ASAHI SUNAC

Operation and Maintenance Manual

Compact Rotary Atomizing Automatic Gun

NC Bell

ASG10

Ec'Coater™ エコーター

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 equipment 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.

9th Edition: July 10, 2025

Introduction

Thank you for purchasing our product compact rotary atomizing automatic gun: NC bell <ASG10>.

Please be sure to read this operation manual carefully before using this product so that you can always use it under the optimum conditions.
In particular, please fully understand the items in the specifications and use them according to the correct usage.

If you have any questions, please contact us by clearly stating the "product number" and "serial number" and contacting us on the back cover.

Please keep this operation manual in a safe place where you can easily refer to it.

Contents

9th Edition: July 10, 2025

1 For safe and correct use

Please understand the contents of this instruction manual and be sure to follow the handling method. If you use it without following this instruction manual, **you may injure your body or damage your equipment and fire.**

The following safety precautions should be considered as minimum basic safety measures when using our products.

●Precautions are displayed in the following two stages.

⚠ **WARNING**	Hazards that can result in death or serious injury.
⚠ **CAUTION**	Danger that may result in minor or moderate injury or physical damage only.

●Other important points are indicated as follows:

NOTE	Observations to ensure the equipment's performance and functions are fully operational.

In addition, please observe all national and local laws and regulations related to fire, electricity, and safety, as well as the rules and regulations of your own company or business division.

≪Range of use suitable for the product≫

This product is an automatic spray gun designed to be installed in the coating booth equipped with an exhaust system and used for painting with paint adjusted for rotary atomization paint.

If you use the product under conditions other than the above, it will be used improperly. Also, please be careful as it may cause an accident.

《Warning and precautions for safe use》

⚠ WARNING

Fire and explosion

Preventing fire and explosion in coating shop

- **Do not use halogenated hydrocarbon solvents.**
  The aluminum alloy contained in this product's components may undergo a chemical reaction and explode.

- **Do not use this product outside its specifications.**
  Using it out of specification range may result in a fire hazard.

- **Provide adequate ventilation with ventilation equipment.**
  Volatilized organic solvents and other substances may remain and ignite, creating a risk of fire.

- **Clean the coating room and exhaust system (ducts and fans) regularly.**
  If the accumulated powder simply peels off, a spark may occur, which could cause a dust explosion.
  In the unlikely event of a fire, paint residue etc. will make it easier for the fire to spread and result in greater damage.

Prevent fire and electric shock caused by faulty earthing

- **All conductive objects in the coating booth (paint containers, peripheral equipment, etc.) must be grounded with an earth wire.**
  When paint flows through a pump or hose, static electricity is generated, and poorly grounded conductors can become charged and sparks can discharge, resulting in a fire or electric shock.

- **Always keep the workpiece earthed.**
  Risk of fire or electric shock due to spark discharge from charged workpieces.

- **Paint hose must be grounded with an earth wire.**
  Static electricity can cause spark discharge, which can result in fire or electric shock. When paint flows through the injector and paint hose, static electricity is generated and becomes charged.

- **The paint container must be grounded with an earth wire (excluding the insulated stand specifications).**
  The paint path can cause the paint container to become charged, a risk of fire or electric shock.

《Warning and precautions for safe use》

⚠ WARNING

Fire and explosion

Prevent fire and electric shock caused by faulty earthing

- **Be sure to periodically remove any paint that has stuck to the hanger.**
  If paint adheres to the contact part between the hanger and the object, there is a risk of fire or electric shock due to poor earthing.
  The ground resistance value should be 1kΩ or less for metal (1MΩ or less for resin) (measurement voltage should be 500V or more).

- **Do not place any items in the coating booth that are not necessary for coating.**
  Static electricity can cause spark discharge, which can result in fire or electric shock.

- **Paint operator must take precautions to prevent static electricity.**
  Static electricity builds up on the human body, causing sparks to discharge, which may result in fire or electric shock.

Prevent fires caused by ignition of paints and solvents

- **Do not bring any spark-producing devices, matches, lighters, etc.**
  Risk of explosion or fire due to ignition of flammable materials.

Equipment misuse

Preventing accidents caused by poor maintenance

- **Any abnormal noise, vibration or high voltage leakage, immediately stop operation.**
  Product damage may result in a fire hazard.

- **Do not operate if any parts are damaged or missing.**
  Product damage may result in a fire hazard.

《Warning and precautions for safe use》

⚠ WARNING

Human protection

Protection from solvents, air and paint pressure

- **Do not spray paint towards person**
  Harmful substances may cause serious injury, including inflammation and poisoning.
  Pressurized paint can cause personal injury.

- **Wear protective glasses, a protective mask, and protective gloves when handling paint.**
  Harmful substances may cause serious injury, such as inflammation or poisoning.
  Carefully read the safety data sheet (SDS) of the paint you are using and
  take appropriate exposure prevention and protective measures.
  * SDS：Safety Data Sheet

- **Clean the coating room and exhaust device (ducts and fans) regularly.**
  If the exhaust device does not function properly, harmful substances may cause
  serious injury, including inflammation and poisoning.

《Warning and precautions for safe use》

⚠ WARNING

- **Do not use this product outside its specifications.**
  Using it out of specification range may result damage to the product.

- **Hoses should be hung from the ceiling or side walls and not dragged across the floor.**
  It may cause damage such as scratches.
  When using conductive paint, be sure to suspend the paint hose from an insulating material such as a rubber tube.

- **Never use a metal brush to clean the sprayer or its components.**
  It may cause scratches, breakdowns, and poor coating results.
  The bell cup and bell cap are important parts of the sprayer.
  If you use a metal brush to scratch it, uniform coating will not be possible.

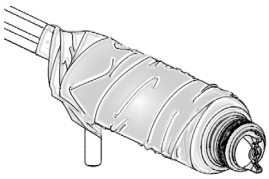
- **Check frequently for paint leaks, air leaks, and loose screw.**

《Warning and precautions for safe use》

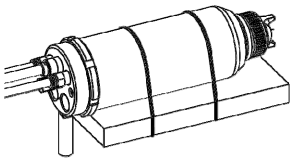
⚠ WARNING

• **Do not touch the bell cup of the sprayer carelessly.**
There is a risk of injury if you come into contact with the edge of the bell cup, which is rotating at high speed. Please handle with care.

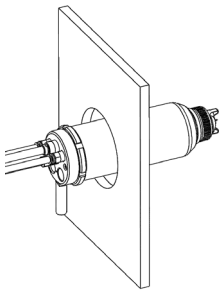
• **Do not install it like following.**
Electrostatic guns apply high voltage to the tip of the gun and the rear is earthed, make sure there are no obstacles on the main body (insulated part).



①If the gun is used with the dirt-proof sheet wrapped around it, moisture will accumulate inside, causing an overcurrent error.



②If a metal plate is attached close to the gun body, insulation breakdown may occur between the charged part of the gun and the plate.



③If the gun body is inserted through a hole in a metal plate, insulation breakdown may occur, just as in ②.

●**A fire extinguisher should always be kept near the work area.**
In case of a fire, make sure to have equipment that has been regularly inspected installed at all times.

●**When disposing of this product, please dispose of it in accordance with the laws of your country.**

2 Outline of Equipment

<<Features>>

(1) The bell cup has a self-cleaning mechanism. Its cleaning operation can be remotely controlled.

(2) The paint path inside the gun is excellent in cleaning performance, which makes it possible to minimize cleaning time and waste cleaning liquid.

(3) The gun has no built-in valve; it is easy to perform maintenance work.

(4) The gun can be separated at its back; it facilitates maintenance work.

(5) Using the rotation controller (optionally available), it is possible to hold the preset rotation speed constant by minimizing variations in the rotation due to the influence of paint discharge loads.

3 Equipment Specifications

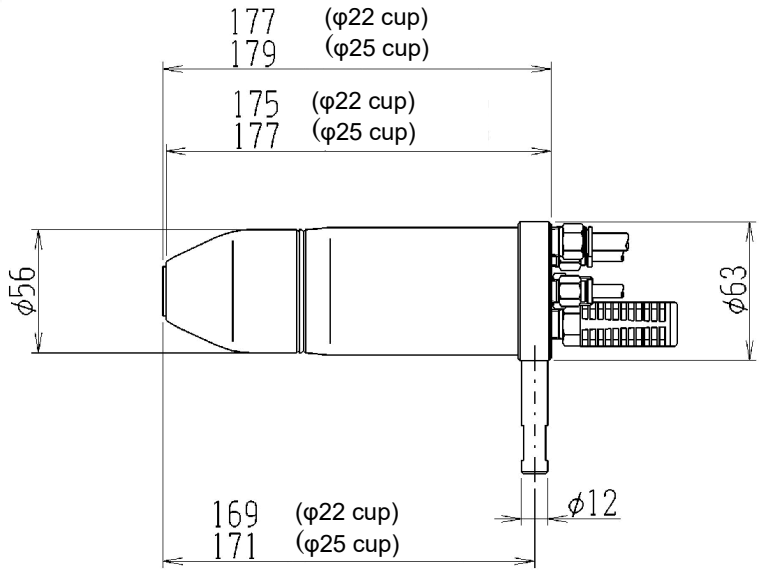


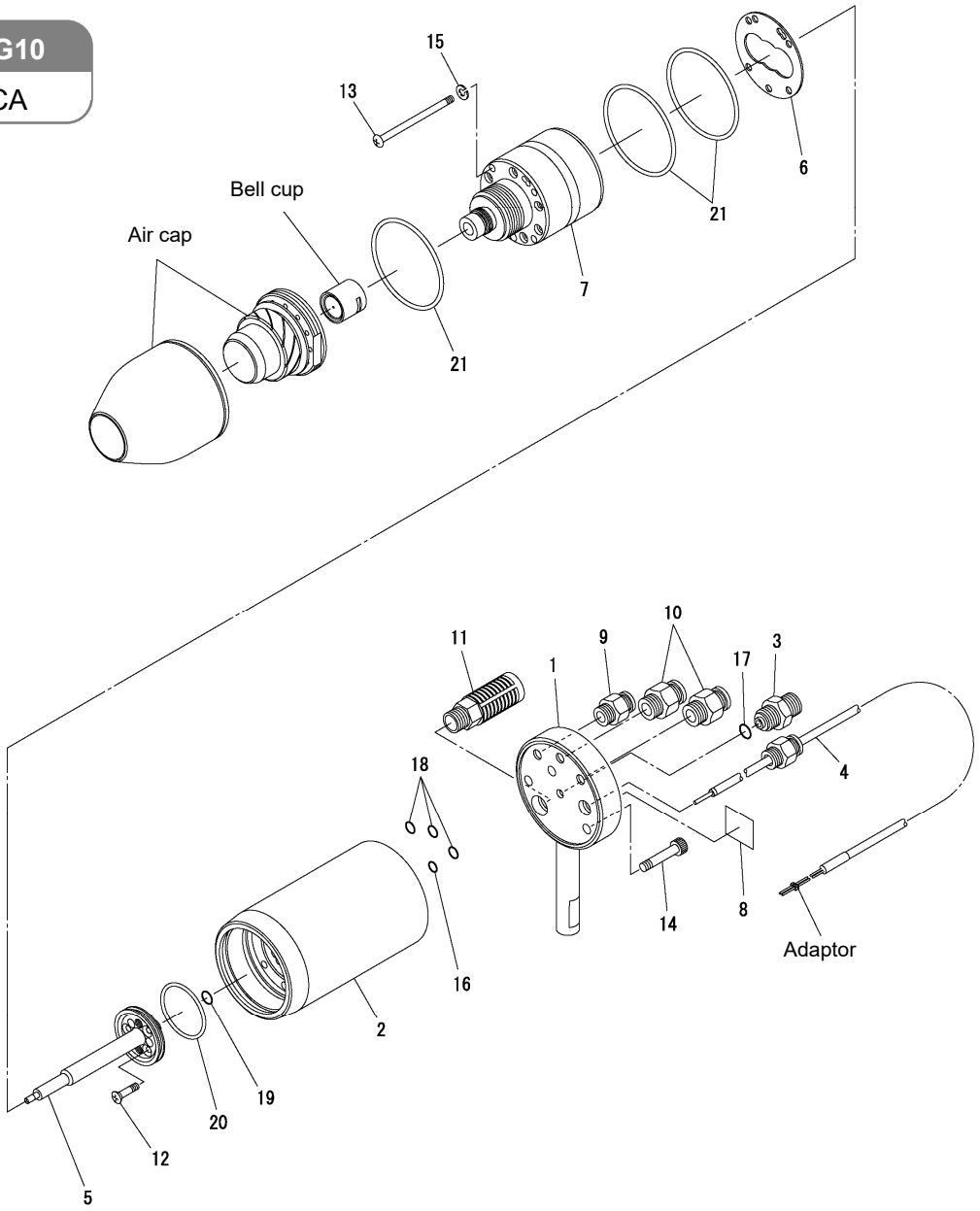
Fig. 1: External view

Table 1: Basic specifications

Normal turbine rotation speed	70,000 rpm or lower (when c attached) 60,000 rpm or lower (when φ25 cup attached)
Maximum turbine rotation speed	80,000 rpm (when φ22 cup not subject to load) 70,000 rpm (when φ25 cup not subject to load)
Bearing air pressure	0.4 MPa or more
Spray rate	Max. 250 mL/min (at viscosity of 50 mPa･s)
Cleaning thinner agent discharge rate	500 mL/min or lower (no air trapped)
Air consumption and maximum air pressure	Bearing 50 L/min (ANR) (at 0.5 MPa) Max 0.7 MPa Turbine 270 L/min (ANR) (at 70,000 r.p.m.) Max 0.7MPa Shaping 300 L/min (ANR) (at 0.5 MPa) Max 0.7 MPa
Weight	800 g

ASG10

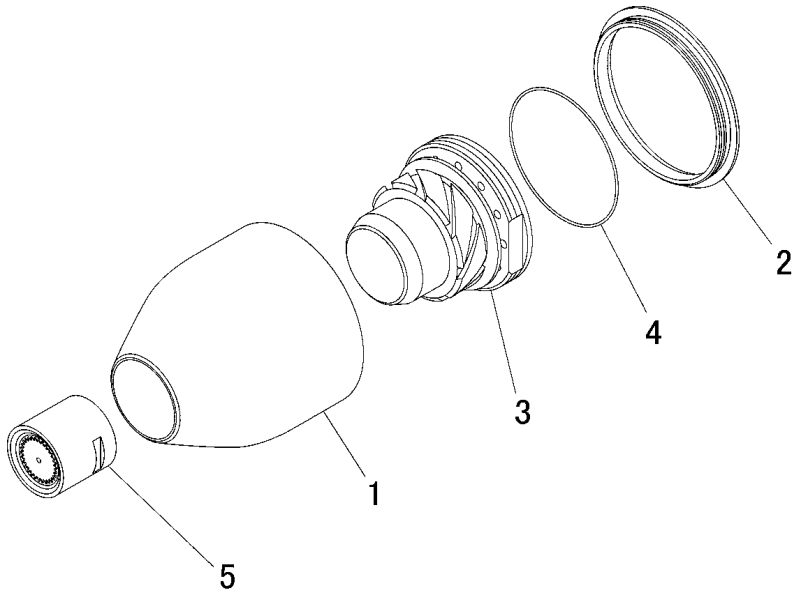
13CA



No.	Parts No.	Part name	Qty	Remarks
1	13CA-001	Base	1 set	
2	13CA-002	Barrel	1 set	
3	13CA-003	Nipple	1	
4	13CA-004	Sensor	1 set	
5	13CA-005	Feed tube	1 set	
6	139F-014	Packing	1	
7	321-0015	Spindle	1 set	
8	331F-002	Nameplate	1	
9	376-0601	Quick joint	1	
10	376-0802	Quick joint	2	
11	326-0005	Muffler	1	

No.	Parts No.	Part name	Qty	Remarks
12	69-10312	Cross-recessed countersunk head machine screw	3	
13	68-10345	Cross-recessed flat head screw	4	
14	03-50525	Hex. socket screw	3	
15	41-50300	Spring washer	4	
16	101-2005	O ring	1	
17	101-2007	O ring	1	
18	130-2006	O ring	3	
19	130-7006	O ring	1	
20	130-6029	O ring	1	
21	130-9048	O ring	2	

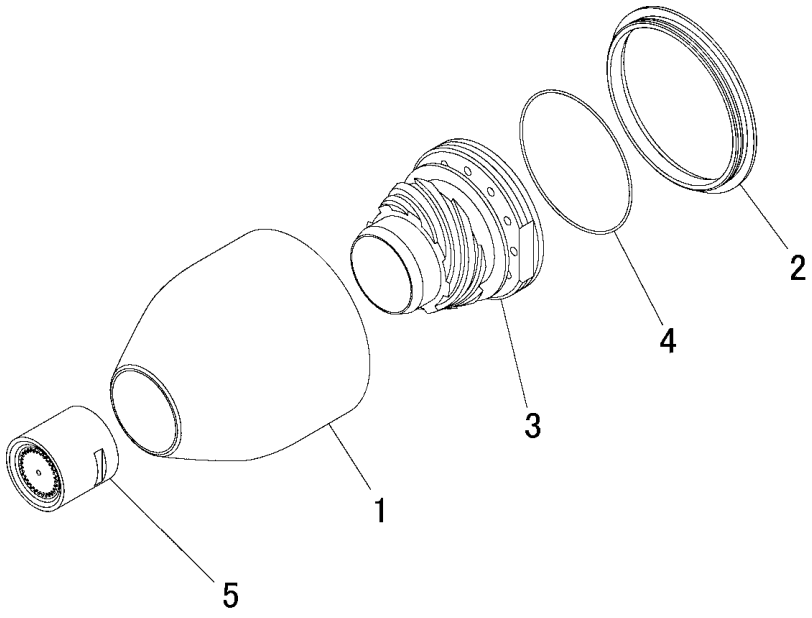
● Combination of φ22 bell cup NC22 (156A) and φ100 pattern air cap NC22-10 (156E)



No.	Parts No.	Part name	Qty.	Remarks
1	156E-001	Cap	1	
2	156E-002	Spacer	1	
3	156E-003	Jet	1	

No.	Parts No.	Part name	Qty.	Remarks
4	130-9048	O-ring	1	
5	156A	φ22 bell cup	1	

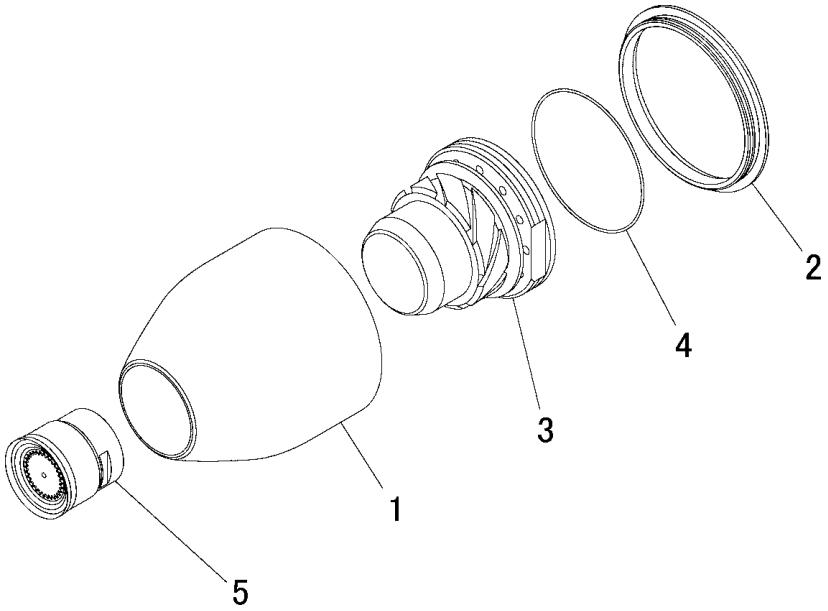
● Combination of φ22 bell cup NC22 (156A) and
φ200 pattern air cap NC22-20 (156F)



No.	Parts No.	Part name	Qty.	Remarks
1	156F-001	Cap	1	
2	156E-002	Spacer	1	
3	156F-003	Jet	1	

No.	Parts No.	Part name	Qty.	Remarks
4	130-9048	O-ring	1	
5	156A	φ22 bell cup	1	

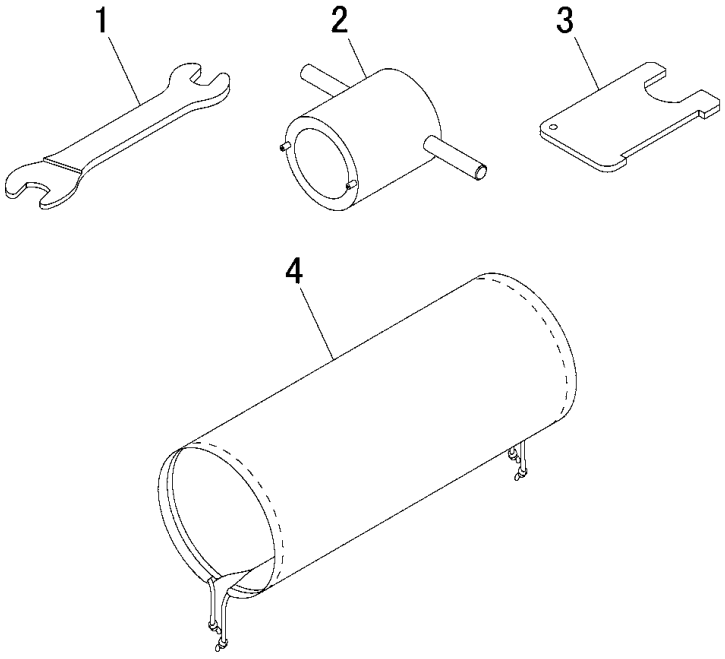
● Combination of φ25 bell cup NC25 (156C) and φ150 pattern air cap NC25-15 (157S)



No.	Parts No.	Part name	Qty.	Remarks
1	157A-001	Cap	1	
2	156E-002	Spacer	1	
3	157A-003	Jet	1	

No.	Parts No.	Part name	Qty.	Remarks
4	130-9048	O-ring	1	
5	156C	φ25 bell cup	1	

● Accessory tool (357E)



No.	Parts No.	Part name	Qty.	Remarks
1	357E-001	Bell removal tool	1	
2	357E-002	Air cap attachment tool	1	

No.	Parts No.	Part name	Qty.	Remarks
3	355E-001	Flat spanner	1	
4	3591-026	Hose cover	1	

[1] Installing the main unit

A typical installation diagram of this coating machine is given in Fig. 2.

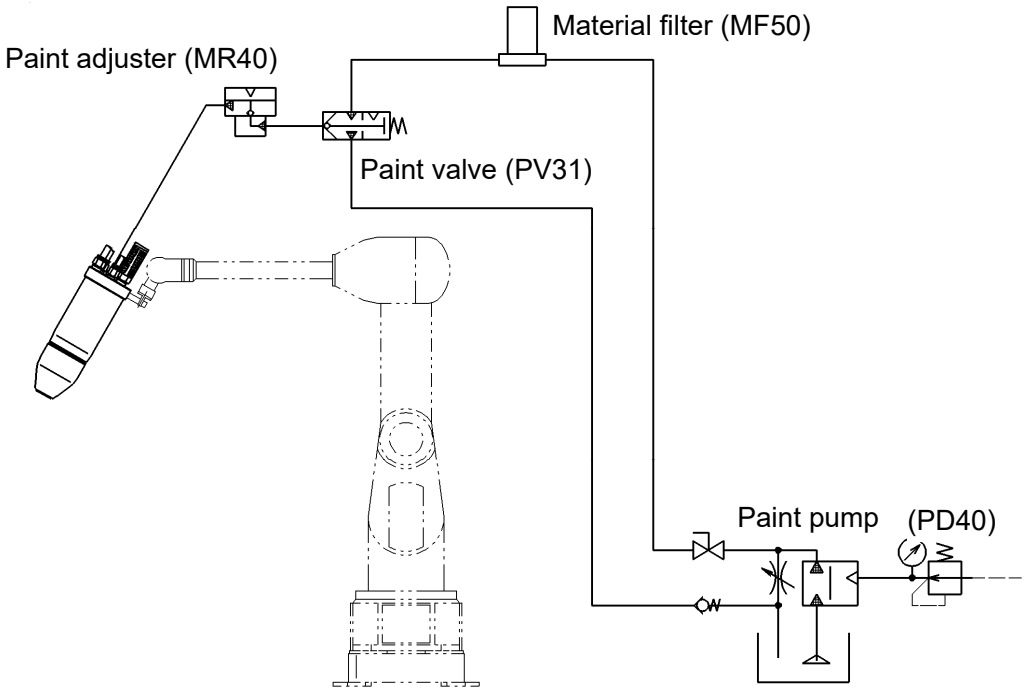


Fig. 2: Installation diagram

⚠ CAUTION

Set up the paint circuit and valve to prevent temporary increases in the discharge rate during paint valve opening/closing. Such increases may cause coating problems. They could also cause damage to the turbine shaft due to thinner spillage from the bell cup.

(1) It must be firmly secured to the reciprocator arm or to the fixing stand, etc.

(2) Make sure that the tip of the gun is located at least 600 mm from the booth's ground object, such as its water tank or conveyor rail.

(3) For the reciprocator, set its reciprocation speed to 40 m/min or lower. If not, the paint adhesion efficiency may become lower, resulting in paint adhesion/damage to the reciprocator or gun. If it is used together with an automated machine, etc., make sure that the acceleration applied to the gun is 0.3 G or lower.

(4) The gun mounting angle should be within the range of vertically downward to horizontal. If it is directed above the horizontal, paint may spill from the cup, resulting in a damaged turbine due to the spilt paint.

(5) At the start of spraying, do not control the paint discharge rate to gradually increase it. This may cause paint to enter the turbine via the feed tube, resulting in turbine burnout.

[2] Connecting the air line

(1) The bearing air NC bell uses a precision air bearing, which holds the turbine shaft in a suspended position. If air contaminated with foreign matter, such as oil, water, shavings, or seal tape, is supplied to this bearing, it may deteriorate in a very short period of time. Furthermore, in that case, this could result in an equipment failure. To avoid this, please strictly observe the precautions described below.

1) Provide an air dryer. Completely remove oil, water, and dust from the air supplied to the air bearing.
2) Be sure to provide an air bearing with a micro-mist separator per gun.
3) The micro-mist separator should be located as close as possible to the gun (within a radius of 10 m from the gun).
4) Install the air line so that foreign objects such as seal tape or liquid seal do not enter it after the micro-mist separator.
5) Before connecting the gun to the air line, be sure to completely remove air and dust from the air line.
6) Make sure that air is constantly supplied to the bearing except during maintenance work. Depending on the quality of the air, the shaft may get stuck due to impurities, regardless of their quantities, when the air not being supplied; turbine burnout could occur as a result.

(2) For air supply to other air line guns, refer to the table below and ensure sufficient air quantities/pressures.

Item	Role	Supply condition	Tube
(1) Bearing air	To support the high-speed rotating bearing.	50 L/min (ANR) (0.4 MPa and over)	φ6×4* (at 10 m)
(2) Turbine air	To rotate the bearing at high speed.	220 L/min (ANR) (at 0.5 MPa)	φ8×6* (at 10 m)
(3) Shaping air	To adjust the spraying pattern.	300 L/min (ANR) (at 0.5 MPa)	φ8×6* (at 10 m)

* If the tube is longer than 10 m, make sure that it is as thick as possible in immediate proximity to the gun.

⚠ CAUTION

If the bearing air supply pressure drops, or if poor-quality air, which is contaminated with oil/water/foreign matter, is used, the bearing's orifice may be clogged and/or a motor rotation failure could occur due to shaft galling, etc., resulting in a worn/damaged shaft and bearing inside the turbo motor. To constantly supply clean air, replace/clean the filter element at regular intervals. Turbo motor failures resulting from improper management of air quality are not covered by the warranty.

⚠ CAUTION

Make sure that the bearing air is constantly supplied at 0.4 MPa or higher. If not , the air bearing may burn out. Also make sure that the air pressure does not exceed 0.7 MPa.

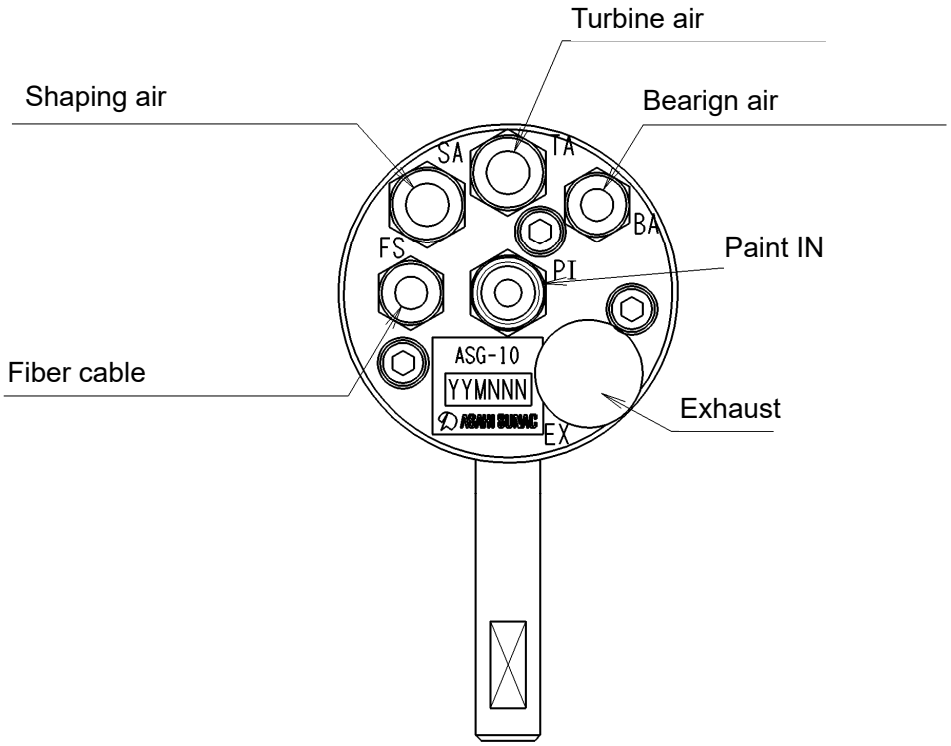


Fig. 3: Air line connections

[3] Connecting the air line

The NC bell does not contain a paint opening/closing valve. Provide a paint opening/closing valve if necessary. Connect the paint hose to the NC bell, via the paint opening/closing valve if attached, from the paint pipe line (paint pump, paint regulator, color change valve, etc.).

⚠ CAUTION

To prevent the turbine shaft from being damaged due to thinner spillage from the bell cup, provide the thinner line with a regulator, etc. so that thinner is discharged at 500 mL/min or lower during cleaning with thinner.

[4] Connecting the optical fiber cable

The cable is located in the green tube attached to the NC bell. The standard length of the cable is 10 m. A 20 m long optical fiber cable (optionally available) can be used instead. Use the Keyence FS-V21 amplifier to connect the fiber cable. If it is only necessary to display the rotation speed, the Keyence RX-20/22 rotation indicator can be used. However, since the decrease in the rotation speed during discharge cannot be compensated for, great care must be taken when the discharge rate is high or the discharge rate is frequently controlled.

(1) Follow the procedure below to attach the tip of the fiber cable protruding from the green tube.
   1) Open the amplifier cover and put the fiber fixing lever into its lowest position.
   2) Insert the adaptor (square-shaped part having two pins protruding from it) into the tip of the fiber cable.
   3) Insert the fiber into the insertion hole in the side of the amplifier, as far as it will go, so that it should not be removed from the adaptor.
   4) Put the fiber fixing lever back into its original position.
   5) With the turbine rotating, hold down the SET button for 3 to 4 seconds. The rotation indicator is tuned automatically.
   6) Close the amplifier cover.

⚠ CAUTION

The optical fiber amplifier unit is not explosion proof. Make sure that it is located outside the explosion-proof area.

⚠ CAUTION

Be careful not to bend the optical fiber. The amplifier cord must have a cross-sectional area of 0.3 mm^2 or more and a length of 100 m or more. It should neither be connected together with the power line nor the high-voltage line.

[5] Precautions when bundling the fiber cable and hose, etc.

⚠ CAUTION

To prevent deterioration in cable strength/service life, be sure to observe the following precautions when bundling the fiber cable and hose, etc.:

(1) Do not bundle them within approx. 70 cm from the throat of the gun. Beyond that point, provide a clearance of 50 cm or more to ensure "slack" bundling. If they are continuously bundled using vinyl tape or a wide spiral tube, the wound portion may be formed into a stick-like shape; it could break at both ends, resulting in a broken cable or a damaged hose.

(2) Make sure that the cable and hose, etc. are long enough to connect the reciprocator and robot without pulling the gun. If it is repeatedly forcibly pulled, this may result in a broken cable or a damaged hose.

(3) Do not step down the cable and hose, etc. during coating work. If you step them down especially on the metal draining board, this may result in a broken wire, etc.

(4) Do not submerge the cable and hose in solvent for a long period of time. This may lead to extreme deterioration in cable/hose strength and service line.

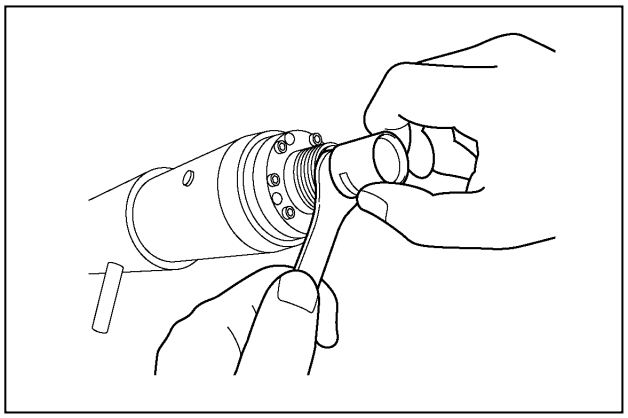
(5) Do not use any metal cable tie for bundling. This may lead to electrification by metal.

[1] Attaching the bell cup and air cap

(1) Attaching/removing the bell cup

1) Attaching the bell cup

Put the open-end wrench over the width across flats of the spindle and finger-tighten the bell cup without rotating the shaft.



⚠ CAUTION

When attaching or removing the bell cup, make sure that the bearing air is supplied. When attaching it, finger-tighten it without using the wrench. If it is excessively tightened using the wrench, the bell cup may deform, resulting in a coating failure.

⚠ CAUTION

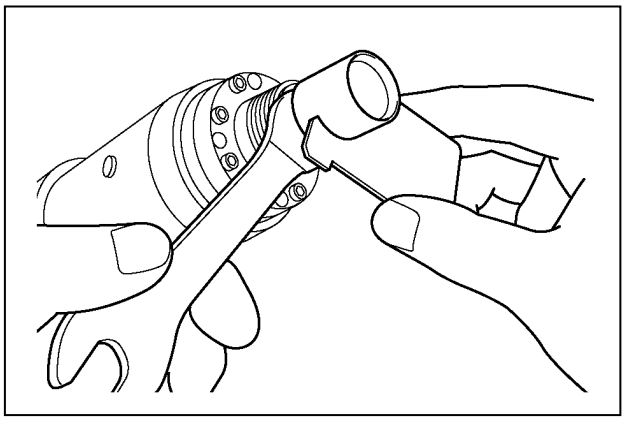
Before attaching the bell cup, make sure that its mounting screw and mating part are free from paint. If it is attached with smear on it, the bell cup may rotate in an unbalanced manner, resulting in air bearing burnout.

⚠ CAUTION

Before attaching the bell cup, make sure that its paint hole is not clogged. If clogged, a coating failure may occur. In addition, paint may spill from the bell cup and the bearing could burn out due to entry of solvent into the spindle.

2) Removing the bell cup

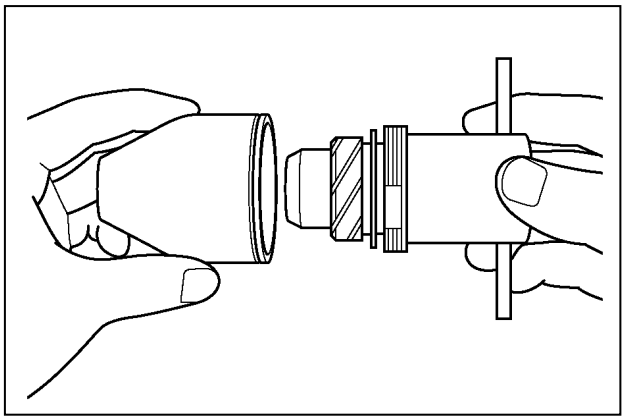
Put the open-end wrenches over the widths across flats of the spindle and the bell cup and loosen the bell cup without rotating the shaft.



(2) Attaching/removing the shaping cap

1) Attaching the shaping cap

Insert the jet into the air cap and tighten it with the special tool.

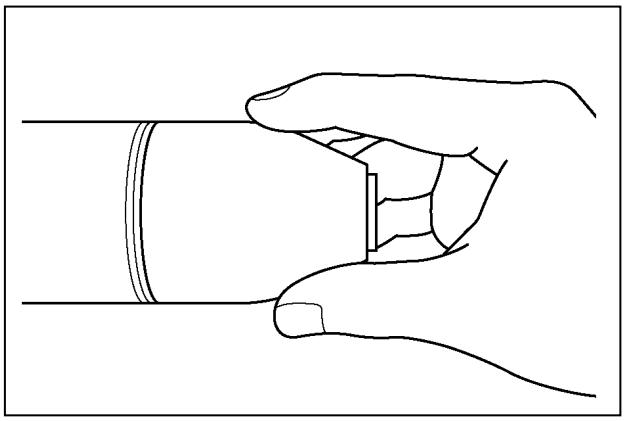


⚠ CAUTION

Do not change the combination of the air cap and jet. There are air caps and jets for small- and medium-diameter patterns. If it is tightened with this combination changed, the slit portion of the air jet may become damaged, resulting in a coating failure due to pattern deformation.

2) Attaching the shaping cap to the gun

Put the O-ring over the air cap and then attach it to the gun. Do not tighten it excessively. After tightening, return it by approx. 1 cm.



⚠ CAUTION

Do not tighten the air cap too much against the gun. This may cause damage to the pattern. There are air caps and jets for small- and medium-diameter patterns. If it is tightened with this combination changed, the slit portion of the air jet may become damaged, resulting in a coating failure due to pattern deformation.

[2] Preparing paint

This system is compatible with general synthetic resin coating materials. However, some other coating materials such as two-component paints, air drying paints, UV paints, or extender rich paints which cure quickly may not be applicable. For detailed information, please consult with our staff.

⚠ WARNING

Breathing problems or solvent poisoning may occur.

- **Some ingredients of paint/solvent may be harmful if inhaled or in contact with skin. Observe the instructions contained in the paint/solvent manufacturer's material safety data.**
- **To prevent accumulation of hazardous materials, perform operations in a well-ventilated area.**

[3] Operation method

Regarding the paint supply unit such as the paint pressure feed pump, please be sure to read their instruction manuals.

(1) Checks before the start of operations

Before starting operations, make sure that the paint hose, air hose, and fiber cable are firmly attached and that the paint supply unit, such as the paint pressure feed pump, is correctly connected to ground.

⚠ WARNING

A fire or explosion may occur.

Make sure that the gun and the object to be coated are correctly connected to ground. Liquids, such as paint, may produce static electricity when they flow through pipes. If correct grounding is not provided, a fire or explosion may occur due to a static discharge or spark.

(2) Supplying bearing air

Make sure that the turbine air switch on the air control panel is OFF and then start supplying the air. Confirm that the bearing air pressure gauge reading is 0.4 to 0.7 MPa. Gently rotate the cup by hand to make sure that it rotates smoothly with the shaft not in contact with the parts surrounding it.

⚠ CAUTION

If the cup does not rotate smoothly or it stops rotating due to interference, repair the spindle immediately without rotating the turbine. If it is rotated in this condition, the bearing may burn out.

(3) Supplying paint

Remove the bell cup and air cap. Decrease the shaping air regulator on the air control panel to 0 MPa to prevent shaping air from being discharged. Make sure that the high-voltage generator power switch is OFF. Direct the gun downward and supply the paint from the paint pressure feeder at a low pressure of 0.1 to 0.2 MPa. Open the paint opening/closing valve and allow the paint to be discharged from the feed tube on a trial basis to remove the air from the paint line. Make sure that the paint line is free from leakage and that no paint leaks from the tip of the feed tube when the paint opening/closing valve is closed.

⚠ CAUTION

If any paint leaks from the tip of the feed tube, do not use it. If paint enters the spindle, the bearing may burn out.

⚠ CAUTION

When discharging paint, direct the gun downward below horizontal. If you fail to do so, the discharged paint may enter the spindle, resulting in bearing burnout. Make sure that the paint discharge rate is 300 mL/min or lower. Even when cleaning with solvent, it should be 500 mL/min or lower. If not, paint may enter the spindle, resulting in bearing burnout.

(4) Checking the spray

Attach the bell cup and air cap. Increase the shaping air regulator on the air control panel to approx. 0.4 MPa. Return the shaping air regulator on the air control panel to its original position to prevent rapid application of high pressure air to the turbine. Then, set the turbine air switch to ON. Adjust the regulator so that the turbine air pressure gauge reading is 0.1 MPa. Make sure that the cup is rotating and then spray the paint with the gun directed in a downward direction.

⚠ CAUTION

Use of an unbalanced bell cup may result in a spindle failure; care must be taken. If a bell cup with paint on it is used, or if the bell and shaft mounting part is contaminated with paint, a spindle failure may occur due to imbalance.

⚠ CAUTION

When rotating the spindle, make sure that the bearing air is supplied. If it is rotated without the supply of the bearing air, this may cause major damage to the bearing. It is recommended that the bearing air is constantly supplied. If the spindle is operated with the bearing air pressure below 0.4 MPa, the bearing may become damaged.

⚠ CAUTION

When discharging paint from the bell, make sure that the turbine is rotating and discharge the shaping air. If the rotation speed is low, paint may not be discharged through the holes in the front of the bell due to centrifugal force and it could flow from the rear of the bell back to the clearance between the motor shaft and feed tube, resulting in a failure; great care must be taken. When measuring the discharge rate, be sure to remove the bell cup beforehand.

(5) Coating work

Start coating work.

1) The relationships between adjustment turbine rotation speed and pressure when a 10 m air hose is used are described in the table below. The rotation speed becomes lower when paint is discharged. It also varies according to the viscosity of the paint used. The values given below should be used only as a guide. Using the rotation controller (optionally available), it is possible to hold the preset rotation speed constant by minimizing variations in the rotation due to the influence of paint discharge loads.

Turbine air pressure	0.1 MPa	0.16 MPa	0.23 MPa	0.32 MPa	0.46 MPa
Rotation speed when not discharged	20000 r.p.m.	30000	40000	50000	60000
When discharged at 200 mL/min	13000 r.p.m.	21000	29000	37000	45000
When discharged at 300 mL/min	11000 r.p.m.	18000	25000	32000	39000

In the case of normal coating work, quality finish and good adhesion performance can be achieved with a turbine air pressure of 0.2 to 0.3 MPa. A finer paint particle size is obtained at a higher rotation speed; however, more of the paint is scattered, resulting in a dirtier gun and lower adhesion performance. It should be adjusted in accordance with the discharge rate and the viscosity of the paint used.

2) Adjusting the shaping air

Adjust it using the shaping air regulator on the air control panel. In the case of normal coating work, quality finish can be achieved with a shaping air pressure of 0.3 to 0.4 MPa. It should be adjusted with the trigger of the gun being pulled. As the shaping air is decreased, the patter becomes larger; however, more of the paint is scattered, resulting in a dirtier gun and a coarser paint particle size.
To prevent scattered paint particles from returning towards the rear of the gun, the flow of air inside the booth should be adjusted so that the air does not flow from the rear of the gun towards the object to be coated.

[4] Cleaning due to color change

(1) When cleaning using thinner valve

1) Adjust the turbine air on the air control panel to set the rotation speed to approx. 25,000 rpm.

⚠ CAUTION

During cleaning, be sure to rotate the spindle at approx. 25,000 rpm to prevent thinner spillage from the bell cup. If you fail to do so, paint or solvent may enter the spindle, resulting in bearing burnout.

2) Adjust the shaping air pressure to approx. 0.2 MPa.
3) Open the thinner supply valve to supply thinner to the bell cup.
4) Turn off the thinner supply, stop the spindle from rotating, and clean the waste paint from the side of the cup and the air cap using a cloth impregnated with solvent or a brush.
5) Supply new color paint.

(2) When cleaning from the paint supply unit

1) Perform steps 1) and 2) above for cleaning using the thinner valve.
2) Operate the paint supply unit at low pressure to discharge the paint from the paint line through the bell cup.

⚠ CAUTION

If air is entrapped in the paint line during the cleaning, paint may spill from the bell cup due to a temporary increase in the discharge rate. Operate the paint supply unit gradually and slowly during the cleaning. If you fail to do so, paint or solvent may enter the spindle, resulting in bearing burnout.

3) Supply thinner to the bell cup from the paint supply unit.
4) Turn off the thinner supply, stop the spindle from rotating, and clean the waste paint from the side of the cup and the air cap using a cloth impregnated with solvent or a brush.
5) After the spindle is rotated, discharge the thinner and supply new color paint.

[5] End of operations

(1) In the case of temporary stoppage or when resuming coating work within 2 to 3 hours

1) Decrease the paint supply unit pressure to 0 MPa.
2) Set the turbine air on the air control panel to OFF to stop the rotation, and clean the waste paint from the side of the cup and the air cap using a cloth impregnated with solvent or a brush.
3) Discharge the shaping air and rotate the spindle for 1 to 2 seconds to remove the residual solvent from the air cap and cup.

⚠ CAUTION

When cleaning the front of the cup and the air cap, direct the gun downward below horizontal. If you fail to do so, paint or solvent may enter the spindle, resulting in bearing burnout.

⚠ CAUTION

NEVER use any air spray gun to clean the gun. This may result in an air motor stop accident due to entry of paint/dust, etc. If it is cleaned under pressure, solvent may enter the spindle, resulting in bearing burnout.

⚠ CAUTION

When stopping the gun, remove the paint pressure and then direct the gun downward below horizontal. If you fail to do so, paint or solvent may enter the spindle, resulting in bearing burnout, when the paint valve seat does not operate properly due to dust.

(2) When resuming coating work in more than 24 hours

⚠ CAUTION

If either a chemically reactive cure paint (such as a two-component paint) or a deposition-prone paint is used, follow the procedure described below to clean whenever coating work is interrupted.

1) Set the turbine air on the air control panel to OFF to stop the rotation.
2) Decrease the shaping air regulator on the air control panel to 0 MPa.
3) Remove the bell cup and air cap from the gun. Clean the waste paint from the cup and air cap using a cloth impregnated with solvent or a brush.
4) Remove the paint supply unit's suction pipe from the paint container. Operate the paint supply unit at low pressure to discharge from the return side of the paint supply unit.
5) Make the pump take in solvent through the suction pipe and discharge it from the return side of the paint supply unit. Repeat this step until the inside of the pump is completely clean.
6) Open the paint opening/closing valve to discharge the paint and solvent from the paint hose to clean it completely.
7) Stop the operation of the paint supply unit and close the paint opening/closing valve.
8) Attach the bell cup and air cap.
9) Turn off the air supply to the air control panel and fix the gun in place with its tip directed diagonally downward to stop the coating work.
10) To resume the coating work, return the shaping air regulator on the air control panel to its original setting.

⚠ CAUTION

When turning off the bearing air supply for the purpose of stopping coating work, etc., make sure that the turbine air is turned OFF and that the bell cup has stopped rotating. If the bearing air supply is turned off with the bell cup rotating, the air bearing motor may become damaged.

[1] Gun

(1) Always keep the gun clean. Never submerge the gun in solvent. Clean the gun carefully with a brush or a cloth impregnated with solvent.

⚠ WARNING

Injury may occur.

Before cleaning, be sure to turn off the power to the coating system to prevent its inadvertent activation (i.e., make sure that it is in "safe" condition). When attaching or removing the bell cup, make sure that the spindle has stopped rotating. Also, do not stop the bell cup by hand if it is rotating.

⚠ CAUTION

Never submerge the gun in solvent. Do not apply solvent to the gun NOR spray solvent over the gun. Solvent may enter the spindle, resulting in bearing burnout.

(2) Do not disassemble any part of the gun other than those designated. If the gun becomes faulty, please contact us.

[2] Bell cup and air cap

(1) Always keep the bell cup and air cap clean. Do not submerge them in solvent to clean them. Hold them in hand and clean them carefully with a brush or a cloth impregnated with solvent.

⚠ CAUTION

Do not use any wire brush to clean the bell cup and air cap. This may cause damage to the bell cup and air cap, resulting in a poor pattern distribution/shape.

(2) Do not leave the bell cup and air cap in solvent for a long period of time. They may swell due to the solvent, resulting in a substantial decrease in their service life.

(3) Dry the bell cup and air cap after cleaning.

(4) If the bell cup is subjected to high impact (ex. dropping), be sure to replace it. The air bearing may burn out due to rotation of an unbalanced bell cup (its dent or flaw).

[3] Spindle

(1) Do not disassemble the spindle. It consists of high-precision parts. If it is disassembled, it may fail to operate as intended. Please note that it will not be covered by the warranty if it is disassembled.

(2) The turbine shaft will continue rotating for a while after the turbine air is turned off. Do not touch the cup/shaft in this condition. This may cause injury. When inspecting them, make sure that the bell cup and shaft have come to a COMPLETE STOP.

(3) The spindle uses a precision air bearing. The air filter and micro-mist separator connected to the air bearing and turbine air should be replaced at regular intervals.

[4] Hose, etc., fiber cable

(1) Always keep the hose, etc. and fiber cable clean.

(2) Be careful not to cause damage by applying mechanical impact. (For example, tensile force, placement of object on them, run over by car, etc.)

(3) Do not drag the hose, etc. and fiber cable along the floor.

(4) The hose, etc. and fiber cable are consumable parts. Replace them if necessary.

⚠ CAUTION

For replacement of the fiber cable, please contact our staff.

8 Paint Problems and Solutions

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

[1] Poor atomization

Possible cause	Countermeasure
(1) Shaping air pressure is too low.	(1) Increase the shaping air pressure; or open the pattern valve on the side of the gun.
(2) Paint discharge rate is too high.	(2) Decrease the discharge rate; or increase the atomization air pressure.
(3) Paint viscosity is too high.	(3) Decrease the paint viscosity.
(4) Turbine rotation speed is low.	(4) Increase the turbine rotation speed.
(5) Cup is damaged.	(5) Replace the cup.
(6) Air cap is damaged.	(6) Replace the air cap.
(7) Solvent is not compatible with the paint.	(7) Consult with the paint manufacturer.

[2] Great paint splashes

Possible cause	Countermeasure
(1) Shaping air pressure is too high.	(1) Decrease the shaping air pressure.
(2) Pattern is too large. (Shaping air pressure is too low.)	(2) Increase the shaping air pressure.
(3) Turbine rotation speed is high.	(3) Decrease the turbine rotation speed.
(4) Long spraying distance.	(4) Decrease the spraying distance.
(5) Cup is damaged.	(5) Replace the cup.
(6) Air cap is damaged.	(6) Replace the air cap.
(7) Booth exhaust air flow rate is low.	(7) Increase the booth exhaust air flow rate.

[3] Poor paint adhesion

Possible cause	Countermeasure
(1) Shaping air pressure is too high.	(1) Decrease the shaping air pressure.
(2) Pattern is too large. (Shaping air pressure is too low.)	(2) Increase the shaping air pressure.
(3) Turbine rotation speed is high.	(3) Decrease the turbine rotation speed.
(4) Long spraying distance.	(4) Decrease the spraying distance.
(5) Booth exhaust air flow rate is too high.	(5) Decrease the exhaust air flow rate.

[4] ”Whiskers” produced due to paint on the side of the cup or the air cap; or “thread-like” defects on the coated object.

Possible cause	Countermeasure
(1) Solvent evaporates too quickly. (2) Paint viscosity is high.	(1) Replace it with a less evaporative one; or adjust it with an additive. (2) Decrease the paint viscosity.

[5] Coarse particles produced on painted surface.

Possible cause	Countermeasure
(1) Poor atomization. (2) Paint viscosity is high. (3) There is much dust in the coating room. It adheres to the painted surface. (4) Paint pigment dispersion failure.	(1) See Section 1, “Poor atomization,” above. (2) Decrease the paint viscosity. (3) Connect the dust filter to ground and remove dust in the coating room. (4) Review the solvent; or strain the paint through a fine filter.

[6] Orange peel (roughness)

Possible cause	Countermeasure
(1) Coating room temperature is high; or solvent evaporates quickly. (2) Painted object temperature is high.	(1) Adjust the room temperature; or replace the solvent with a less evaporative one. (2) Adjust the drying furnace to decrease the painted object temperature.

(7) Eye hole

Possible cause	Countermeasure
(1) Painted object is not clean. (2) Atomizing air is contaminated. (3) Baking furnace exhaust failure.	(1) Completely clean and degrease. (2) Inspect the air line mist separator. (3) Ensure sufficient exhaust.

(8) Paint dripping from painted surface

Possible cause	Countermeasure
(1) Coating film is too thick (paint discharge rate is high). (2) Paint viscosity is too low. (3) Solvent evaporates slowly.	(1) Decrease the paint discharge rate; or move the gun faster. (2) Increase the paint viscosity. (3) Replace the solvent with a more evaporative one.

[9] See-through coating film

Possible cause	Countermeasure
(1) Paint discharge rate is low. (2) Paint viscosity is too low.	(1) Increase the paint discharge rate; or move the gun slower. (2) Increase the paint viscosity.

(10) Pinholes produced.

Possible cause	Countermeasure
(1) Atomizing air is contaminated. (2) Solvent evaporates too quickly. (3) Painted object temperature is high. (4) Insufficiently dried undercoating. (5) Setting time is short.	(1) Clean or replace the air line filter. (2) Replace it with a less evaporative one. (3) Decrease the painted object temperature. (4) Completely dry. (5) Allow for sufficient setting time.

(11) Blushing (whitening)

Possible cause	Countermeasure
(1) Coating room temperature and humidity are high. (2) Selection of inappropriate solvent.	(1) Replace the solvent with a less evaporative one; or inspect the air-conditioning equipment. (2) Consult with the paint/evaporation manufacturer or Asahi Sunac.

(12) Propping (bubbles)

Possible cause	Countermeasure
(1) Atomizing air is contaminated. (2) Insufficient drying after water rubbing. (3) Coating film is too thick. (4) Solvent evaporates too quickly. (5) Baking furnace temperature is too high.	(1) Clean or replace the air line filter. (2) Completely dry. (3) Decrease the paint discharge rate. (4) Replace it with a less evaporative one. (5) Correct the baking furnace temperature setting.

9 Troubleshooting

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

[1] Coating cycle fails to complete successfully (variations in pattern).

Possible cause	Countermeasure
(1) Air is entrapped in the paint. (2) Shaping air cap/jet is incompletely tightened. (3) Paint discharge rate is too low.	(1) Check the paint supply line. (2) Completely tighten the air cap and jet. (3) Increase the paint discharge rate; or change the feed tube's orifice diameter to φ0.7.

[2] Poor pattern shape (cracked pattern)

Possible cause	Countermeasure
(1) Cup edge is damaged. (2) Shaping air cap/jet is incompletely tightened. (3) Shaping air cap/jet is damaged. (4) Cup is off-center; or it is incompletely tightened.	(1) Replace the cup. (2) Completely tighten the air cap and jet. (3) Replace the air cap and jet. (4) Completely tighten the cup; or replace it.

[3] Unstable cup rotation; or no rotation (shaft remains in contact with other parts surrounding it)

Possible cause	Countermeasure
(1) Bearing air is not supplied; or foreign matter such as oil is included in the bearing air.	(1) Check the micro-mist separator for contamination. Also check the bearing air line and air tube for breakage, etc.
(2) Cup is off-center; or it is incompletely tightened.	(2) Completely tighten the cup; or replace it.
(3) Shaping air cap/jet is off-center; or it is incompletely tightened.	(3) Completely tighten the air cap and jet; or replace them.
(4) Feed tube is deformed; it is in contact with the cup.	(4) Replace the feed tube。
(5) Cup and feed tube are in contact with each other due to adhesion of paint.	(5) Clean the paint from the feed tube and cup using a brush.
(6) Cup is rotating in unbalanced condition due to adhesion of paint inside the cup.	(6) Clean the paint from the cup using a brush.
(7) Since paint was discharged from the gun directed upward, it entered the bearing.	(7) Replace the spindle; or ask us to repair it. *1
(8) Since paint was discharged with the cup not rotating, it entered the bearing.	(8) Replace the spindle; or ask us to repair it. *1
(9) Since the paint discharge hole in the cup got clogged, it spilled from the cup and it then entered the bearing.	(9) Clean the paint discharge hole in the cup. Then, replace the spindle; or ask us to repair it. *1
(10) Since the paint/solvent discharge rate was high during coating/cleaning, it spilled from the cup and it then entered the bearing.	(10) Replace the spindle; or ask us to repair it. *1
(11) Either the O-ring between the base and barrel or the spindle mounting surface packing is damaged or its screw is loose.	(11) Replace the O-ring or packing. Tighten up the threaded part.
(12) The exhaust line is clogged due to exhaust muffler contamination.	(12) Replace or remove the exhaust muffler.

[4] Paint leaks from the rear of the barrel or from the exhaust port.

Possible cause	Countermeasure
(1) Needle packing/O-ring failure. (2) Paint/solvent spilled from the cup entered the spindle.	(1) Remove the two barrel clamping bolts and replace the packing set or the O-ring. (2) See Section 3, “Unstable cup rotation; or no rotation,” above.

[5] Rotation speed not displayed

Possible cause	Countermeasure
(1) Optical fiber amplifier adjustment failure. (2) Optical fiber is broken or disconnected. (3) Paint/solvent entered the spindle and/or the rotation detection part.	(1) Hold down the SET button on the optical fiber amplifier for 3 to 4 seconds and readjust. (2) Check the optical fiber line for breakage or disconnection. Or ask us to repair if necessary. *1 (3) Refer to Section 3, “Unstable cup rotation; or no rotation,” above, and replace the spindle and optical fiber cable; or ask us to repair. *1

[6] Electrical shock felt when painted object or other parts touched

Possible cause	Countermeasure
(1) Painted object and other parts are not correctly connected to ground. (2) Operator him/herself is charged with static electricity.	(1) Remove the paint from the conveyor hook and hanger and connect the gun and pump to ground. (2) The operator should use anti-static shoes, etc. to prevent static charge.

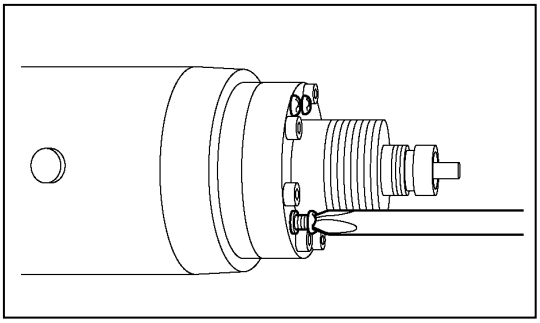
*1 The spindle may be subjected to unrecoverable damage if it is repaired by an unskilled person. If it becomes necessary to repair it, be sure to ask us to do it.
Please note that it will not be covered by the warranty if it is disassembled/repaired by anyone other than Asahi Sunac. If you ask us to repair, please inform us of the manufacturing number marked under the cable connection part of the product, as well as of the details of the defect.

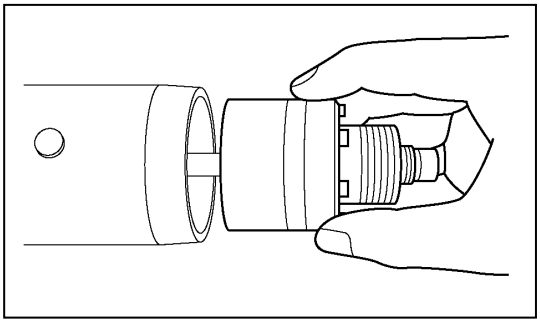
10 Parts Replacement Procedures and Adjustments Procedures

Follow the procedures below to replace/repair the parts. Before performing these operations, be sure to turn off the power to the gun, clean the paint from the paint line, and turn off the compressed air.

[1] Removing the spindle

Detach the cup, and then remove the four Phillips-head screws that secure the spindle using a Phillips screwdriver. Slowly pull the spindle straight to remove it from the barrel.





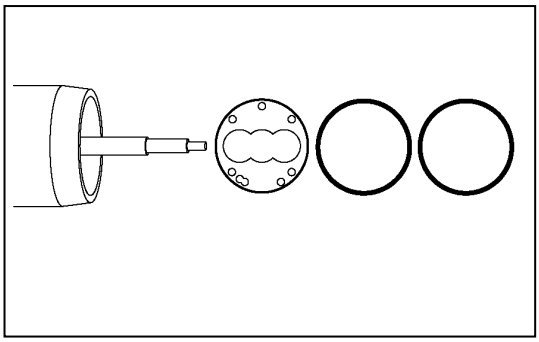
⚠ CAUTION

When removing the spindle, be sure to pull it straight. If you fail to do so, the feed tube may become damaged. If it becomes necessary to disassemble the spindle, please ask our staff to do it. Inappropriate disassembly may cause unrecoverable damage to the spindle.

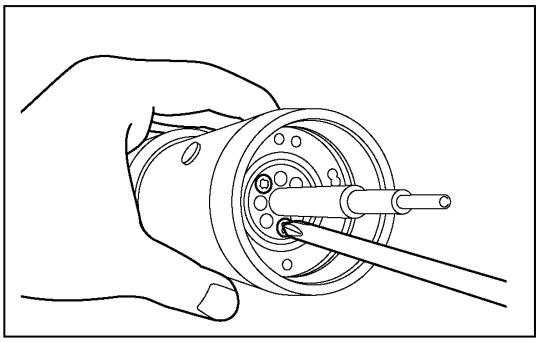
[2] Removing the feed tube

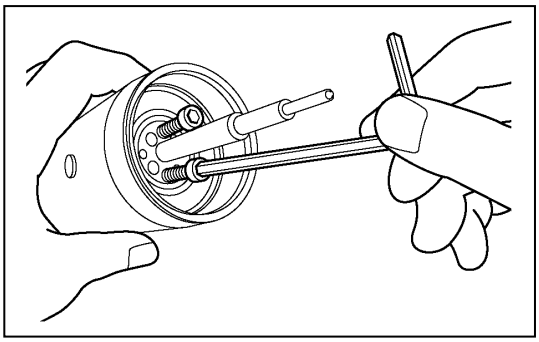
To prevent the optical fiber for rotation detection from being contaminated with paint/solvent, completely remove the solvent from the paint line beforehand.

(1) Remove the spindle first and then the O-ring and packing.



(2) Remove the three flat-head bolts, attach two M5 screws to the side, and gradually tighten them evenly to pull out the feed tube. If M5 screws are unavailable, use the hexagon socket head cap screws (03-50525) that secure the barrel to the base.

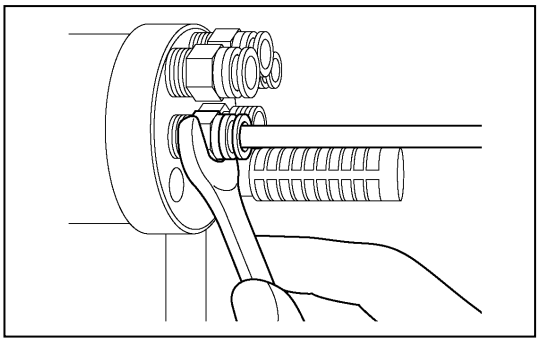




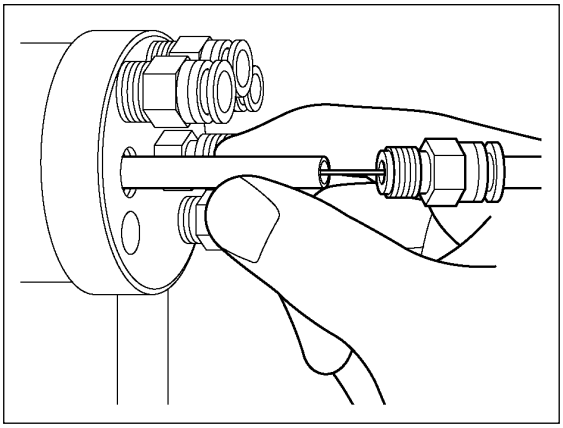
[3] Removing the optical fiber cable

To prevent entry of paint/solvent into the spindle, completely remove the solvent from the paint line beforehand.

(1) Gently separate the green tube slightly from the quick joint. Loosen the quick joint without pulling/rotating the tube.



(2) Gradually pull it out. When the green tube appears, pull it out.



⚠ CAUTION

When removing the tube from the quick joint or disconnecting the optical fiber cable, do not forcibly pull it. This may result in a broken wire.

11 Maintenance Log

Please use record the details that you conduct a maintenance service, such as replacement of a part, tear-down cleaning, post-failure repair, etc.

Equipment name			NC bell <ASG10>		Purchase date:	
Date of service			Portion worked on	Description	Result	Who serviced
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac
						In-house / Dealer / Asahi Sunac

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

12 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 to 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 lightening.
  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.

- 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.

【MEMO】

9th Edition: July 10, 2025

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.

9th Edition, July 10, 2025

ASAHI SUNAC CORPORATION

HEAD OFFICE
5050, SHINDENBORA, ASAHIMAE-CHO,
OWARIASAHI, AICHI PREF. 488-0852, JAPAN
PHONE +81-561-52-0717 FAX +81-561-54-8847

URL : www.sunac.co.jp
E-mail : ctrd01@sunac.co.jp

Sales office

English Chinese