Instruction Manual

CNC Two-component Coating System

ACW Mixing Unit

ACW4200EX

The instruction manual for ACW4200EX is composed by control unit and mixing unit.
The manuals are divided as below.

ACW control unit
- 1. Operation manual
- 2. Installation manual
- 3. Maintenance manual

ACW mixing unit
- 4. Instruction manual

And this document is **4.Instruction manual**.

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

14th Edition: June 25, 2025

Preface

Thank you very much for choosing our CNC Two-component Mixing System (ACW).

In order to keep this equipment in the best condition for an extended period, please carefully read this manual before use. Above all, the specifications, warnings and prohibitory or cautionary instructions shown herein shall be fully understood and observed during the use of this equipment.

The equipment covered by this manual is designed for industrial coating work.
It shall be used by those who have been duly trained regarding the handling and scope of application and have an understanding of the operating procedure.

If you need further information about this manual, please call any of our branches listed on the back cover by specifying the “model” and “serial No.” of your equipment.

14th Edition: June 25, 2025

Content

14th Edition: June 25, 2025

Content

14th Edition: June 25, 2025

Content

14th Edition: June 25, 2025

1 For Safety and Correct Use

Contents of this instruction manual shall be fully understood and the instructions shown herein strictly observed. Using the system without following instructions in this manual may lead to bodily injury or damage to properties.

The safety measures described herein are the minimum requirements and additional measures may also be required. All requirements provided by laws and legislations as well as rules and guidelines laid by your company or office shall be observed.

The cautionary instructions shown below shall be construed as minimum basic requirements for safety in the use of our product.

● Cautionary instructions are shown in three levels as defined below.

⚠	**WARNING**	Calls the user's attention to a situation that may lead to bodily injury and describes how to avoid that situation.
⚠	**CAUTION**	Calls the user's attention to a situation that may lead to damage or breakdown to the equipment and describes how to avoid that situation.
	NOTE	Gives important or helpful information.

* Please remember that the situation mentioned under CAUTION may also lead to a serious disaster under certain circumferences. All instructions are important for your safety and prevention of system disorder and shall be strictly observed.

⚠ WARNING

SCOPE OF SUITABLE USE FOR THE EQUIPMENT

- For mixed fluid coating, the ACW Mixing Unit is used with the ACW Control Unit.
  Do not use them in another composition or for another purpose than mixed fluid being obtained by mixing base resin and hardener.
- Use the primary power and air supplies complying with the specifications.
  Doing so may lead to equipment disorder, damage, malfunction, electric shock and fire.
- The Intrinsically Safe Explosion-proof components include the flowmeter and Solenoid Valves (Intrinsically Safe Explosion-proof type) within ACW Mixing Unit, also include Remote Control Box (option), and lower limit level sensor (explosion-proof type only) installed on Hermetically-sealed Stainless-steel Tank for controlling hardener. Only these products are allowed for use in an explosive hazardous area.
- Never use any acid or corrosive substance or halogenated hydrocarbon solvent for any paint control unit around the equipment.
  Doing so may lead to equipment explosion, fire, malfunction, or disorder.
- If you have any doubt about the intended use of the product or the paint to be used, please contact us.
- The use of the equipment under conditions other than specified above is considered as abuse unless our company approves such use.

<<GENERAL SAFETY INSTRUCTIONS>>

- Never apply a fluid or air pressure exceeding the allowable maximum to the equipment.
  All components and accessories to be used shall be durable against the maximum operating pressures mentioned above.
- Class D (Regulation in Japan) grounding is required for the equipment (to ensure an electric resistance not exceeding 100 ohms).
- Check the whole equipment every day. If any unusual condition is found, turn off the main power switch and, if the problem can be solved within the specified scope of maintenance work, repair or replace faulty parts as necessary. If the unusual condition cannot be corrected within the specified scope of maintenance work, please contact us, or any of our distributors for repair.
- When checking the equipment, never fail to turn off the main power switch on the ACW Control Unit and reduce all the air and paint pressures to zero.
- To ensure a safe operation of the system, all operators shall read and understand this manual and labels attached to each unit. Adequately trained personnel can only operate the equipment.
- Fire and electric codes and safety related regulations provided by the national or local government should be observed during the work.

⚠ WARNING

FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

<<Sources of ignition>>

When the paint flows through a pump or hose, it generates static electricity, which may spark at any part of the coating equipment if not properly grounded. Sparks may ignite combustible volatile components of solvents, particles of sprayed paint, dust suspended in the air and other combustible substances to cause fire or explosion, resulting in serious injury or damage to the equipment.

- Always check that the coating equipment, the products to be coated and all conductive materials are correctly grounded.
- Do not perform the coating operation in the vicinity of open flame, pilot lamp, drive unit such as electric motor or engine or another source of ignition.
- Never smoke in or around a spray booth or in the atmosphere containing solvent.
- Adequately ventilate the spray coating place so that it will not be filled with a combustible (solvent containing) atmosphere generated by the solvent.
- If you feel shocked even slightly by static electricity when handing the coating equipment, immediately stop the coating operation and check that all components are grounded. Never restart the coating operation until the cause is located and corrective action taken.
- Fire extinguishers with a sufficient capacity must be provided in the place where the spray coating operation is performed.
- When checking the equipment, never fail to turn off the main power switch on the ACW Control Unit and reduce the air and paint pressures supplied to the ACW Control Unit and ACW Mixing Unit to zero.
- Do not take apart, and do not remodel a flow meter electronic equipment part of the ACW mixing device and other electric equipment. The equipment is damaged, and there is danger of the electric shock and a fire due to the breakdown.

⚠ WARNING

<<GROUNDING>>

Class D (Regulation in Japan) grounding is required for the equipment (to ensure an electric resistance not exceeding 100 ohms).

The pump, products to be coated and all other coating equipment components (in use or around the unit in use) shall be grounded to prevent accidents from static electricity. If no adequate grounding means is provided, the grounding work (Class D grounding) shall be performed according to the technical standard for electric equipment.

The coating equipment components shall be grounded as specified below.

(1) Grounding the pump

- Attach a grounding wire to the grounding terminal provided at the pump body or car and connect the other end of the wire to a Class D (Regulation in Japan) grounding means.

(2) Grounding the hoses

- All high-pressure hoses must be grounded to ground the whole coating system. When connecting additional hoses for extension, check that each hose is grounded.
- The paint hoses in use shall be checked every week to measure the electric resistance.
  The electric resistance shall be 100 ohms or less as obtained with Class D (Regulation in Japan) grounding. If the maximum electric resistance is not indicated on the hose, contact the hose distributor or manufacturer.
  Connect an ohmmeter to metal parts such as the joint of the hose to measure the resistance and, if it exceeds the permissible limit, immediately replace the hose with another one.

(3) Grounding the products to be coated

- If hangers and earth clips are contaminated, complete grounding cannot be achieved. Keep hangers and earth clips clean and conductive (grounded).

(4) Grounding the paint containers

- The containers, made of a conductive metal, shall be placed on a grounded floor or table.

(5) Grounding the container of solvent used for flushing

- The container, made of a conductive metal, shall be placed on a grounded floor or table. Do not place it on a non-conductive sheet such as paper or corrugated cardboard.

<<SAFE FLUSHING>>

- Before flushing, check that the mixing unit, whole coating equipment and paint and solvent containers has been correctly grounded.
- Adequately ventilate the workplace so that it will not be filled with a combustible (solvent containing) atmosphere.
- When doing the spray coating work, always wear the protective goggles, protection clothes and gas mask for organic solvents.

⚠ WARNING

TOXIC SUBSTANCES HAZARD

<<SOLVENTS>>

Halogenated hydrocarbon solvents may explode if brought into contact with aluminum or plated part of a pressure vessel (pump, heater, filter, valve, spray gun, etc.). The explosion may consequently lead to fatal bodily injury.

Never use halogenated hydrocarbon solvents.

<<Examples of halogenated hydrocarbon solvents>>

Chlorine group	Trichloroethylene, tetrachloroethylene, chlorinated ethylene
Bromine group	n-propyl bromide
Fluorine group	HCFC-225, HFC-43-10mee, HFE-449s1 (HFE-7100)

(The above list does not include all halogenated hydrocarbons. For detail, contact the paint distributor or manufacturer.)

<<INFLUENCES ON THE HUMAN BODY>>

If a solvent containing atmosphere or fluid comes into contact with your eyes or mouth or a toxic substance is inhaled or swallowed and brought into your body, your nervous tissue may be destroyed to cause serious injury such as lifetime functional disorder. Immediately ask for adequate medical treatment.

NECESSITY OF MEDICAL TREATMENT

Immediately receive medical treatment by a medical specialist such as orthopedist, not by a layman. At this time, you should tell him (her) the exact type of the paint you used.

- You may lapse into dyspnea or be poisoned by organic solvent in the mist of paint or spraying atmosphere. Do not use the equipment in a closed room, tunnel, tank or another poorly ventilated place. The user shall take enough care of persons and livestock around him as well as himself.
- The isocyanate used for two-component fluid may hurt mucous membranes in your noise or throat. You should be acquainted with components of the paint, hardener, solvent and other volatile substances to be used. If you need further information, contact the paint or solvent manufacturer.
- When doing the spray coating work, always wear the protective goggles, protection clothes and gas mask for organic solvents, recommended by the paint or solvent manufacturer. Additional protective devices may be required depending on the paint components or ventilation level. Contact the paint or solvent manufacturer.

⚠ WARNING

INJECTION AND PRESSURES HAZARD

This system uses the paint under a very high pressure. Therefore, the spray gun is filled with the highly pressurized paint. If the sprayed or leaking paint hits a person at a close distance, it huts his skin and a lot of toxic substances penetrate into his body. If he fails to receive adequate medical treatment, his nervous tissue may be destroyed to cause serious injury such as lifetime functional disorder or surgical amputation of damaged part of his body. You may be seriously injured if the paint is only pinged into your eyes or skin.

NECESSITY OF MEDICAL TREATMENT

If you are hit by the sprayed paint, immediately receive medical treatment by a medical specialist such as orthopedist, not by a layman. At this time, you should tell him (her) the exact type of the paint you used.

- Never aim the head of a spray gun to your body or another person or draw any part of your body near the spray.
- Never cover the nozzle of the spray gun with your finger, palm or another part of your body.
- Do not start using the system before fully understanding how to operate it.
- Before using the system, always make sure that hose joints and all connections in the paint circuit are tight. Above all, check that joints of the hoses that move during operation are locked tight.

<<SAFETY DEVICE ON SPRAY GUN>>

- Each spray gun is provided with a safety device. Before using the spray gun, make sure that the safety device correctly functions.
- Do not remove or modify any part of a safety device. Doing so may lead to a malfunction or injury.
- Use the spray gun according to the instruction manual provided with it.

<<FOR SAFETY AGAINST NOZZLE>>

- Do not put your finger, palm or any article in your hand onto the nozzle.
- Take special care when cleaning or replacing the nozzle. If the nozzle is clogged during the spraying operation, immediately fasten the safety lock on the gun trigger, reduce the paint and air pressures to zero and remove the nozzle for cleaning. It is dangerous to start removing the paint sticking around the nozzle before fully releasing the pressures or with the trigger not locked.

⚠ WARNING

<<SAFETY OF HOSES>>

- Handle hoses with much care. Be sure that hoses are not caught or pulled by another object or brought into contact with sharp edges.
- Do not bend or collapse any hose. Doing so raises the pressure in the hose and possibly breaks the hose to cause the paint to be injected in a dangerous manner.
- Do not expose hoses to temperatures higher than 50 deg C or lower than -20 deg C.
- Before starting the equipment, always make sure that hose joints and all connections in the paint circuit are tight. Above all, check that joints of the hoses that move during operation are locked tight.
- Do not pull any hose to drag or move the equipment.
- Never use any damaged hose. Check each hose throughout its length for scars, leak, wear, swell, cracks and loose fittings. In any of them is found, immediately withdraw the hose from service and replace it with a new one.
- Any hose with paint leak must be replaced with a new one. Use a standard hose complying with our specifications.

<<DANGER FROM MISUSE OF THE EQUIPMENT>>

- When checking the equipment, never fail to turn off the main power switch on the ACW Control Unit and reduce the air and paint pressures supplied to the ACW Control Unit and ACW Mixing Unit to zero.
- Never apply a fluid or air pressure exceeding the allowable maximum to the equipment. All components and accessories to be used shall be durable against the maximum operating pressures mentioned above.
- When power is on, do not open the door of the ACW Control Unit, and do not touch the terminals.
- To ensure a safe operation of the system, all operators shall read and understand this manual and labels attached to each unit. Adequately trained personnel can only operate the equipment.
- Fire and electric codes and safety related regulations provided by the national or local government should be observed during the work.

2 Outline of System

2-1 Outline

Different from the conventional volume type simultaneous pumping to the mixer, this system employs new measuring and mixing systems, in which each of base resin and hardener is precisely measured and fed alternately into the mixer by the computer control.

Necessary quantities of base resin and hardener are very precisely measured by flowmeters and alternately fed into the Power-mixer or the Mixing Hose. The Mixing Hose changes base resin and hardener in the flowing of simultaneous (primary mixed fluid). After that, the primary mixed fluid is sent into the Static Mixer for complete mixing and then fed into the spray gun. In power mixer use, base resin and hardener, which fed alternately, are completely mixed by the Power Mixer. Then the mixed fluid supplies a spray gun.

Once necessary parameters are defined, only switching on with the mode button can spray the mixed fluid. The parameters are divided into two groups; the ones related with the equipment conditions and the ones frequently used such as mixing ratio and flushing time, all of which are protected by passwords.

The mixing ratio, flow rate, quantities of base resin and hardener put into the system, the remaining time of Pot Life, etc. are very clearly indicated on the ACW controller.

2-2 Principles of operation

In this system, two-component fluid are metered and mixed as long as the spray gun is on (spraying) and the Base Resin and the Hardener Mixing Valves close to stop mixing control when the gun is off.

(See Figure 2.2.1)

(1) In the state of the READY lamp-on of the MAIN screen of the ACW controller, mixing and color change controls are available. In the state of the READY lamp-off, the mixed fluid is not sprayed even if the spray gun trigger is pulled.

(2) As the trigger of a spray gun is pulled, the solenoid valve of Hardener Mixing Valve will be operated to start feeding hardener.

(3) Hardener is fed through the flowmeter to the Mixing Hose or the Power Mixer. (See Figure 2.2.2)

(4) The ACW controller controls the Mixing Valve according to the signals sent from the flowmeter to obtain the calculated target flow rate and accurately measures hardener feed into the Mixing Hose.

(5) After supply of hardener is completed, the Base Resin Mixing Valve is operated to feed base resin in the similar manner. (See Figure 2.2.3)

(6) Those steps are repeated to alternately feed base resin and hardener into the Mixing Hose or the Power Mixer.

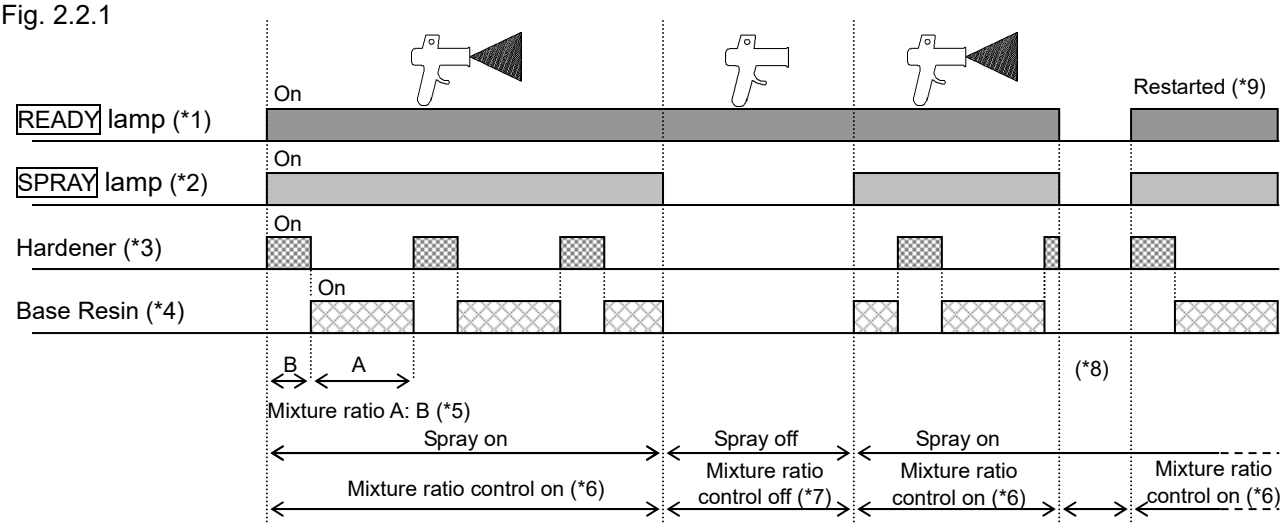
(7) The mixed fluid is prepared in the Mixing Hose for Static Mixer. It is supplied to the Static Mixer to completely mix, before supplying to the spray gun. In power mixer use, base resin and hardener are completely mixed by the Power Mixer.

(8) When the spraying operation is stopped, the Mixing Valves that supplies fluid is closed. (This means that both of the Base Resin and Hardener Mixing Valve have closed). When the spray was begun again, the mixing valve that is closed is opened to start mixing. The trouble of hardening by the back-flow of mixed fluid is not generated between spray stops.

(9) The Pot Life counter starts counting down right after the system is filled with the mixed fluid. As the spray gun trigger is pulled and the resetting point (flow rate) is reached, the Pot Life counter is reset for restarting. In short, the countdown continues as long as the mixed fluid is left unused for spraying.

(10) During the flushing process at the end of coating work, the Pot Life counter does not count down.

Fig. 2.2.1



(*1): The READY lamp (READY mode) state of the ACW controller is shown.

(*2): The state of the trigger signal of a spray gun is shown.

(*3): The state of hardener supply is shown. (The status of the Hardener Mixing Valve is shown).

(*4): The state of base resin supply is shown. (The status of the Base Resin Mixing Valve is shown).

(*5): A mixing ratio is shown.

(*6): The alternately supply state of base resin and hardener is shown.

(*7): Under a spray stop is shown. Both Mixing Valves are closed to stop mixing control.

(*8): READY lamp-off state is shown. The state where control was once reset is shown.
(The Pot Life counter is not reset.)

(*9): READY lamp-on state is shown. It becomes a new start from supply of hardener.

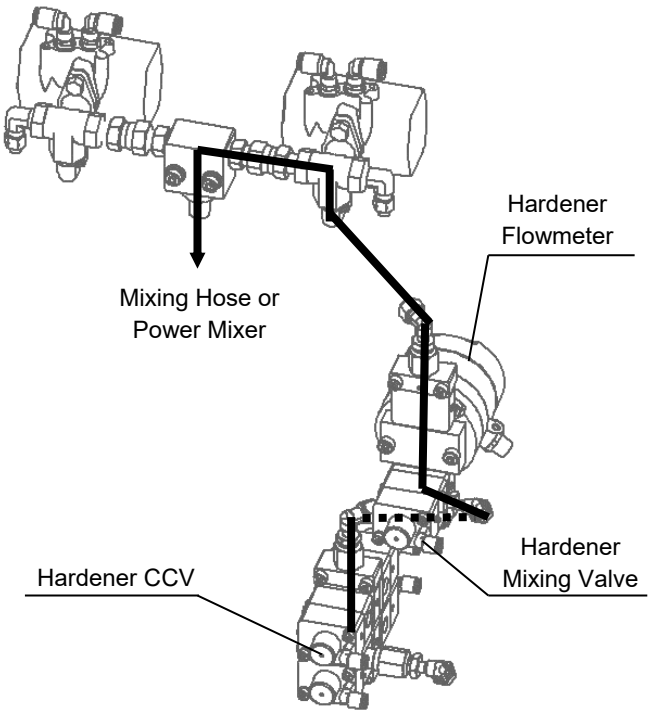


Fig. 2.2.2

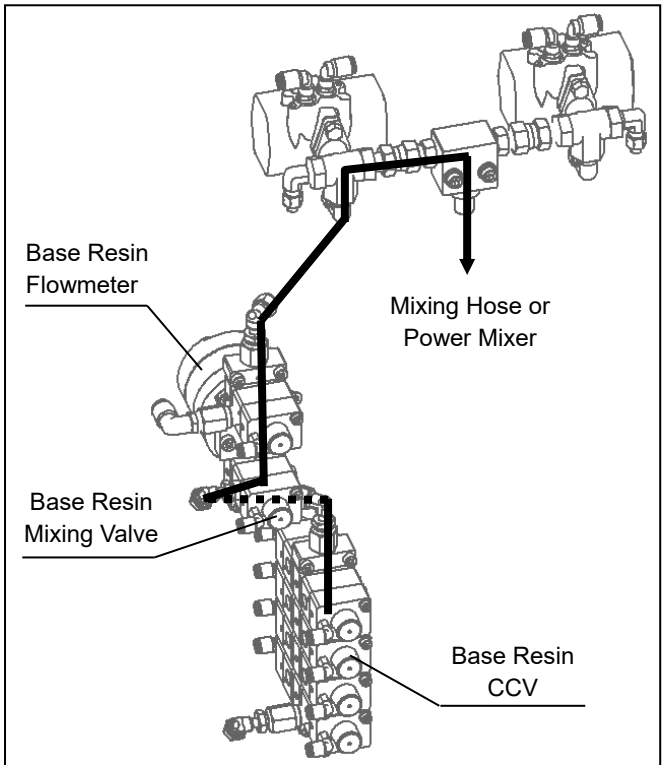


Fig. 2.2.3

3 Specifications

3-1 System specifications

System specification is the combination of an ACW Control Unit and ACW Mixing Unit.
The instructions manual of “ACW Control Unit” is referred to for the specification manual of the ACW Control Unit.

Designation	CNC Two-component Mixing System
Mixing ratio range	1:1 to 12:1 (Max 1:5 to 30:1)
Mixture control accuracy	±5% or less (*1)
Components of fluid	Max.21 types (colors) of base resin and 21 types of hardener
Viscosity ranges	25mPa·s to 300mPa·s for base resin/hardener (for low-pressure type) (*2)
Flow rate ranges	50 to 700 ml/min for type 1 (*3) 100 to 1000 ml/min for type 2 (*3) 200 to 2000l/min for type 3 (*3)
Compressed air pressure	0.4 MPa to 0.7 MPa

(*1): The mixing control accuracy depends on the conditions of use including the paint viscosity and flow rate.
(*2): For the paint with a viscosity above 100mPa·s (30 seconds/FC#4), the pump pressure shall be 0.5MPa or higher. The specified mixing control accuracy cannot be maintained with a viscosity below 30mPa·s (12 seconds/FC#4).
(*3): Depends on the specification of configured flowmeter. For the paint with a viscosity below 30mPa·s (12 seconds/FC#4), the flow rate may not be controlled within this range.
The flow rate during the fill-up shall not exceed the specified limit.

3-2 ACW Mixing System Specification

Model:	ACW42***EX See [3-3 How to assign model]
Withstanding pressure of paint circuit:	1.2MPa *(1)
Paint supply pressure:	Shall be at least three times the pressure required for spraying for the low-pressure type. *(1)
Materials of devices in contact with mixture:	Stainless steel, Aluminum or Teflon
Usable paint:	Two-component polyurethane for finish coat or two-component epoxy (Compatible with solvent base solid and clear paint.) Additional negotiation is required for others as necessary. *(2)
Explosion protection:	Intrinsically Safe Explosion-proof (Solenoid Valves (Explosion-proof type), Remote Control Box, Flowmeter) *(3)

*(1) For the low-pressure type, the pressure loss through the mixing unit is about 0.2MPa. To ensure a stable flow rate, the paint supply pressure shall be three times the pressure required for spraying. The tripled pressure shall not exceed the maximum withstanding pressure of the paint circuit.
*(2) Use a flushing fluid (solvent) with sufficient solubility, such as the one that is soluble for both epoxy and urethane. See [6-3 Flushing fluid (solvent)]. Some metallic paints and special paints containing rough particles may not be used. In this case, inform our sales staff of the paint property, and perform checking test in advance. See [6-2 Metallic paints]
*(3) All components and electric devices are not explosion-proof.

Equipment components: CCV, Mixing Valve, Flowmeter, Measuring Valve, Mixer, Frame (or Box), and Intrinsically Safe Explosion-proof Solenoid Valve (for Mixing Valve)

Other necessary items:
(1) Base resin, hardener, flushing pump, and pump support
(2) Paint regulator (for base resin, hardener, and flushing)
(3) Hermetically-sealed Stainless-steel Tank (10L, 20L, 40L, and 60L)
(4) Paint hose and air tube
(5) Spray gun and nozzle
(6) Nitrogen gas cylinder (equipped with pressure reducing valve) and gas piping work
(7) Mixing rate verifying precision balance (capable of measuring in 1/100 grams)
(8) Air system diagram and electric piping work on primary side

Options:
(1) Remote Control Box (within a booth for manual color change operation)
(2) Lower limit level sensor for tank (Choice: No-explosion-proof type, or Explosion-proof type)

3-3 How to assign model

Assignment of model is determined as follows. As for other specifications in detail, check them on the specification sheet.

Model: ACW42 □ □ − EX.

2: Two-component specification

The number of hardeners: Example 1 type 1

The number of base resin: Example 3 colors 3

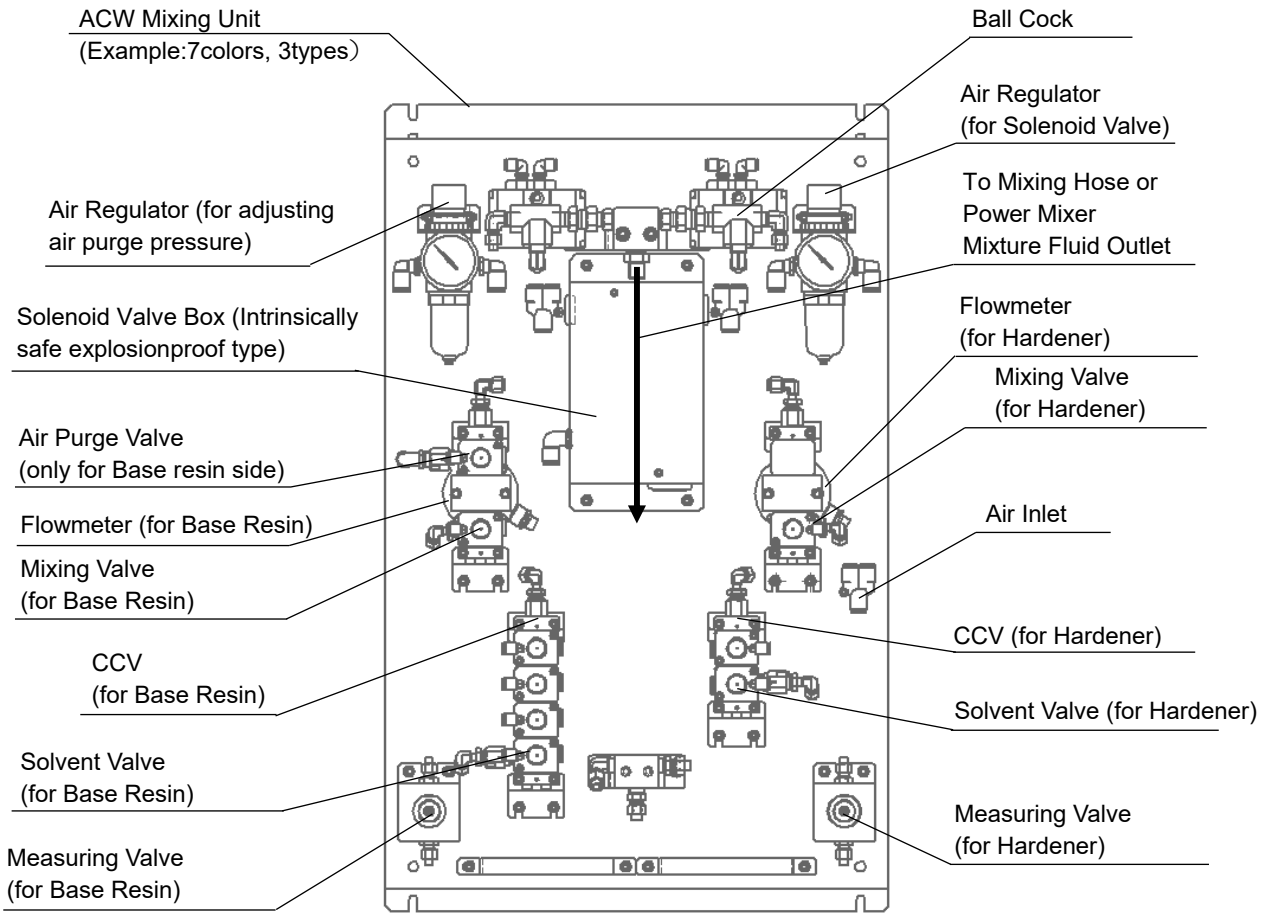
≪ACW Mixing System, example of model≫

Model ACW4231-α	The number of base resin	3 colors	
	The number of hardeners	1 types	
	Pressure	Low-pressure	0 to 1.2MPa

4 Name of Main Parts

4-1 ACW Mixing Unit

Name of main parts is described on the basic layout of assembly.

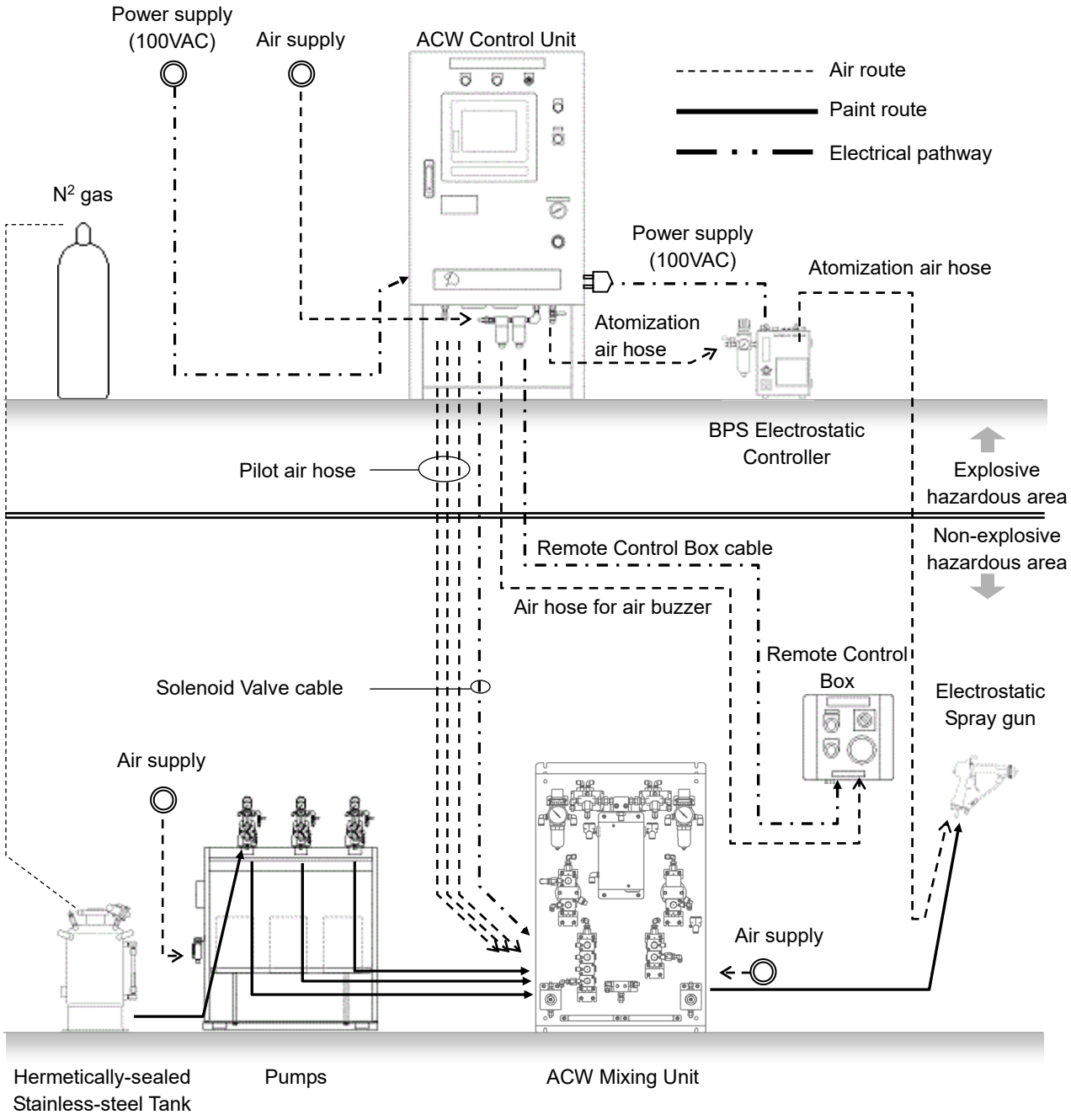


*1 This layout does not represent the shape and installation position of each assembly.
*2 The figure of ACW Mixing System above represents the frame type.

5 System Configuration

5-1 System configuration example

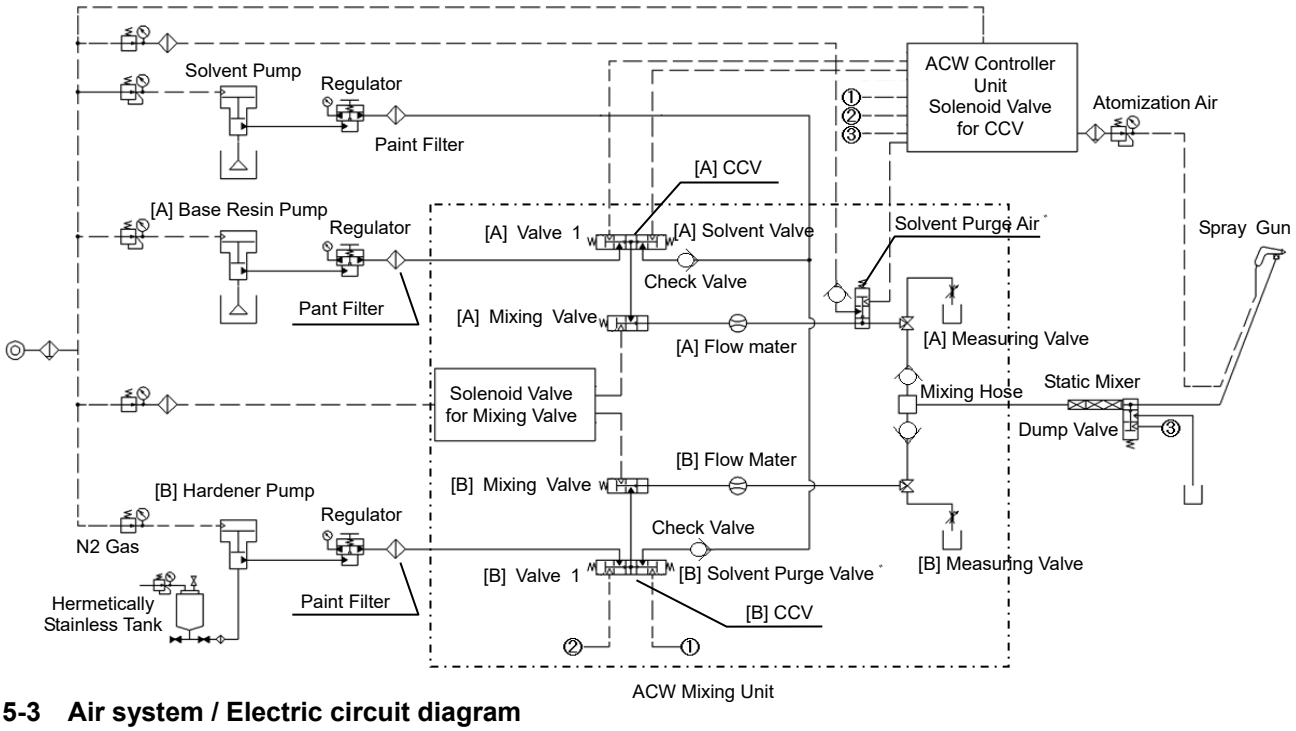
The fundamental example of a system configuration is shown.
(Low-pressure specification, electrostatic spray gun)



NOTE: System depends on specification.

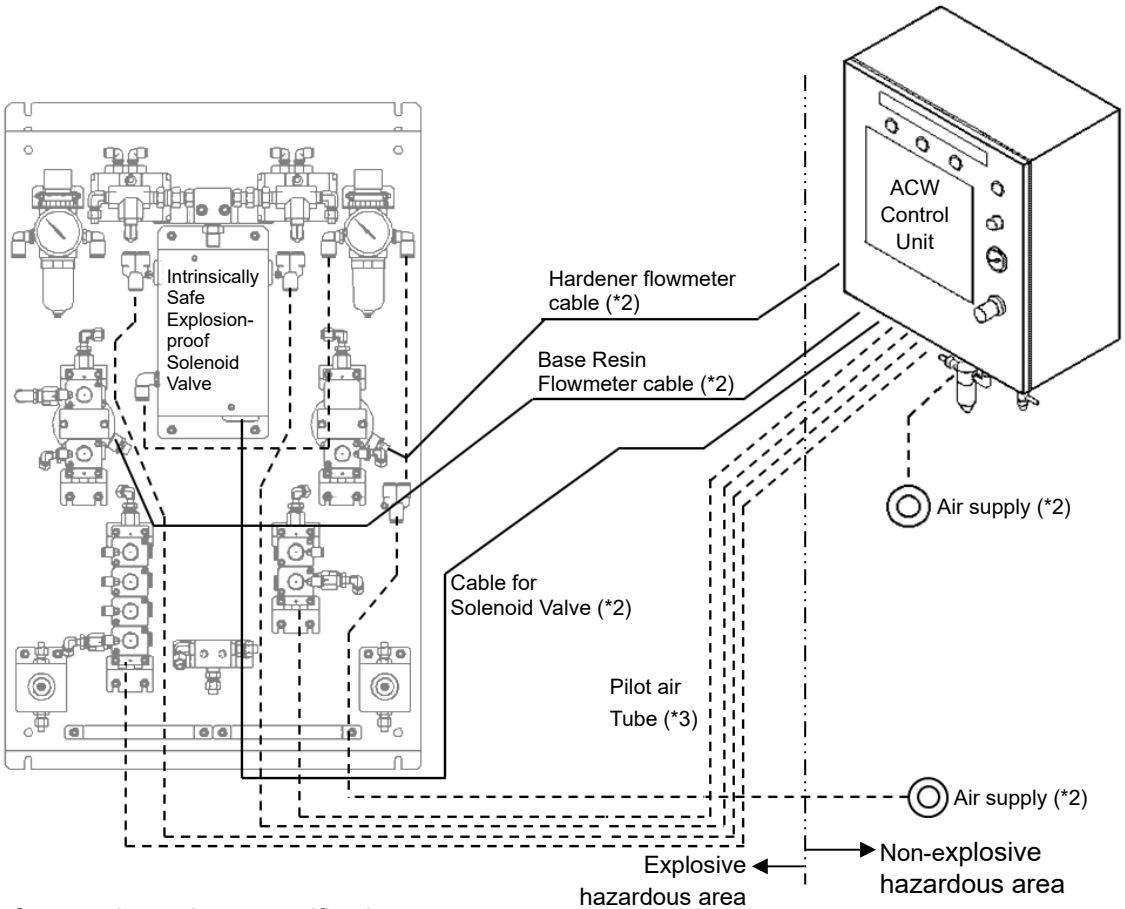
14th Edition: June 25, 2025

5-2 Air / Material system diagram



5-3 Air system / Electric circuit diagram

This equipment detects the signal from flowmeter with an ACW controller, and controls Mixing Valves and CCV valves with pilot air of each solenoid valve. Configuration of such pilot air and electric circuit is shown below.



(*1): System depends on specification.

(*2): Refer to the instructions manual of “ACW Control Unit”.

(*3): See [7-4-2 Pilot air between ACW Control Unit and ACW Mixing Unit CCV]

6 Two-component Fluid, Flushing Fluid, Mixing

6-1 Two-component Fluid (Mixture Fluid)

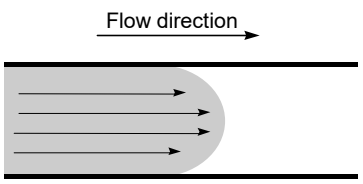


Fig. 6.1

As shown in Figure 6.1, the velocity of the fluid is higher at the central area in the pipe and almost zero along the inside surface of the pipe wall. The fluid as mixed with isocyanate or reactor (hardener), which has been in contact with the moisture in the air, initiates a chemical reaction and accumulates on the pipe wall just like cholesterol to make the pipe narrower and finally clog it. Therefore, it is important to control the hardener and keep the devices and pipes in contact with the mixture thoroughly clean.
Isocyanate, a chemical agent used for the two-component fluid, may hurt mucous membranes in your nose or throat. Put on a facemask for protection from organic solvents during the work. Additional protective devices may be required depending on the paint components or ventilation level. Contact the paint or solvent manufacturer.

6-2 Metallic paints

General metallic paints may be used but some metallic paints and special paints containing rough particles (pearly paints) may not be used because the particles may clog the precision geared flowmeters, which have very small clearances, and make the mixture control impossible.
When using any of such paints, communicate properties of the paint to our sales personnel and perform a test run in advance. When using paint not used before, do not directly use it on the line but perform a functional test using the equipment to check the mixing, flushing and color change functions and verify the coating quality with coated samples.

6-3 Flushing fluid (solvent)

For flushing the base resin and hardener circuits and hardener tank, use a flushing fluid (solvent) specially provided for two-component fluid. Do not use any lacquer or alcohol based solution, solution containing much alcohol or collected and recycled solution.

⚠ CAUTION

POSSIBILITY OF DAMAGE, MALFUNCTION, OR INTERNAL HARDENING OF EQUIPMENT

- **Do not use any lacquer or alcohol based solution for flushing the equipment. It reacts with the mixture fluid or hardener and accumulates in the flowmeter, Mixing Valve, and paint hoses, just like cholesterol. And it causes internal hardening and malfunction of equipment finally. Always use an exclusive flushing fluid recommended by the paint manufacturer.**
- **Do not use any collected and recycled solution for flushing the equipment.**

6-4 Ratio by weight and ratio by volume

This system controls the flow rates by volume. To convert a ratio by weight to that by volume or the weight of the paint sampled for mixture ratio test to a volumetric value, calculation is required using the specific gravity of the paint.

(1) Calculation of mixture ratio (by weight → by volume)

◆Mixture ratio (by volume) = Weight of base resin / specific gravity of base resin: weight of hardener / specific gravity of hardener

(2) Calculation of sampled paint quantity (weight→ volume)

◆Volume of sampled paint (ml) = Weight of sampled paint (g) / specific gravity

6-5 How to control hardener

When an isocyanate-based hardener comes into contact with the moisture (OH group) in the air or another solution, it generates an invisible substance (crystal dust). In the initial stage of reaction between the hardener and OH group, no effect of the crystal dust is observed with eyes. But, after a certain time, it is increasingly hardened and sticks to or accumulates on inside surfaces of pipes where the fluid flows slowly. If it is sent to the system, it may affect the performance. Therefore, the following steps must be taken to control the hardener.

(1) To keep the hardener out of contact with the air as far as possible, use an exclusive tank capable of sealing in nitrogen gas.

(2) We do not take responsibility for the equipment disorder or clogged circuit or flowmeter due to the crystal dust or hardened wastes generated when the hardener is not controlled with nitrogen gas. If nitrogen gas is not available, you may use the compressed air dried by passing through an air dryer and an air filter containing silica gel. In this case, however, the equipment shall be used at the customer's risk.

(3) Use stainless steel pipes and Teflon hoses, which are slow to absorb moisture or air, to feed the hardener. In an absorptive nylon hose or easily oxidized iron pipe, the hardener quickly reacts and hardens even if the circuit is apparently enclosed. Especially in hot, moist seasons, the hardener is cured within a day in such a hose or pipe.

* the piping part except the stainless steel is given special surface treatment to prevent the chemical reaction of the hardener. The hardener route downstream of the valve is flushed frequently, flushing program run forcibly at finish work. There is no fear that a hardening and a flocculating agent hardener route in non-operation time including the night, because exhaust the hardener which stayed the route and fill the solvent. The piping except this mixing unit is concerned about the chemical reaction of the hardener. Use the piping materials depend on above (3).

⚠ CAUTION

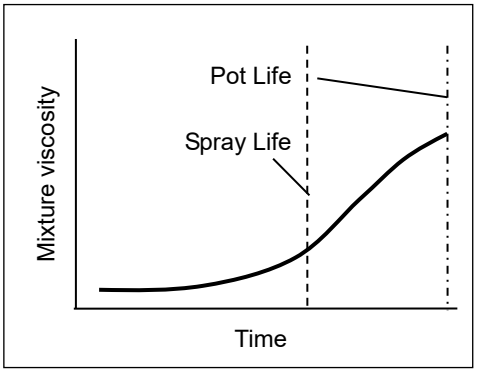
POSSIBILITY OF DAMAGE, MALFUNCTION, OR INTERNAL HARDENING OF EQUIPMENT

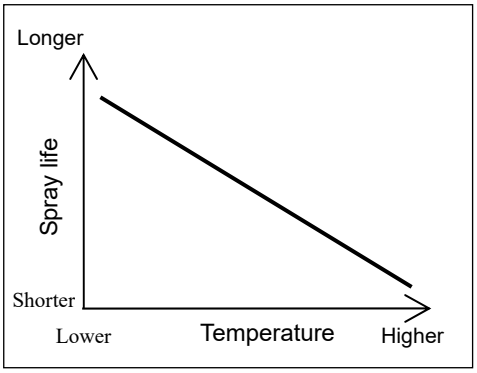
- **The hardener shall be kept out of contact with the air.**
- **The hardener shall be stored in an exclusive sealable tank with the air replaced with nitrogen gas.**

6-6 Spray Life and Pot Life

(1) Spray Life : A length of time in which the mixture can be sprayed to obtain a desired coating quality.

(2) Pot Life : A length of time from the point of mixing to the point when the mixture is hardened (gelled).





The viscosity more quickly increases after the end of the Spray Life, in general.

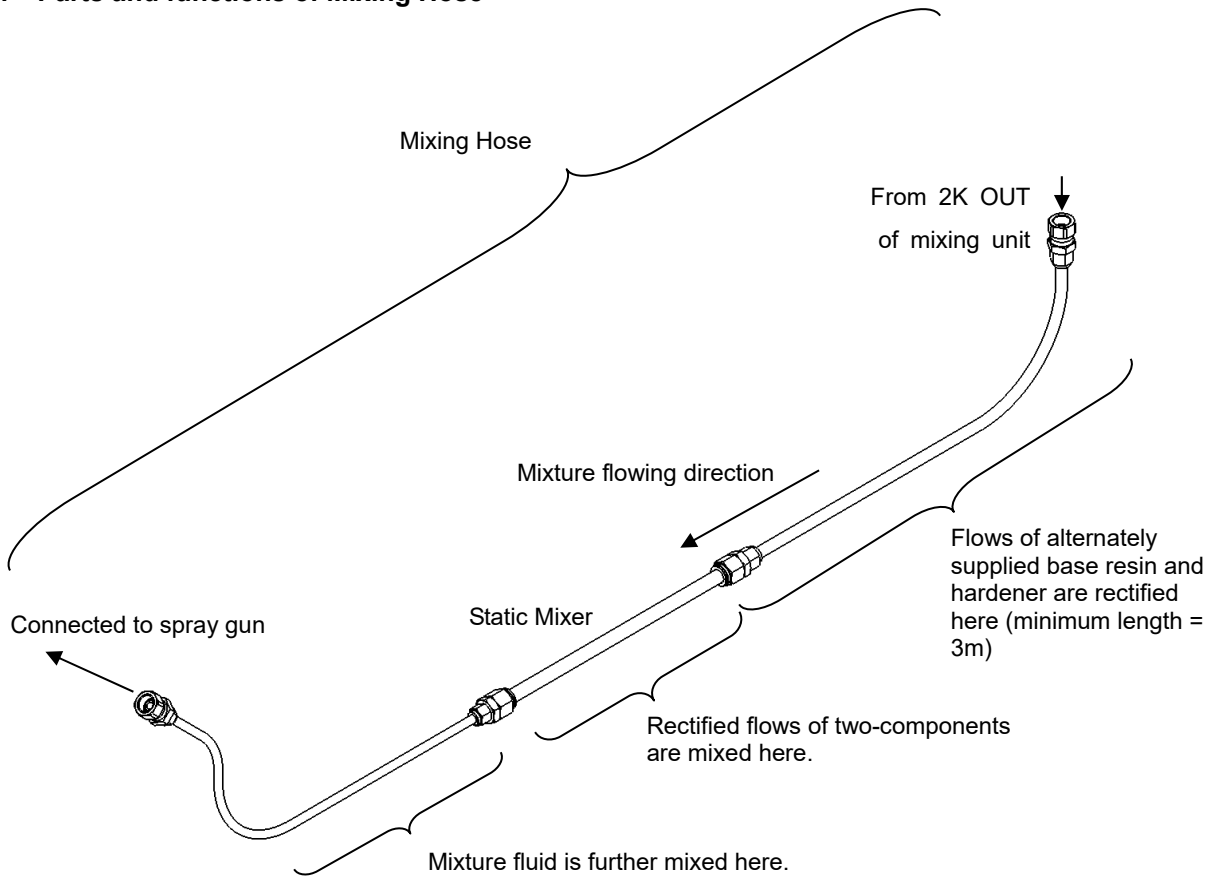
The Spray Life becomes shorter with the increase of the air and fluid temperatures.

6-7 Mixing Hose

The Mixing Hose serves to rectify the flows of the alternately supplied base resin and hardener to ensure complete mixing by the Static Mixer.

(Standard length: 5m)

6-7-1 Parts and functions of Mixing Hose



The figure shows for low pressure as a model <4433>.

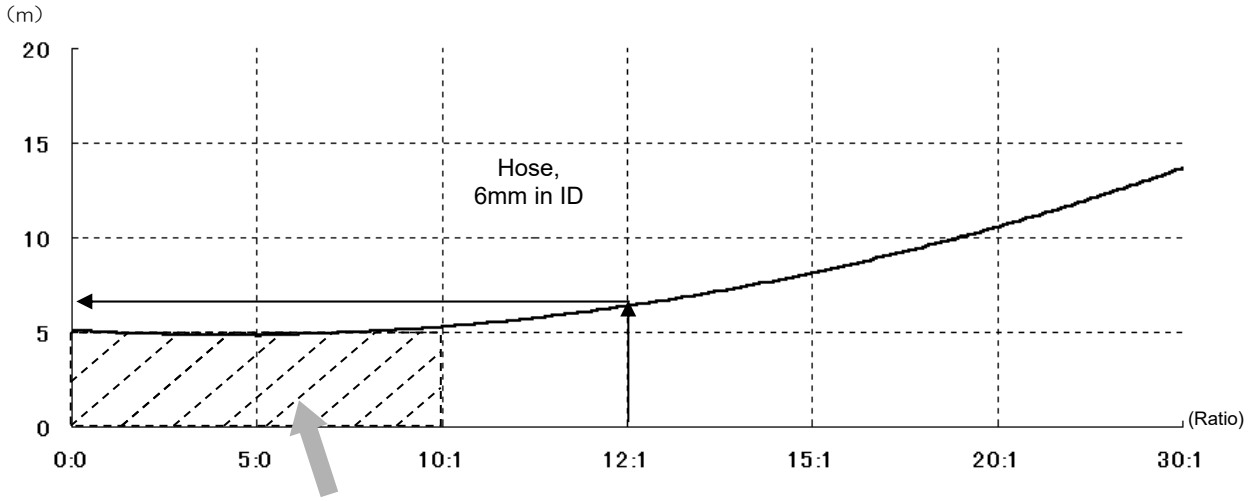
⚠ CAUTION

POSSIBILITY OF POOR MIXING OR INTERNAL HARDENING OF EQUIPMENT

- **If the hose length to the Static Mixer is too small, the paint cannot be thoroughly mixed by the Static Mixer, possibly resulting in poor hardening. Do not reduce the hose length to the Static Mixer or change the hose diameter.**
- **The hose portion downstream the Static Mixer also serves to ensure the mixture quality. Do not directly connect the Static Mixer to the spray gun.**

6-7-2 Effect of Mixing Hose length on mixing ratio

To achieve a larger mixing ratio, the hose length from the Static Mixer to the spray gun shall be increased. Adjust the hose length according to the following chart.



(Example) To achieve the ratio of 12:1

The Mixing Hose shall be 7m long. It is necessary to change the hose before the Static Mixer to 5m as shown in the figure below.

It is possible to correspond by changing one-cycle mixed quantity when the length of the hose cannot be lengthened. In this case, please contact our company.

See the following table for extension hoses. Cut them to a necessary length before use.

Teflon Hose, 6mm in ID

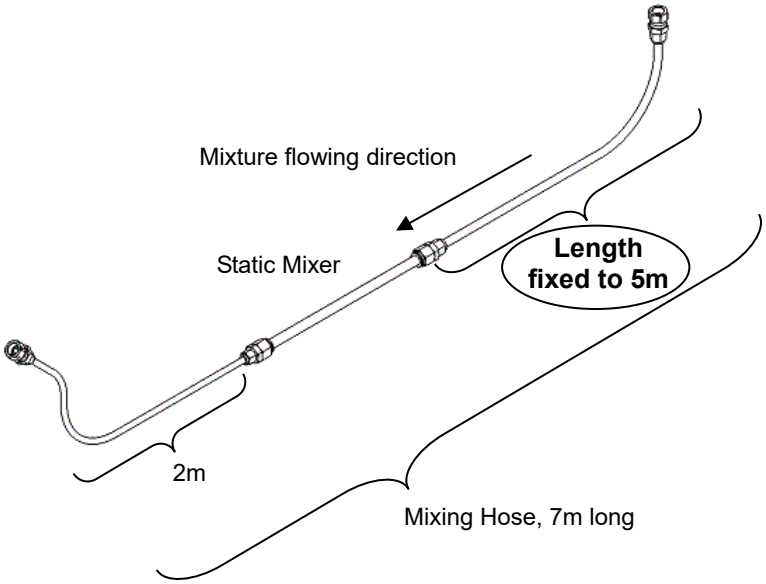
Hose	Part No.	Remark
5m	52C-0050	For ϕ8-6
10m	52C-0100	For ϕ8-6

< Reference >

Teflon Hose, 4mm in ID

Hose	Part No.	Remark
5m	570-0050	For ϕ6-4
10m	570-0100	For ϕ6-4

For hose since static mixer



See [11-15-4 or 11-15-5 Mixing Hose L]

7 Unpacking and Installation

This equipment is 100% inspected at the manufacturer's factory. However, some parts may be damaged or lost during transportation. After unpacking, please check carefully for missing or damaged parts and, if any, contact our distributors.

7-1 Caution in unpacking

(1) Check the ACW Mixing Unit for parts and dents around the periphery.
(2) Retighten loose screws, nuts and joints if any.
(3) Check the pressure gauges for paint and air for damage, and replace it with a new one if necessary.

7-2 Installation place and caution in installing

(1) Install the ACW Mixing Unit in the environment that satisfies the general specifications described in this manual.
(2) Class D (Regulation in Japan) grounding work is required for all pumps and ACW Mixing Unit.
(3) The ACW Mixing Unit and Remote Control Box (optional) are Intrinsically Safe Explosion-proof. They can be installed in any place other than class 0 explosive hazardous area. When installing any device other than above, thoroughly read the instruction manual for that device before use and, if you need further information, contact the manufacturer or distributor before installation.
(4) Each unit shall be installed with enough space reserved around it for routing of the paint hoses and air tubes and for ease of maintenance.
(5) Vibration and noise give an adverse effect on the flowmeters and may prevent accurate mixture control. The ACW Mixing Unit shall be secured horizontally on a rigid foundation and installed at least 1m apart from sources of noise such as robots.
(6) Never apply a tensile force to a power cable (to the flowmeter, etc.), air tube or paint hose or collapse it with a heavy object.

7-3 Working in an explosive hazardous area (combustible/explosive atmosphere)

When installing the equipment in an explosive hazardous area such as inside of the booth, the following instructions shall be observed. A difference of an explosion-proof device from general ones is that it requires "safety check" before use.

⚠ WARNING

INJURY HAZARD

- **Never remodel the equipment or use a combination of units other than specified as doing so may lead to an accident. If remodeling or structural change is required, please contact the responsible personnel of us.**

FIRE AND EXPLOSION HAZARD

- **Check that all units have been completely grounded.**
- **Adequately ventilate the workplace so that it will not be filled with a combustible (solvent containing) atmosphere.**

7-3-1 Before starting the work

(1) The grounding work according to the “Guidelines for Electric Equipment Protection against Explosion at Factories” is required for the equipment and all devices and tools used for operation, maintenance and servicing of the equipment in “an explosive hazardous area” where, for example, a combustible (explosive) atmosphere exists.

(2) When directly involved in the work in a place where a combustible (explosive) atmosphere exists, all operators shall have full knowledge about the explosion prevention and electric work and fully check the safety of everything including the devices and tools to be used and (anti-static) working clothes.

7-3-2 Working tools

(1) The tools connected with an “outlet” when used, e.g. power drills and illuminators, must be checked before work. Scared, thinned (elongated), swelled or otherwise deformed cables must be always checked for.

(2) Perform a continuity test using an ohmmeter between metallic part or grounding terminal of each tool and the power cable terminal and ground the tool before use.

(3) The “outlet” used in an explosive hazardous area must be equipped with an interlock to open or close contacts after a given delay. A capability of making electric circuits completely continuous or open when the plug is inserted or removed is a precondition for the explosion-proof equipment.

(4) A power supply intermittently connected to a tool may become a source of ignition. Preventive measures against human errors and correct operating procedures shall be strictly observed in working.

7-3-3 Grounding

For the equipment installed in an explosive hazardous area such as inside of the booth (e.g. ACW Mixing Unit and Remote Control Box), the main body and grounding terminals (e.g. terminals provided in the spray booth) shall be grounded according to the “Guidelines for Electric Equipment Protection against Explosion at Factories”.

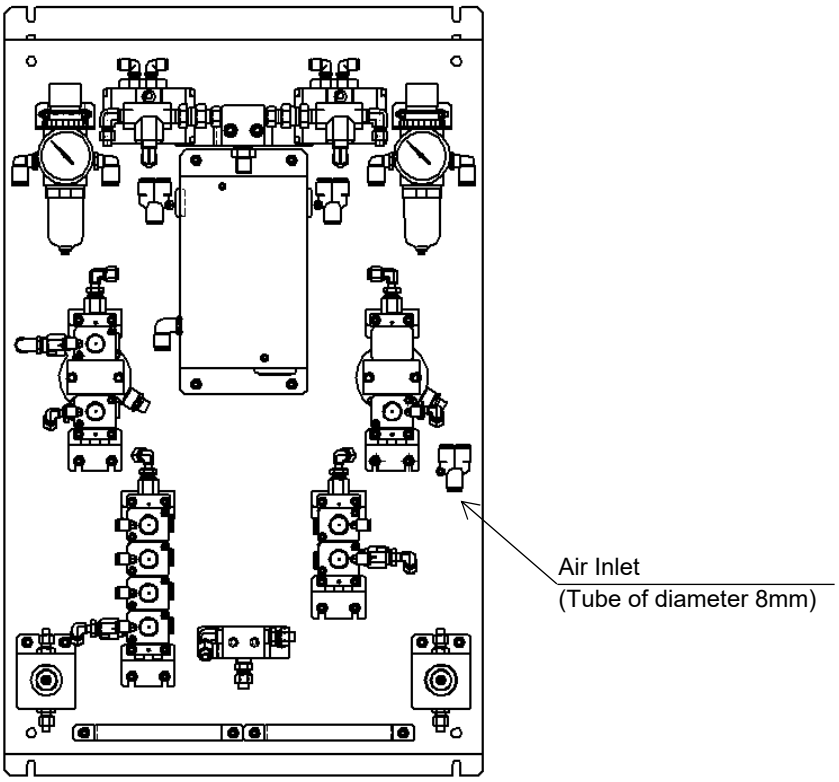
(1) A continuity test shall be performed between the main bodies of the ACW Mixing Unit and Remote Control Box (optional) and the grounding terminals to check that there is a continuity meeting the standard for class D grounding.

(2) Thoroughly read the paragraph of “Grounding” in section [1. For Safe and Correct use] before starting the work.

7-4 Connection of air hose

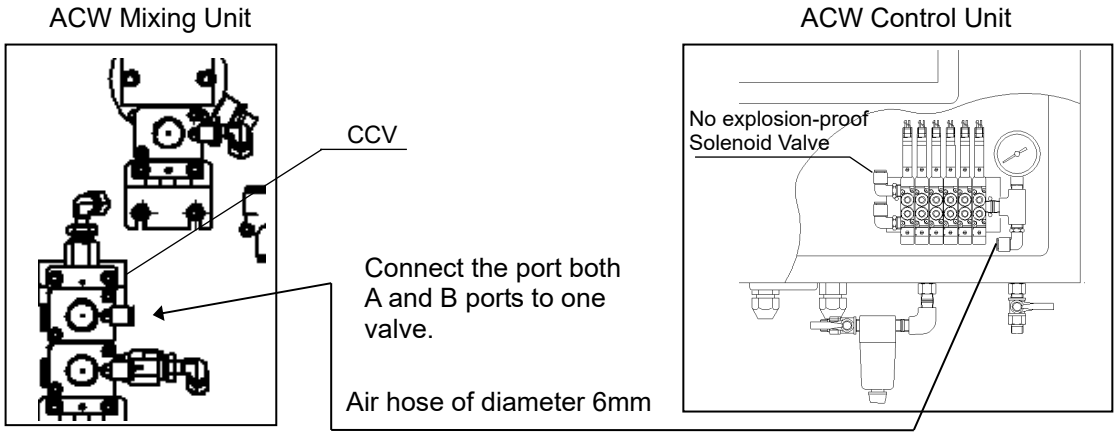
7-4-1 ACW Mixing Unit

As for ACW Mixing System, connect the air hose to the inlet of air regulator (joint for tube of diameter 8mm, G1/4 screw when joint is removed).



7-4-2 Pilot air between ACW Control Unit and ACW Mixing Unit CCV

Connect the air hose of diameter 6mm to CCV of ACW Mixing Unit from no explosion-proof Solenoid Valve in the ACW Control Unit.



7-4-3 Caution when separating the Solenoid Valve Box from ACW Mixing Unit

If it should be necessary to keep the Solenoid Valve Box away from the ACW Mixing Unit for convenience of installing position, set the distance of air hose **within 2m** connecting each Mixing Valve and Solenoid Valve Box. When they are kept 2m or more off, response of Mixing Valve is poor, and correct mixing ratio cannot be ensured.

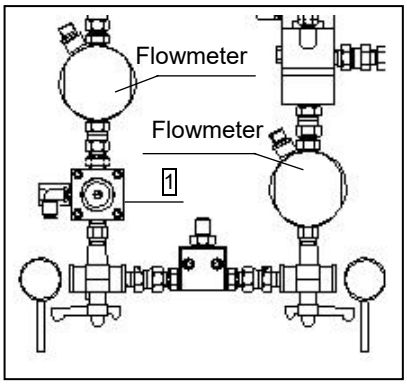
7-4-4 Connection of purging air hose

⚠ CAUTION

POSSIBILITY OF DAMAGE OF EQUIPMENT AND LEAKAGE OF FLUID

- **When no check valve is attached to the Air Purge Valve, it is possible that fluid may flow back. Be sure to attach a check valve.**

When the air purge valve 1 is attached to ACW Mixing Unit, follow the description below for connecting:



(1) The air supply joint of the Air Purge Valve has a check valve mechanism. Be sure to install Check Valve along the air route.

(2) An air filter is attached to the source of purge air. If fluid should flow back, it is designed that fluid is accumulated in the filter.

(3) Attach the Air Purge Valve to the base resin route downstream of flowmeter. If it is attached upstream of flowmeter, or along the hardener route, it may lead to damage to the flowmeter and trouble of the Air Purge Valve.

(4) Use a transparent air hose that can withstand the solvent for purging.

(5) It must be possible to adjust the pressure of supply air, and air must be supplied with no oil component or dirt contained.

7-5 Connection of paint hoses

(1) Connect the paint hoses between the inlet of the hardener pump and the outlet of the hermetically-sealed stainless-steel tank.

See [8-1 Hardener Tank]

(2) Connect the hose joint of each paint pump (supply unit) outlet (paint filter outlet) to the hose joint of paint regulator.

(3) Connect a paint hoses between the paint regulator and CCV. CCV has a nameplate. Match the color number of nameplate with the color number of regulator when connecting a hose.

See [5-2 Air/Material system diagram] and [9 Preparation of Paint and Compressed Air]

7-6 Flushing the equipment

After the location of each unit is determined and the air and paint hoses are connected, flush the paint circuit and equipment (circulate the flushing fluid).

⚠ WARNING

BREATHING DISORDER AND INTOXICATION HAZARD

- **Wear toxic fluid protecting mask, safety glasses, and protective clothes.**
- **Ventilate sufficiently to avoid filling by inflammable atmosphere (solvent atmosphere).**

FIRE AND EXPLOSION HAZARD

- **Check that all units have been correctly grounded.**
- **Ventilate sufficiently to avoid filling with inflammable atmosphere (solvent atmosphere).**

⚠ CAUTION

POSSIBILITY OF DAMAGE OR MALFUNCTION OF EQUIPMENT

- **Failure to flush leads to the outflow of wastes, etc., which clogs the flowmeters to cause a malfunction or damages the valve or check valve seat, resulting in a reverse flow of the paint. Never fail to flush.**

(1) Flushing the pumps (feeders)

Suck the flushing fluid and open the pump drain to circulate the flushing fluid. Flush all feeders.

(2) Flushing the base resin container

Chips and other particles stick to the inside surface of the container. Carefully clean them using a waste cloth or brush.

(3) Flushing the Hermetically-sealed Stainless-steel Tank for hardener (optional)

See [8-2 Flushing the Hardener Tank] and [6-3 Flushing fluid]

(4) Flushing the paint circuits

After flushing each pump (feeder), remove the paint hoses connected to the CCV and wrap a clean cloth around the loose end of each paint hose and run the pump to drain the flushing fluid (solvent) and remove debris, etc. in the hose. Flush the flushing pump in the same manner.

(5) Flushing the paint filter.

After flushing, never fail to overhaul and clean the paint filter and other filters.

7-7 Feeders

The fluid may be fed from a pneumatic pump, pressurized tank (paint tank) or circulation line. When feeding the fluid, follow the procedure described below.

7-7-1 When feeding fluid at a pressure not higher than 1MPa (for the low-pressure type)

(1) Each feeder shall have a capacity not lower than three times the flow rate and delivery pressure required for the spray gun.
If a spray gun delivery pressure of 0.2MPa is required, it is necessary to ensure a stable pressure not lower than 0.4MPa at each valve of the ACW Mixing Unit although depending on the length and inside diameter of the paint hose to be connected and the viscosity of the paint. Therefore, a feeder capable of feeding at 0.6MPa or higher is required.

(2) The feeder shall be capable of generating a fluid pressure not lower than 0.6MPa for the paint with a viscosity between 80 and 100mPa·s or not lower than 1.0Mpa for the paint with a viscosity not lower than 100mPa·s.

(3) Install the paint regulator and paint pressure gauge in the paint circuit consisting of a 2m or shorter hose from the CCV of the ACW Mixing Unit.
If the pressure is regulated at the outlet of the pump, it may significantly drop around each valve of the ACW Mixing Unit. The pressure around the Base Resin Mixing Valve and that around the Hardener Mixing Valve shall differ less than 10%.

(4) Keep the pressure gauge clean enough to ensure clear readings and regularly reduce the pressure to confirm that the pressure gauge correctly functions.

(5) Use a filter with 100 or more meshes (0.15 x 0.15mm openings) in the paint circuit.

7-7-2 When using a cylinder pump

(1) Install an anti-pulsation device or paint regulator to prevent pulsation due to pump piston changes.

(2) Install the paint regulator and paint pressure gauge in the paint circuit consisting of a 2m or shorter hose from the CCV of the ACW Mixing Unit.
The pressure around the Base Resin Mixing Valve and that around the Hardener Mixing Valve must differ less than 10%. See [9-3 Base resin supply], [9-4 Hardener supply]

(3) Keep the pressure gauge clean enough to ensure clear readings and regularly reduce the pressure to confirm that the pressure gauge correctly functions.

(4) Use a filter with 100 or more meshes (0.15 x 0.15mm openings) in the paint circuit.

7-7-3 When using a pressurized (paint) tank

(1) Always install a check valve in the paint circuit to prevent reverse flow.
Different from pumps, the pressurized tank is not equipped to prevent reverse flow of the fluid and may cause the fluid to circulate between the paint hose and the tank. Always take steps to prevent reverse flow to the tank.

(2) Provide a safety valve in the tank and a cock valve in the paint circuit for servicing and maintenance.

7-7-4 When using a circulation line

(1) Provide a T-shaped joint in the circulation line to supply to the ACW Mixing Unit through a single circuit. As for the type of valve that returns fluid into the feeder there through. It is concerned about malfunction of the flow meter by vibration.

(2) When feeding the paint from the circulation line, always install a cock, paint regulator and paint pressure gauge at the intake port for servicing and maintenance.

(3) Be sure to install a backpressure filter (paint pressure adjusting system) on fuel return side, and keep constant pressure in the circulating line.

8 Hardener Tank

⚠ WARNING

BREATHING DISORDER AND INTOXICATION HAZARD

- **Wear toxic fluid protecting mask, safety glasses, and protective clothes.**
- **Ventilate sufficiently to avoid filling by inflammable atmosphere (solvent atmosphere).**

FIRE AND EXPLOSION HAZARD

- **Check that all units have been correctly grounded.**
- **Ventilate sufficiently to avoid filling with inflammable atmosphere (solvent atmosphere).**

8-1 Hardener Tank

To prevent the hardener from hardening in the pump or valves as a result of contact with the moisture in the air, it must be contained in a Hermetically-sealed Stainless-steel Tank capable of sealing in nitrogen gas.

(1) Use a Teflon hose to connect the pump and tank.

(2) Adjust the nitrogen gas pressure supplied to the tank between 0.01 and 0.02MPa.

(3) Set the safety valve activating pressure between 0.1 and 0.15MPa.

(4) To check for gas leak, fill the tank with nitrogen gas (0.01 to 0.02MPa), shut off the valve at the supply side and leave the tank in this state for 2 hours. If the pressure drops to about 3/4 of the initial pressure, the tank must be leaking. Clean the packing at the filler port, etc. and replace if damaged.

(5) Before starting the coating work, never fail to make sure that the tank contains a sufficient quantity of hardener for use in the coating work. When the hardener runs short and air is sucked into the tank, an alarm is raised at ACW Control Unit. Under certain circumferences, hardened wastes accumulated in the hardener circuit flow into the flowmeter and valves in the mixing unit, resulting in a disorder or malfunction.

(6) An optional level sensor may be installed in the Hermetically-sealed Stainless-steel Tank to detect the fluid level at the lower limit. When installing a lower limit sensor of Intrinsically Safe Explosion-proof specification, it is necessary a level sensor barrier inside ACW Control Unit. When ACW Controller detects lower limit, “external trouble” is output. Only charging hardener can reset it. See the instruction manual of level sensor for level sensor contact.

See [9-4 Hardener supply]

*As for specification, consumable part and the other detail, see the instruction manual of [Hermetically-sealed Stainless-steel Tank].

⚠ CAUTION

POSSIBILITY OF DAMAGE, MALFUNCTION, OR INTERNAL HARDENING OF EQUIPMENT

- **If nitrogen gas (N_2 gas) leaks from the Hermetically-sealed Stainless-steel Tank, the nitrogen gas cylinder becomes empty within only a day. This condition is equivalent to that of a tank with the air in it not replaced with nitrogen and generates crystal dust and hardened wastes, resulting in an equipment disorder. Regularly check for leak and nitrogen gas pressure drops.**

8-2 Flushing the Hardener Tank

⚠ CAUTION

POSSIBILITY OF INTERNAL HARDENING OF EQUIPMENT INSIDE OF ROUTE OF MIXING UNIT OR MEASURING TUBE.

- **Do not use any lacquer or alcohol based solution for flushing the equipment. It reacts with the mixture fluid or hardener and accumulates in the flowmeter, Mixing Valve, and paint hoses, just like cholesterol. And it causes internal hardening and malfunction of equipment finally. Always use an exclusive flushing fluid recommended by the paint manufacturer.**

See [6-3 Flushing fluid (solvent)]

(1) Completely close the main valve of the nitrogen gas cylinder and, then, close the pressure-reducing valve of the gas cylinder.
(2) Close the nitrogen gas supply valve at the top of the Hermetically-sealed Stainless-steel Tank and open the exhaust valve to release the nitrogen gas until the tank internal pressure becomes 0MPa.
(3) Run the pump connected to the tank to drain the hardener remaining in the tank through the return circuit of the pump.
(4) Fill the Hermetically-sealed Stainless-steel Tank with flushing fluid (solvent) using the attached funnel or such. Clean the inside of the tank using a brush if necessary.
(5) Let the pump suck the flushing fluid (solvent) and circulate it for a while.
(6) Drain the flushing fluid (solvent) through the return or drain circuit of the pump to empty the tank.
(7) The tank can be cleaned more effectively. Filling the tank with new flushing fluid (solvent), and letting the pump suck and circulate the flushing fluid (solvent) again.
(8) Overhaul and clean the paint filter, Y-shaped strainer and other filters.
(9) When the equipment is to be withdrawn from service (for about a week), supply new flushing fluid (solvent) into the tank to fill the pump and circuit with the flushing fluid (solvent). At this time, it is not necessary to supply nitrogen gas.

*As for specification, consumable part and the other detail, see the instruction manual of [Hermetically-sealed Stainless-steel Tank].

9 Preparation of Paint and Compressed Air

⚠ WARNING

BREATHING DISORDER AND INTOXICATION HAZARD

- **Wear toxic fluid protecting mask, safety glasses, and protective clothes. Isocyanate, a chemical agent used as hardener, may hurt mucous membranes in your nose or throat. Wear the mask for protection from organic solvents during the work. Additional protective devices may be required depending on the paint components or ventilation level. Contact the paint manufacturer.**

FIRE AND EXPLOSION HAZARD

- **Check that all units have been correctly grounded.**
- **Ventilate sufficiently to avoid filling with inflammable atmosphere (solvent atmosphere).**

9-1 Hoses

(1) Check each hose throughout its length for scars, leak, wear, swells, cracks and loose fittings. In any of them is found, replace the hose with a new one and restore the equipment to the normal state before use.

(2) Check hose connectors and joints (especially at the gun mounting section) for loose fittings and fluid leak. If any leak is found, tighten or replace them.

9-2 Compressed air supply

(1) Use compressed air at 0.4MPa or higher.

(2) The compressed air to be supplied shall be adjustable in pressure and free of oils and debris.

(3) Prepare for air consumption enough to satisfy the spray gun specifications.

(4) If the air pressure at the gun head is too low, change the air hose to the next larger size to reduce the pressure loss.

9-3 Base resin supply

(1) Drain the flushing fluid (solvent) remaining in the base resin can or container and fill it with new (base resin).

(2) Run the pump to suck. Follow the instruction manual of the pump (feed system) in operation.

(3) Adjust the fluid pressure using the base resin regulator so that the base resin and hardener pressures will be the same. For the high-pressure type, the base resin pressure shall be about 10% lower than the hardener pressure.

9-4 Hardener supply

(1) Run the pump to drain the flushing fluid remaining in the Hermetically-sealed Stainless-steel Tank through the return or drain circuit of the pump.

(2) Fill the tank with hardener using the attached funnel or such with care not to let the hardener stick around the filler port of the tank or to the O-ring (gasket). Wipe off the sticking hardener, if any, with a waste cloth damped with flushing fluid.

(3) When filling the tank, watch the floating ball in the level gauge provided at the side of the tank not to overflow the hardener.

(4) Pouring too much hardener through the funnel at a time may lead to an overflow, as the opening in the funnel is small.

(5) Firmly close the tank lid.

(6) Open the main valve of the nitrogen gas cylinder and, then, slightly open the pressure-reducing valve of the cylinder. (Open the reducing valve until the needle of the pressure gauge moves from the position of the pin.)

(7) Shut off the exhaust valve at the top of the tank. Then, open the nitrogen gas supply valve to supply nitrogen gas and adjust its pressure between 0.01 and 0.02MPa. Open the exhaust valve to release the air from the tank and shut off again 10 seconds later to replace the air with nitrogen gas.

(8) Run the Hardener Pump to suck the hardener. Operate the pump according to the instruction manual for pump (feeder).

(9) Adjust the hardener pressure using the paint regulator so that the base resin and hardener pressures will be the same. For the high-pressure type, the hardener pressure shall be about 10% higher than the base resin pressure.

(10) When using a cylinder pump (high-pressure type), fill the cup of the material cylinder with packing protective agent. Check that the Mixing Valve, hardener CCV and the Teflon tube at the side of the hardener paint regulator have also been filled with packing protective agent.

See [8-1 Hardener Tank]

9-5 How to charge CCV

Purge air along the route of base resin, hardener, and Flushing fluid in conformance with the CALIBRATION operation method. Discharge fluid from the measuring valve till air mixed left in a hose is eliminated.

*When charging by this operation, there is case when an error occurs by the residual air pass through the flowmeter. Continue CHARGE operation by pressing “Reset”

(1) Set the screen of ACW Controller to CALIBRATION screen.

(2) Perform operation from (2) to (10) of CALIBRATION operation method to discharge base resin supplied to CCV through the measuring valve. Discharge until air mixed in the route is eliminated.

(3) Follow the procedure sequentially for base resin, hardener, and flushing fluid (solvent).

(4) Finally clean the measuring tube according to the CALIBRATION operation method 11.

*NOTE: Refer to the instructions manual of “ACW Control Unit” about method of operation.

⚠ CAUTION

POSSIBILITY OF INTERNAL HARDENING

● **Be sure to clean when purge is finished.**

10 Preparation for Operation and Cautionary

⚠ WARNING

INJURY HAZARD

- **Before the power-up, always reduce the air supply pressure to zero so that the equipment does not accidentally move.**

FIRE AND EXPLOSION HAZARD

- **Before the power on, check that all units have been completely grounded.**
- **Before the power on, check for combustible (solvent containing) atmosphere around the ACW Control Unit. Do not turn on the power switch in the presence of a combustible atmosphere even in a small quantity.**

10-1 Preparation for operation

10-1-1 Power-on procedure and cautionary notes

(1) After connecting the paint hose, air tube, and electricity, supply the paint and compressed air.
See [7 Unpacking and Installation] and [9 Preparation of Paint and Compressed Air.]

(2) Check that the air pressure supplied to the ACW Control Unit and ACW Mixing Unit (for Solenoid Valve Box) have been set to zero so that the equipment does not accidentally move.

(3) Turn on power switch for ACW Control Unit.

NOTE: Refer to the instructions manual of “ACW Control Unit” about method of operation.

10-1-2 Paint conditions

(1) Never fail to adjust the fluid (base resin and hardener) pressures using the respective paint regulators. Adjust the pumps (feeders) to prevent pulsation of fluid flow and so that the dynamic (not static) pressures of base resin and hardener will be the same.

⚠ CAUTION

POSSIBILITY OF MIXING CONTROL, RATIO OR FLOW ERROR

- **Failure to adjust the paint pressures may lead to ratio error or pulsation of the spray.**
  Keep a higher pump pressure and install paint regulators to prevent pulsation.

POSSIBILITY OF INTERNAL HARDENING OF EQUIPMENT

- **Do not connect directly from circulating line to CCV except for special specification. If backflow of hardener should be caused by trouble of system and valve, hardening trouble is possible in the circulating line. When taking out paint from the circulating line, install a paint regulator branched from the line. Check valve and paint regulator prevent backflow.**

(2) Above all, keep a sufficient quantity of flushing fluid in stock. Be prepared to immediately flush the equipment in case of the “Pot Life Time Up” error or trouble in the paint line.

See [6-3 Flushing fluid (solvent)]

⚠ CAUTION

POSSIBILITY OF INTERNAL HARDENING OF EQUIPMENT

●When the flushing pump is idling and air is entangled in supply, the flowmeter still counts. Flushing under this condition is incapable of sufficient flush of the route, and hardening trouble is possible.

10-2 Caution in operation

10-2-1 Mixture Fluid in Mixing Hose

(1) When spray is interrupted long or when mixing ratio is changed, it is necessary to discard fluid of valve within ACW Mixing Unit, Mixing Hose, paint hose, and total volume up to spray gun.

<Reference: Hose specifications and waste spray quantities>

Mixing unit capacity	Mixing Hose, ID 6mm in 6m long	Mixing Hose through gun	ID	Hose capacity	Waste spray quantity
80mL	200mL	Hose length 3 m	ϕ6mm	85mL	365mL
			ϕ4mm	40mL	320mL

* Volume of mixing unit is a value in standard specification.

* Calculate waste spray time from discharge quantity and waste spray quantity.

(2) The above-mentioned amount of waste spray is applied to ACW controller's set value " Pot Life Reset Volume (Weight)" and it sets it.

NOTE: Refer to the instructions manual of “ACW Control Unit” about Input of numerical value.

10-2-2 Operation of spray gun (manual spray gun, automatic spray gun)

(1) This equipment alternately supplies the base resin and hardener and may not control the alternate supply if the spray gun on/off intervals are too short (1 second or less). For robot teaching, prepare a program for continuous spraying as far as possible.

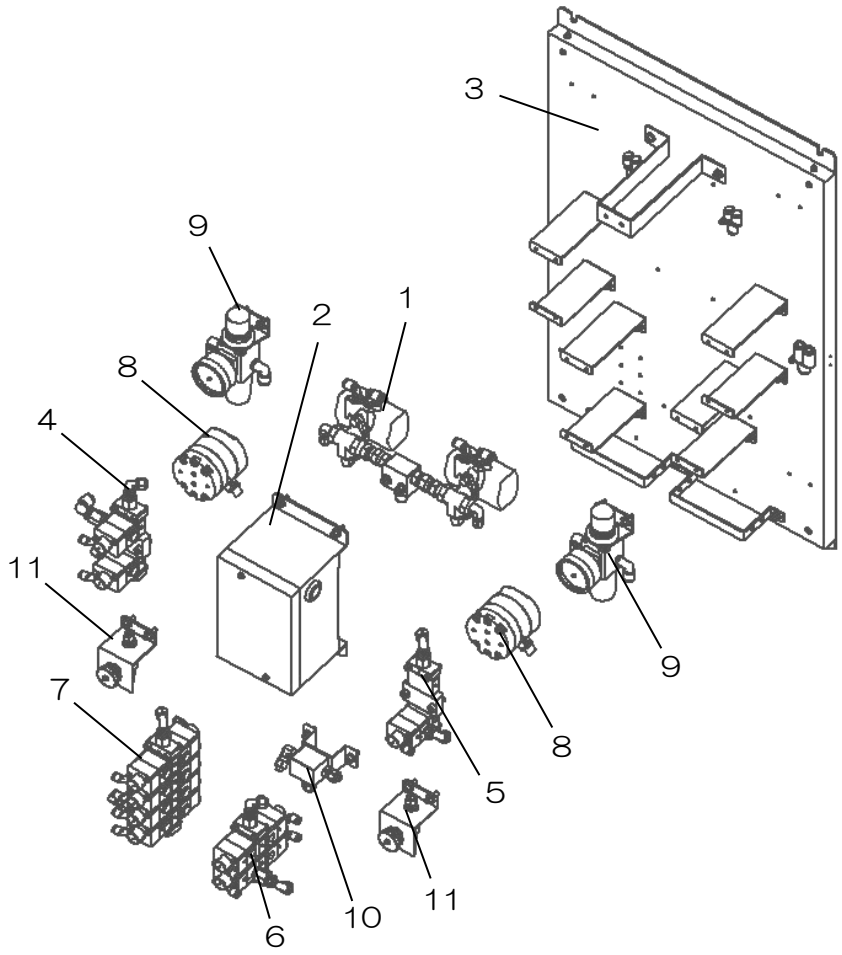
(2) Keep pulling the trigger of spray gun during color change and ADJUST operation. If a spray is stopped in the middle, abnormalities will occur or it will become a control trouble.

(3) Do not blow air using the spray gun (air spray or lap gun). The atomization air for spray gun serves as a starting switch for mixture control. Blowing air with the spray gun raises the “Flow Too Low” alarm.

NOTE: Refer to the instructions manual of “ACW Control Unit” about details of errors.

11 Exploded Diagram and Names of Parts

11-1 ACW Mixing Unit



No.	Part No.	Part name	Qty	Remarks
1	4929	Mixing Core ASSY	1	
2	26FA	Solenoid Valve Box Set	1	
3	1973	Base Plate	1	
4 (*1)	0857	MV Unit RA	1	Base resin side (for aluminum type)
	0857-1	MV Unit RS		Base resin side (For Stainless Type)
5 (*1)	0857-2	MV Unit HA	1	Hardener valve side (for aluminum type)
	0857-3	MV Unit HS		Hardener valve side (For Stainless Type)
6 (*2)	0856-□(*3)	CV Unit 2PHA	1	Valve Unit of Hardener valve side (for aluminum type)
	0855-□(*3)	CV Unit 2PS		Valve Unit of Base resin and Hardener (For Stainless Type)
7 (*2)	0854-□(*3)	CV Unit 2PA	1	Valve Unit of Base resin (for aluminum type)
	0855-□(*3)	CV Unit 2PS		Valve Unit of Base resin and Hardener (For Stainless Type)
8 (*4)	375-0004-1	Flowmeter Unit	2	Flow rate range 100～1000mL/min
	375-0006-1			Flow rate range 50～700mL/min
9	9910	Air Regulator Set	2	
10	6382-001	Manifold	1	
11	4929-010	Measuring Valve	2	

*1：Part No. is decided depending on material of wetted metal parts.

*2：The stractur like number of vavles depend on system specification. Patr No. is setted eache specification. See [11-4 Core Valve unit]

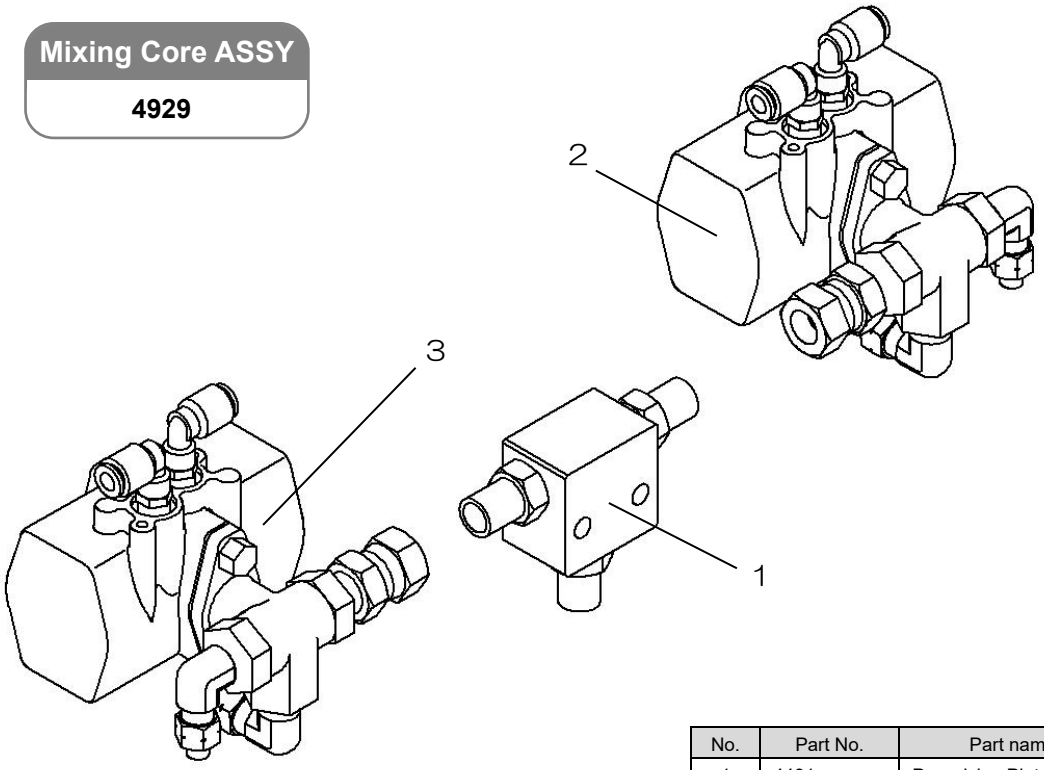
*3：For number in the“□”of the Part No., see [11-4 Core Valce unit].

*4：Specification and Part No is depend on flow rate range.

11-2 Elements of mixing unit

Mixing Core ASSY

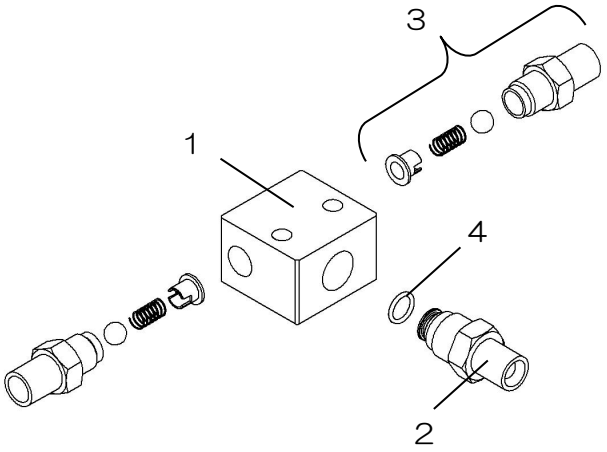
4929



No.	Part No.	Part name	Qty	Remarks
1	4431	Pre-mixing Plate	1	
2	4929-011	Three-way Valve A	1	
3	4929-012	Three-way Valve B	1	

Pre-mixing Base

4431

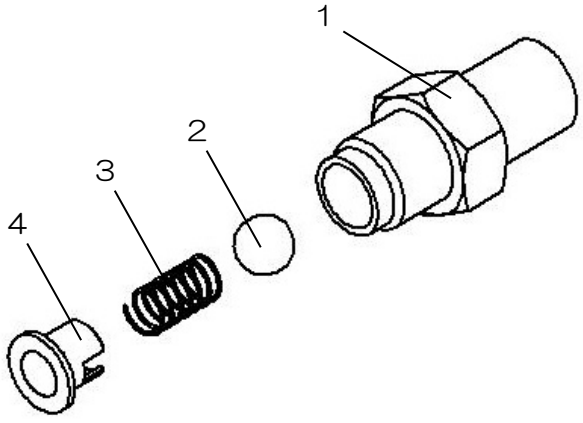


＜Pre-mixing Base 4431 Structure Table＞

No.	Part No.	Part name	Qty	Remarks
1	4431-001	Block	1	
2	4431-002	Hose Nipple	1	
3	3620	Check Valve	2	
4	101-9009	O-ring	1	

Check Valve

3620

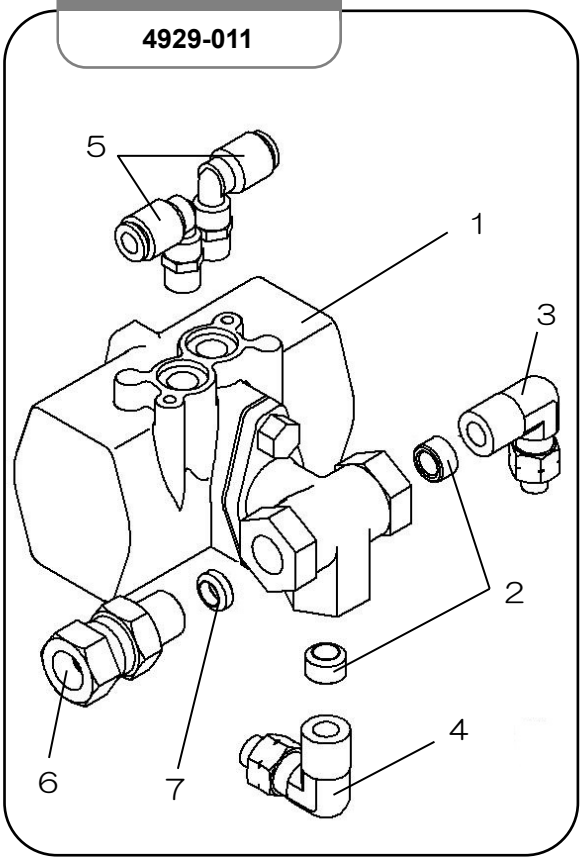


＜Check Valve 3620 Structure Table＞

No.	Part No.	Part name	Qty	Remarks
1	4430-004	Valve Body	1	
2	0231-009	Valve Ball	1	
3	4426-006	Spring	1	
4	4430-005	Gasket	1	

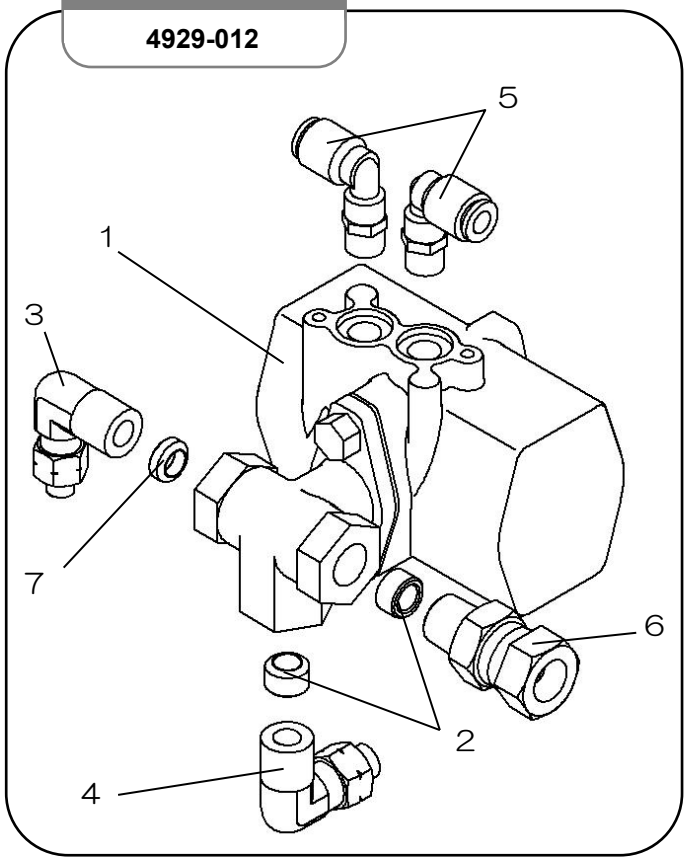
Three-way Valve A

4929-011



Three-way Valve B

4929-012

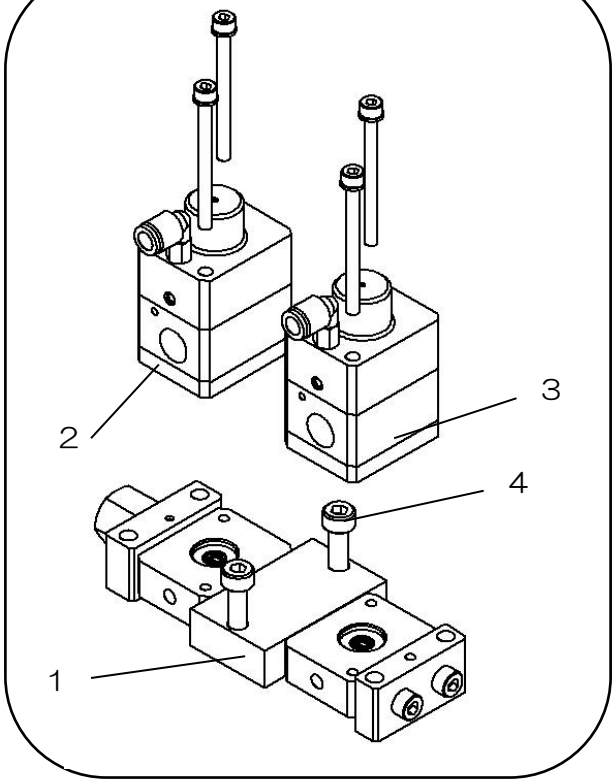


No.	Part No.	Part name	Qty	Remarks
1	325-0057	Air Operate Three-way Valve	1	
2	4920-031	Collar A	2	Color: White*1
3	345-0039	Elbow	1	
4	345-0050	Elbow	1	
5	384-0601	Quick Joint	2	
6	22E-4202	Union Joint	1	
7	4929-013	Collar B	1	Color: Black*1

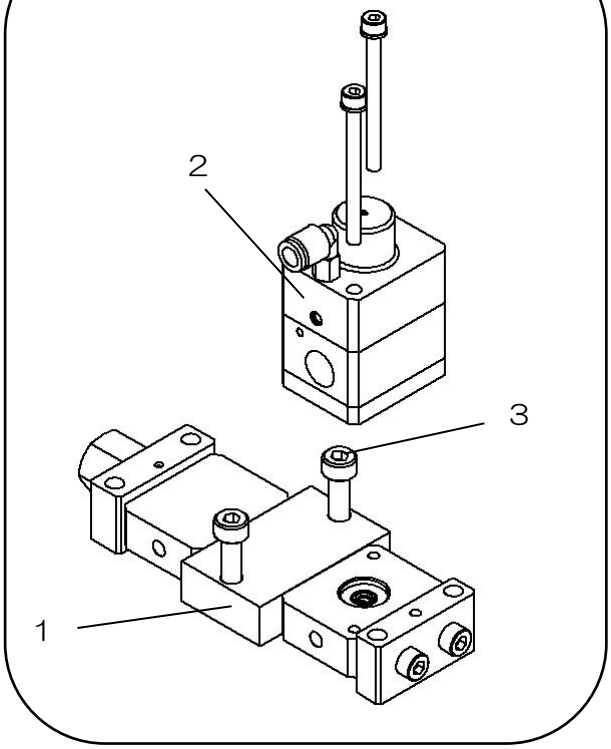
*1: The mounting position of 4929-011 and 4929-012 are the left and rightreversed.

11-3 Mixing Valve Unit

MV Unit for Base



MV Unit Hardener



MV Unit RA

0857(Aluminum type)

No.	Part No.	Part name	Qty	Remarks
1	3813	Manifold 2KRA	1	aluminum type *1
2	0845	2P Valve DFA	1	For air purge *2
3			1	aluminum type *1
4	03-80620	Hex Socket Bolt	2	

MV Unit HA

0857-2(Aluminum type)

No.	Part No.	Part name	Qty	Remarks
1	3813-2	Manifold 2KHA	1	aluminum type *1
2	0845	2P Valve DFA	1	aluminum type *1
3	03-80620	Hex Socket Bolt	2	03-80620

MV Unit RS

0857-1(Stainless Type)

No.	Part No.	Part name	Qty	Remarks
1	3813-1	Manifold2KRS	1	Stainless type *1
2	0845	2P Valve DFA	1	For air purge *2
3	0845-1	2P Valve DFS	1	Stainless type *1
4	03-80620	Hex Socket Bolt	2	

MV Unit HS

0857-3(Stainless Type)

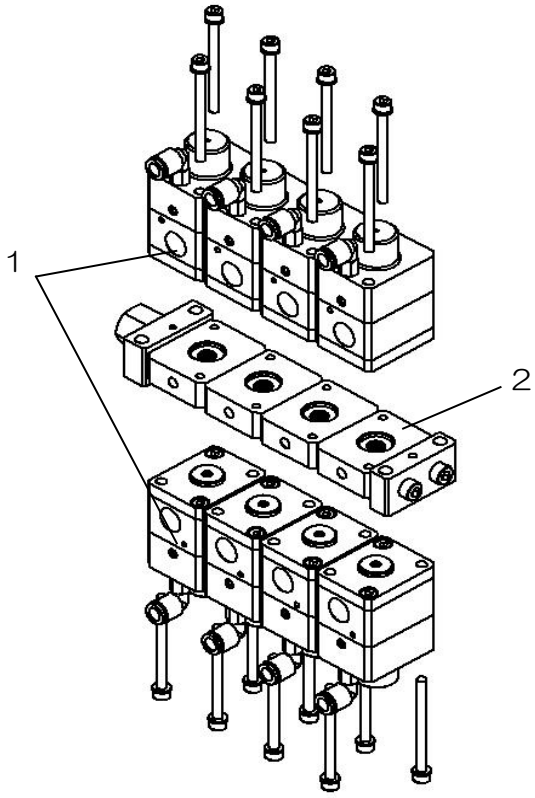
No.	Part No.	Part name	Qty	Remarks
1	3813-3	Manifold2KHS	1	Stainless type *1
2	0845-1	2P Valve DFS	1	Stainless type *1
3	03-80620	Hex Socket Bolt	2	

*1：The part material of wetted metal (Alminium or Stainless Steel) are changed by type of paint.
*2：Alminium is used for Air Purging Valve.
*3：The bolts to fix the valve are included Valve unit.
*4：A Name plate sticks to each valve. When it is necessary, please ask us and order it separately.

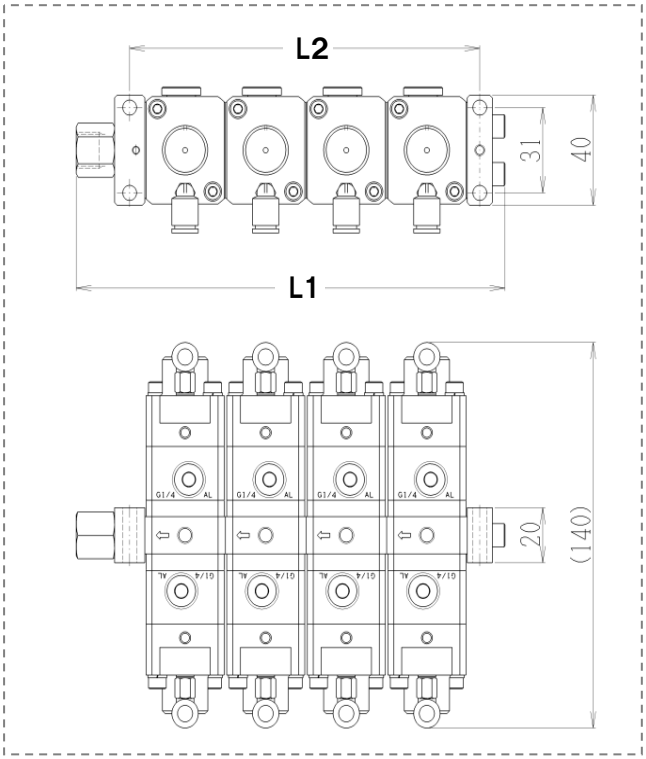
11-4 Core Valve Unit

CV Unit 2PA

0854-□(for Base Resin/Aluminum type)



(Unit：mm)



＜ Structure table ＞

*Number in the "□" of the parts No. indicates the number of mounting valves. See the table below.

			Number of mounted valves (pieces)							
Components			2	3	4	5	6	7	8	9
No.	Part No.	Part name	CV Unit Part Number *2							
			0854-2	0854-3	0854-4	0854-5	0854-6	0854-7	0854-8	0854-9
			Number of Part							
1 (*1)	0845	2P Valve DFA	2	3	4	5	6	7	8	9
2 (*2)	3814-2	Manifold	1							
	3814-3			1						
	3814-4				1					
	3814-5					1				
	3814-6						1			
	3814-7							1		
	3814-8								1	
	3814-9									1

＜Size table＞ (Unit:mm)

L1	74.2	106.2	138.2	170.2	202.2
L2	43	75	107	139	171

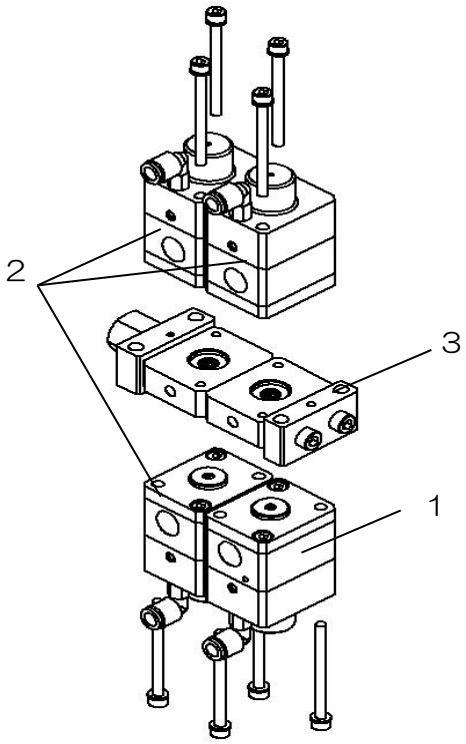
*1：The number of the need Valve is the number of the Base Resin Valves and one (for Solvent Valve).

*2：Part No. and configuration will change depending on number of valvs and pipe material.

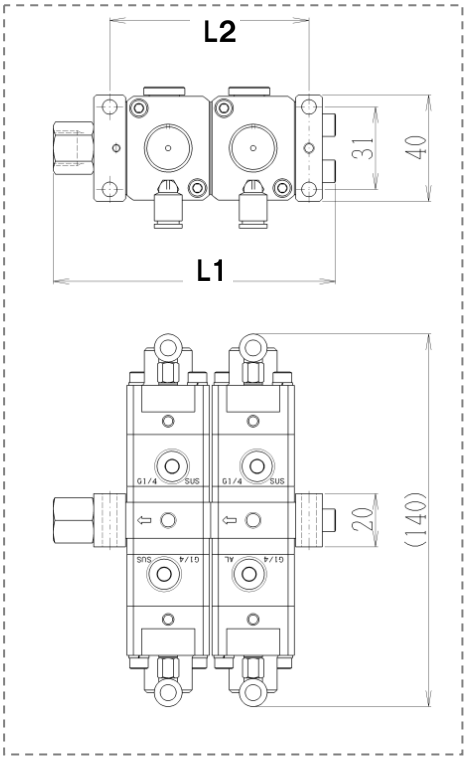
*3：A Name plate sticks to each valve. When it is necessary, please ask us and order it separately.

CV Unit 2PHA

0856-□(for Hardener/Aluminum type)



(Unit：mm)



＜Structure table＞

Components			Number of mounted valves (pieces)			
			2	3	4	5
No.	Part No.	Part name	Part Number of CV Unit *2			
			0856-2	0856-3	0856-4	0856-5
			Number of Part			
1	0845	2P Valve DFA	1			
2 (*1)	0845-1	2P Valve DFS	1	2	3	4
3 (*2)	3814-2	Manifold	1			
	3814-3			1		
	3814-4				1	
	3814-5					1

＜Size table＞ (Unit:mm)

L1	74.2	106.2	138.2
L2	43	75	107

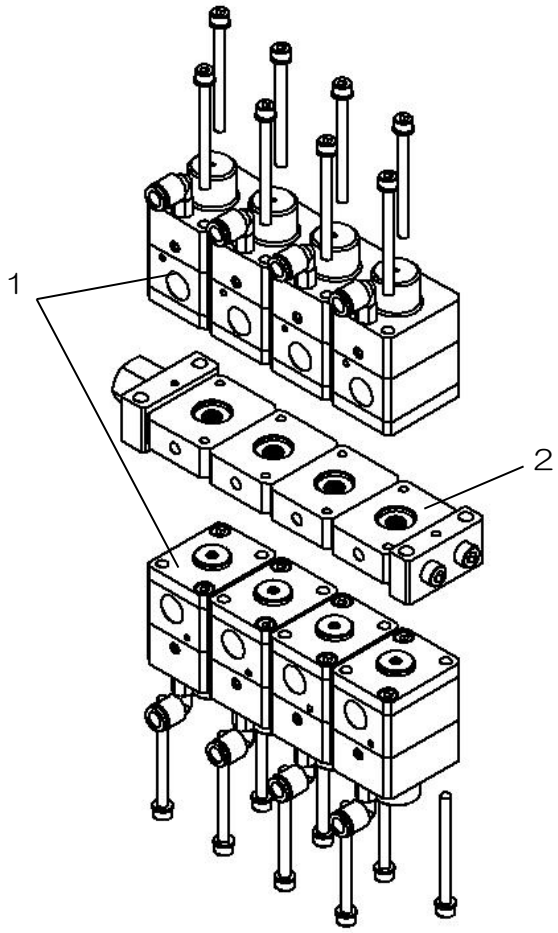
*1：The number of the need becomes the number of the Hardener Valves.

*2：Part No. and configuration will change depending on number of valvs and pipe material.

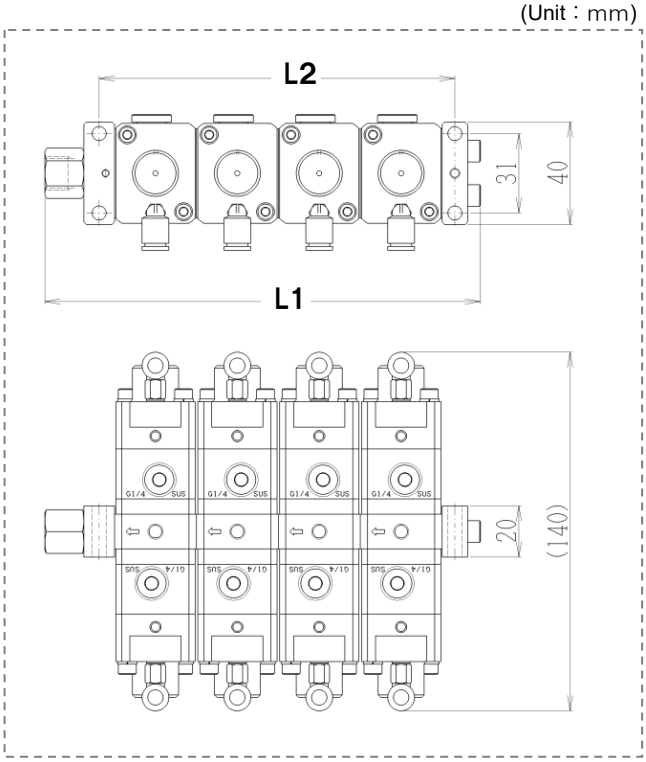
*3：A Name plate sticks to each valve. When it is necessary, please ask us and order it separately

CV Unit 2PS

0855-□(for Base Resin and Hardener/Stainless steel)



(Unit：mm)



＜Structure table＞

*Number in the "□" of the parts No. indicates the number of mounting valves. See the table below.

Components			Number of mounted valves (pieces)							
			2	3	4	5	6	7	8	9
No.	Part No.	Part name	Part Number of CV Unit *2							
			0855-2	0855-3	0855-4	0855-5	0855-6	0855-7	0855-8	0855-9
			Number of Part							
1 (*1)	0845-1	2P Valve DFS	2	3	4	5	6	7	8	9
2 (*2)	3815-2	Manifold	1							
	3815-3			1						
	3815-4				1					
	3815-5					1				
	3815-6						1			
	3815-7							1		
	3815-8								1	
	3815-9									1

＜Size table＞ (Unit:mm)

L1	74.2	106.2	138.2	170.2	202.2
L2	43	75	107	139	171

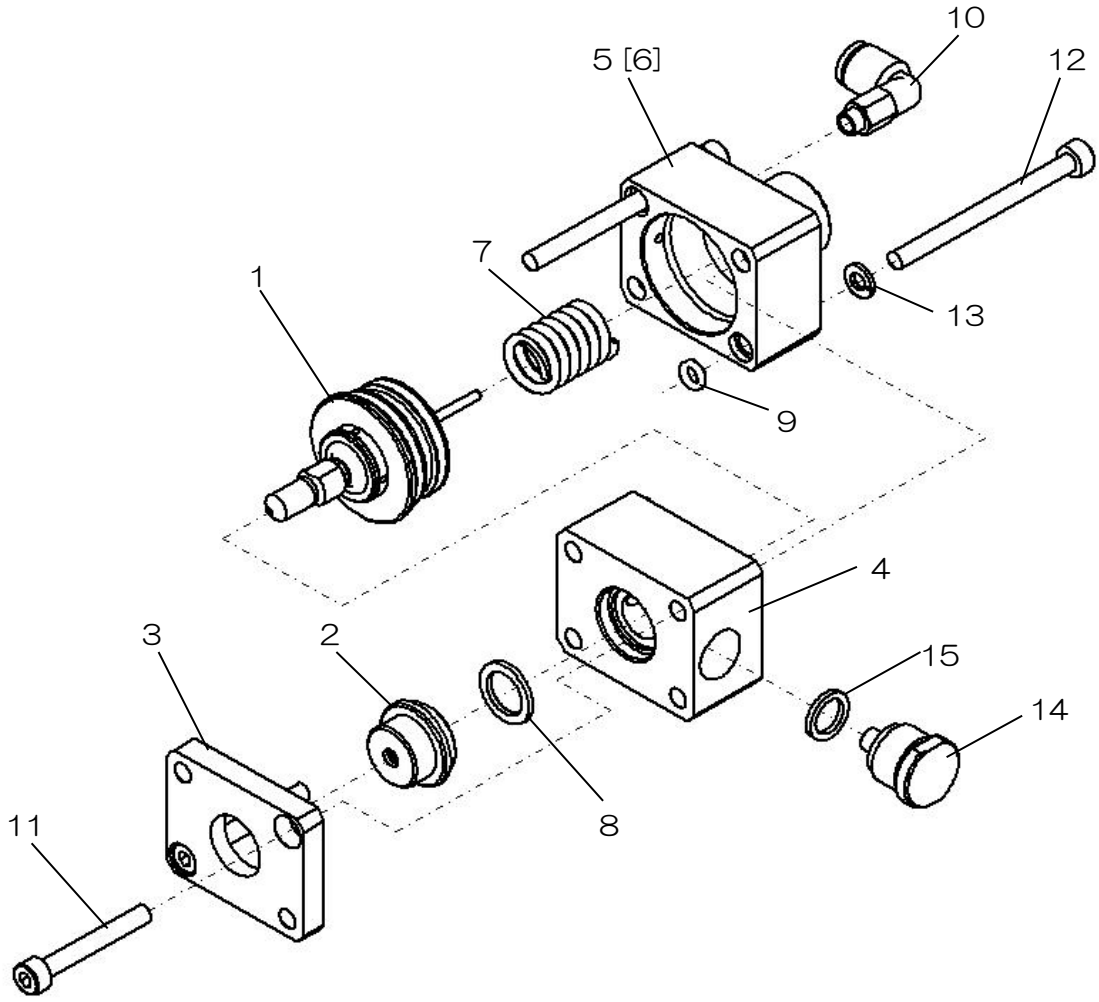
*1：The number of the need Valve is "the number of the Base Resin Valves and one (for Solvent Valve)" or "the number of the Hardener Valves and one (for Solvent Valve)".

*2：Part No. and configuration will change depending on number of valvs and pipe material.

*3：A Name plate sticks to each valve. When it is necessary, please ask us and order it separatel.

11-5 Paint Valve

2P Valve DFA	2P Valve DFS
0845(Aluminum type)	0845-1(Stainless Type)



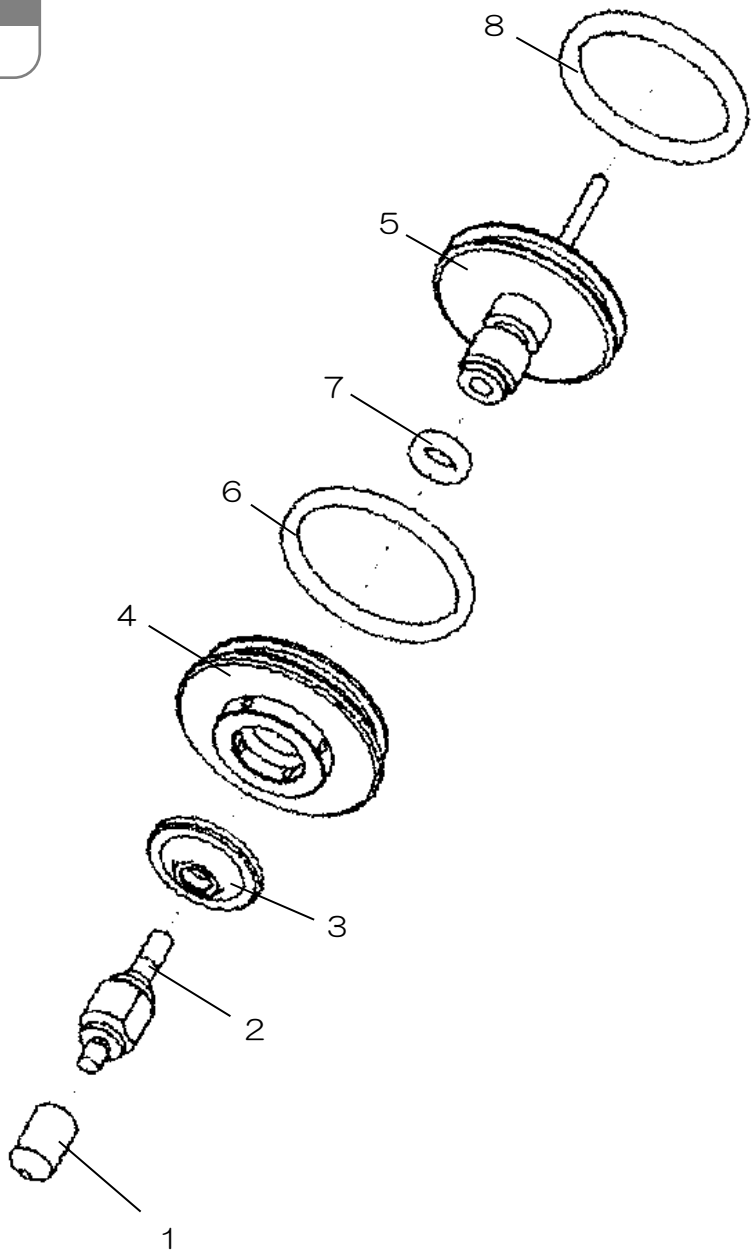
No.	Part No.	Part name	Qty	Remarks
1	0845-001	Needle 2P	1	
2	0845-009	Seat	1	
3	0845-010	Housing	1	
4	0845-011 (0845-111)	Body A (Body S)	1	
5	0845-012	Cylinder	1	
6	0845-013	Nameplate	1	
7	1294-014	Spring	1	
8	155-2010A	Back-up Ring	1	

No.	Part No.	Part name	Qty	Remarks
9	130-6004	O-ring	2	
10	384-0600	Quick Joint	1	
11	03-80430	Hex Socket Bolt	2	
12	03-80450	Hex Socket Bolt	2	
13	41-80400	Spring Washer	2	
14	0845-014	Plug	1	
15	155-2008	Back-up Ring	1	

*The brackets ( ) indicate for the stainless type, 0845-1.

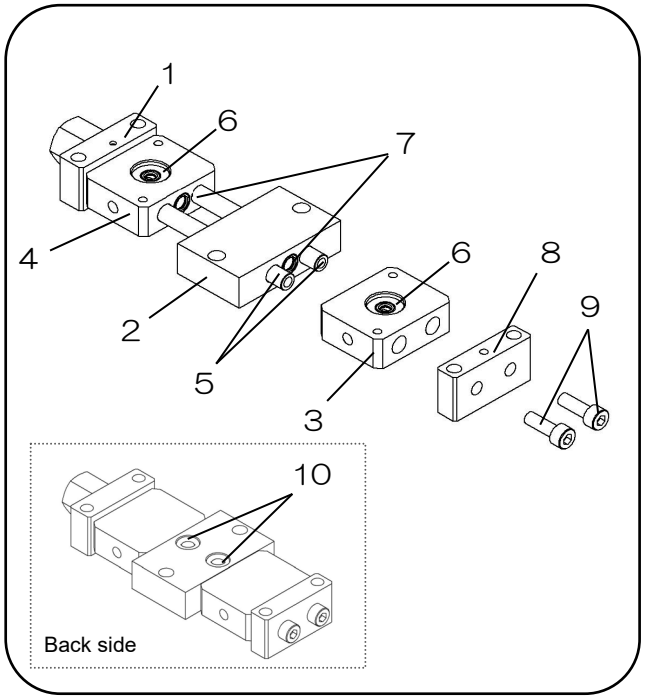
Needle 2P

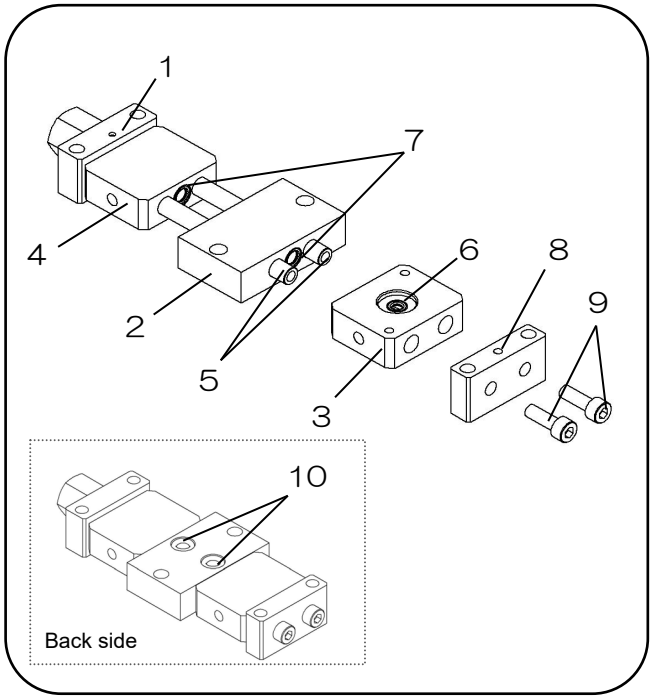
0845-001



No.	Part No.	Part name	Qty	Remarks
1	0845-002	Head	1	
2	0845-003	Rod	1	
3	0845-004	Diaphragm	1	
4	0845-005	Retainer	1	
5	0845-006	Piston	1	
6	130-6024	O-ring	1	
7	101-9005	O-ring	1	
8	101-6022	O-ring	1	

11-6 Manifold (for Mixing Valve Unit)





Manifold 2KRA

3813(Aluminum type)

No.	Part No.	Part name	Qty	Remarks
1	3808-002	Plate FG set	1	
2	3812-001	FM Manifold A	1	
3	3808-013	Manifold ASE	1	
4	3808-012	Manifold ASM	1	
5	3808-043	Pipe 3	2	
6	130-2005	O-ring	2	
7	130-2006	O-ring	2	
8	3808-021	Plate E	1	
9	03-80515	Hex Socket Bolt	2	
10	101-2007	O-ring	2	

Manifold 2KHA

3813-2(Aluminum type)

No.	Part No.	Part name	Qty	Remarks
1	3808-002	Plate FG set	1	
2	3812-001	FM Manifold A	1	
3	3808-013	Manifold ASE	1	
4	3808-019	Manifold ANM	1	
5	3808-043	Pipe3	2	
6	130-2005	O-ring	1	
7	130-2006	O-ring	2	
8	3808-021	Plate E	1	
9	03-80515	Hex Socket Bolt	2	
10	101-2007	O-ring	2	

Manifold 2KRS

3813-1(Stainless type)

No.	Part No.	Part name	Qty	Remarks
1	3808-002	Plate FG set	1	
2	3812-101	FM Manifold S	1	
3	3810-013	Manifold SSE	1	
4	3810-012	Manifold SSM	1	
5	3808-043	Pipe 3	2	
6	130-2005	O-ring	2	
7	130-2006	O-ring	2	
8	3808-021	Plate E	1	
9	03-80515	Hex Socket Bolt	2	
10	101-2007	O-ring	2	

Manifold2 KHS

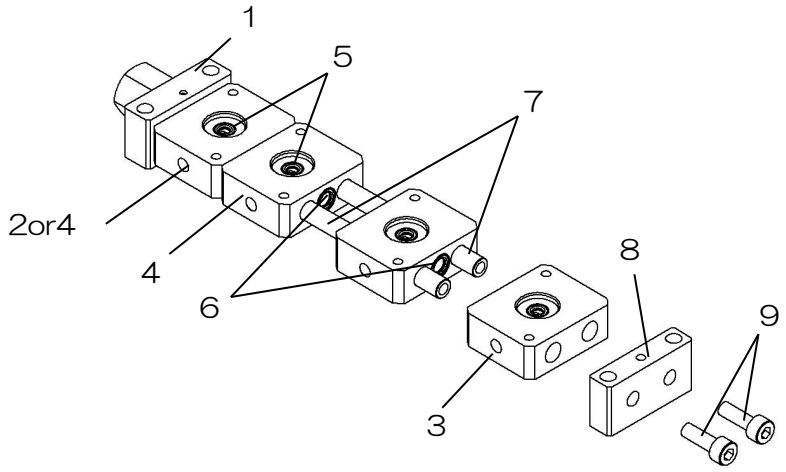
3813-3(Stainless type)

No.	Part No.	Part name	Qty	Remarks
1	3808-002	Plate FG set	1	
2	3812-101	FM Manifold S	1	
3	3810-013	Manifold SSE	1	
4	3810-019	Manifold SNM	1	
5	3808-043	Pipe 3	2	
6	130-2005	O-ring	1	
7	130-2006	O-ring	2	
8	3808-021	Plate E	1	
9	03-80515	Hex Socket Bolt	2	
10	101-2007	O-ring	2	

11-7 Manifold (Core Valve Unit 用)

Manifold

3814-□(Aluminum type)

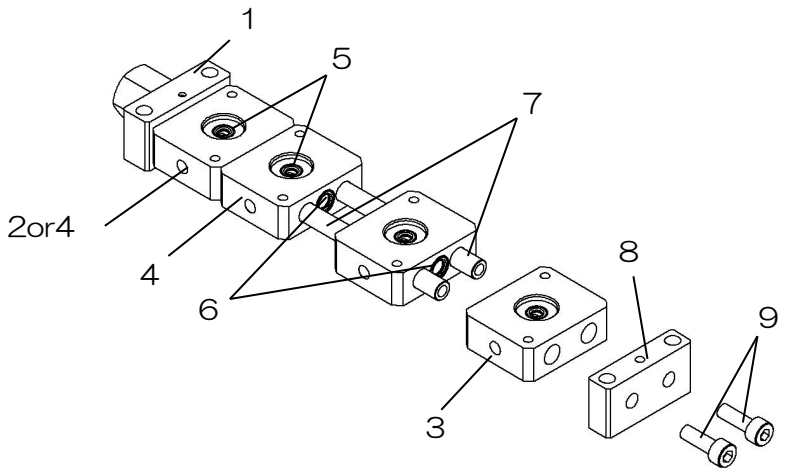


*Number in the "□" of the parts No. indicates the number of mounting valves. See the table below.

Components			Number of mounted valves (pieces)							
			2	3	4	5	6	7	8	9
No.	Part No.	Part name	Part Number of Manifold							
			3814-2	3814-3	3814-4	3814-5	3814-6	3814-7	3814-8	3814-9
			Number of Part							
1	3808-002	Plate FG set	1set							
2	3808-010	Manifold ADM	-	-	1	1	2	2	3	3
3	3808-011	Manifold ADE	1							
4	3808-012	Manifold ASM	-	1	-	1	-	1	-	1
5	3808-041	Pipe 1	2	-	-	-	-	-	-	-
	3808-042	Pipe 2	-	2		-	-	-	-	-
	3808-043	Pipe 3	-	-	-	2		-	-	-
	3808-044	Pipe 4	-	-	-	-	-	2		
	3808-045	Pipe 5	-	-	-	-	-	-	-	2
6	130-2005	O-ring	2	3	4	5	6	7	8	9
7	130-2006	O-ring	-	1		2		3		4
8	3808-021	Plate E	1							
9	03-80515	Hex Socket Bolt	2							

Manifold

3815-□(Stainless type)



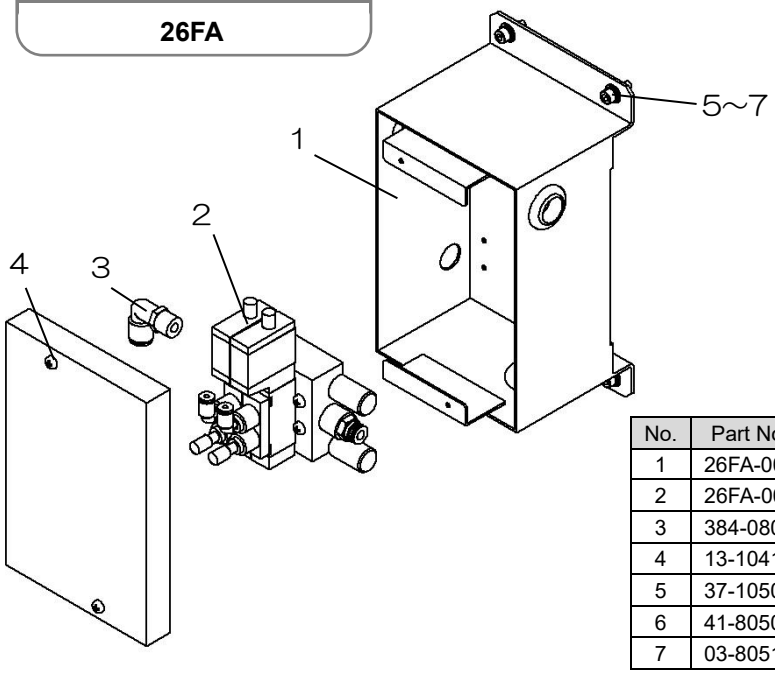
*Number in the "□" of the parts No. indicates the number of mounting valves. See the table below.

Components			Number of mounted valves (pieces)							
			2	3	4	5	6	7	8	9
No.	Part No.	Part name	Part Number of Manifold							
			3815-2	3815-3	3815-4	3815-5	3815-6	3815-7	3815-8	3815-9
			Number of Part							
1	3808-002	Plate FG set	1set							
2	3810-010	Manifold SDM	-	-	1	1	2	2	3	3
3	3810-011	Manifold SDE	1							
4	3810-012	Manifold SSM	-	1	-	1	-	1	-	1
5	3808-041	Pipe 1	2	-	-	-	-	-	-	-
	3808-042	Pipe 2	-	2		-	-	-	-	-
	3808-043	Pipe 3	-	-	-	2		-	-	-
	3808-044	Pipe 4	-	-	-	-	-	2		
	3808-045	Pipe 5	-	-	-	-	-	-	-	2
6	130-2005	O-ring	2	3	4	5	6	7	8	9
7	130-2006	O-ring	-	1		2		3		4
8	3808-021	Plate E	1							
9	03-80515	Hex Socket Bolt	2							

11-8 Solenoid Valve Box set

Solenoid Valve Box

26FA



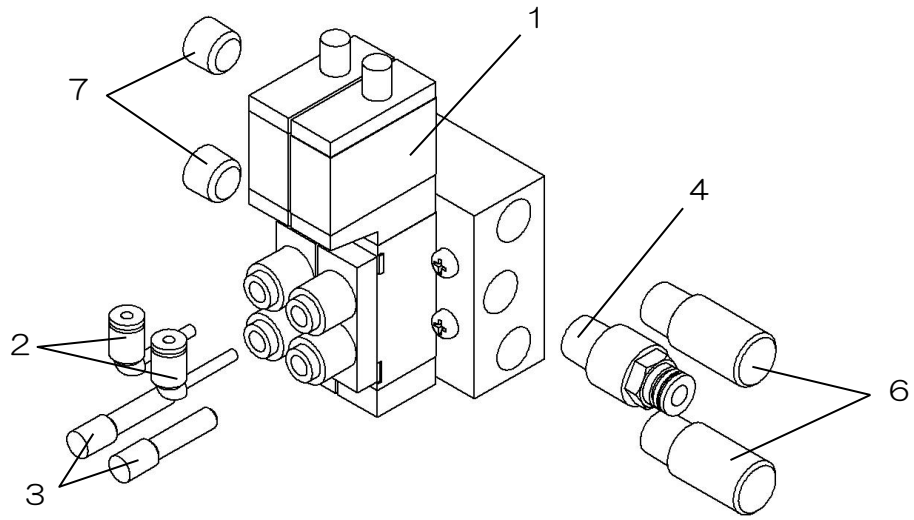
No.	Part No.	Part name	Qty	Remarks
1	26FA-001	Solenoid Valve BOX	1	Set of box and
2	26FA-002	Solenoid Valve ASSY	1	2 pieces set
3	384-0802	Quick Joint	1	
4	13-10410	SEMS screw	2	
5	37-10500	Washer	4	
6	41-80500	Spring Washer	4	
7	03-80510	Hex Socket Bolt	4	

* It is recommended to keep Solenoid Valve <411-0128> as single units in stock.

11-9 Solenoid Valve ASSY

Solenoid Valve Assy

26FA-002

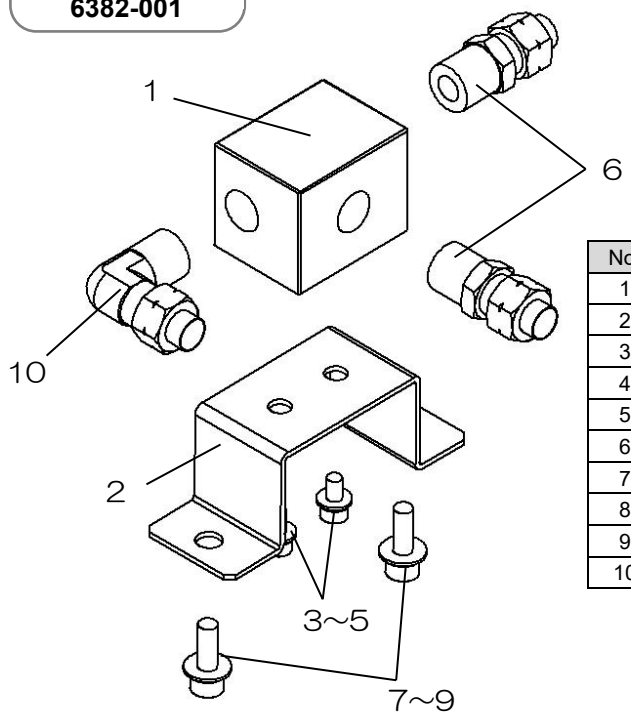


No.	Part No.	Part name	Qty	Remarks
1	26FA-003	Solenoid Valve ASSY	1	SOL • Manifold set
2	342-0178	Quick Joint	2	
3	393-0600	Plug	2	
4	342-0158	Exhaust Valve	1	
5	Nil			
6	6606-014	Muffler	2	
7	244-2002	Hex Socket Plug	2	

11-10 Manifold (for solvent)

Manifold

6382-001

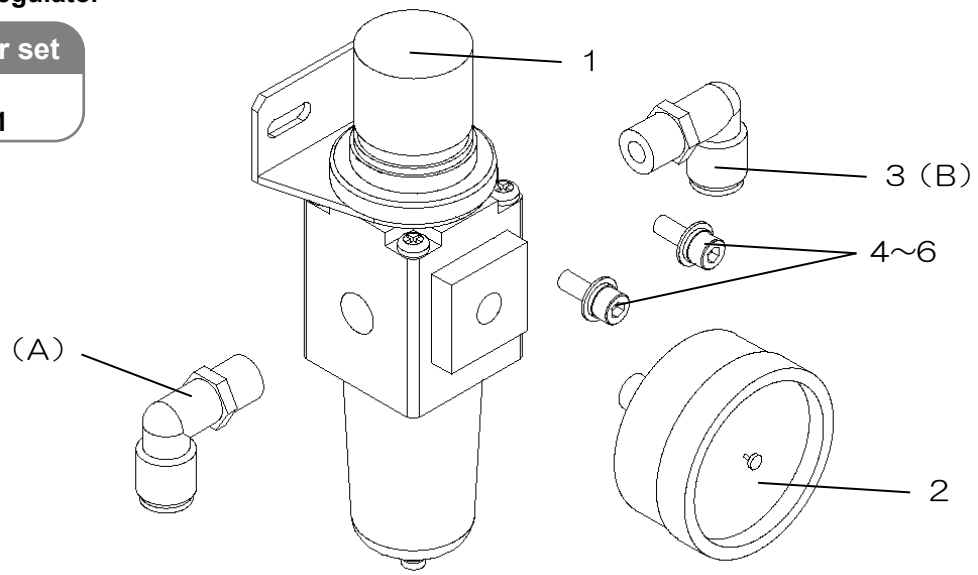


No.	Part No.	Part name	Qty	Remarks
1	6382-001-1	Manifold	1	Only block
2	6382-001-2	Bracket	1	
3	03-80408	Hex Socket Bolt	2	
4	41-80400	Spring Washer	2	
5	37-10400	Washer	2	
6	345-0049	Connector	2	
7	37-10500	Washer	2	
8	41-80500	Spring Washer	2	
9	03-80510	Hex Socket Bolt	2	
10	345-0050	Elbow	1	

11-11 Air Regulator

Regulator set

9910
9910-1



No.	Part No.	Part name	Qty	Remarks
1	301-0070	Filter Regulator	1	
2	305-0033	Pressure Gauge	1	0.6MPa
3	384-0802	Quick Joint	2	

No.	Part No.	Part name	Qty	Remarks
4	03-80515	Hex Socket Bolt	2	M5×14（plated）
5	41-80500	Spring Washer	2	M5（plated）
6	37-10500	Washer	2	M5

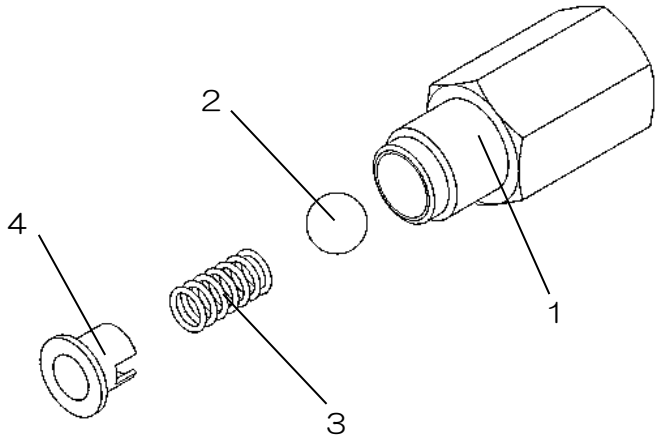
*1:For part No. 9910, (A)is inlet and,(B)is outlet.

*2:For part No. 9910-1, (B)is inlet and,(A)is outlet.

11-12 Check Valve for Solvent Valve / Air Purge Valve

Check Valve

3625

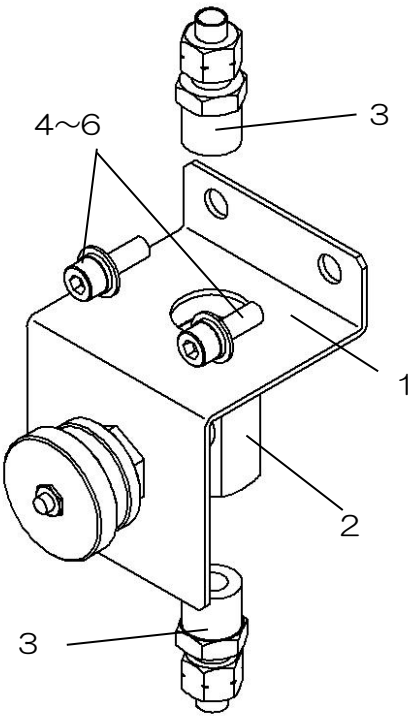


No.	Part No.	Part name	Qty	Remarks
1	3625-001	Case	1	
2	0231-009	Valve Ball	1	
3	4426-006	Spring	1	Low pressure
4	4430-005	Gasket	1	

11-13 Measuring Valve

Measuring Valve

4929-010



No.	Part No.	Part name	Qty	Remarks
1	4929-001	Bracket	1	
2	304-0019	Needle Valve	1	
3	345-0040	Connector	2	
4	37-10500	Washer	2	
5	41-80500	Spring Washer	2	
6	03-80510	Hex Socket Bolt	2	
7	5254-201	Nameplate	1	

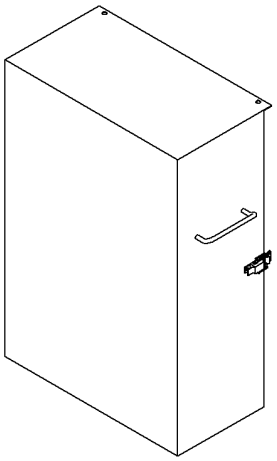
11-14 Cover

There is the case that a normal frame and box are not used for by specifications.

Please refer to drawings.

Cover

1973-010



No.	Part No.	Part name	Qty	Remarks
1	1973-010-1	Cover	1	
2	322-0034	Handle	2	
3	323-0006	Crip	2	
4	12-10306	SEMS screw	8	
5	12-10510	SEMS screw	4	

11-15 Mixer

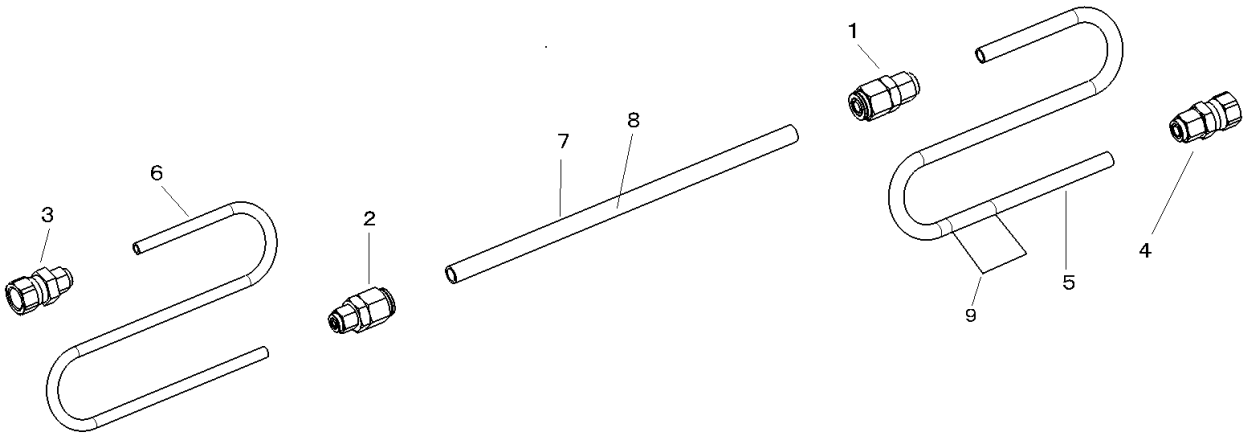
Static Mixer and Mixing Hose are different depending on delivery specifications.

In this clause, it shows the exploded diagram of the general Static Mixer and Mixing Hose.

11-15-1 Mixing Hose L (for low-pressure type)

Model: AMH-LD6 (for ϕ6-4) Part No.: 4433 (for ϕ6-4)

This Mixing Hose is used for low-pressure spray gun.

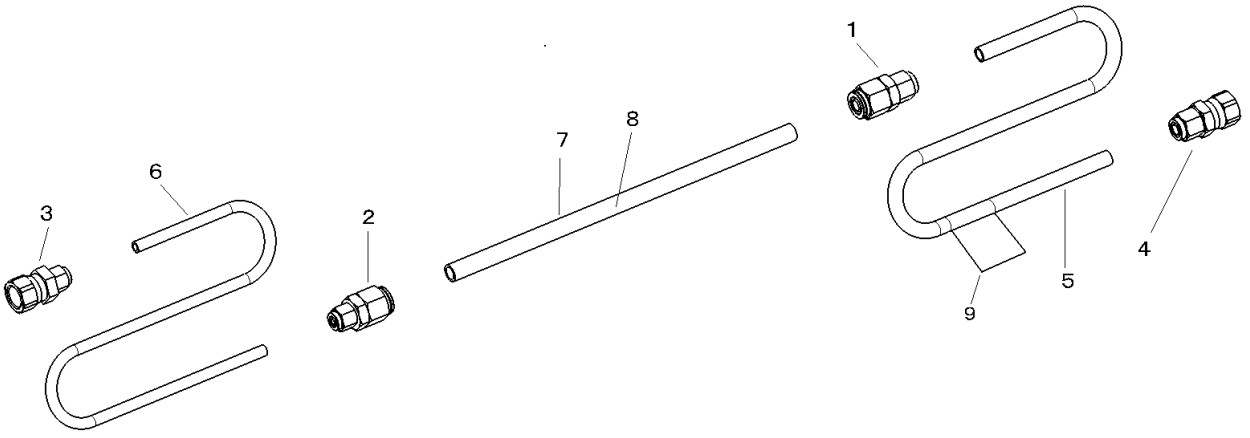


No.	Part No.	Part name	Qty	Remarks
1	3254-001	Union	1	
2	3254-022	Union	1	
3	342-0056	Hose Joint	1	
4	342-0057	Hose Joint	1	
5	52C-0030	Teflon Tube	1	3m

No.	Part No.	Part name	Qty	Remarks
6	570-0020	Teflon Tube	1	2m
7	4432-001	Tube	1	
8	4425-014-3	Element	2	
9	5254-039	Hose Label	1	

Model: MH-LD8 (for ϕ8-6) Part No.: 4433-1 (for ϕ8-6)

This Mixing Hose is used for low-pressure spray gun.

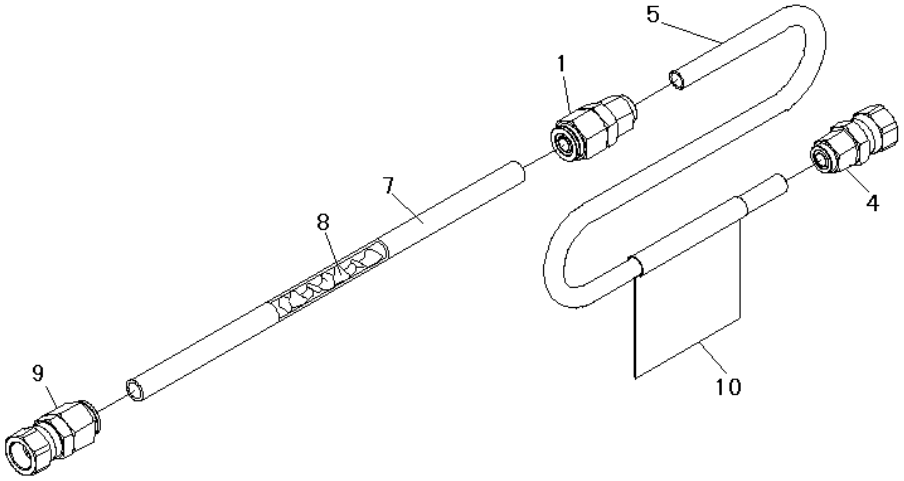


No.	Part No.	Part name	Qty	Remarks
1	3254-001	Union	2	
2	Nil	-	-	-
3	Nil	-	-	-
4	342-0057	Hose Joint	1	
5	52C-0030	Teflon Tube	1	3m

No.	Part No.	Part name	Qty	Remarks
6	570-0020	Teflon Tube	1	2m
7	4432-001	Tube	1	
8	4425-014-3	Element	2	
9	5254-039	Hose Label	1	

Model: AMH-L1/4, Part No.: 4433-2

This Mixing Hose is used for low-pressure automatic spray gun, two or more spray guns.



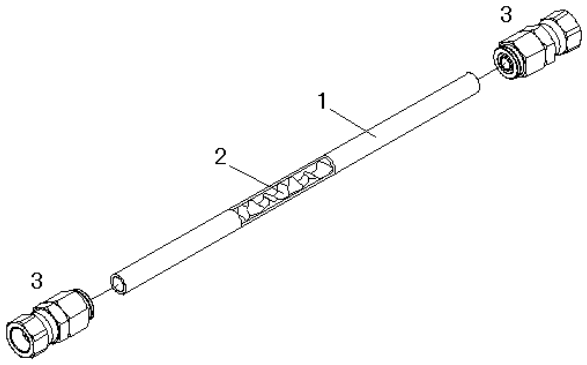
No.	Part No.	Part name	Qty	Remarks
1	3254-001	Union	1	MUJ08-3/8
2	248-7202	Nipple	1	
3	Nil	-	-	-
4	342-0057	Hose Joint	1	
5	52C-0030	Teflon Tube	1	TP4-8x6 3m

No.	Part No.	Part name	Qty	Remarks
6	Nil	-	-	-
7	4432-001	Tube	1	3/8, L219
8	4425-014-3	Element	2	
9	342-0155	Hose Connector	1	NP5-3/8-G02-SUS
10	5254-039	Hose Label	1	

11-15-2 Static Mixer L (for low-pressure type)

Model: ASM100LS, Part No.: 4432

This Static Mixer is connected through a Pre-mixing base <4431>.



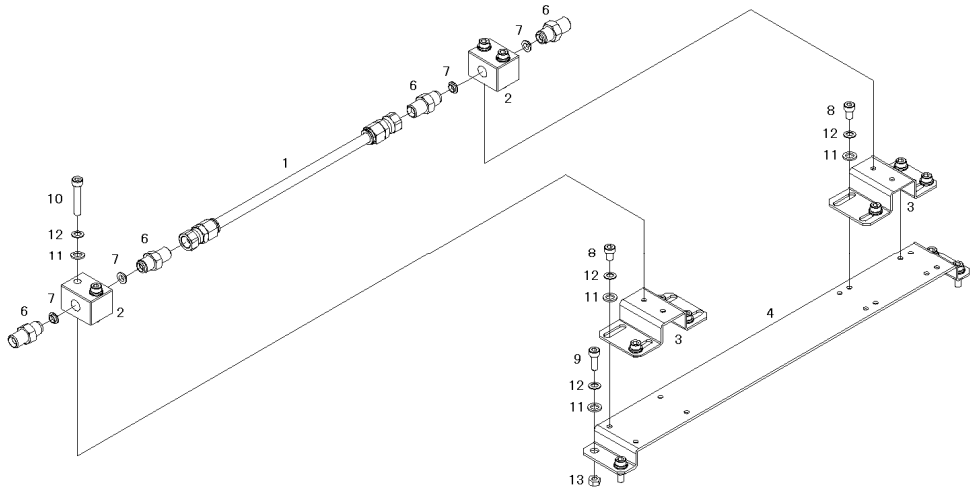
No.	Part No.	Part name	Qty	Remarks
1	4432-001	Tube	1	
2	4425-014-3	Element	2	

No.	Part No.	Part name	Qty	Remarks
3	342-0155	Hose Connector	2	

11-15-3 Static Mixer LB (for low-pressure type)

Model: ASM100LB, Part No.: 4439

This Static Mixer is installed to a bracket.



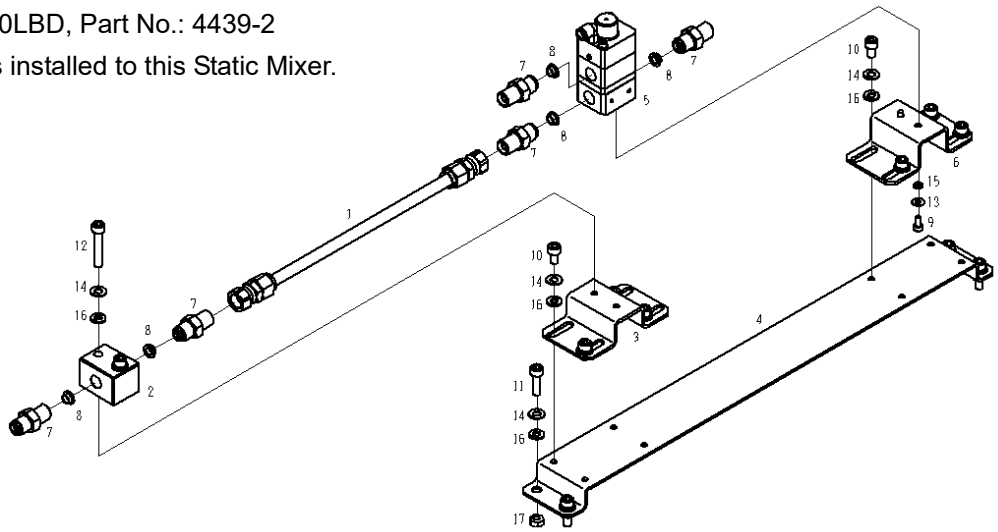
No.	Part No.	Part name	Qty	Remarks
1	4432	Static Mixer	1	ASM100L
2	4437-002	Base	2	
3	4437-003	Bracket	2	
4	4439-004	Bracket	1	
5	Nil	-	-	-
6	134E-025	Hose Nipple	4	
7	4425-007	Gasket	4	

No.	Part No.	Part name	Qty	Remarks
8	03-80610	Hex Socket Bolt	8	M6x10 (Plated)
9	03-80620	Hex Socket Bolt	4	M6x20 (Plated)
10	03-80635	Hex Socket Bolt	4	M6x35 (Plated)
11	37-10600	Plain Washer	16	M6
12	41-80600	Spring Washer	16	M6 (Plated)
13	15-10600	Hex Nut	4	M6

11-15-4 Static Mixer LBD (for low-pressure type)

Model: ASM100LBD, Part No.: 4439-2

A drain valve is installed to this Static Mixer.



No.	Part No.	Part name	Qty	Remarks
1	4432	Static Mixer	1	ASM100LS
2	4437-002	Base	1	
3	4437-003	Bracket	1	
4	4439-005	Bracket	1	
5	0848-3	G Valve S-G	1	GV-SG
6	4439-006	Bracket	1	
7	134E-025	Hose Nipple	5	
8	4425-007	Gasket	5	
9	03-80410	Hex Socket Bolt	2	M4x10(Plated)

No.	Part No.	Part name	Qty	Remarks
10	03-80610	Hex Socket Bolt	8	M6x10 (Plated)
11	03-80620	Hex Socket Bolt	4	M6x12 (Plated)
12	03-80635	Hex Socket Bolt	2	M6x20 (Plated)
13	37-10400	Plain Washer	2	M4
14	37-10600	Plain Washer	14	M6
15	41-80400	Spring Washer	2	M4 (Plated)
16	41-80600	Spring Washer	14	M6 (Plated)
17	15-10600	Hex Nut	4	M6

12 List of Consumable Parts

Durable lives of the parts may vary depending on the type of paint used and coating and equipment conditions. The values shown below should be taken as reference lives under the conditions of 20 working days per month and 8 hours per day.

(1) 2P Valve DFA • 2P Valve DFS ＜Part No.：0845, 0845-1＞

Part No.	Part name	Qty	Durable life	Remarks
0845-002	Head	1	12 month	
0845-004	Diaphragm	1	12 month	Or 10 million cycle
0845-009	Seat	1	12 month	
101-9005	O-ring	1	Until overhauled	O-ring for Piston
101-6022	O-ring	1	Until overhauled	O-ring for Piston
130-6024	O-ring	1	Until overhauled	O-ring for Retainer

(2)-① Flowmeter MAX 700ml/min < Part No.: 375-0006>

Part No.	Part name	Qty	Durable life	Remarks
134-9125	O-ring (exclusive)	1	Until overhauled	O-ring around flowmeter gear.
101-2007	O-ring (P7)	2	Until overhauled	O-ring for manifold.

* It is recommended to keep a surplus number of flowmeters as single units in stock.

(2)-② Flowmeter MAX 1000ml/min < Part No.: 375-0004>, 2000ml/min < Part No.: 375-0007>

Part No.	Part name	Qty	Durable life	Remarks
134-9132	O-ring (exclusive)	1	Until overhauled	O-ring around flowmeter gear.
101-2007	O-ring (P7)	2	Until overhauled	O-ring for manifold.

* It is recommended to keep a surplus number of flowmeters as single units in stock.

(3) Solenoid Valve Box (Intrinsic safety explosion-proof type)

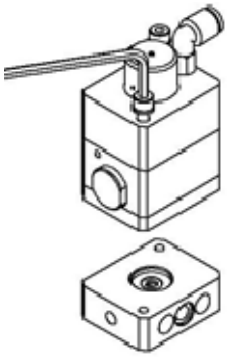
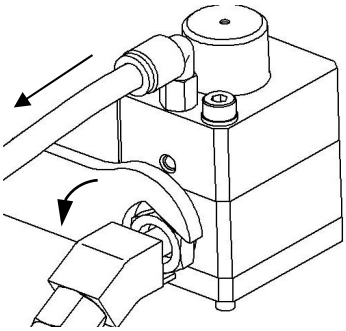
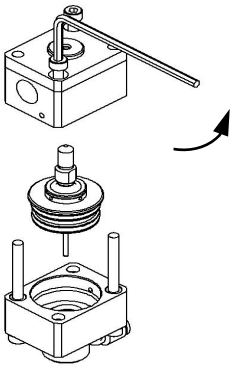
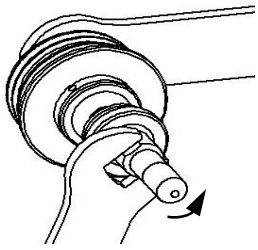
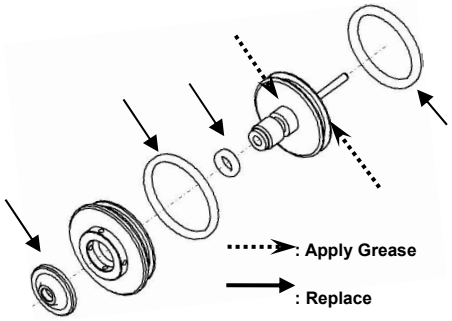
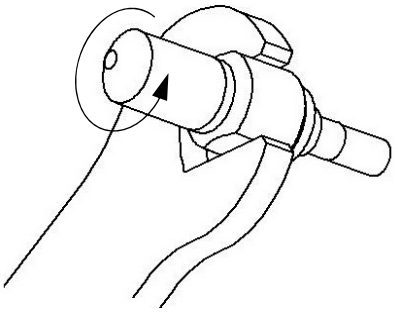
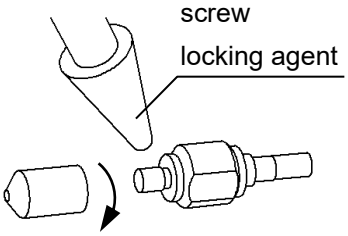
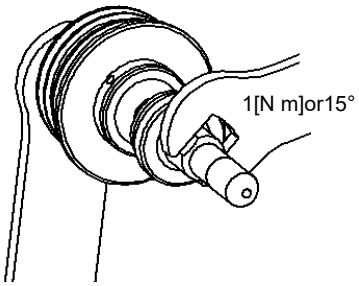
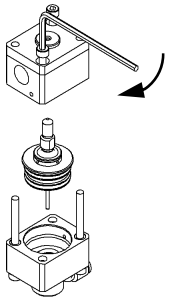
Part No.	Part name	Qty	Durable life	Remarks
411-0128	Solenoid Valve	2	12 months	Replace Solenoid Valve as a single unit.

(4) Remote Control Box

Part No.	Part name	Qty	Durable life	Remarks
3913	Air Flow Switch	1	Replace as necessary	For manual spray gun.

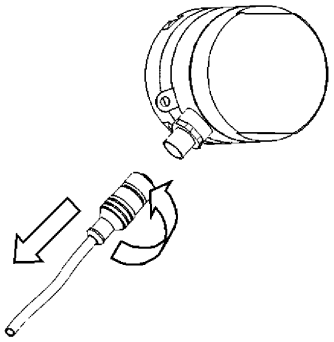
* For the paint regulators, pumps (feeders) and other devices, see the relevant instruction manuals.

13-1 Overhauling and Maintenance

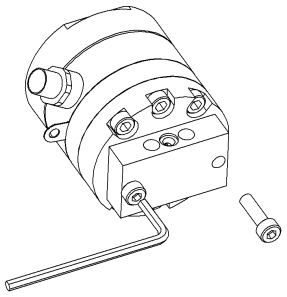
		
(1) Reduce the fluid pressure and operating air pressure to zero. Use a wrench (3 mm) to fasten two hexagon socket screws.	(2) Remove the air tube. Use a spanner (14 or 17 mm) to remove the paint joint.	(3) Use a wrench (3 mm) to remove two hexagon socket screws to disassemble the valve. Wipe grease from the piston with cloth.
		
(4) Use a spanner (7 mm) to disassemble the needle 2P.	(5) Replace the diaphragm, seats, and O-rings. Apply grease (*1) to grooves for the O-rings.	(6) Use pliers to remove the head while fixing the width across the flat (7mm) of the rod.
		
(7) Apply screw locking agent (*2) and mount the head. Wipe off excessive screw locking agent with a soft cloth that has cleaning solvent absorbed.	(8) Use a torque wrench (1 N m) to mount the needle 2P. If a torque wrench is not available, re-tighten it for 15° after the screw section is settled on the seat.	(9) Assembly the cylinder, needle 2P and body in the reversed order from the disassembly.

13-2 Flowmeter

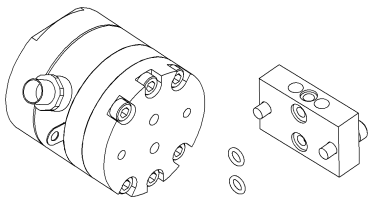
Flush the ACW Mixing Unit before overhauling.



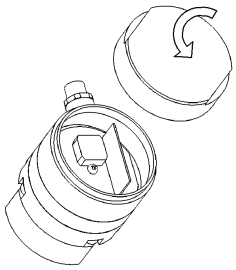
(1) Remove the flow meter cable.
Disconnect the flow meter cable connector.



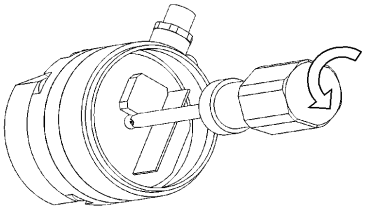
(2) Remove the manifold.
Remove two hex socket bolts using a wrench (5mm) and remove the manifold from the flow meter



(3) Replace the O-ring.
When using the high-pressure type, never fail to replace the two O-rings of the manifold. See [12 List of Consumable Parts].

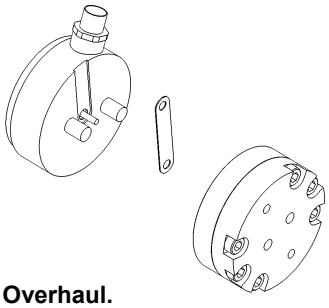


(4) Overhaul the amplifier.
Remove the case lid.

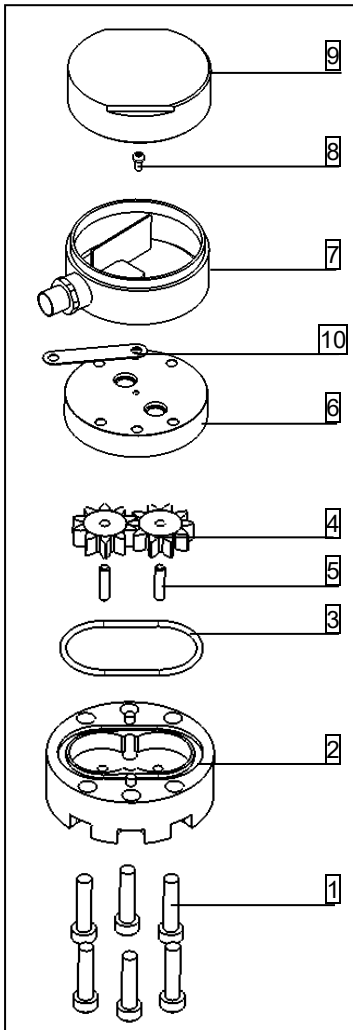


(5) Overhaul the amplifier.
Remove the mounting (cross-recessed head) screws and remove the amplifier case from the flow meter body.

* Do not rotate the amplifier case.
* Do not wet the printed board with

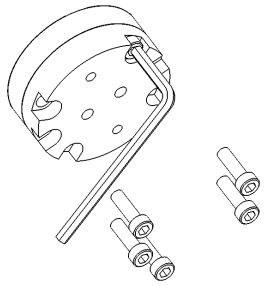


(6) Overhaul.
The assembly can be overhauled as shown above. Take care not to lose the grounding plate.

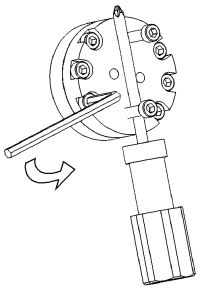


1	Hex socket bolt (M6)
2	Housing
3	O-ring
4	Gear
5	Shaft
6	Upper cover
7	Amplifier case
8	Mounting screw
9	Case lid
10	Grounding plate

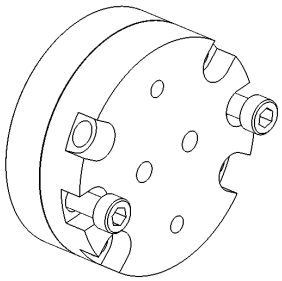
*Not to affect the flow meter performance and calibration after installation, the parts except the O-ring (No. 3) can only be ordered as an assembly.
See [12 List of Consumable Parts]



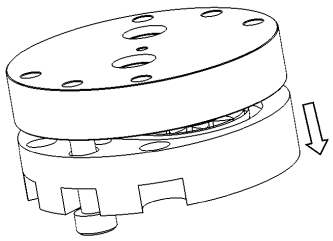
(7) Remove the bolts.
Remove the six hex socket bolts using a wrench (5mm).



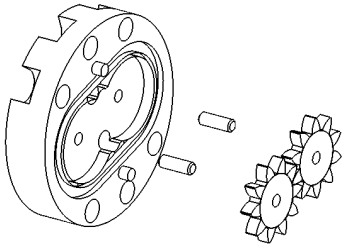
(8) Remove the bolts.
Install two hex socket bolts as shown above and loosen the body using a screwdriver as a lever.



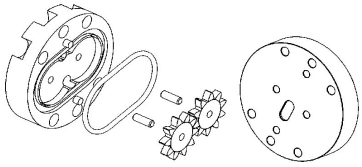
(9) Overhaul the body.
Install two hex socket bolts as shown above to facilitate the overhaul.



(10) Overhaul the body.
Slowly separate the upper cover and housing. The cap screws serve as guides to facilitate the removal.

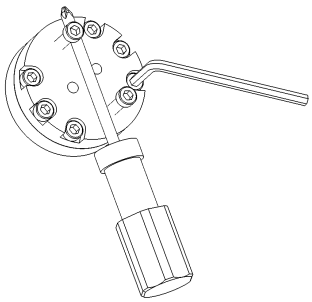


(11) Overhaul and clean the gears and shafts.
Remove the gears and shafts and wipe out using clean solvent and a soft brush or waste cloth. Take care not to damage or gouge the parts.



(12) Clean all parts.
Clean the shaft and gear mounting sections, whole gears and sections of the upper cover and housing in contact with the gears. Take care not to damage or gouge the gears, housing and other parts. Replace an O-ring 134-9132 with a new one if required.

<u>* Lint or hair from the waste cloth or brush shall not stick to any part.</u>



(13) Assemble.
When assembling, align with the mark on the side and tighten the cap screws until the gap between the upper cover and the housing is eliminated.
Tightening torque: 12N-m

(14) Check.
Install the mixing valve and CCV valve with the reverse procedure of disassembly. Turn on the power switch and fill the system with solvent to check the performance and check for a while that the flow rate is smoothly counted up. Also check for fluid leak.

For part numbers of replacement parts, see [12 List of Consumable Parts]

14 Inspection Items

14-1 Pre-work inspection

Check the following items at the start of the everyday work.

Check item	Check method	Criteria	Corrective action
Fluid leak from Base Resin Valve Unit	Check with eyes.	No fluid leak allowed.	･Reduce the fluid pressure to zero and overhaul valve and replace packing.
Fluid leak from Hardener Valve Unit	Check with eyes.	No fluid leak allowed.	･Reduce the fluid pressure to zero and overhaul valve and replace packing.
Pump (feeder) performance	Check with eyes.	Pump shall smoothly function.	･Replace packing and ball. ･Overhaul pump.
Fluid leak from SUS tank	Check with eyes.	No fluid leak allowed.	･Tighten pipe joints. ･Replace packing.
Nitrogen gas leak from SUS tank	Stop nitrogen gas supply and check for pressure changes.	No gas leak allowed. Pressure gauge reading shall not change.	･Replace packing at SUS tank lid. See [8 Hardener Tank]
Air supply pressure to the ACW Mixing Unit	Check with eyes.	The pressure gauge shall read 0.4MPa or higher.	･Raise the air pressure. ･Check air hose for bends.
Air pressure from air booster	Check with eyes.	Pressure gauge reading shall reach or exceed necessary pressure.	･Raise the air pressure. ･Check air booster.
Fluid leak from paint regulators	Check with eyes.	No fluid leak allowed.	･Overhaul regulators.
Pressures at paint regulators	Check with eyes.	Base resin and hardener pressures shall be the same.	･Hardener and base resin pressures shall be the same or the former shall be about 10% higher during the mixing process. *Pressure gauge may be out of order. Reduce the primary fluid pressure to zero to check that pressure gauge reads zero.
Pulsation of fluid flow	Check with pressure gauge. Check with eyes.	No pulsation allowed. *Variations shall not exceed 10%.	･Raise the pump pressure. ･Replace pump with a one that has a higher capacity. ･Install the pulsation controller.
Remaining quantity of nitrogen gas	Check with pressure gauge. Check with eyes.	A sufficient quantity shall remain.	･Replace gas cylinder. ･Refill before cylinder becomes empty.
Quality of air from air drier			･Take action according to the instruction manual for air drier. *Drier using silica gel or such shall be replaced when silica gel needs replacement.

14-2 Inspection after work

Check the following items at the end of the everyday work.

Check item	Check method	Criteria	Corrective action
Remaining flushing fluid quantity	Check with eyes.	Necessary quantity for flushing x 1.5.	･Refill flushing fluid. *Keep tank full of flushing fluid.
The flushing fluid from dump valve. * When the dump valve is installed.	Check with eyes.	Flushing fluid shall come out of dump valve.	･Remove contaminants and clogging matter in the drain pip or the drain hose. ･Overhaul and clean the dump valve. ･A setup is changed, when the time that is opening Dump Valve is short and liquid is not fully discharged.
Air cap and nozzle cleaning	Check with eyes.	Contaminants and clogging matter in air spray hole or nozzle.	･Remove air cap and nozzle and remove contaminants and clogging matter using a brush.

14-3 Weekly inspection

Check the following item once a week.

Check item	Check method	Criteria	Corrective action
Quality and pressure of air from pumps, etc.	Air filter clogging matter.	Shall be free of dirt, oil and water.	·Remove wastes in air filter. ·Replace filter.
Quality of air to Solenoid Valve Box	Air filter clogging matter.	Shall be free of dirt, oil and water.	·Remove wastes in air filter. ·Replace filter.

14-4 Monthly inspection

Check the following items every month.

Check item	Check method	Criteria	Corrective action
Regulation by paint regulators	Check with eyes.	Shall correctly regulate pressure.	·Overhaul regulator. ·Replace pressure gauge.
Paint filter in pump	Check with eyes.	No filter clogging matter and contaminants allowed.	·Clean or replace filter.
Clogging matter in paint filter at Hardener Tank	Check with eyes.	No filter clogging matter and contaminants allowed.	·Clean or replace filter.
Film formation in paint hoses	Check with eyes.	No film formation allowed.	·Replace paint hoses.

14-5 Regular inspection

Check the following items every 3 to 6 months.

Check item	Check method	Criteria	Corrective action
Leak from paint hoses	Check with eyes.	No fluid leak allowed.	·Tighten hose joints. ·Replace paint hoses.
Contamination of Static Mixer	Overhaul and check with eyes.	Accumulated contaminants and paint.	·Clean Pre-mixer and overhaul and clean or replace Static Mixer element.
Responsiveness of Mixing Valves (Base Resin and Hardener)	ADJUST data.	30% or higher than the level obtained by learning at the time of delivery.	·Replace consumable parts of valves (V-packing, needle and O-ring). ·Replace Solenoid Valves (Explosion-proof type)

*The “ADJUST” is a function to determine the responsiveness of valves. After the learning operation, note the settings.

NOTE: Refer to the instructions manual of “ACW Control Unit” about method of operation.

14-6 Miscellaneous

Check the following items as necessary.

Check item	Check method	Criteria	Corrective action
Flowmeter operation	Indication of flow rate	Shall be smoothly counted up.	·Overhaul or replace flowmeter.

See [12 List of Consumable Parts] and [13 Overhauling and Maintenance]

NOTE: Refer to the instructions manual of “ACW Control Unit” about controller's display.

15 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]

- When transferring this equipment to another owner, attach the instruction manual to the equipment.
- This equipment has been manufactured according to the laws and legislations of Japan and may only be used in Japan.
  When using the equipment in another country, it is necessary to observe the safety standards in that country.

14th Edition: June, 25, 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