

Solvent Degassing Unit
GASTORR
AG-42 / AG-44 series

Instruction Manual

Ver. 2.0

To The User

We ask that you read this manual carefully and in its entirety before installing and using the unit.

After reading please keep the manual for reference. A product warranty is attached at the back.



Introduction

Thank you for selecting the GASTORR inline degassing unit. The purpose of this Instruction Manual is to help you use the GASTORR degassing unit safely and properly, and to help prevent damage and/or safety hazards during normal operation and maintenance. For safety's sake, please read this manual carefully before installing, wiring, connecting, and operating the unit. Please follow the Safety Notes found throughout the manual, as they contain key points about the safe handling and care of the unit. Please keep this manual in a safe place easily accessible to the actual operators of the unit. By following these instructions, you will ensure a long and safe operating life to the GASTORR degassing unit.

Note carefully the safety information given in the points below.

- I. The Safety Notes are divided into 3 categories, in descending order of hazard: [Danger], [Warning], and [Caution]. Read and understand these points well before operating the unit.
- II. FLOM Corporation assumes no responsibility for the following:
 - 1) accidents or problems occurring as a result of operating the unit in a manner not in accordance with this manual's instruction;
 - 2) accidents or problems resulting from the use of non-standard replacement parts (neither FLOM brand parts nor parts from a FLOM-approved vendor).
 - 3) accidents or problems resulting from operating the unit outside the defined specifications and parameters.
- III. If you wish to recondition the unit, always consult with FLOM first.
- IV. Consult FLOM before you perform repairs or periodic maintenance on the unit.
- V. Do not install the unit in the locations listed under "Locations to Avoid" in Section 10-2. In general do not install or use the unit in any place deemed hazardous for whatever reason.
- VI. There is a product warranty on the last page of this manual. Please be careful not to damage or lose it. In case of loss, contact FLOM and inform us of the model and serial number of the unit (for custom specification units, please also supply the specifications). We will issue you another copy of the instruction manual, but please be aware that under certain circumstances the contents of the warranty may no longer be applicable.



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1. Safety Precautions

Please read this instruction manual carefully and follow the instructions while installing, running, maintaining and servicing the degassing unit. Make sure you understand the basic operation of the unit, safety information, and the safety precautions listed below.

< Definition of Markers Denoting Safety Cautions >

The  Mark: This mark indicates matters of special concern and caution which need to be heeded *before* handling or running the unit. After the  mark, one of 3 words: **Danger**, **Warning**, or **Caution**, will appear indicating the level of hazard. For safety's sake please follow all instructions appearing after these marks.

● Safety caution categories indicate the degree of hazard resulting from mistaken application of the instructions.



: A “Danger” Mark indicates the imminent and acute possibility of a high risk of injury or death, if the situation or action described is not avoided.



: A “Warning” Mark indicates the possibility of injury or death if the situation or action described is not avoided.



: A “Caution” Mark indicates the possibility of moderate or light injury, or physical damage, if the situation or action described is not avoided.

In addition, the “※ Note” sign indicates important and useful reference information.

2. Standard Accessory List

When opening the unit packaging, please check that all the following accessories are included.

Part Name	Specifications	Number	Notes
Power Cord	7A 125V	1	
3-Prong Connector	15A 125V	1	
Suction Needle	#0005	1	
1/8" Hex Flat Seal Fitting (PEEK)	#9771	5	AG-42
		9	AG-44
φ3 M6 Flat Seal Ferrule (TEFZEL)	#9704	5	AG-42
		9	AG-44
PFA Tube (3 mm × 2 mm × 1m)	#7104	2	AG-42
		4	AG-44
Wrench	6 mm x 8 mm	1	
Instruction Manual		1	

※ Note: If you discover any accessory part to be missing or defective, please contact the vendor immediately. The white port caps are not solvent-resistant; please immediately wipe off any organic solvents spilled on it.

Please do not use off-market or knock-off connector items on the unit; FLOM will not be responsible for any damage resulting from their use, and using such products may void the FLOM guarantee of free repair.

3. Specifications

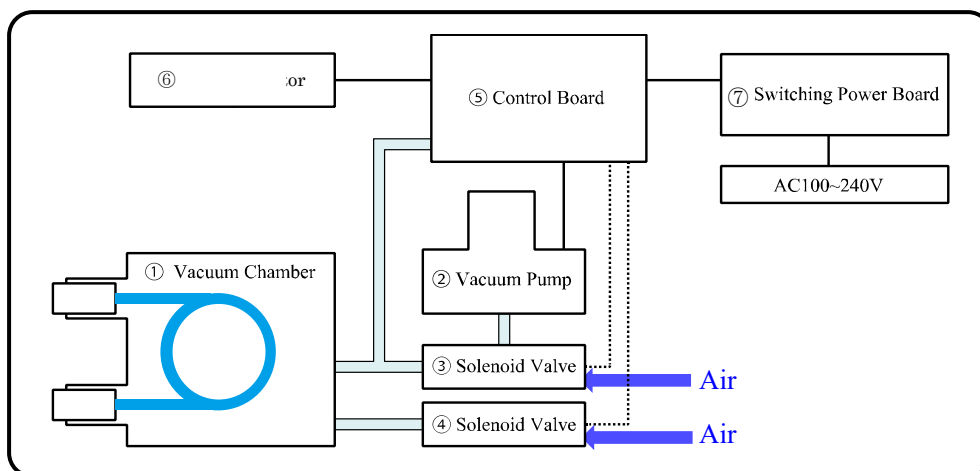
Product Name	Solvent Degassing Unit (GASTORR)	
Model	AG-42-01	AG-44-01
Channels	2	4
Vacuum tube's volume	340 μ L	
Max Flow Rate	10 mL/min	
Setup vacuum level	100 hPa	
Thread size	1/4-28 UNF	
Wetted materials	Teflon™ AF, ETFE, PPS	
External output	-	
Dimensions	108 (H) x 70 (W) x 240 (D) mm (excluding protruding parts)	
Weight	Approx. 2.1kg	
Power source	0.8 A, 80 VA	
Rated Power Supply	AC100~240V 50/60Hz, Max. 80 VA	

- * Specifications and external appearance of the unit may change without notice.
- * Please understand that some photographs and illustrations in this manual may not reflect current designs due to product changes and improvements.
- * Feel free to consult FLOM if you require any special-order products.
- * Teflon AF™ and ETFE are registered trademarks of the Chemours.

4. Principles of Operation

<4-1> Overview of the Unit

The principle operating subsystems of the unit are as shown below.



<4-2> Overview of Component Parts

① Vacuum Chamber

A capillary vacuum tube degases solvent.

The connection to the pump and solvent can be connected to either of the left or right joints.

② Vacuum Pump

Vacuum pump decompresses and controls vacuum level inside the vacuum chamber.
(The vacuum level is set to 100hPa.)

③ / ④ Solenoid Valves

Cleans each part by feeding air into the vacuum chamber or vacuum pump. It always operates under optimum conditions with the self-cleaning function under the control of a vacuum pump and solenoid valve.

⑤ Control Board

The status of the vacuum pump is monitored and controlled constantly.

⑥ LED Indicator

Shows the current state of the degasser.

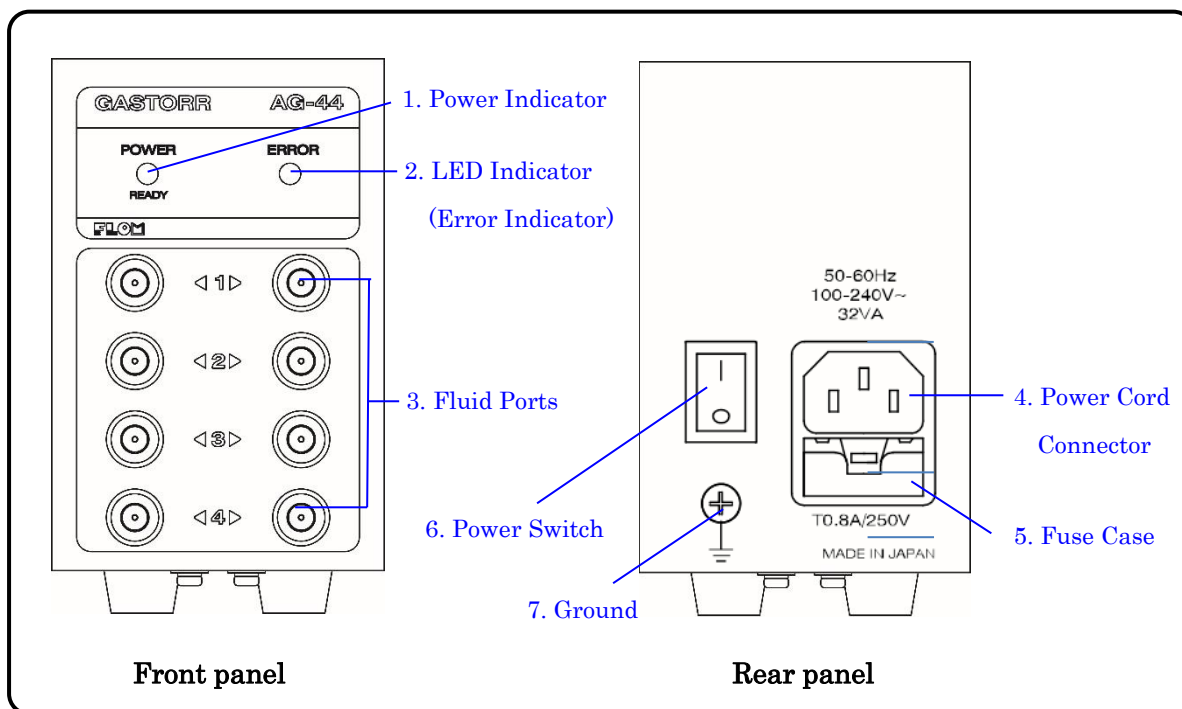
⑦ Switching Power Board

AC100V to 240V can be applicable.

<4-3> Principle of Operation

The solvent to be degassed is led in a continuous manner, from the degasser's inlet port, into the vacuum tubing within the vacuum chamber, then from the chamber's exit port to the pump. As the solvent passes through the vacuum tubing in the vacuum chamber, dissolved gases within the solvent penetrate the wall of the tubing and diffuse into the lower pressure area of the chamber. Thus, degassing is achieved by membrane exchange technology through this pressure differential.

5. Part Names and Functions



< 5-1 > Front Panel

1. Power Indicator LED

LED lights when the degassing unit is turned on. Green light shows the status of operation ready.

2. Error Indicator LED

LED lights when error occurred. The degassing unit automatically stop operation under the Condition. (Please refer to <8-1> Error Description.)

3. Fluid Ports

The connection to the pump and solvent can be connected to either of the left or right joints.
Thread size: 1/4-28 UNF

< 5-2 > Rear Panel

4. Power Code Connector

Power code's input.

5. Fuse case

Two fuses 1A are preinstalled.

6. Power Switch

ON/OFF the power supply

7. Ground

Individual ground

6. Installation

<6-1> Accessories

When first opening the unit packaging, check to make sure that all standard accessories are included.

(See Section 2, Standard Accessory List.)

※Note: If any accessories are missing or damaged, contact your vendor. FLOM corporation will not be held responsible for any problems resulting from the use of the third-party parts.

<6-2> Electrical Connection

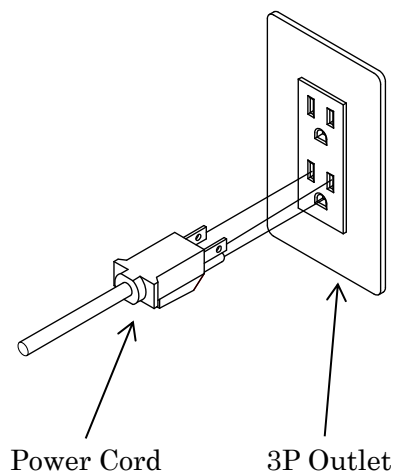


Holding the plug head of the power cord, insert into a nearby electrical outlet. Do not touch the cord with wet hands to avoid electric shock.

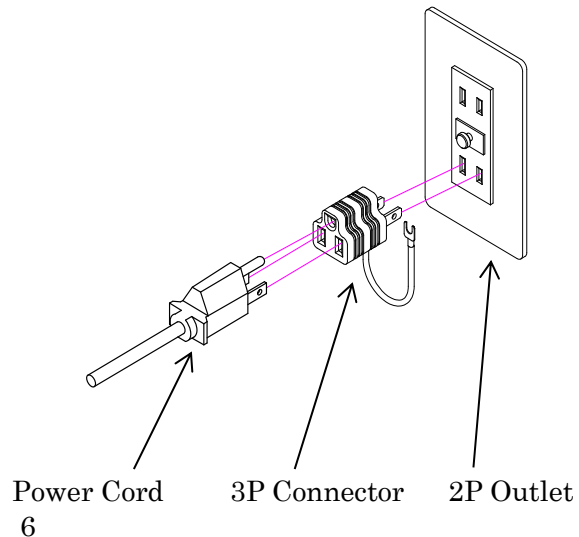


Your system may contain a large device that could produce an electrical surge in the degassing unit if they are run from the same power outlet. In this case please connect the degassing unit to a separate power outlet. Plug the power cord provided with the unit into the connector on the back panel, and plug the other end into an indoor electrical outlet. The power source can be from AC 100V to 240V and can use both 50Hz and 60Hz frequencies. The cord provided is a 3-pronged triplex cable. If connecting to a 2-pronged outlet, always use a 3-pronged adapter unit in between, as shown in the illustration below.

3-Prong Outlet



2- Prong Outlet



<6-3> Fluid Connections



The degassing unit should be placed between the solvent bottle and the pump. Since the unit uses suction only to move fluid, never attempt to hook the pump up so that it tries to 'push' the fluid through the degasser.

1. Remove the cap of the joint for the number of flow paths used.

For unused flow paths, keep the cap intact.

2. Turn on the power switch on the rear panel and check the operation sound of the vacuum pump.

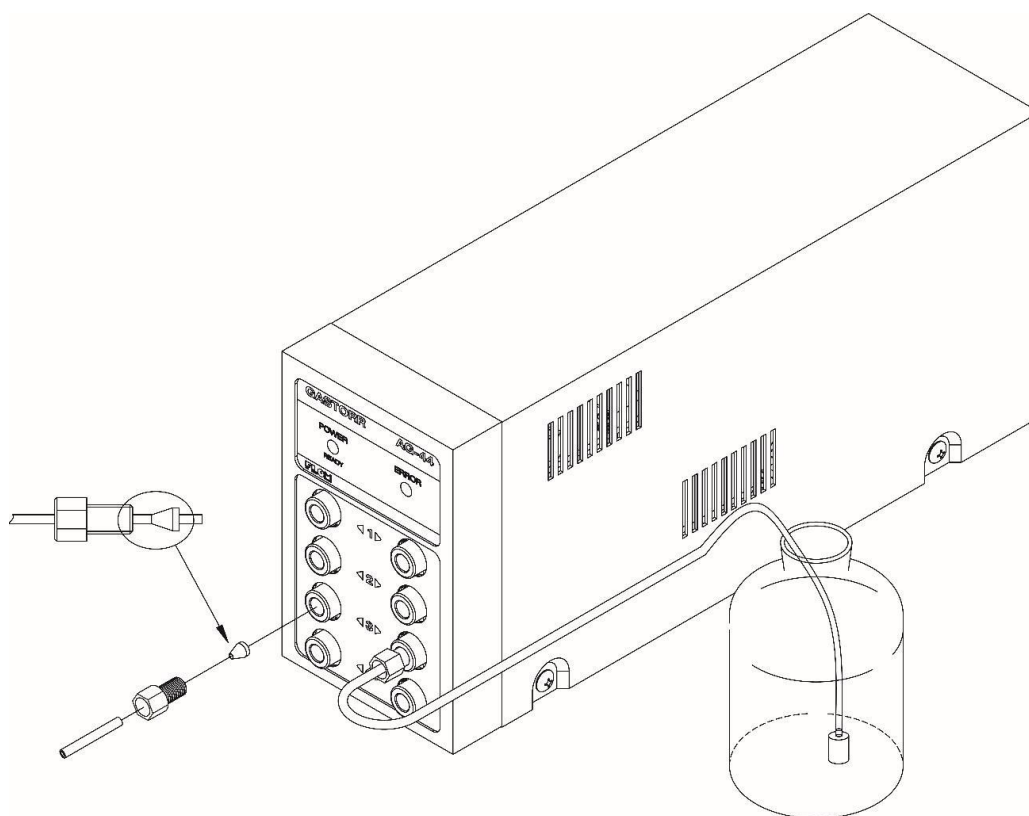
The vacuum system is self-cleaned for approximately 90 seconds after the power is turned on. Depending on the conditions of use, self-cleaning may take up to 90 seconds or longer.

3. Connect the solvent to be used and the device as shown in the figure below, and draw the solvent thoroughly into the device with the provided suction needle. The connection can be made either left or right.

4. Connect the pump and the degassing unit.

5. Continue feeding at about 1 mL/min.

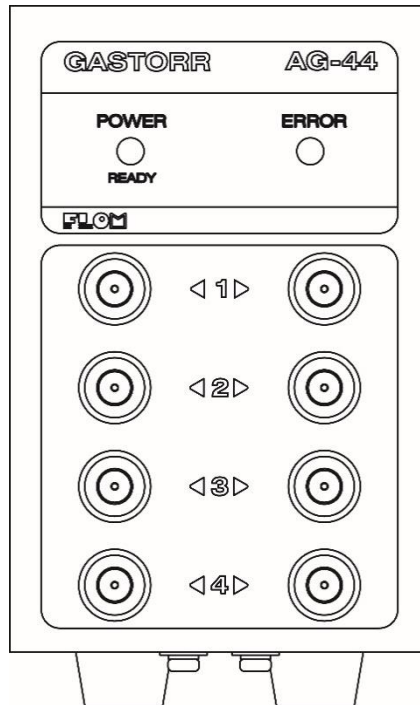
The solvent is degassed and stabilized in about 20 minutes from the start of feeding, and installation is completed.



7. Operation

<7-1> How to operate

Turn on the power switch on the rear panel, and the device automatically start operation. Begin operation after you have finished the system installation as described in Section 6. Installation.



<7-2> LED Indication

When the power is turned on, POWER LED lights in red.

The vacuum pump is activated and the inside of the chamber is degassed.

POWER LED turns green when the chamber reaches the set vacuum level (100hPa) and the deaerator is ready.

8. Error Indication

When the control vacuum value is not reached due to leakage from the vacuum system or exhaustion of the vacuum pump, etc., the LED Error indicator on the front panel lights red.

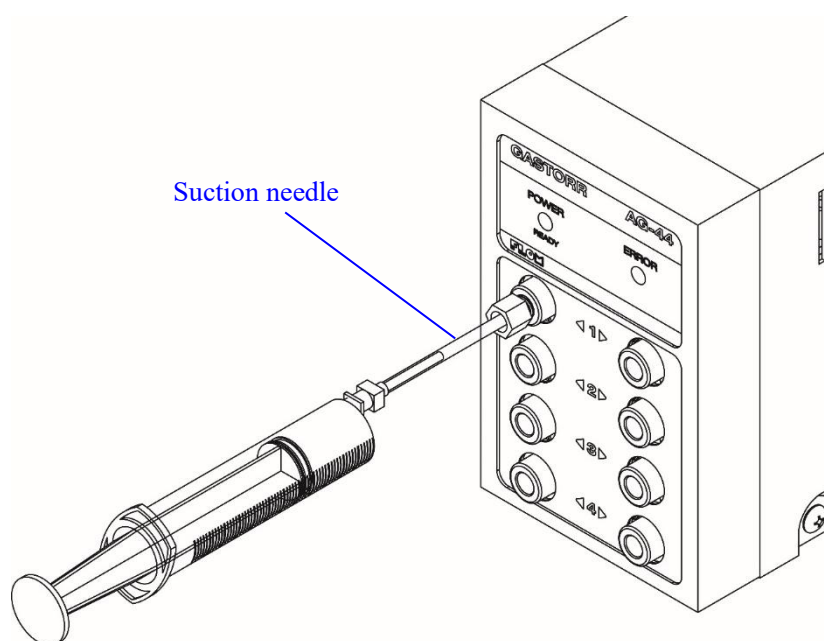
9. Treatment after Operation

When the degasser stops for more than 12 hours, remove the fluid from the vacuum chamber by connecting the suction needle of the accessory as shown below.

When degassing is performed without diluting the organic solvent, the gas concentration in the chamber increases if it is kept in the vacuum chamber, which may cause a failure of the vacuum pump.

Please pay attention especially when using highly volatile solvents.

We recommend that the degasser continue to operate even when the liquid feed is stopped.



10. Handling Precaution

<10-1> Special Precautions during Operation



Warning

: The points below are all WARNINGS. Avoid these actions and situations at all times.

- Never wet the panel or cover of the unit with solvents, organic or otherwise. If solvent is inadvertently spilled on it, clean immediately. Do not start the unit until it is completely dry. A wet unit is a hazard for fire, short circuits, electric shock and unit damage. If you suspect a large volume of solvent has leaked into the unit interior, contact your vendor for advice.
- Never allow stainless steel tubing or metal fragments of any kind to enter the unit through the cover vents. This could cause short circuits, electrical shock, damage or injury.
- Do not attempt to repair or dismantle the unit if you suspect a technical problem, nor attempt to convert or upgrade it yourself. Doing so could cause fire, electrical shock, or injury.
- When moving the degassing unit, always turn off the power switch on the back panel, and unplug the power cord from the AC outlet. Do not plug or unplug with wet hands.



Caution

: The points below are CAUTIONS. Be sure to follow them to ensure safe operation of the unit.

- Do not run this unit on a electric power system outside the standard AC 100V-240V (50/60 Hz) range. Doing so could result in fire, electrical shock or damage.
- If a malfunction occurs, stop operation immediately. Contact FLOM, providing clear descriptions of the problem. Using the unit after malfunction could cause fire, electrical shock, or injury.
- Treat the electric power cord carefully: do not excessively bend, treat, tuck into small spaces, connect to long extension cords, wrap up, bind up, or place under heavy objects. Doing so could result in fire, overheating, and electrical shock.
- Do not place the unit on top of or close to heating units. Doing so could result in fire, overheating, or damage.
- Always tighten the threaded connectors by hand. Using a tool could result in breakage of the connector. Never use connectors or ferrules not supplied with the unit, even if they happen to have the same specifications.
- When using buffer solution with frequent changing of connections (opening and closing of ports), the ferrule seal surfaces inside the connection are easily damaged by salts in the spilled

solution. When changing connections, clean the sealed area of the port with cleaning solution before reconnecting.

- Do not run liquids with particulate matter or high viscosity through the unit. These can cause malfunction due to clogging in the vacuum chamber.

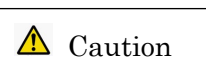
<10-2> Location of Installation and Storage



: The points below are all dangerous HAZARDS. Avoid these actions and situations at all times.

This device is not rated explosion-proof. Never use in an environment with an explosion hazard. Doing so will result in a high risk of injury and/or fire hazard.

This unit features a compact design, but do not place in a location above head level or where the unit could easily fall. Doing so could result in death, injury, or damage to the unit.



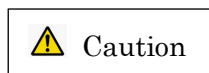
: The points below are CAUTIONS. Be sure to follow them to ensure safe operation of the unit.

- Do not use or store the unit out-of-doors.
- Do not use or store the unit near a source of corrosive gas.
- Strong electromagnetic waves can cause malfunctioning in nearby CPUs, so do not use the unit near high-frequency equipment.
- Do not place the unit in vibrating or unstable locations.
- Do not place in direct sunlight or sources of high heat.
- Do not use or store in places with high humidity or excessive dust.
- One important condition is to always use and store the unit at room temperature (indoors). Avoid use or storage under extremes of temperature. (Around 10° – 40° C in areas without water condensation.)
- If the unit is not to be used for a long time, please do not store the unit with solvent left remaining in the vacuum chamber. Distilled and deionized water can, if left in the chamber, allow the growth of molds which can negatively impact performance. Also, when using a buffer solution, always wash afterwards with distilled water and remove all liquid from the chamber with the suction needle.

* When pumping solution, place the solvent bottle on the same level as the pump.

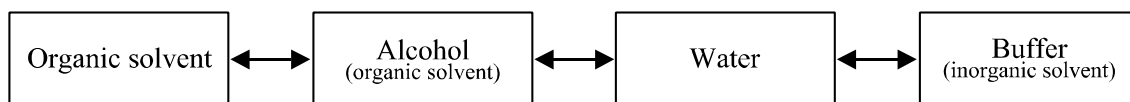
11. Maintenance and Service

<11-1> Maintenance



Please observe the following CAUTIONS at all times.

1. When changing from one solvent to another, always determine what kind of solvent has been left in the vacuum chamber from the previous operation. Follow the steps shown below to switch over from one solvent to another. Sometimes this can take multiple steps.



2. When using the provided suction needle or a pump to switch between solvents that dissolve together (as shown above), please dilute in the order shown in the graph above. In particular one should beware of changing directly from an alcohol solvent to a salt solvent (without a water step in between), as the salt may precipitate out of solution to form a crystallized fluorinated resin which can clog the filter membrane.

If a malfunction or problem occurs, please use the flowchart on the next page to determine the type of problem to the best of your ability, then contact your vendor or FLOM directly. When sending in a unit for service, first drain all solvent fluid out of the vacuum chamber. Sending a unit for service with fluid still in the chamber could cause damage to other components not involved in the original problem.

When the unit is still under warranty we will be happy to quickly send you a temporary replacement, so please contact us if you need such assistance. Please be aware that, depending on the type of malfunction found, some repairs may not be covered by the warranty and may incur an additional charge (see Section 14. Product Warranty).

Symptoms	Check points
Power does not turn on	<ul style="list-style-type: none"> Is the power supply connected properly?
Power is ON, but vacuum pump is not working properly (does not reach 100hpa)	<ul style="list-style-type: none"> Is the device installed properly? (Connection of the pump to the pressurized side may cause a failure.) Turn on the power supply again
[E:0] are indicated	
Others Liquid leakage, joint damage, clogging due to salt crystals, etc.	

If symptoms still remain, please contact your vendor or FLOM directly.

※1 Operation after power-on

Cleaning takes place for about 90 seconds after the power is turned on.

If the vacuum level does not reach 100hpa even though the vacuum pump is operating normally, or if an error is displayed, please turn the power off and on again.

12. Consumable Parts

Part Name	Part Descriptions
#0005	Suction Needle
#9771	1/8" Hex Flat Seal Fittings (10 pcs./a pack)
#9704	φ3 M6 Flat Seal Ferrules (10 pcs./a pack)
#7104	PFA tube, OD 3 mm × ID 2 mm × 10 m

※Note: When ordering, please specify model and part name. If connection problems arise due to the use of the third-party connectors, repair will be charged even if the warranty is still in effect. Please be aware that, depending on the type of malfunction found, some repairs may be outside the scope of the unit's warranty.

13. Product Warranty

Product Warranty

Thank you for purchasing this FLOM product.

FLOM Corporation guarantees the performance of this product for one (1) year.

FLOM Corporation will assume responsibility for covering the costs of repair and/or replacement for any defect in, or damage to, the unit, occurring within this period, when such defect or damage can be shown to be the responsibility of FLOM. However, FLOM Corporation will assume no responsibility for defects or damage due to, or substantially similar to, the following circumstances or conditions:

- 1) operating the unit not in accordance with the instructions given in the operating manual under section 10, Operating Instructions;
- 2) mistakes in operation;
- 3) repairs or reconditioning not done by FLOM;
- 4) earthquakes, fire, catastrophes or other acts of God;
- 5) all defects or damage resulting from causes not inherent in the unit;
- 6) high temperature, high humidity, extremely low temperature, corrosive gas, constant high vibration and other factors produced by extreme environments
- 7) replacement of consumables and similar parts.

Filling out the information below is required to activate the warranty. If the required information is missing the warranty may be null and void.

Model: _____

Serial Number: _____

Purchase Date: _____

Dealer: _____