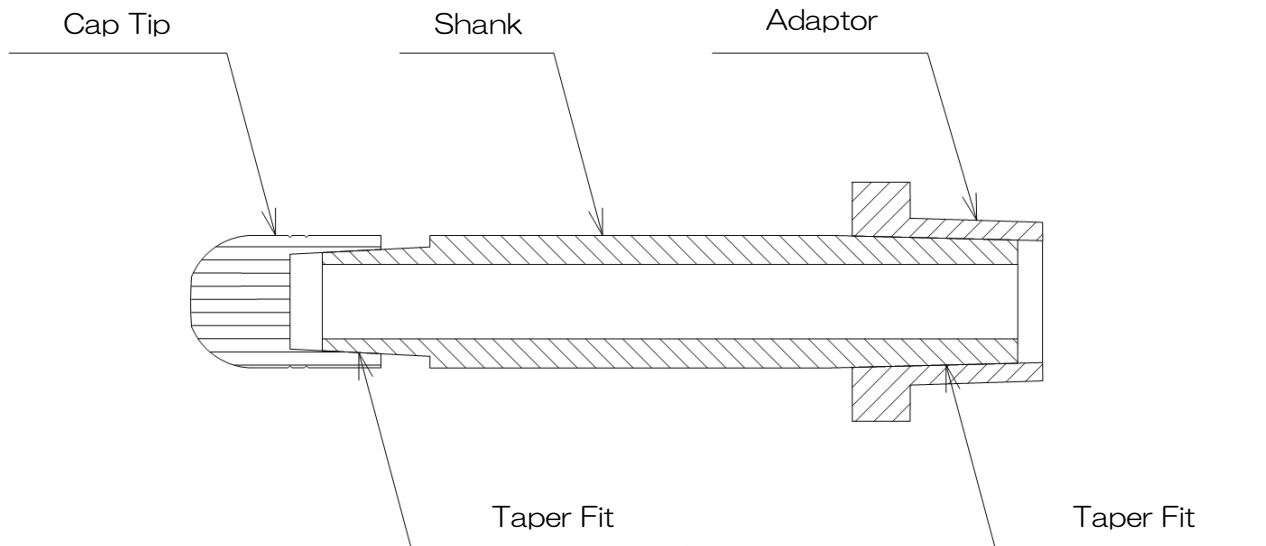
- ① Please set inside robot's operating area.
The attachment pitch of KIKK-SG is 58*70. (Please refer to the drawing below)
- ② Fix KIKK-SG by using 4×M8 bolts.
- ③ Please set air filter in the air supplying route.
(For prevention of malfunction and damage)
- ④ Please set air pressure to **0.5MPa or more** when in use.



Requirement (Standard)	
Remover	Tip Opening : more than 30mm
	Arm Dimension: more than 30mm
Magazine	Tip Opening : more than 37mm
	Arm Dimension: more than 18mm

<Mandatory fixing for a shank and an adaptor>

Make sure a shank and an adaptor are fixed well before removing a cap to achieve a proper cap removing.



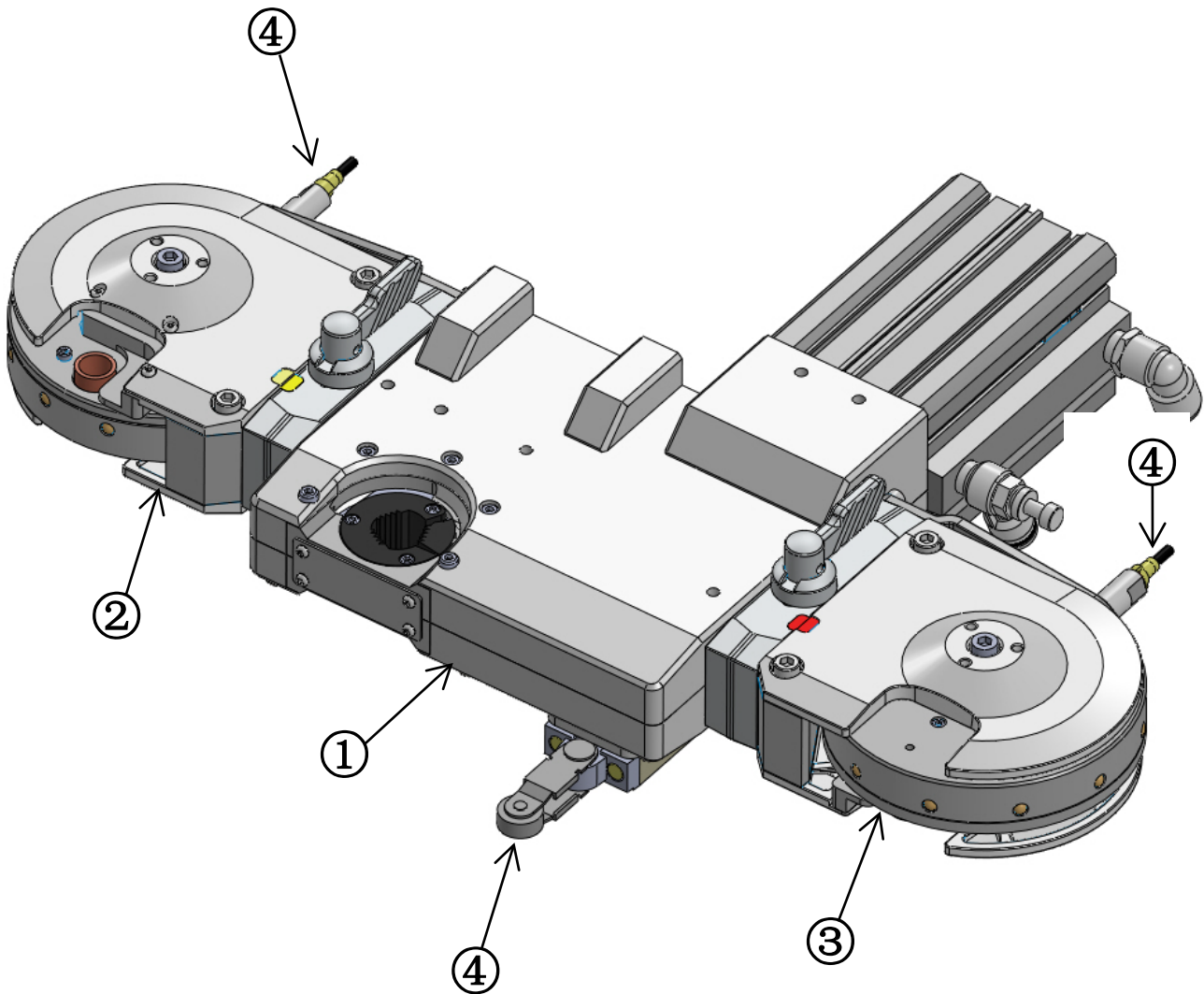
If it is hard to fix, take off an adaptor and a shank and hit the shank in to the adaptor with paying attention not to hurt the taper then restore it on a gun.

If a taper on the shank or the adaptor is worn out or damaged, it is required to replace the shank or the adaptor.

It may cause a tip remove failure if a process above is not completed properly.

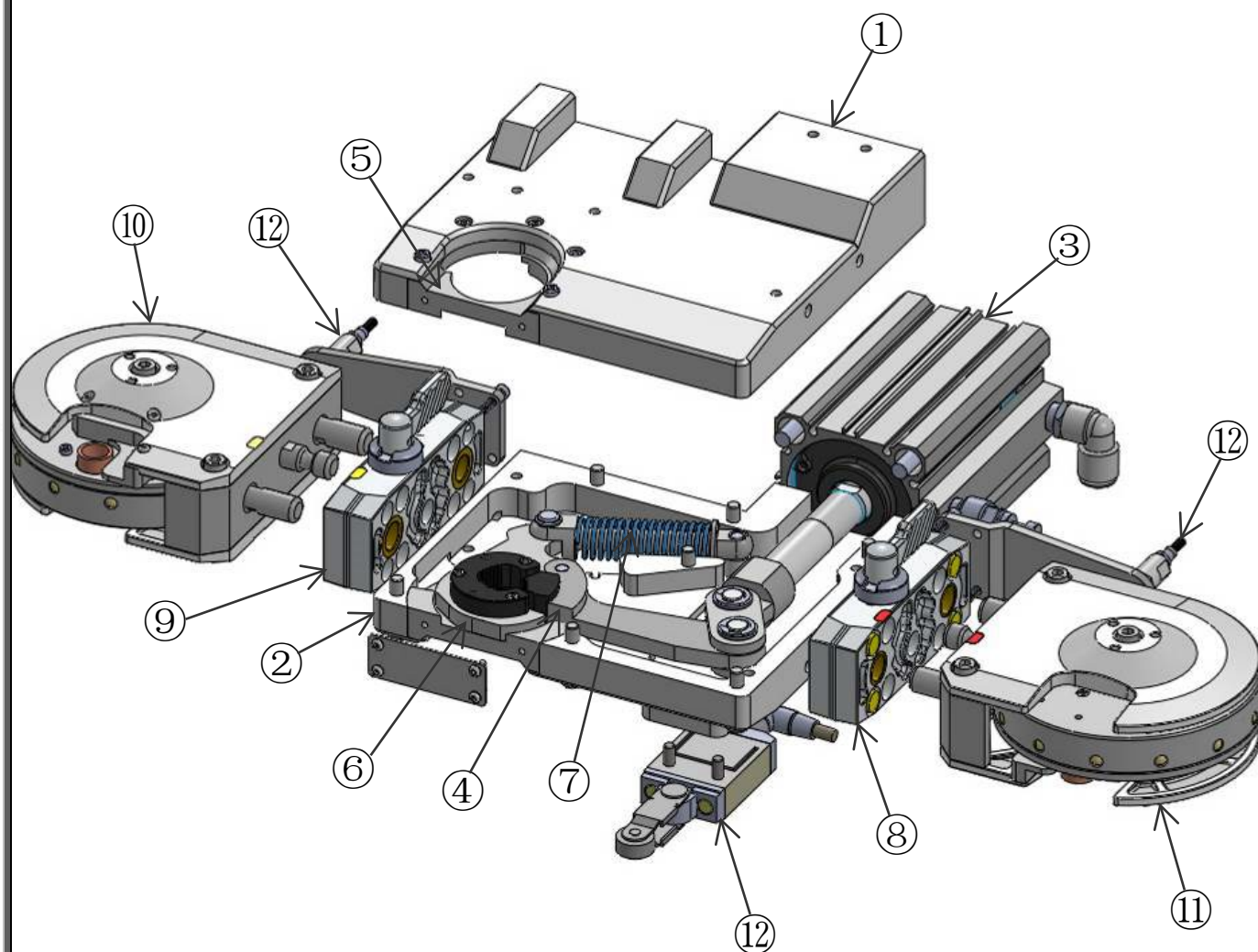
2. Parts Name

No.	Name	Type Name
1	KIKK-SG Body	KIKK-SG**
2	Upper Magazine	MG*****MR-U
3	Lower Magazine	MG*****MR-L
4	Sensor Pack (Option)	KIKK-EL-SE-Pac



3. Parts List

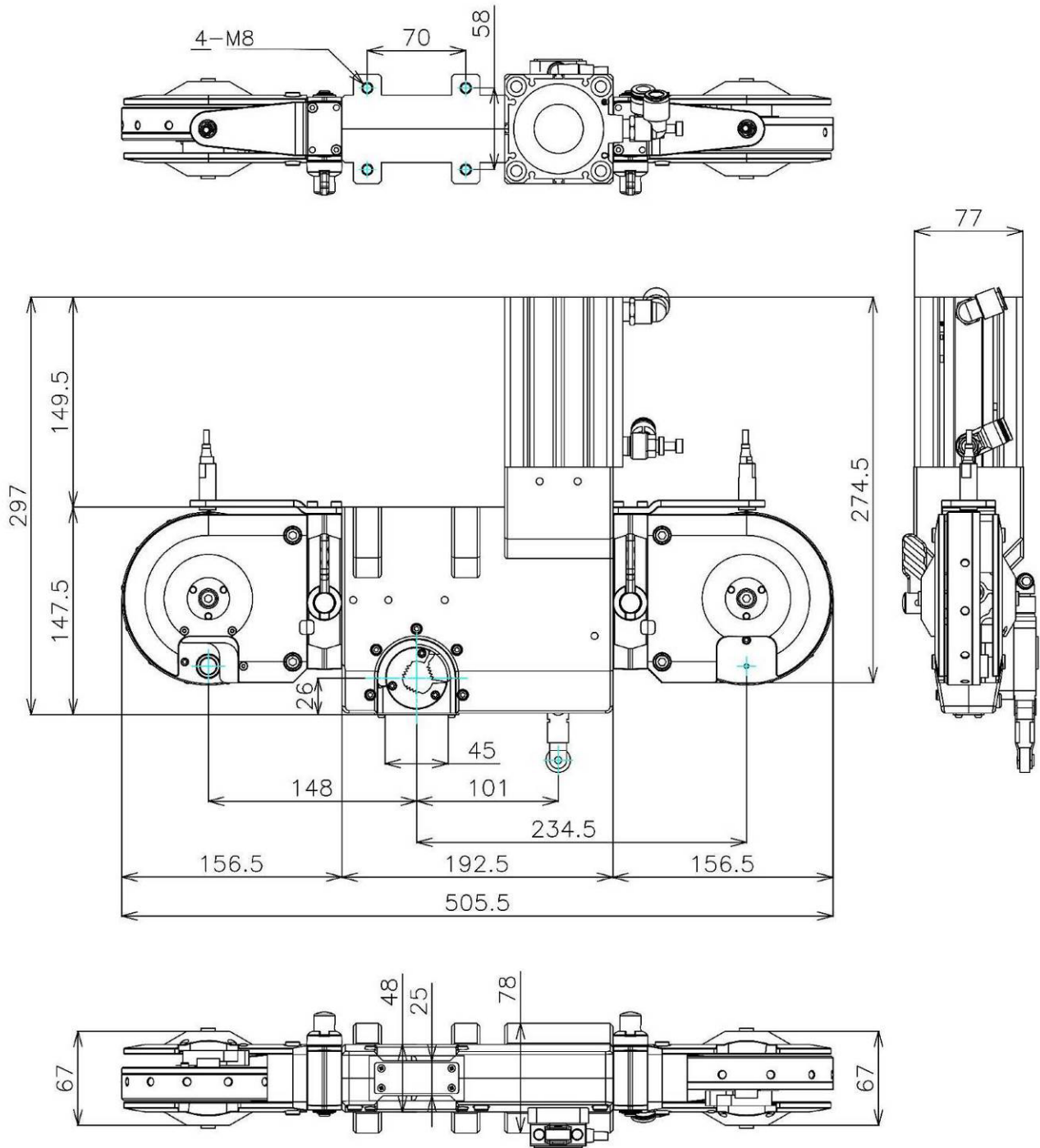
#	Name	Type Name	Qty	Remarks
1	Upper Body	KIKK-SG-P-001	1	
2	Lower Body	KIKK-SG-P-002	1	
3	Cylinder	CDQ2B-63-75DCM-M9BA	1	
4	Remover Unit	KIKK-SG-ReU-TYPE-**	1	** = Using tip diameter
5	Upper Bush	KIKK-SG-P-005U	1	φ13/φ16
		KIKK-SG-1920-P-005U		φ19/φ20
6	Lower Bush	KIKK-SG-P-005L	1	φ13/φ16
		KIKK-SG-1920-P-005L		φ19/φ20
7	Spring	51-22100	1	
8	Right Magazine Adapter	MR-MAG-ADB-R	1	
9	Left Magazine Adapter	MR-MAG-ADB-L	1	
10	Upper Magazine	MG*****MR-U	1	
11	Lower Magazine	MG*****MR-L	1	
12	Sensor Pack	KIKK-EL-SE-Pac	1	Optional



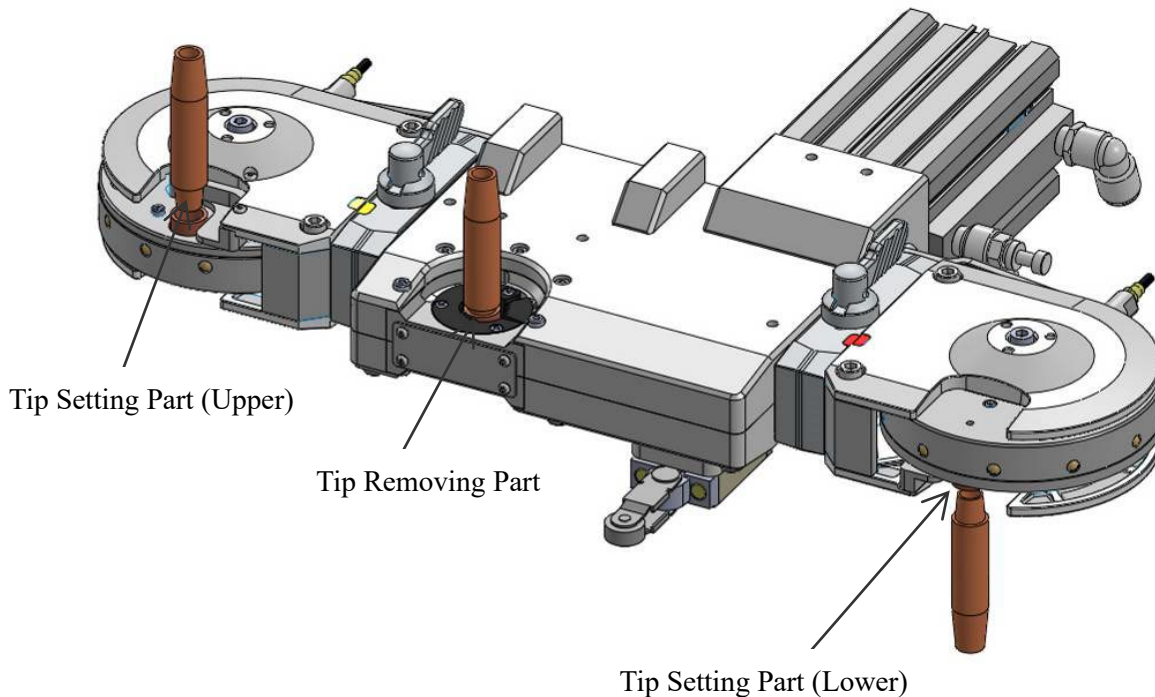
4. Dimensions

< Weight >

- Gross weight 9.3kg
- Body 6.5kg
- Magazine 1.4kg/1 pcs



5. Removing/Setting Method

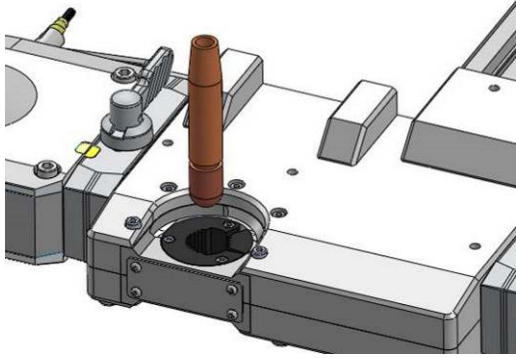


<5.1 Cautions and Preparation before Operating>

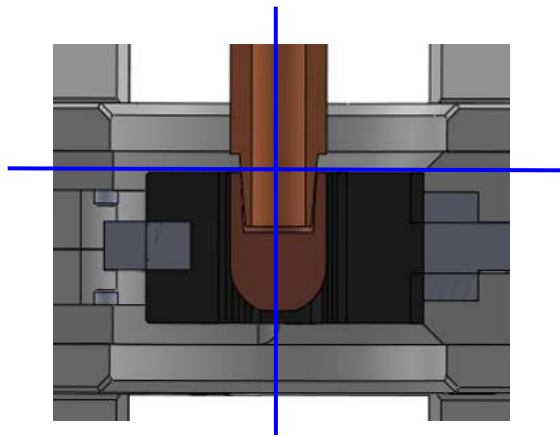
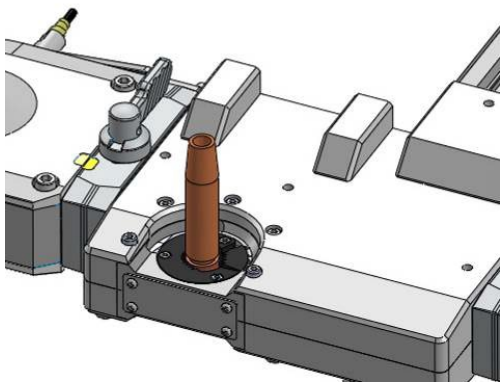
- ① Make sure that the machine is fixed on stand tightly.
 - ② Confirm the shank is joined tightly to the gun arm.
 - ③ Please refer to 「P5. Mandatory fixing for a shank and an adaptor」
 - ④ Confirm the connection of the air supply.
 - ⑤ Adjust cylinder speed. Adjust speed controller to keep 1.5 sec to 2 sec from forward end to back end on a cylinder.
 - ⑥ Check air cylinder operation and chucking rotation movement. (Test operating also possible)
- Charge the cap tip which fits in with the magazine.
Remove the cap tip in the magazine manually and confirm that next cap tip comes to the right position.

<5.2 Operation for Removing>

- ① Position cap tips to the center of the removing part by teaching robot.



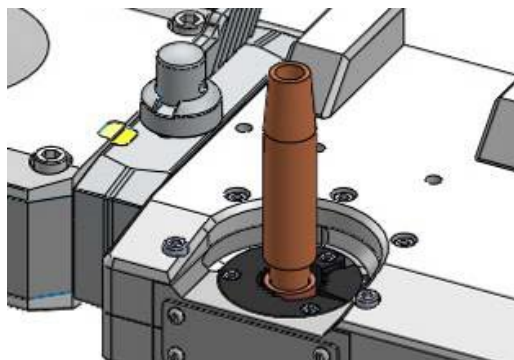
- ② Confirm the tip is in the center of the nail and move to the removing position.



- ③ Lift up 3 mm to Z axis direction in 0.7 sec after a cylinder start moving.

※Remover starts rotation in 0.7 sec. A robot has to be lifted up during the rotation.

※Recommended lift up speed is about 100mm/sec.



<Important>

Please do the below action, since the cap tip can NOT be removed by only the rotation of the remover.

(Upper→Raise about 3mm, Lower→Lower about 3mm)

This action also prevents the robot gun and the KIKK-SG from being damaged.

The position of the cylinder switch needs to be re-adjusted when confirming the operation of the KIKK.

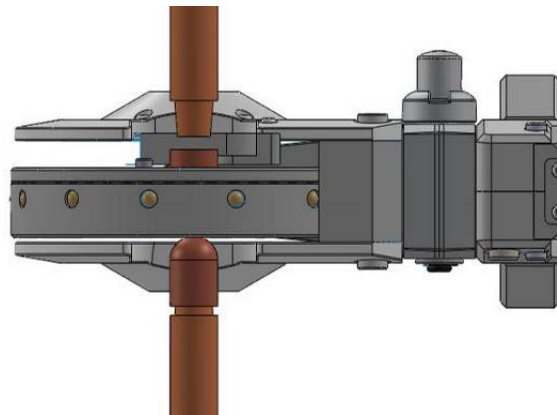
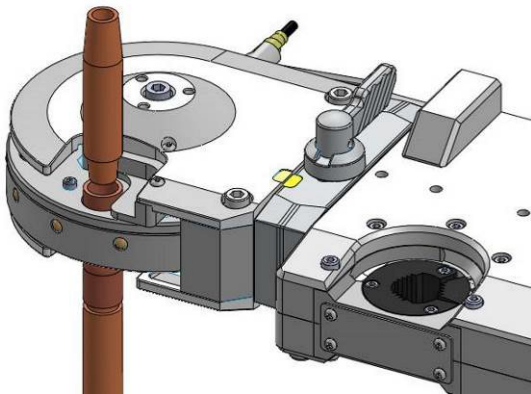
- ④ After the robot has escaped and is not close to KIKK-SG, return the cylinder and release the tip.

If the tip is released with the robot being close to KIKK-SG, the tip may hit the parts such as gun arm and scatter in an unexpected area.

<5.3 Upper Tip Setting Procedure>

- ① Move to the below position.

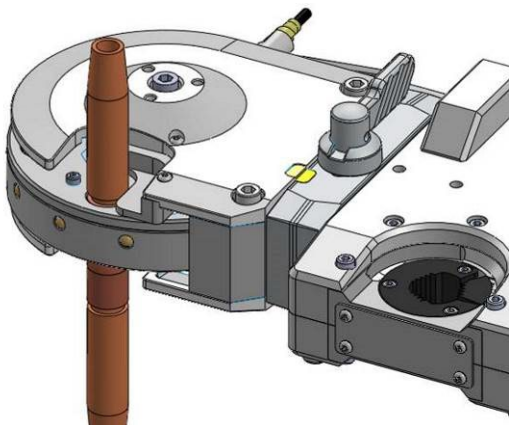
The lower tip must be in a position where it is touching the magazine.



- ② Pressure from above to set the cap tip.

The pressure must be from 100kgf~150kgf.

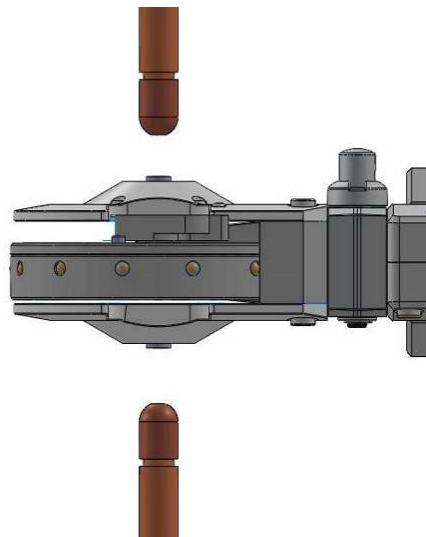
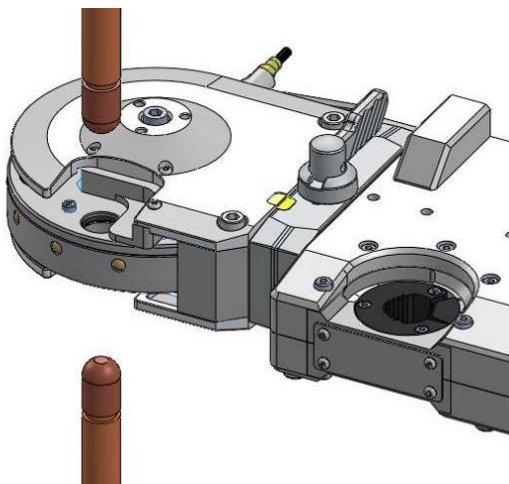
- When set under 100kgf : possibility of the tip to not be set properly.
- When set above 150kgf : possibility of damaging the magazine.



- ③ Release both upper and lower at the same time and escape.

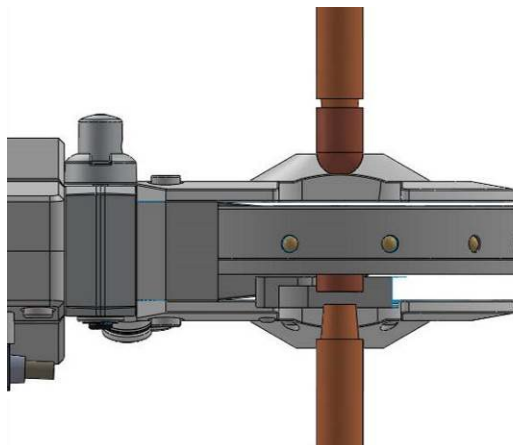
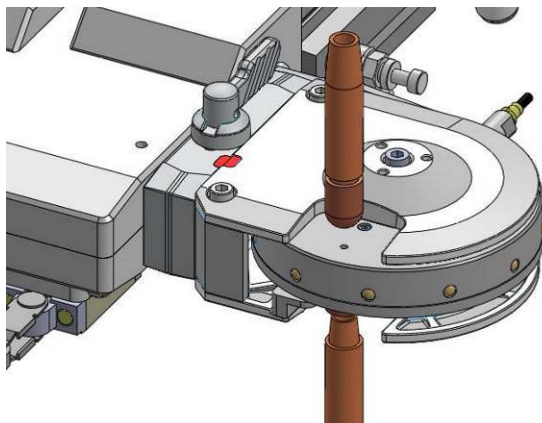
Please escape with the magazine and the shank to be in a vertical position.

(To prevent damage to the magazine and the tip.)



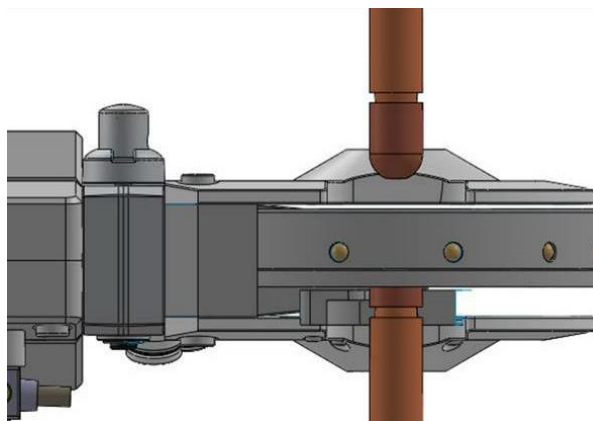
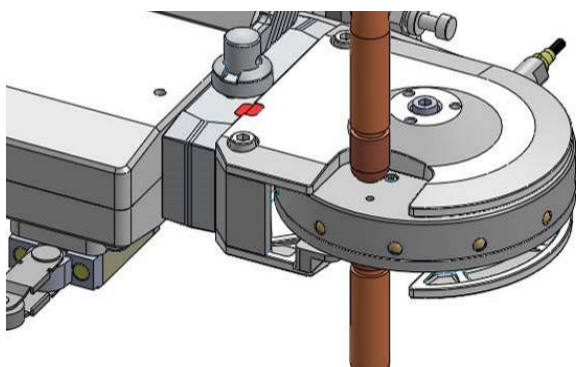
<5.4 Lower Tip Setting Procedure>

① Move to the below position.



② Insert the lower shank to the position where it is completely hidden.

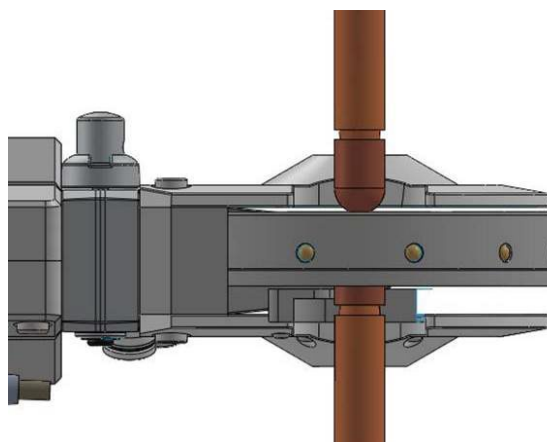
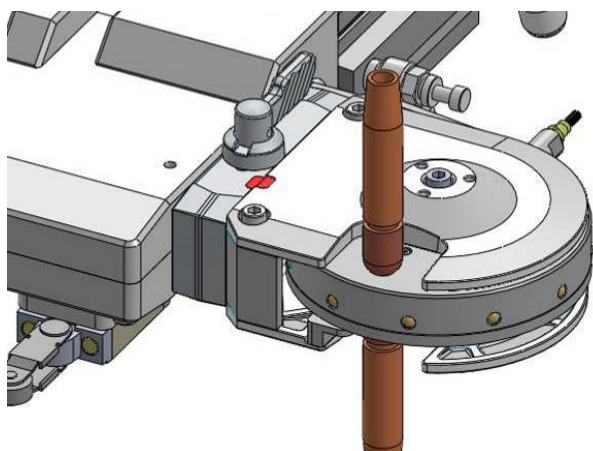
(Position with the magazine is slightly lifted)



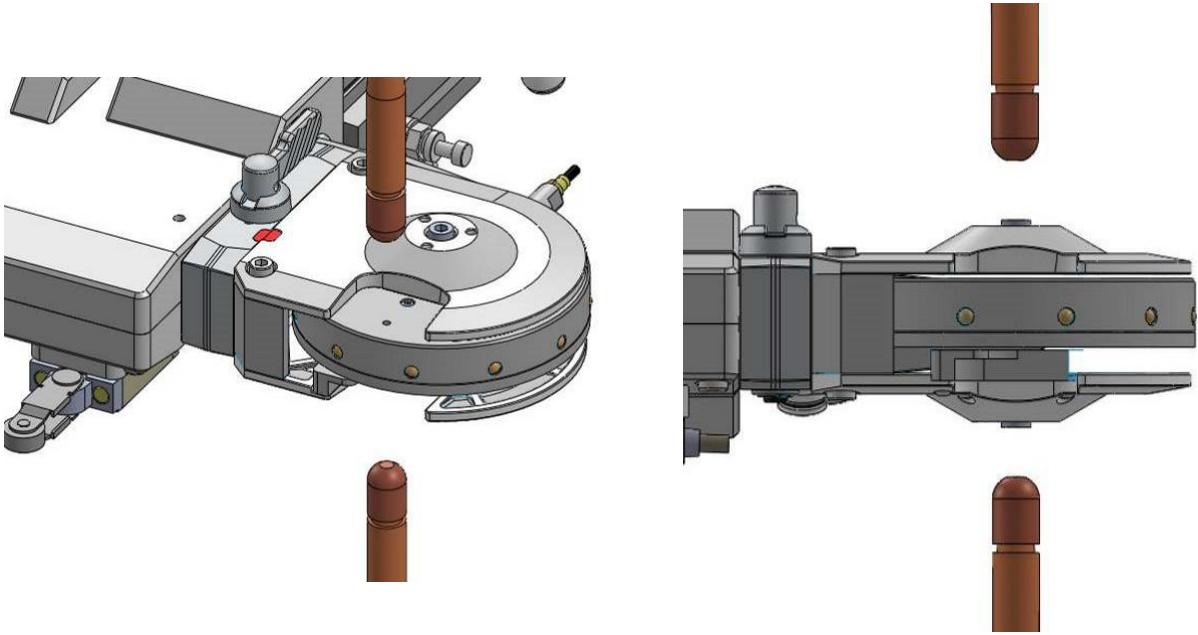
③ Pressure from above to set the cap tip.

The pressure must be from 100kgf~150kgf.

- When set under 100kgf : possibility of the tip to not be set properly.
- When set above 150kgf : possibility of damaging the magazine.



- ④ Release both upper and lower at the same time and escape.
Please escape with the magazine and the shank to be in a vertical position.
(To prevent damage to the magazine and the tip.)



6. Method of Changing Magazine/Setting Tips

◆ please read below before going to the magazine/parts changing method.

- Please use protectors such as goggles and gloves.
- Please prevent KIKK-SG to operate by taking off the air hose or making the air not to flow when doing operation.
- Please be sure to follow the orders written above when doing the operation.

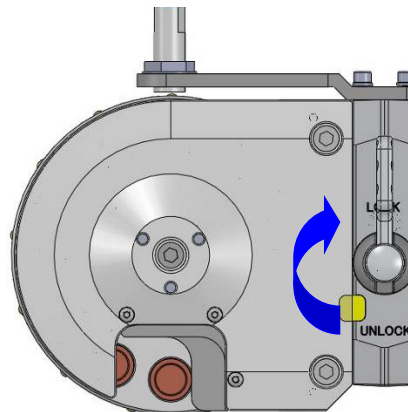
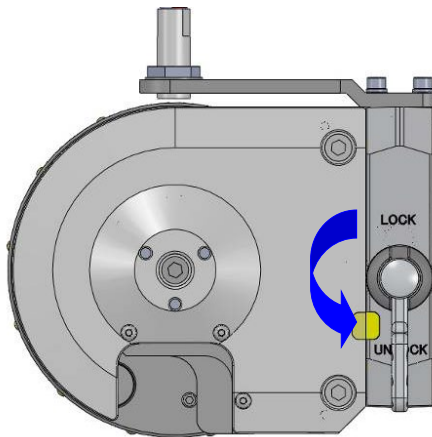
The orders written below are for the upper magazine.

For the lower magazine, the rotation of the lever is opposite.

If the lever is turned in a reverse way as it is specified, there is a possibility of damaging the product.

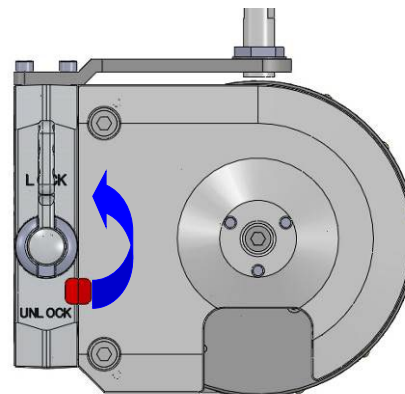
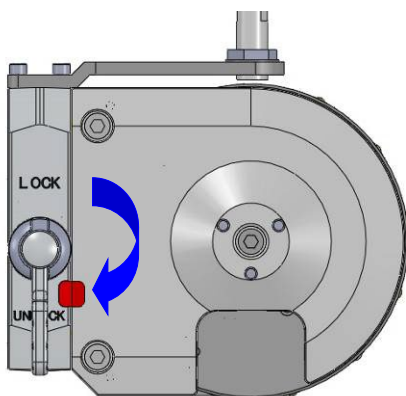
For Upper Magazine

- **【LOCK】** → **【UNLOCK】** Left Turn
- **【UNLOCK】** → **【LOCK】** Right Turn



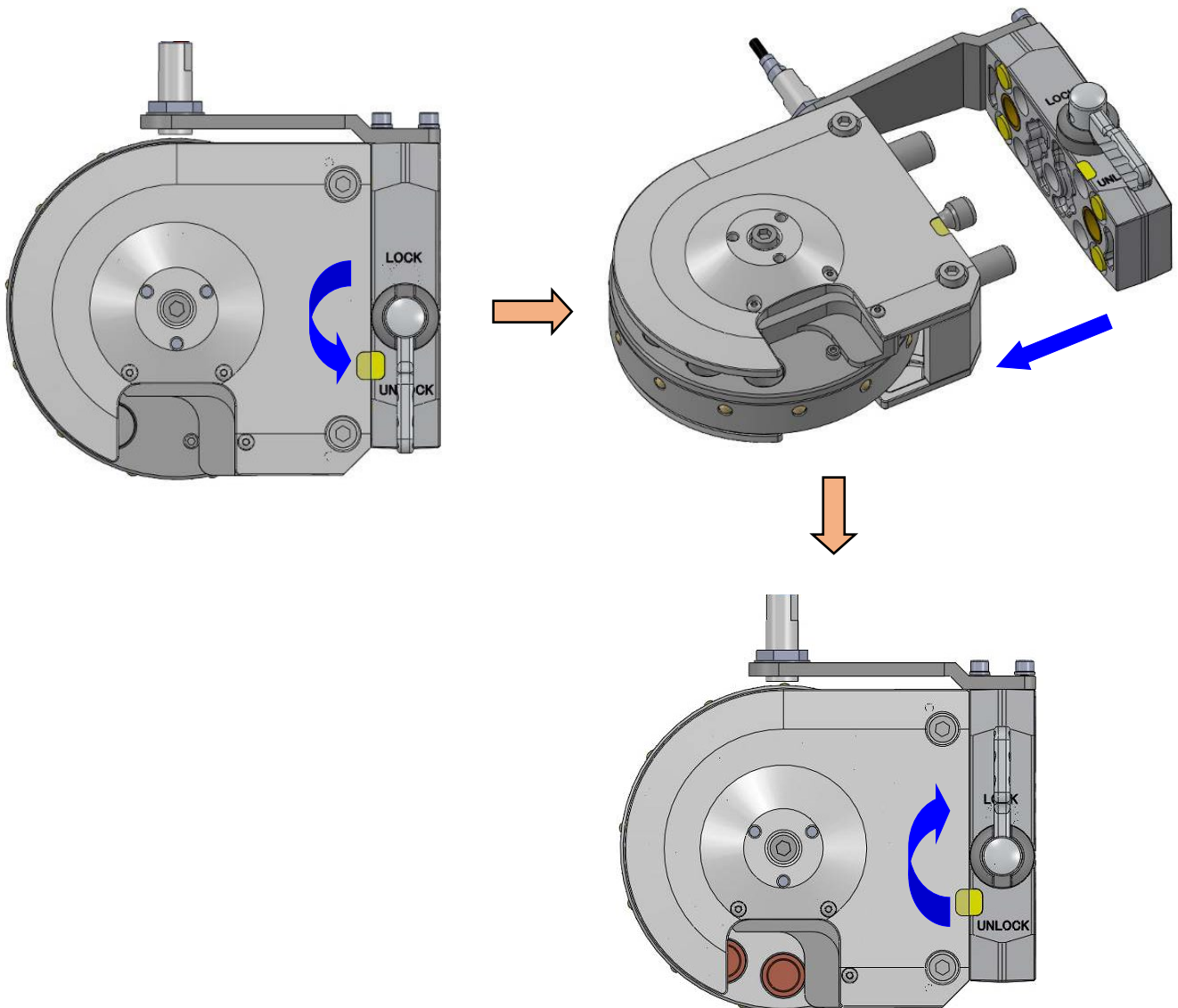
For Lower Magazine

- **【LOCK】** → **【UNLOCK】** Right Turn
- **【UNLOCK】** → **【LOCK】** Left Turn



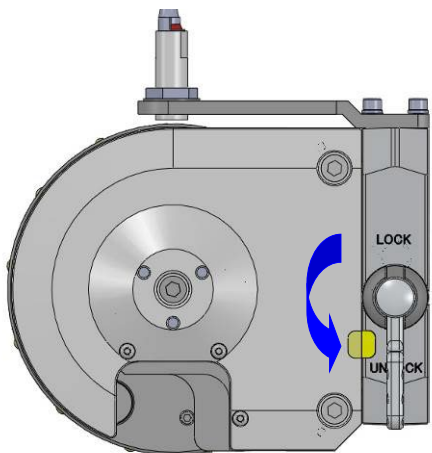
6.1 Magazine Changing Method

1. Turn Off the air supply.
2. Turn the lever to **【UNLOCK】** (Left)
3. Pull the magazine off from the adapter.
※Caution not to damage the proximity sensor.
4. Set the spare magazine to the adapter.
If there are no spare magazines, please charge tips to the using magazine.
5. Adapt the magazine to the adapter and turn the lever to **【LOCK】** (Right)
6. Confirm the tip remaining signal.



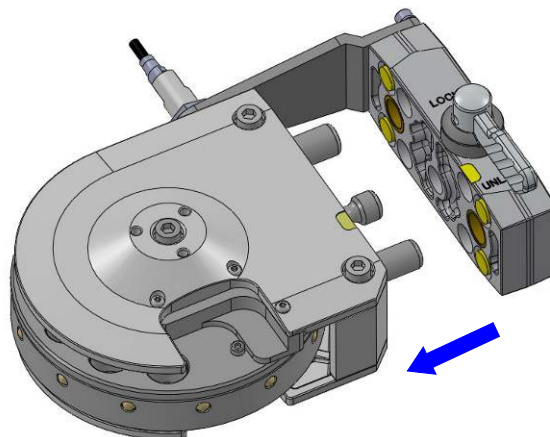
6.2 Changing Magazine / Tip Changing Method

1. Turn the lever to **【UNLOCK】** . (Left)

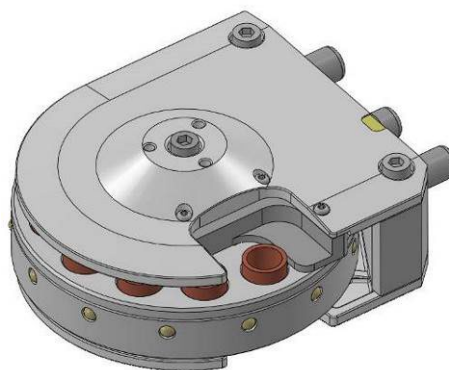
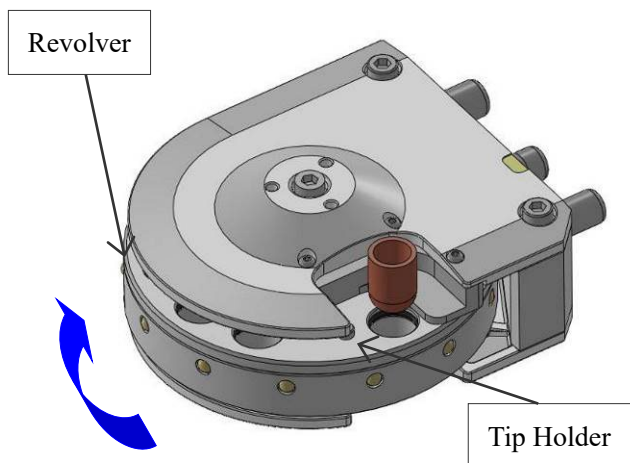


2. Pull the magazine off from the adapter.

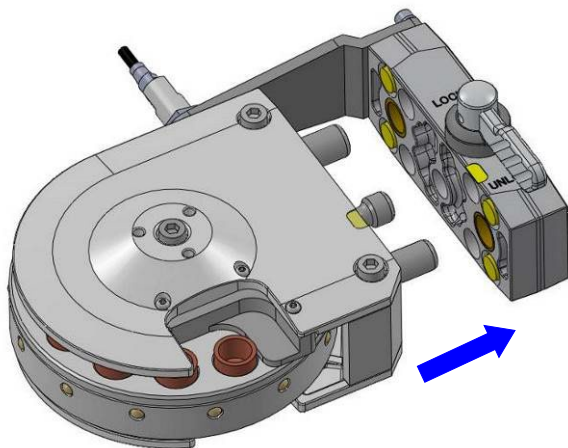
※Caution not to damage the proximity sensor.



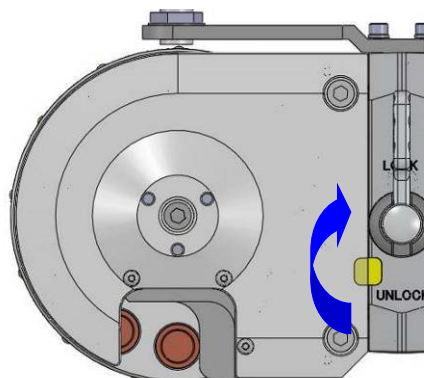
3. Please be careful of the tips facing way and charge one by one.



4. Set the spare magazine to the adapter.



5. Adapt the magazine to the adapter and turn the lever to **【LOCK】** (Right)

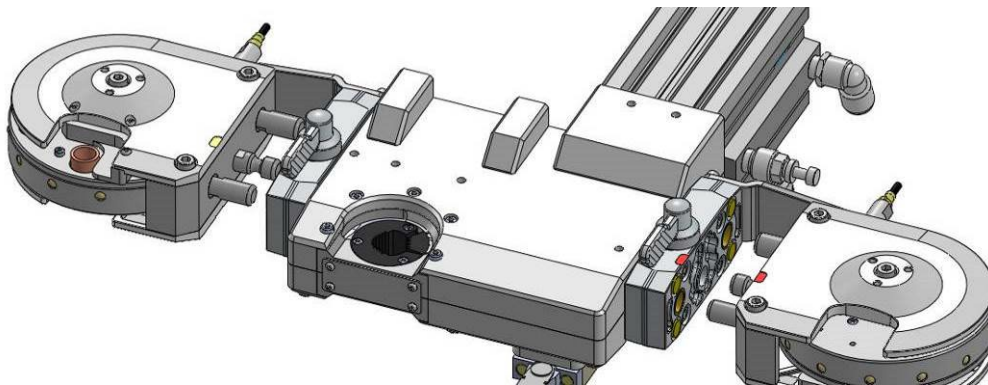


6. Confirm the tip remaining signal.

7. Replacing Method of Remover Unit

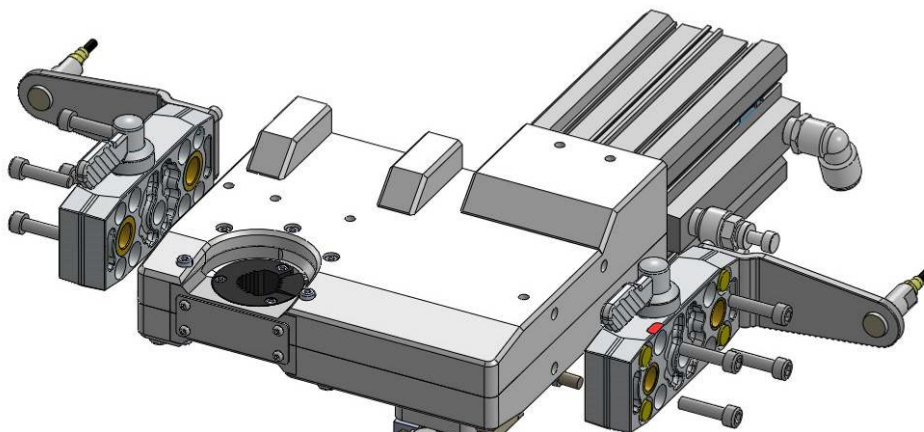
※ 「Medium Strength Loctite」 is recommended as a slack preventing agent.

1. Remove the magazine by switching the lever from 【LOCK】 to 【UNLOCK】 .



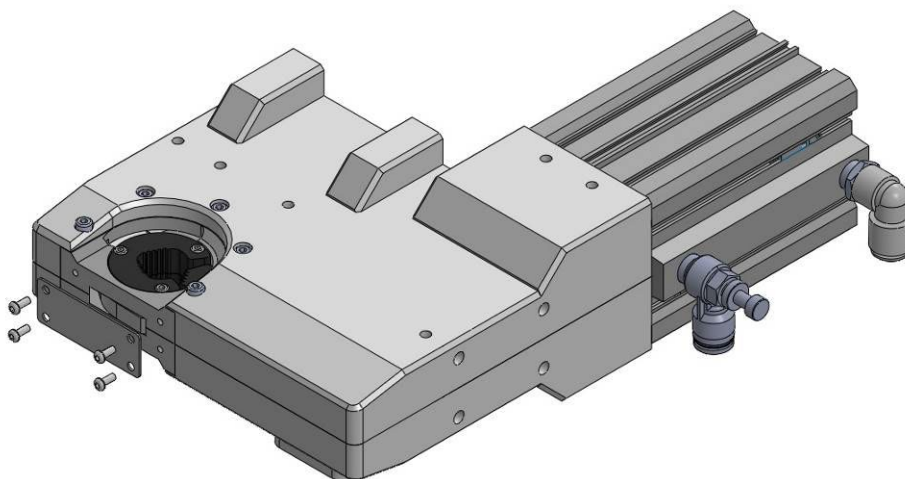
2. Unscrew the 8 M6*25L cap bolts of the magazine adapter.

※The screwing torque when assembling must be $7.6\text{N} \cdot \text{m}$ with loctite.



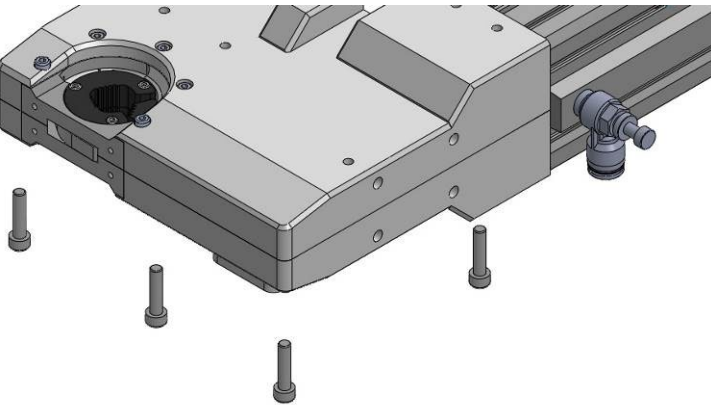
3. Unscrew the 4 bolts on the front plate and disassemble.

※The screwing torque when assembling must be $1.0\text{N} \cdot \text{m}$ with loctite.



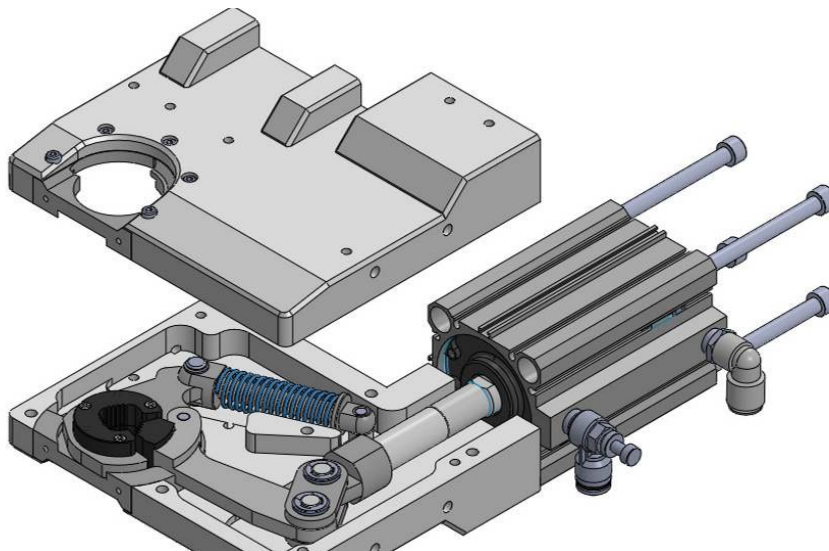
4. Unscrew the M6*25L cap bolts(7pcs) under the lower gear case.

※The screwing torque when assembling must be $7.6\text{N} \cdot \text{m}$ with loctite.

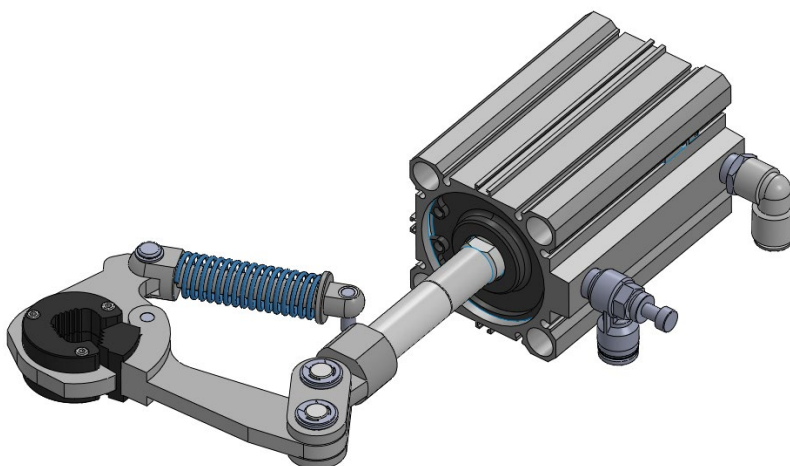


5. Take off the upper gear case by unscrewing the M8*125L cap bolts (4pcs) of the cylinder.

※The screwing torque when assembling must be $18.5\text{N} \cdot \text{m}$ with loctite.



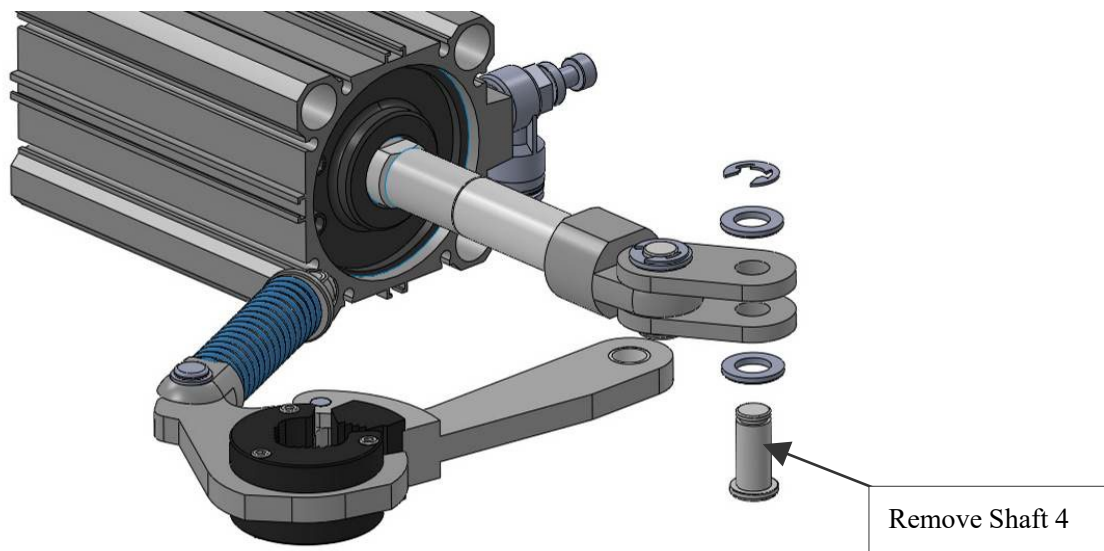
6. Remove the remove unit together with the cylinder.



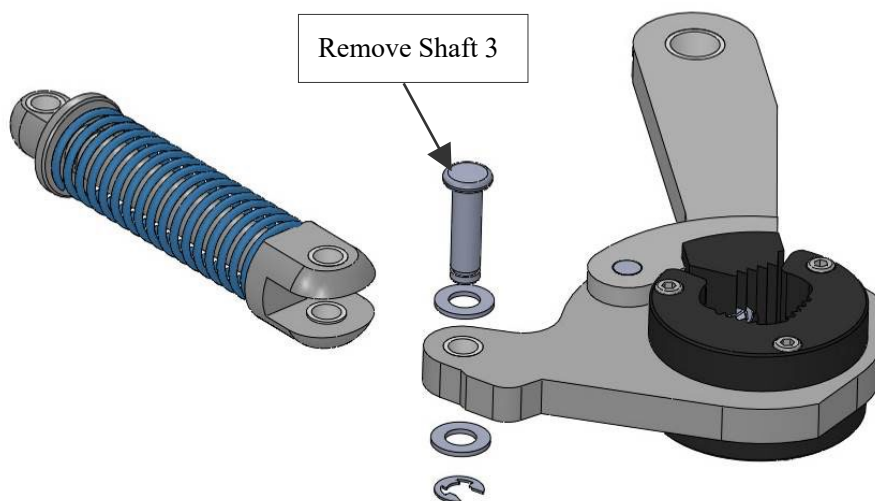
※When replacing the bush, refer to **【9.0 Replacement of Bush】**.

※When replacing the spring, refer to **【10.0 Replacement of Spring】**.

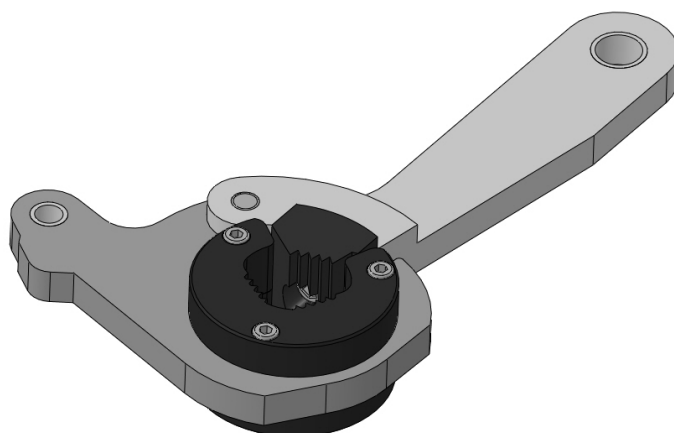
7. Remove the E-ring and remove **【Remove Shaft 4】**



8. Remove the E ring and take off the **【Remove Shaft 3】** .



9. Assemble the remover unit by doing the steps 1→8 in a reverse order.

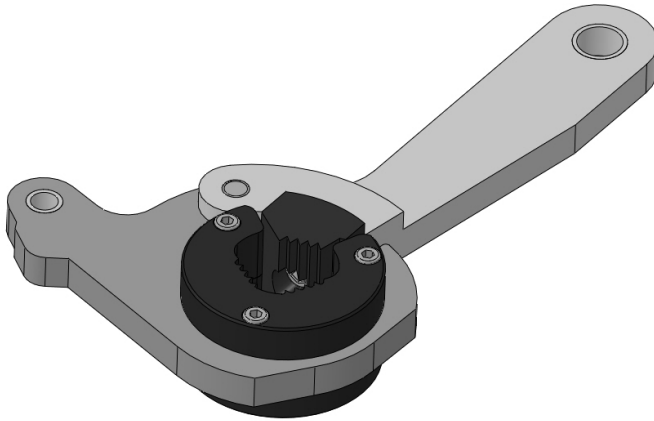


※For changing nails, please refer to **【8.0 Nail Changing Method】**

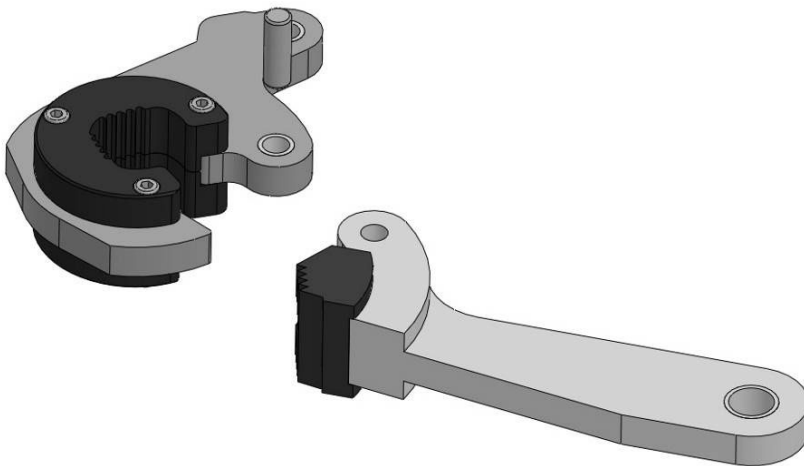
8. Nail Changing Method

※ 「Medium Strength Loctite」 is recommended as a slack preventing agent.

Please finish the 【7.0 Replacement Method of Remover Unit】 to process 9.

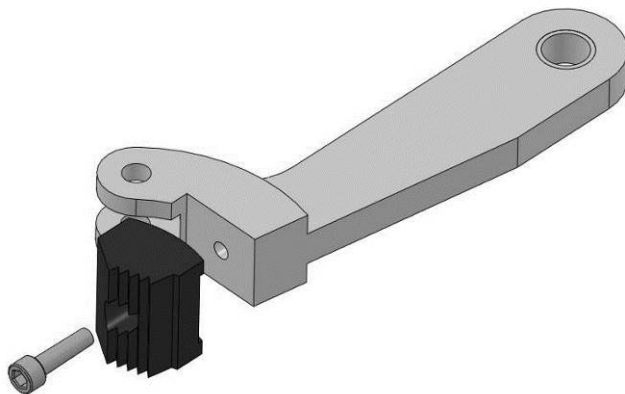


1. Pull off the $\phi 6$ pin and disassemble.



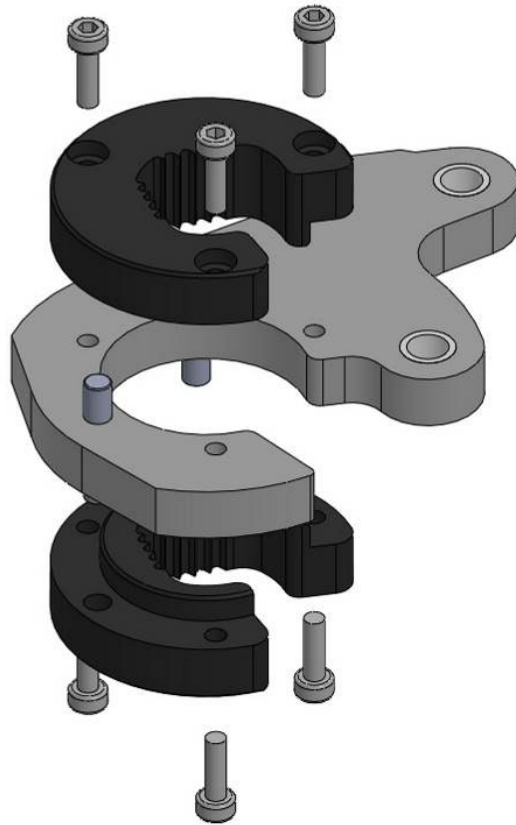
2. Unscrew the M4*15L cap bolts (1 pcs) and disassemble the nails.

※The screwing torque when assembling must be $3.0\text{N} \cdot \text{m}$ with loctite.

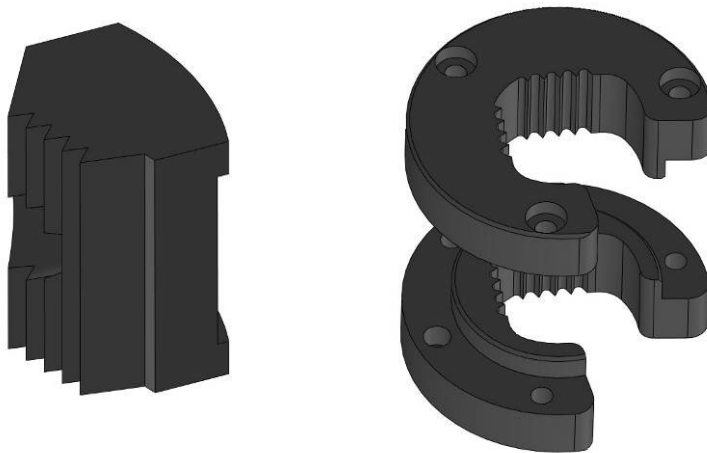


3. Unscrew the M3*10L cap bolts (6 pcs) and disassemble the nails.

※The screwing torque when assembling must be 1.0N • m with loctite.



4. To assemble a new nail , do steps 1→3 in a reverse order.



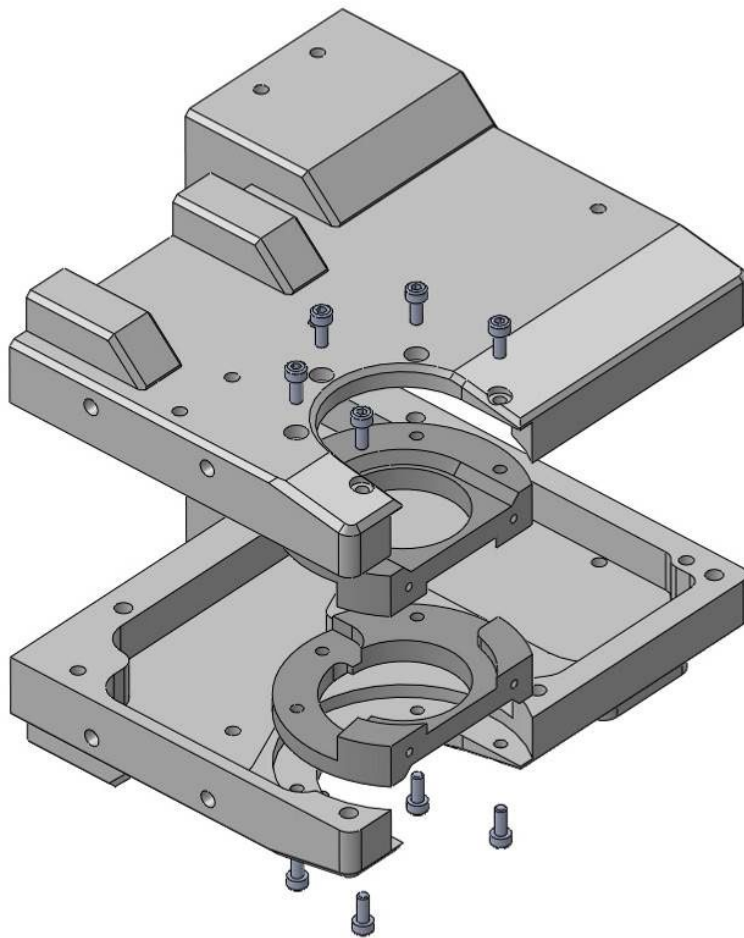
9. Replacing Method of Bush

※ 「Medium Strength Loctite」 is recommended as a slack preventing agent.

Please finish the 【7.0 Replacement Method of Remover Unit】 to process 6 and confirm there are no parts inside of the gear case.

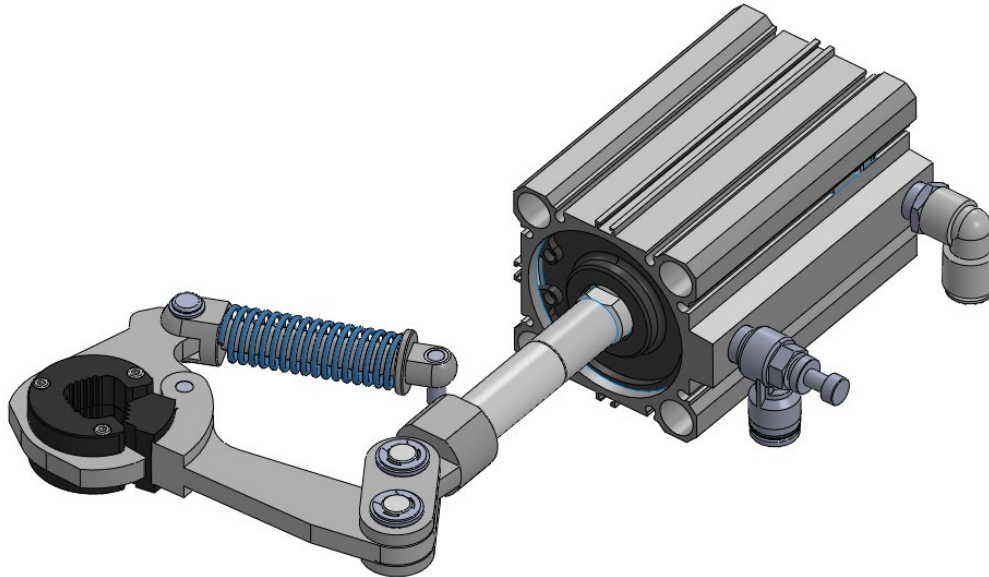
1. Unscrew the M4*10L cap bolts (10pcs.) which are holding the bush to decompose.

※The screwing torque when assembling must be $3.0\text{N} \cdot \text{m}$ with loctite.

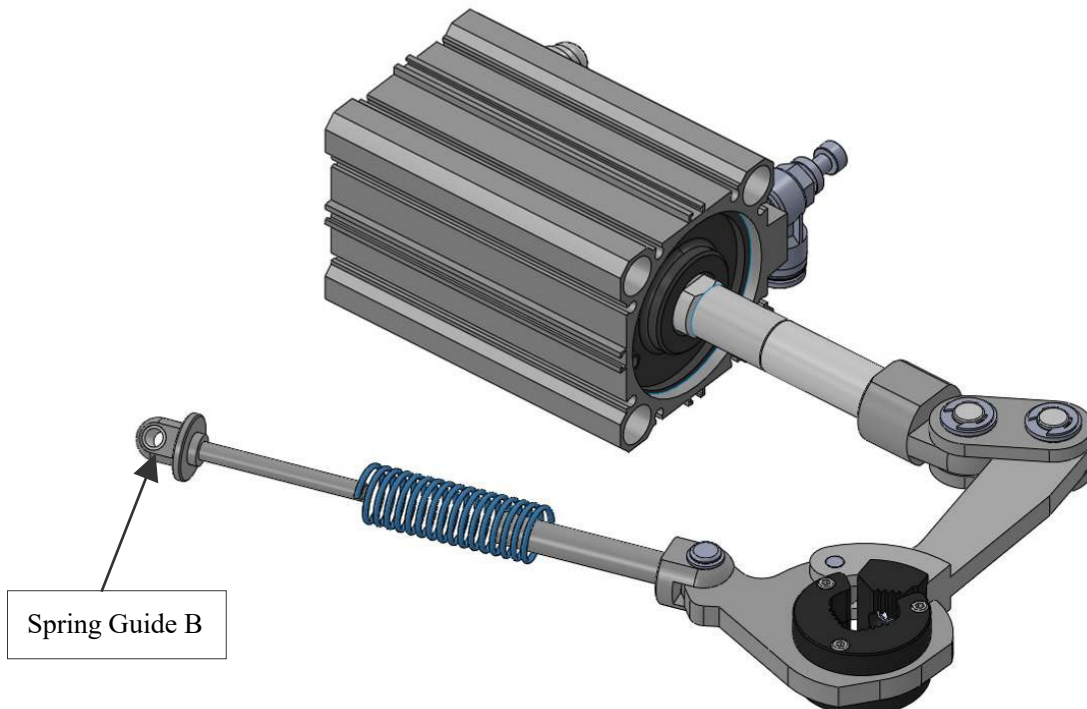


10. Replacing Method of Spring

Please finish the 【7.0 Replacement Method of Remover Unit】 to process 6.



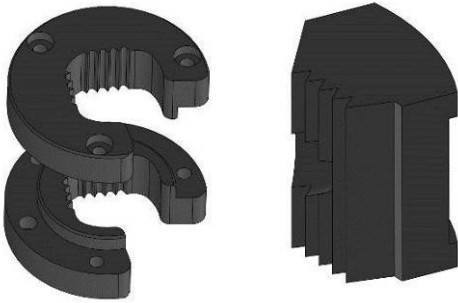
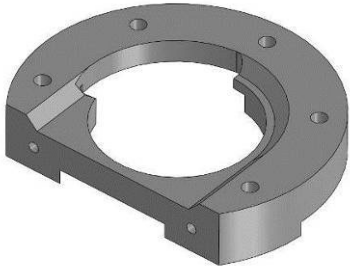


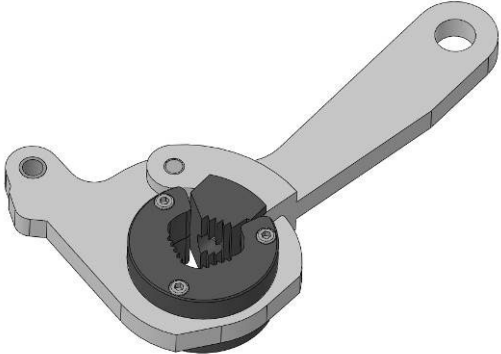
1. Remove the “Spring Guide B” and replace the spring.



11. Troubleshooting

TROUBLE	Cause and Countermeasure
Tip does not remove.	<p>※Breakdown of a remover unit →Confirm the nails of remover unit and change it for new one.</p> <p>※The spec of tip dia. And the remove unit does not match. →Please confirm the specification.</p> <p>※The motion when removing is not proper. →Please confirm the robot teaching.</p> <p>※The air pressure is too low, or it is not supplied. →Please check the air supply.</p> <p>※The setting of the speed controller is not proper. →Please refer to P.9 and reset.</p>
Removed tip does not fall.	<p>※The nail might be clumping the tip. Please rotate the nail to retract the nail.</p>
A magazine does not fit into adapter or it can't be fixed.	<p>※Wrong orientation magazine or opposite side of tip magazine. →Please switch up and down or right and left side of magazines</p> <p>※Trash or dast can be jammed in adapter side of magazine. →Please clean up adapter pins</p> <p>※Purge dail is set to 【Lock】 →Please set to 【UNLOCK】</p> <p>※A Proximity switch touches a magazine. →Please adjust the position of the proximity switch.</p>
Magazine does not come off the adapter.	<p>※The lever might be set on 【LOCK】 . →Please turn the lever to 【UNLOCK】 .</p>
Thetip does not fit the magazine.	<p>※The measurement of the tip and the magazine might be wrong. →Please confirm the measurements.</p>
The magazine does not send the next tip.	<p>※Spring in the magazine might be damaged or broken. →Please replace the spring or the magazine unit.</p>
Unable to confirm tip remains.	<p>※A proximate switch is broken.◦ →Please exchange the proximate switch.</p> <p>※A proximity sensor is in wrong position. →Please adjust the position of the proximity sensor.</p>

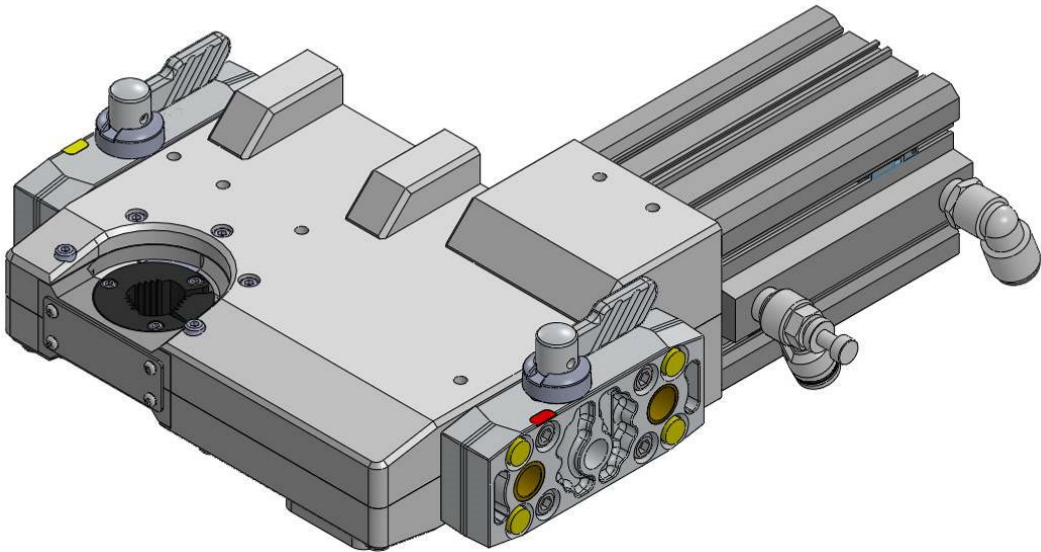
12. Consumption Parts

	<p>Nail Set Name : KIKK-SG-N-**AB ※** = Using Tip Diameter (φ13 用 : KIKK-SG-N-13AB) (φ16 用 : KIKK-SG-N-16AB) (φ19 用 : KIKK-SG-N-19AB) (φ20 用 : KIKK-SG-N-20AB)</p> <p>◆Needed Qty. : 1 Set ◆Replacing Cycle : 2000times</p>
	<p>Upper Bush Name : KIKK-SG-P-005U (φ13/φ16 用) Name : KIKK-SG-1920-P-005U (φ19/φ20 用)</p> <p>◆Needed Qty. : 1 Set ◆Replacing Cycle : 2000times</p>
	<p>Lower Bush Name : KIKK-SG-P-005L (φ13/φ16 用) Name : KIKK-SG-1920-P-005L (φ19/φ20 用)</p> <p>◆Needed Qty. : 1 Set ◆Replacing Cycle : 2000times</p>
	<p>Spring Name : 51-22100</p> <p>◆Needed Qty. : 1 Set ◆Replacing Cycle : 4000times</p>
	<p>Remover Unit Name : KIKK-SG-ReU-TYPE-** ※** = Using Tip Diameter (For φ13 : KIKK-SG-ReU-TYPE-13) (For φ16 : KIKK-SG-ReU-TYPE-16) (For φ19 : KIKK-SG-ReU-TYPE-19) (For φ20 : KIKK-SG-ReU-TYPE-20)</p> <p>◆Needed Qty. : 1 Set ◆Replacing Cycle : 4000times</p>

13. How To Order

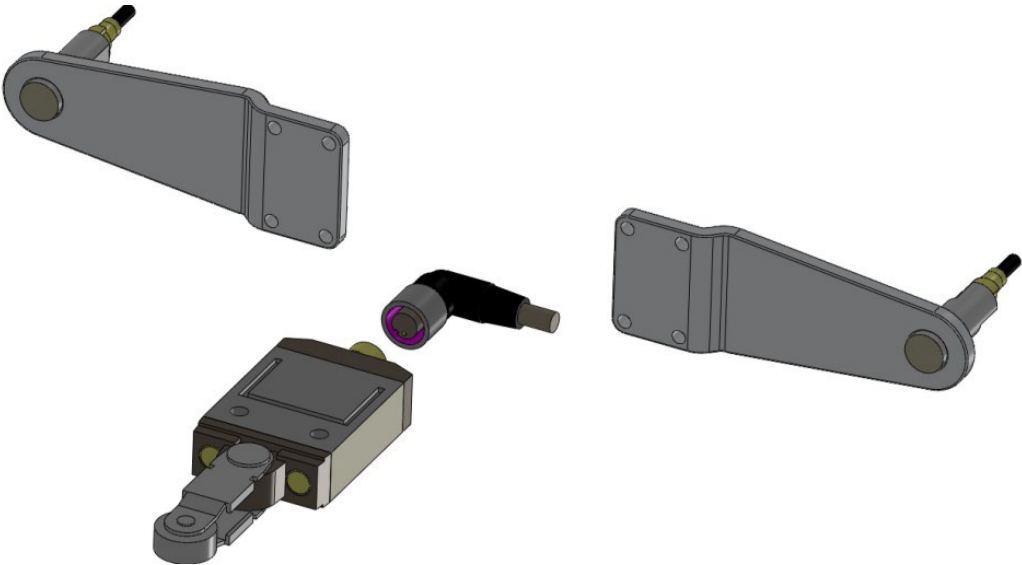
【KIKK-SG Body】

Tip Dia.	Type Name
φ 13	KIKK-SG13
φ 16	KIKK-SG16
φ 19	KIKK-SG19
φ 20	KIKK-SG20



【Sensor Pack (Option)】

Type Name: KIKK-EL-SE-Pac



【Magazine】

◆ The available tip shapes are the listed below.

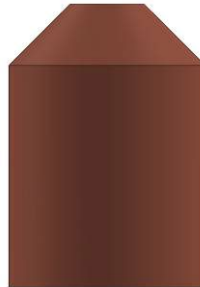
For shapes not listed below, please contact our sales department.



DR Shape



R Shape

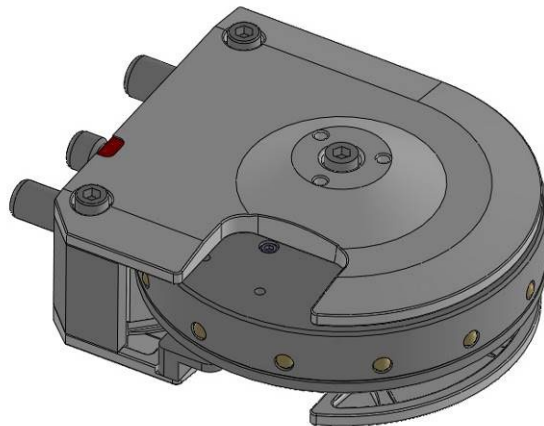
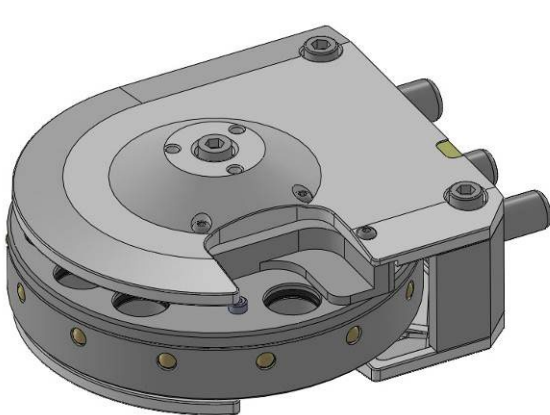


C Shape



Flat Shape

Tip Diameter	Tip Length (mm)	Upper Magazine Type Name	Lower Magazine Type Name
φ 13	18~21	MG131821MR-U	MG131821MR-L
	20~23	MG132023MR-U	MG132023MR-L
	22~25	MG132225MR-U	MG132225MR-L
φ 16	18~21	MG161821MR-U	MG161821MR-L
	20~23	MG162023MR-U	MG162023MR-L
	22~25	MG162225MR-U	MG162225MR-L
φ 19	18~21	MG191821MR-U	MG191821MR-L
	22~25	MG192225MR-U	MG192225MR-L
φ 20	18~21	MG201821MR-U	MG201821MR-L
	22~25	MG202225MR-U	MG202225MR-L



Contact

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



KYOKUTOH CO., LTD

181-1, Nakayashiki, Orido-cho, Nisshin, Aichi 470-0115 Japan

TEL +81-561-72-8811 FAX +81-561-72-8821

E-Mail: sales@kyokutoh.com

<http://www.kyokutoh.com>

SAITAMA Office

TEL +81-49-277-4324 FAX +81-49-277-4325

KANAGAWA Office

TEL +81-46-204-9260 FAX +81-46-204-9261

HIROSHIMA Office

TEL +81-82-569-6227 FAX +81-82-569-6228

FUKUOKA Office

TEL +81-92-410-6977 FAX +81-92-410-6988



CHANGER & DRESSER CORPORATION

1527 ITC Way, Anniston, AL 36207 U.S.A

TEL +1-256-832-4392 FAX +1-256-832-4393

<http://www.changer-dresser.com>



KYOKUTOH CHINA

73 Huagang Street, Xiuquan Town, Huadu District,
GuangZhou City, GuangDong Province, China.

TEL +86-20-86980880 FAX +86-20-86980890

<http://www.kyokutoh.com.cn>



KYOKUTOH THAILAND

339/2 Soi Phattanakarn 69, Phattanakarn Road, Prawet,

Bangkok 10250 THAILAND

TEL +66-272-162-82 FAX +66-272-162-84

<http://www.kyokutoh.co.th>



KYOKUTOH KOREA

117, Tawon TAKRA II Industry Center, Dongsan-ro 76,

Danwon-gu, Ansan-si, Gyeonggi-do, Korea 15434

TEL +82-31-414-8730 FAX +82-31-414-8731



KYOKUTOH EUROPE

Max-Planck-Str.4 59423 Unna Germany

TEL +49-2303-93-615-00 FAX +49-2303-93-615-29

<http://www.kyokutoh.de>



KYOKUTOH WELD INDIA

Office No.19, 3rd Floor, Aditya Centeegra, FC Road, Deccan,
Pune - 411004

TEL +91-20-68297011 FAX +91-20-68297011
