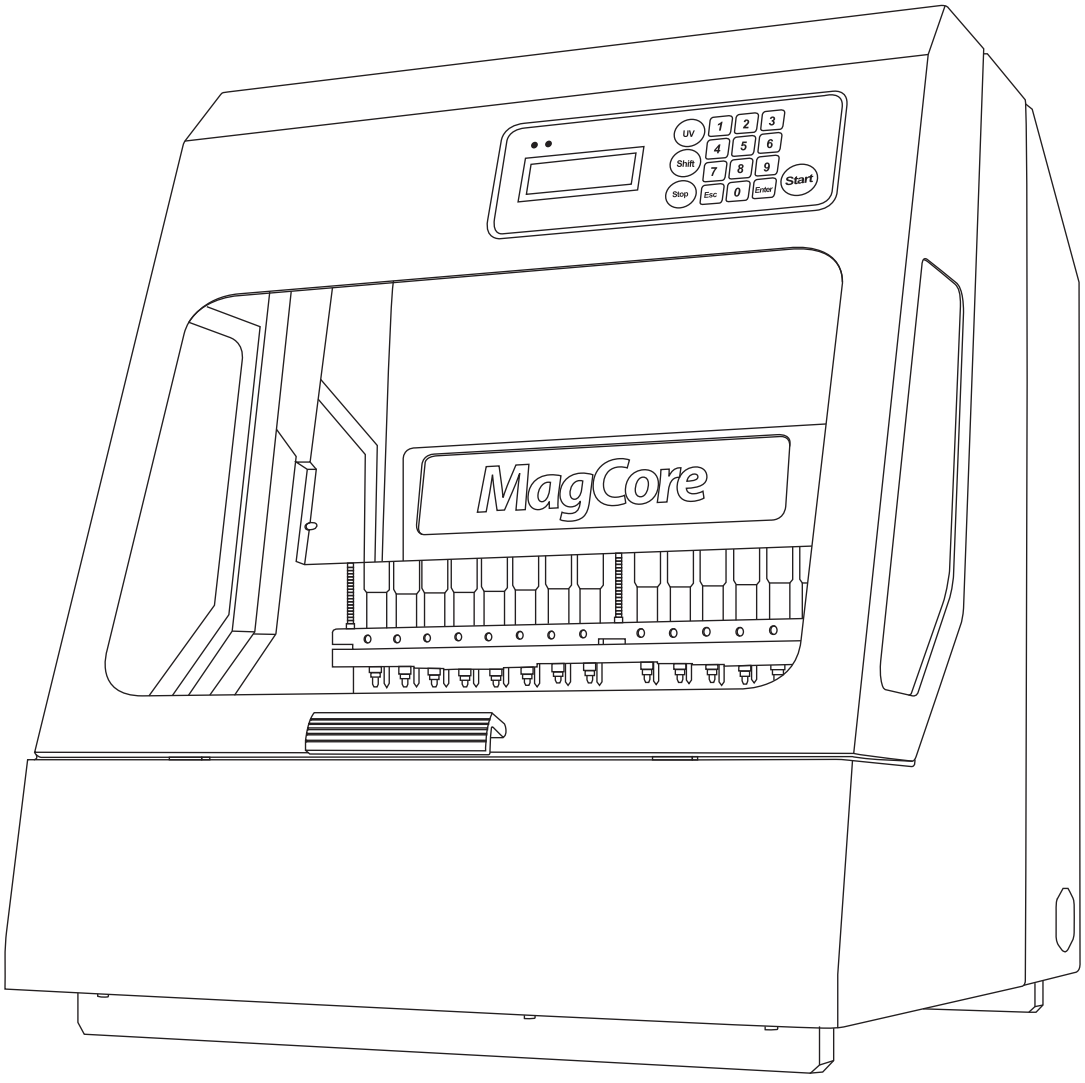
MagCore HF16
Service Manual



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Prologue

I. Contact Addresses

Manufacturer: RBC Bioscience Corp.
5F., No.15, Qiaohe Rd.,Zhonghe Dist., New Taipei City 235029, Taiwan
TEL:+886-2-8912-1200 FAX:+886-2-8912-1300

II. Declaration of Conformity

To which this declaration relates, we hereby declare that the above-mentioned device is in conformity with the essential requirements of the following Directive and Standards: In vitro Diagnostic Medical Devices Directive 98/79/EC

III. Trademark

MagCore®

IV. Warranty

The warranty conditions are specified in the sales contract.
Contact your RBC Bioscience Corp. representative for further information.
Any unauthorized modification of the MagCore Instrument and/
or the MagCore Software will result in invalidity of the guarantee and service contract.

V. Intended Use

The MagCore® Nucleic Acid Extraction System is an automated nucleic acid purification system consisting of the MagCore® instrument, software, Kit (consumables and reagents). The MagCore® Nucleic Acid Extraction System is intended for use by professional users for the purification of nucleic acids from biological samples for in vitro diagnostic purposes. The MagCore® Nucleic Acid Extraction Kit is for use with the MagCore® Nucleic Acid Extraction System.

The MagCore® Nucleic Acid Extraction system is intended for life science research only. It is not for use in diagnostic procedures.

The MagCore® Nucleic Acid Extraction system is not intended for in vitro diagnostic use. Any use of the MagCore® Nucleic Acid Extraction System as a front-end sample preparation system for in vitro diagnostic test systems. The validation of the combination of MagCore® Nucleic Acid Extraction system nucleic acid isolation and in vitro diagnostic testing must be performed by operator, following the relevant national regulations.

VI. Product Use Limitations

The MagCore® Nucleic Acid Extraction Instrument is not intended for use with reagent kits other than MagCore® reagent kits or with samples other than those defined within the product limitation of the specific MagCore®reagent kit being used.

VII. Preamble

Before setting up operation of the MagCore® System, it is important to read this operator's guide thoroughly and completely. Non-observance of the instructions contained herein or performing an operation not stated in this Operator's Guide could involve safety hazards.

VIII. Conventions Used in this Operator's Guide

In this operator's guide symbols are used as visual signals:

Symbol	Heading	Description
	WARNING/ CAUTION	This symbol is used to indicate that non-compliance with instructions or procedure could lead to physical injury or even death or could cause damage to the instrument.
	DANGEROUS ELECTRICAL VOLTAGE	This symbol is used to indicate the danger of personal injury due to dangerous electrical voltage. Refers to an imminent danger that may result in death or serious personal injury.
	BIO HAZARD	This symbol is used to indicate that certain precautions must be taken when working with potentially infectious material.
	HOT SURFACE	This symbol is used to label potentially hot instrument surfaces.
	ULTRAVIOLET LIGHT	This symbol indicates that the MagCore instrument contains high-energy ultraviolet lamps which can cause serious temporary eye and skin irritation. Never expose unprotected eyes or skin to the UV light.

The following symbols appear on the instrument

Symbol	Heading	Description
	MANUFACTURER OF DEVICE	On the instrument type plate.
	CE MARK	The CE mark on the instrument type plate indicates conformity with requirements of the directives relevant for this instrument.

IX. Environmental Requirements (Operating, Shipping and Storage Condition)

Power Requirements: 100V~240VAC,50/60Hz,2.5A
Temperature: 10℃-40℃(shipping/storage), 15℃-35℃(operation)
Humidity: 30%-75%
Pressure Allowed: 700hPa-1060hPa

The MagCore® Instrument is intended for indoor use only. Wipe up spills immediately. To avoid shortening the expected lifespan of the instrument, install in location that meets the following criteria:

- *Locate on a sturdy, level surface.*
- *Avoid dusty areas.*
- *Choose a location that has good air circulations and is not exposed to direct sunlight.*
- *Avoid electrically noisy power sources.*
- *Don't install in a location where there is large temperature variability or high humidity.*
- *Don't place use near flammable gases or liquids*
- *Don't place next to heat sources.*
- *Don't place near other electrically sensitive instruments.*

X. Warnings and Precautions

This user manual contains information about warnings and cautions that must be followed by the user to ensure safe operation of the MagCore® instrument and to maintain the instrument in a safe condition.

Possible hazards that could harm the user or result in damage to the instrument are clearly stated at the appropriate places throughout this user manual.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Check the validity of reagents and disposables as per each instruction or caution of use.
The following safety conventions are used throughout this user manual.



WARNING

The term WARNING is used to inform you about situations that could result in personal injury to other persons. Details about these circumstances are given in a box like this one.

CAUTION

The term CAUTION is used to inform you about situations that could result in damage to an instrument or other equipment. Details about these circumstances are given in a box like this one.

The advice given in this manual is intended to supplement, not supersede, the normal safety requirements prevailing in the user's country.

1. Proper use

The MagCore® must only be operated by qualified personnel who have been appropriately trained.
Servicing of the MagCore® must only be performed by RBC Bioscience Field Service Specialists.



WARNING

Risk of personal injury and material damage

Improper use of the MagCore® may cause personal injuries or damage to the instrument.



CAUTION

Damage to the instrument

Avoid spilling water or chemicals onto the MagCore® Instrument damage caused by water or chemical spillage will void your warranty.

Note: Do not place items on top of the MagCore® instrument.



WARNING

Risk of personal injury

Two people must carry the instrument. After the MagCore® has been unpacked, 2 people must lift the instrument.
Lift the instrument by placing your hands underneath the bottom of the instrument.

Note: In case of emergency, switch off the MagCore® instrument and unplug the power cord from the power outlet.



CAUTION

Damage to the instrument

Ensure that the MagCore® is switched off before you manually move the mechanical components of the instrument.

2. Electrical safety

Note: If operation of the instrument is interrupted in any way (e.g., due to interruption of the power supply or a mechanical error), first switch off the MagCore® instrument, then disconnect the electrical cord from the power supply and contact RBC Bioscience Technical Services.



WARNING

Electrical hazard

Any interruption of the protective conductor (earth/ground lead) inside or outside the instrument or disconnection of the protective conductor terminal is likely to make the instrument dangerous. Intentional interruption is prohibited.
Lethal voltages inside the instrument When the instrument is connected to line power, terminals may be live. Opening covers or removing parts is likely to expose live parts.

When working with the MagCore® instrument:
- *Do not adjust or replace internal parts of the instrument.*
- *Do not operate the instrument with any covers or parts removed.*
- *If liquid has spilled inside the instrument, switch off the instrument, disconnect it from the power outlet, and contact RBC Bioscience Technical Services.*
- *The instrument shall be installed in a way that the power cord is accessible.*
- *If the MagCore® instrument becomes electrically unsafe, prevent other personnel from operating it, and contact RBC Bioscience Technical Services.*

The instruments may be electrically unsafe when:
- *The MagCore® instrument or the line power cord appears to be damaged.*
- *The MagCore® instrument has been stored under unfavorable conditions for a prolonged period.*
- *The MagCore® instrument has been subjected to severe transport stresses.*
- *Liquids have come into direct contact with electrical components of the MagCore® instrument.*
- *The power cord has been exchanged with a non-official power cord.*

Note: Do not place items on top of the MagCore® instrument.



WARNING

Electrical hazard

Do not touch the MagCore® instrument with wet hands.
Never install a fuse different from that specified in the user manual.

Note: If water, reagent, sample or ethanol has spilled onto or into the instrument,
switch off the instrument and disconnect it from the line power supply. Call RBC Bioscience Technical Services.

3. Environment

Operating conditions



WARNING

Explosive atmosphere

The MagCore® instrument is not designed for use in an explosive atmosphere.

Risk of overheating

To ensure proper ventilation, maintain a minimum clearance of 15 cm (6 in.) and 30 cm (12 in.) from the rear and sides of the MagCore® instrument. Slits and openings that ensure the ventilation of the instrument must not be covered.

4. Waste disposal

Used consumables, such as reagent cartridges and disposable filter-tips, may contain hazardous chemicals or infectious agents from the purification process. Such wastes must be collected and disposed of properly according to local safety regulations.



CAUTION

Hazardous materials and infectious agents

The waste contains samples and reagents.
This waste may contain toxic or infectious material and must be disposed of properly.
Refer to your local safety regulations for proper disposal procedures.

5. Biological safety

The MagCore® instrument is designed to ensure safe operation. However, since biological research sample material may be processed in the instrument, there is a possible risk of infection. Therefore, when handling potentially infectious material, always follow standard safety procedures and bear in mind the following steps to minimize the chance of contamination or infection.

Note: Specimens and reagents containing materials from humans should be treated as potentially infectious.
Use safe laboratory procedures as outlined in publications such as Biosafety in Microbiological and Biomedical Laboratories, HHS.

Samples



WARNING

Samples containing infectious agents

Some samples used with this instrument may contain infectious agents.
Handle such samples with the greatest of care and in accordance with the required safety regulations.
Always wear safety glasses, gloves and a lab coat.
The responsible persons (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe, and that the instrument operators are suitably trained and not exposed to hazardous levels of infectious agents as defined in the applicable Safety Data Sheets (SDSs) or OSHA, ACGIH† or COSHH‡ documents.*
Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.
** OSHA: Occupational Safety and Health Administration (United States of America).*
† ACGIH: American Conference of Government Industrial Hygienists (United States of America).
‡ COSHH: Control of Substances Hazardous to Health (United Kingdom).

6. Chemicals



WARNING

Hazardous chemicals

Some chemicals used with the MagCore® instrument may be hazardous or may become hazardous after completion of a purification.
Always wear safety glasses, gloves, and a lab coat.
The responsible persons (e.g., laboratory manager) must take the necessary precautions to ensure that the surrounding workplace is safe and that the instrument operators are not exposed to hazardous levels of toxic substances (chemical or biological) as defined in the applicable Safety Data Sheets (SDSs) or OSHA, ACGIH† or COSHH‡ documents.*
Venting for fumes and disposal of wastes must be in accordance with all national, state, and local health and safety regulations and laws.

Toxic fumes

Note: If you work with volatile solvents, toxic substances, etc., you must provide an efficient laboratory ventilation system to remove vapors that may be produced.



WARNING

Toxic fumes

Do not use bleach to clean or disinfect the MagCore® instrument. Bleach in contact with salts from the buffers can produce toxic fumes.

Toxic fumes

Do not use bleach to disinfect used labware. Bleach in contact with salts from the buffers used can produce toxic fumes.

7. Mechanical hazards

The worktable of the MagCore® instrument moves during operation of the instrument.
Never open the MagCore® instrument door while the MagCore® instrument is operating.



WARNING

Moving parts

To avoid contact with moving parts during operation of the MagCore® instrument, the instrument must be operated with the door closed.

8. Heat hazard

The MagCore® instrument worktable contains a heating system.



Hot surface

The heating system can reach temperatures of up to 90°C. Avoid touching it when it is hot.

9. UV radiation

The MagCore® instrument supports UV lamps. The wavelength of the UV light produced by the UV lamp is 253.7 nm. This wavelength corresponds to ultraviolet light type C, which can be used for decontamination procedures.



CAUTION

UV radiation

Avoid looking directly into UV light. Do not expose your skin to UV light.

Damage to the instrument

The UV lamps need a minimum switch-on time of 20 minutes. Do not interrupt a UV light cycle before 20 minutes have passed since it will reduce the lamp's lifetime.



CAUTION

Damage to the instrument

Be careful not to damage the cover of the UV lamps when loading and unloading the worktable.

Damage to the instrument

Do not slam the door. It may harm the filament of the UV lamp.



WARNING

Risk of personal injury

The UV lamp consists of a robust glass cylinder. It is safely located inside the door of the MagCore® instrument. In case of accidental breakage of the lamp, contact RBC Bioscience Technical Services or your local distributor to arrange proper disposal of the lamp.

10. Maintenance safety



WARNING
CAUTION

Risk of personal injury and material damage

Only perform maintenance as described in this user manual.

Risk of personal injury and material damage

Improper use of the MagCore® instrument instrument may cause personal injuries or damage to the instrument. The MagCore® instrument must only be operated by qualified personnel who have been appropriately trained.
Servicing of the MagCore® instrument must only be performed by RBC Bioscience Field Service Specialists.



WARNING

Risk of fire

When cleaning the MagCore® instrument with alcohol-based disinfectant, leave the instrument door open to allow flammable vapors to disperse. Only clean the MagCore® instrument with alcohol-based disinfectant when worktable components have cooled down.



CAUTION

Damage to the instrument

Do not use bleach, solvents or reagents containing acids, alkalis or abrasives to clean the MagCore® instrument.

Damage to the instrument

Do not use spray bottles containing alcohol or disinfectant to clean surfaces of the MagCore® instrument. Spray bottles should be used only to clean items that have been removed from the worktable.

Damage to the instrument(s)

After wiping the worktable with paper towels, make sure that no bits of paper towel remain. Pieces of paper towel remaining on the worktable could lead to a worktable collision.



WARNING
CAUTION

Risk of personal electric shock

Do not open any panels on the MagCore® instrument.
Only perform maintenance as described in this user manual.

XI. Disposal of the Instrument

Disposal Recommendations

All electrical and electronic products should be disposed of separately from the municipal waste system. Proper disposal of your old appliance prevents potential negative consequences for the environment and human health.

The instrument must be treated as biologically contaminated hazardous waste. Decontamination (i.e., a combination of processes, including cleaning, disinfection and/or sterilization) is required before reuse, recycling or disposal. Dispose of the instrument according to local and/or laboratory regulations. For more information contact your local RBCBioscience Support personnel.

Components of your control unit such as the monitor, which are marked with the crossed-out wheeled bin symbol are covered by the European Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) of the European Parliament and the Council of January 27, 2003. These items must be disposed of via designated collection facilities appointed by government or local authorities. For more information about disposal of your old product, please contact your city office, waste disposal service or local RBCBioscience Support personnel.

It is left to the responsible laboratory organization to determine whether control unit components are contaminated or not. If contaminated, treat in the same way as the instrument.

Overview

1. Introduction

MagCore® instrument Purification Procedure

Purification or isolation of nucleic acids is the first step in most molecular biology studies and all recombinant DNA techniques.

The MagCore® instrument provides automated nucleic acid purification for a range of research sample types. The MagCore® instrument is designed for use by laboratory professionals. The purification methods use sample lysis and binding to Cellulose Coated Magnetic Beads as the primary separation principle. Up to 16 samples can be prepared in a single run.

The automated purification performed by the MagCore® instrument includes:

- *Sample lysis in the presence of a specially formulated Lysis Buffer*
- *Binding of nucleic acids to Cellulose Coated Magnetic Beads*
- *Washing of the bound target molecules away from other components*
- *Elution of the nucleic acids*

2. Specifications of the Instrument

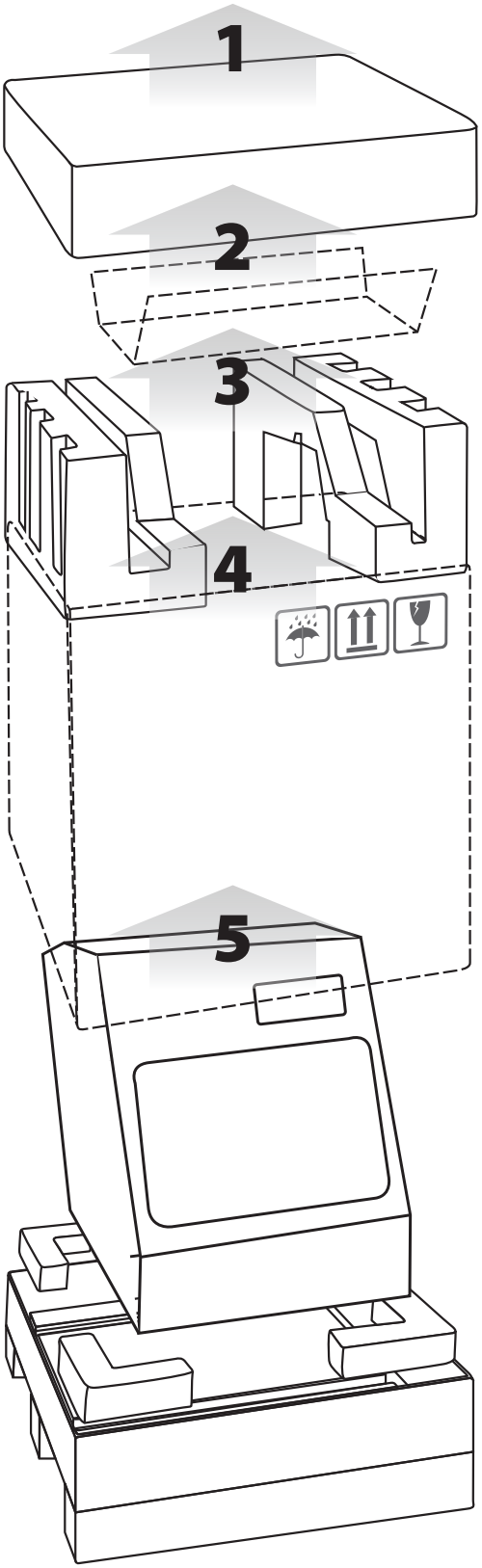
General Specifications

Model	HF16
System Method	Cellulose Coated Magnetic Beads
System Components	1. Pipetting Unit: Dispensing, transferring, Y-V two axis movements. 2. Electric Control: Internal microprocessor. 3. UV Light: Power 5W, life duration >1,000 hrs. 4. Heating Block: RT~100°C. 5. Display Screen: 3 inches LCM Screen with keypress Panel 6. Accessories: T-Rack, Cartridge Rack, Empty Cartridges, Tip/Holders, Sample tube, Microcentrifuge Tube, Syringe O-ring and Grease.
S Power Supply	Voltage: AC 100-240V; Frequency: 50/60Hz; Power Consumption >1.0KVA
Dimension	W550 X D660 X H680 (mm)
	W21.65 X D25.98 X H26.77 (inches)
Net Weight	70kg / 155lbs

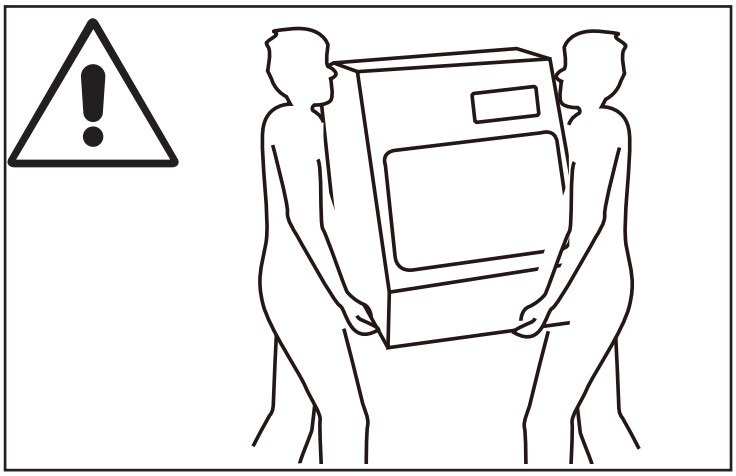
Operating Parameters

Processing Capacity	*1~16 samples per batch*
Processing Time	*30-70 minutes (depends on sample type and method)*
Sample Volume	*200µl/400µl/1,200µl/2,400µl*
Elution Volume	*60µl/100µl/150µl/200µl*
Yield	*Average 6µg Genomic DNA from 200µl human whole blood*
	Average 1µg total RNA from 400µl human whole blood
Purity	*DNA: O.D A260/280 ratio 1.8±0.1*
	RNA: O.D A260/280 ratio 2.0±0.2

1. Package Contents
1.1 Package



1. Open the package cover.
2. Remove accessories.
3. Remove the bump buffer.
4. Remove outer carton case.
5. Take out of the machine .

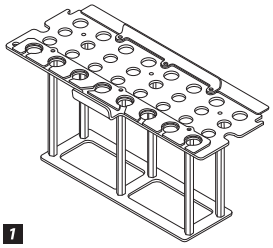


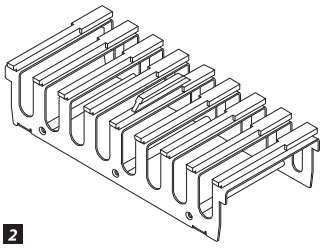
MagCore®HF16 has a weight of 70 kg(155lb). 2 people are required to lift the MagCore® HF16 safely.

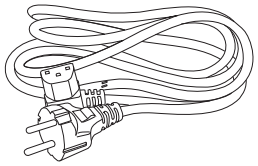
Please put MagCore® HF16 on a solid worktop table without pulley. Do not place on the same table of other facilities which need to be kept away from vibration.

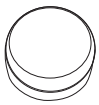
Packaging materials are recyclable.
Recommends to keep the package for future transportation or movement.

1.2 Accessories

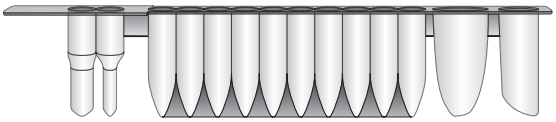

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2

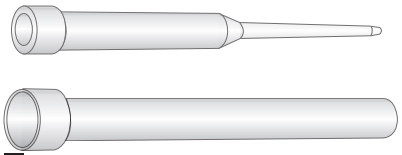

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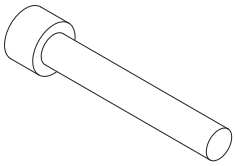

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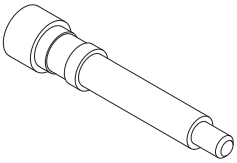
Check that the following parts are included in addition to the main unit:

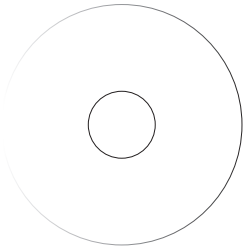
1 *T-Rack.....2*	2 *Cartridge Rack.....2*	3 *Power Cable.....1*	4 *Lubricating silicon grease.....1*
5 *O-Rings.....16*	6 *Cartridge.....32*	7 *Sample/Elution Tube.....32*	8 *Tip/Tip Holder.....32*

Accessory No: 6, 7, 8 are installation tools, please keep clean for permanent use.

1.3 Engineer Tools







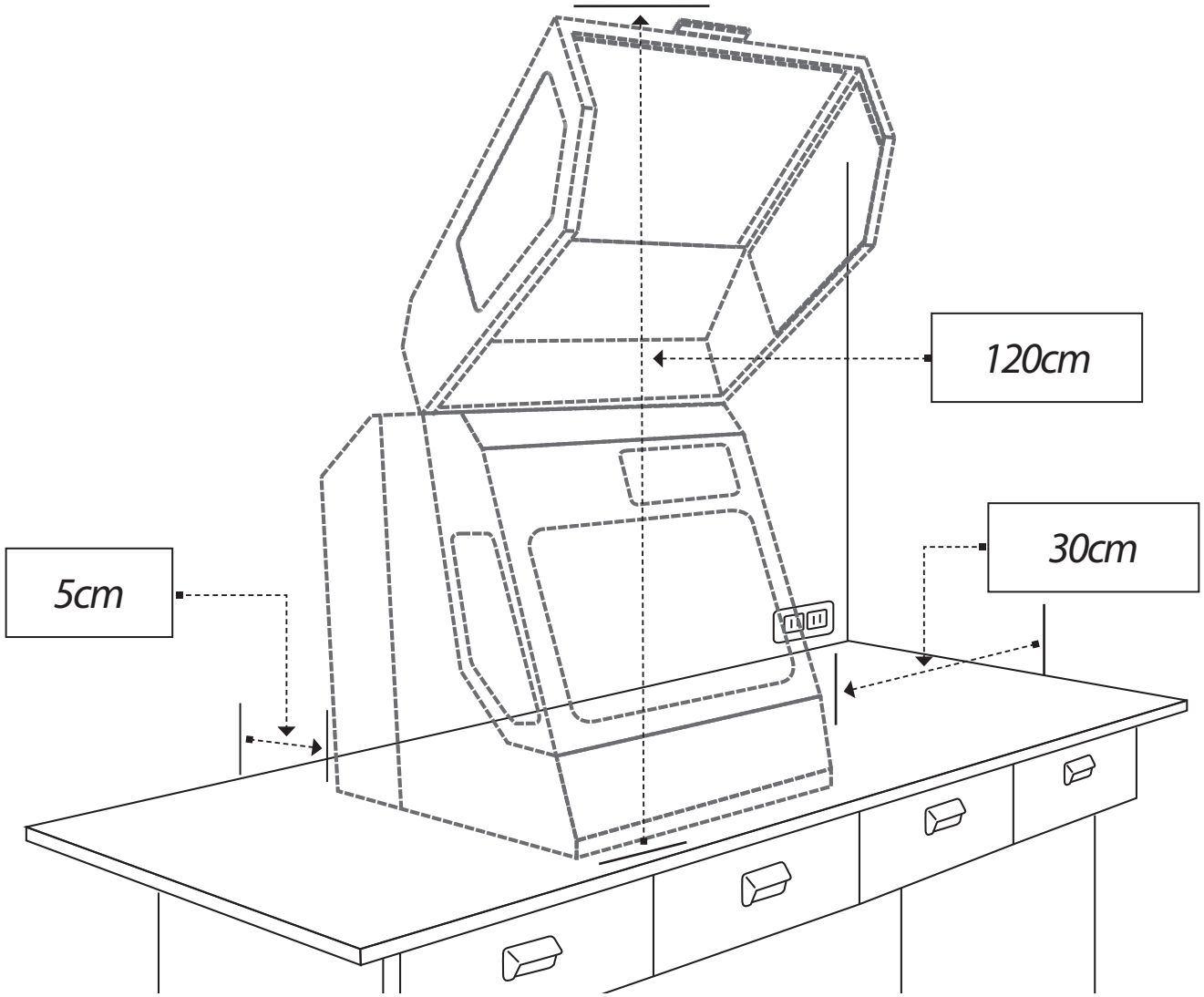
1 *Axis Teaching Tools.....2*	2 *Syringe Teaching Tools.....2*	3 *RS232 To USB Converters.....1*	4 *Program CD 1*

1.4 Shipping

The MagCore Instrument is shipped fastened to a pallet enclosed in a wooden case.

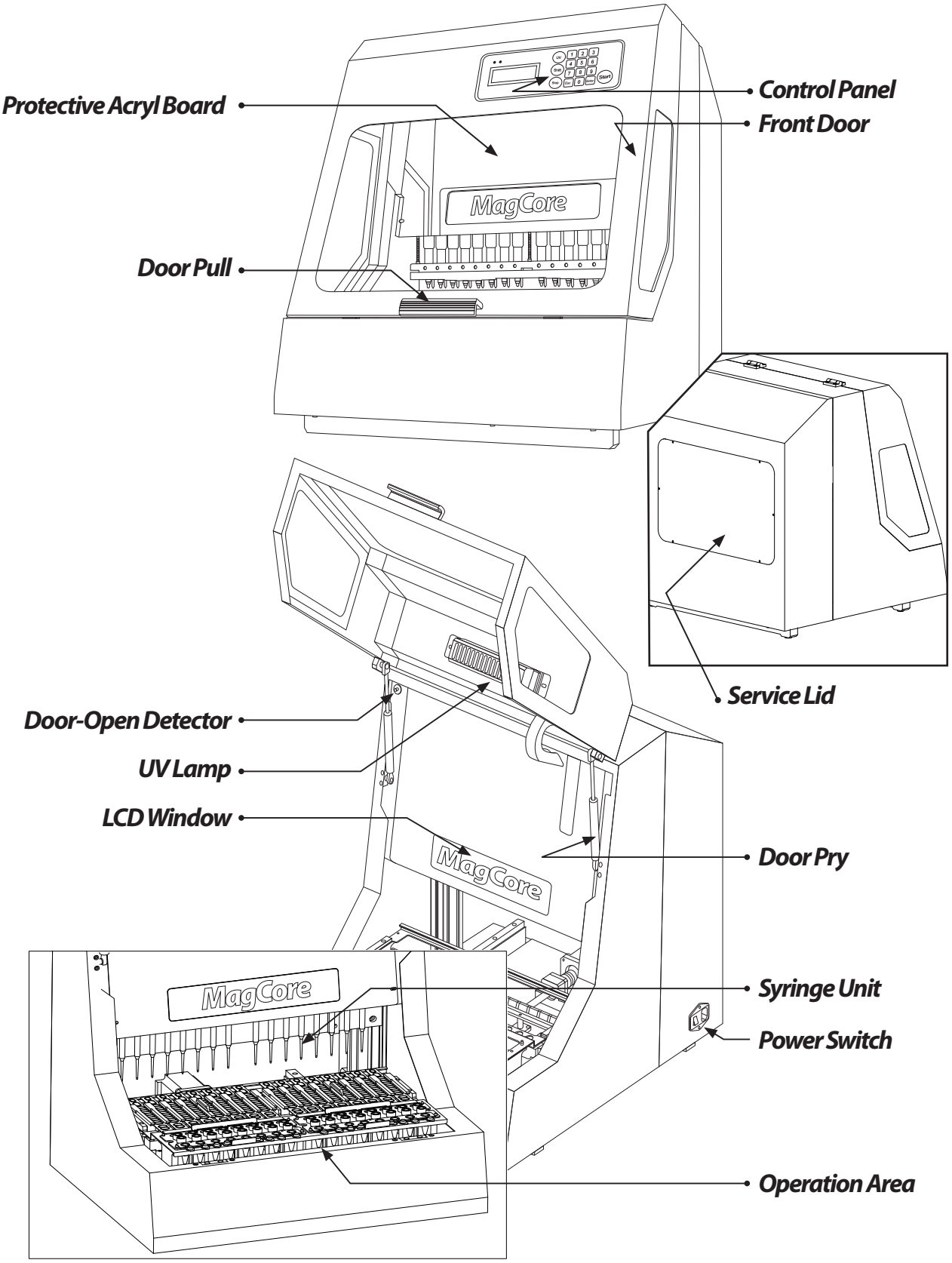
Use only the original packaging for transportation or relocation of the MagCore Instrument.

2. Installation
2.1 Before Install

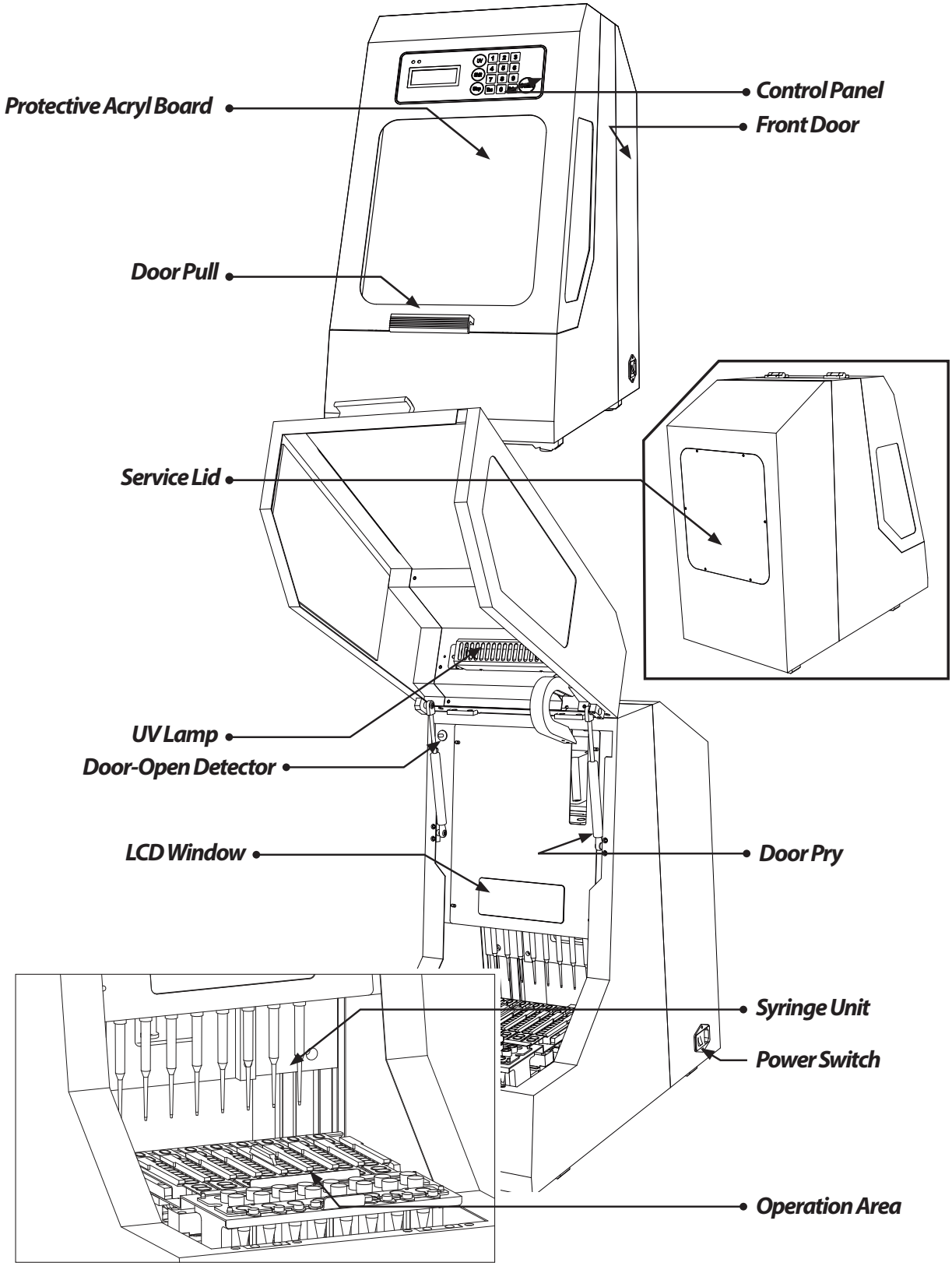


Before installation, please find a location of bench-top close to electrical outlets, and remain enough space for machine installation and ventilation.

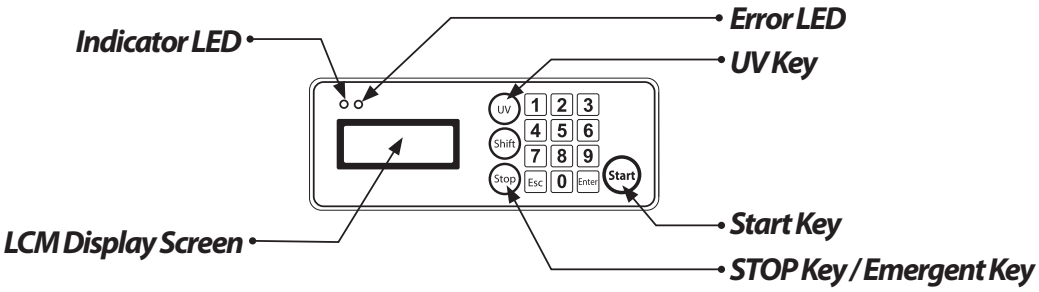
2.2 HF-16 System Overview



Compact System Overview



2.3 LCM Display Screen and Keypress Panel



MagCore® HF16 provides a touch button keypress panel for you to communicate with your instrument. The number keys give users to input Cartridge Code which specified on the Reagent Cartridge to run built-in program automatically, or to select desired volumes at start-up sample and final elution steps.

LCM Display Screen which with sapphire background light, shows clear information that the MagCore® HF16 is currently performing.

Special function of buttons described as:



UV

Perform UV sterilization after handling contagious specimens.

UV Sterilization

UV button is designed to turn on UV Lamp while your MagCore® HF16 needs to be sterilized after runing contagious samples.

Procedure

*Turn on power switch of MagCore® HF16, or after program completed and return back to "**Stand-By**" condition.*

*LCM display screen shows "**Stand-By**".*





Press UV button to proceed UV sterilization with 1hr / 30 mins of time options.
*Esc: Back to "**Stand-By**" menu.*

UV lamp actives and count down with selected time at minutes.

*MagCore® HF16 will go back to " **Stand-By**" menu once UV sterilization procedure completed.*

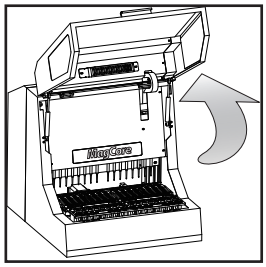
Emergent Stop

Stop

*Stop button is designed for going back to "Stand-By" menu at program completed, or for **EMERGENT STOP** use.*

In case of emergency, press "STOP" button at anytime. LCM display screen shows warning sign, Red Indicate LCD lights up and a beep sound can be heard.



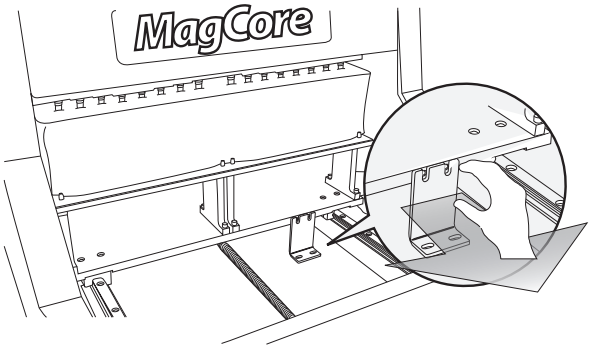


If the front door was opened during program running, MagCore® HF16 stops all mechanical movements immediately due to safty considerations.

Shift

Shift button is designed for machine calibration
***DO NOT** excute this program without trained engineer aside.*

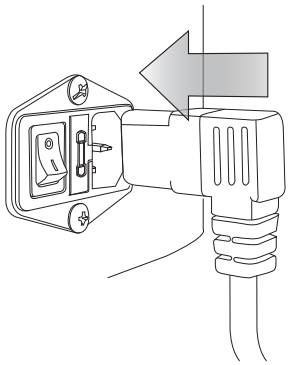
2.4 Install MagCore® HF16



Proceed installation procedures after placing MagCore® HF16 on a solid bench-top.

Open the front door and use philip screw driver to loose and take out the L-Block.

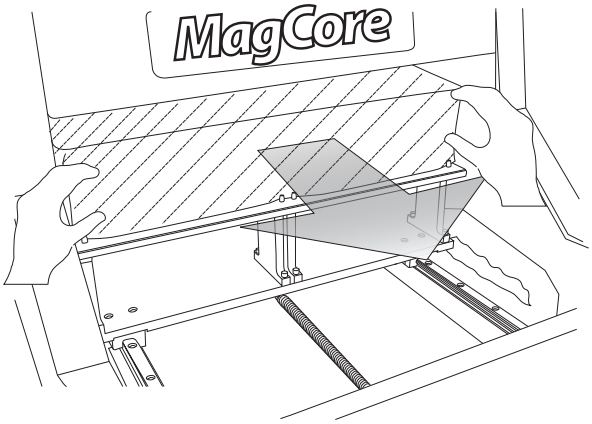
Please retain the L-Block and screws, to relocate for future move process or to fixed machine .



*Confirm the outlet voltage is **100v** to **240v** Keep hands dry and make sure that the machine remain switch-off while insert into the socket then turn on the power switch.*

Connect power socket and turn on the power.

2.5 Remove bump buffer

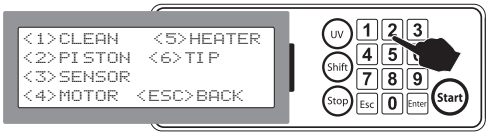


Repack bump buffer

1. *Plug in power cable, then turn on power switch.*
2. *Push back the plateform back (without T-rack and cartridge rack) to position where L-Block can be fixed.*
3. *Use Philip screw drive to fix 4 screws to L-Block.*
4. *Place the bump buffer on the cartridge plateform*
5. *Pull down the Syrindge plateform to secure bump buffer.*
6. *Turn off power.*



*After power on, LCM shows "**STAND-BY**", then press Shift for FUNCTION menu*

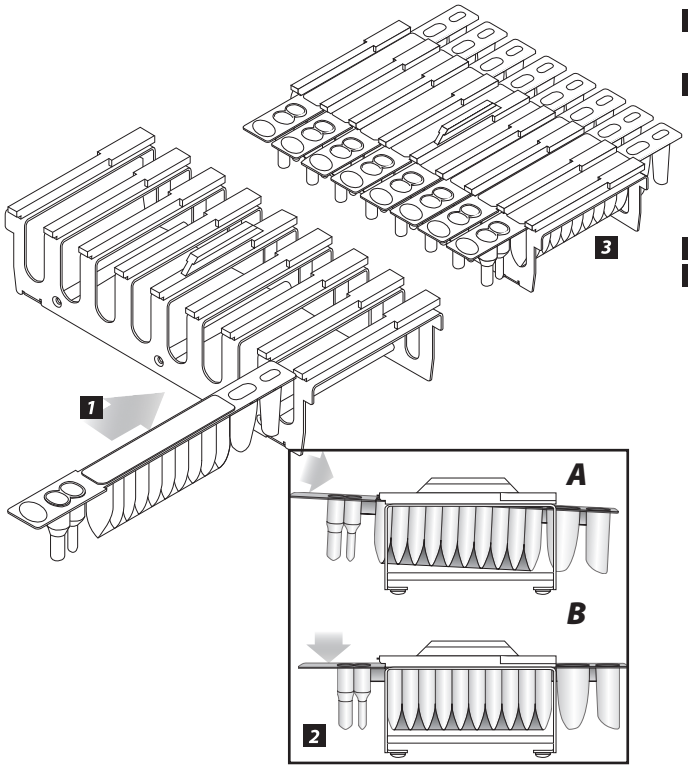


Select (2) PISTION, machine will retreat bump buffer automatically.

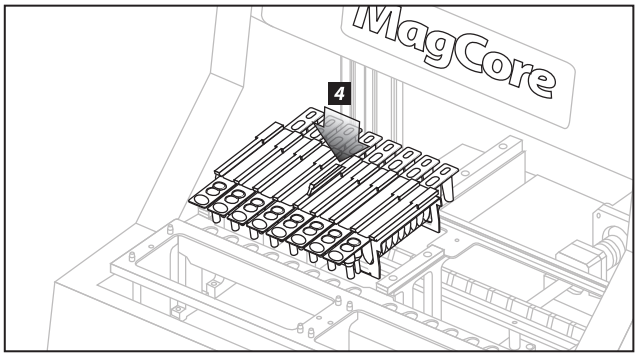


Press ECS twice to go back to STAND-BY menu. Complete instal procedures.

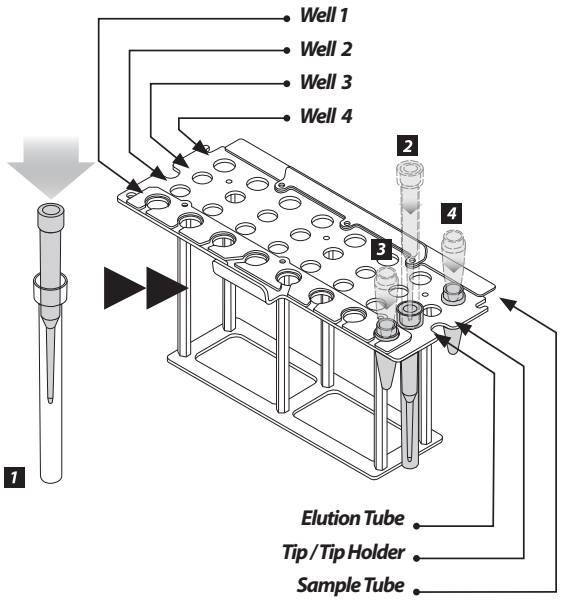
2.6 Insert Cartridge



1. *Insert MagCore® HF16 Viral Nucleic Acid cartridge into Cartridge Rack following arrow point directions.*
2. *A. Slide MagCore® HF16 cartridge into Cartridge Rack to the end with slight downward angle.*
   B. Press down the cartridge to interlock position under the overhang part of Cartidge Rack. A click sound can be heard when it is locked correctly.
3. *Load as many cartridges as sample runs. Capacity for each*
4. *Cartridge Rack is 8, up to 16 samples for two Cartridge Racks can be performed at one time on MagCore® HF16.*
   Instal the cartridges loaded Cartridge Rack into inner operation area of the MagCore® HF16 and lock firmly.

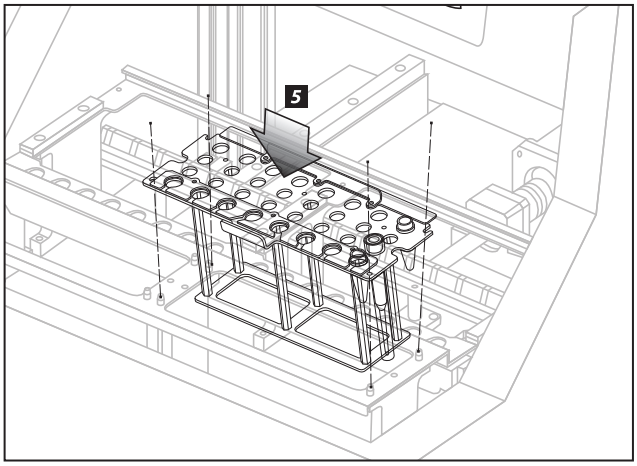


2.7 Setup Tube, Tip and Tip Holder



Please refer to MagCore® Kit User Menu for appropriate wells to setup Tip and Tube.

1. *Put Tips into Tip Holders.*
2. *Set the Tip/Tip Holder onto hole 2 of T-Rack.*
3. *Place provided Elution (Eppendorf) Tube or other types of tube into hole 1 of T-Rack as final purified DNA collection tube.*
4. *Set the Sample Tube onto hole 4 of T-Rack.*
5. *Instal the Tip/Holder and Sample/Elution Tubes loaded T-Rack into outter operation area of the MagCore® HF16 and lock firmly.*



Caution:

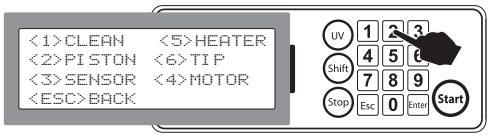
DO NOT use any other type of microcentrifuge tube to replace provided Sample Tube.
It may cause operation impact due to different height of tubes.

2.8 System Test

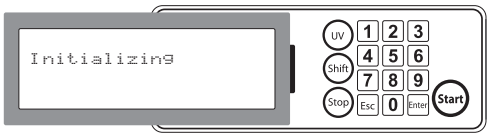
1. Apply 16 Tips / Tip Holders and Sample/Elution Tubes to T-Rack. Add 1ml of water to each Sample Tubes then close the front door.

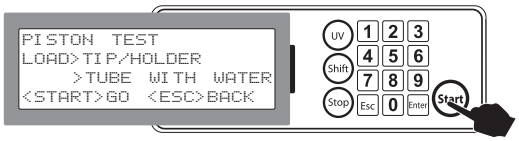


2. Press Shift to enter FUNCTION Menu.



3. Select (2) PISTON for Tip taking and Syringe air-tight tests.

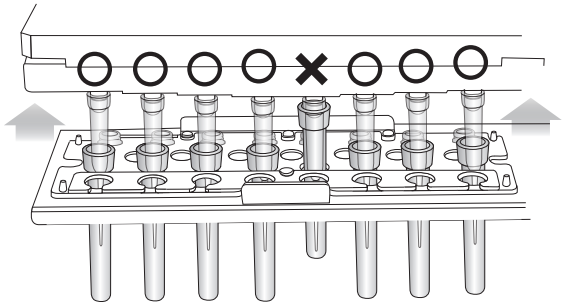




4. Press START to go.

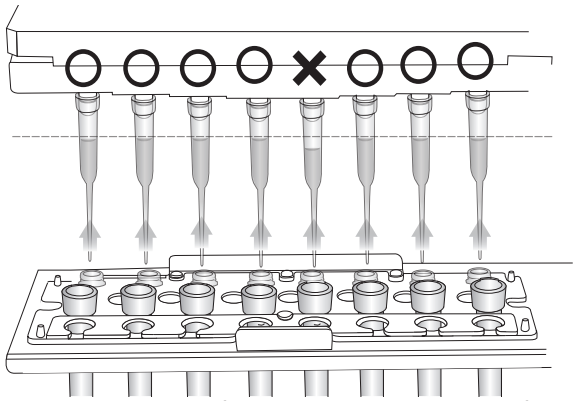


2.8.1 Test 1



Machine taking up Tips, please check whether the Tips move smoothly. If you observe a Tip Holder stuck, please press the STOP button immediately to stop and remove the jammed Holder. Replace the Tip/Tip Holder then run the procedure again. If the problem persists, contact your local dealer for engineering helps.

2.8.2 Test 2



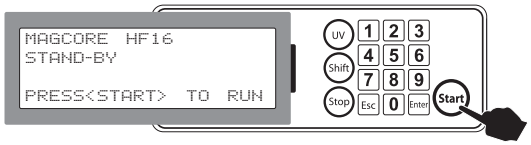
Tip will absorb water from Sample Tube and pause for 15 seconds, please check the liquid level of each columns are at same horizontal. If leakage situation is observed, press STOP button to stop and replcae the leaking Tip and O-ring, then run the test again. If the problem persists, contact your local dealer for engineering helps.

2.8.3 Test 3

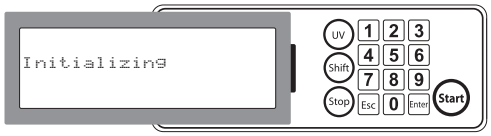
Return Tip Please check whether it is smooth or not at returning Tips.

2.9 Start Programs

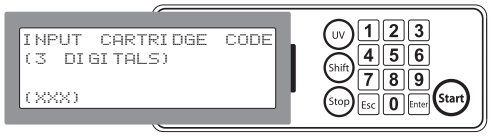
Install all necessary accessories and apply your specimen to MagCore®.

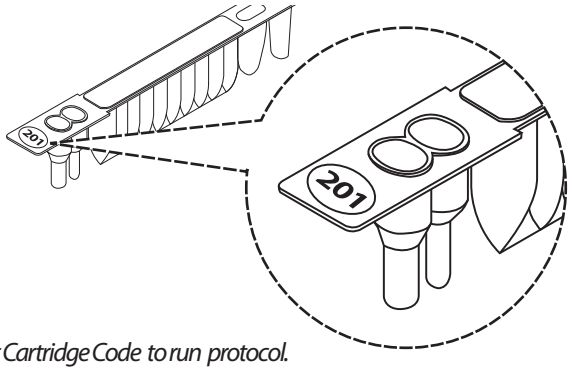


Press START



After press Start button, machine runs program of calibration, initialize to move all axis to original factory positions.





Input Cartridge Code to run protocol.
Cartridge Code is shown on your Reagent Cartridge and the cover of user manual.

Above CODE is for demostration purpose, please refer to the kit you purchase for real workshop.



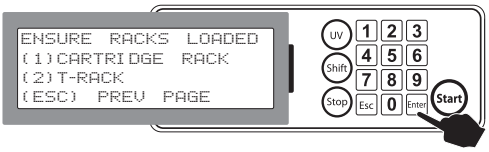
Confirm your input code again and press Enter to next page for sample volume selection.



Select Sample Volume.



Confirm your input Sample Volume.
Press Enter for next page, Press ESC for back to Stand-By page.



At this step prepare racks to operation area.After racks loaded then press Enter to next page for elution volume selection.



Select final elution volume.



MagCore® HF16 in process of selected protocol at this step. The Green Indicat LCD lights up and Heating Block starts to heat up to 65°C for Lysis Step.

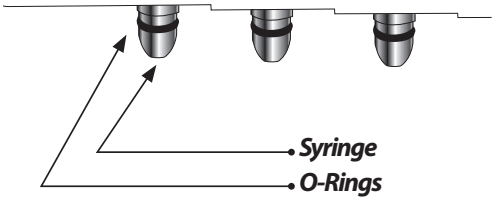
During MagCore® HF16 is under program running, the "MagCore" LCD lights up at all times.
DO NOT open the door at this moment, it causes emergent stop and you might lose your samples by machine interruption.



While program finished, a beep sound can be heard.
and green Indicate LCD light went out.

3. Easy Maintenance

3.1 Replace O-Rings

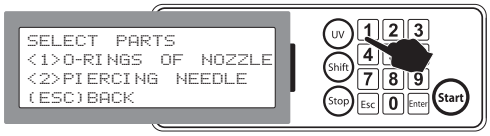




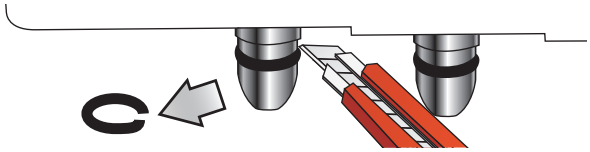
Under STAND-BY Menu, press Shift to enter FUNCTION menu.



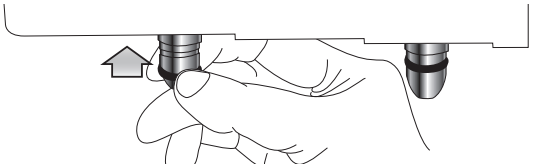
Select (1) CLEAN to enter next step.



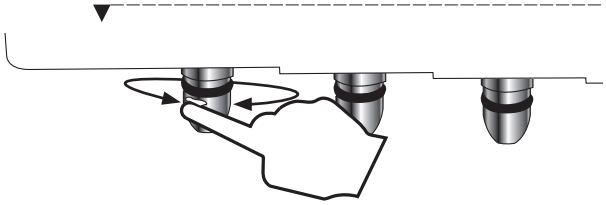
Select (1) for O-ring replcement.



Use a shap blade to cut off old O-ring,



Apply with new one,



Use supplied lubricating oil to rub a thin layer around O-Rings , press ESC to back to STAND-BY menu and complete replacement.

3.2 Clean Piercing Needles

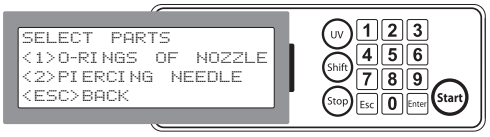
The Piercing Needles are very sharp, be careful for possible stabbing wounds to the hand.



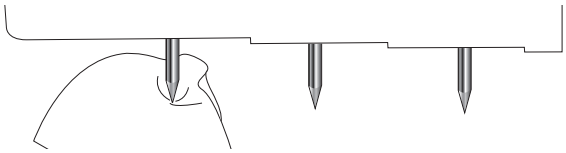
Under STAND-BY Menu, press Shift to enter FUNCTION menu.



Select (1) CLEAN to enter next step.



Select (2) for Piercing Needles clean up.

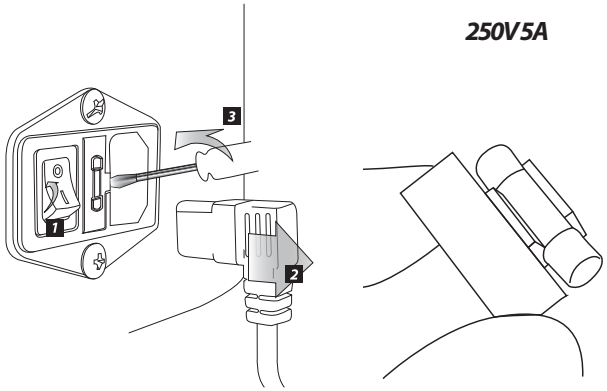


When Piercing Needles are positioned and stopped, use 70% alcohol with cotton paper to clean . Press ESC to go back to STAND-BY menu and complete cleaning procedures.

Machine is only allowed to clean with 70% alcohol. DO NOT use any type of organic solvents for cleaning.

3.3 Replace Fuse

3.3.1 Replace Fuses (inside Power Inlet)



Only use specified fuse for replacement, using higher amper fuse will cause server danger of burning.

Equipment

Flathead screwdriver

Procedure

1. *Remove the Fuse Holder using a flathead screwdriver.*
2. *Replace the Fuse when broken with a new fuse according to the*
3. *specification written on the Power Inlet (**5A**).*

3.3.2 Replace Fuses (CPU Board)

Turn off the power and remove power socket before opening the Service Lid. Touch internal parts may cause electric shock hazards.

Take electrostatic protective measures while you need to toch the CPU board.

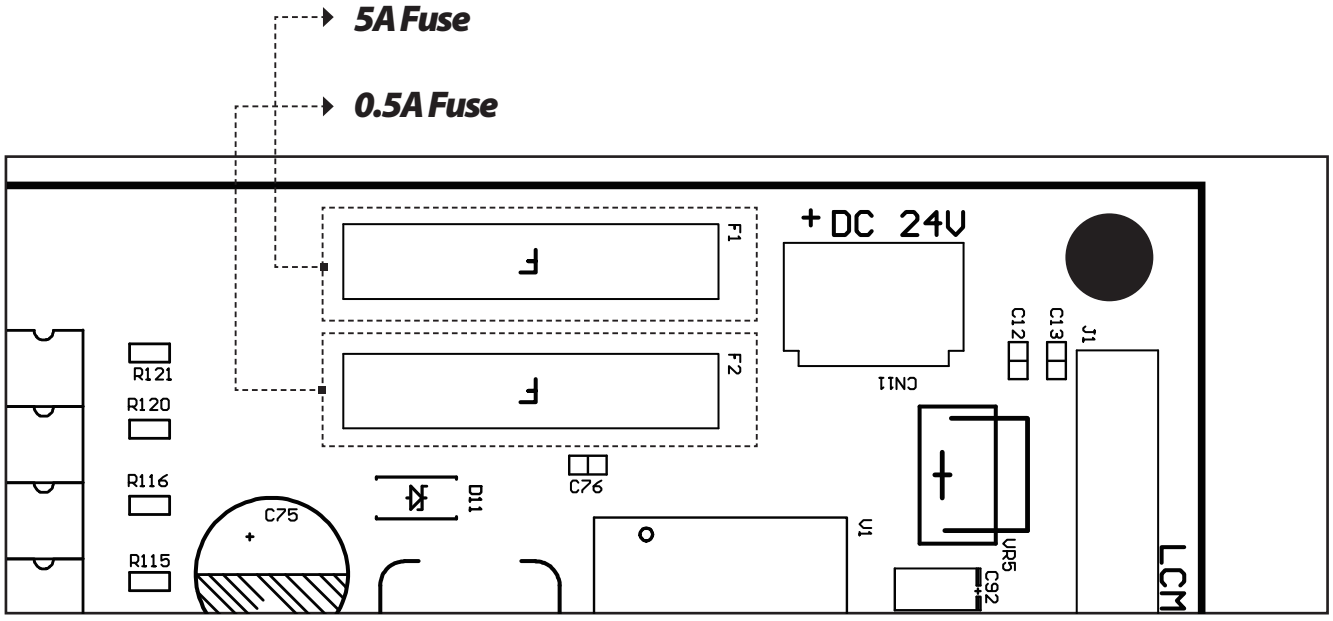
Procedure

1. *Removing Service Lid*
2. *Replace a Fuse(s) when broken with a new fuse according to the specification written on the board .*

Each fuse is placed in the circuit as follows:

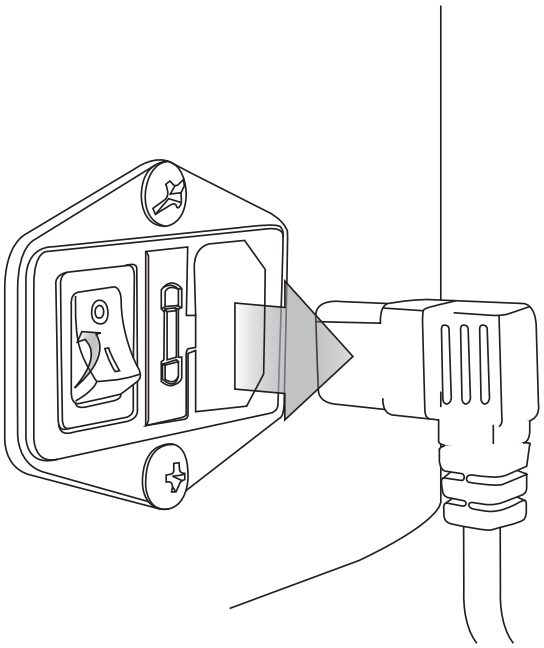
*F1: **5A** CPU Board, Power Indicator, Four Axes Pulse Motor Driver Board*

*F2: **0.5A** Four Axes Pulse Motor Driver Board (Excitation ON/OFF)*



Caution !

Turn off the power and remove power socket Before processing advanced maintenance !



Caution !

All advanced maintanence must be performed by trained Engineers !

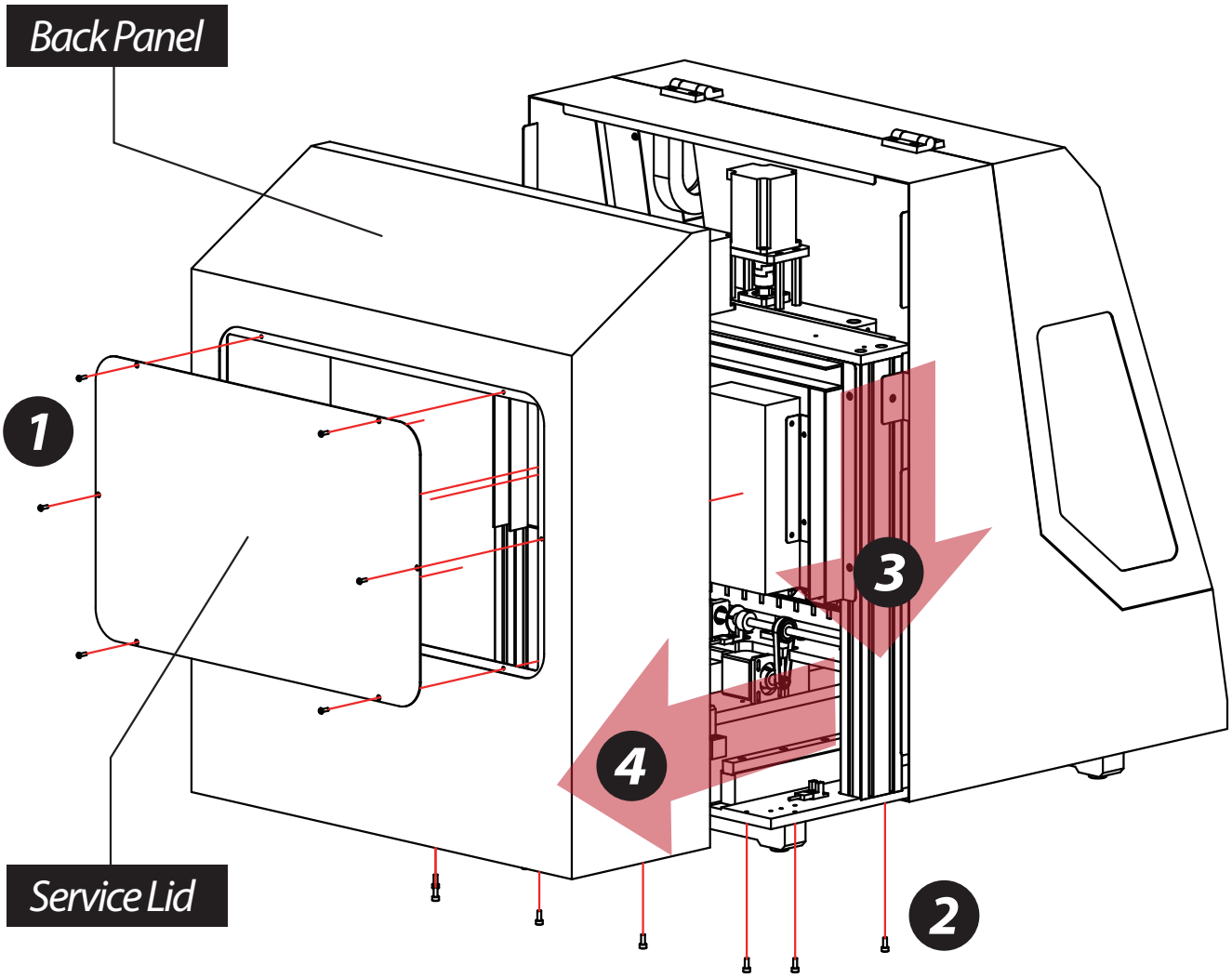
4. Advanced Maintenance
4.1 Service Lid And Front Lid
4.1.1 Removing Service Lid And Back Panel

Equipment

Hex Wrench (2.5 mm), Hex Wrench (3mm)

Procedure

1. *Remove six Fixing Screws on the HF16 system's Back Panel. Remove Service Lid from Back Panel.*
2. *Remove the eight Back Panel Fixing Screws under the HF16 System's main body.*
3. *Push down Back Panel. Hooks connecting with Front Cover are automatically released.*
4. *Pull back Back Panel .*
5. *Remove the Back Panel from the main body.*



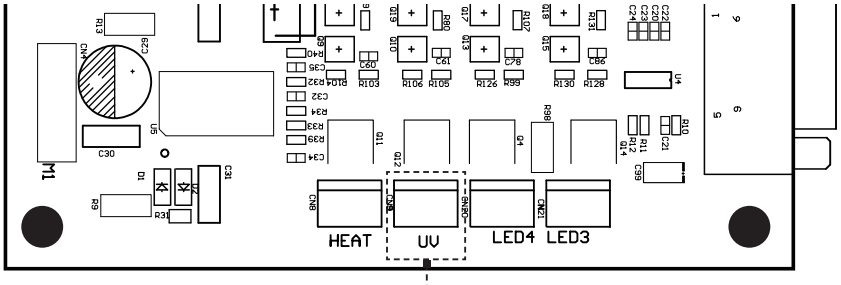
4.1.2 Removing Front Door and Front Lid

4.1.2.1 Removing Front Door Connectors

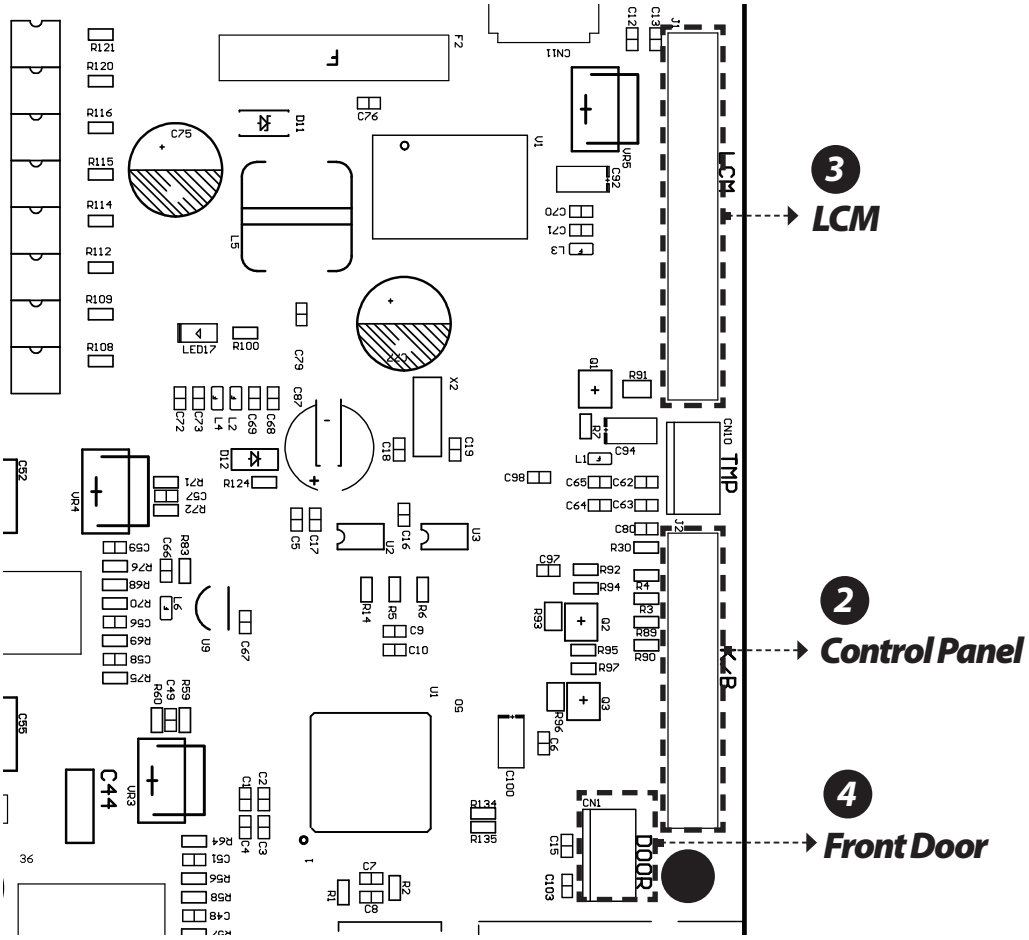
Procedure

The Service Lid needs to be removed in advance, before removing the Front Door Connectors.
When removing the Service Lid, refer to "4.1.1 Removing Service Lid" and follow the instructions below.

1. *Disconnect the UV Lamp Power Connector from the UV Lamp Ballast Output Wire.*
2. *Disconnect the Operation Panel Connector from the CPU Board.*
3. *Disconnect the Panel Sheet Connector from the CPU Board.*
4. *Disconnect the Front Door Safety Switch Connector from the CPU Board.*



1 UV Lamp



3 LCM

2 Control Panel

4 Front Door

4.1.2.2 Removing Front Lid

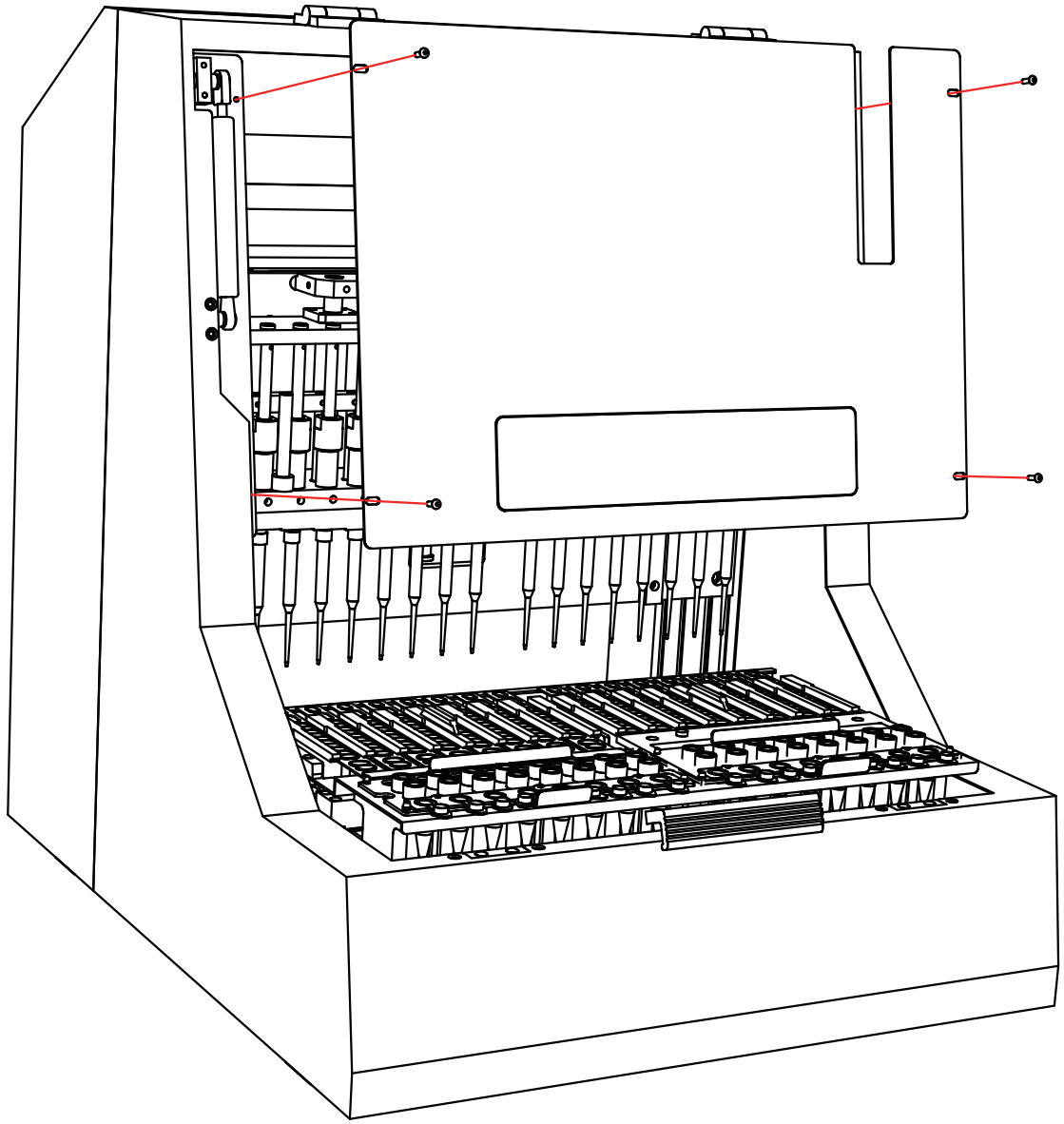
The Service Lid needs to be removed in advance, before removing the Back Panel.
When removing the Service Lid, refer to "4.1.1 Removing Service Lid" and follow the instructions below.

Equipment

Hex Wrench (2.5mm)

Procedure

1. *Disconnect the Display Lamp Power Connector from the Light Extension Wire which is connected to the CPU Board.*
2. *Remove the four Front Lid Fixing Screws on the Front Cover.*



4.1.2.3 Removing Front Door

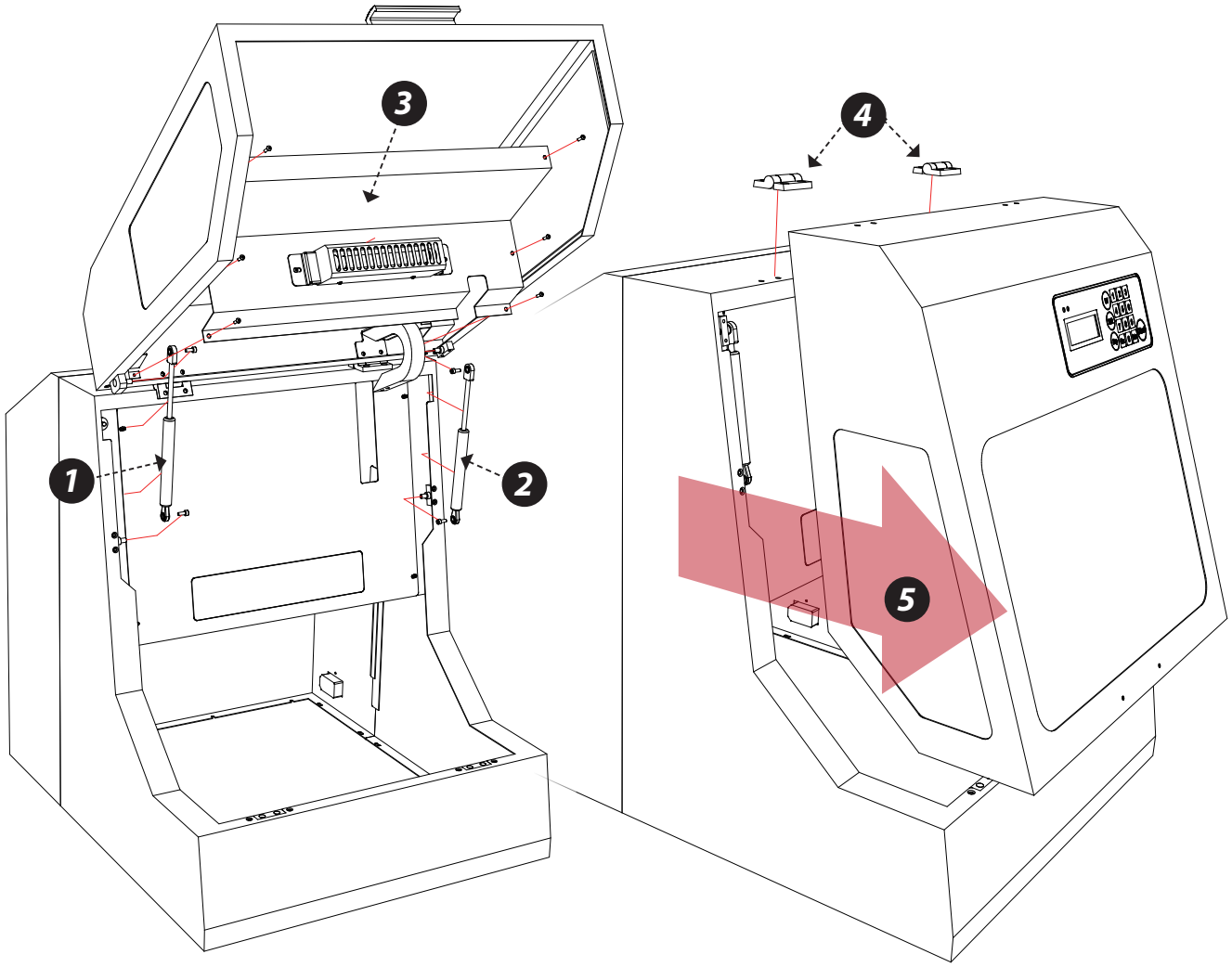
The Front Lid and the Front Door Connectors need to be removed in advance, before removing the Front Door.
When removing the Front Lid refer to "4.1.2.2 Removing Front Lid."
When removing the Front Door Connectors refer to "4.1.2.2 Removing Front Lid," and follow the instructions below.

Equipment

Hex Wrench (2.5mm) , Hex Wrench (3mm, 4mm)

Procedure

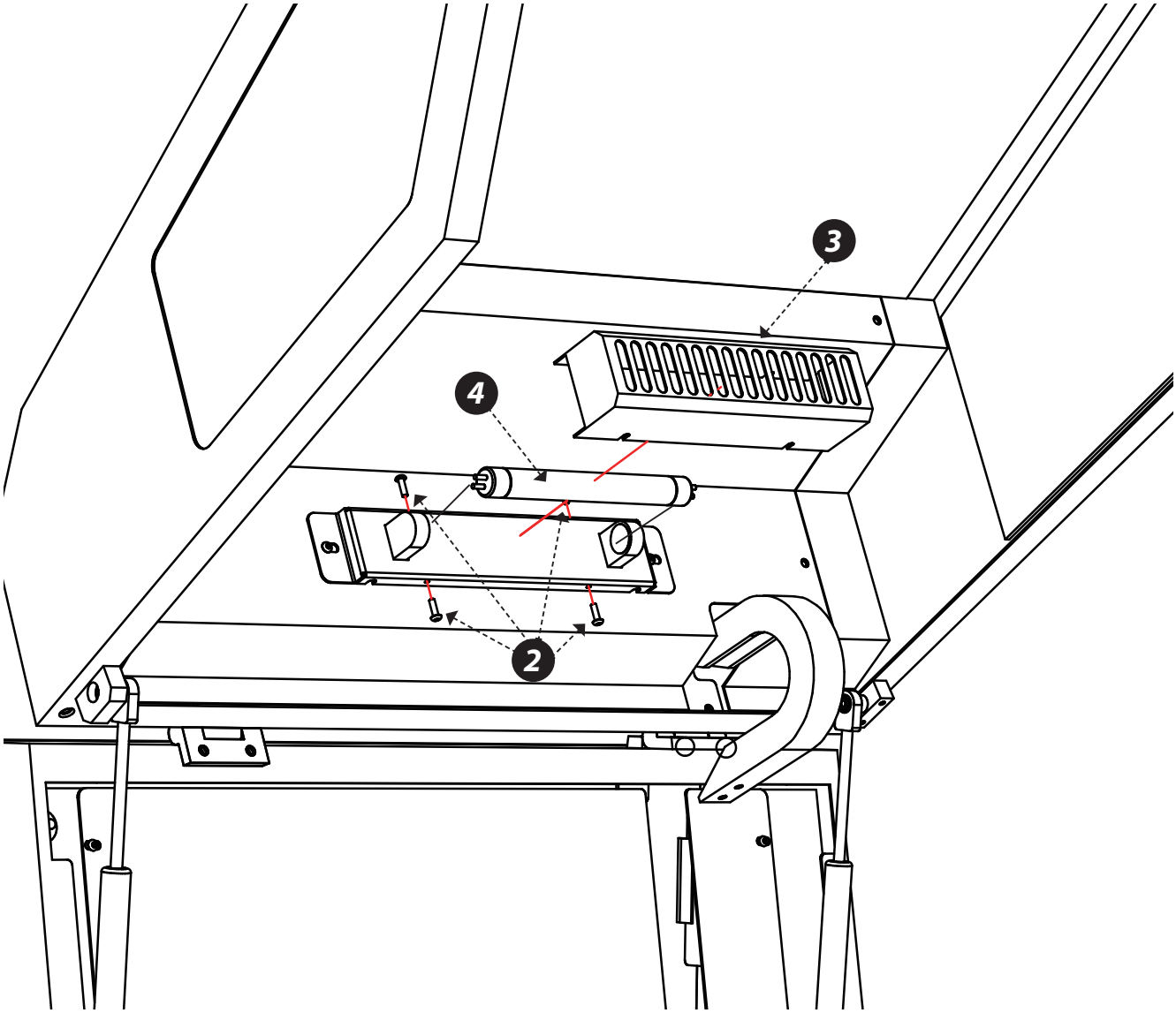
1. *Remove the two Fixing Screws on the left side Gas Spring under the Front Cover. Note: Use Hex Wrench (3mm)*
2. *Remove the two Fixing Screws on the right side Gas Spring under the Front Cover. Note: Use Hex Wrench (3mm)*
3. *Remove the six Fixing Screws on the Operation Panel Cover under the Front Door.*
4. *Remove the four Fixing Screws from the two hinges under the Front Cover, and the Cable Bear Hanger is automatically released. Note: Use Hex Wrench (4mm)*
5. *Remove the Front Door from the Front Cover.*



4.2 UV Lamp

4.2.1 Replace UV Lamp

1. *Open the HF16 System's Front Door.*
2. *Remove the four Fixing Screws on both sides of the UV Lamp Cover.*
3. *Remove the UV Lamp Cover with care not to damage the UV Lamp.*
4. *Remove the UV Lamp from the UV Lamp Bracket.*
5. *Replace the UV Lamp Cover and the four Fixing Screws.*



4.2.2 Replacing UV Lamp Ballast

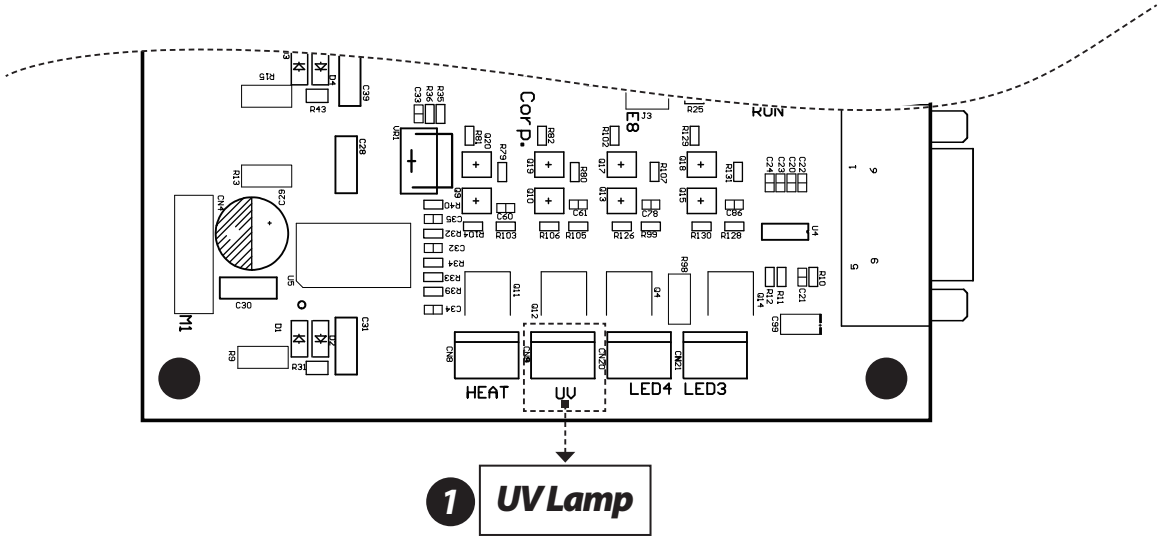
The Service Lid needs to be removed in advance, before replacing the UV Lamp Ballast.
When removing the Service Lid refer to "4.1.1 Removing Service Lid," and follow the instructions below.

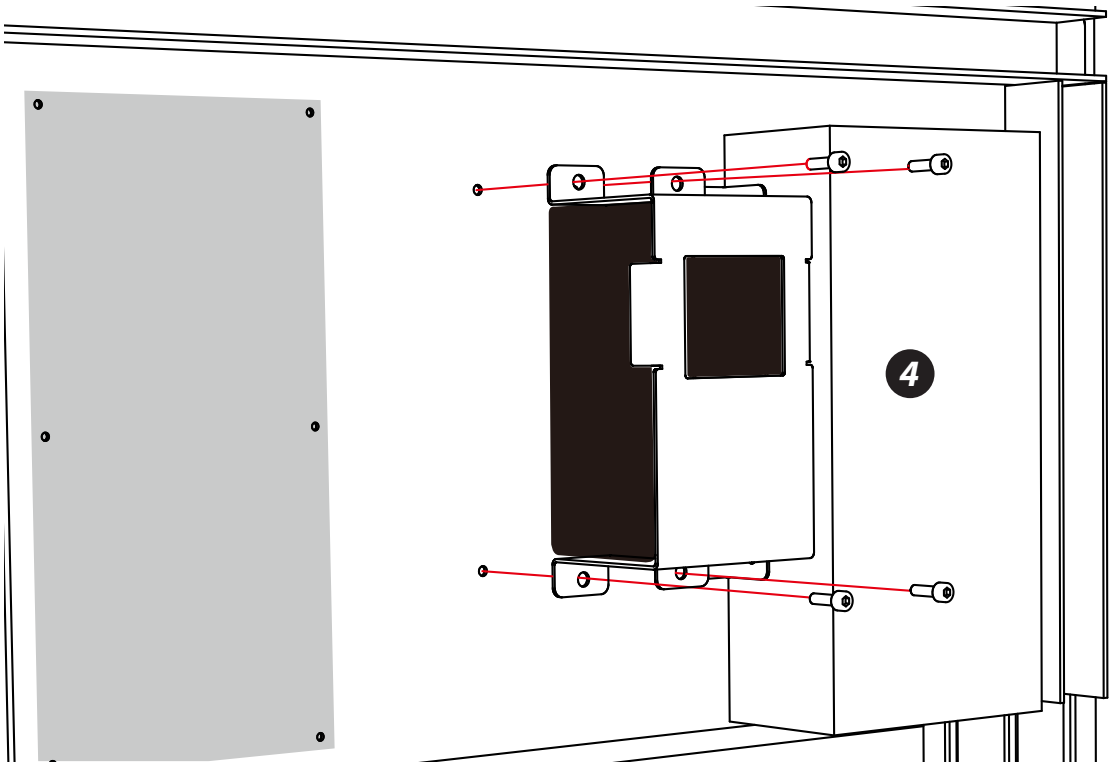
Equipment

Phillips Screwdriver (#2)

Procedure

1. *Disconnect the Power Connector from the CPU Board Power Distribution refer to "6.1 CPU Board".*
2. *When removing the Operation Panel Cover refer to "4.1.2.3 Step 3 " , Remove the six Fixing Screws on the Operation Panel Cover under the Front Door.*
3. *Disconnect the UV Lamp Power Connector from the UV Lamp Ballast Output Wire.*
4. *Remove the four UV Lamp Ballast Fixing Screws.*
5. *Reassemble the new UV Lamp Ballast in the inverse order.*





4.3 Panel Sheet

4.3.1 Replacing Panel Sheet

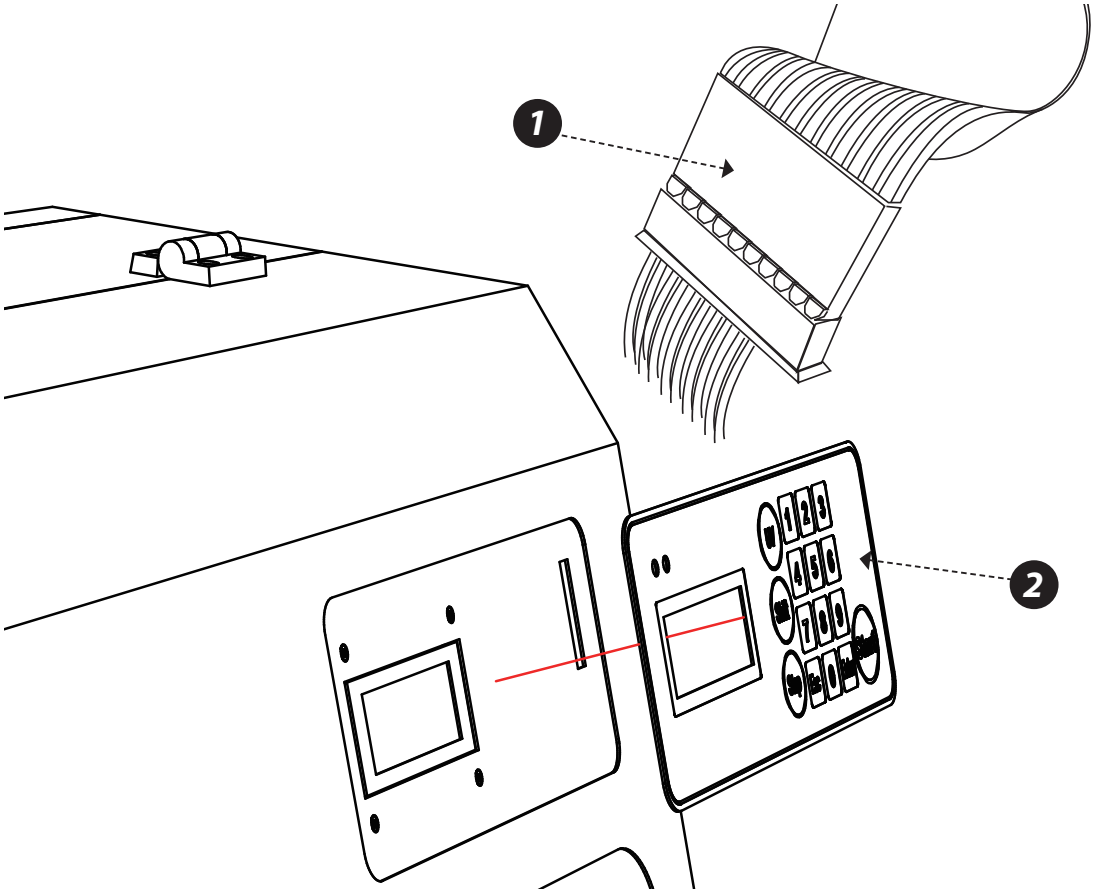
The Operation Panel Cover needs to be removed in advance, before replacing the Panel Sheet.
When removing the Operation Panel Cover refer to "4.1.2.3" Step 3 " and follow the instructions below.

Equipment

Double-stick tape

Procedure

1. *Disconnect the Panel Sheet Connector.*
2. *Peel the Panel Sheet off slowly with caution.*
3. *Remove old double-stick tape thoroughly and attach the new Panel Sheet (with double-stick tape.)*
4. *Reassemble in inverse order.*



4.3.2 Replacing Operation Panel

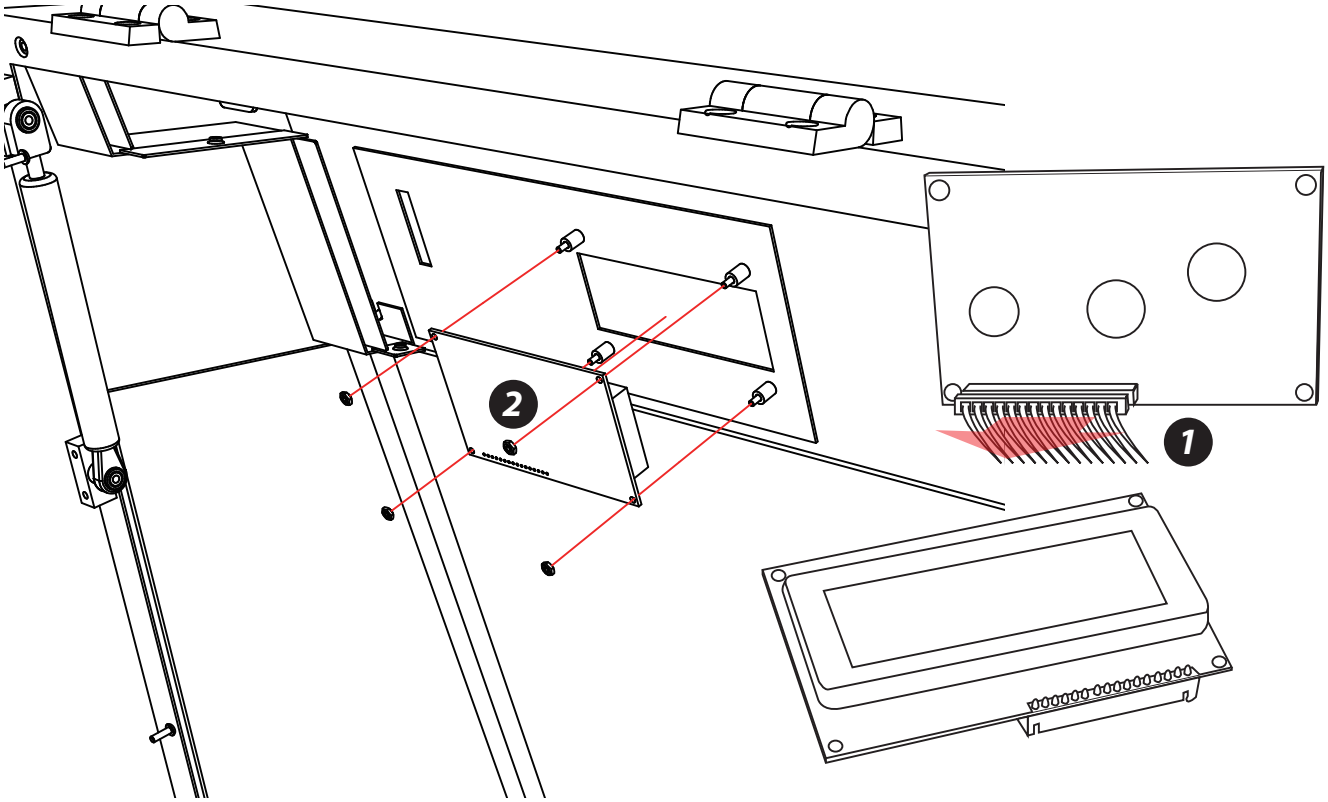
The Operation Panel Cover needs to be removed in advance, before replacing the Panel Sheet.
When removing the Operation Panel Cover refer to "4.1.2.3 Step 3" , and follow the instructions below.

Equipment

Spanner (3mm)

Procedure

1. *Disconnect the Operation Panel Connector.*
2. *Remove four the Operation Panel Fixing Screws.*
3. *Reassemble new Operation Panel in the inverse order.*



4.4. Heat Block unit

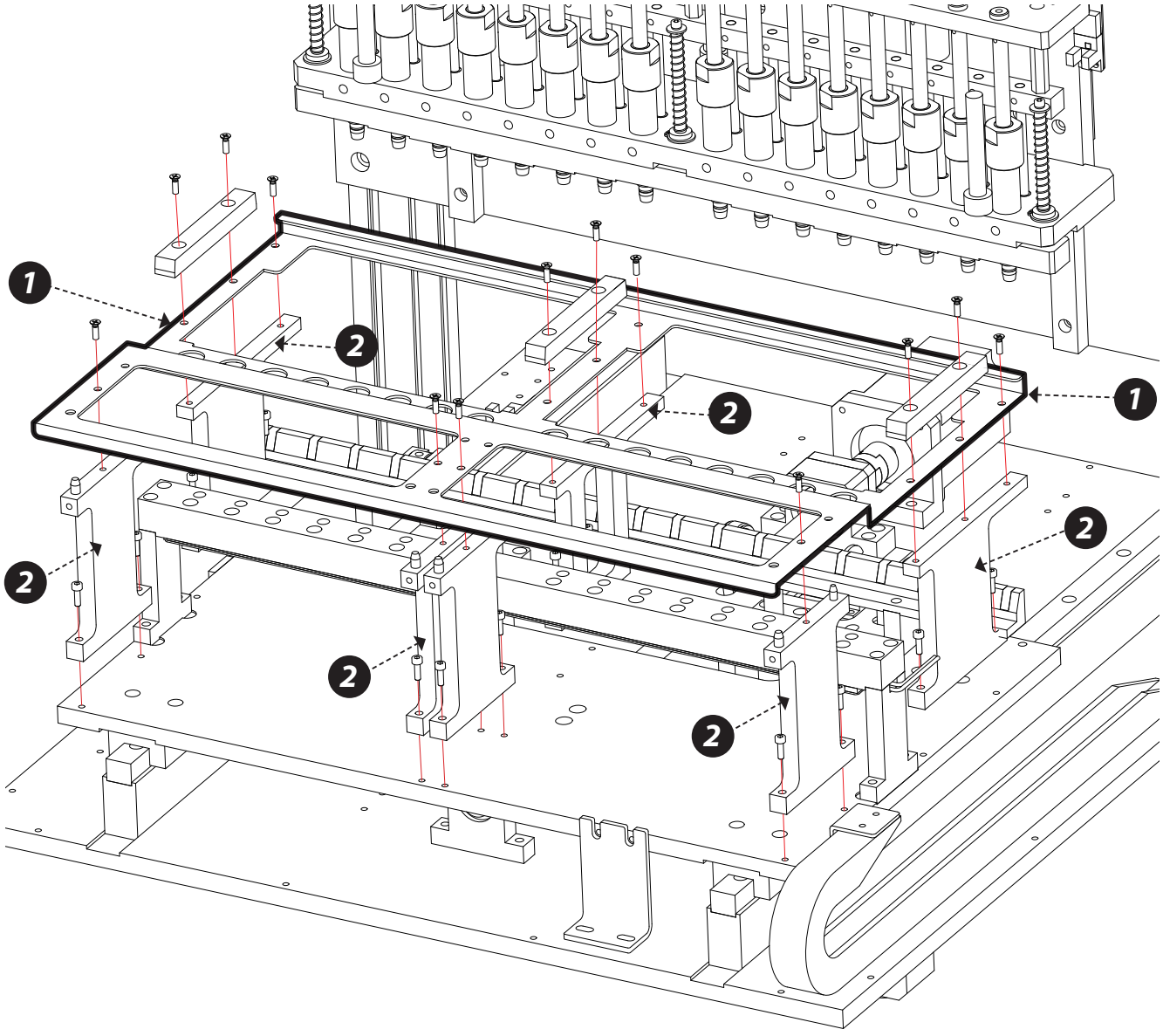
4.4.1 Removing Tip Holder Unit

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Remove Upper part of Tip Holder unit ant POM Washers.*
2. *Remove stands of Lower part of Tip Holder unit.*

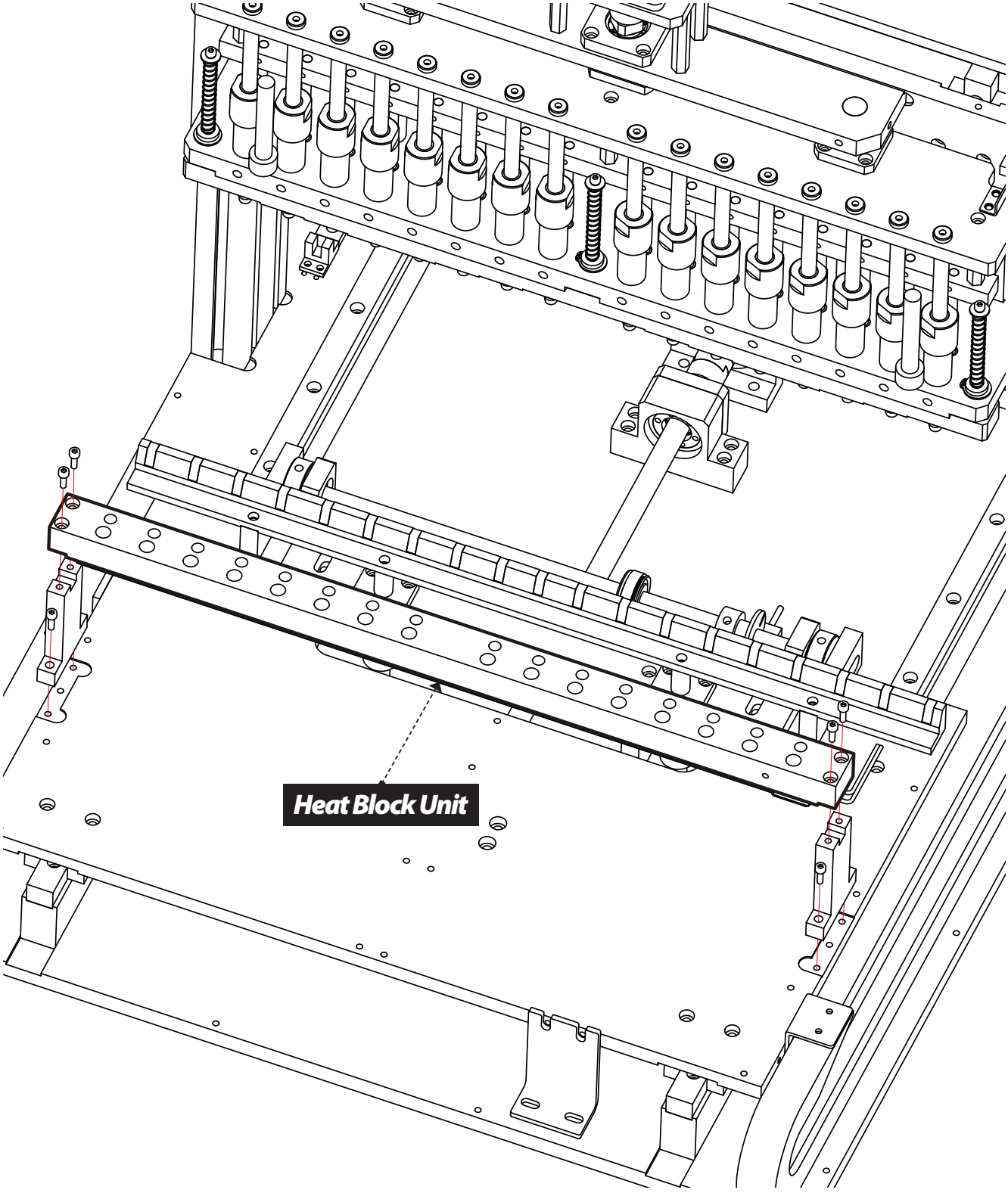


Next Page

4.4.2 Replacing Heat Block Unit

Procedure

Remove the four Heat Block Unit Fixing Screws on the Y Module. Note: Use Hex Wrench (3mm)
Remove heat block unit.
Reassemble new Operation Panel in the inverse order.



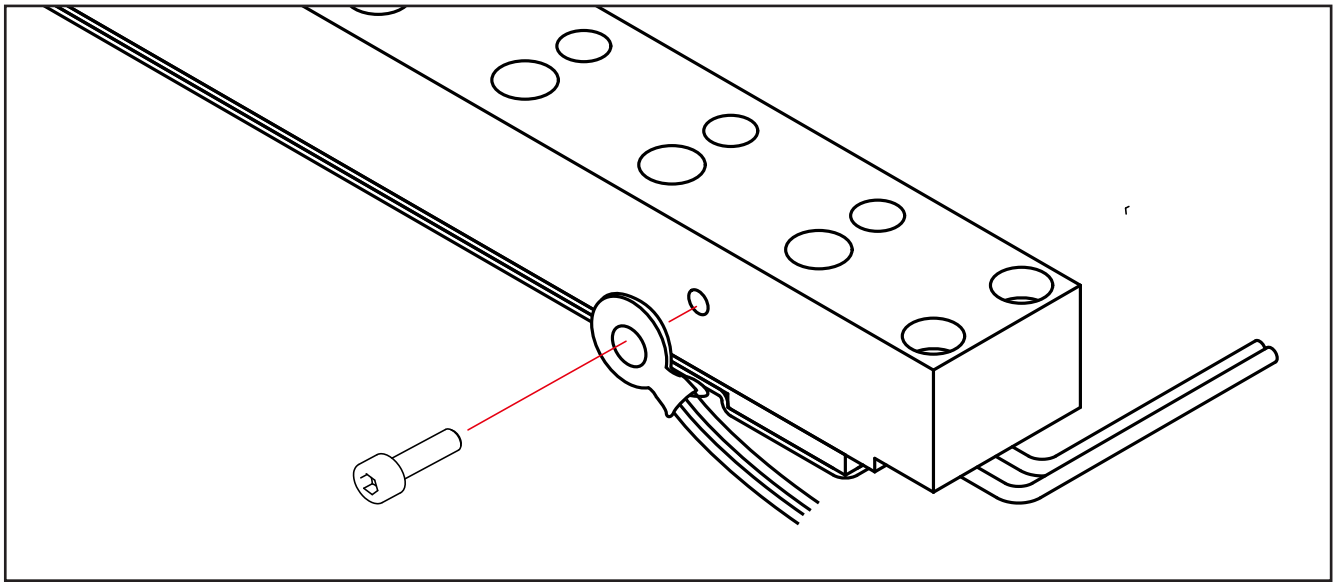
4.4.3 Replacing Temperature Sensor

Equipment

Hex Wrench (2mm)

Procedure

1. *Remove a Temperature Sensor Terminal Block Fixing Screw beside the Heat Block Unit.*
2. *Reassemble in inverse order after completion of replacement.*



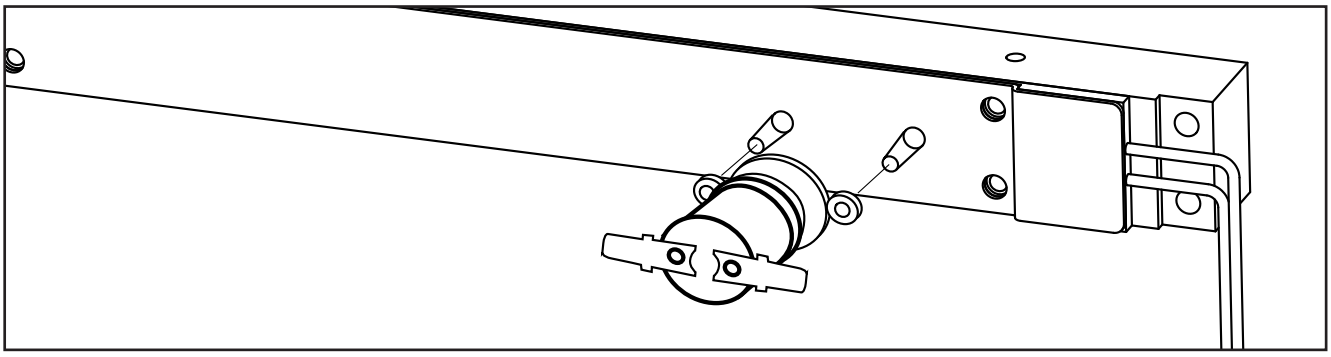
4.4.4 Replacing Thermal Protecto

Equipment

Spanner (3mm)

Procedure

1. *Remove the two Thermal Protector Fixing Screws under the Heat Block Unit.*
2. *Reassemble in inverse order after completion of replacement.*

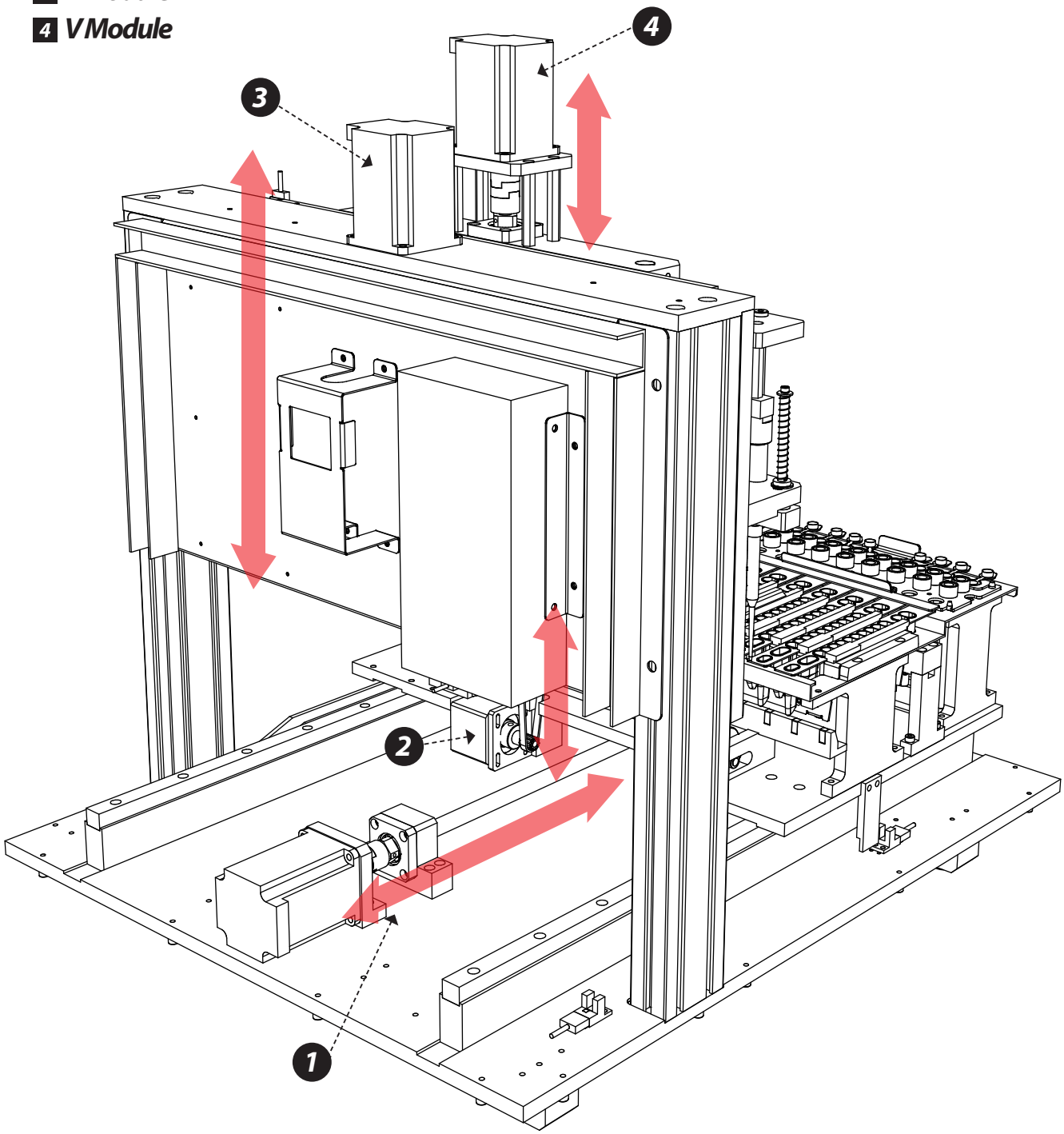


4.5 Maintenance of Internal Modules

4.5.1 Internal Modules Position

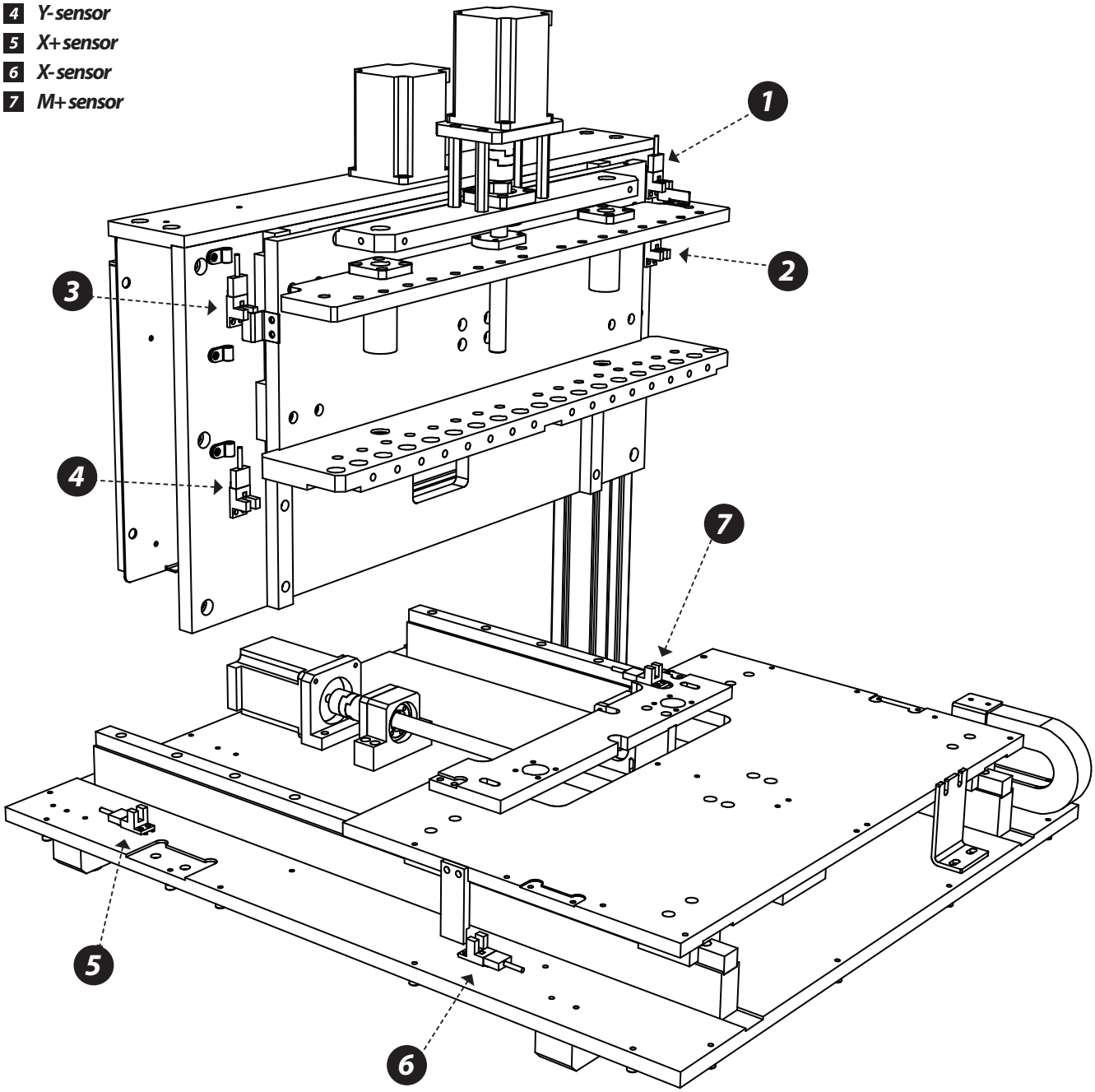
The system consists of the following four major modules.

1. ***X Module***
2. ***E Module***
3. ***Y Module***
4. ***V Module***



4.5.2 Sensor Position

1. V+ sensor
2. V- sensor
3. Y+ sensor
4. Y- sensor
5. X+ sensor
6. X- sensor
7. M+ sensor



4.5.3 X Module

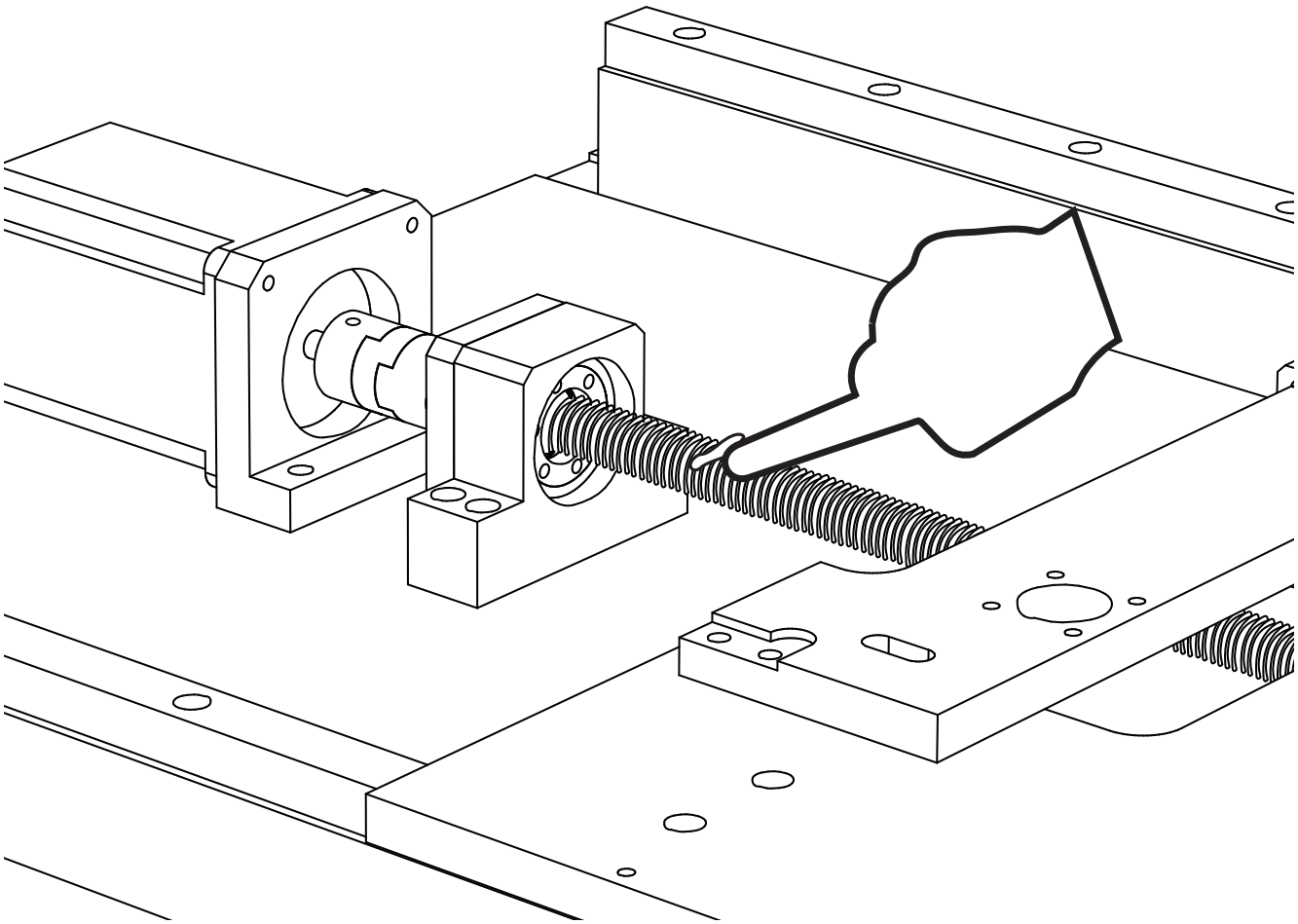
4.5.3.1 Cleaning and Lubricating X Axis LM Guides and Ball

Equipment

LM Guide grease (recommended)
Ball Screw grease (recommended)

Procedure

1. *Clean up both the X Axis LM Guides and the X Axis Ball Screw.*
2. *Evenly apply a small amount of recommended grease on the X Axis LM Guides and the X Axis Ball Screw.*
3. *Wipe off the excess grease.*



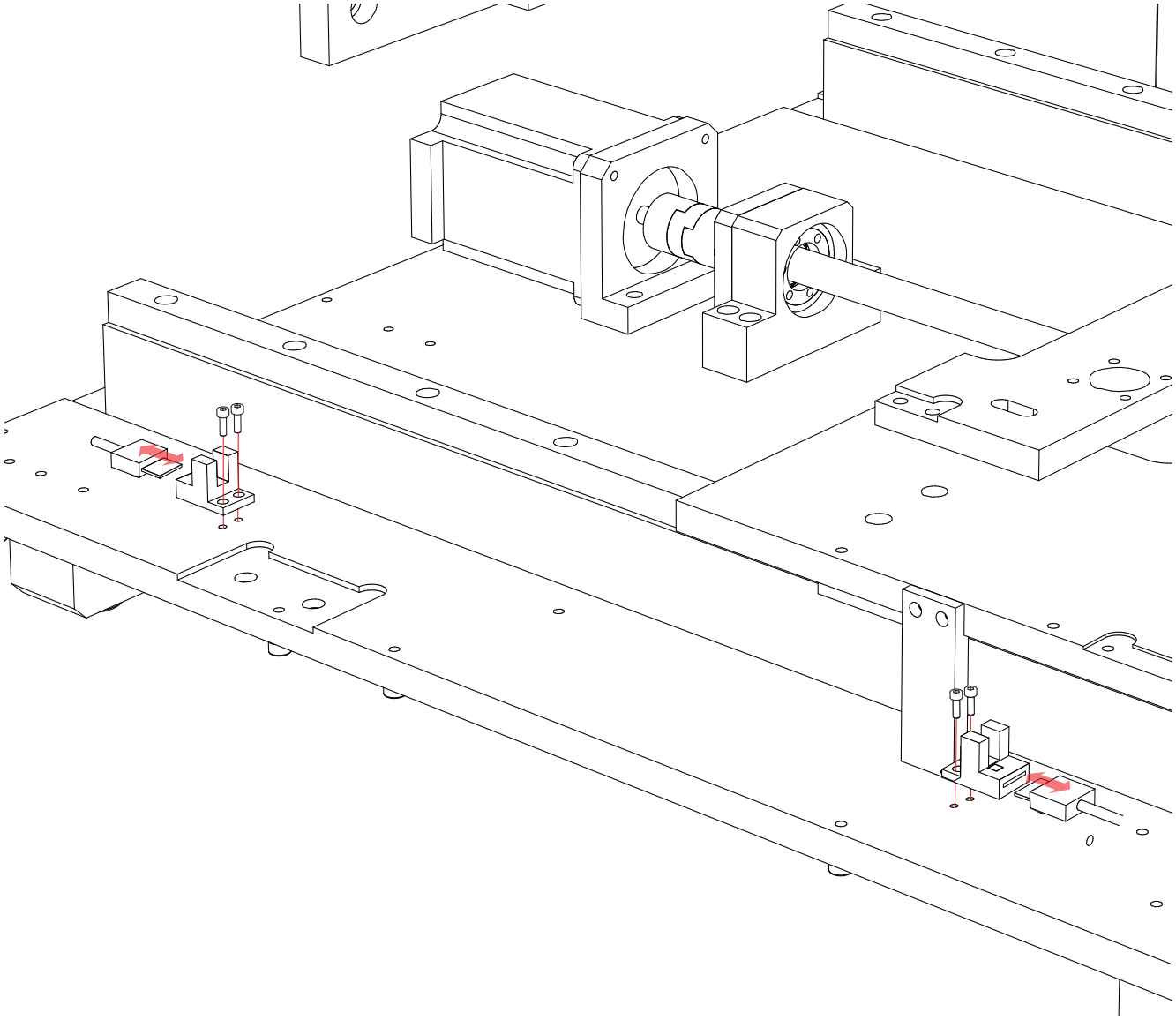
4.5.3.2 Replacing X Axis ORG Sensor (XORG, + XEL)

Equipment

Hex Wrench (2.5mm)

Procedure

1. *Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.*
2. *Perform a readjustment of the teaching parameters after replacing the XORG Sensor.*



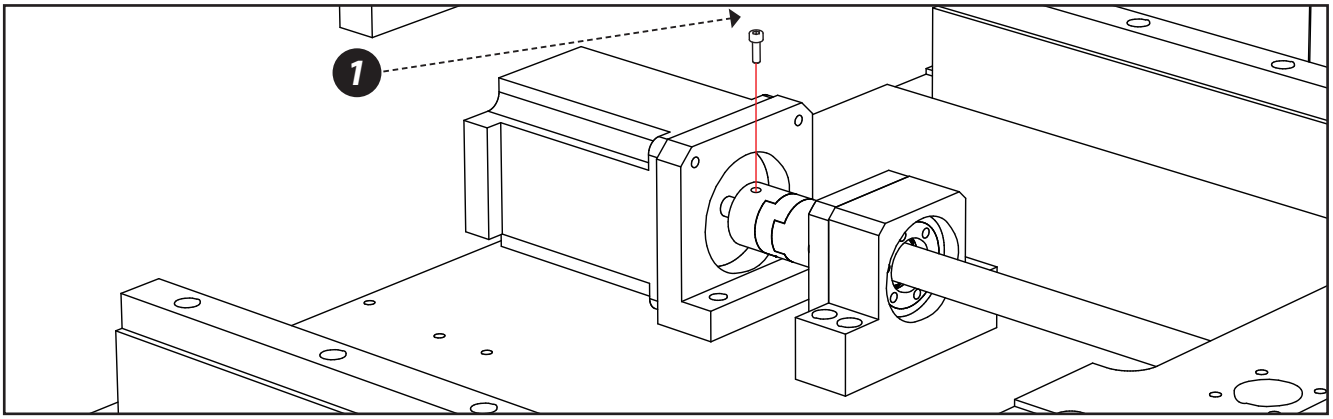
4.5.3.3 Replacing X Axis Motor

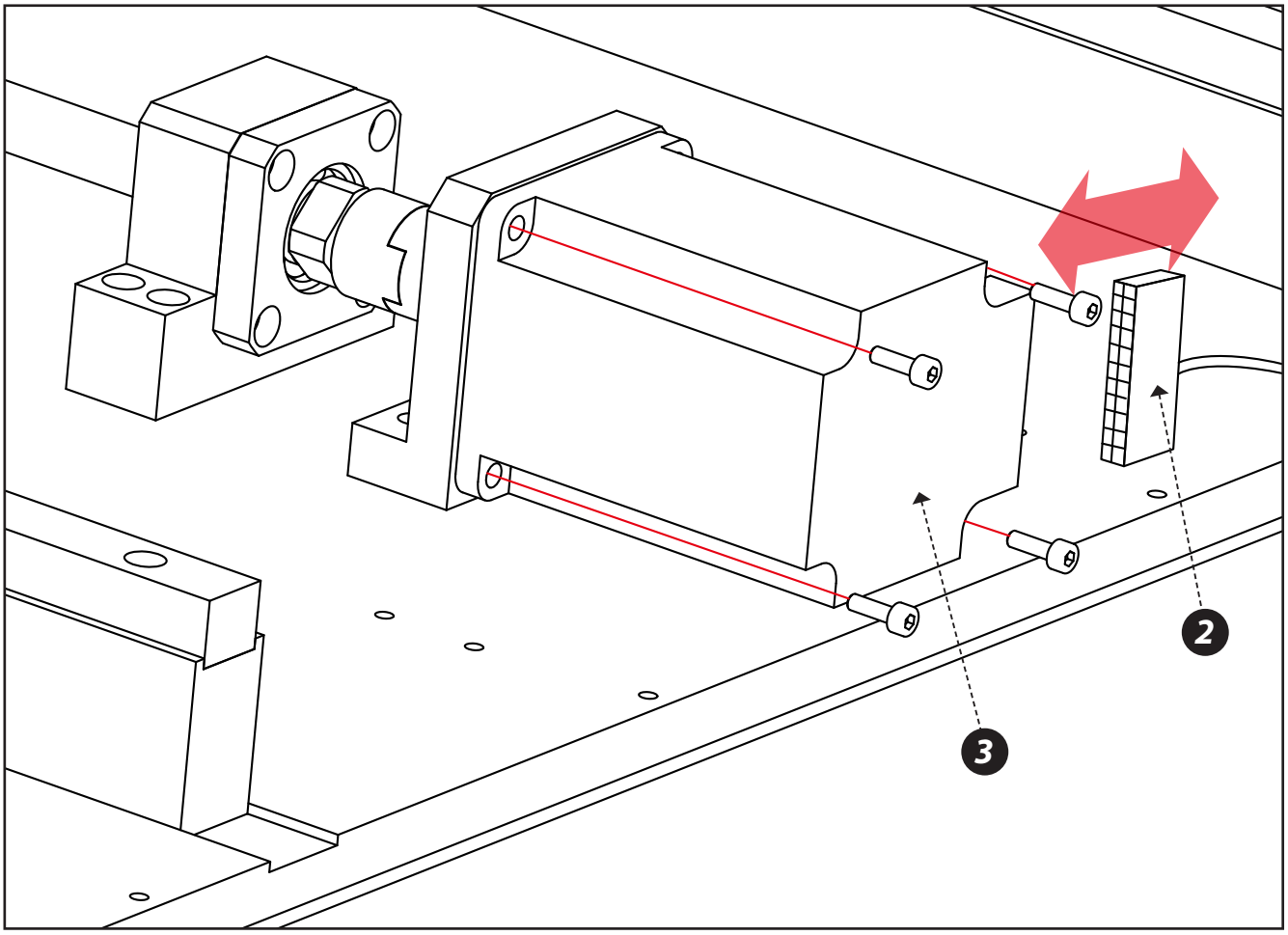
Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Loosen the Set Screw for X Axis Coupling. Note: Use Hex Wrench (2.5mm)*
2. *Disconnect the X Axis Motor Connector.*
3. *Remove the X Axis Motor by removing the four X Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)*
4. *Reassemble in inverse order after completion of replacement.*





4.5.4 Y Module

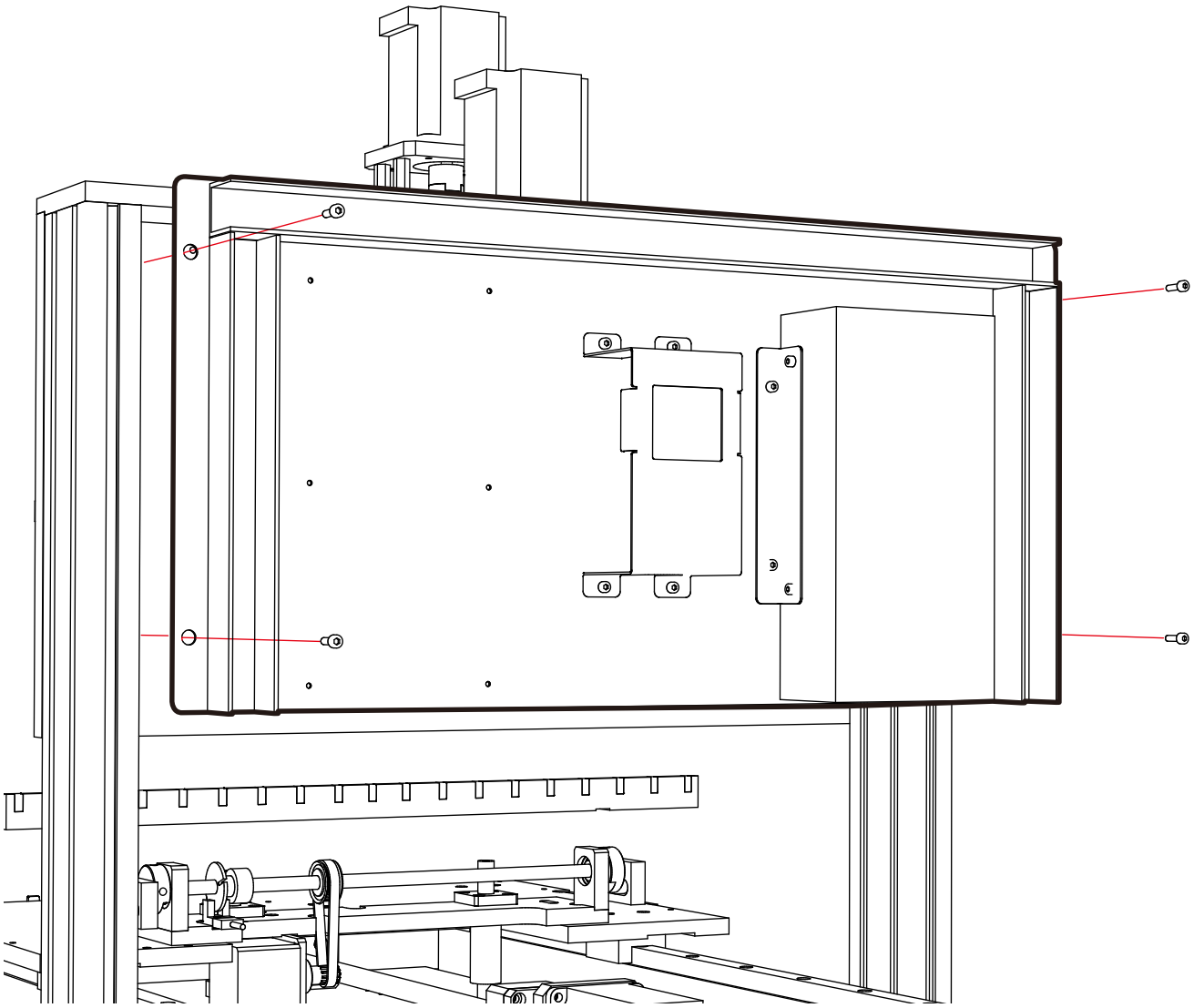
4.5.4.1 Removing Electronic Control Board

Equipment

Hex Wrench (4mm), Ball Screw grease (recommended), Ball Screw grease (recommended)

Procedure

1. *Disconnect the any Connector from the PCB.*
2. *Remove the four Electronic Control Board Fixing Screws .*



4.5.4.2 Cleaning and Lubricating Y Axis Ball Screw

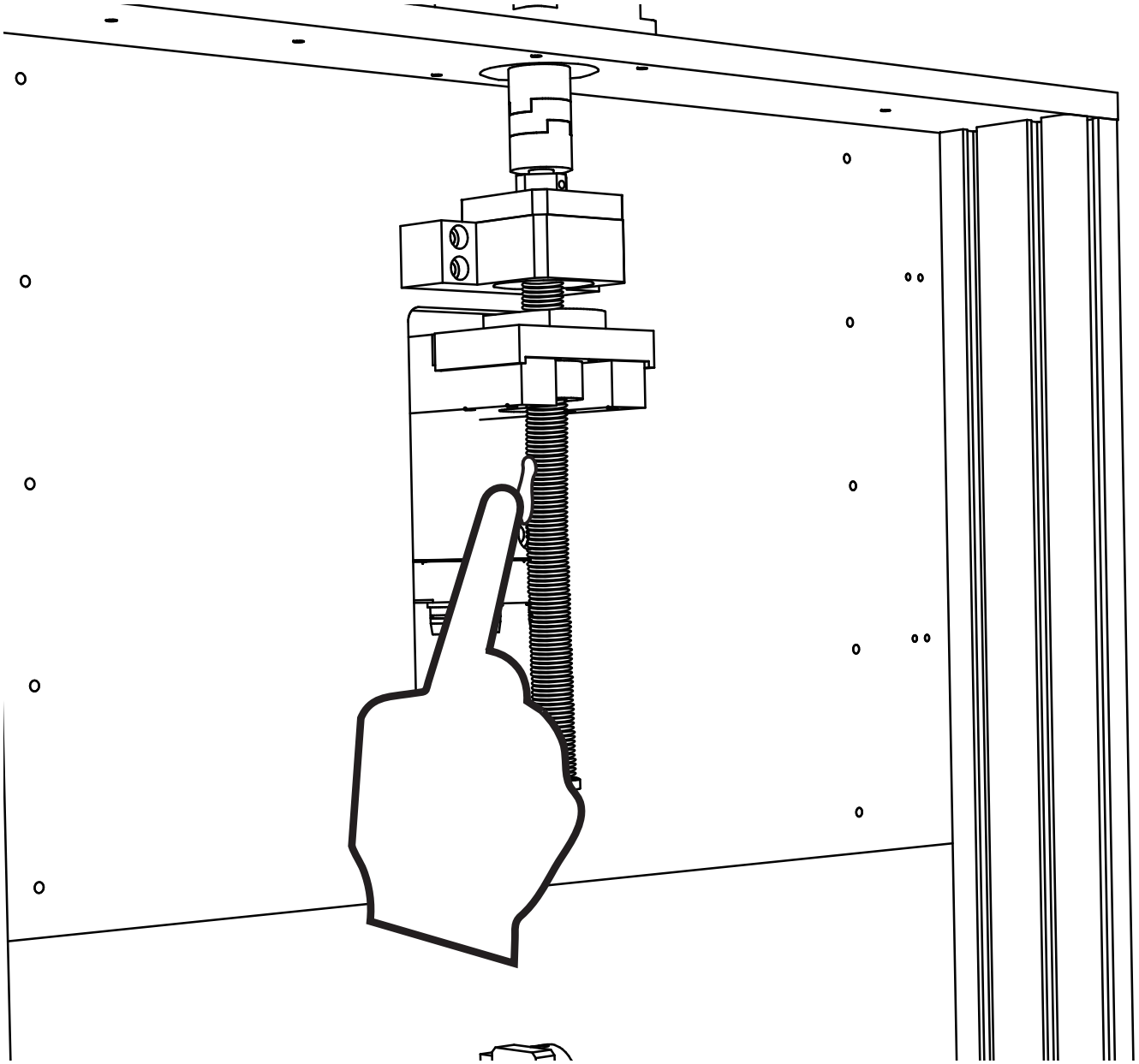
Equipment

LM Guide grease (recommended)

Ball Screw grease (recommended)

Procedure

1. *Clean up both the Y Axis LM Guides and the Y Axis Ball Screw.*
2. *Evenly apply a small amount of recommended grease on the Y Axis LM Guides and the Y Axis Ball Screw.*
3. *Wipe off the excess grease.*



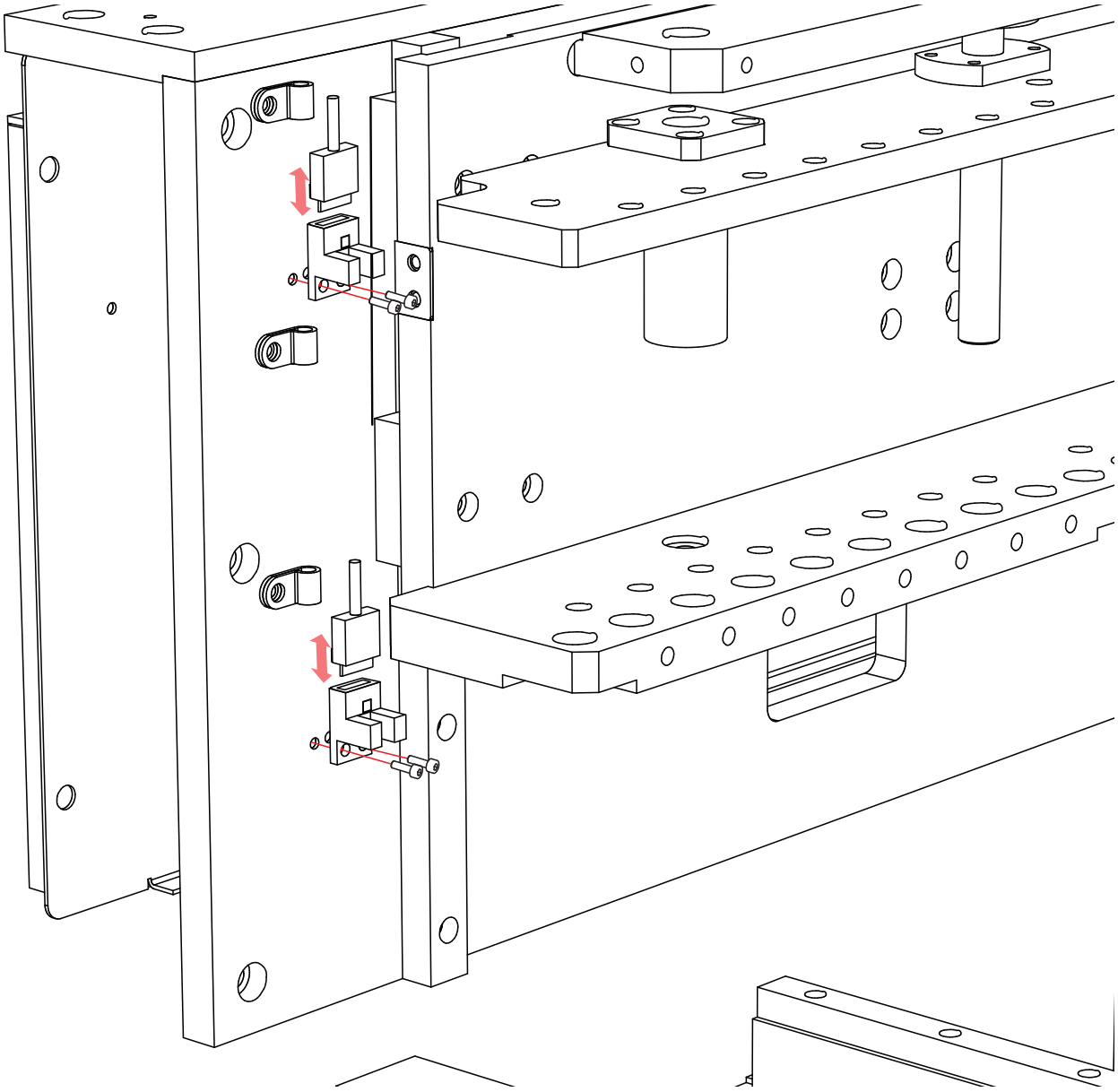
4.5.4.3 Replacing Y Axis ORG Sensor (YORG, + YEL)

Equipment

Hex Wrench (2.5mm)

Procedure

1. *Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.*
2. *Perform a readjustment of the teaching parameters after replacing the YORG Sensor.*



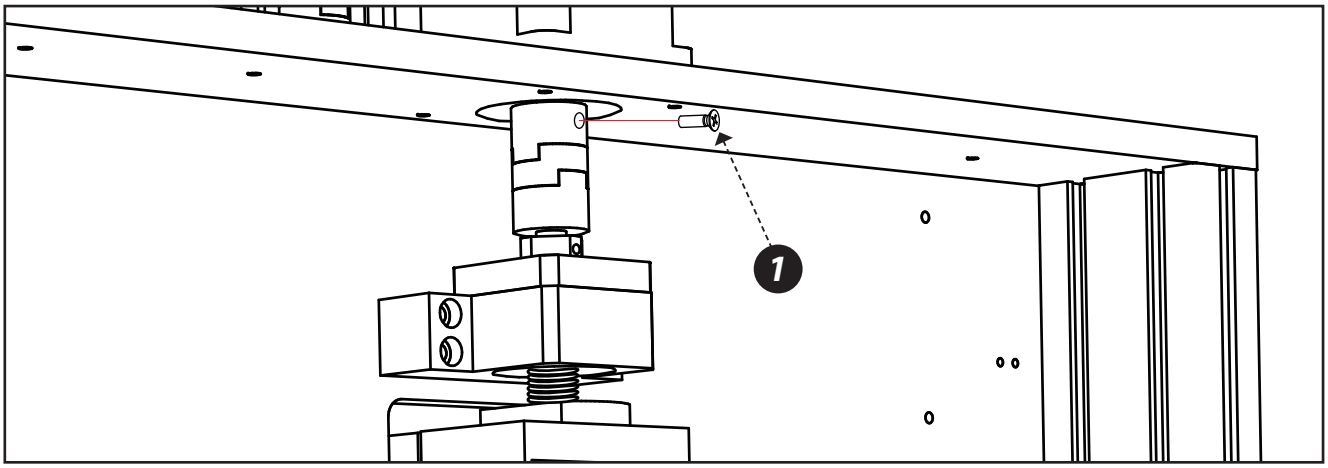
4.5.4.5 Replacing Y Axis Motor

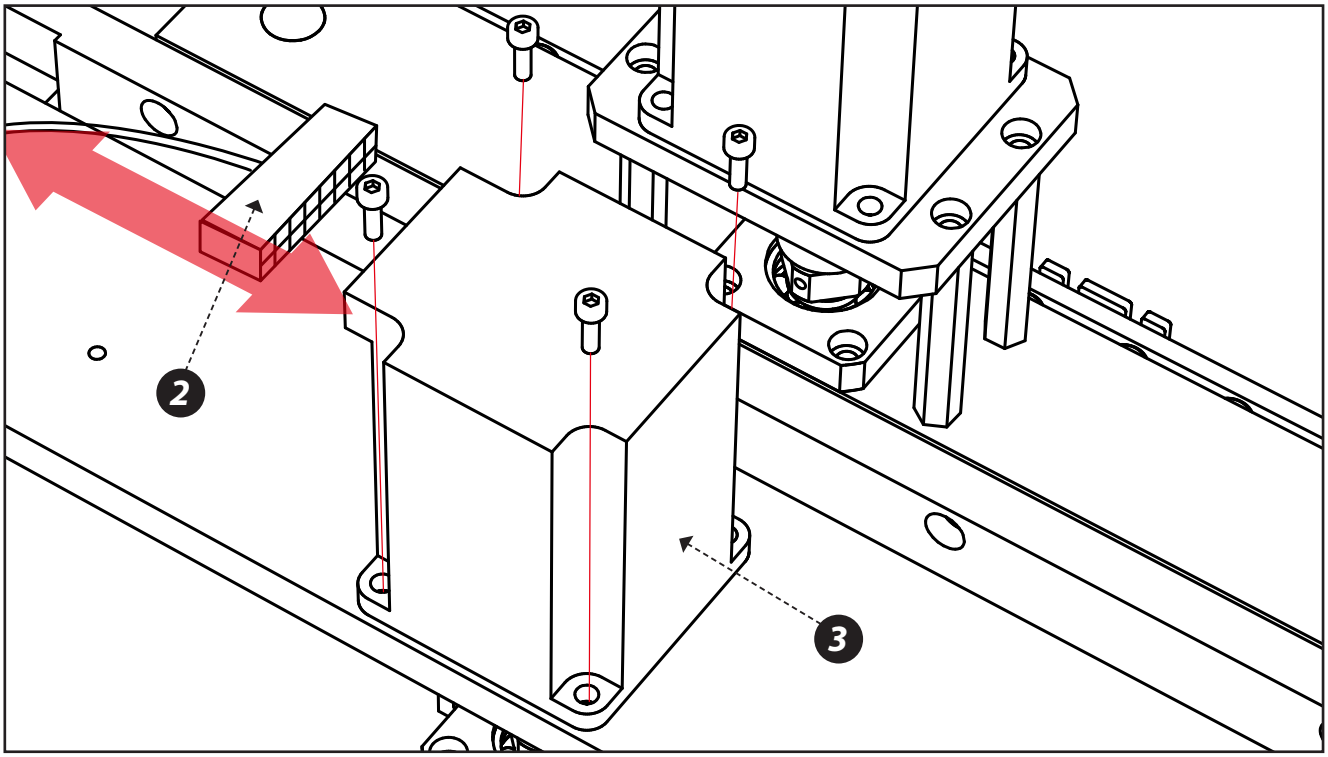
Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Loosen the Set Screw for Y Axis Coupling. Note: Use Hex Wrench (2.5mm)*
2. *Disconnect the Y Axis Motor Connector.*
3. *Remove the Y Axis Motor by removing the four Y Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)*
4. *Reassemble in inverse order after completion of replacement.*





4.5.5 V Module

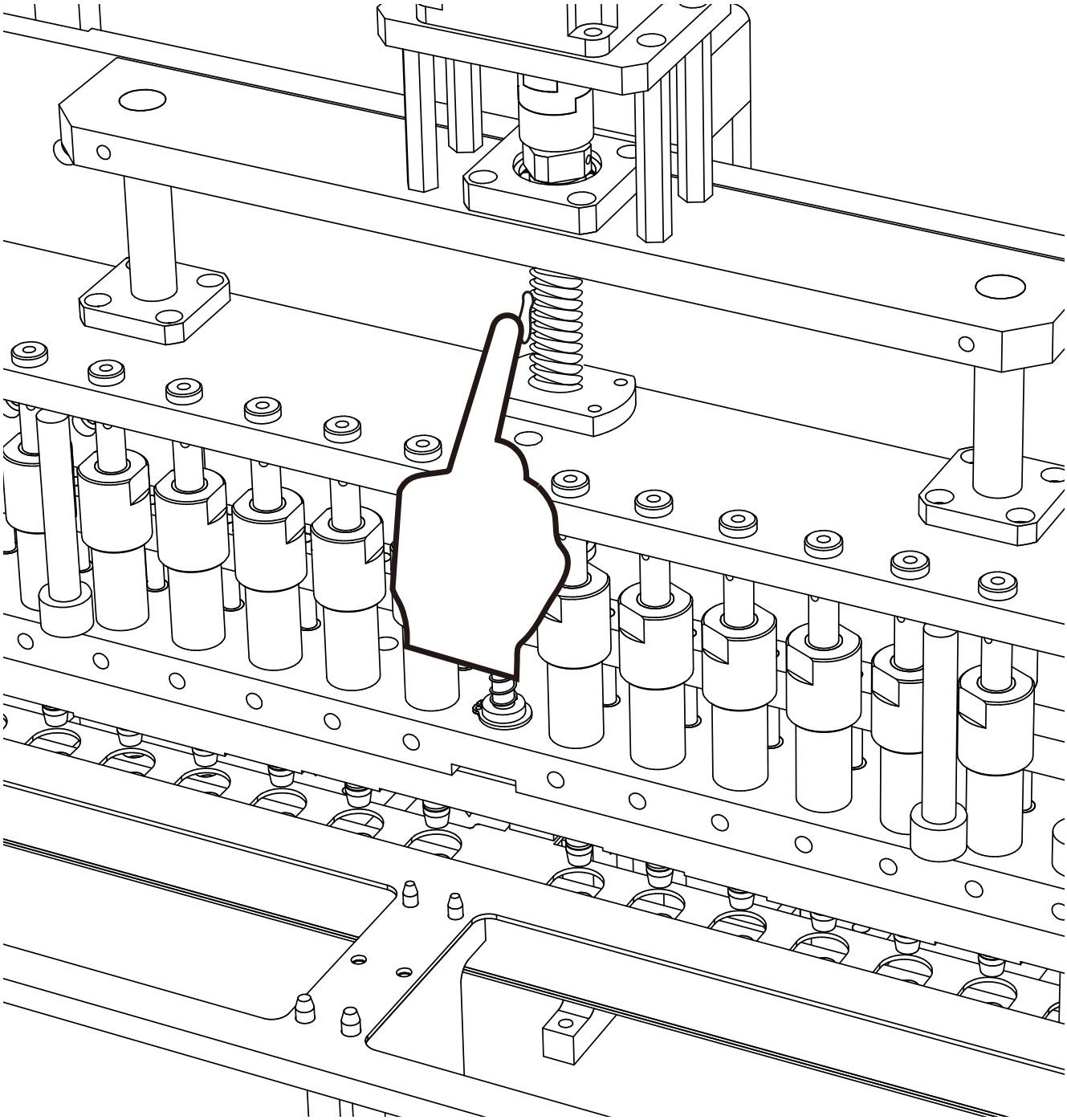
4.5.5.1 Cleaning and Lubricating V Axis Linear Shaft and Ball Screw

Equipment

LM Guide grease (recommended)
Ball Screw grease (recommended)

Procedure

1. *Clean up both the V Axis LM Guides and the V Axis Ball Screw.*
2. *Evenly apply a small amount of recommended grease on the V Axis LM Guides and the V Axis Ball Screw.*
3. *Wipe off the excess grease.*



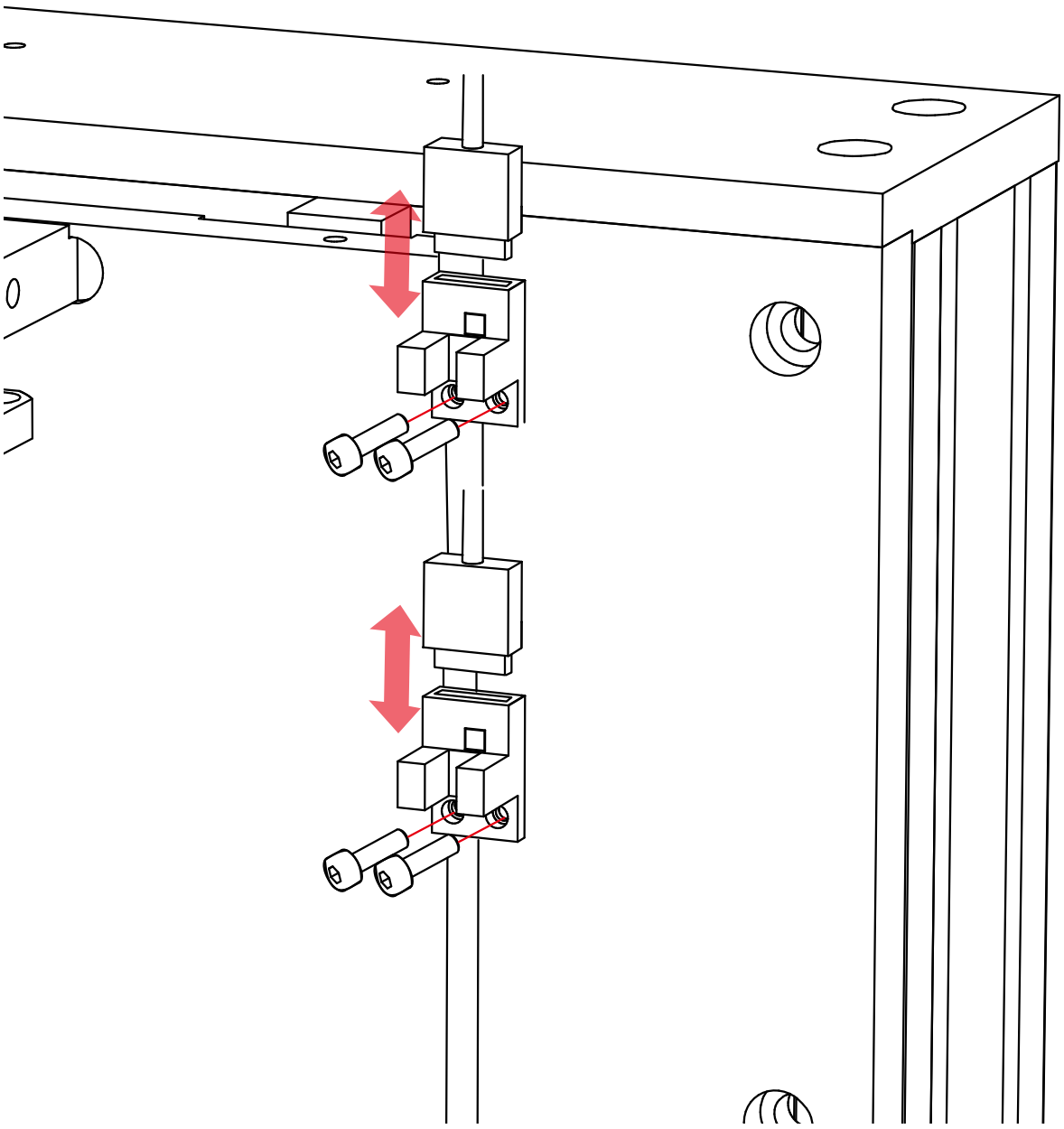
4.5.5.2 Replacing V Axis ORG Sensor (VORG, VEL)

Equipment

Hex Wrench (2.5mm)

Procedure

1. *Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.*
2. *Perform a readjustment of the teaching parameters after replacing the VORG Sensor.*



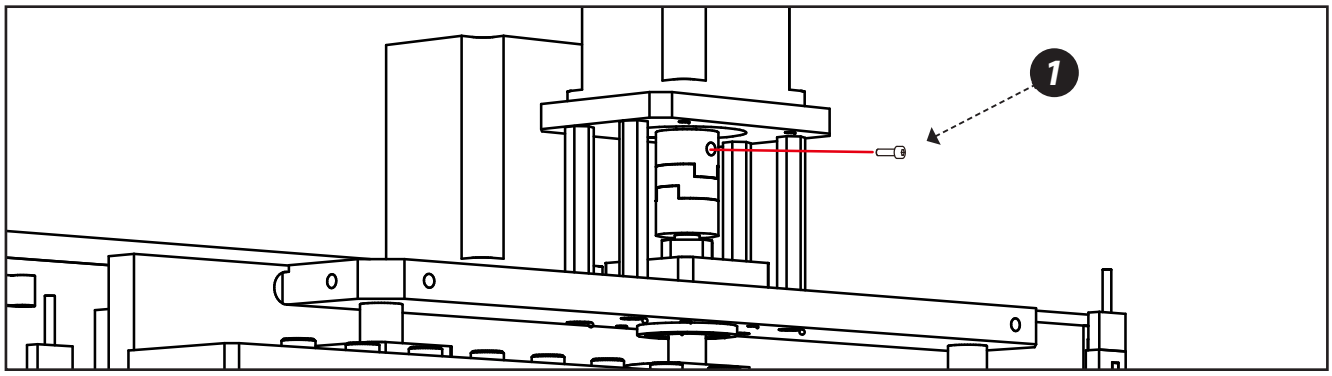
4.5.5.3 Replacing V Axis Motor

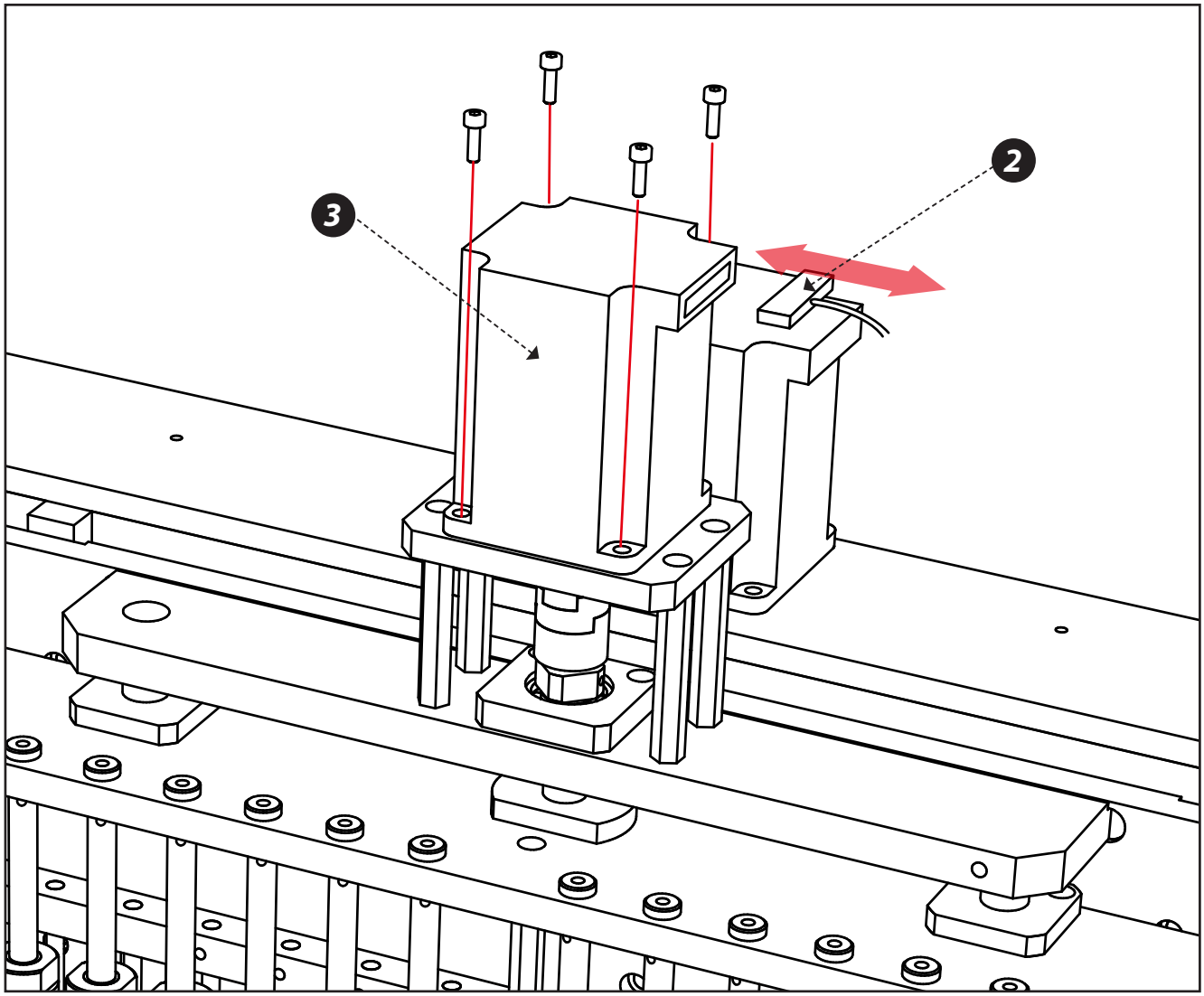
Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Loosen the Set Screw for V Axis Coupling. Note: Use Hex Wrench (2.5mm)*
2. *Disconnect the V Axis Motor Connector.*
3. *Remove the VAxis Motor by removing the four V Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)*
4. *Reassemble in inverse order after completion of replacement.*





4.5.6 E Module

4.5.6.1 Replacing Magnet Unit

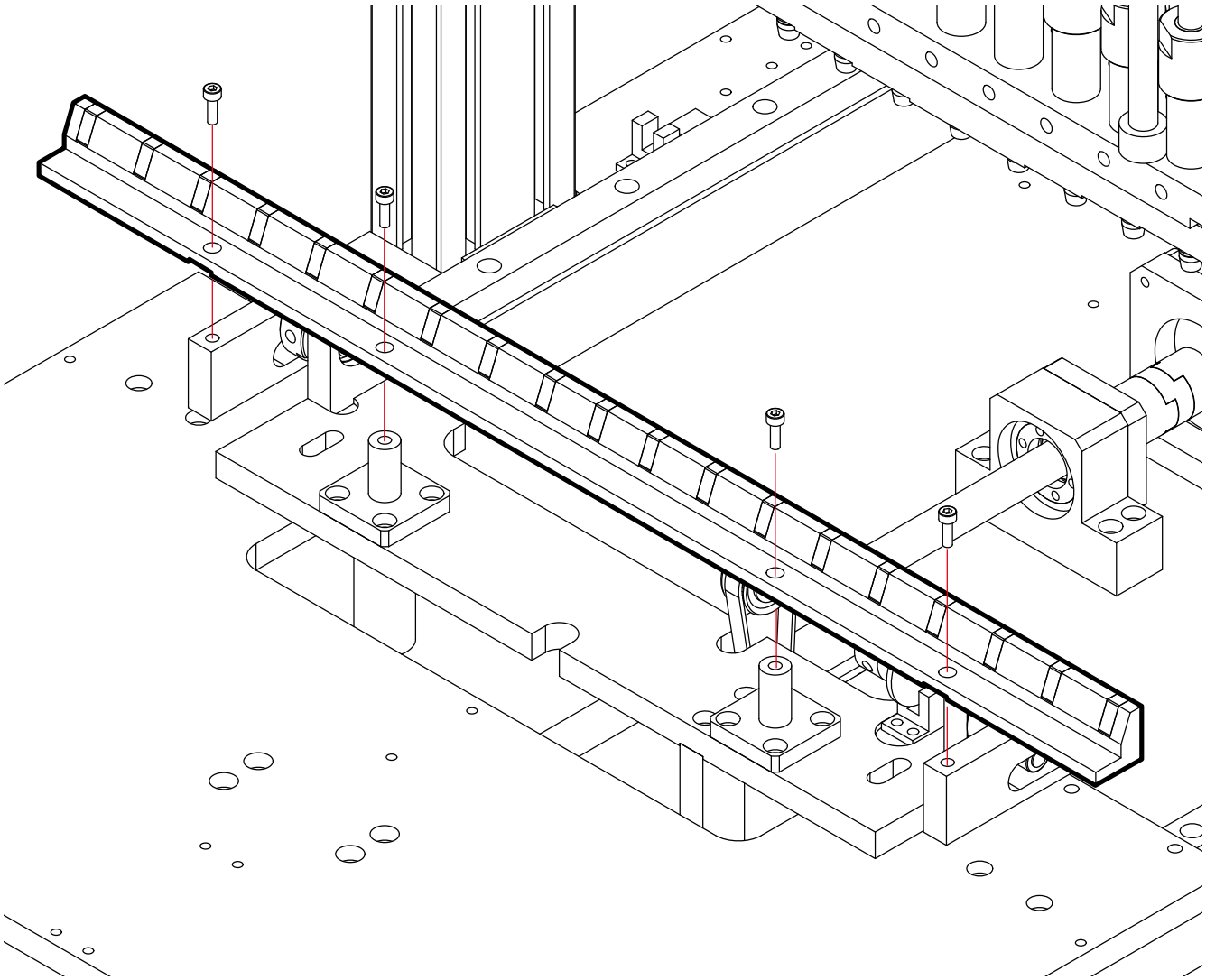
The Tip Holder Unit needs to be removed, before replacing the Magnet Unit.
When removing the Tip Holder Unit refer to "4.4.1 Removing Tip Holder Unit," and follow the instructions below.

Equipment

Hex Wrench (4mm)

Procedure

1. *Remove the Magnet Unit by removing the four Magnet Unit Fixing Screws.*
2. *Reassemble in inverse order after completion of replacement.*



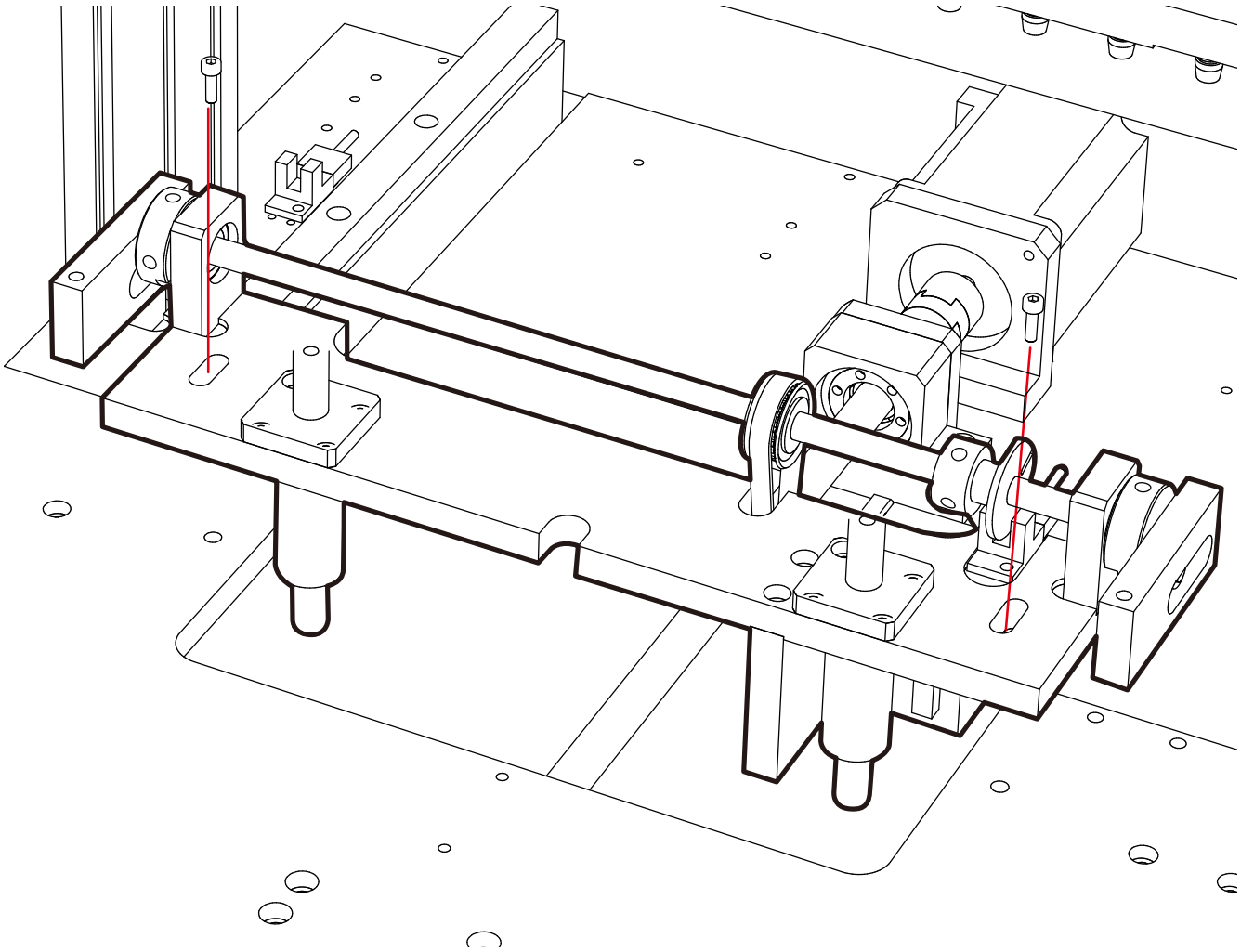
4.5.6.2 Removing E Axis Shaft Unit

Equipment

Hex Wrench (5mm)

Procedure

1 *Remove the E Module by removing the two E Module Fixing Screws.*



4.5.6.3 Replacing E Axis Timing Belt

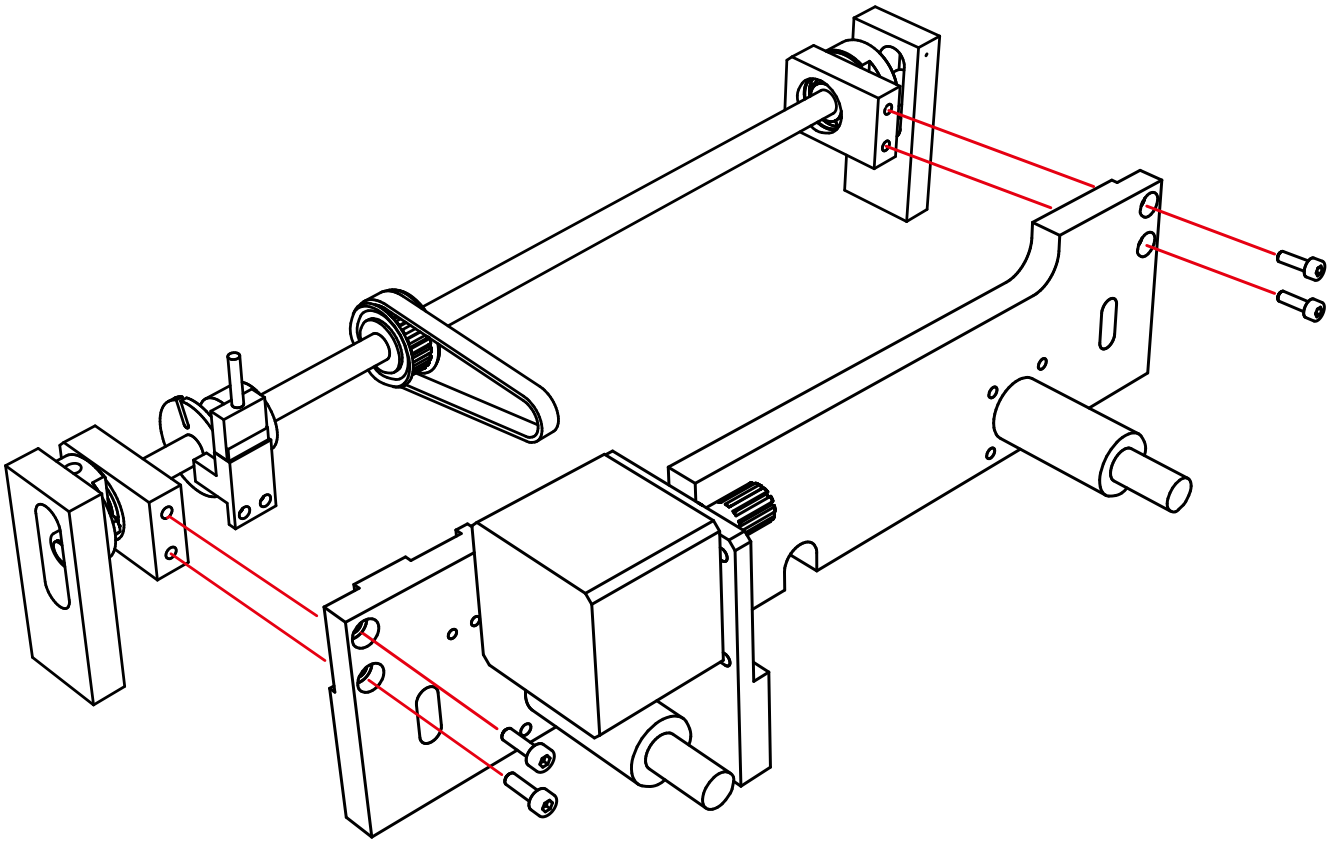
Equipment

Hex Wrench (3mm)

Procedure

1. *removing the four E Module Fixing Screws.*
2. *Remove and replace the E Axis Timing Belt from the E Axis Shaft.*
3. *Reassemble in inverse order after completion of replacement.*

Perform a readjustment of the teaching parameters after replacing the E Axis Timing Belt.



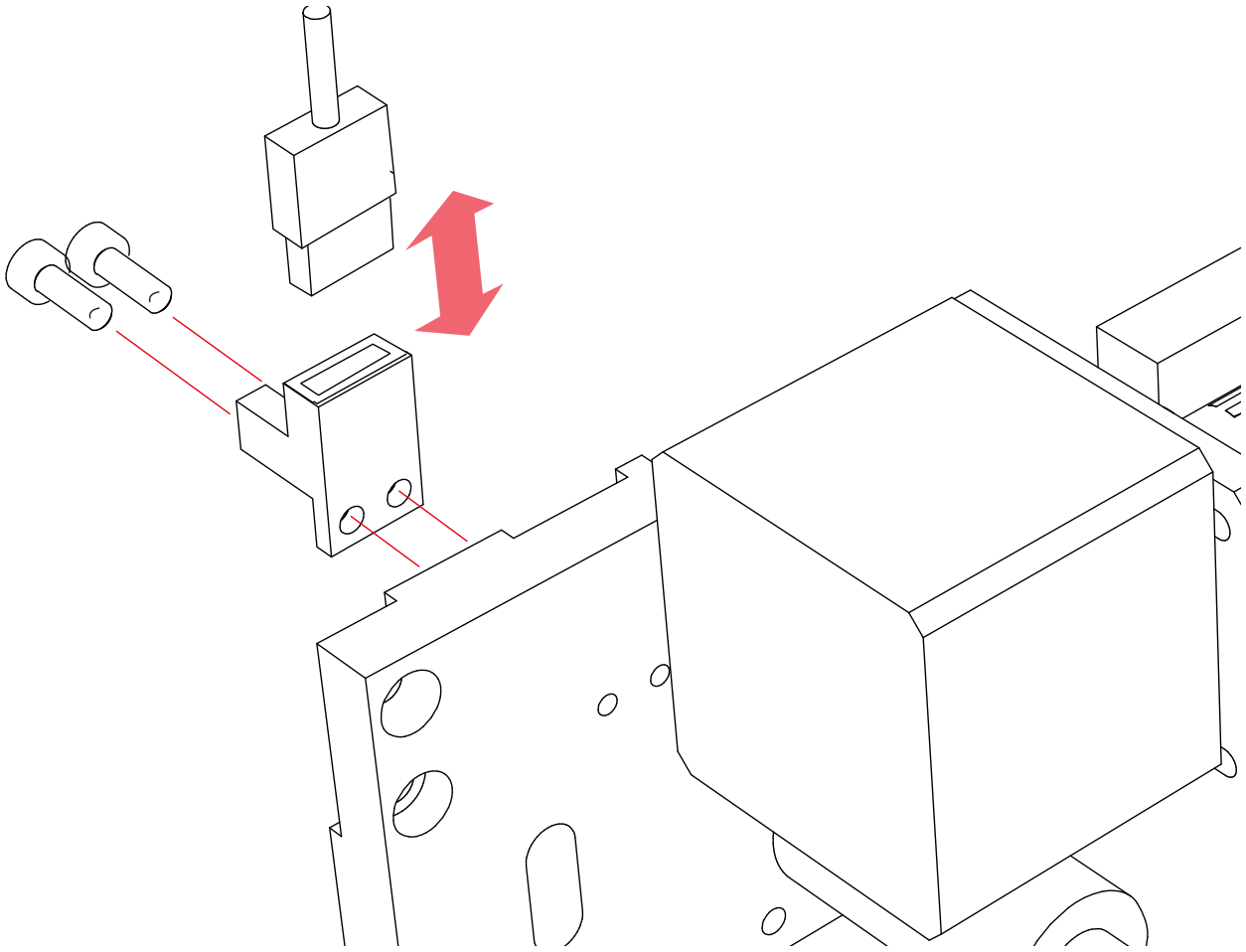
4.5.6.4 Replacing E Axis ORG Sensor (EORG)

Equipment

Hex Wrench (2.5mm)

Procedure

1. *Disconnect each Sensor Connector and remove the two Fixing Screws for each and replace each sensor.*
2. *Perform a readjustment of the teaching parameters after replacing the EORG Sensor.*



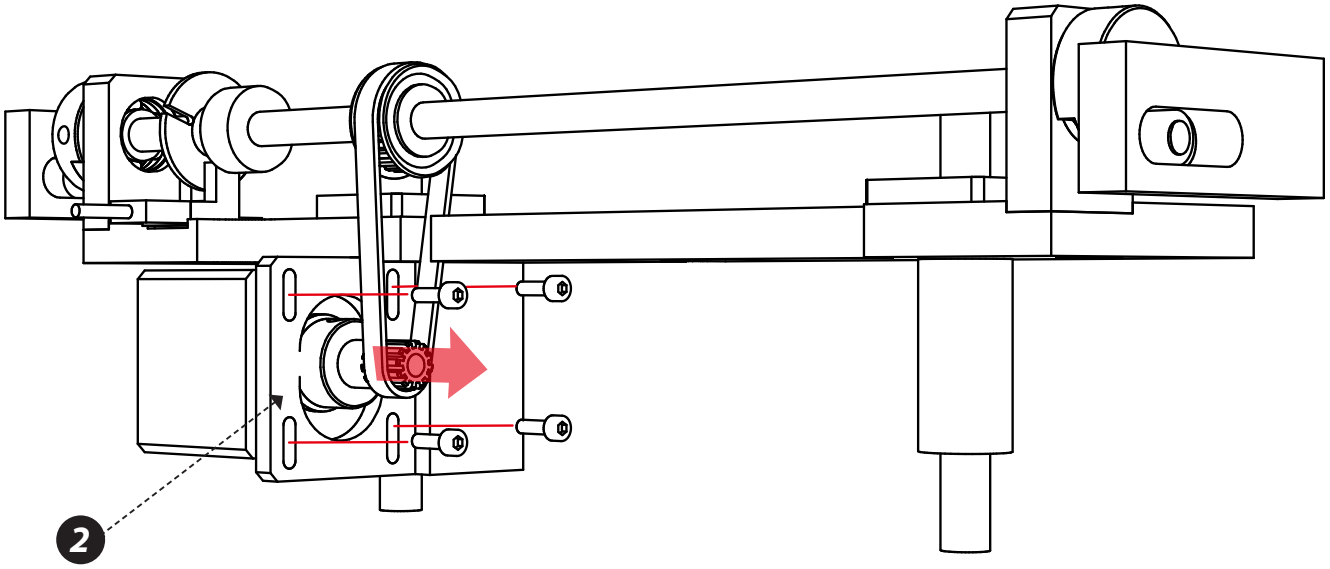
4.5.6.5 Replacing E Axis Motor

Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Disconnect the Y Axis Motor Connector.*
2. *Remove the Y Axis Motor by removing the four Y Axis Motor Fixing Screws. Note: Use Hex Wrench (3mm)*
3. *Reassemble in inverse order after completion of replacement.*



4.6 Single Syringe

4.6.1 Replacing Single Syringe

The Front Lid needs to be removed in advance, before replacing the Single Syringe.
When removing the Front Lid refer to "4.1.2.2 Removing Front Lid," and follow the instructions below.

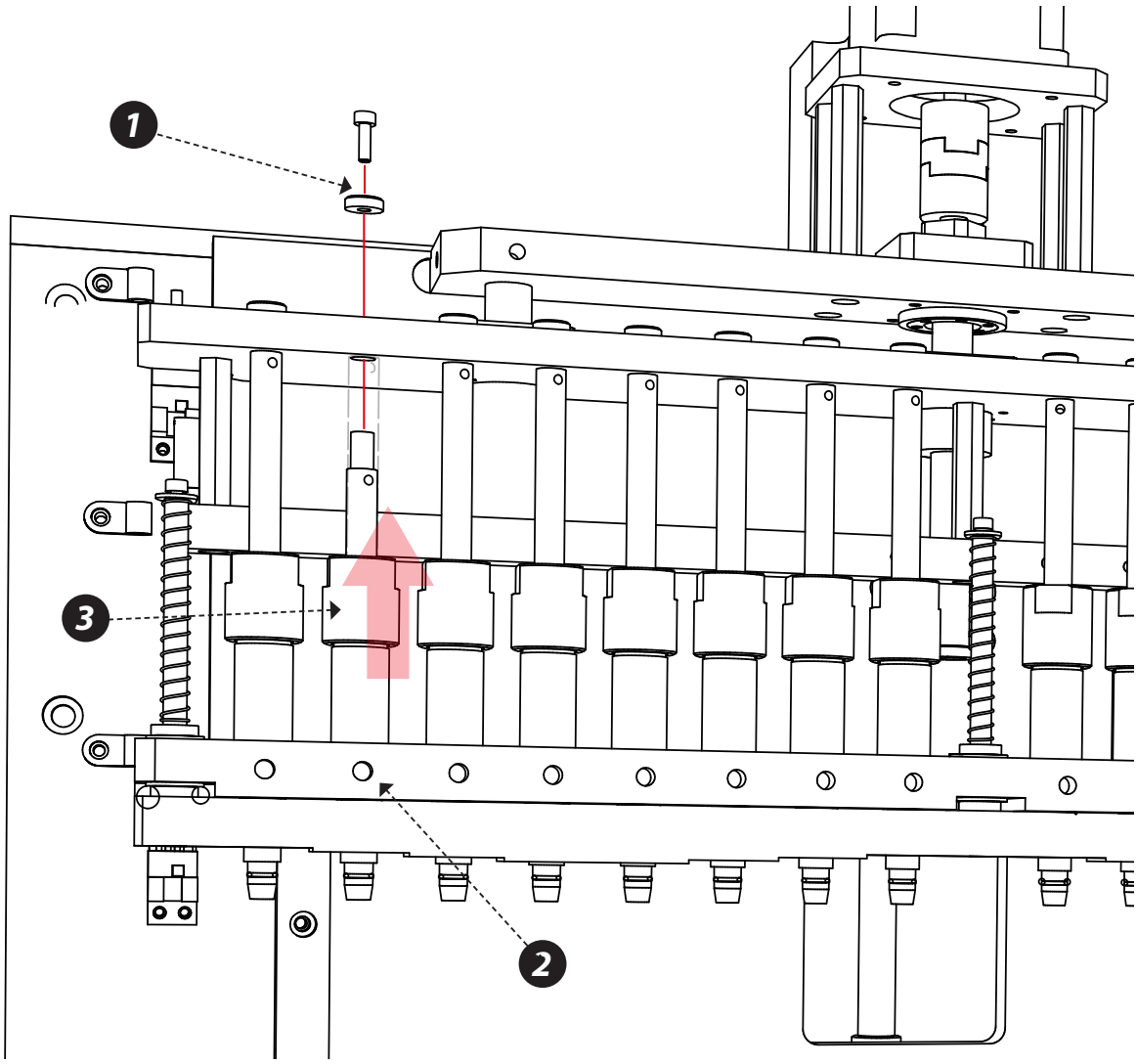
Equipment

Hex Wrench (2.5mm, 3mm)

Procedure

1. *Remove the Single Syringe by removing the syringe top Fixing Screw.*
2. *Remove the Front side Fixing Screw.*

Use Hex Wrench (2.5mm) Top Fixing Screw
Use Hex Wrench (3mm) Front Side Fixing Screw
Reassemble in inverse order after completion of the replacement.



4.6.2 Replacing Syringe O-Rings

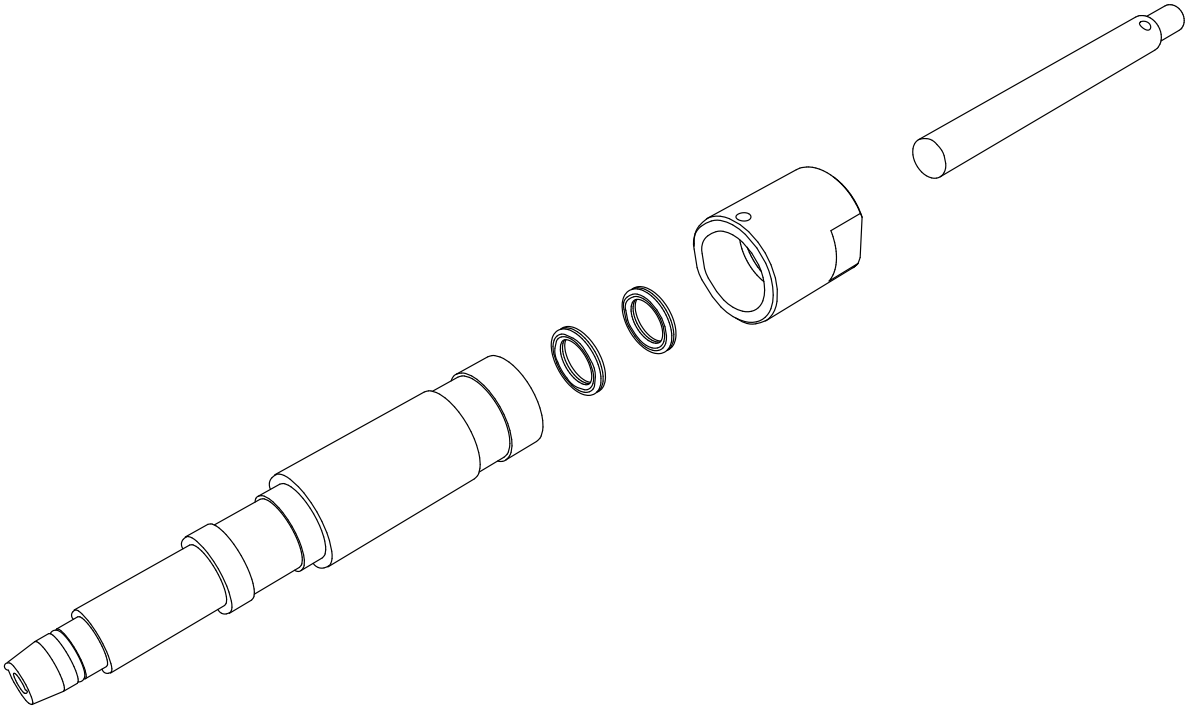
The Single Syringe needs to be removed in advance, before replacing the Syringe O Rings.
When removing the Single Syringe refer to "4.6.1 Replacing Single Syringe" and follow the instructions below.

Equipment

Hex Wrench (1.5mm)
Silicon grease (recommended)

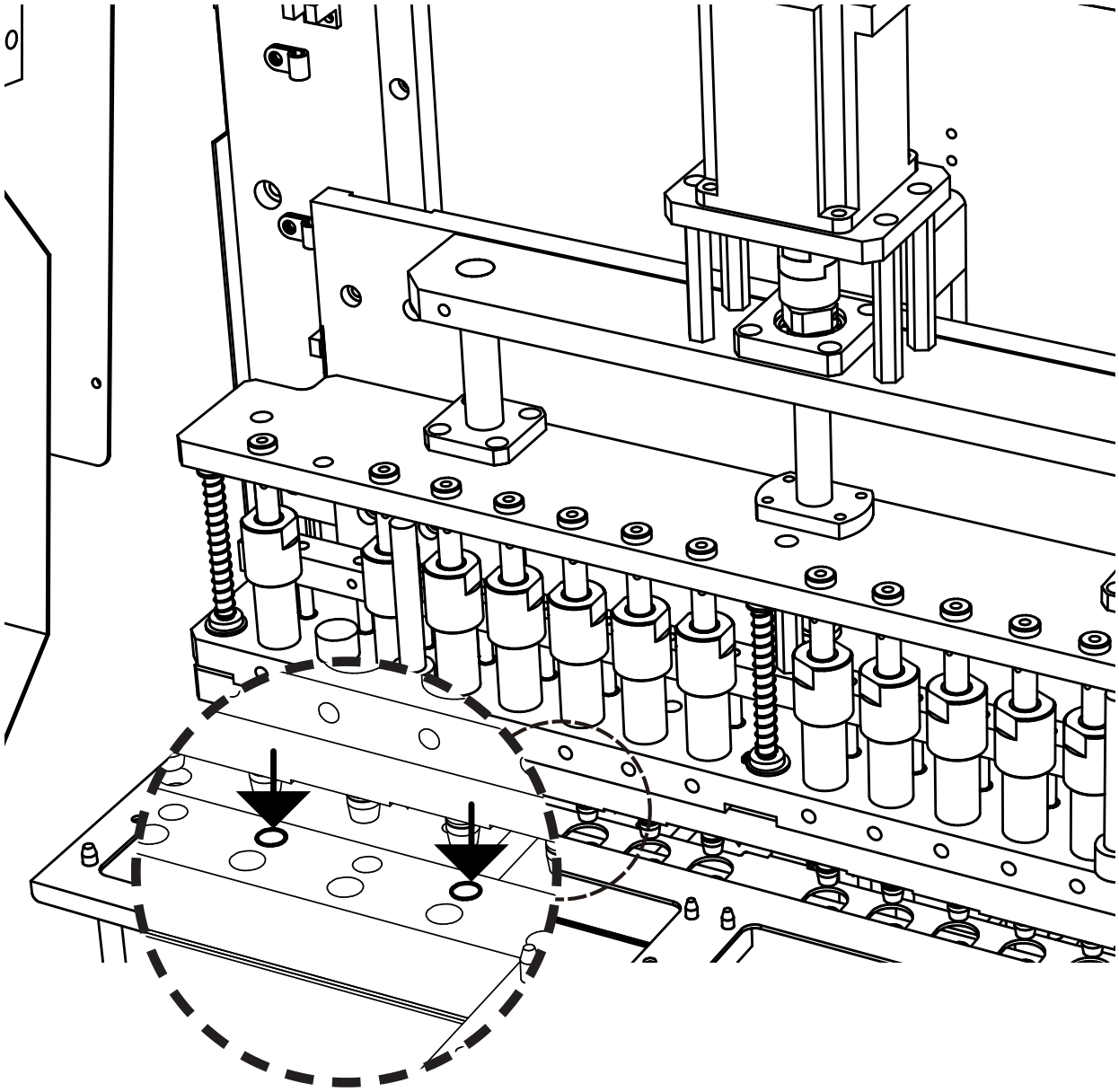
Procedure

1. *Remove the Syringe Head by removing the Syringe Head Fixing Screw and rotating*
2. *Replace the new Syringe O Rings in the Single Syringe.*
   Reassemble in inverse order.



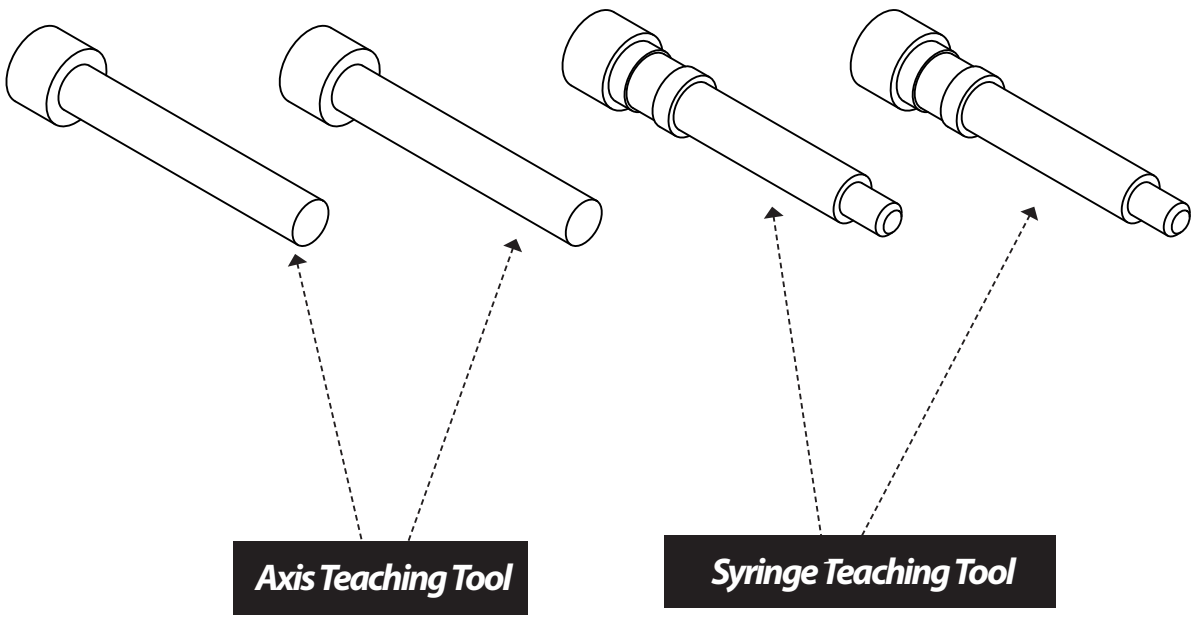
4.7 Heater Test

1. *Please add small amount of water into the test point (arrow)*
2. *Press <Shift>*
3. *Press <Heater>*
4. *When the temperature reach 65 degrees, please opened the door and then press <1> the continue.*
   After 5 minutes, using thermometer measured into heater (arrows). The normal range of temperature should be 56 to 65 degrees.
5. *After the test, dry the water*



5 Regulate

5.1 Teaching Tools Set

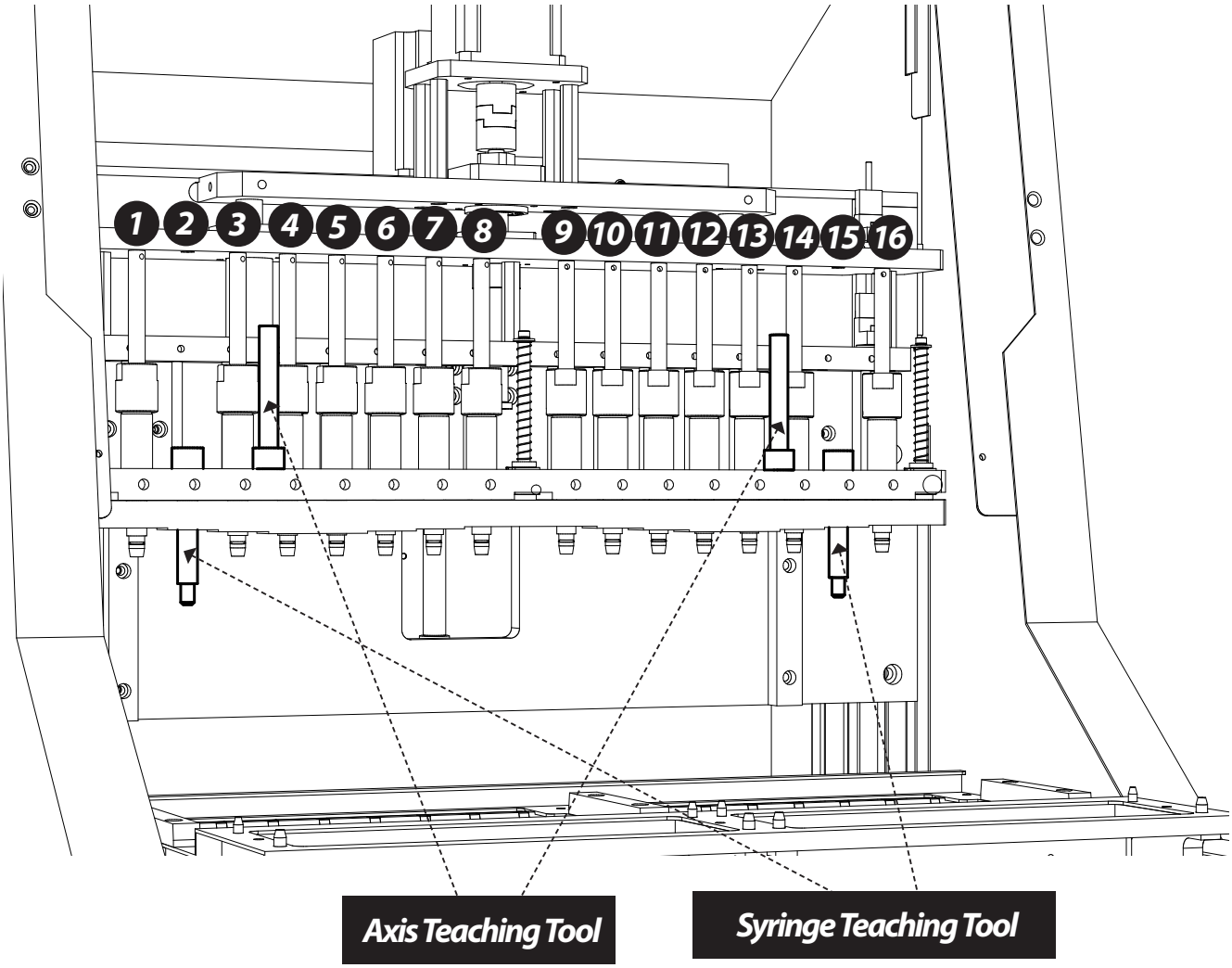


5.2 Procedures before Calibration

Step 1

Remove #2 and # 15 Syringe by removing the Syringes' top Fixing Screws and Front side Fixing Screws.
Replaced with two Syringe Teaching Tools at both ends (#2 & #15).
Note: Use Hex Wrench (3mm)
Place Axis Teaching Tools between #3 and #4, aswell as #13 and #14

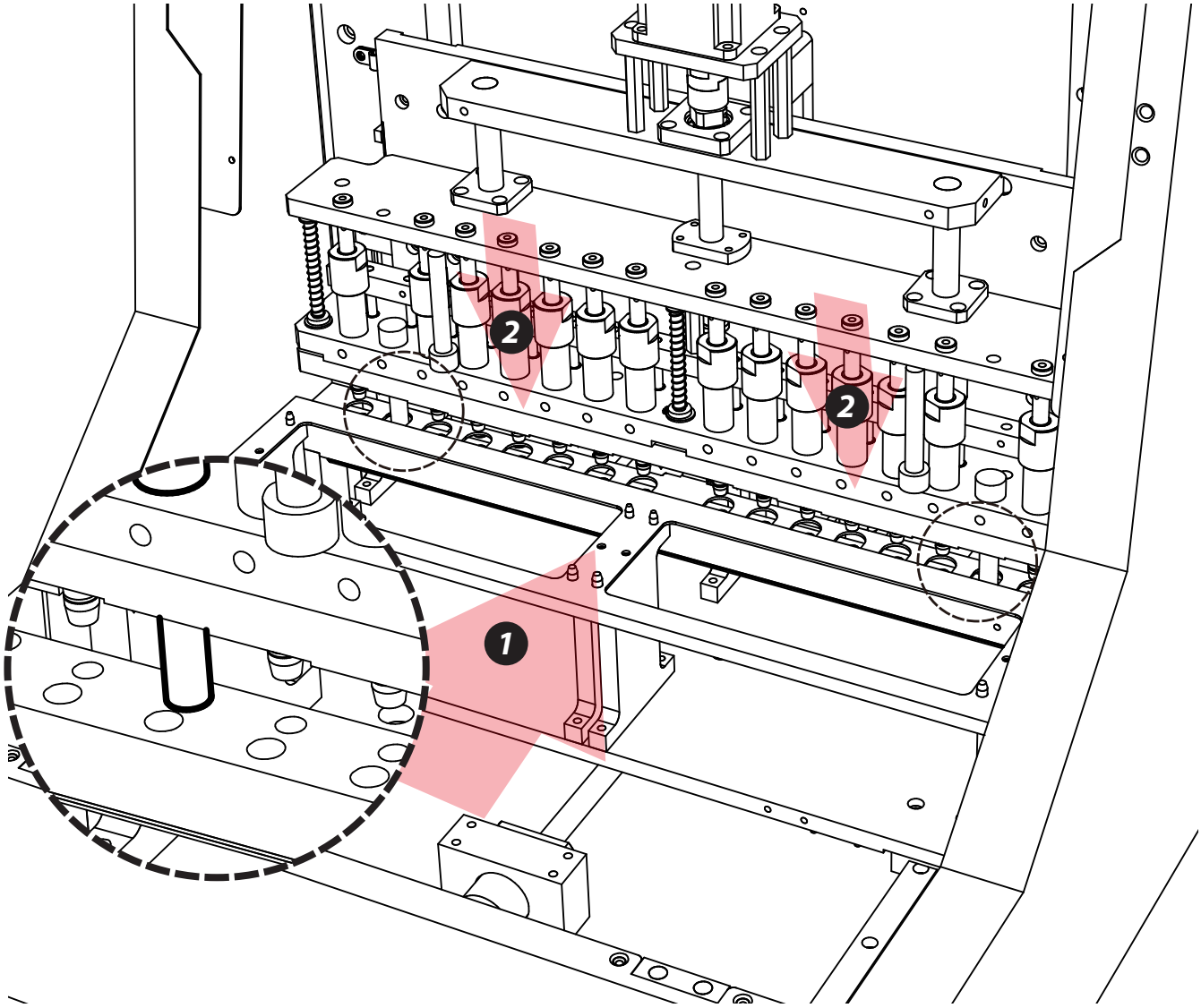
Go to step 4 for input original factory setup or Axis Value.



Next Step

Step 2

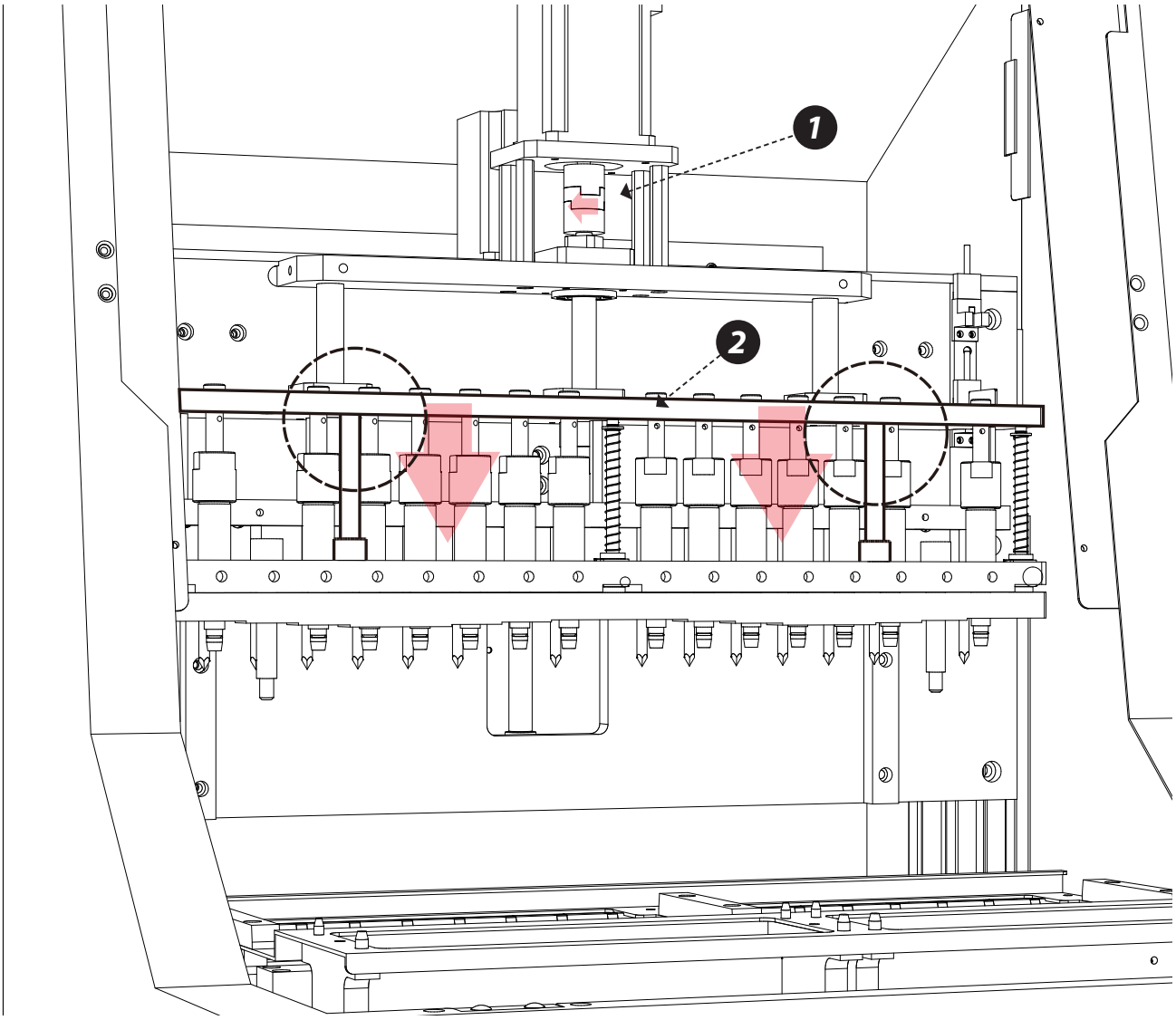
1 *Push in the Tip holder unit to the end.*
2 *Push down Y Axis till the Syringe Teachint Tool fixed and Stand into the Elution Heating Wells.*



Next Step

Step 3

Rotate V Axis motor connector to push down Syringes block until firmly fixed with Axis Teaching Tools



Next Step

Step 4

1 *Place 4 Teaching Tools in position before perform calibration*

Turn on power switch and Press Shift Key



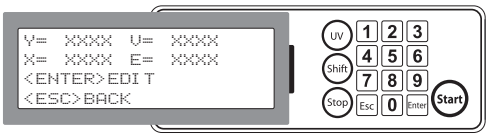


Select 3 SENSOR



(1) Edit Stored Data

Select <1> for input Asix Value.



Press Enter Key to input new value

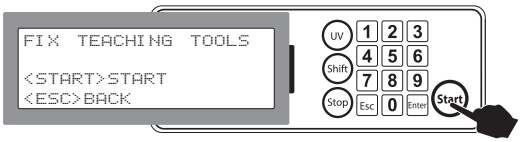
This step is for input original parameter form "Teaching data sheet" or calibrated Axis value after Replace of CUP board.

Calibrated Asix value can be acguired by <2> check by Tools.

Echo XXXX stands for one Asix value.

(2) Check By Tools (Continue last page)

Select <2> for calibration.



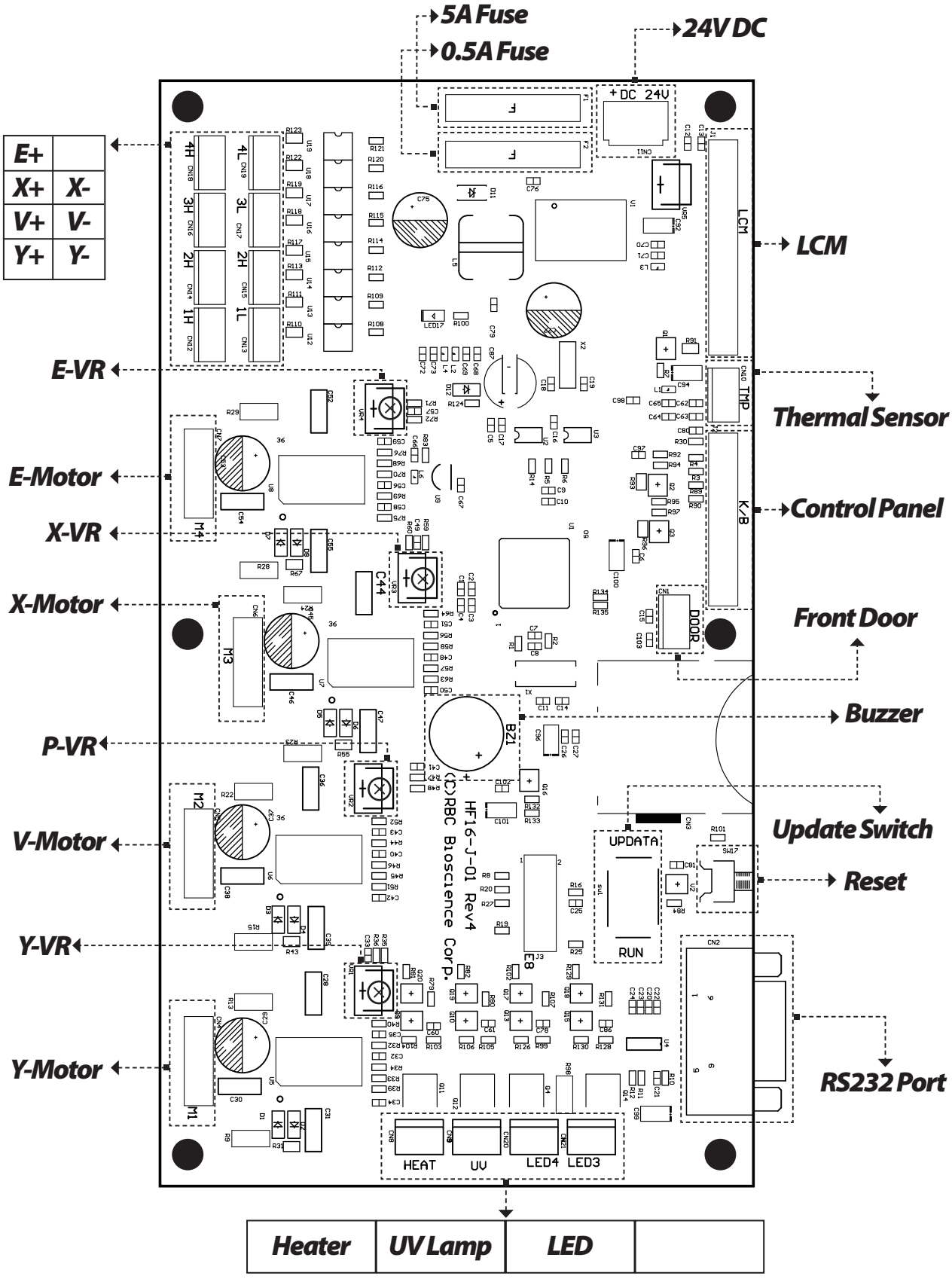


Record the Asix Value on your service manual.

Perform 2.8 system test.

6. CPU Board And Power Supply Switch

6.1 CPU Board



6.1.1 Replacing CPU Board

The Service Lid needs to be removed in advance, before replacing the CPU Board.
When removing the Service Lid refer to "4.1.1 Removing Service Lid" and follow the instructions below.

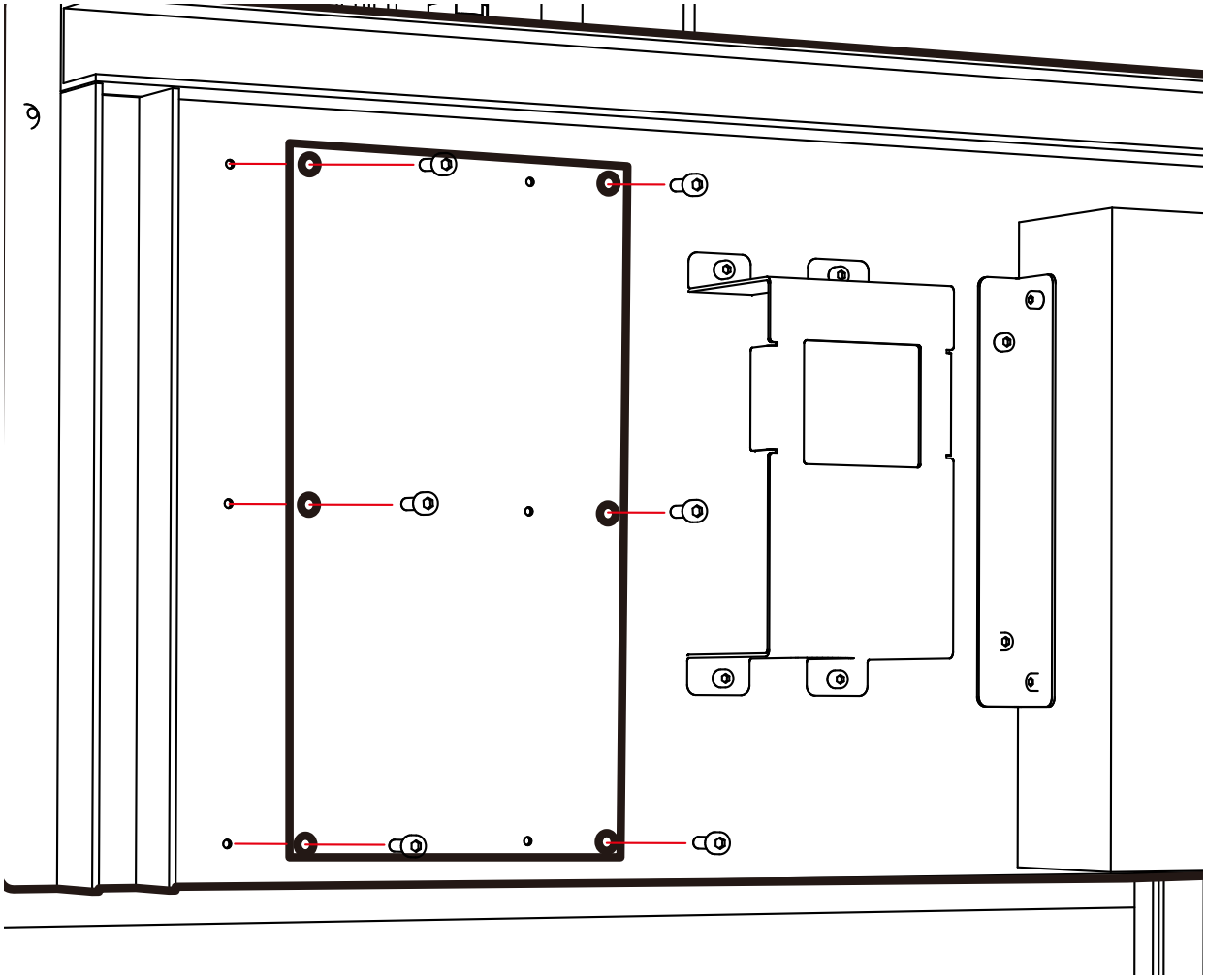
Equipment

Hex Wrench (2.5mm)

Procedure

Disconnect the seven IO Connectors from the CPU Board.
Disconnect the four Axis Connectors from the CPU Board.
Disconnect the three Power Distribution Connectors from the CPU Board.
Disconnect the DC link input Connector from the CPU Board.
Disconnect the Front Door Safety Switch Connector from the CPU Board.
Disconnect the two Operation Panel Connectors from the CPU Board.
Remove the six CPU Board Fixing Screws.
Reassemble the new CPU Board in the inverse order.

Peform 5. Regulate steps.



6.2 Replacing Power supply switch

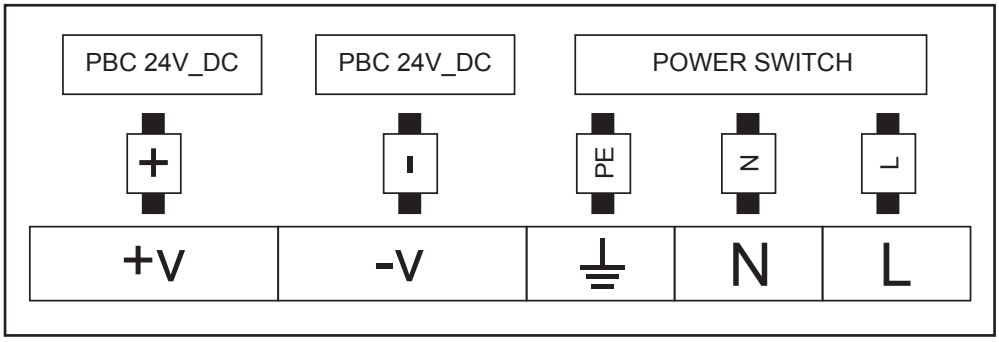
The Service Lid needs to be removed in advance, before replacing the Power supply switch.
When removing the Service Lid refer to "4.1.1 Removing Service Lid" and follow the instructions below.

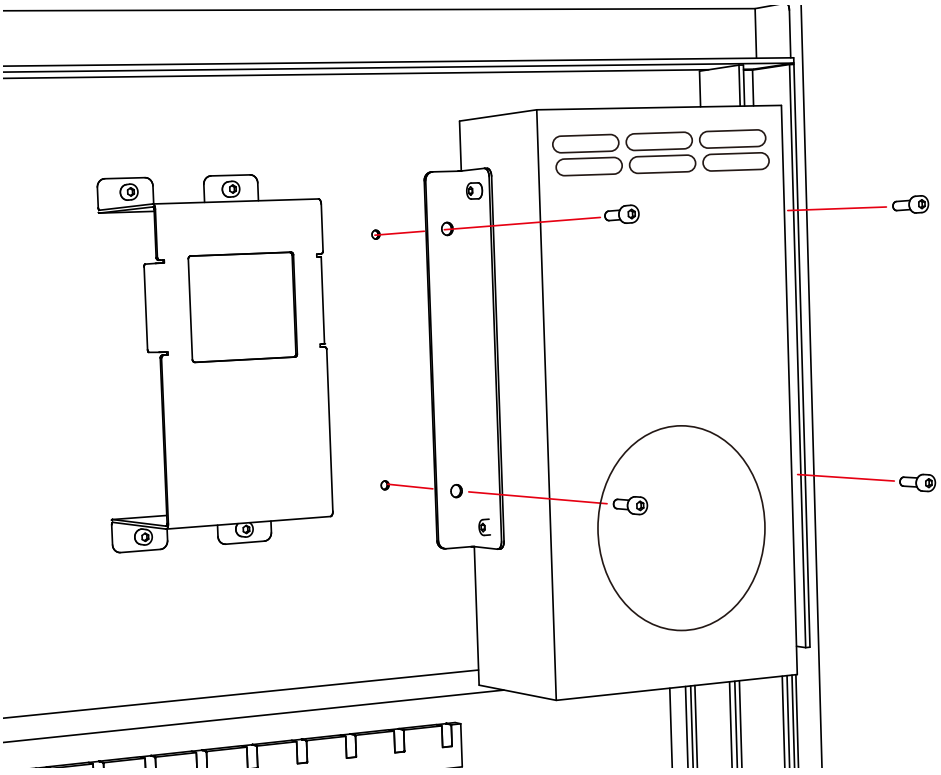
Equipment

Phillips Screwdriver (#2)

Procedure

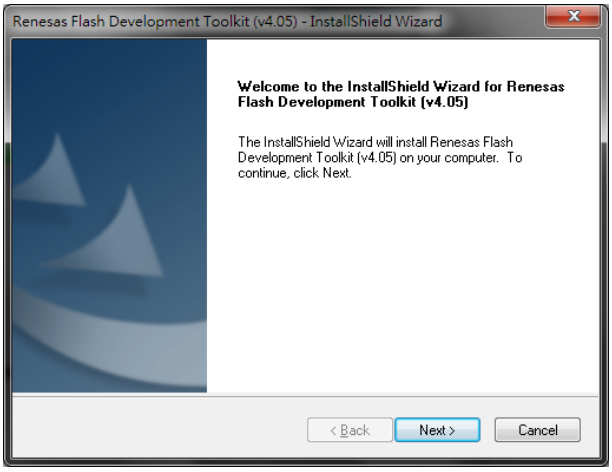
Disconnect the AC Input Connector.
Remove the four power supply switch fixing screws.
Disconnect the AC Input Terminal and the DC Output Terminal.
Reassemble the new power supply switch in the inverse order.



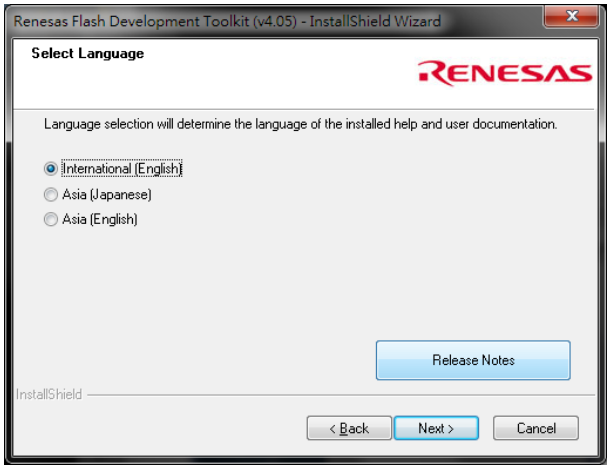


7 Update Software
7.1 Installing Update Software –RENESAS For Windows

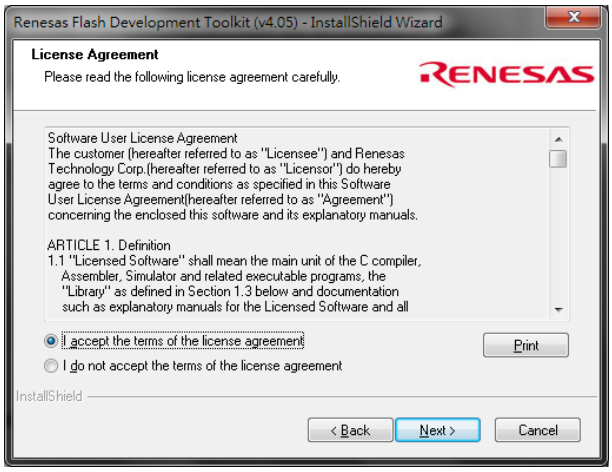
The InstallShield Wizard will open to help you, and press next.



You will be asked to choose your preferred language from the choices.

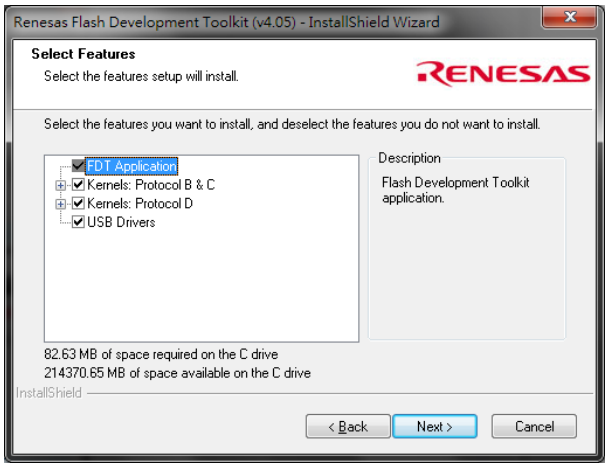


On the next screen, you will be asked to accept the terms of license agreement. Please check the box, and click next.

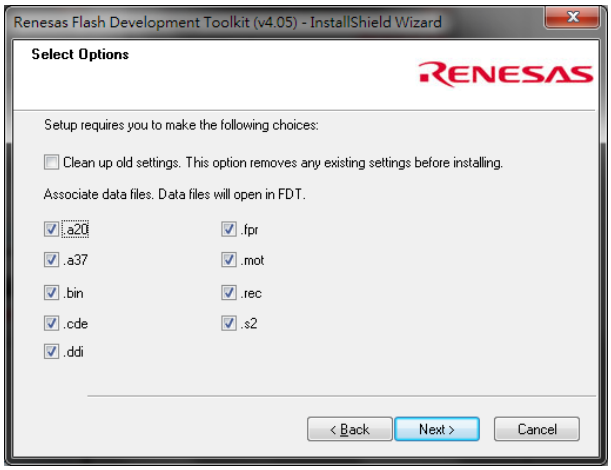


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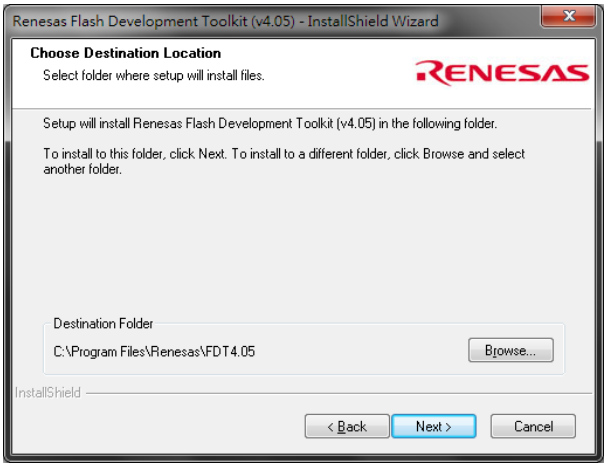
First, go to the folder where you saved the file. Double click the file to begin the installation of the Renesas Flash Development Toolkit.



This next window is to select options. Just ensure that all boxes are checked. You won't need to clean up the old settings, though. Click next.

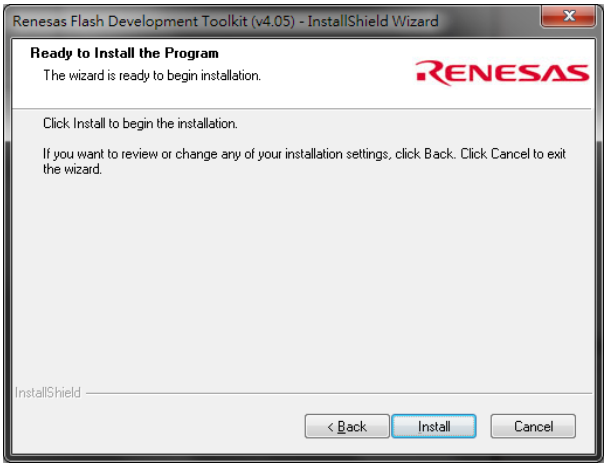


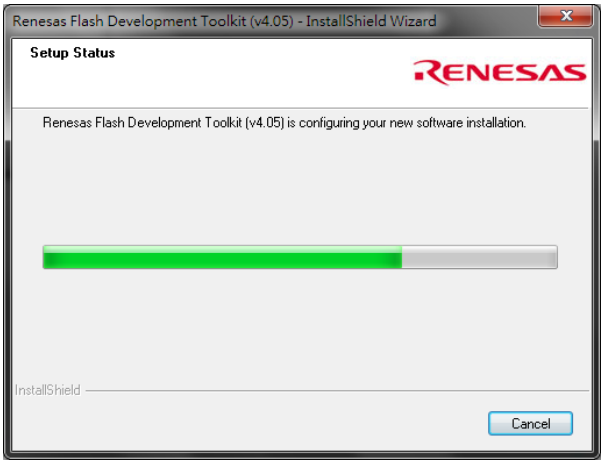
Now, select the destination for the file install. The wizard will automatically choose Program Files. If you wish to select another folder, use browse. Once that's done, click next.



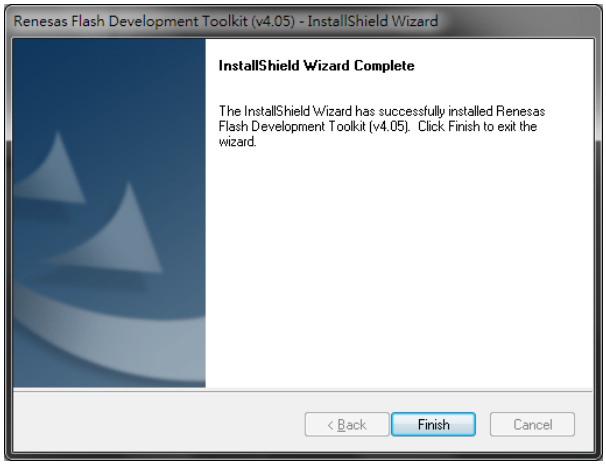
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It's ready to install, so click "Install".





Once the installation is completed, press Finish. This completes stage one.



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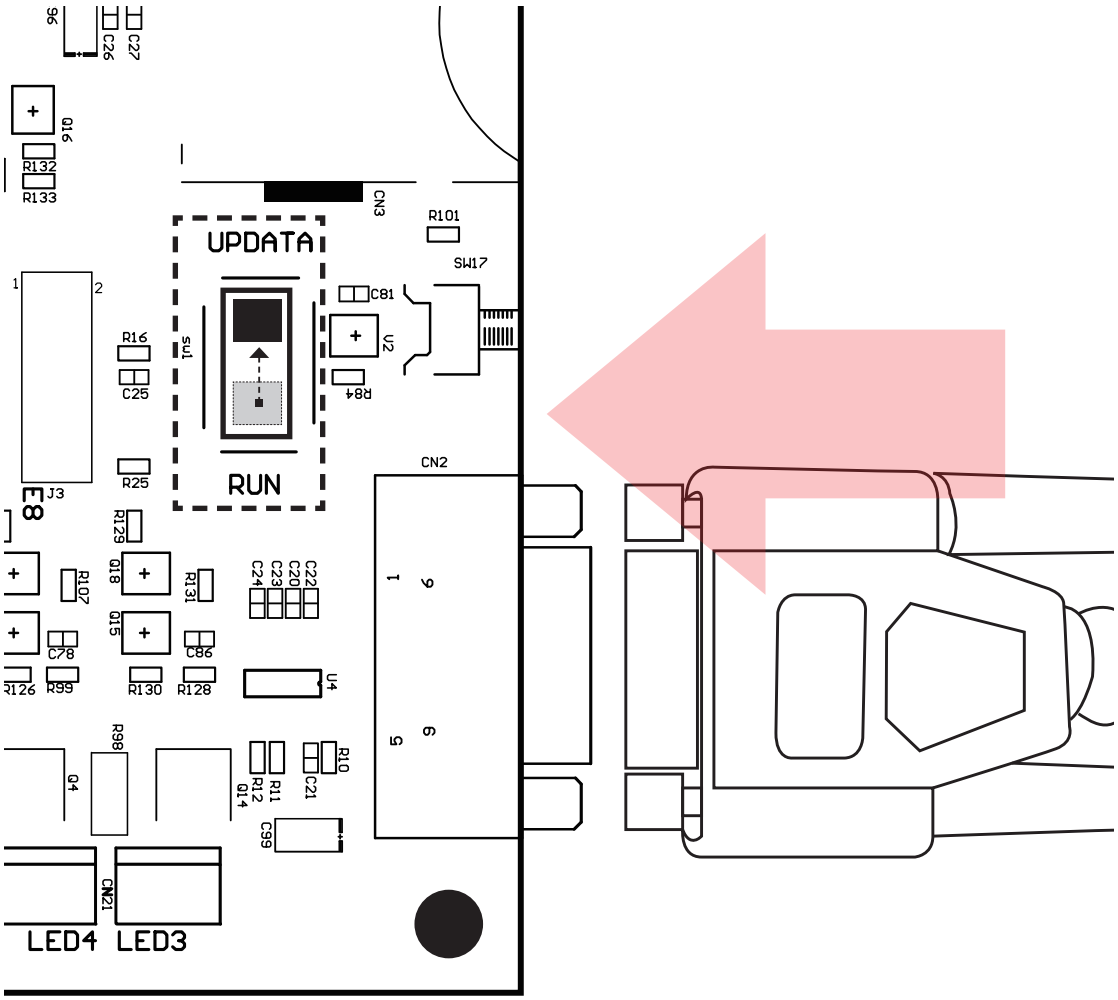
This next stage of the installation involves connecting the MagCore HF16 System with your computer software, uploading data to the MagCore HF16 System, and checking settings.

NOTE: Turn off machine power before this step.
Remove the MagCore HF16 back-panel, and move the "Protocol Updata" stick to the upper position. (UPDATA)

Now, connect the USB-RS232 plug with the extended RS232 cable line.
NOTE: You may need to install the USB-RS232 cable driver software to your PC first.

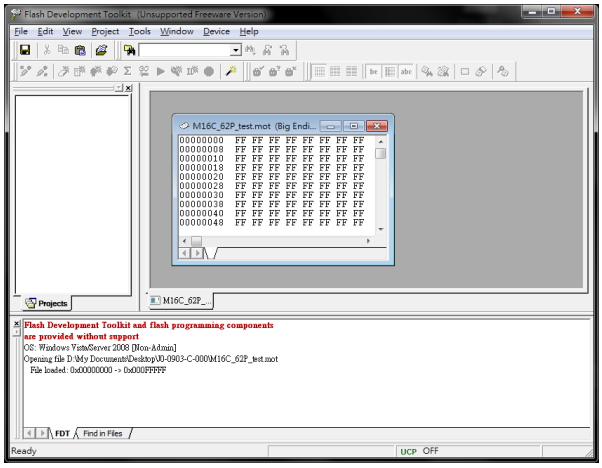
Thirdly, connect the extended cable line to the machine's RS232 port, and connect the other end to the PC's USB port.

Move the stick (in the dotted frame) upward to UPDATA, then turn on machine power, the two steps should be done in two seconds.

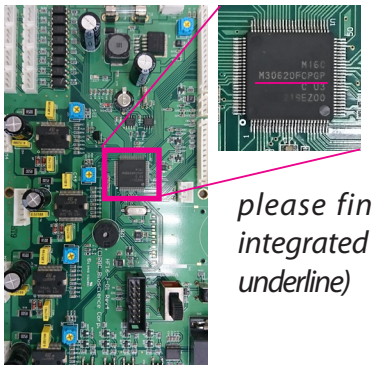


7.2 Update Protocol

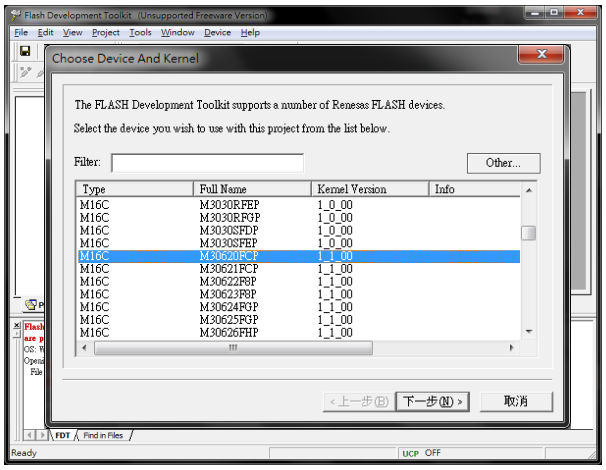
Double click on the file RBC has provided for upgrading the MagCore Compact protocol. This will open the Flash Development Toolkit.



Next, click the pen with a light icon in the middle of the screen, called "Configure flash project" to configure the flash project.

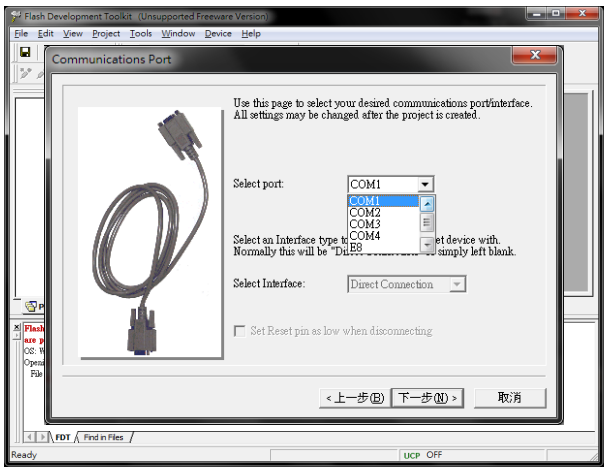


please find the numbers on the integrated circuit (marked with red underline)



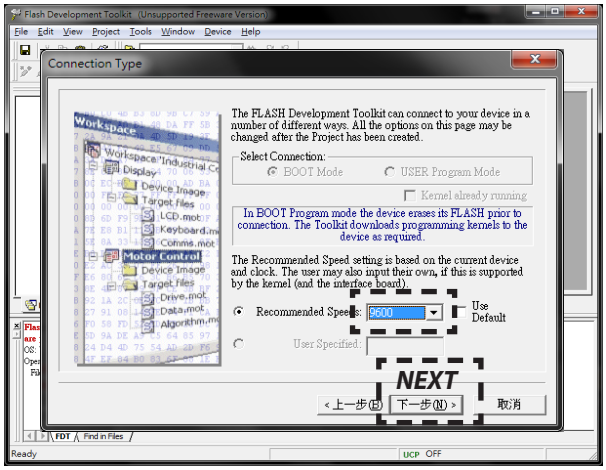
*You will be asked to choose the device and kernel. if the numbers on the integrated circuit is M3062**0**……, please select "M16CM3062**0**FCP"; if the numbers on the integrated circuit is M3062**4**……. , please select "M16CM3062**4**FCP", then press next*

The next screen is the communication port. Use this page to select communicate port from your PC or laptop. Then click next.

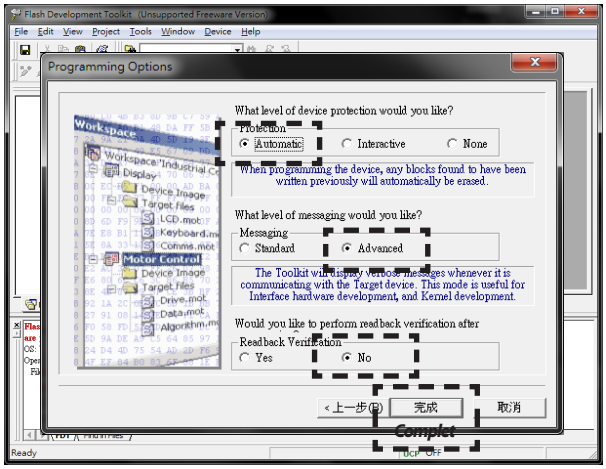


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*For your connection type, uncheck "User Default" check box and select the recommended speed **9600**.*



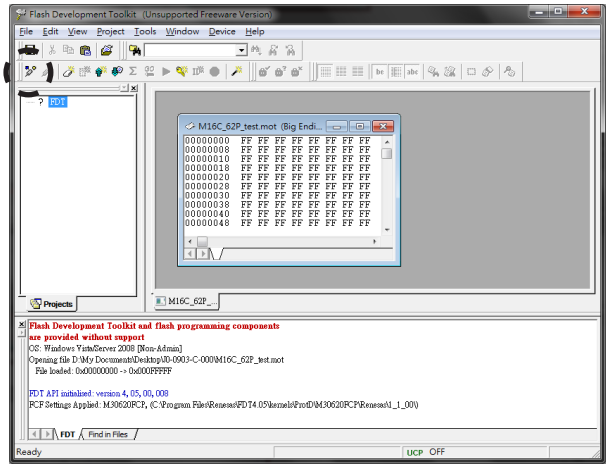
Now, select the protection system as
*Protection "**Automatic**"*
*Messaging "**Advanced**"*
*Then press "**Complete**"*
– which is the middle button.



Now, please turn on the MagCore HF16's power.

Back on the computer, press the
*"**FDT Connect**" icon.*

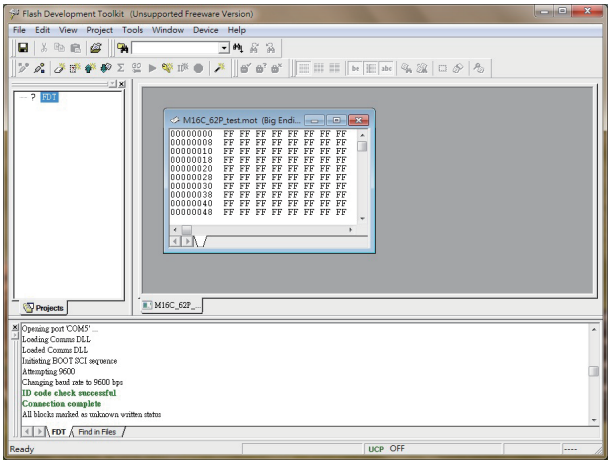
After doing this, your computer begins connecting to the MagCore HF16 microprocessor.



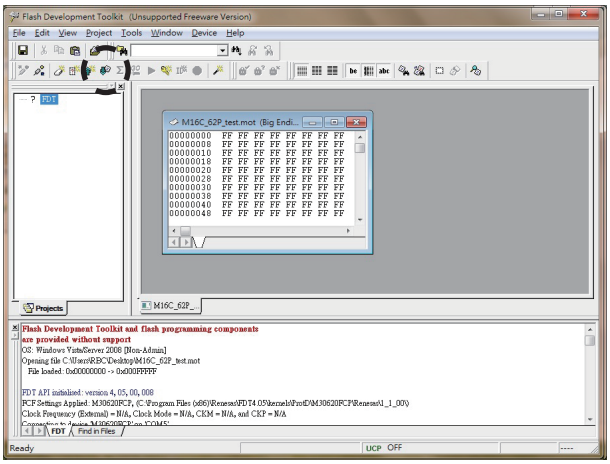
Next Page

The communication box at the bottom of the screen will show in green - "ID code check successful. Connection Complete."

If this information doesn't show up, check your RS232 cable line and run the above procedures again.

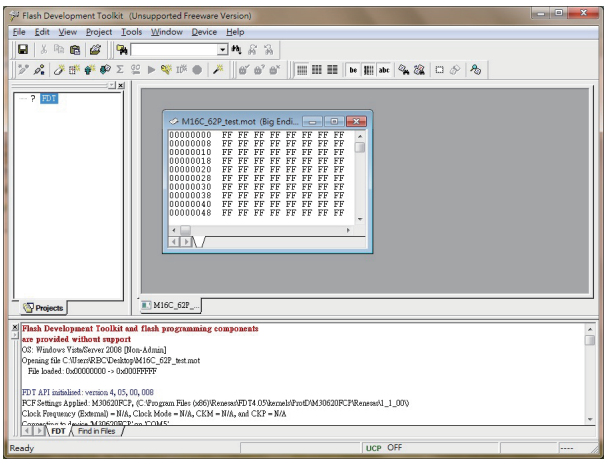


Next, select the "Download Active File" icon on the Toolkit.



The communication box at the bottom of the screen will show in green - "Image successfully written to device."

If this information doesn't show up, check your RS232 cable line and run the above procedures again, or contact RBC for a solution.



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Finally,

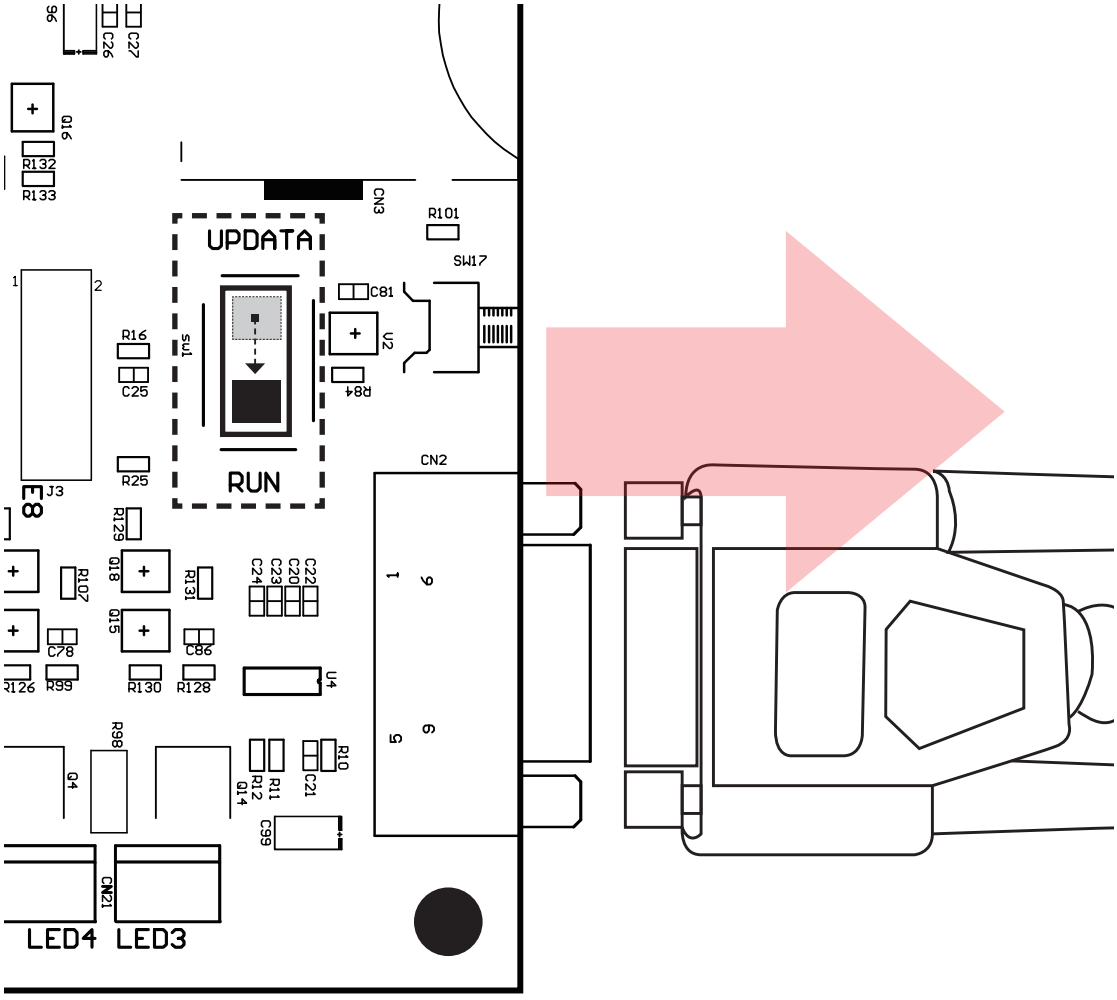
1. Turn off the MagCore power switch.

2. Move the "Protocol Updata" stick to the lower position. (RUN)

3. Disconnect the RS232 cable line.

4. Screw the back panel on again, and turn on the power. Your MagCore HF16 System is ready for new protocol applications.

We hope the se instructions have been clear and easy to follow. Thank you for choosing the MagCore HF16 System, and please contact RBC if you have any further questions.



Trouble shooting Guide

Problem	Possible Cause	Recommendation
Drops of liquid on the Cartridge rack or the T-rack	Leakage of the tips due to damaged or worn O-rings in piston.	Please refer to the System Test, and check the liquid level of each columns are at same horizontal.
Pipetting of wrong liquid volumes	1. Head of tip might be bent. 2. Worn piston O-rings 3. Reagents were stored too long.	1. Check the Tip head. 2. Please refer to the System Test, and check the liquid level of each columns are at same horizontal.
Liquid level up to tip fillte	1. Wrong sample meterials 2. Wrong sample tubes.	1. Please refer to the MagCore® kit manual. 2. Please use provided sample tubes.
No piercing	V motor or connector is not working properly.	Restart system. If problem persists, contact Technical Service.
LCM panel disappeared	PCB board or connector is not working properly	Contact Technical Service.
Axis no movement	Motor or connector is not working properly.	Restart system. If problem persists, contact Technical Service.
Tip Holder jammed	1. The holder might be bent. 2. Nozzle Heads is not correctly position.	1. Press the STOP button immediately, and replacing the new Tip and Holder. 2. Contact Technical Service.

MagCore®

RBCBioscience



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