ASAHI SUNAC

Operation and Maintenance Manual

Motor-Driven Airless Spray Painting Machine

SUNQ600

AQ600

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 the Asahi Sunac Corporation, directly, and ask us to send you a new one.

23th Edition: May 18, 2022

Introduction

Thank you for buying our product, Motor-Driven Airless Spray Coating Equipment, Model SUN-Q 600/400.

Before you use the equipment, carefully read this manual and get to know how to use it safely, efficiently and effectively. Especially, fully understand the operating conditions described in the specifications, as well as warnings, cautions, notes and “do’s and don’ts” in the manual. Following these instructions, get the most out of the equipment for many years to come.

The coating 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 an authorized training course. Should you have any questions about the manual, please get in touch with us at the addresses, phone and fax numbers as shown on the back of this manual. In order for us to give you an answer that’s relevant to your particular needs, don’t forget to give us the “model” and “serial number” of your equipment at that time.

Contents

23th Edition: May 18, 2022

1 For Your Safety

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 may need some other types of safety precautions: in fact, you may come across with other types of hazards not shown in the manual down the road. And, of course, there are regulatory and voluntary safety requirements set forth by the governments and businesses.

So, 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 lead to serious consequences if not properly followed. To ensure safety and prevent equipment failure, always observe the safety precautions and follow the hazard avoidance measures.

⚠ WARNING

For correct use of the product

Never use acids, corrosive materials and halogenated hydrocarbon-based solvents for the product covered by this manual.

If you have any doubt about the intended use or materials of the product, please consult us.
This equipment does not employ an explosion-proof structure.

⚠ WARNING

Danger of the pressurized fluid

《General safety notes》

●The coating equipment uses a high pressure that may cause serious injury.
The pump is designed to apply extremely high pressure to the paint. Therefore, the paint is supplied under high pressure. If the paint sprayed or leaked under high pressure or a broken piece of a part directly shots your body at point-blank range, it would injure your skin and a large amount of toxic substances may intrude into your body.
If you fail to immediately receive adequate treatment, the toxic substances destroy your nerve system, possibly resulting in a serious situation, e.g. lifetime functional disorders or amputation of the injured part of your body. Even a splash of the paint may lead to serious injuries if it enters your eyes or sticks to your skin.

《Necessity of treatment》

If you are shot by the paint spray under high pressure, do not undergo home treatment but immediately see a medical specialist such as orthopedist. It is necessary to notify him or her of the correct type of the paint used.

●Never direct the tip of the spray gun toward your body or another person or get closer to the way in which the paint is to be shot.
●Never hold the nozzle of the spray gun with your finger, palm or another part of your body.
●Do not use the coating equipment until you fully understand the procedures for operating it.
●Pay special attention when you are using this airless spray coating equipment.

Danger of the misuse

《Safety Devices for Spray Gun》

●The spray gun is equipped with safety devices. Use them properly.
●Before using the spray gun, check that all of the safety devices correctly function.
●Do not make alterations to the gun. Also, do not remove it from the equipment. Otherwise, malfunction or injuries may occur.

☐Trigger lock

●When the spray gun is not used, be sure to lock the trigger to prevent it from being pulled accidentally. If it is not locked, the spray gun may be accidentally triggered.

☐Tip guard

●Before performing operations with the airless spray coating equipment, be sure to install the tip guard to the gun. Although it has some effect of reducing the risk of paint blowout by calling your attention to it, it is not designed to protect your hand or any other part of the body not to approach the nozzle accidentally.

☐Trigger guard

●Do not perform spray coating operations without using the trigger guard, which prevents the trigger from being pulled accidentally when something drops on it or when it is hit with something.

⚠ WARNING

《For the safety of the nozzle》

- Do not hold the nozzle with your finger, palm or any object in your hand.
- Take special care when cleaning or replacing the nozzle.
  If the nozzle is clogged during a spraying operation, immediately lock the trigger, reduce the paint pressure according to the "**pressure releasing procedure**" and remove to clean the nozzle.
  It is dangerous to wipe the deposited paint off the nozzle and its surrounding parts with the paint pressure incompletely released or the trigger unlocked.

Release the pressure with the following procedure.

《Pressure releasing procedure》

To reduce the possibility of injury from the paint spray or splashes into your eyes or skin, always release the paint pressure with the following procedure before inspecting the pump or gun, mounting, removing, cleaning or replacing the nozzle or stopping the spraying operation.

① **Lock the trigger.**
② **Turn the pressure control knob counterclockwise to reduce the pressure, and then, turn off the power.**
③ **Release the ball cock to reduce the entire system pressure to zero. Unlock the trigger and pull the trigger.**
④ **Lock the trigger again.**

- If the nozzle or hose is completely clogged or it seems that the pressure cannot be sufficiently reduced with the aforementioned procedure, slowly loosen the chip guard mounting nut or hose terminal connector to reduce the pressure until it is completely loosened. Then, check the nozzle or hose.

⚠ WARNING

<<General safety notes>>

- ●An excessive pressure, modifications to the parts, the misuse of the paint or solvent or the use of a worn or broken part may lead to damage to the pump, injury from the paint spray or splashes into your eyes or skin and/or serious disasters such as fire and explosion.
- ●Never replace or modify any part of the pump, or malfunction may occur.
- ●Periodically inspect the whole equipment and repair it or replace defective parts as necessary.
- ●When performing a spraying operation, always wear the safety goggles, working clothes and mask recommended by the paint and solvent manufacturers. Special protective devices may be required depending on the paint type or ventilation. Please consult the paint and solvent manufacturers.

<<Machine internal pressure>>

- ●Be sure to check the maximum operating paint pressure and the maximum air pressure for the pump. Never apply the pressure beyond those levels.
  Check that all components of the equipment and its accessories such as hose, connectors and swivel withstand the maximum operating pressure specified above.
  If the withstanding pressure of a component or accessory of the equipment is lower than the maximum operating pressure of the pump, take care **not to exceed the maximum operating pressure specified for that component or accessory.**
- ●Be sure to use the hose that is longer than 20 m. Use of a hose that is shorter than 20 m may lead to overpressure.
- ●Before using the equipment, **fasten all connections**.

<<Compatibility of the paint and solvent>>

Check that the paint and solvent to be used are compatible with the “materials of the part of the pump that is in contact with the fluid.” Before using a paint or solvent with the pump, fully check its specifications provided by the material manufacturer.

<<For safety of the hose>>

- ●The pressurized paint in the hose has a higher possibility of danger. If the hose is leaking, cracked, damaged, worn or incorrectly used, the pressurized paint may spout out and cause personal injury or damage to the equipment
- ●Handle the hose with care. Do not move the pump by pulling the hose or use an inappropriate paint or solvent for the material of the outside and inside surfaces of the hose.
- ●If the hose is bent or pressurized by something at a point, the pressure is centered at that point, possibly resulting in paint leakage.
- ●Do not expose the hose to a temperature higher than 80°C or lower than -40°C.
- ●Fasten the hose connector and joint before use.

⚠ WARNING

- ●Never use a damaged hose. Check the hose over its entire length for cuts, paint leakage, wear, blisters, flaws and loose fittings. If any of those problems is found, immediately withdraw the hose from service and replace with a new one.
- ●Never hold the leaking point with your hand nor temporarily close it with an item, such as a tape as doing so may rather increase the possibility of danger.
- ● If paint leaks from a hose, replace the hose with a new one or consult us or a repair shop designated by us.
- ● Be sure to use a standard hose that meets the product specifications. The hose must be longer than 20 m. Use of a hose that is shorter than 20 m may lead to overpressure.
- ● Although the paint hose is designed to ensure excellent pressure tightness, it may deteriorate in performance in a relatively short period if it is pulled or pressed for a prolonged time. It is recommended to replace the hose after one-year under normal use, or half-year use if it is used very frequently.

<<Danger of moving parts>>

- ●When inspecting or servicing the pump and other components, reduce the paint pressure according to **the pressure releasing procedure (on page 3)** so that the pump will not accidentally be actuated.
- ●Do not leave the pump while it is running. When stopping or finishing a coating operation, turn off the power.
- ●Do not allow children and those who do not fully understand the airless coating equipment to get into the working area, especially in the vicinity of the pump.

⚠ WARNING

Possibility of the fire or explosion

<<Sources of ignition>>

Static electricity is generated when the paint runs through the pump or hose.
If parts of the coating equipment are not appropriately grounded, electrostatic sparks may be generated to ignite the volatile component of a solvent, sprayed paint mist, suspending debris or other combustible substance, possibly resulting in fire or explosion that could lead to serious personal injury or damage to the equipment.

- ●Fully ventilate the area where a spraying operation is performed.
- ●Do not perform a coating operation in the vicinity of an open flame, pilot lamp or other source of ignition.
- ●Do not place the pump in a paint booth or other airtight places.
- ●Keep the pump at least 5m away from the coating work area, or a fire or explosion may occur depending on the type of paint. For more details, consult the paint manufacturer.
- ●Never wipe the pump with thinner during operations.
- ●When using the pole gun, be careful not to allow it to approach the electric wiring system.
- ●Check that the coating equipment and the products to be coated are properly grounded. If not, electrostatic sparks may be generated to cause a fire or explosion.
- ●If you feel an electrostatic shock, even slightly, when handling the coating equipment, immediately stop the coating operation and check the grounded condition of each part. Do not restart the coating operation until the cause is located and necessary countermeasure is completed.
- ●An extinguisher with a sufficient capacity must be provided at the area where a spraying operation is performed.

<<Grounding (earthing)>>

To prevent hazards caused by static electricity, be sure to completely ground the pump, products to be coated and all other coating devices (including active ones and all surrounding objects). If there is no proper grounding object, ground them in accordance with the methods specified in the technical standards for electric equipment (class D grounding or equivalent).
The installation method of the coating equipment is as follows.

☐**Grounding of the pump**

- ●Connect one end of the grounding cable to the tapped hole marked “E” on the front pump body with a screw, and connect the clip of the other end to a class D grounded object.

☐**Grounding of the hose**

- ●Be sure to ground the hose for grounding the overall coating system.
  When using an extension hose, check that it has been securely grounded.
- ●Check the electric resistance value of the hose once a week. The paint hose to be used shall have an electric resistance not greater than 100Ω, which is equivalent to that provided by class D grounding. If the maximum electric resistance value is not indicated on the hose, consult the distributor which sold the hose or the hose manufacturer. Connect an ohmmeter to a proper part of the hose and measure the resistance. If the resistance value exceeds the permissible maximum limit, immediately replace the hose with a new one. Any improperly grounded hose may cause damage to the overall system.

☐Grounding of the spray gun

If the spray gun is securely connected with the correctly grounded hose and pump, it is properly grounded.

☐Grounding of the product to be coated

Dirt on the hangers or the earth clip may cause imperfect grounding.
Keep the hangers and the earth clip clean in order to maintain the grounded condition.

⚠ WARNING

☐Grounding of the paint can

Any metallic or electrically conductive container for the paint shall be placed on a grounded floor or table.

☐Grounding of cans of solvent used for cleaning

Any metallic or electrically conductive container for the solvent shall be placed on a grounded floor or table. Never put the container on a non-conductive sheet of material, such as paper or corrugated cardboard. When cleaning the pump or reducing the pressure, securely hold the metallic portion of the spray gun at the edge of the grounded container before pulling the trigger.

<<For safe cleaning>>

Before cleaning, check that the whole coating equipment and cleaning solvent can have been correctly grounded. (See the section “Grounding cans of solvent used for cleaning.”)

- When cleaning the system, remove the nozzle according to “Pressure Releasing Procedure” (on page 3) and reduce the pressure as far as possible (to the lowest pressure required to run the cleaning fluid).
- To prevent generation of electrostatic sparks, bring the tip of the spray gun into contact with a grounded cleaning solvent can (metallic) before pulling the trigger to clean.

<<Solvents>>

A halogenated hydrocarbon-based solvent may explode if it is brought into contact with an aluminum or plated part in a pressure vessel (e.g. pump, heater, filter, valve or gun), possibly resulting in fatal injury to a human body.

Never use halogenated hydrocarbon-based solvents.

●Examples of halogenated hydrocarbon-based solvents

Chlorinated	Trichloroethylene, tetrachloroethylene, and ethylene chloride
Brominated	n-propyl bromide
Fluorinated	HCFC-225, HFC-43-10mee, HFE-449s1 (HFE-7100)

(The above list of halogenated hydrocarbons is not all inclusive. For detail, consult the distributor from which the paint was purchased or the paint manufacturer.)

⚠ WARNING

The paint mist or sprayed atmosphere may cause dyspnea or organic solvent poisoning.

●Do not use the product in a room, tunnel, tank or other poorly ventilated place.
Take enough care of not only yourself but also the surrounding people and domestic animals.

NOTE

The cemented carbide nozzle is a precision machined product. Pricking the nozzle with a hard metallic needle or the like damages the nozzle hole and makes the nozzle unusable. To remove clogging matter, clean the nozzle from the tip to the inside with a soft toothpick or the like and then blow off the clogging matter.

2 Preparation for Operation

①General Precautions before Operation

(1) This coating system requires a power source providing single-phase 100 V, 50/60 cycle, and 20 A or more.

⚠ CAUTION

Use a fuse with the capacity of 20 A or more. Check that the power supply can provide a single-phase 100 V and that the fuse capacity is 20 A or more.

(2) The power supply voltage shall range from 90 V to 110 V.

⚠ CAUTION

If the power supply voltage is out of the 90V-to-110V range, equipment failure may occur.

(3) Keep the power socket 4m or 5m away from the coating area and the place where the coating equipment is installed. The cabtire cable length is 5 m. If a longer cable is required, contact us.

(4) Securely put the plug of the cabtire cable in the outlet. When it is properly put in, the neon lamp of the power switch will turn on. If it does not turn on, check the electric power box and the power source switch because the electric current may not be carried from the outlet.

⚠ WARNING

If the power plug is disconnected during operation, sparks from the plug may touch off the vaporized solvent, sprayed paint particles, air dust, or other flammable materials to cause a fire or explosion. Also, such disconnection during operation may damage the power plug. So, be sure to securely put the plug in the outlet.

⚠ CAUTION

Before putting the plug of the cabtire cable in the outlet, be sure to carefully check that the motor input voltage indicated on the coating equipment's rating plate is the same as the voltage applied to the power supply box.

(5) Securely ground the grounding (earth) cable.

Connect one end of the grounding cable to the tapped hole marked “E” on the front pump body with a screw, and connect the clip of the other end to a grounded object.

⚠ WARNING

Improper grounding of the grounding cable may cause an electric shock, fire, or explosion.

(6) When disconnecting the power plug, be sure to hold the plug.

⚠ CAUTION

If you pull the cabtire cable, breaking of wire or other hazardous accident may occur. So, be careful when unplugging it.

(7) Never remove the cabtire cable coming from the motor. If the cabtire cable is damaged, disconnected or deteriorated with the paint or thinner, be sure to consult us or our agent for repair.

(8) Check the level gauge located on the side of the pump body periodically. If no oil adheres to the level gauge, remove the level gauge and replenish the oil for SUN-Q use. If the oil level is too low, it will become impossible to perform the spraying operation. So, before every operation, be sure to check the level gauge.

⚠ CAUTION

Do not use other oil than the one designated for SUN-Q(Part No.8011-023). If any other oil is replenished, the equipment may not provide sufficient performance.

(9) When any sign of malfunction or failure is found, refer to “Internal Check and Parts Replacement” (page 17) and “Troubleshooting” (page 22) and take proper corrective action.
If your problem is not solved even after the action, do not try to repair it anymore, and immediately consult us or the distributor that sold it for proper repair.

②Unpacking and Connection (For the names of parts, refer to pages 26 through 28)

The airless pump has been carefully checked at our plant before delivery and is ready for operation just by attaching the hose and the spray gun to it. However, to prevent any trouble due to missing or damaged parts, which may occur during transportation, carefully check the contents upon unpacking. If you notice any damaged or missing part, contact us or the distributor that sold the product.

(1) The contents of the box are: pump body, accumulator hose (AQ600), high-pressure paint hose, spray gun, nozzle tip, suction hose, suction filter, drain hose, grounding (earth) cable, and some accessory tools. After unpacking the box, check for loosened bolts, nuts, and other joint portions. If any, securely tighten them, especially those for the suction hose.

⚠ CAUTION

If the suction hose is loose, the paint cannot be sucked properly.

(2) Connect the accumulator hose to the hose joint located on the upper side of the pump. Then, connect the paint hose to the end of the accumulator hose by using the intermediate joint (an accessory). The maximum length of the paint hose to be connected ranges from 60 to 80 m, depending on the paint's viscosity, discharge pressure and discharge rate.

⚠ WARNING

Be sure to check that the paint hose is securely connected. If it is loose, blowout of the paint will occur, leading to health problems or some accidents.

(3) Attach the spray gun to the end of the paint hose. At this time, do not attach the nozzle to the gun.

⚠ WARNING

When attaching the spray gun, lock its trigger. If it is not locked, the spray gun may be accidentally triggered, causing injury.

(4) Connect one end of the grounding cable to the tapped hole marked "E" on the front pump body with a screw, and connect the clip of the other end to a grounded object.

⚠ WARNING

Improper grounding of the grounding cable may cause an electric shock, fire, or explosion.

3 Operation

① Operating Procedures

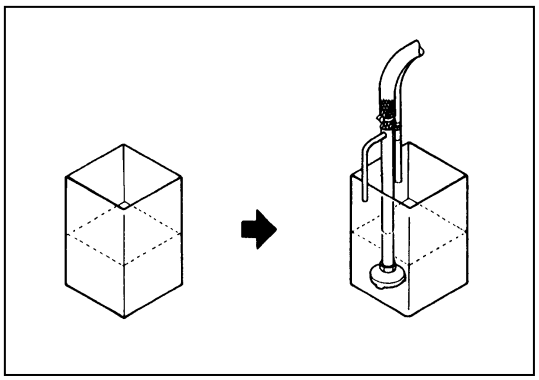
▲ Before suction of paint

Before using the equipment, clean it with the solvent. At this time, check the entire paint path for any leak. If any leak is found, retighten the relevant screw or joint for that portion. For retightening, use the two screw wrenches, with one of them for tightening the screw or joint, while the other for tightening the washer or ring, respectively. If there is any foreign matter, remove it.

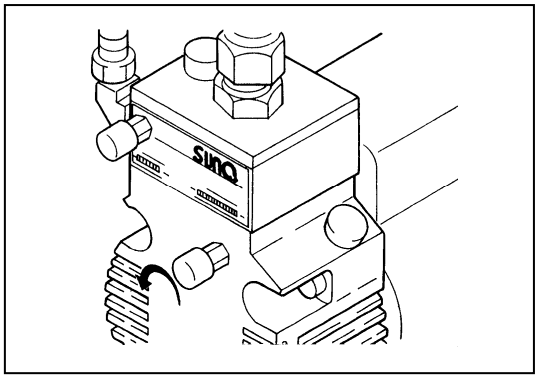
NOTE

Dust or any other foreign matters in the equipment may cause a clogged nozzle or defective pattern, resulting in poor coating. So, carefully clean the inside of the equipment.

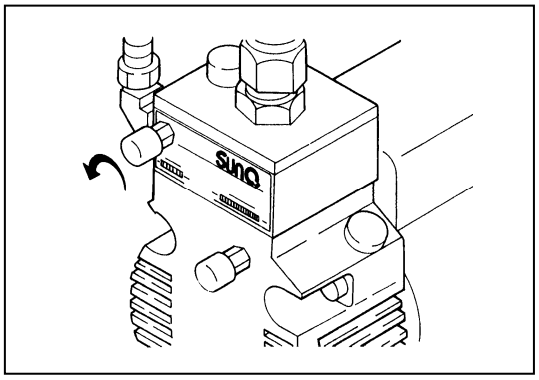
For cleaning the equipment, follow the procedure mentioned below.



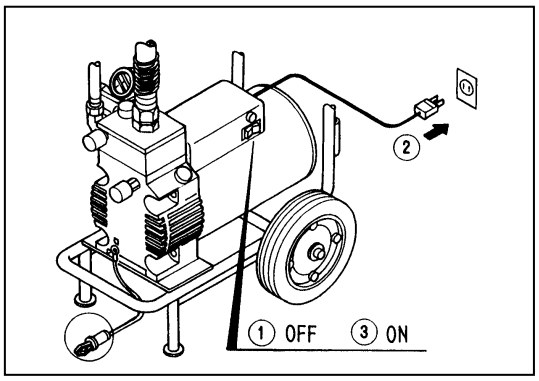
(1) Prepare two liters of the solvent (cleaning thinner) and pour it into a container (empty can). Then, put the suction pipe in the container and check that the filter of the suction pipe is submerged in the solvent.



(2) Turn the pressure control valve counterclockwise to fully open it.



(3) Turn the air-bleeding valve counterclockwise to fully open it.



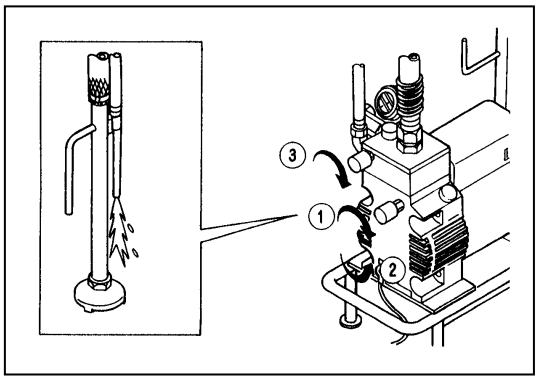
(4) Set the power switch located on the side of the box above the motor to “OFF.” Put the power plug in the wall outlet. The power supply shall range from 90V to 110V. Set the power switch to “ON.” Then, the motor is energized, and the pump is activated.

⚠ WARNING

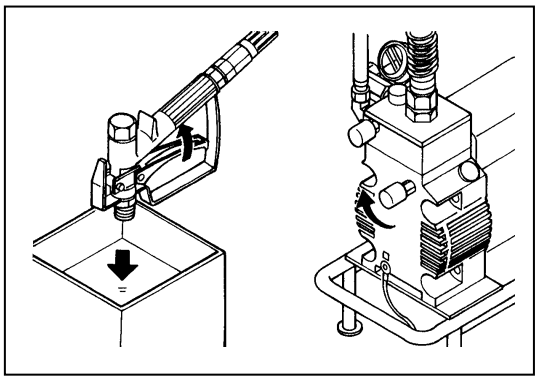
Improper grounding of the grounding cable may cause an electric shock, fire, or explosion. Check that the grounding cable is properly grounded.

⚠ CAUTION

Before handling the power source, be sure to disconnect the power plug from the outlet.



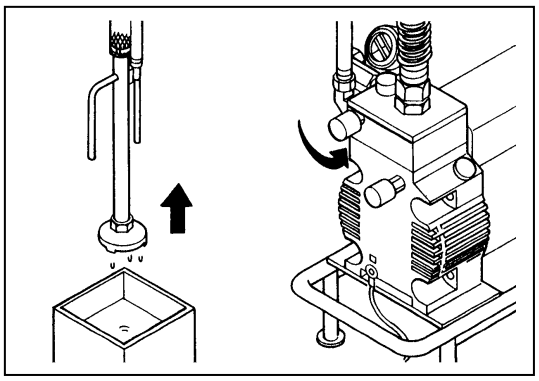
(5) After a short time, the solvent is discharged from the drain hose located next to the suction pipe.
①When you turn the pressure control valve clockwise little by little, the solvent’s flow rate will increase, and the inside of the pump is cleaned up.
②Then, turn the pressure control valve counterclockwise.
③Set the air-bleeding valve to “CLOSE.”



(6) Put the tip of the spray gun in the solvent and pull the trigger, while turning the pressure control valve clockwise a little.
(This is for cleaning the inside of the hose, so slight turning of the pressure control valve is sufficient.)
By doing so, the inside of the equipment, hose and the gun can be cleaned up.

⚠ WARNING

Never aim the tip of spray gun at a person or flammable material.



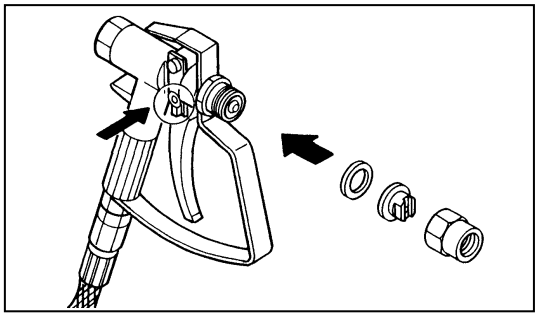
(7) After cleaning, remove the suction pipe from the container and set the air-bleeding valve to “OPEN.” Then, idle the pump to discharge the solvent from the pump.

Thus, the preparation for coating operation has been completed.

▲ Now, let’s start the coating operation.

(8) Prepare a paint can containing the paint to be used.

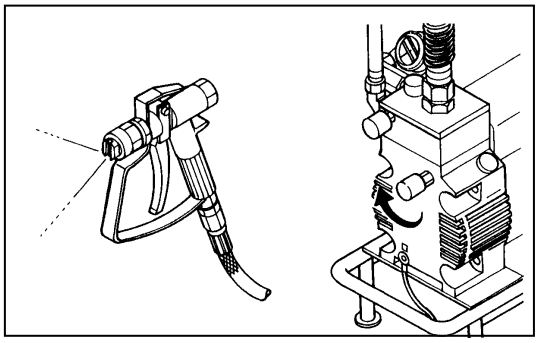
(9) Repeat the above-mentioned steps (1) through (5) using the paint.



(10) Attach the nozzle to the spray gun.

⚠ WARNING

When attaching the spray gun, lock its trigger. If it is not locked, the spray gun may be accidentally triggered, causing injury.



(11) Turn the pressure control valve clockwise to increase the pressure and stop it in a position that allows spray coating to be performed properly. At first, carefully check that the paint is actually being sprayed (by performing trial spraying) because the thinner used for cleaning still remains inside.

NOTE

If the pressure is increased more than necessary, the nozzle’s service life will be shortened, with the electric consumption increased. So, perform the coating operation at the minimum pressure.

(12) When you take a break during the spraying operation, reduce the pressure in accordance with the “Pressure Releasing Procedure” described on page 3.

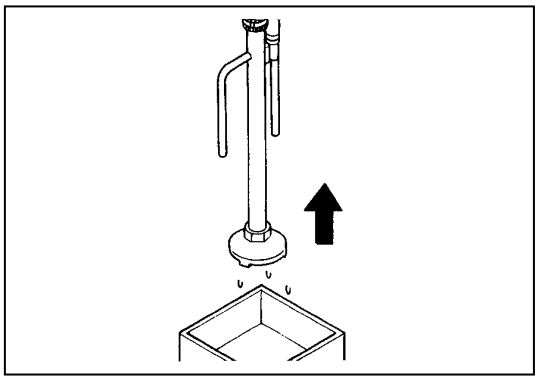
(13) When the hydraulic oil (the designated oil for SUN-Q : Part No.8011-023) temperature becomes too low in winter, the set pressure may fluctuate. In that case, warm-up operation is needed (for 15 minutes or so).

②What to Do after Operation

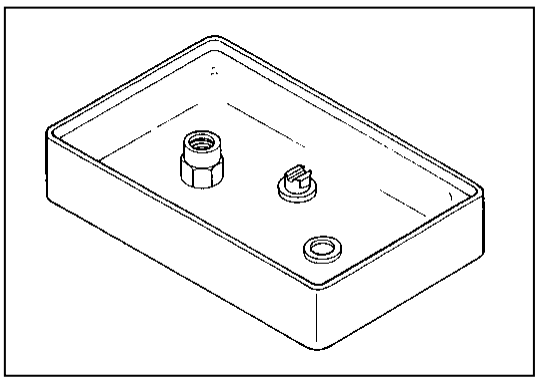
After the coating operation, completely remove the paint from the overall coating path by cleaning it according to the following procedure.

NOTE

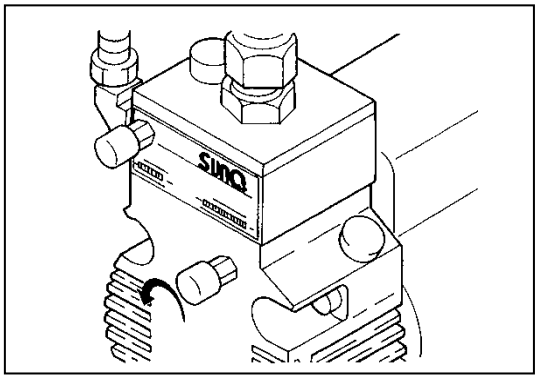
Insufficient cleaning may cause incomplete suction of the paint at the next time of coating, leading to the need for disassembly of the equipment for cleaning. Also, after the cleaning, make the system suck light oil or lamp oil to allow for smooth operation at the next time of coating. It is recommended to perform such a cleaning operation each time the coating operation is finished, especially after the use of water-based paint.



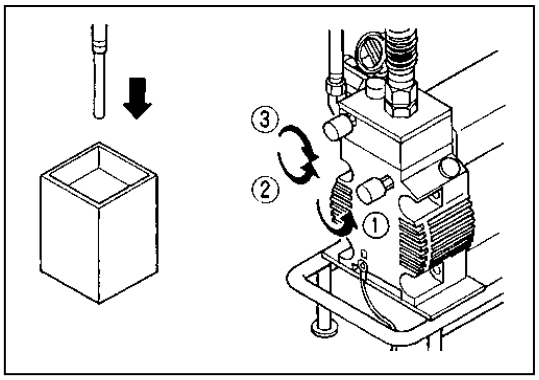
(1) Remove the suction pipe from the paint.



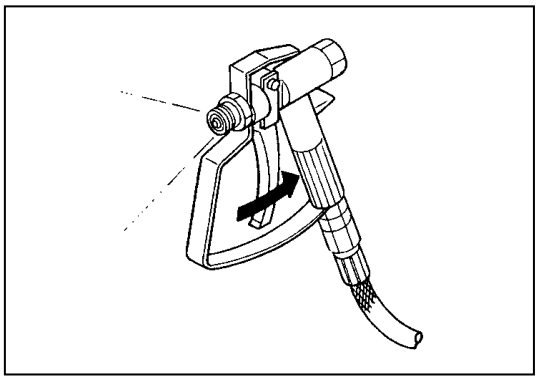
(2) Remove the nozzle from the spray gun and clean it with the solvent.
(Immersion of the nozzle in the solvent is one of the cleaning methods.)



(3) Turn the pressure control valve counterclockwise.



(4) Put the drain pipe in the paint can.
①Turn the pressure control valve in the arrow-indicated direction.
②Then, turn the air-bleeding valve counterclockwise to open it.
The paint is discharged from the drain pipe, reducing the pressures in the suction, drain, and paint hoses.
③Turn the air-bleeding valve clockwise to close it.



(5) Pull the trigger of the spray gun to discharge all the remaining paint from the high-pressure paint hose.

(6) Prepare the solvent in a paint can, and put the suction pipe in the can. Pull the trigger of the spray gun to clean up the overall paint path. (Repeat it with a little amount of solvent several times. That is more effective than one-shot cleaning with a large amount of solvent.)

(7) During the above-mentioned operation, open the air-bleeding valve a few times to clean up the drain hose.

(8) After the cleaning, repeat the operations (1), (4) and (5) to empty out the entire paint path. And supply a small amount of solvent (to prevent the paint from adhering to the foot valve and check valve).

(9) Wipe the spray gun with a cloth impregnated with a thinner. Especially, clean off the seat housing and nozzle contacting area by using the thinner. If any dried paint is found in the gun, disassemble it for cleaning.

(10) After finishing all the above operations, tighten the pressure control valve a few times.

4 Maintenance of Equipment

For maintenance of the coating equipment, pay attention to the following points.

(1) Before storing the equipment, be sure to check that the power switch of the coating equipment is in the “OFF” position. Then, disconnect the power plug of the cabtire cable from the outlet.

(2) Do not store the equipment in a place which is subject to high humidity or rain water. (The equipment is equipped with a totally-enclosed-fan-cooled motor, but any possibility of entering of water must be avoided.)

(3) Periodically check the operating oil.(the designated oil for SUN-Q : Part No.8011-023)
Oil change shall be conducted at the time of 80-hour use after the first operation. After the first change, the oil shall be changed every 300 hours of operation. To drain the existing oil, remove the drain plug located on the lower portion of the pump, and then remove the level gauge located on the upper portion.

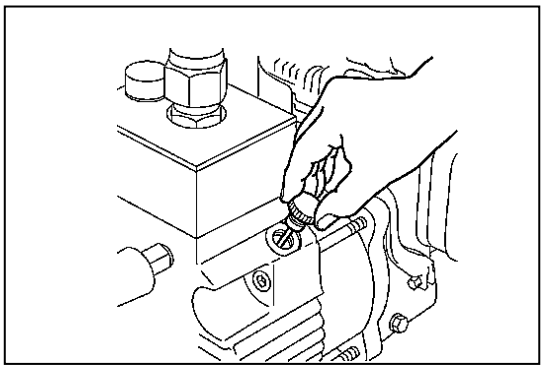
(4) If any paint remains in the oil, the diaphragm may have been damaged.
In that case, perform the disassembly cleaning and replace the diaphragm unit with a new one by following the after-mentioned parts replacement procedure.

(5) If any paint adheres to the inside of the pump, perform the disassembly cleaning by following the after-mentioned parts replacement procedure.

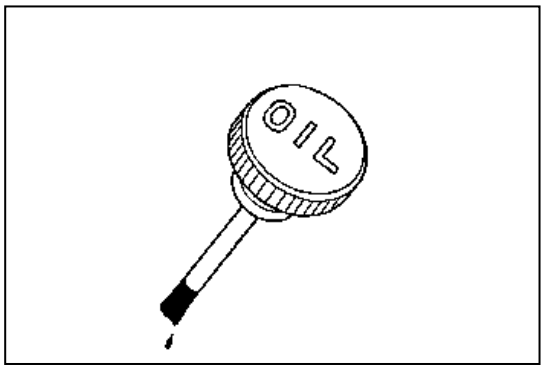
5 Internal Check and Parts Replacement

①Diaphragm Pump Operating Oil Check, Replenishment and Replacement

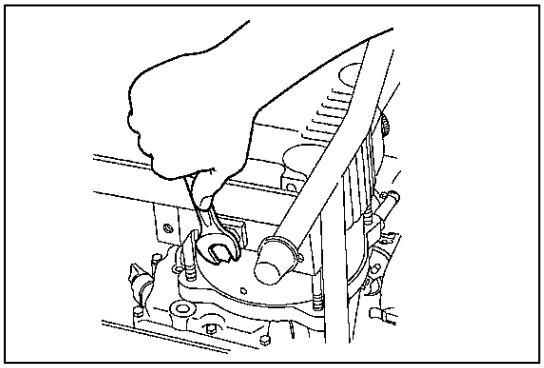
(For the structure and the names of parts, refer to the pages 26 through 30.)



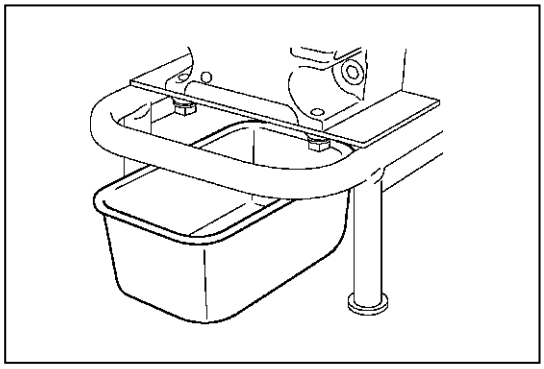
① Check the operating oil (the designated oil for SUN-Q : Part No.8011-023) by using the level gauge. Loosen the level gauge (12) and remove it.



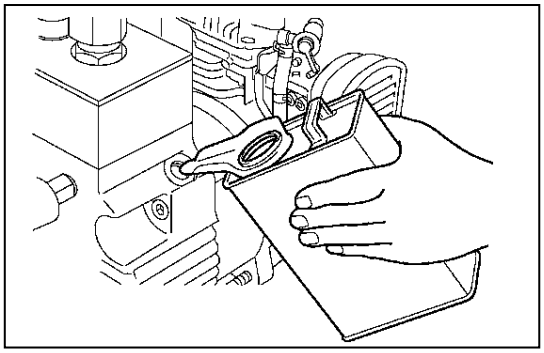
②Insert the level gauge (12) and check that the tip of the gauge is wet with the oil. (Normal condition)



③Loosen the drain plug (6) located on the lower portion of the pump by using the 19-mm wrench. Be careful not to excessively loosen it, or a large amount of oil will flow out at a time.



④Place an empty can with the capacity of about 2 liters under the drain port. Remove the drain plug (6) by hand and drain the existing operating oil.



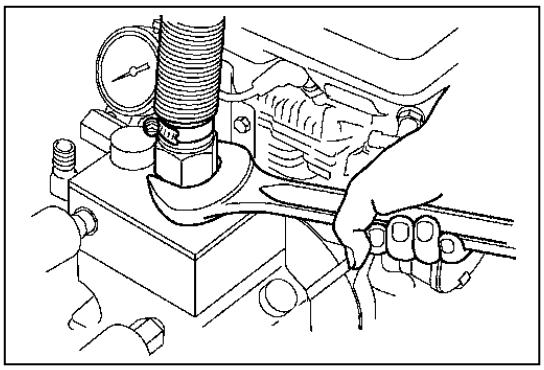
⑤When the operating oil does not drop from the drain port any more, tighten the drain plug (6). Then, supply the new operating oil through the oiling port. (Up to approximately one liter of oil can be supplied.)

NOTE

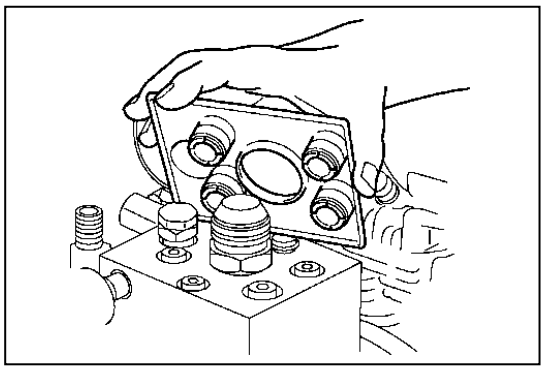
Use the designated oil for SUN-Q as the operating oil.

②Check Valve Replacement

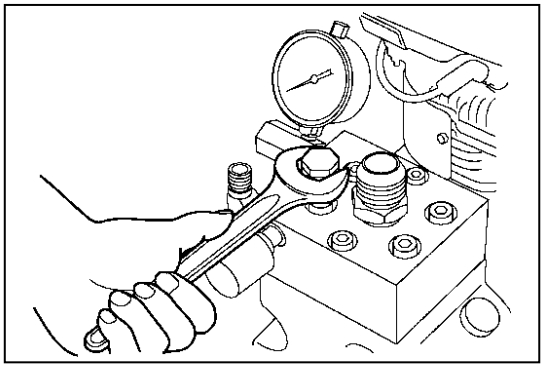
(For the structure and the names of parts, refer to the pages 26 through 30.)



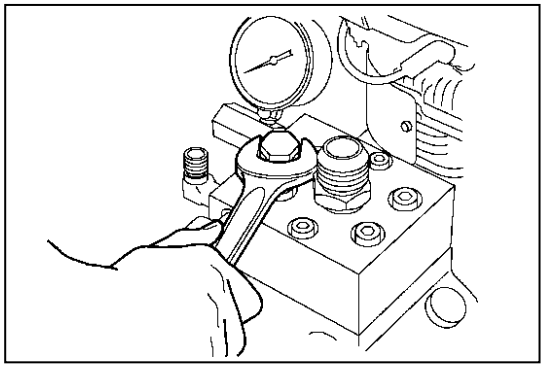
①Remove the suction hose (16) by using the 41-mm wrench.



②Remove the cover (5).



③Remove the check valve (10) with the 27-mm wrench.

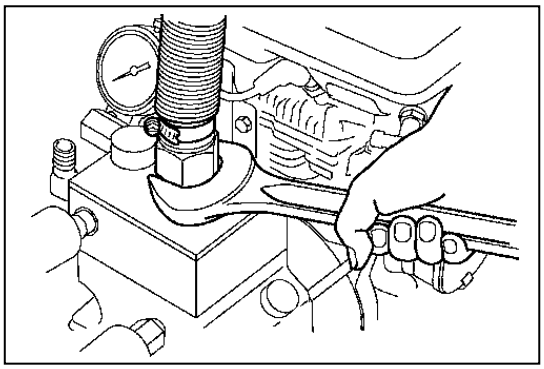


④Apply the tightening torque of **6860N-cm** to the check valve (10).

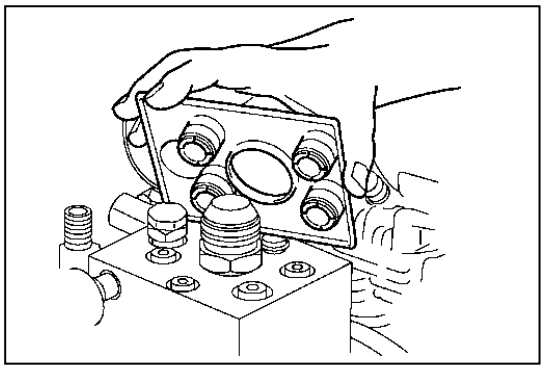
● Reassemble the above parts in the reverse order of disassembling.

③Diaphragm Replacement

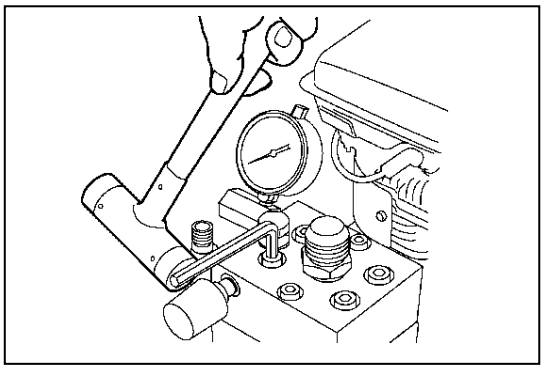
(For the structure and the names of parts, refer to the pages 26 through 30.)



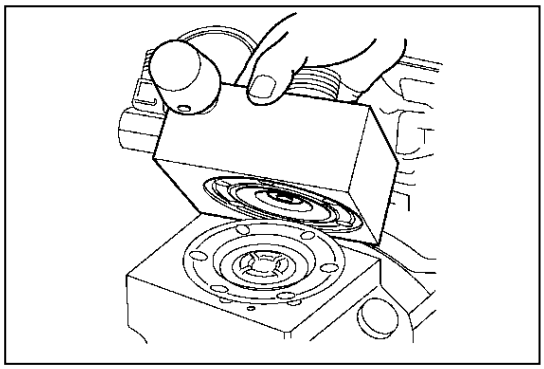
①Remove the suction hose (16) by using the 41-mm wrench.



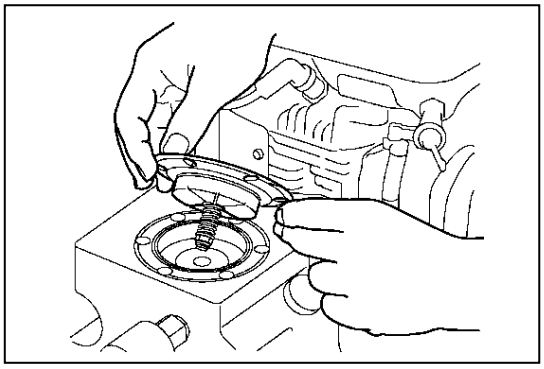
②Remove the cover (5).



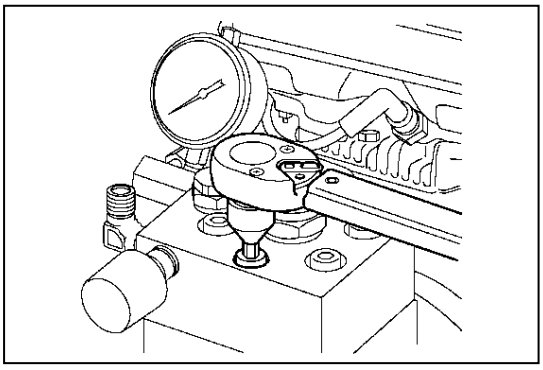
③Remove the hex. socket bolt (3) by using the 8-mm hex. wrench. (These bolts have been very securely tightened, so use a wooden hammer to hit the wrench for loosening them.)



④Remove the six hex. socket bolts (3), and remove the cylinder block (2). Be careful not to damage the cylinder block (2)'s diaphragm contacting face.



⑤Remove the diaphragm (21) by twisting and pulling it by both hands.



⑥Install a new diaphragm unit and assemble the cylinder block in the reverse order (④→③). Then, attach and tighten the bolts.

⚠ CAUTION

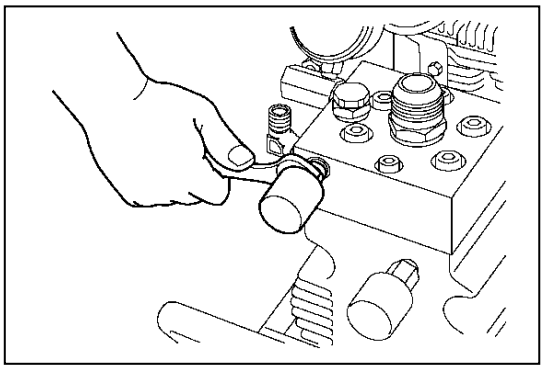
Apply the tightening torque of 6370N-cm. After operations for 10 hours or so, tighten the bolts again.

NOTE

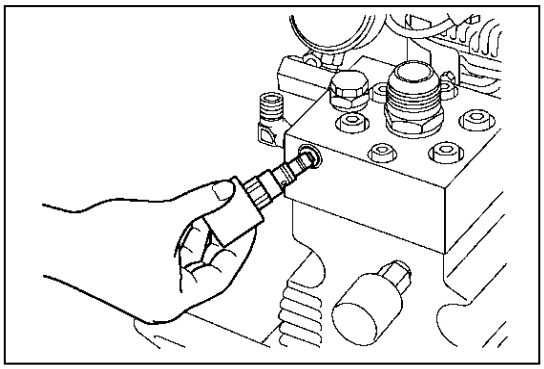
When replacing a damaged diaphragm, also replace the operating oil.

④Pressure Control Valve and Air-Bleeding Valve Replacement

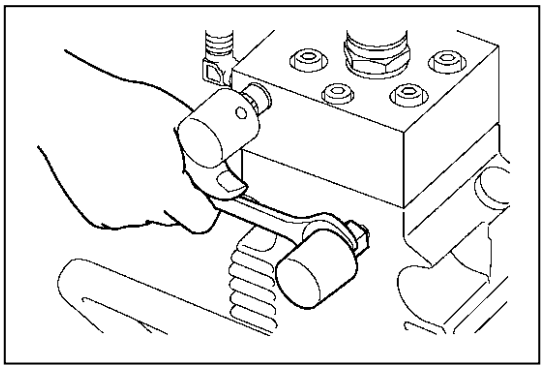
(For the structure and the names of parts, refer to the pages 26 through 30.)



①How to replace the air-bleeding valve



②How to replace the air-bleeding valve



③How to replace the pressure control valve

①②③

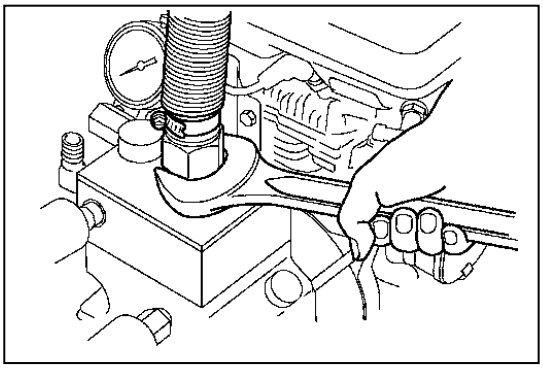
When removing the air-bleeding valve (6) and the pressure control valve (9), use the 19-mm wrench.

(When reattaching them, check whether there is any damage to O-ring. If any damage is found, replace it.)

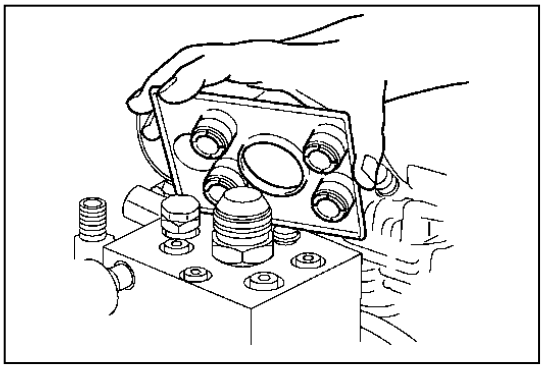
Apply the tightening torque of 3230N-cm to both the air-bleeding valve and the pressure control valve.

⑤Foot Valve Replacement

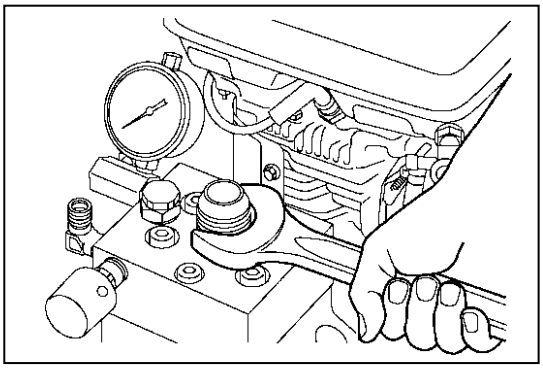
(For the structure and the names of parts, refer to the pages 26 through 30.)



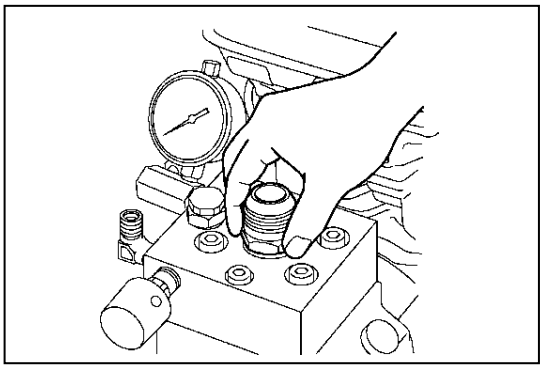
①Remove the suction hose (16) by using the 41-mm wrench.



②Remove the cover (5).



③Remove the foot valve (3) by using the 36-mm wrench, and replace it with a new one.



④When attaching the new one, first tighten it by hand and finally tighten it securely by using the 36-mm wrench. (If any damage is found on the nylon gasket (4), replace it with a new one.) Apply the tightening torque of **5880N-cm** to it.

6 Troubleshooting

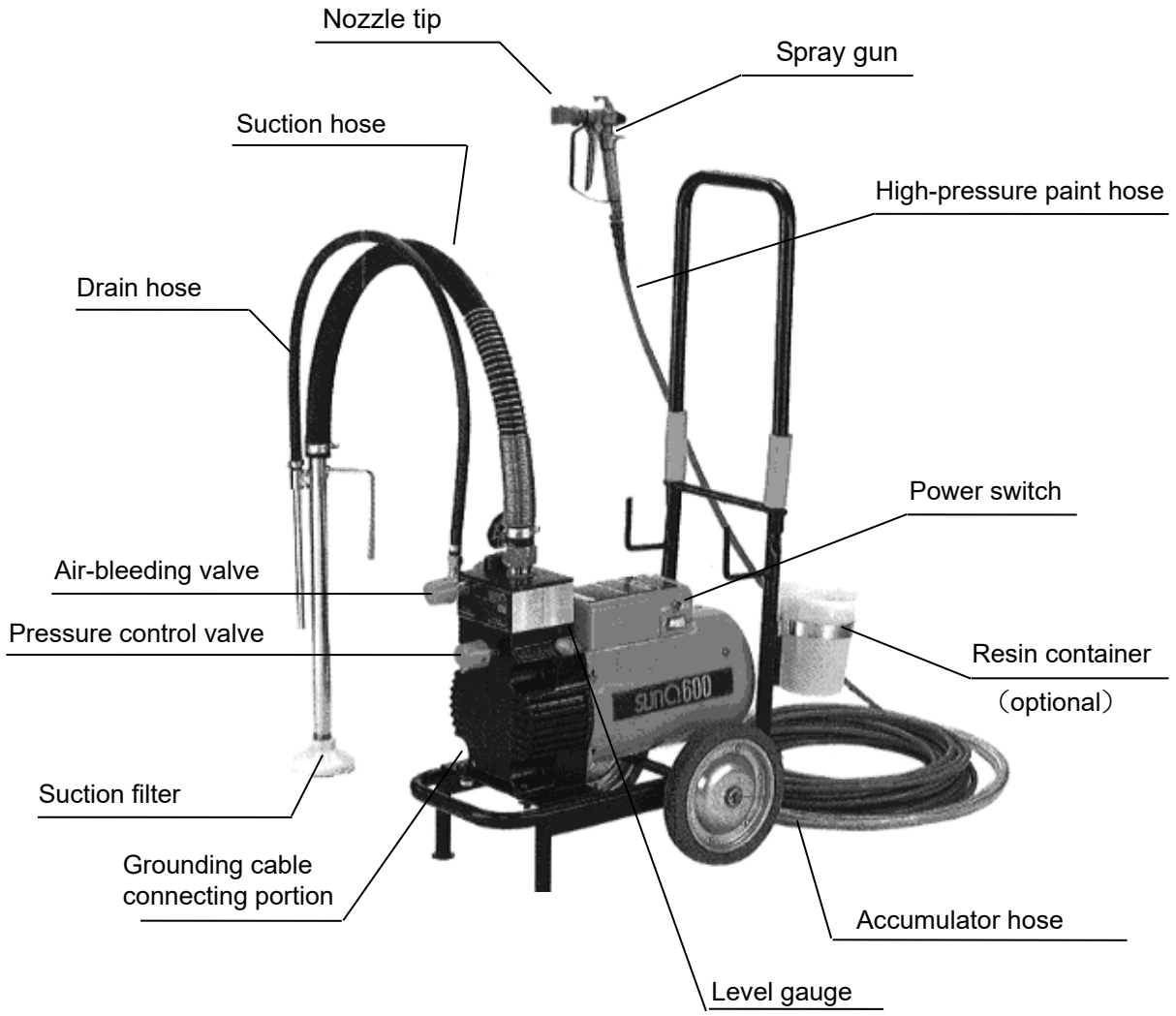
* For the reference numbers of parts, refer to the pages 26 through 30.

Symptom	Cause	Countermeasure
Even after power-on, the motor does not run. (The neon lamp of the power switch does not light up.)	Electricity is not supplied to the outlet.	After making sure that the main power is supplied, turn on the power switch.
	Defective fuse	Check for installation error, breakage, or capacity shortage of the fuse. The fuse capacity must be 20A or higher.
	The power plug is not properly inserted into the outlet.	Securely insert the plug into the outlet.
	Breaking of the cabtire cable	The cabtire cable needs to be replaced with a new one. Consult the distributor or us.
Even after power-on, the motor does not run. (The neon lamp of the power switch is on.)	The thermal relay of the motor protection circuit is working.	Turn off the power switch, and press the black rubber-covered reset button, which is located above the power switch. (Press it straight. When the thermal relay is working, it clicks.)
	Breakage of the power switch	The power switch needs to be replaced. Consult us, the distributor, or a designated service company.
	Failure in the motor (Breakage of the capacitor)	The capacitor needs to be replaced. Consult us, the distributor, or a designated service company.
	Residual pressure in the hose (overload in the motor)	Set the air-bleeding valve to “OPEN,” and reduce the hose pressure to zero.
The paint is not sucked.	Paint adhering to the seat face of the foot valve (3) deteriorates the valve motion.	Remove the suction hose (16), and press the tappet of the foot valve (3) to allow the tappet to move freely.
	Paint adhering to the seat face of the check valve (10) deteriorates the valve motion.	Remove the check valve (10) by using the 27-mm wrench to allow the valve to move freely. At this time, clean the body and valve with the solvent.
	The air-bleeding valve (6) is not set to “CLOSE.”	Turn the air-bleeding valve (6) clockwise and set it to “CLOSE.” (Also check the setscrew.)
	The pressure control valve (9) is not fully opened.	Turn the pressure control valve (9) counterclockwise until it comes into contact with the stopper.
	The drain hose (15) is clogged.	The drain hose (15) needs to be cleaned or replaced.
	The suction filter (17) is clogged.	Clean the filter, while referring to the exploded diagram on page 28.
	The suction hose (16) is broken or clogged.	Replace the suction hose (16) with a new one.
	The paint’s viscosity is too high.	Add the solvent to reduce the paint’s viscosity.

Symptom	Cause	Countermeasure
Paint is sucked, but little paint is circulated even when the air-bleeding valve (6) is "closed." Or, the pressure extremely drops when spraying is performed although it rises when spraying is not performed.	Looseness of each valve	Retighten the pressure control valve (9) and the air-bleeding valve (6).
	There is a foreign matter on the seat face of the pressure control valve (9). Or, some parts are worn or damaged.	Repeat opening and closing of the pressure control valve (9) several times to discharge the foreign matter. If the same problem arises, replace the valve with a new one.
	There is a foreign matter on the seat face of the air-bleeding valve (6). Or, some parts are worn or damaged. (In this case, the paint continues to flow without stopping from the drain hose.)	Repeat opening and closing of the air-bleeding valve (6) several times to discharge the foreign matter. If the same problem arises, remove the valve to check the needle and the seat areas. If any foreign matter is found there, remove it. Also, if any spring or part is damaged or worn, also replace them with new ones.
	Lack of operating oil	Replenish the designated oil for SUN-Q(Part No. up to the specified level.
	The diaphragm (21) does not work properly due to the entry of air in the oil cylinder (23).	Fully open the pressure control valve (9) when the pump is working. After 30 seconds or one minute, tighten the valve.
	Damage to the O-ring (24) of the oil cylinder (23)	Remove the cylinder block (2) and the motor, and replace the O-ring (25) of the cylinder with a new one.
	Wear or damage to the pressure control valve (9)	Replace the pressure control valve (9) with a new one.
	The paint's viscosity is too high.	Add the solvent to reduce the paint's viscosity.
	The discharge rate from the nozzle is too high.	The nozzle may be too large or may be worn. Replace the nozzle with a new one.
	The pump body is cold (lower than 0℃).	Perform the warm-up operation (for about 15 minutes).
Sometimes the pressure sharply drops.	A foreign matter generated by oil contamination sometimes sticks the pressure control valve (9).	The oil needs to be replaced. Discharge all existing oil to replace it with new oil for SUN-Q use.
	The suction hose (16) sucks air.	Retighten the suction hose (16). If the same problem arises, the hose may be damaged. In that case, replace the damaged hose with a new one.
When you stop the pump which is in high pressure, the pressure sharply drops.	Looseness of the check valve (10) or the air-bleeding valve (6), or defective seats for them (If the air-bleeding valve (6) is defective, the paint flows from the drain hose.)	Retighten each valve. If the same problem arises, replace the valve. Check if there is any foreign matter on the valve seat surface.
The motor stops when the spraying operation is being performed.	The thermal relay is working due to the voltage drop.	Turn off the power switch. Press the reset button of the thermal relay located above the power switch.
	The worn nozzle excessively increases the discharge rate, causing motor overload.	Replace the nozzle with a new one of same number.
	Both the pressure control valve (9) and the air-bleeding valve (6) do not work properly.	Replace the pressure control valve (9) and the air-bleeding valve (6) with new ones.
	Overheat of motor	Stop the operation and cool the motor.
Paint or oil leaks.	Looseness of each valve or mounting screw due to vibration	Retighten each valve or screw. Or, replace the O-ring with a new one, and tighten each valve and screw again.
	Oil leakage due to damage to the oil tank, etc.	Check if there is any external damage. If any, replace the component.
	Looseness of the cylinder block (2)	Retighten the mounting bolt (3) for the cylinder block (2).

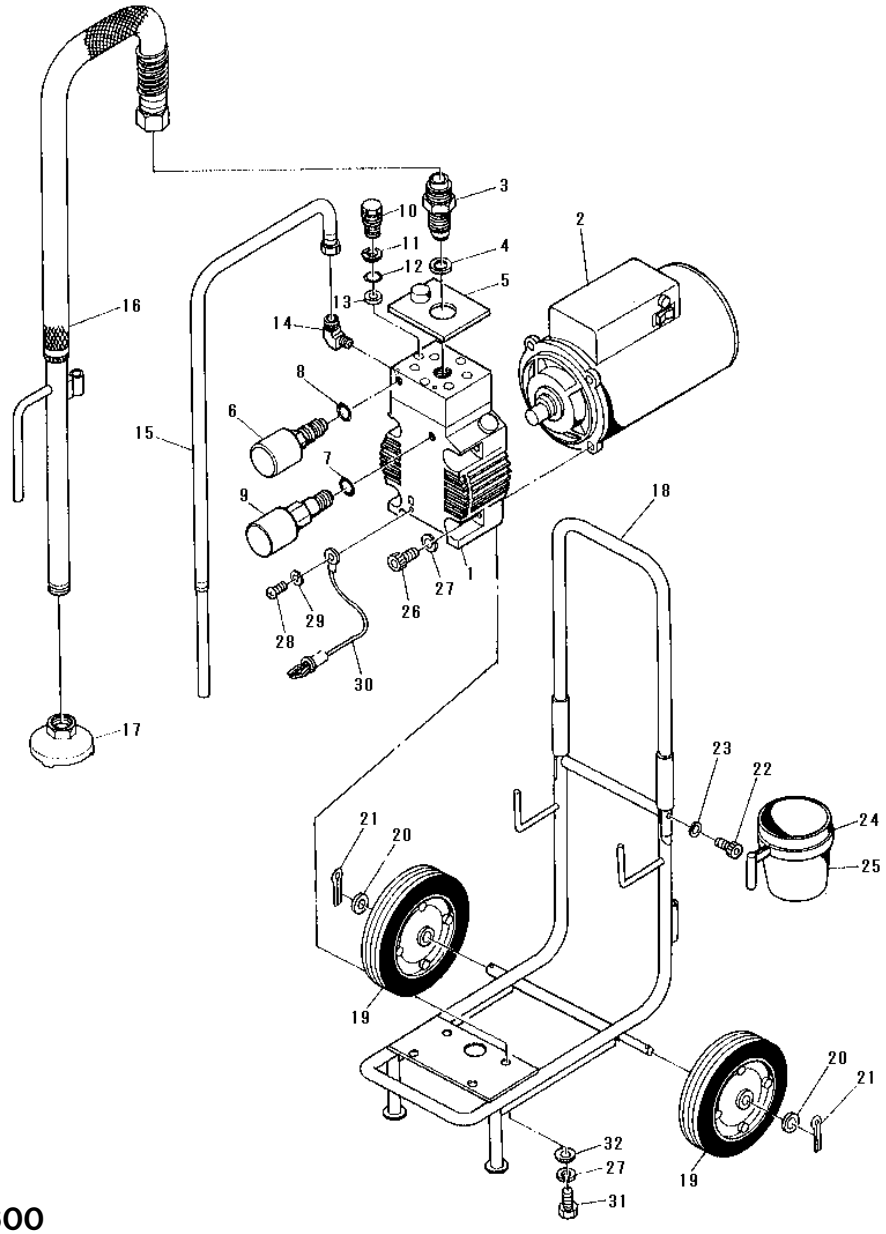
7 Exploded Diagram and Names of Parts

●Outside view



AQ600

48043



SUNQ600 AQ600

No.	Part No.	Part name	Q'ty	Remarks
1	8043	Pump body	1set	
2	8043-021	Motor	1set	
3	8012-2	Foot valve	1set	
※4	4052-007	Gasket	1	
5	8043-006	Cover	1	
※6	8047	Air-bleeding valve	1set	
※7	130-6014	O-ring	1	
※8	130-6012	O-ring	1	
9	8048	Pressure control valve	1set	
※10	8022-2	Check valve	1set	
※11	106-2020	Back-up ring	1	
※12	101-6020	O-ring	1	
※13	8022-106	Gasket	1	
14	8011-216	Hose joint	1	
15	8061	Drain hose	1set	
16	8062	Suction hose	1set	

No.	Part No.	Part name	Q'ty	Remarks
17	0501-2	Suction filter	1set	
18	2024	Cart	1set	
19	309-0040	Caster	2	
20	37-11200	Plain washer	2	
21	49-10330	Split pin	2	
22	03-50608	Hex socket bolt	2	
23	41-50600	Spring washer	2	
24	5706-003	Filter holder	1	Optional
25	316-0006	Resin beaker	1	Optional
26	03-51055	Hex socket bolt	4	
27	41-51000	Spring washer	4	
28	60-40406	Hex socket screw	1	
29	41-30400	Spring washer	1	
30	40338-024	Grounding wire	1	
31	01-11020	Hex bolt	4	
32	37-11000	Plain washer	4	
	8011-023	the designated oil for SUN-Q	1	1L For Mentenance

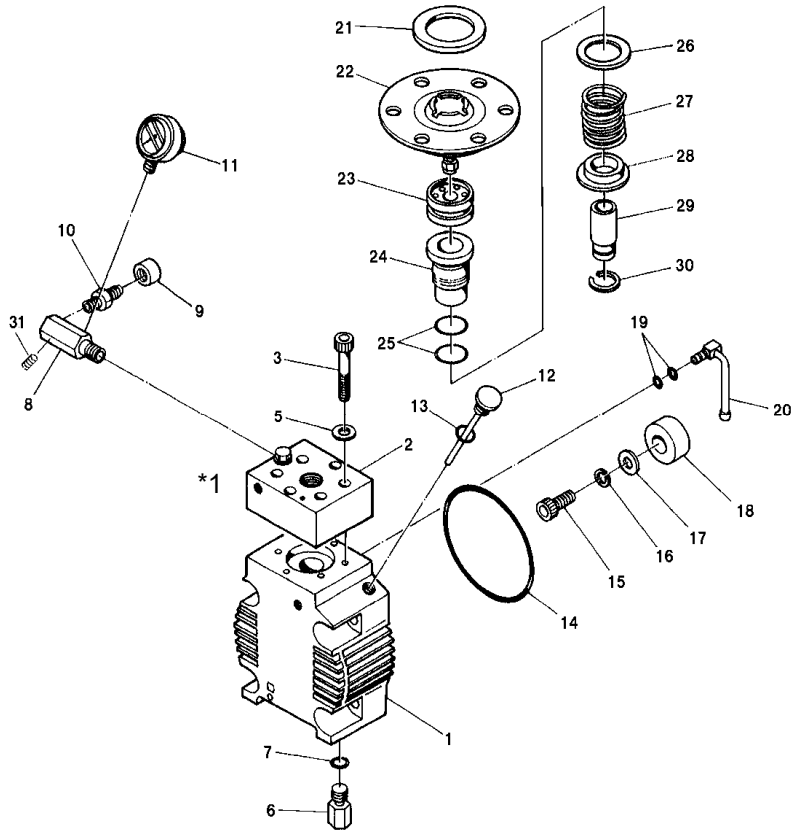
Item marked with ※ are the parts we recommend you to carry in stock.

Note : No.3 Foot valve set attached gasket.

●Diaphragm pump

AQ600

8043



SUNQ600 AQ600

No.	Part No.	Part name	Q'ty	Remarks
1	8043-001	Body	1	
2	8011-202	Cylinder block	1	
3	03-51075	Hex bolt	6	
5	0F-81000	Conical spring washer	6	
6	4051-015	Drain plug	1	
7	101-6011	O-ring	1	
8	8011-044	Pressure gauge adapter	1	
9	363-0011	Cap	1	
10	3211-017	Hose joint	1	
11	305-0024	Pressure gauge	1	
12	8043-011	Level gauge	1	
13	101-6015	O-ring	1	
14	130-6150	O-ring	1	
15	03-50615	Hex socket bolt	1	
16	41-50600	Spring washer	1	

No.	Part No.	Part name	Q'ty	Remarks
17	8043-016	End plate	1	
18	312-0046	Roller follower	1	
19	130-6004	O-ring	2	
20	8043-013	Oil feed pipe	1	
21	4051-016	Insert	1	
※22	4051-012	Diaphragm	1	
23	4051-013	Spacer	1	
24	8043-003	Cylinder	1	
25	131-61026	O-ring	2	
26	8043-039	Washer	1	
27	8011-007	Spring	1	
28	8011-005	Spring stopper	1	
29	8011-004	Piston	1	
30	58-21800	C-type stop ring	1	
31	244-2002	Hex plug	1	

Item marked with ※ are the parts we recommend you to carry in stock.

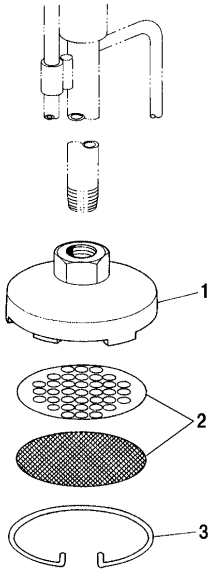
*1 Because the Insert (No.21,4051-016) is the part of Cylinder block (No.2,8011-202),you don't have to order Insert.

Electric parts

No.	Part No.	Part name	Q'ty	Remarks
1	151-0024	Oil seal	1	
2	414-0005	Overload protector	1	
3	404-0016	Cabtire cable	1	

No.	Part No.	Part Name	Q'ty	Remark
4	426-0004	Starting capacitor (300μF 125V)	1	
5	426-0001	Phase advance capacitor (45μF 230V)	1	
6	412-0020	Rocker switch	1	

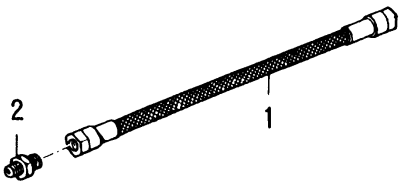
Suction filter
0501－2



Suction filter SF906(0501－2)

No.	Part No.	Part name	Q'ty	Remarks
1	0501-201	Filter body	1	
2	0501-003-06	Screen	1	
3	0501-002	Snap	1	

Accumulator hose
ALN9－2

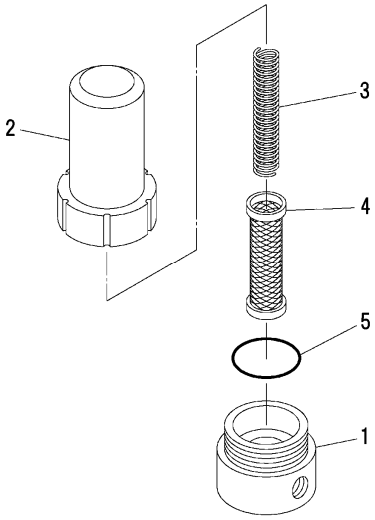


Accumulator hose ANL9－2

No.	Part No.	Part name	Q'ty	Remarks
1	563-1020	Accumulator hose	1	
2	3202-211	Nipple	1	

Material filter
0410

(Note)
This parts doesn't attached.



Material filter MF50E(0410)

No.	Part No.	Part name	Q'ty	Remarks
1	0410-001	Base	1	
2	0410-002	Housing	1	
3	0402-005	Spring	1	
※4	0402-004-06	Screen	1	♯60
5	102-2040	O-ring	1	

Item marked with ※ are the parts we recommend you to carry in stock.

8 Maintenance Log

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			SUNQ600〈AQ600〉		Date of acquisition : YYYY/MM/DD	
Date of service			Portion worked on	Description	Date of service	Portion worked on
						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 and specifications of the equipment specified herein are subject to change without prior notice.

9 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.

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- 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.

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