

Operation and Maintenance Manual

Air Electrostatic Handgun

HB4000M/W



This manual contains important information on warnings and cautions. Read the manual thoroughly before starting to operate the equipment, and follow the instructions. Always keep the manual handy until such time as the product is no longer being used. If your manual is lost or worn badly, do not hesitate to contact our agency which is closest to you, or Asahi Sunac Corporation directly, and ask us to send you a new one.

Introduction

Thank you for purchasing our product, air electrostatic handgun <HB4000M/W>.

Before you use the equipment, carefully read this manual and understand how to use it safely, efficiently and effectively. Please pay particular attention to major specifications, warnings and precautions, including prohibited items. Use the equipment appropriately and with care, following the instructions. We hope that by doing so you win benefit from use of the product over a long period of time.

This product is used in combination with the electrostatic controller (BPS114). Carefully read the manual of the electrostatic controller.

The painting equipment in this manual is for professional use only, calling for a qualified person to operate. Use of the equipment should, therefore, be limited to those who have acquired operation and application skills through appropriate training.

This product complies with NFPA requirements with respect to Chemical Compatibility. Refer to ANSI/NFPA 491M, latest conditions.

Should you have any questions with regard to the manual, please give us the "Model Name" and "Serial Number" of your equipment, so that we may be able to help you with your questions. You can reach us at any of the addresses, phone numbers and fax numbers shown on the back cover.

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Please read and follow all the technical and safety instructions in this manual.

Failure to do so may result in personal injury and/or property damage.

While all the safety precautions in the manual are very important, you should not consider them to be as cure-all. They are nothing but minimum requirements. You should observe matters specified by law and regulations, and rules and regulations of company or office.

Shown below and in the pages that follow are the basic minimum safety precautions in connection with use of our product.

● **Safety precautions are classified into three categories based on the severity of hazards involved.**

	WARNING	Alerts a hazardous situation which may result in personal injury, along with hazard avoidance measures.
	CAUTION	Alerts a hazardous situation which may result in equipment damage or breakage, along with hazard avoidance measures.
	NOTE	Indicates important methods and practical information.

- * Safety precautions classified into the CAUTION category could cause personal injury if not properly followed.

To ensure safety and prevent equipment failure, always observe the safety precautions and follow the hazard avoidance measures in any categories.

WARNING

<<For correct use of the product>>

The product covered by this Operation and Maintenance Manual is the
Air Electrostatic Handgun <HB4000M/W>.

This product is a manual spray gun designed to be installed in the coating booth equipped with an exhaust system and to spray paint for the air electrostatic atomizing spray.

Use this product in a spray booth with the capacity specified in the relevant law and regulations or under equivalent ventilation conditions.

If you have any doubt about the intended use or materials of the product, please consult us.

The use of the product under conditions other than specified above is always considered as misuse and may lead to an accident unless our special approval has been obtained.

<<General safety precautions for handling of the coating machine>>

1. Do not point this product toward people and animals. Failure to avoid this may cause serious injuries due to toxic substance such as inflammation and cause symptoms of poisoning.
2. If a pacemaker is used in the scope where this product is used, the pacemaker may malfunction and stop due to the high voltage.
3. Wear the appropriate antistatic shoes specified in JIS T8103 when you enter the place that this equipment is used such as coating booth. If you don't wear it, the spark discharge can be occurred because of human body charging.
It may cause serious accidents such as fire and electric shock.
4. Supply and exhaust air properly through the ventilation system at all times so that vaporized organic solvent etc. will not remain under the environment where this product is used.
5. If you use this product when in poor physical condition, correct judgment on avoidance of danger may delay, which may lead to serious accident.
6. Stop using this product immediately when abnormality such as abnormal sound, vibration and high-voltage leakage is found during use. Continuing operation with abnormality may cause a fire or damage the product.
7. Do not use halogenated hydrocarbon solvents. Aluminum alloy contained in the component of this product may cause chemical reaction, leading to explosion.
8. Do not bring devices and tools such as matches and lighters, which generate spark, to the environment where this product is used. Flammable materials may catch fire, and cause explosion or fire.

WARNING

9. If this product is used outside the prescribed specifications, fire or product damage could occur. Make sure to use this product within the specification range.
10. Before operating this product, examine the installation status of the devices and check for damaged or chipped parts.
11. Before using the coating machine, complete the training course for safe operation of the coating machine. The coating machine may only be operated by those who have completed the training course for safe operation.
12. Be sure to ground the electrostatic controller. Grounding the electrostatic controller is the basics of safety operations. The coating machine is also grounded through the electrostatic controller; therefore, be sure to ground it.
13. The work pieces to be coated shall be kept grounded. Their contact resistance shall be 1 k Ω in the case of metal and shall not exceed 1 M Ω in the case of resin. (The measuring voltage shall be at least 500 V.)

The work pieces are generally grounded through the conveyor and hanger and may become poorly grounded if paint sticks to the area in contact with the hanger, and will be charged, cause sparks, resulting in fire. Be sure to periodically remove the paint sticking to the hanger.
14. Ground all conductive objects and paint containers in the coating booth using grounding wires. The atmosphere around the coating machine in the coating booth is ionized by high voltages to charge ungrounded conductive objects and thinner containers through the atmosphere convection, and when any grounded object approaches them, sparks may be generated. Do not place unnecessary paint cans, tools, etc. inside the coating booth.

Even in the case of outside the coating booth, be sure to ground the paint containers if placing them near the entrance.
15. Operate the coating machine with bare hand. The grip part is grounded through the electrostatic controller. If you operate it with electrically insulated gloves such as rubber gloves, your body will be charged. And if you get close to or contact another grounded object in that state, you may get electric shock or it may cause fire. When you use insulated gloves, punch a large hole in the palm part of the gloves so that the grip part and your palm touch each other.
16. The operators involved in electrostatic coating, coating machine cleaning and maintenance operations or working around them shall wear antistatic shoes to prevent build-up of static electricity. Always check that the soles of the antistatic shoes are not contaminated due to paint.
17. The working floor shall be antistatic. For enclosed coating booths, the whole working floor shall be antistatic and, for open coating booths, the range of 1.5 m from each side of the booth opening and 2.5 m from its front shall be antistatic not to exceed 1 M Ω and kept clean.
18. When cleaning the nozzle, be sure to stop the supply of paint and air and turn off the power switch of the electrostatic controller. Applying high voltage while cleaning the nozzle may lead to fire. Always turn off the power switch of the electrostatic controller when suspending or finishing the operation.

Do not touch the nozzle tip while applying high voltage.

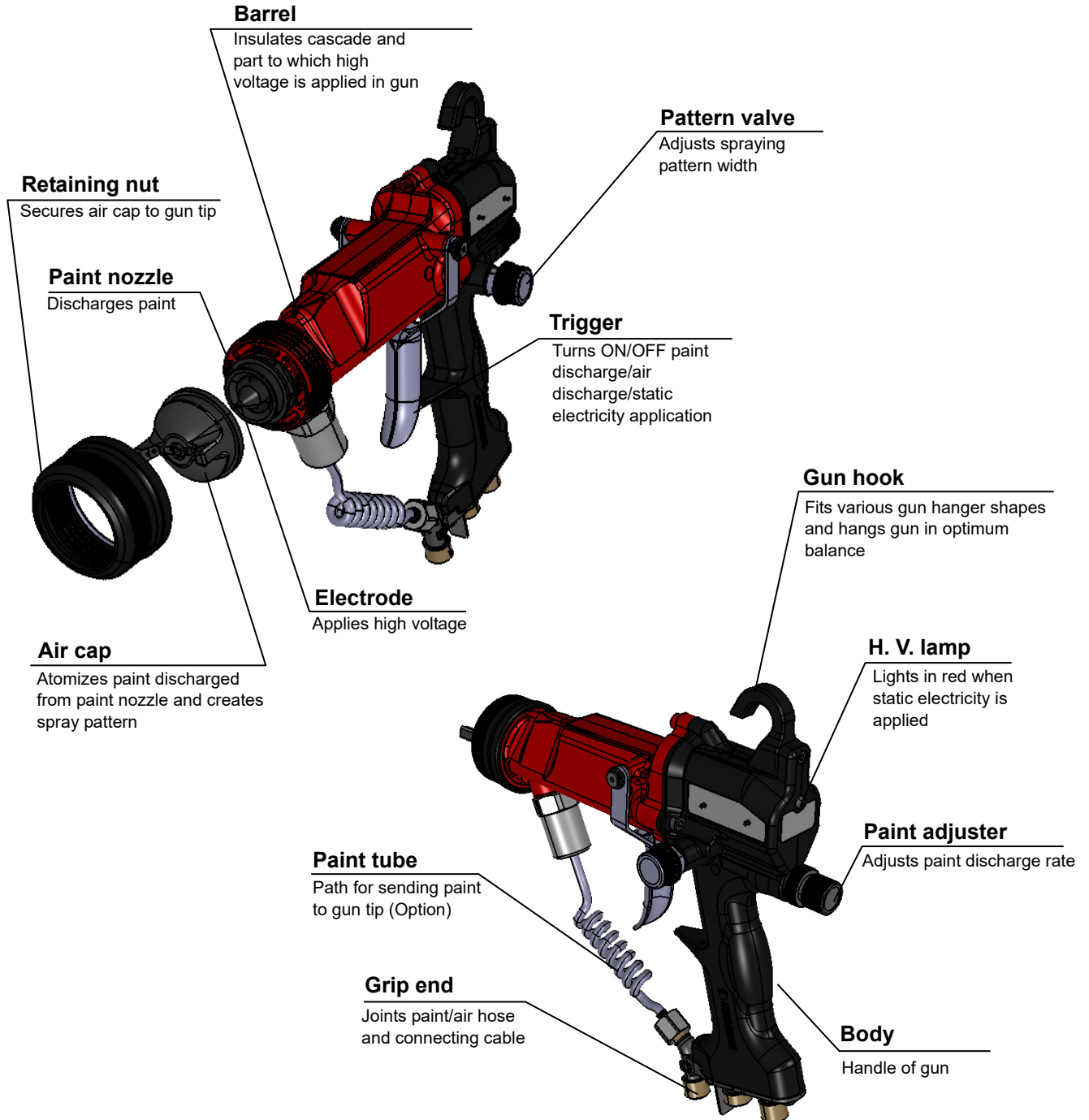
WARNING

19. Never use a metallic brush for cleaning the nozzle. The nozzle is an important part of the coating machine. If you damage the nozzle using a metallic brush, uniform spraying cannot be maintained. When cleaning the nozzle, use a bamboo brush and the like. The electrode pin is pointed and likely to stick in your finger, so handle it carefully.
20. Do not immerse the coating machine, connecting/extension cables and hoses in the cleaning solvent. Since the electrostatic coating machine is an electric machine, if immersed in a cleaning solvent needlessly, it may be damaged.
21. Do not drag connecting/extension cables and hoses over the floor as doing so scratches or otherwise damages them. They shall be suspended from the ceiling or side wall as far as possible. (When using conductive paint, be sure to hang the paint hose with an insulator such as a rubber tube.)
22. The coating booth and exhaust system (duct and fan) shall be kept clean by periodically cleaning. In case a fire breaks out, it tends to spread and increase the damage if paint remains in the coating booth or on the exhaust system.
23. Be sure to keep the distance of at least 150 mm between the nozzle tip and product to be coated. Generally the electrostatic coating machine is so designed that if the nozzle approaches the ground, the electric potential of the nozzle will be lowered automatically. However, in the case of the paint feeder using the insulated table, the electric potential of the pump is not lowered; therefore, large sparks may be generated. Keep sufficient spraying distance taking into account unforeseen circumstances such as wobble or falling of the product to be coated.
24. Sufficiently drain the air transformer, air compressor, etc. If there is moisture in the air, it will lead to poor coating, the alarm buzzer will go off and safety circuit will be activated. Be sure to remove moisture.
25. In the case of the paint feeder using the insulated table, install it at a place at least 500 mm away from other surrounding objects. Turn off the power switch of the electrostatic controller and be sure to connect the grounding bar before touching the insulated table. Because paint with low electric resistance conducts electricity like a wire, you may get electric shock if you touch a paint container. Be sure to install the grounded safety fence in a place facing passages and take safety measures so that it will not be touched unintentionally.
26. A periodically-inspected extinguisher with a sufficient capacity must be provided in the vicinity of the work area in case of electrostatic accidents.
27. Do not pull the trigger toward people. Not to mention the state where paint or air is pressurized, also after the operation, paint may be discharged due to residual pressure. When it is not operated, close the paint adjuster so that paint will not be discharged due to careless operation.
28. Before operation, check that there is no leakage of paint or air. Also when using it, frequently conduct inspections so that accidents will not occur due to screw loose.
29. For the use and installation of the gun, comply with current regulations.

2

Outline Of Equipment

2.1 Names and Roles of Parts



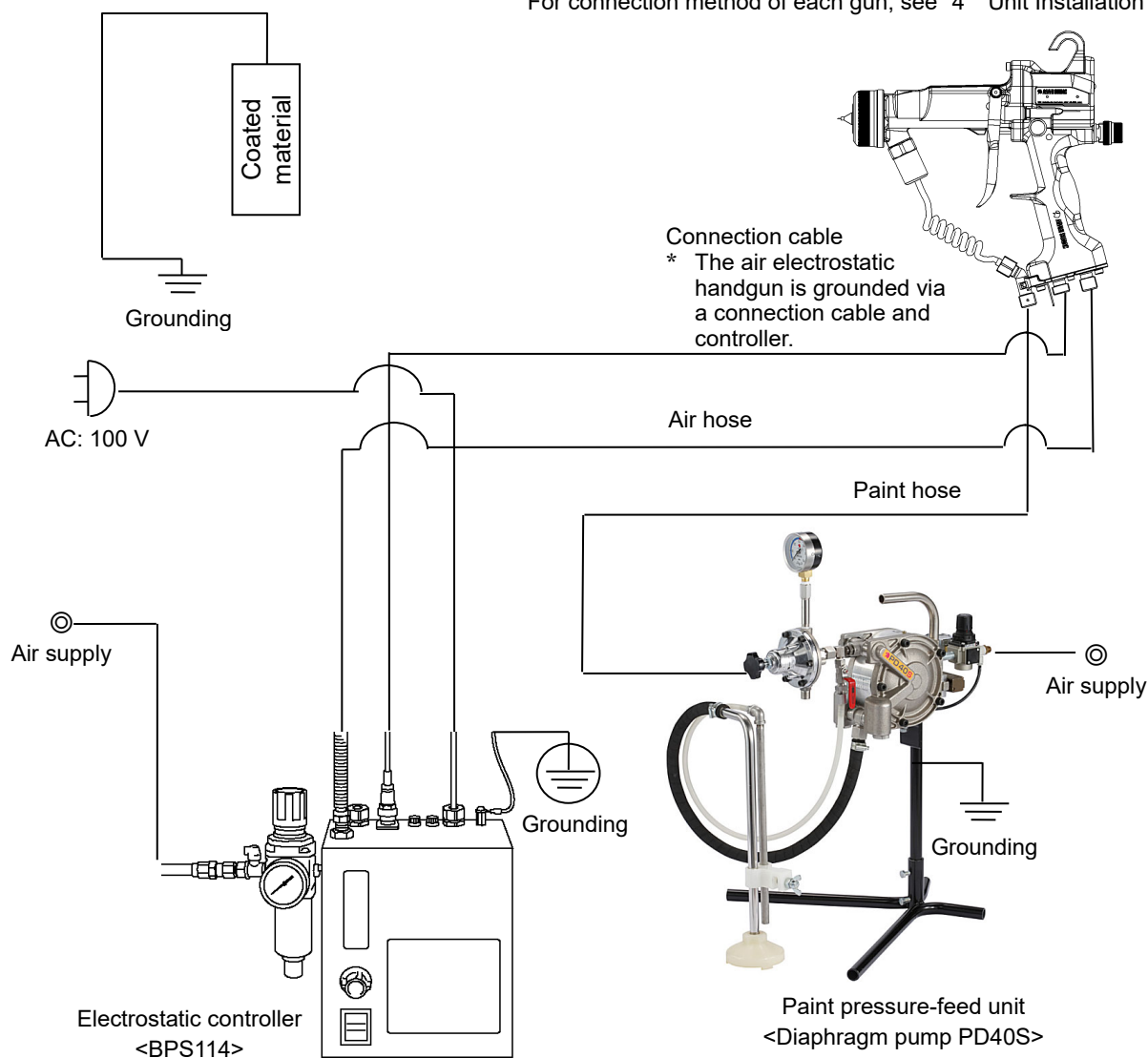
2.2

Example of Structure of Coating Machine Installation

Air electrostatic handgun

Example of <HB4000M>

For connection method of each gun, see "4 Unit Installation"



NOTE

No paint hose is attached to HB4000M. Select the hose suitable for the application. 5m or 10m of paint hose is the standard accessory of HB5000W.

NOTE

No air hose/cable/electrostatic controller BPS114 are attached.

! WARNING

Install electrostatic controller BPS114 outside of the coating booth and at a place at least 1.5m away from the booth opening or entrance.

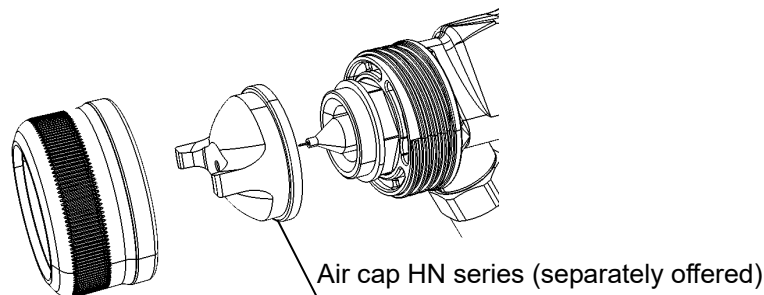
2.3 Related Accessory Equipment

- The related accessory equipment and maintenance tools are necessary for the operation of this product.
Select appropriate equipment from the following according to its usage/conditions and arrange it separately.
- As for arrangement of the products and parts of the related accessory equipment, check their part No. and quantity with their equipment manuals separately.

2.3.1 Air Cap (Model: HN Series)

- A part attached to the tip of the coating machine having a function of atomizing and creating pattern by force of air.
- Select an air cap from the separate manual according to its usage.

Air cap HN series image

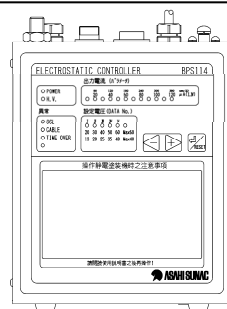


* All the HN series can be used for the common paint nozzle assembly.

2.3.2 Electrostatic Controller (BPS114 series)

- Equipment which controls high voltage application of the cascade contained in the coating machine. Also it detects abnormality and performs output in current monitoring when used.

BPS114 outline view



* Please refer to the Maintenance Manual of BPS114 for detailed use.

2.3.3 Transmission Cable

- By combining and connecting a "connecting cable" and "extension cable" between the coating machine and electrostatic controller, it can be used up to 30 m.

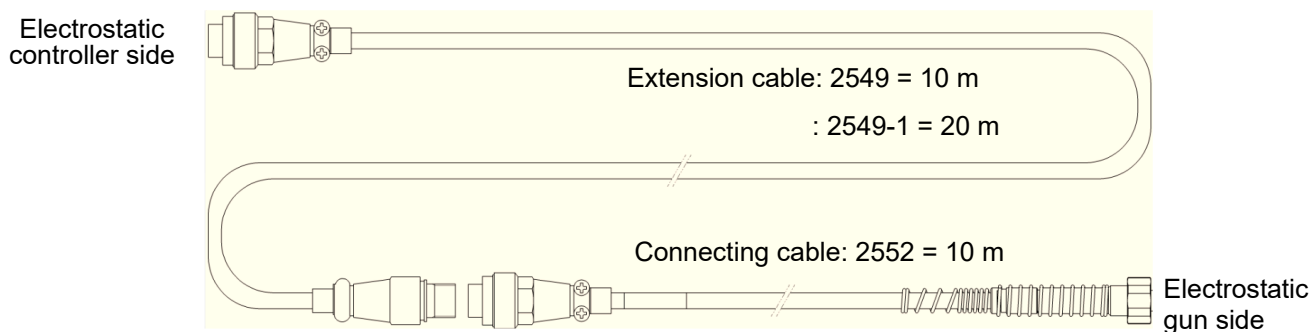
Connecting cable part No. list

No.	Part name	Part No.	Specifications
1	Connecting cable	2552	10m

Extension cable part No. list

No.	Part name	Part No.	Specifications
1	Extension cable	2549	10m
2		2549-1	20m

Transmission cable connection diagram



2.3.4 Air Hose (Model: AH22 Series)

- To supply air required for atomization of paint and pattern creation to the coating machine, connect it between the air regulator of the electrostatic controller and coating machine.
- A grounding wire is contained; therefore, the ground of the coating machine can also be secured through the air path and safety is improved.

Air hose part No. list

No.	Model	Part name	Part No.	Specifications
1	AH22-5	Air hose	3403	5m
2	AH22-10		3403-2	10m
3	AH22-20		3403-3	20m

2.3.5 Paint hose

- A paint hose for sending paint from the pump to the coating machine.

A flexible tube is employed to improve the handling of the gun.

Paint hose part No. list

No.	Part name	Part No.	Specifications
1	Paint hose	3421	5m
2	Paint hose	3421-2	10m
3	Paint hose	3421-3	20m

2.3.6 Maintenance Tool Set

- Preventive maintenance of parts and repair/part replacement due to failures can be done by replacing the targeted part assembly, but this is a maintenance tool set consisting of dedicated tools for more detailed part replacement and maintenance of the cascade assembly etc. and control tools for strict torque control.

"Assembly" means a unit consisting of two or more parts.

CAUTION

If you are interested in detailed maintenance, we will provide a maintenance course.

Only the person who have attended the maintenance course specified by us, can detailed maintenance.

For information on the maintenance course, please contact our person in charge.

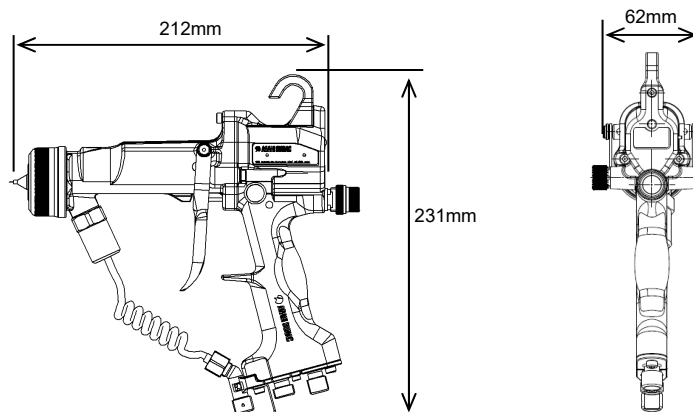
Maintenance tool set

No.	Part name	Part No.	Remarks
1	Maintenance tool set	35EA	

3

Specifications

3.1 Dimensional Outline



3.2 Product Specifications

Model	HB4000M	HB4000W-5	HB4000W-10
Maximum fluid pressure	0.6MPa		
Maximum air pressure	0.6MPa		
Maximum operating voltage	DC-60kV		
Operating environment	Temperature: 5-40°C Humidity: 40-80%		
Mass	540 g * Including nozzle and air cap		
Applicable air cap	HN400 / HN600 / HN800 * For details, see the separate catalog.		
Electrostatic controller	BPS114 series		
Connecting cable length	10m * By combining it and an extension cable, it can be used up to 30 m.		
Supply air conditions	Solid particle size: 0.1μm or below Dew point under pressure: 10 °C Dew point under atmospheric pressure: -17°C Residual amount of oil: 0.01 mg/m ³		

NOTE

Do not use a paint heater. Supply paint at 40°C or below.

If the temperature of paint is high, the paint hose may soften and be disconnected.

NOTE

For details on the paint pressure-feed unit and paint regulator, see the instruction manuals.

The paint pressure-feed pressure should be 0.6 MPa or less.

4

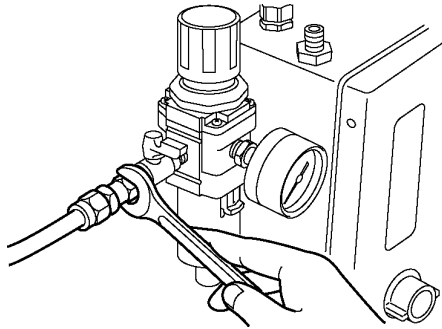
Unit Installation

Make preparations in accordance with the following procedures when starting to use the unit.

4.1 Connection of Air Supply

Connect the air supply to the air regulator attached to the electrostatic controller.

(Screw port diameter: PF1/4)

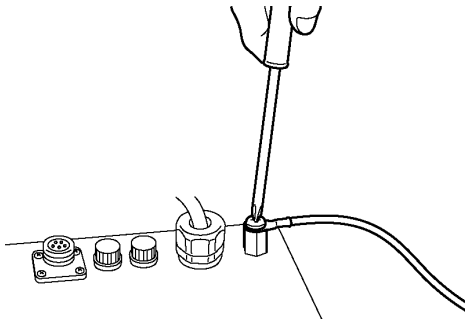


4.2 Connection of Grounding Wire

Be sure to connect it to the controller. For this operation, a Phillips screwdriver is required.

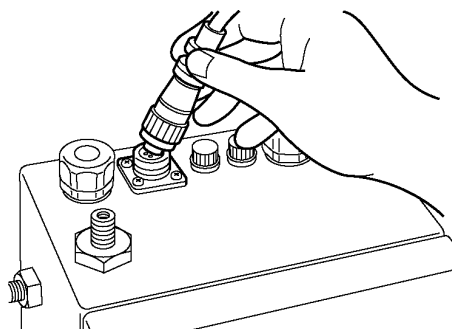
CAUTION

The diameter of the grounding wire of the electrostatic controller should be 3.5 mm² or more and it should be laid at a place where type D grounding (grounding resistance: 100 Ω or less) has been done.

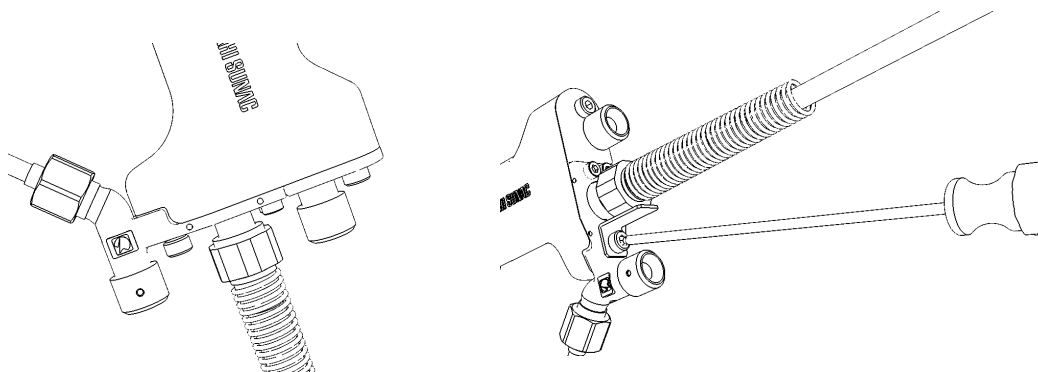


4.3 Transmission Cable

Wipe the metal connector at the end of the connecting cable attached to the coating machine with a clean cloth, securely tighten it to the output terminal "OUTPUT" of the electrostatic controller.



Attach the cable to the gun by securely tightening it with a hex. 17 mm spanner. After attaching it, prevent loosening with a stopper. If the attachment position cannot be adjusted, do not tighten it forcibly. Loosen the nut and attach it so that the stopper surface will stick to the hex. flat part.



CAUTION

Damage of the unit may occur.

Do not tighten the connecting cable too tightly.

Be sure to prevent loosening with a stopper.

CAUTION

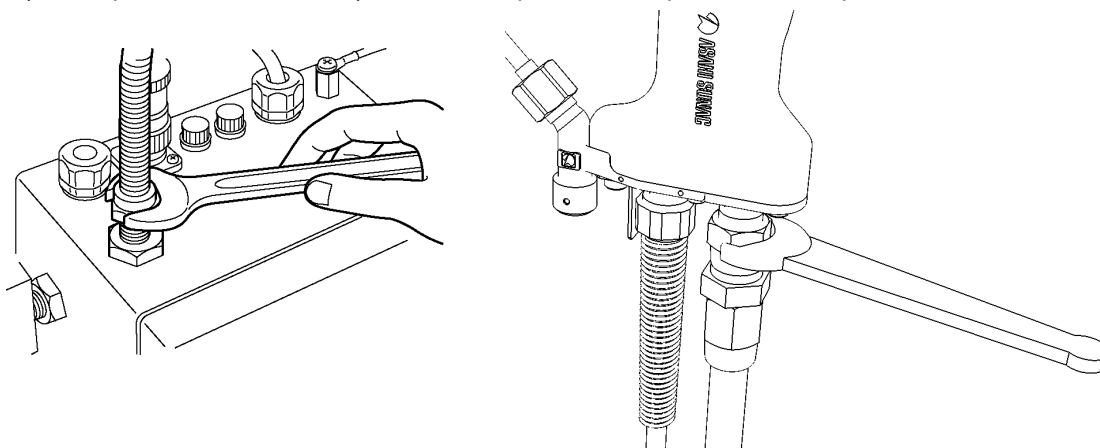
Disconnection of a cable may occur.

When bundling the connecting cable, air hose and paint hose with tape and the like, loosen them slightly so that pull force will not be applied to the cable.

If you use it with the cable pulled, it may lead to disconnection. For details, see "4.6 Binding of Connecting Cable and Precautions for Use".

4.4 Connection of Air Hose

Connect the end connector of the black air hose to the nipple at the lower end of the gun grip (next to connecting cable). Then connect the other end connector to "AIR OUT" of the electrostatic controller and tighten it. (Screw port diameter: PF1/4) A 17 mm spanner is required for this operation.



CAUTION

Damage of the unit may occur.

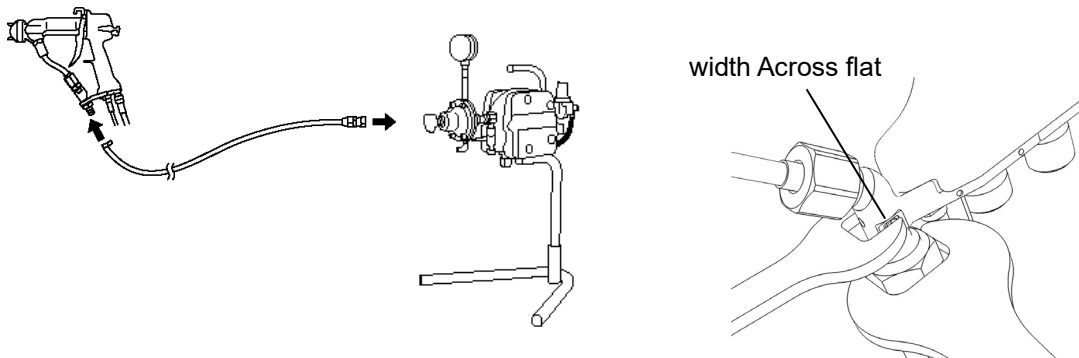
When tightening an air hose or paint hose to the gun, be sure to use two spanners and do not apply excessive force to the gun. Also remove and attach it so that the spanner will not touch the cable connector.

NOTE

If the length of the air hose is 10 m or more, by using a 3/8 air hose, atomization of paint will be improved. If a joint bush (3204-027) is attached, it will be a screw port diameter of PF3/8.

4.5 Connection of Paint Hose

Connect the end connector of the paint hose to the lower end of the gun grip (in front of connecting cable) and attach the other end paint hose connector to the paint pressure-feed unit (screw port diameter: PF1/4).

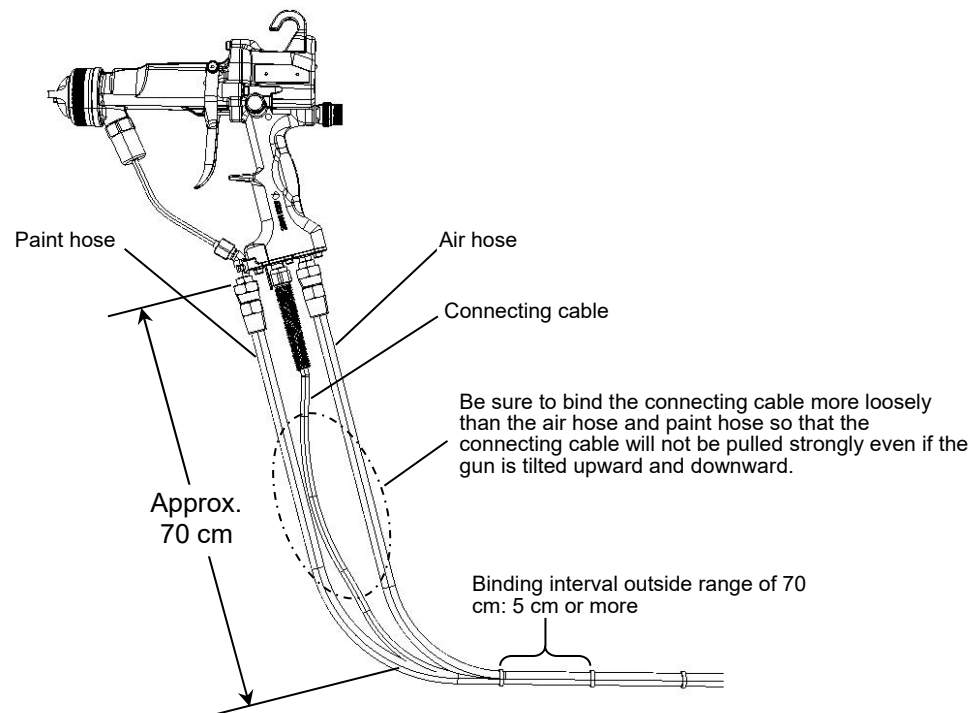


When paint hose is retighten, hook tools (wrench) to width Across flat.

Please be carried out with care prevent from scratch the gripend surface.

CAUTION

1. To prevent reduction in strength and service life of the connecting cable, be sure to observe the following for binding of connecting cable of the electrostatic gun.
 - (1) Do not bind connecting cable within a range of approximately 70 cm from the electrostatic gun handle.
 - (2) Bind the connecting cable while securing allowance of the connecting cable for the air hose and paint hose so that the connecting cable will not be strongly bent or pulled when aiming the electrostatic gun upward, downward, left and right.
 - (3) Loosely bind the cable outside a range of 70 cm from the electrostatic gun handle at intervals of 5 cm with resin binding bands (insulok) and plastic tape not by tightening it too tightly. In particular, do not wind plastic tape and wide spiral tubes seamlessly. The wound part will be a rod-like shape and its both ends will be broken, which leads to disconnection or damage of the connecting cable and hose.



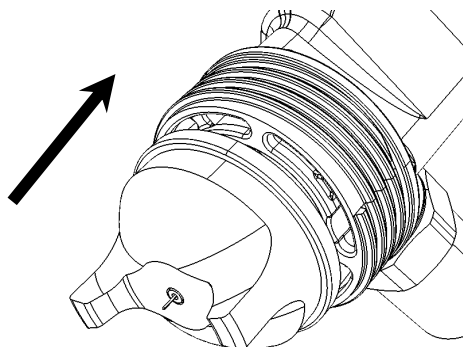
2. Operate the electrostatic gun and bind the connecting cable so that the connecting cable, air hose and paint hose will not be forcibly bent or strongly pulled during painting. Strength may be lowered and disconnection may occur.
3. Be careful not to step on the connecting cable. In particular, if you step on it on metal floor grates, it may be disconnected.
4. Do not wind plastic tape only on the connecting cable (especially vicinity of electrostatic gun connector) seamlessly for reinforcement and prevention of contamination. Strength may be lowered and disconnection may occur.
5. Do not immerse the connecting cable in the solvent or paint for a long time. If it is immersed for a long time, its strength and service life will be reduced significantly.
6. After cleaning the connecting cable, be sure to wipe off the solvent attached to the surface or blow it with air.
7. Do not use metal binding bands. Static electricity accumulates and you may get a shock.

4.7 Installation of Air Cap

- (1) Fix the air cap to the nozzle by hand.

At this time, be careful so that the electrode pin will not be bent due to the air cap.

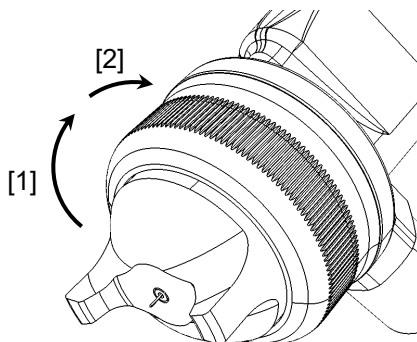
Also tilt the gun tip downward so that thinner or solvent will not enter the gun.



- (2) Attach the retaining nut assembly to the outside of the air cap.

[1] Tighten the retaining nut assembly tightly, and then adjust the angle direction of the air cap to the direction of pattern creation.

[2] Tighten the retaining nut assembly more strongly until the air cap is fixed.



CAUTION

Personal injury or damage of the electrode pin may occur.

When attaching the air cap to the gun, do not touch the electrode pin.



CAUTION

Damage of the unit may occur.

Since this is a resin product, the nozzle attachment joint inside diameter screw may be damaged if tightened too tightly. Remove and attach it with sufficient care.

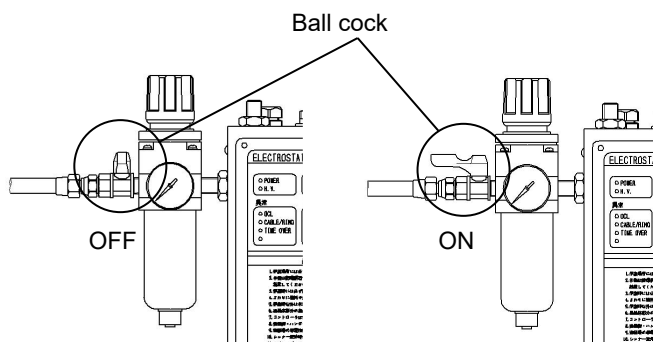
5

Check Before Coating Operation

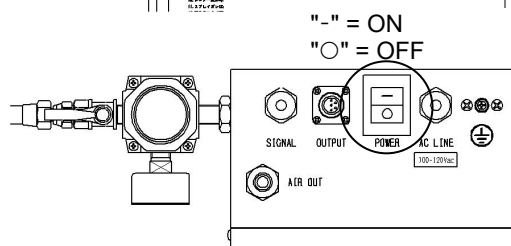
Before a coating operation, check the coating machine in accordance with the following procedure.

5.1 Operation Check at High Voltage

- (1) Open the ball cock of the electrostatic controller and adjust the air supplied to the gun to 0.3-0.4 MPa with an air regulator. Then check that there is no air leakage from the connection of the hose.



- (2) Turn on the power switch of the electrostatic controller while holding the grip of the gun. If it is normal, a green lamp will be lit on the controller. At this time, no high voltage is applied to the tip of the gun.

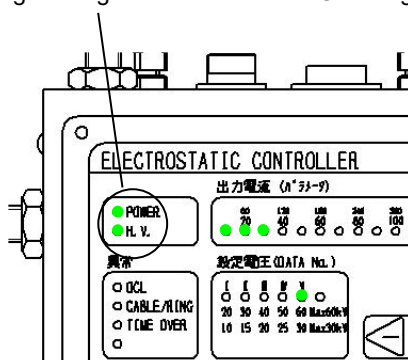


- (3) Pull the trigger of the gun.

If air is discharged from the nozzle, the air flow switch contained in the electrostatic controller will be activated, the high voltage indicator (green) of the controller will be lit and high voltage will be generated.

Also the H.V. lamp (red) on the back of the gun body will be lit. When the red lamp is lit, high voltage is applied to the tip of the gun.

High voltage indicator "H.V." = Green light



! WARNING

Personal injury or accidents may occur due to electric shock.

Do not touch the air cap, nozzle and electrode pin when high voltage is applied.

! CAUTION

When an inspection is completed, turn off the power switch of the electrostatic controller.

5.2 Mixing of Paint

Since this unit can obtain an electrostatic effect with almost all synthetic resin paints except some paints, it is not necessary to mix paints specially. However, it is possible to obtain a higher electrostatic effect by adjusting the electric resistance of solvent etc. depending on the case. In the case of paints whose electric resistance is extremely low or high, a high electrostatic effect is not expected. Check the resistance with a paint resistance meter. In most cases, it is possible to obtain a good effect by adjusting paint resistance to approximately 15-70 MΩcm. In the case of resistance lower than 15 MΩcm, even though the electrostatic effect is good, if the ventilation of the booth is not appropriate, paint may splash back at the gun and operator.

NOTE

If paint is sprayed on the front surface and a coating film is formed on the back surface with a steel pipe of 20-30 mm in diameter grounded, it is judged that the electrostatic effect is good.



CAUTION

In the case of conductive paint whose electric resistance is extremely low such as metallic paint and water paint, an electrostatic effect is hardly expected unless the paint feeder using the insulated table is used.

Also in the case of such paint, when high voltage is applied, the high-voltage breaking circuit of the electrostatic controller and alarm buzzer are activated and the high voltage is shut off. The alarm buzzer is reset by turning off the power switch of the electrostatic controller.



CAUTION

Use paint and solvent whose flash point is higher than the room temperature by 5°C or more and be sure to activate the ventilation system.

NOTE

If you have any doubt about compatibility of the gun, system and paint, please consult us.

6

Coating Preparation

Before a coating operation, make preparations for coating in accordance with the following procedure.

CAUTION

Check that the power switch of the electrostatic controller is turned off.

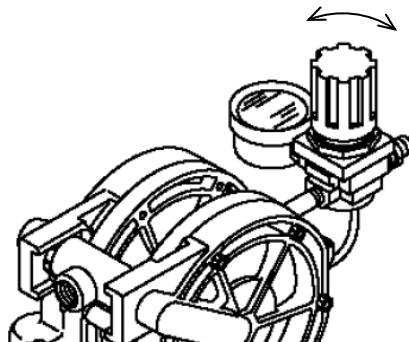
- (1) Put paint in the paint feeder.

When this coating machine is used, the general standard viscosity is approximately 9-30 sec/FC#4, but it is not necessarily limited depending on various conditions such as the type of paint and solvent, shape of the product to be coated and thickness of the coating film. Also it is recommended that before putting in paint, the paint resistance be measured.

- (2) Operate the paint feeder to feed the paint to the gun.

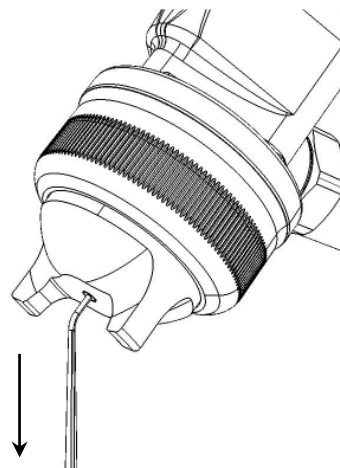
Operate the pump at a low pressure (approximately 0.1 MPa) with the air regulator for the pump and suck the paint.

Adjust the paint regulator attached to the paint outlet of the pump so that the pump pressure will be increased to approximately 0.2-0.3 MPa.

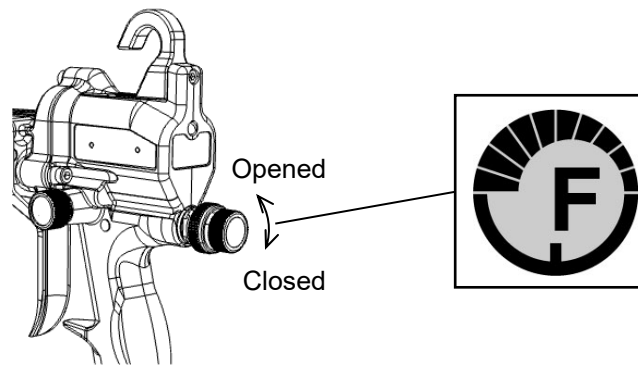


- (3) Discharge paint through the gun tip.

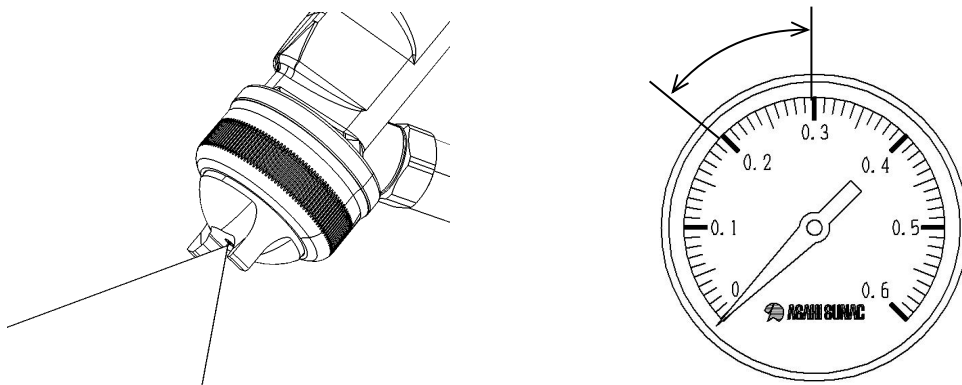
Discharge paint through the gun tip by pulling the trigger with air not supplied to the gun. If air is remained in the paint hose, it causes shortness of breath when paint is discharged; therefore, keep discharging paint until the air in the hose has been removed.



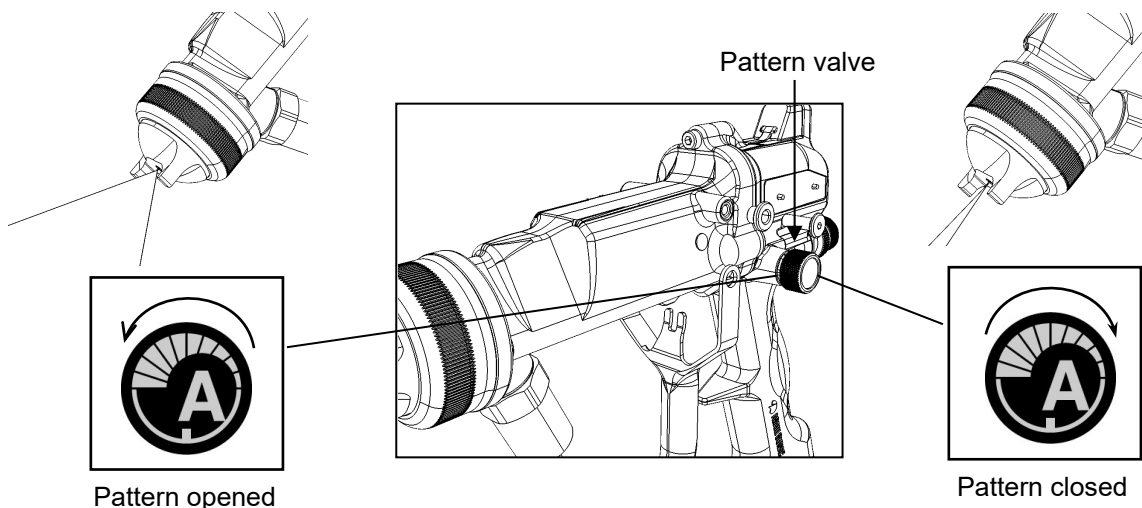
The paint discharge rate is increased by turning the paint adjuster at the back of the gun to the left. If it is tightened to the right, the rate will be decreased and the discharge will be stopped.



- (4) Check the atomization state of the paint discharged from the gun.
Adjust the pressure of the air supplied to the gun to 0.2-0.3 MPa and atomize the paint by pulling the trigger.
Adjust the air pressure according to the air cap used.



- (5) Adjust the pattern width of the atomized paint.
Adjust the pattern width with the pattern valve on the left side of the gun. If you turn it to the left, the pattern will be broadened; to the right, narrowed. Adjust it according to the shape of the product to be coated.



WARNING

Check that there is no air leakage when the connection of the air hose and trigger are returned.

If the power of the controller is turned on when air is discharged, high voltage will be generated even when a coating operation is not performed.

⚠ CAUTION

Before performing a coating operation, check that the grounding resistance of the product to be coated is within the range of the following values.

- If product to be coated is metal: 1 kΩ or less
- If product to be coated is resin: 1 MΩ or less

Start of Coating Work

- (1) Turn on the power switch of the electrostatic controller.

⚠ CAUTION

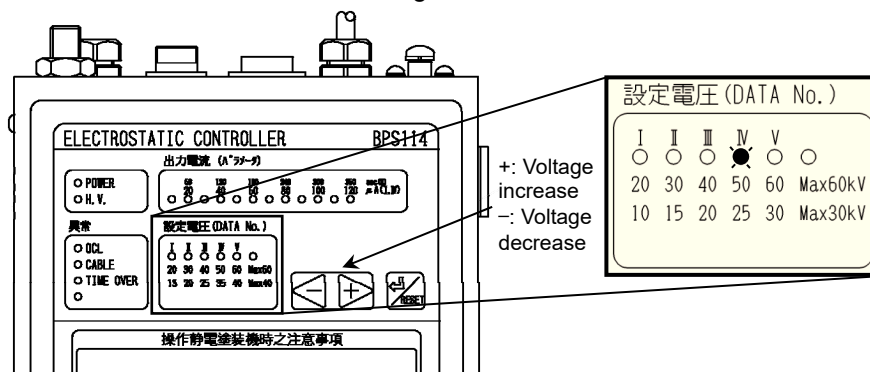
Before turning on the power switch of the electrostatic controller, check the grounded condition of the grounding wire connected to the controller and product to be coated.

- (2) Pull the trigger of the gun to start coating work.

Adjust the voltage of the electrostatic controller according to the condition of the product to be coated.

When it is adjusted as shown in the following figure for the maximum set voltage of the equipment used, the voltage indicated at the lower part of the level lit is the set voltage.

* Following figure : When HB4000M is used : Set voltage = -50 kV



⚠ WARNING

Sparks may be generated, possibly resulting in fire.

Do not allow the electrode pin of the gun tip to contact a product to be coated.

If the electrode pin approaches the grounded object, the electric potential of the pin will be controlled to be lowered automatically.

However, if the approach speed is fast, sparks may be generated.

Keep the gun, paint hose and connecting cable clean so that there will be no contamination such as paint. Also always be careful so that they will not be damaged due to mechanical shocks.

8.1 Measures After Operation is Completed

When suspending or finishing the coating operation, use the following procedure.

8.1.1 In Case Where Operation is Resumed Within 24 Hours

(1) Turn off the power switch of the electrostatic controller.

While holding the grip of the gun, turn off the power switch of the controller with the other hand.

! WARNING

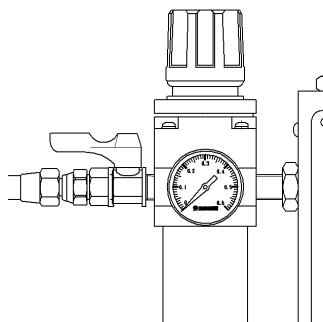
Sparks may be generated, possibly resulting in fire.

Never leave the gun on a workbench or the ground with the power switch of the electrostatic controller turned on.

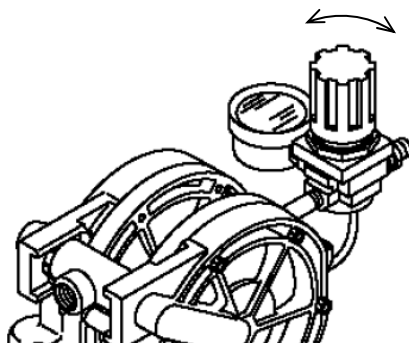
! CAUTION

When the electric resistance of the paint is low (2 MΩcm or less), high voltage is charged to the paint pump. Never touch the pump when high voltage is applied. Turn off the power switch of the electrostatic controller and ground it with a grounding bar before touching it or supplying paint.

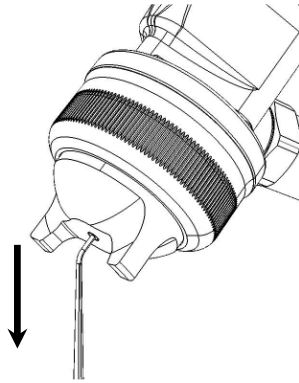
(2) Adjust the pressure of air supplied to the gun to 0 MPa.



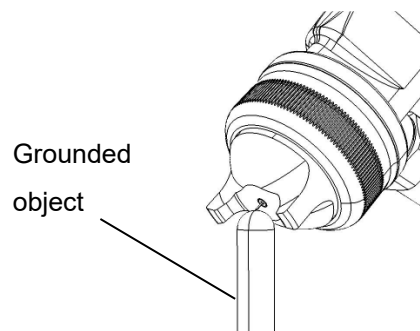
(3) Adjust the drive air pressure of the paint pressure-feed unit to 0 MPa.



- (4) Discharge paint through the gun tip to release the residual pressure.

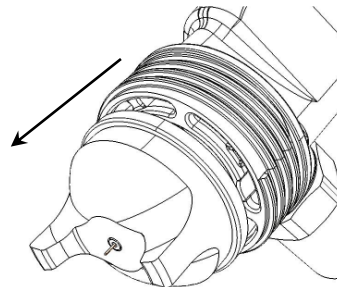
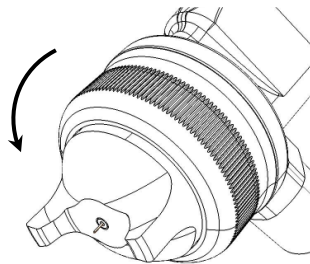


- (5) With the trigger opened to remove the residual charge, gently ground the electrode pin at the nozzle tip.



- (6) Remove the retaining nut by turning to the left and air cap too.

When removing the air cap, tilt the gun tip downward so that thinner or solvent will not enter the gun.



CAUTION

**When removing the air cap, be careful not to drop it.
If dropped, it may be damaged.**

WARNING

Personal injury or accidents may occur.
When removing the air cap, do not touch the electrode pin.



CAUTION

Damage of the retaining nut, nozzle and unit may occur.

When removing the retaining nut, be sure to turn it by hand.

If you use a tool, damage may occur.

- (7) Wipe off dirt such as paint mist attached to the gun and air cap with a cloth impregnated with cleaning solvent.



CAUTION

When cleaning the gun and air cap, do not use a hard brush such as a metal brush.

Their surfaces may be damaged and their performance may be impaired.



CAUTION

When a coating operation is not performed, close the paint adjuster of the gun to prevent paint from being discharged due to a careless operation.



CAUTION

When cleaning the nozzle and air cap, always tilt the gun tip downward so that solvent will not enter the coating machine. After the cleaning, pull the trigger to release air to discharge the entered solvent.



CAUTION

After cleaning or an operation, do not allow the gun, power cable, hose, etc. to be immersed in solvent. Electric and electronic circuits are contained in the gun and a structure is employed where solvent does not enter when a normal usage method is used.

However, if they are immersed in solvent for a long time, their durability will be decreased, which may cause failures.



CAUTION

When using chemically hardened paint such as two-component paint or paint that settles easily, clean it based on "8.1.2 In Case Where Operation is Not Performed for 24 Hours or More" each time an operation has been completed.

8.1.2 In Case Where Operation is Not Performed for 24 Hours or More

- (1) Turn off the power switch of the electrostatic controller.
- (2) Adjust the pressure of air supplied to the gun to 0 MPa.
- (3) Extract the suction pipe of the paint pump from the paint container.
- (4) Drive the paint pump at a low pressure (approximately 0.1 MPa) and discharge the paint in the pump from the return side to the paint container.
- (5) Discharge the paint remaining in the hose and gun through the gun tip by pulling the trigger of the gun.
- (6) Suck the cleaning solvent through the suction pipe, discharge it from the return side to the cleaning wastewater container and repeat the cleaning until the inside of the pump is cleaned.
- (7) Discharge the solvent through the gun tip to clean the hose and inside of the gun.
- (8) Stop the pump and pull the trigger of the gun to release the residual pressure through the gun tip.
- (9) Turn the retaining nut to the left to remove the air cap.
- (10) Wipe off dirt such as paint mist attached to the gun and air cap with a cloth impregnated with cleaning solvent.
- (11) With the trigger of the gun pulled, put a dedicated spanner on HEX of the nozzle and turn it to remove the nozzle.

It is recommended to allow the cleaning fluid to remain in the passage after cleaning to prevent fixation of paint remaining in the paint passage.



CAUTION

Damage of the nozzle and needle may occur.

Be sure to remove the nozzle with the trigger of the gun pulled.

The seat surfaces of the nozzle and needle will be damaged and failures of the seat may occur.



CAUTION

Damage of the nozzle may occur.

When removing the nozzle, be sure to use the attached dedicated spanner.

Be careful not to drop it.

- (12) Immerse the nozzle in cleaning solvent and blow off the dirt with compressed air.



CAUTION

When cleaning the nozzle, do not poke at it with metal such as wire.

Also do not use a metallic brush and the like. Its performance may be impaired due to enlargement of hole diameter and scratches.

CAUTION

Only after 10 seconds have passed since the power switch of the electrostatic controller is turned off, clean the gun. Ninety percent or more of fire accidents due to the electrostatic coating machine have occurred when the nozzle etc. is cleaned. When cleaning the nozzle etc., be sure to turn "OFF" the power switch. Keep a fire extinguisher at your hand in case of fire accidents.

CAUTION

If a problem occurs during an operation, immediately turn "OFF" the power switch of the electrostatic controller and lower the pressure of the air and paint supplied to the gun to 0 MPa.

CAUTION

Always hang the gun on the gun hanger fixed to a wall.

CAUTION

Be careful so that shocks such as falling will not be applied.
Plenty of resins are used for HB4000M/W for weight saving.
They are designed taking into account strength but may be damaged due to shocks.

(13) As for disposal of cleaning wastewater, recover and recycle it using a solvent recovery system or dispose of it through a contracted industrial waste processor in accordance with the laws.

8.2 Periodic Inspection

In order to fully exercise the performance of this equipment, perform periodical inspection according to the following table.

The inspection timings are only shown as a guide and may vary depending on the conditions of use.

WARNING

Personal injury or accidents may occur due to an unexpected operation of the coating machine.

When conducting a periodic inspection, turn off the power of the electrostatic controller and release the pressure of the air and paint.

Item	Action	Period
Check external appearance of the gun body	If there is paint dirt, saturate a soft cloth or brush with cleaning solvent and wipe it off. If there is damage, replace with a new one.	1 day
Check for air cap paint dirt	If there is paint dirt, saturate a soft cloth or brush with cleaning solvent and wipe it off.	
Check for clogging of air spray hole of air cap	After immersing in cleaning solvent, remove by blowing air. If cannot be removed, replace with a new one.	
Check for scratches and dents around paint outlet of nozzle	If there are scratches or dents, replace with a new one.	
Check for clogging of paint spray hole of nozzle	After immersing in cleaning solvent, remove by blowing air. If cannot be removed, replace with a new one.	
Check paint seat of nozzle	Inject cleaning solvent to clean the paint path and nozzle of the gun. If the problem is not solved, replace the nozzle or needle electrode with a new one.	
Check needle electrode	If the distance from the paint spray hole of the nozzle is less than 3.5 mm with the trigger not pulled, replace with a new one.	
Check connecting cable	If there is damage, replace with a new one.	
Check air leakage from trigger	If there is air leakage, replace the air seat.	1 month
Check paint dirt in paint tube	If there is paint dirt, inject cleaning solvent to clean it.	
	If adhered paint cannot be removed, replace with a new one.	
Check paint valve	If the discharge rate cannot be adjusted, replace with a new one.	
Check pattern air valve	If the spray pattern cannot be adjusted, replace with a new one.	

CAUTION

**When using the gun cover, replace it before it gets dirty.
In particular in the case of conductive paint such as metallic paint and water paint, high voltage is likely to leak through the paint attached to the gun cover and an overcurrent fault or electric shock to the operator may occur.
In such a case, stop using the gun cover.**

NOTE

For parts replacement method, see "11 Parts Replacement Method".



CAUTION

**Do not disassemble the gun unnecessarily except for the case of a failure.
To secure electric insulation of the gun and the sealing function, disassemble it only when the parts are replaced due to a failure.**



CAUTION

The upper rear part of the gun may be warmed due to the heat of the high-voltage generator, but this is not a problem.



CAUTION

When using a container for cleaning, be sure to ground a conductive container.

8.3 Consumables

Prepare spare parts according to the conditions of use, referring to the rank classification in the following consumables list.

Rank classification	Part name	Part No	Component assembly	Publishing page
A	Paint nozzle assembly	15F7	Each core unit	41·43
	Needle electrode assembly	1706	Each core unit	41
B	Packing assembly	14C8	Each core unit	41·43
	Straight tube	14E2-002	Straight tube set	44
	Spiral tube	146A-001	Spiral tube set	40·44
	Sleeve	145A-005	Each tube set	44
	U seal	373-0008	Each core unit	41
	U seal	373-0009	Each core unit	41
	Ring seal	373-0010	Retaining nut assembly	44
C	Gun hook	12A1-002	HB4000M	40
	Pattern valve	14C9	HB4000M	40·43
	Paint adjuster	14E1	HB4000M	40·43
	Stopper	14C3-003	Grip end assembly	42
	Air valve assembly	14C6	Each core unit	41
	Needle assembly	14C7	Each core unit	41
D	Packing	14F9-003	Each core unit	41
	O-ring	130-6007	Pattern valve	43
	O-ring	101-6005	Grip end assembly	42
	O-ring	130-6010	Paint adjuster	43
	O-ring	130-6030	Grip end assembly	42
	O-ring	130-7010	Cascade assembly	42
	O-ring	130-9012	Paint nozzle assembly	43

Rank A: Daily consumables

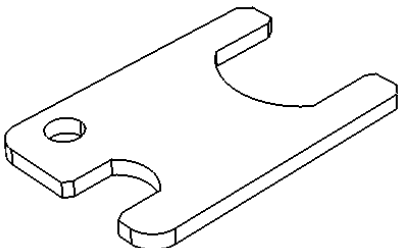
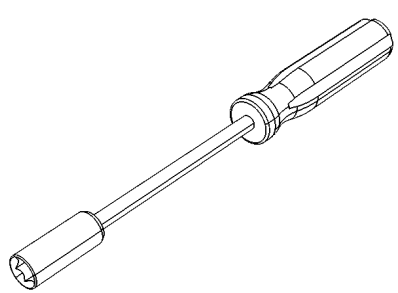
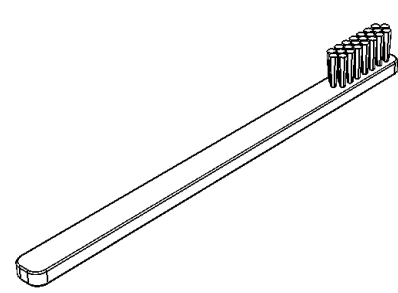
Rank B: Medium-term consumables

Rank C: Parts which may be damaged/lost when used

Rank D: Parts required to be replaced when disassembled

Accessory tool

35CF

Dedicated flat spanner Part No.: 35CF-001	Box spanner Part No.: 337-0056	Bamboo brush Part No.: 337-0006
		

Depending on the situation of a paint problem, several problematic phenomena and causes may occur at the same time.

Problematic phenomenon	Cause	Countermeasure
1. Atomization of spraying is bad	(1) Atomizing air pressure is too low	(1) Set atomizing air pressure to rather high
	(2) Paint discharge rate is too high	(2) Set discharge rate to rather low or atomizing air pressure to rather high
	(3) Viscosity is too high	(3) Decrease paint viscosity
	(4) Nozzle tip pin is bent	(4) Replace needle electrode assembly
	(5) Nozzle is damaged	(5) Replace paint nozzle assembly
	(6) Solvent is inappropriate	(6) Please consult us or paint manufacturer
2. Much paint splashes back	(1) Spraying distance is too long	(1) Spraying distance should be within 150-200 mm
	(2) Atomizing air pressure is too high	(2) Adjust atomizing air pressure to rather low
	(3) Paint resistance is too low	(3) Adjust paint resistance to 15-70 MΩ-cm.
	(4) Grounding of product to be coated is inappropriate	(4) Ground perfectly
	(5) Exhaust velocity is too slow	(5) Set exhaust velocity to rather fast
3. Coating efficiency is low	(1) Grounding of product to be coated is poor	(1) Clean paint attached to hanger and ground perfectly
	(2) Atomizing air pressure is too high	(2) Adjust atomizing air pressure to appropriate pressure
	(3) Spraying distance is too long	(3) Spraying distance should be within 150-200 mm.
	(4) Applied voltage is low	(4) Increase output with output voltage adjustment switch of electrostatic controller
	(5) Booth supply and exhaust rate is too high	(5) Adjust booth supply and exhaust rate to rather low
	(6) Electric resistance of paint is too high	(6) Adjust resistance to 15~70 MΩ-cm
4. Paint is attached to nozzle, which causes roughening, or stringlike particles are created on product to be coated	(1) Evaporation rate of solvent is too high	(1) Replace with solvent whose evaporation rate is low or adjust with additives
	(2) Viscosity of paint is high	(2) Decrease viscosity of paint
5. Particles are created on coated surface	(1) Atomization of spraying is bad	(1) See Section 1 in this chapter "Atomization of spraying is bad"
	(2) There is plenty of dirt in coating booth and dirt is attached to coated surface	(2) Install dust-proof filter on suction part of coating booth to remove dirt on coated surface
	(3) Atomizing air is dirty	(3) Clean or replace filter at air passage
	(4) Pigment dispersion of paint is bad	(4) Review solvent or filter paint well
6. Orange peel (dapple, pockmark) is created	(1) Temperature is high in coating booth or evaporation rate of solvent is high	(1) Adjust temperature or replace with solvent whose evaporation rate is low
	(2) Temperature of product to be coated is too high	(2) To lower temperature of product to be coated, adjust drying furnace
	(3) Supply and exhaust rate is too high	(3) Adjust to 0.5-1.0 m/sec on product surface to be coated
7. Cissing occurs	(1) Cleaning of product to be coated is insufficient	(1) Clean or defat sufficiently
	(2) Atomizing air is dirty	(2) Clean or replace filter at air passage
	(3) Exhaust of baking furnace is inappropriate	(3) Exhaust air sufficiently

Problematic phenomenon	Cause	Countermeasure
8. Paint trickles down on coated surface	(1) Coating film is too thick	(1) Decrease paint discharge rate or increase operation speed of hand gun
	(2) Viscosity of paint is too low	(2) Increase paint viscosity
	(3) Evaporation rate of solvent is low	(3) Replace with solvent whose evaporation rate is high
9. Coating film is translucent	(1) Paint discharge rate is low	(1) Adjust paint discharge rate and consider operation speed of hand gun and recoating
	(2) Viscosity of paint is too low	(2) Increase viscosity
10. Pin holes (small holes) are created	(1) Atomizing air is dirty	(1) Clean or replace filter at air passage
	(2) Evaporation rate of solvent is too high	(2) Replace with solvent whose evaporation rate is low
	(3) Temperature of product to be coated is high	(3) Lower temperature
	(4) Drying of undercoating is insufficient	(4) Dry sufficiently
	(5) Setting time is short	(5) Take sufficient setting time
11. Whitening occurs	(1) Temperature and humidity are high inside/outside coating booth	(1) Replace with solvent whose evaporation rate is low Or check air conditioner
	(2) Selection of solvent is inappropriate	(2) Please consult us or paint/solvent manufacturer
12. Foaming occurs	(1) Atomizing air is dirty	(1) Clean or replace filter at air passage
	(2) Drying after wet rubbing is insufficient	(2) Dry sufficiently
	(3) Coating film is too thick	(3) Set paint discharge rate to rather low
	(4) Evaporation rate of solvent is too high	(4) Replace with solvent whose evaporation rate is low
	(5) Temperature of baking furnace is too high	(5) Adjust temperature to appropriate value
13. Pattern shape is not good	(1) Paint and dirt are attached to atomizing air and paint spray hole of nozzle	(1) Clean well with thinner and bamboo brush and filter paint
	(2) Viscosity of paint is high	(2) Decrease viscosity
	(3) Nozzle tip is damaged	(3) Repair or replace
	(4) Pattern adjustment is bad	(4) Adjust with pattern adjustment knob
	(5) Nozzle attachment is bad	(5) Check paint nozzle assembly is not loosened and attach air cap
14. The amount of paint sprayed is not stabilized.	(1) The needle stroke length is short. * It is recommended that the needle stroke length be 1 mm or more for use.	(1) Decrease the paint injection pressure and increase the needle stroke length.
		(2) Install an orifice etc. in the paint path and increase the needle stroke length.

More than one phenomenon or cause may occur at the same time, depending on the situation.

Phenomenon of failure	Cause	Countermeasure
1. Discharge of paint is unstable, which causes shortness of breath during coating	(1) Tightening of paint nozzle assembly is insufficient	(1) Sufficiently tighten paint nozzle assembly
	(2) Seat surface of paint nozzle assembly is damaged	(2) Replace paint nozzle assembly
	(3) Air is mixed in paint	(3) Check paint feeder system
	(4) Paint discharge rate is extremely low	(4) Increase paint discharge rate or decrease atomizing air pressure
2. Paint discharge rate is low	(1) Abnormality of paint pressure-feed system	(1) Check paint feeder system such as paint pump and paint regulator
	(2) Paint seat part is clogged with lump of paint and dirt	(2) Clean paint seat part
	(3) Paint and dirt are attached to paint nozzle assembly	(3) Remove and clean paint nozzle assembly
3. Paint leaks from nozzle	(1) Paint seat part is clogged with lump of paint and dirt	(1) Clean paint seat part
	(2) Wear and chipping of paint seat part	(2) Replace paint nozzle assembly or needle electrode assembly
	(3) Deterioration of paint shaft spring	(3) Replace spring
	(4) Pressure-feed pressure of paint is too high	(4) Decrease pressure-feed pressure
4. Paint leaks from U seal part	(1) Wear of packing assembly	(1) Replace packing assembly
	(2) Tightening of packing assembly is insufficient	(2) Attach packing assembly properly
	(3) O-ring of packing assembly is damaged	(3) Replace O-ring of packing assembly
5. Even if trigger is returned, air leaks from nozzle part	(1) Seat part of air valve assembly is clogged with dirt	(1) Clean or replace air valve assembly
	(2) Wear of air valve assembly	(2) Replace air valve assembly
	(3) Deterioration of spring	(3) Replace spring
6. Air leaks from air adjuster	(1) O-ring is worn, damaged	(1) Replace O-ring

Phenomenon of failure	Cause	Countermeasure
7. Sparks are generated from nozzle part (in case where insulated table is not used)	(1) Cascade assembly was damaged	(1) Replace cascade assembly
8. Sparks are generated from nozzle part (in case where insulated table is used)	(1) Cascade assembly was damaged	(1) Replace cascade assembly
	(2) Replaced with paint whose electric resistance is low or metallic paint	(2) Decrease output with output voltage adjustment switch of electrostatic controller
9. Alarm buzzer of control unit goes off (in case where insulated table is not used)	(1) Paint is attached to barrel	(1) Clean barrel
	(2) Paint is attached to paint tube	(2) Clean paint hose
	(3) Water has accumulated in air passage in barrel	(3) Sufficiently perform drain discharge in air line Turn off the power of electrostatic controller, release air by pulling trigger and completely discharge water in air passage
	(4) Paint whose electric resistance is low or metallic paint is used	(4) Modify to W specifications and use insulated table
	(5) Paint leaks due to packing assembly damage or wear	(5) Replace packing assembly or O-ring with new one
10. Alarm buzzer of control unit goes off (in case where insulated table is used)	(1) Paint is attached to barrel	(1) Clean barrel
	(2) Paint is attached to paint hose tip	(2) Clean paint hose
	(3) Water has accumulated in air passage in barrel	(3) Sufficiently perform drain discharge in air line Turn off the power of electrostatic controller, release air by pulling trigger and completely discharge water in air passage
	(4) There is grounded object near insulated table	(4) Keep insulated table 300 mm or more away from grounded object
	(5) Paint is attached to insulated rod of insulated table	(5) Clean insulated rod
	(6) Part higher than insulated rod of insulated table is grounded	(6) Separate ground of part higher than insulated rod
	(7) Paint leaks due to packing assembly damage or wear	(7) Replace packing assembly or O-ring with new one

CAUTION

Do not perform repair other than the method indicated in this Operation and Maintenance Manual

Follow the procedures below when replacing or repairing parts.

⚠ WARNING

Personal injury or accidents may occur due to an unexpected operation of the coating machine.

Before replacement and repair of parts, be sure to turn off the compressed air supplied to the gun, turn off the power of the electrostatic controller, discharge the paint in the paint passage and clean it.

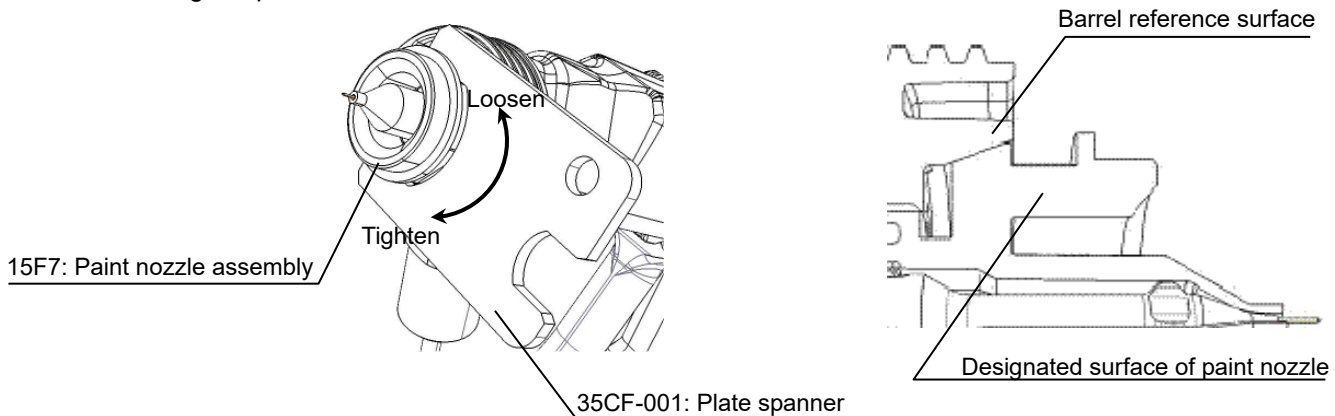
11.1 Replacement of Air Cap

- (1) In accordance with "4.7 Installation of Air Cap" in Chapter 4 "Unit Installation", remove and replace it.

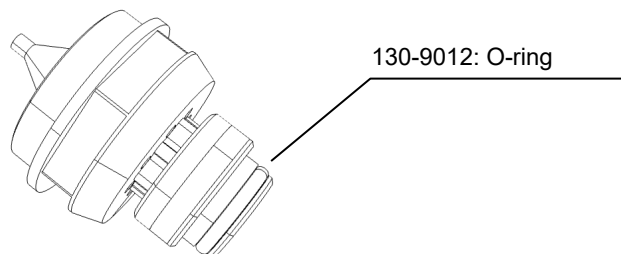
11.2 Replacement of Paint Nozzle Assembly

- (1) Replace it by stopping the paint pump, using a plate spanner (accessory tool) while pulling the trigger with the residual pressure released and removing the nozzle.

The position in which about 1mm entered from barrel edge must tighten there for a regular position when install the paint nozzle. Possibility of cannot the pattern adjustment and the paint backflow when it is not a regular position.



- (2) If the 130-9012:O-ring is damaged when removing the paint nozzle assembly, replace it.



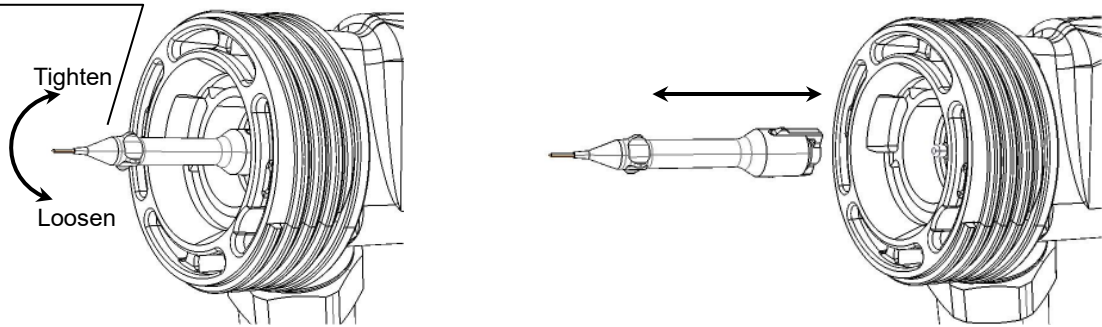
⚠ CAUTION

Confirm are not paint clinging, scar and dirt in the screw of the barrel and the paint nozzle when install the paint nozzle. Becomes impossible for paint to leak, and to remove the paint nozzle due to the screw and dirt.

11.3 Replacement of Needle Electrode Assembly

- (1) Remove and replace it by holding the needle electrode assembly with fingers with the trigger pulled. Also when attaching it, tighten it by holding the needle electrode assembly with fingers with the trigger pulled. Do not tighten it too tight because it is a resin part.

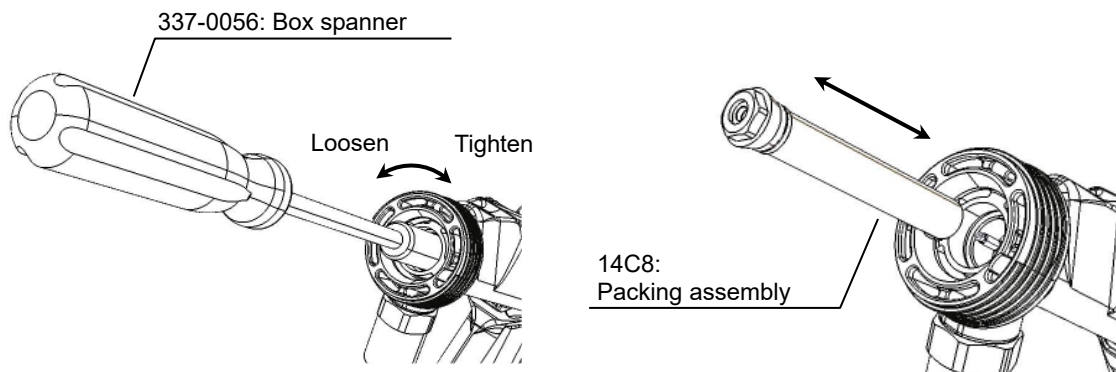
1706: Needle electrode assembly



11.4 Replacement of Packing Assembly

- (1) Remove and replace the packing assembly using the box spanner (accessory tool) with the needle electrode assembly removed. When attaching the packing assembly, do not tighten it too tight because it is a resin part. Tighten guid : 90° after O-Ring begins work.

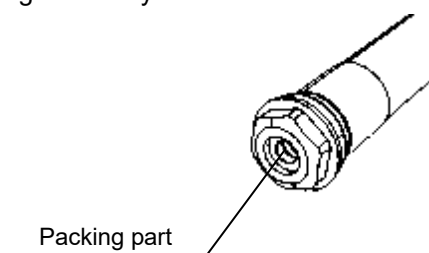
- * Recommended tightening torque = 50 cN•m



- * Loosen packing Assy with Box spana and pulling trigger few times will help to release easily.

- (2) When cleaning the inside of the packing assembly, clean the entire part with thinner without disassembling the inside, and after cleaning, completely dry it by blowing air.

- * Since the packing part is set with controlled load, do not remove it. If the packing part is damaged, replace it with the packing assembly.

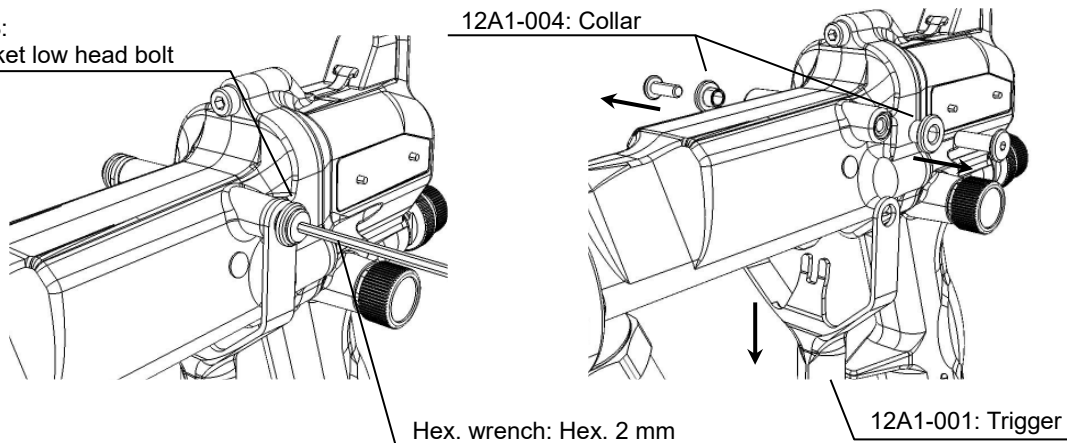


11.5 Replacement of Needle Assembly

- (1) Remove the hex. socket low head bolt fixing the trigger using a hex. wrench of hex. 2 mm and extract the trigger downward.

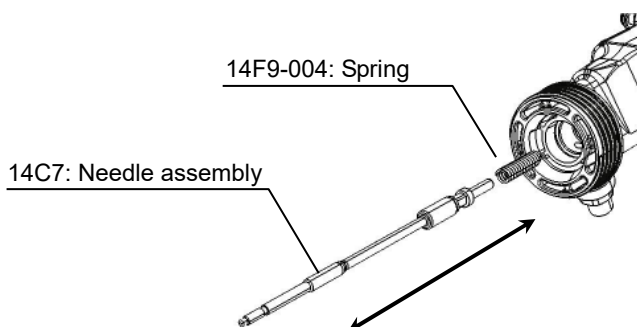
In this case, to prevent the collar holding the hex. socket low head bolt from being dropped/lost, take loss prevention measures.

360-0108:
Hex. socket low head bolt



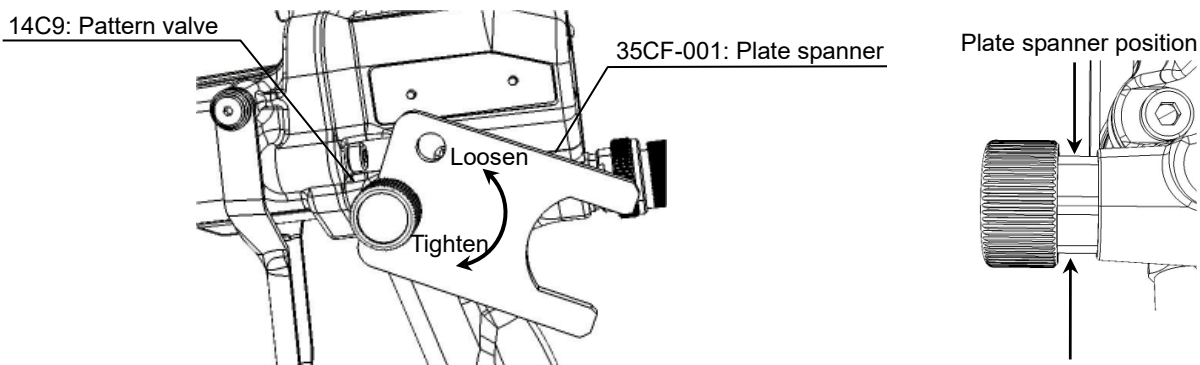
- (2) Extract and replace the needle assembly from the barrel with the needle electrode assembly and packing assembly removed as shown in the figure.

In this case, to prevent the spring from being dropped/lost, take loss prevention measures.



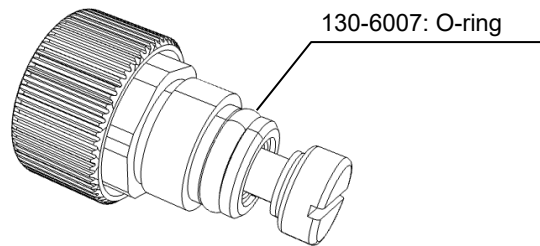
11.6 Replacement of Pattern Valve

- (1) Remove and replace the pattern valve using a plate spanner (accessory tool) with the pattern valve fully opened.



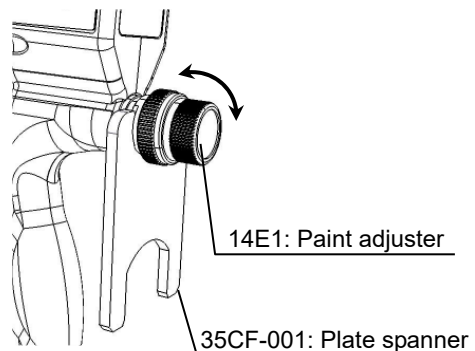
- (2) When removing the pattern valve, be sure to replace 130-6007: O-ring.

It is recommended to apply white petrolatum to the screw part and O-ring part when attaching it.



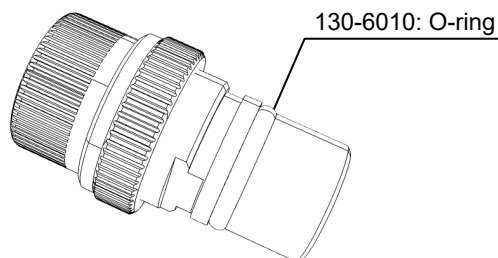
11.7 Replacement of Paint Adjuster

- (1) Remove and replace the paint adjuster using a plate spanner (accessory tool).



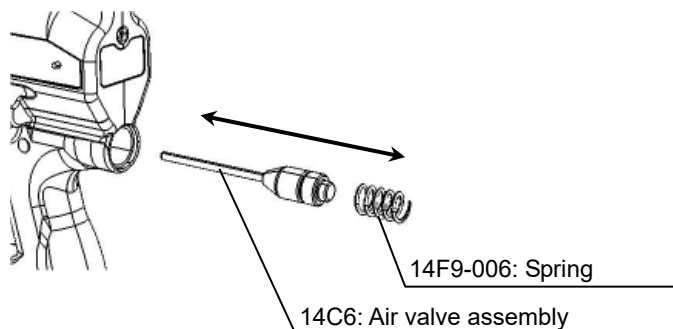
- (2) When removing the paint adjuster, be sure to replace 130-6010: O-ring.

It is recommended to apply white petrolatum to the screw part and O-ring part when attaching it.



11.8 Replacement of Air Valve Assembly

- (1) Extract and replace the air valve assembly using longnose pliers by extracting the spring with the paint adjuster removed.



- (2) Installation the paint adjuster after installs air valve assembly and tighten in addition after completely close.

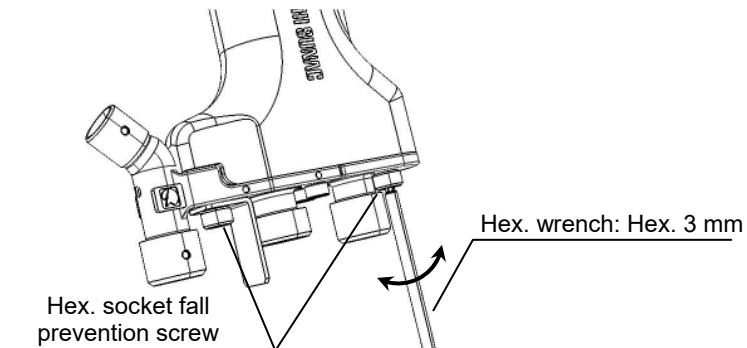
The seat becomes harmonize, and the seat improves.

Completely open the paint adjuster, turn on air, and confirm whether air leaks gun head.

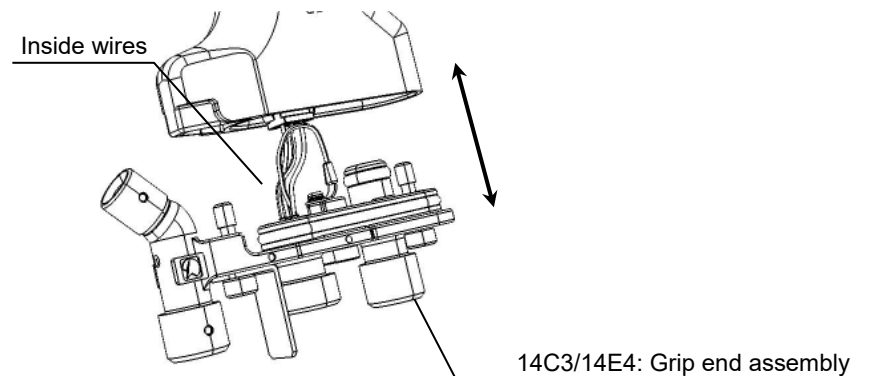
11.9 Replacement of Grip End Assembly

- (1) Loosen the two hex. socket fall prevention screws at the grip end part using a hex. wrench of hex. 3 mm.

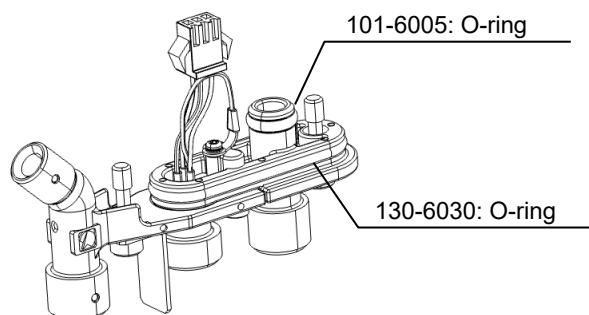
* Recommended tightening torque = 100 cN•m



- (2) Loosen the hex. socket fall prevention screws and slowly extract the grip end assembly from the body assembly. If it is extracted swiftly, the inside wires may be disconnected.

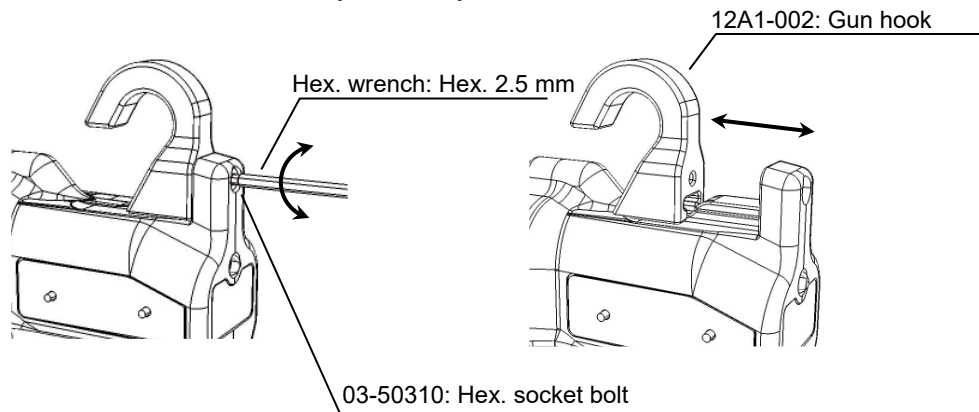


- (3) When removing the grip end assembly, be sure to replace 101-6005/130-6030: O-ring.



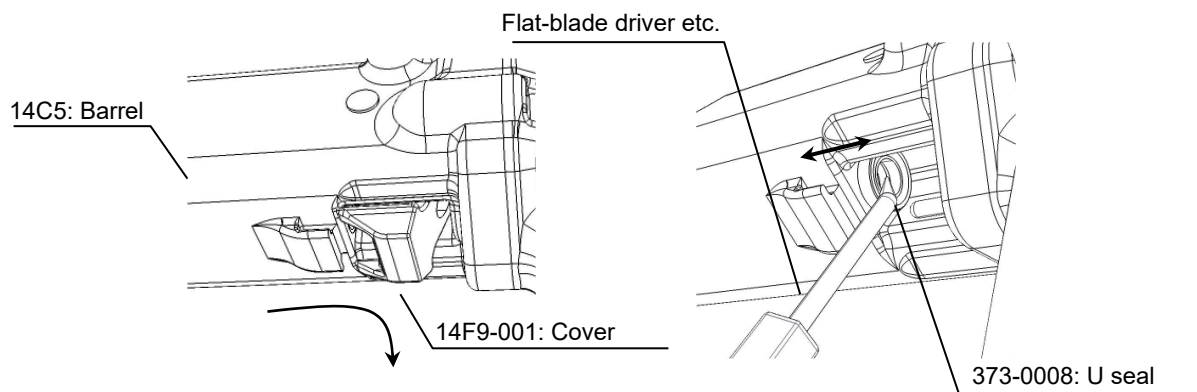
11.10 Replacement of Gun Hook

Remove the 03-50310: hex. socket bolt fixing the gun hook using a hex. wrench of hex. 2.5 mm and extract the gun hook slide-fixed to the body assembly in the direction of the arrow to remove and replace it.



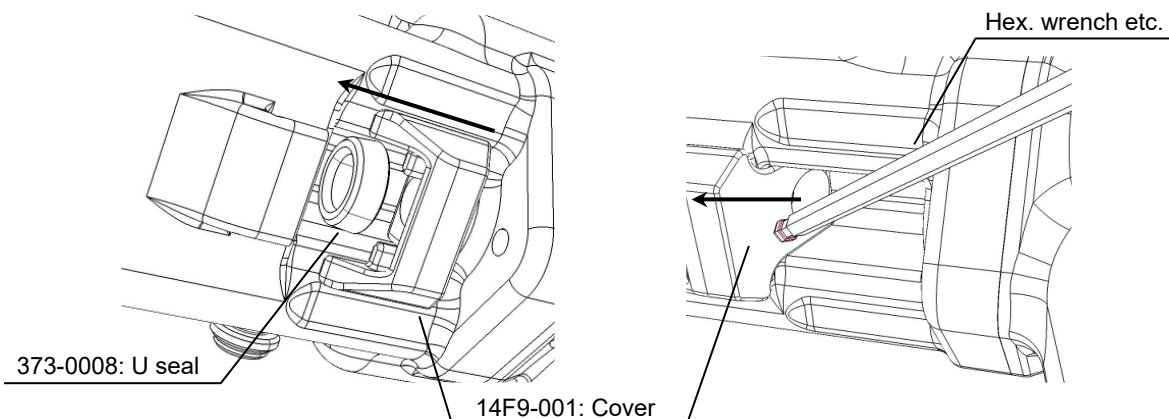
11.11 Replacement of 373-0008: U Seal

- (1) Replace the U seal by removing the cover slide-fixed to the barrel in the direction of the arrow with the trigger and needle assembly removed. Since the U seal is firmly fixed to the barrel, remove it with a flat-blade driver etc. If removed, the U seal may be deformed/damaged, so be sure to replace it.



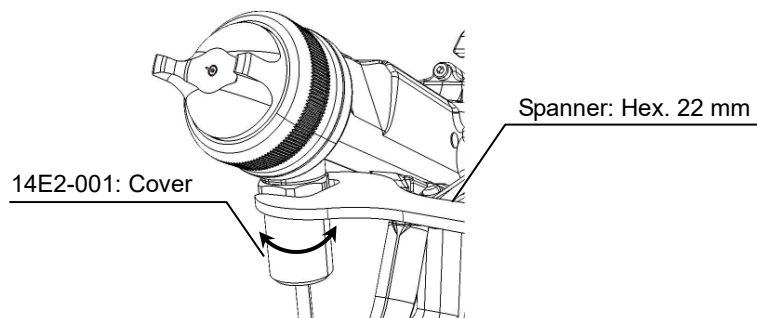
- (2) Attach the U seal by pressing the cover with a hex. wrench etc.

* If only the U seal is pressed, the lip part may be deformed or damaged.

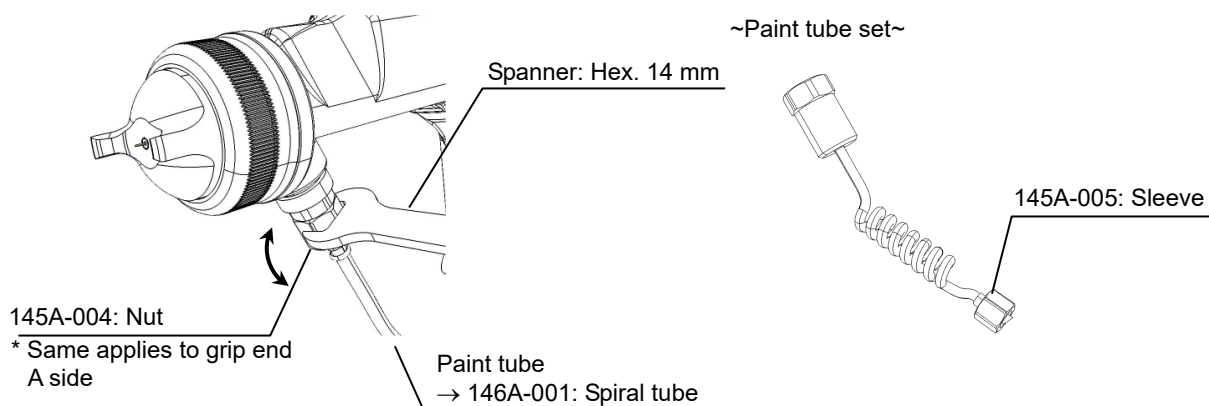


11.12 Replacement of Paint Tube(M type)

- (1) Loosen the cover using a spanner of hex. 22 mm.

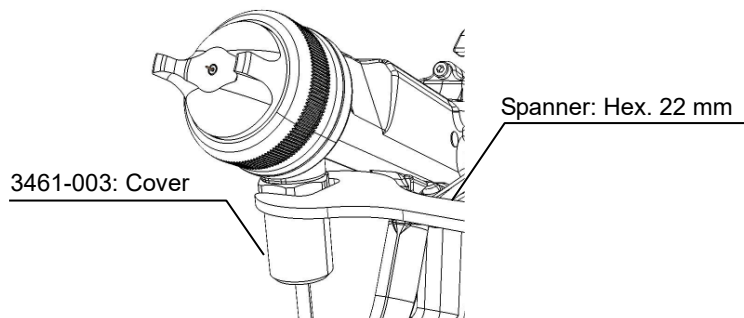


- (2) Loosen the two nuts using a spanner of hex. 14 mm to replace the paint tube.
When replacing the paint tube, be sure to replace the two sleeves too to prevent paint leakage.

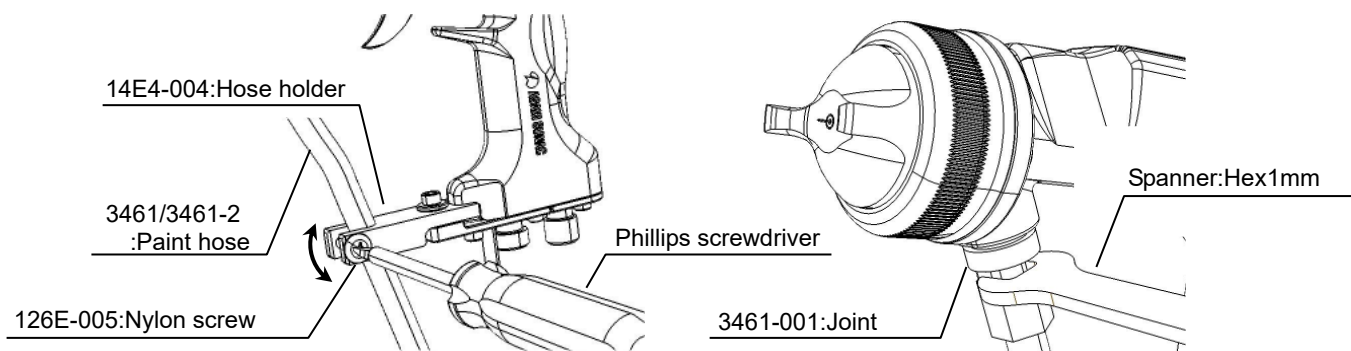


11.13 Replacement of paint hose(W type)

- (1) Retighten the cover with Hex.22 spanner.



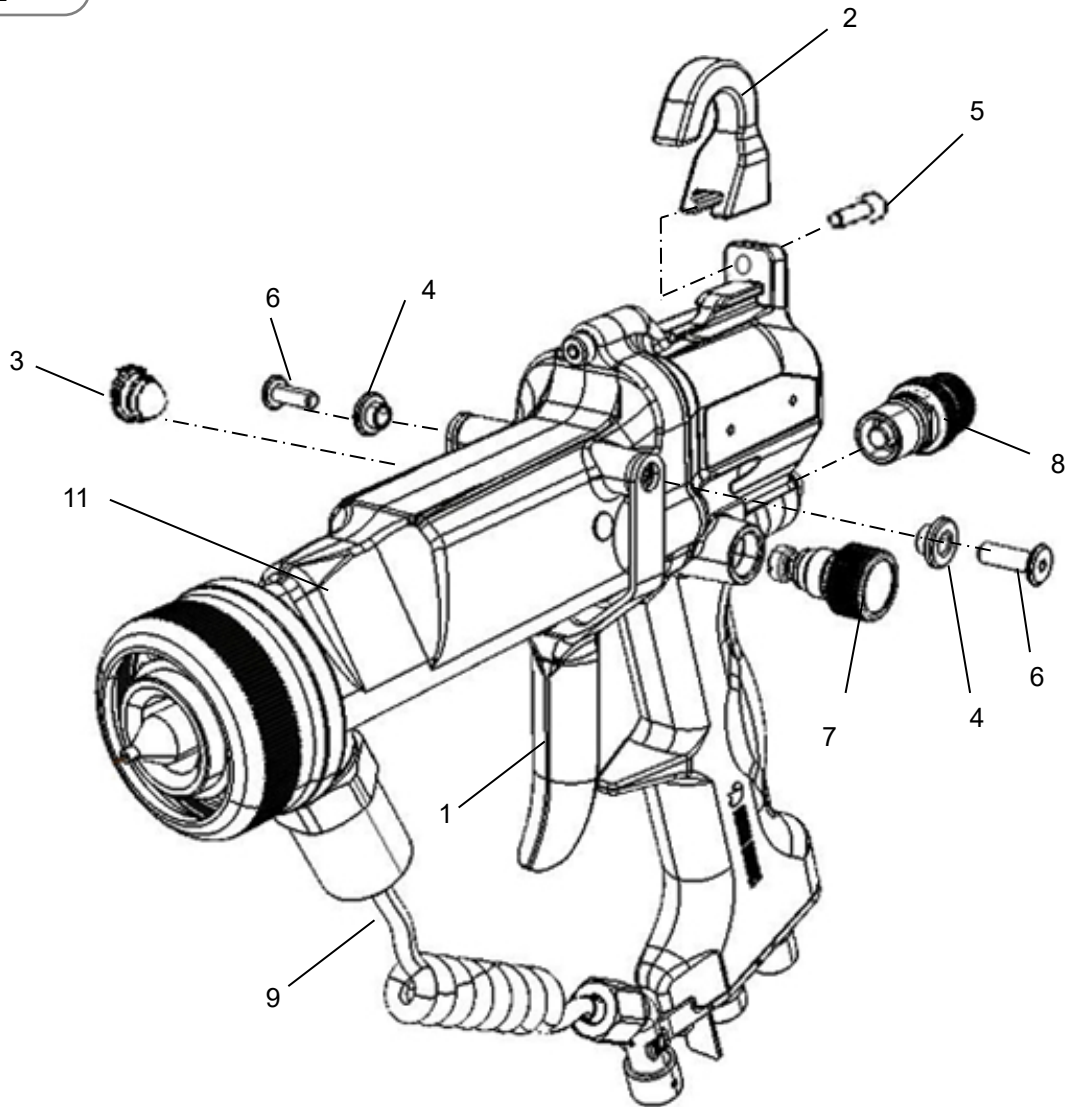
- (2) Remove the nylon spring of paint hose that fixed by hose holder with phillips screwdriver.



12.1 HB4000M

HB4000M

12CE



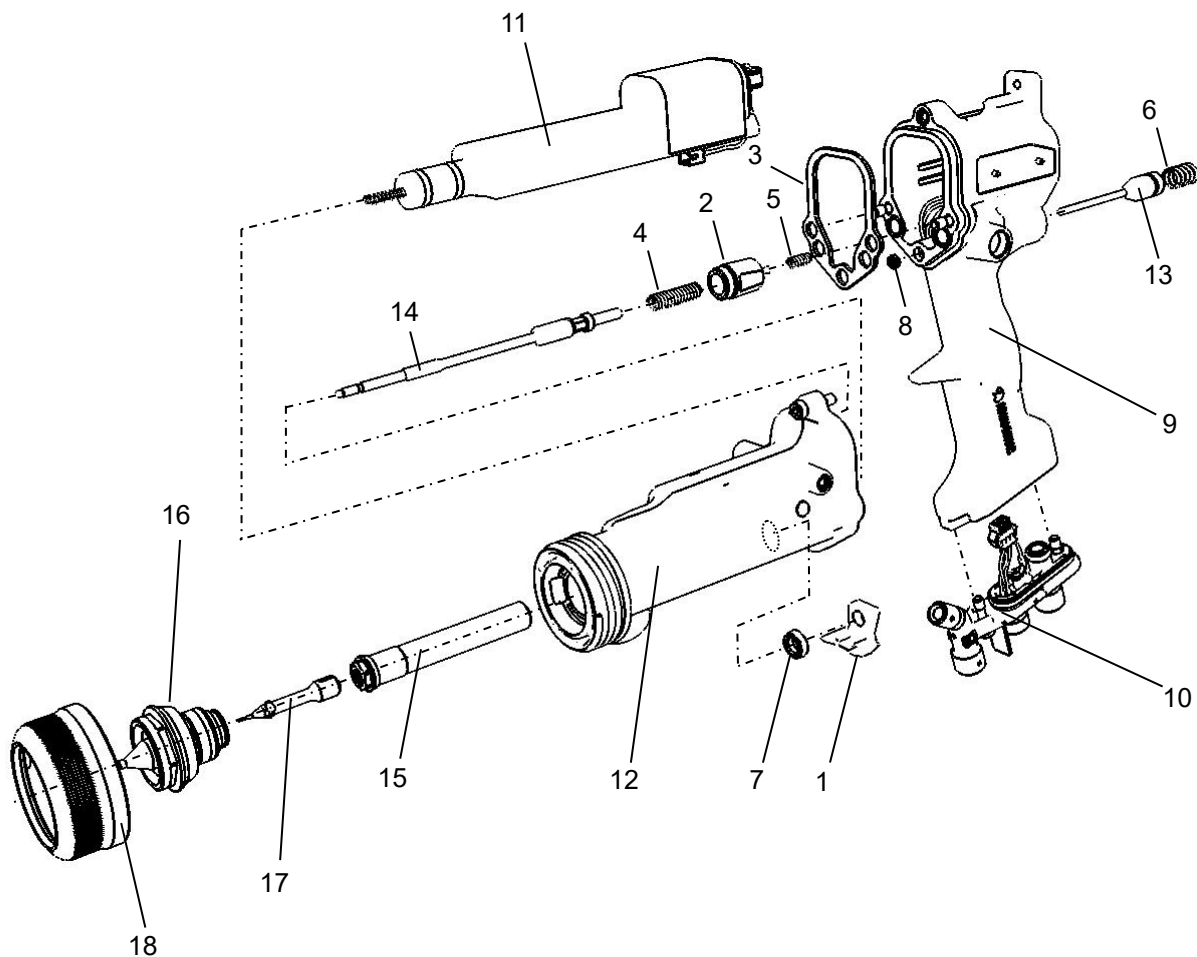
No.	Part No.	Part name	Quantity	Remarks
1	12A1-001	Trigger	1	
2	12A1-002	Gun hook	1	
3	12C5-003	Plug	1	
4	12A1-004	Collar	2	
5	03-50310	Hex socket bolt	1	
6	360-0108	Hex socket low head bolt	2	

* Can not order with core unit only.

No.	Part No.	Part name	Quantity	Remarks
7	14C9	Pattern valve	1	
8	14E1	Paint adjuster	1	
9	14E3	Spiral tube set	1	
10	Nil			
11	-	Core unit	1	*
12	35CF	Accessory tool	1	

12.2 HB4000M Core Unit

Core unit



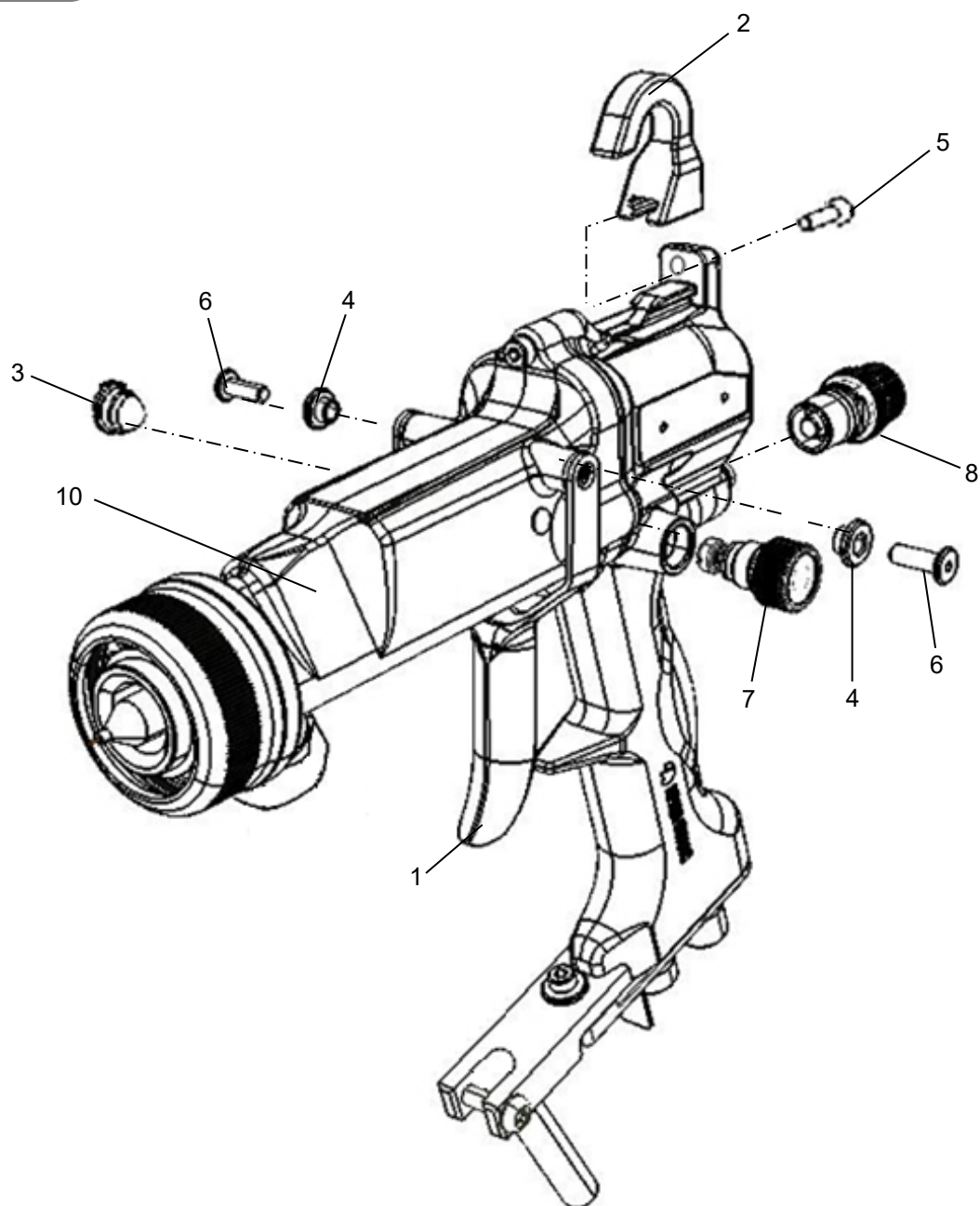
No.	Part No.	Part name	Quantity	Remarks
1	14F9-001	Cover	1	
2	14F9-002	Contact	1	
3	14F9-003	Packing	1	
4	14F9-004	Spring	1	
5	14F9-005	Spring	1	
6	14F9-006	Spring	1	
7	373-0008	U seal	1	
8	373-0009	U seal	1	
9	14C2-4	Body assembly	1	For repair

No.	Part No.	Part name	Quantity	Remarks
10	14C3	Grip end assembly	1	
11	14C4	Cascade assembly	1	
12	1721	Barrel	1	
*13	14C6	Air valve assembly	1	
*14	14C7	Needle assembly	1	
15	14C8	Packing assembly	1	
16	15F7	Paint nozzle assembly	1	
*17	1706	Needle electrode assembly	1	
18	1707	Retaining nut assembly	1	

Items marked with * are the parts, replace with assembly parts.

HB4000W

12CF



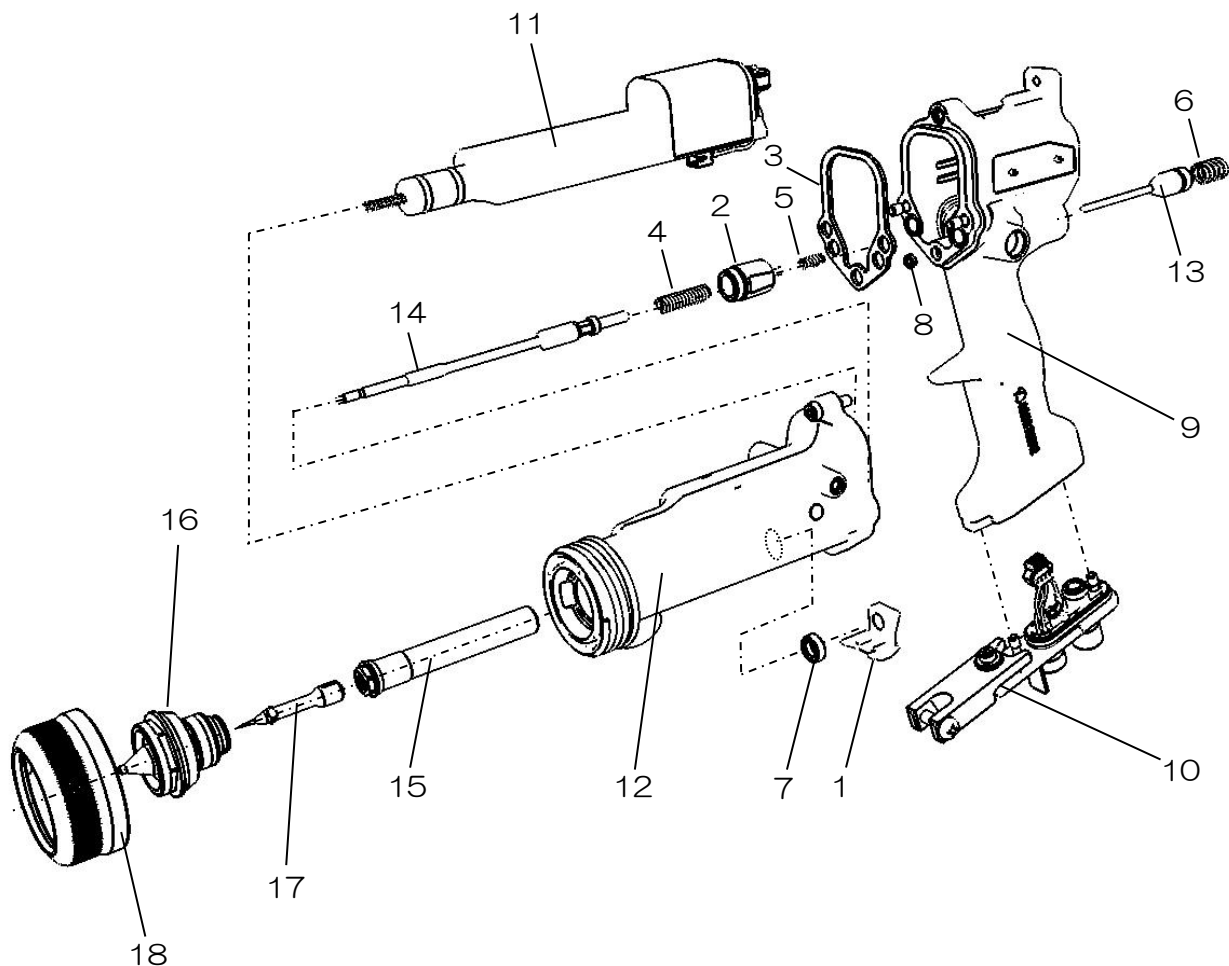
No.	Part No.	Part name	Quantity	Remarks
1	12A1-001	Trigger	1	
2	12A1-002	Gun hook	1	
3	12C5-003	Plug	1	
4	12A1-004	Collar	2	
5	03-50310	Hex socket bolt	1	

No.	Part No.	Part name	Quantity	Remarks
6	360-0108	Hex socket low head bolt	2	
7	14C9	Pattern valve	1	
8	14E1	Paint adjuster	1	
10	—	Core unit	1	*
11	35CF	Accessory tool	1	

*Can not order with core unit only.

12.4 HB4000W Core Unit

Core unit



No.	Part No.	Part name	Quantity	Remarks
1	14F9-001	Cover	1	
2	14F9-002	Contact	1	
3	14F9-003	Packing	1	
4	14F9-004	Spring	1	
5	14F9-005	Spring	1	
6	14F9-006	Spring	1	
7	373-0008	U seal	1	
8	373-0009	U seal	1	
9	14C2-1	Body assembly	1	For repair

No.	Part No.	Part name	Quantity	Remarks
10	14E4	Grip end assembly	1	
11	14C4	Cascade assembly	1	
12	1721	Barrel	1	
*13	14C6	Air valve assembly	1	
*14	14C7	Needle assembly	1	
15	14C8	Packing assembly	1	
16	15F7	Paint nozzle assembly	1	
*17	1706	Needle electrode assembly	1	
18	1707	Retaining nut assembly	1	

Items marked with * are the parts, replace with assembly parts.

12.5 Replacement Parts

The following are the replaceable parts in the parts assembly.

Parts not indicated should be replaced in assembly units.

Body assembly

14C2-4

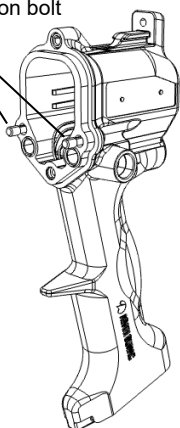
Body assembly

14C2-1

Grip end assembly

14C3

360-0107
: Hex socket fall prevention bolt



360-0107
: Hex socket fall prevention bolt

101-6005
: O-ring

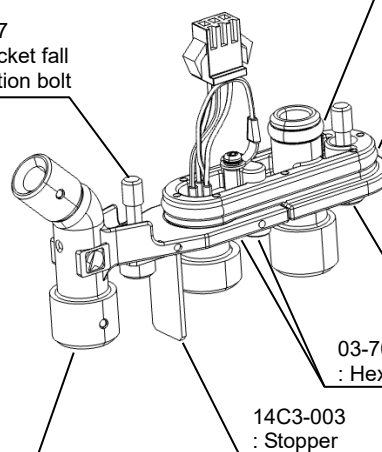
130-6030
: O-ring

360-0107
: Hex socket fall prevention bolt

03-70308
: Hex socket bolt

14C3-001
: Grip end A

14C3-003
: Stopper

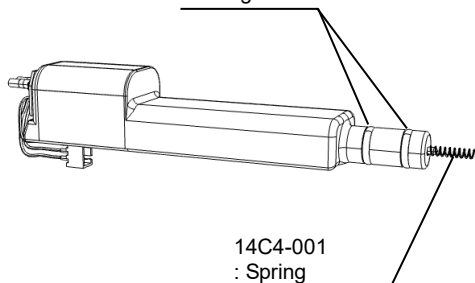


Cascade assembly

14C4

130-7010
: O-ring

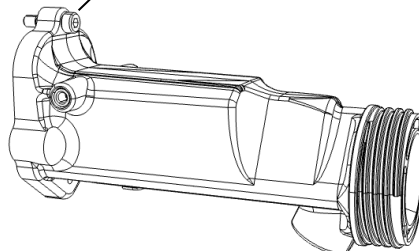
14C4-001
: Spring



Barrel

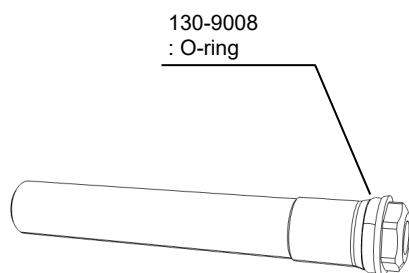
1721

360-0107
: Hex socket fall prevention bolt



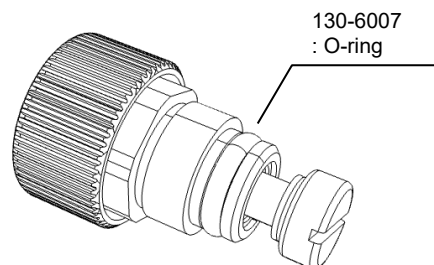
Packing assembly

14C8



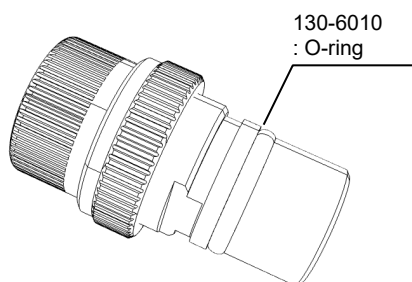
Pattern valve

14C9



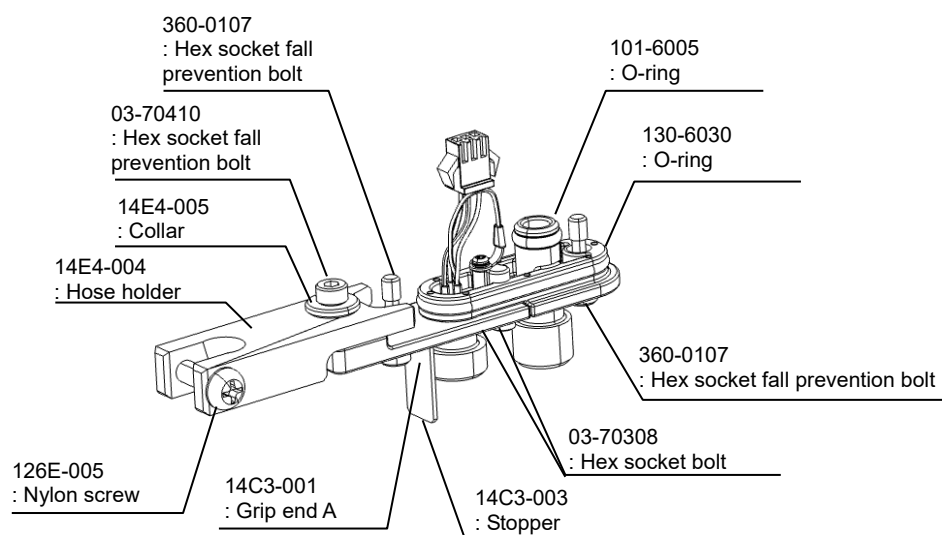
Paint adjuster

14E1



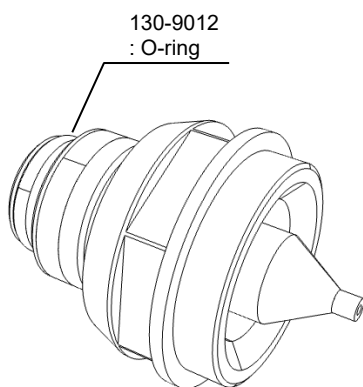
Grip end assembly

14E4



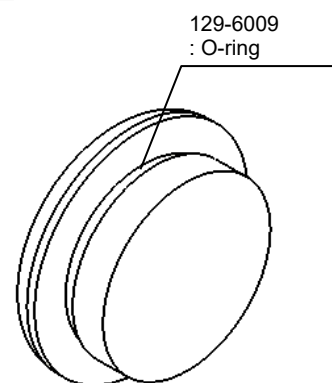
Paint nozzle assembly

15F7



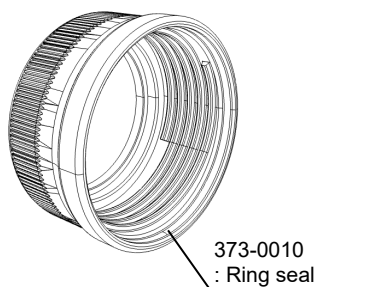
Plug

12C5-003



Retaining nut assembly

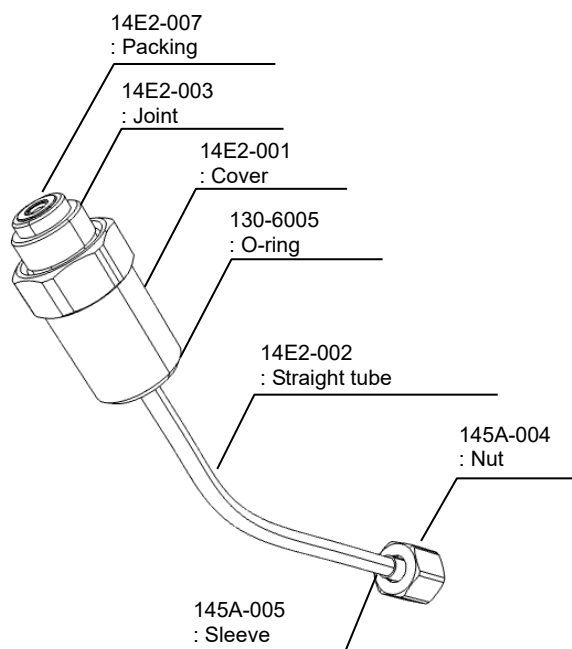
1707



* When Ring seal is removed
from Retaining nut,
Please replace to new one.

Straight tube set

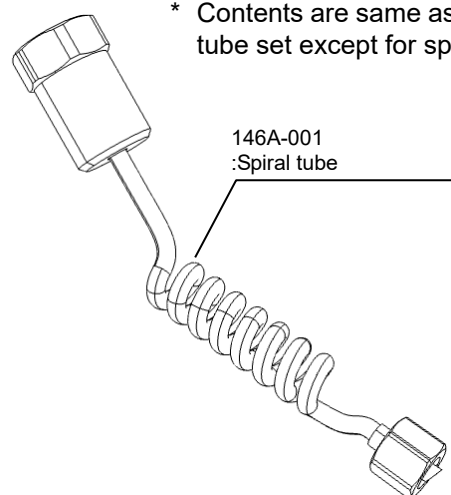
14E2



Spiral tube set

14E3

~In case of 14E3: spiral tube set~



* Contents are same as those of straight
tube set except for spiral tube

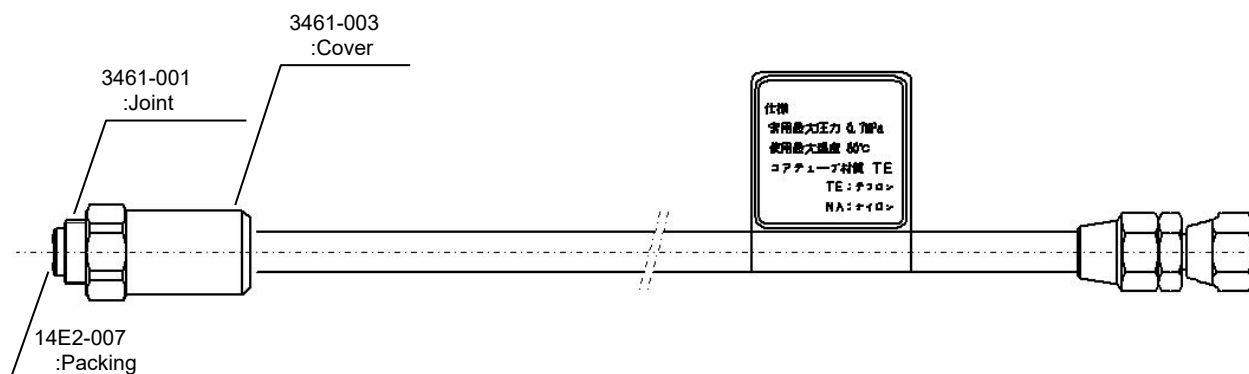
Paint hose:5m

3461

Paint hose:10m

3461-2

*It's only for HB4000W



13

Record Of Measure

Shown below is a maintenance log format of a kind we recommend you to keep. Each time that you conduct a maintenance service, such as replacement of a part, tear-down cleaning, post-failure repair, etc., record the details. In the long run, you will find that such a log is very valuable in keeping your equipment in a consistently good operating condition.

Equipment name			Air Electrostatic Handgun <HB4000M >		Date of acquisition: YYYY/MM/DD	
Date of service			Portion worked on	Description	Result	Worked by
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac
						In-house / Agency / Asahi Sunac

Note: Due to continuous improvements and modifications, the configurations specified herein are subject to change without prior notice.

14

Warranty

ASAHI SUNAC CORPORATION (the "Company") shall provide the original purchaser (the "Purchaser") with warranty service for a period of one (1) year from the date of purchase of the product, as follows:

- Should you find defects in design or workmanship with regard to parts, ship them back to the Company, with freight prepaid. The Company shall repair or replace the parts free of charge and reimburse the freight charges, provided that, as a result of an inspection and investigation of the parts conducted by the Company, the defects are deemed to be attributable to the factors within the Company's responsibility.
- In the following cases, free after-sales service is not provided.
 1. Failure resulting from an inappropriate method of installing this equipment.
 2. Failure resulting from a use method not conforming to this instruction manual or mishandling.
 3. Failure resulting from insufficient maintenance management of this equipment and incorrect handling such as non-conformance to the procedures specified in this instruction manual.
 4. Failure resulting from unauthorized alteration or structure change of this equipment without the Company's consent.
 5. Failure due to force majeure such as earthquake, disaster, flood disaster or lightning.
 6. Warranty for consumables worn or deteriorated even in the case where this equipment is used correctly.
 7. Repair after the machine has been used outside Japan, and shipping cost.
 8. In addition to the above, failure due to circumstances beyond our control.
 9. Failure resulting from use non-genuine parts.
- As for items such as parts purchased by the Company from another manufacturer, the warranty of that manufacturer shall apply.
- As for any parts deemed to be defective, the Company shall not be held liable for any expenses beyond the provision of repair or replacement parts free of charge.
- The Company shall not be held liable for any damage to the Purchaser caused by factors not attributable to the Company, such as misuse of product, etc.

-
- When a transfer of title of this equipment takes place, please see to it that this Operation and Maintenance Manual is handed over to the new owner.
 - This equipment is manufactured in compliance with the Laws and Regulations of Japan.
In the rare eventuality of this equipment being used outside Japan, compliance with the safety standards of the relevant countries is of course mandatory.
-

27th Edition: April 1, 2022

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Chinese

27th Edition: April 1, 2022