

No. 90600-2-02-6

ULVAC

MODEL NO OMI-100/OMI-200

OIL MIST TRAP

INSTRUCTION MANUAL

Before using the product, be sure to read this manual.
Keep this manual in a place where it can be referred
to at any time and look after it carefully.
The contents of this instruction manual are subject to
change without prior notice due to improvements in
performance and the functions of the product.

ULVAC KIKO, Inc.
MIYAZAKI, JAPAN

0. INTRODUCTION

0.1 Before Use of This Unit

Upon receipt of this unit, check that the delivered unit is the correct model you ordered and that there is no damage in transit.

For the names of components of the oil mist trap in this manual, refer to "8. EXPLODED VIEW".

WARNING

Before installation, inspection and maintenance, carefully read this manual and fully understand the specifications, operating procedure and safety cautions.

NOTE

No part of this manual may be reproduced for use by a third party without written consent by ULVAC KIKO.

0.2 Denotations in This Manual

The following denotations are used throughout this manual to call operator's attention to safety.

The denotations are classified into the following categories.

DANGER

Failure to comply with DANGER involves the possibility of impending loss of life or serious personal injury.

WARNING

Failure to comply with WARNING involves the possibility of loss of life or serious injury.

CAUTION

Failure to comply with CAUTION involves the possibility of medium degree of personal injury or serious damage to the equipment.

NOTE

Failure to comply with NOTE involves the possibility of damage to the equipment or malfunction of the equipment.

0.3 Safety Cautions

DANGER

If the vacuum pump is used to pump toxic gas, the pump oil will be toxic, not to mention oil mist trap itself. Take care in maintenance.

WARNING

Do not use the oil mist trap in an explosive atmosphere. Injury or fire can result.

WARNING

Always use the oil mist trap at below the maximum flow rate. Otherwise, the internal pressure will rise and the oil mist trap will fail. The maximum flow rate is 120 L/min for the OMI-100 and 240 L/min for the OMI-200.

WARNING

Do not use the oil mist trap for inflammable gas. Injury or fire can result.

WARNING

Do not touch or replace an element during vacuum pump operation or immediately after the pump is shut down. It is very hot and can cause burn.

WARNING

Do not plug the exhaust port nor attach a device that interferes with the passage of gas to the exhaust port when the unit is operated. The pressure in the oil mist trap will rise and the unit may be damaged or fail. Note that the unit is not explosion-proof.

CAUTION

If the oil mist trap is damaged, immediately turn off the switch for the vacuum pump and remove the power plug. If a damaged oil mist trap is used, oil mist may come out or internal pressure may rise. For safety, contact your local distributor.

CAUTION

Do not use the oil mist trap for corrosive gas. Damage or failure can result.

⚠ CAUTION

Do not modify the oil mist trap. If modified, troubles of the oil mist trap will not be covered by warranty. Also it can generate oil mist or cause internal pressure rise.

0.4 Receipt and Storage of Oil Mist Trap

0.4.1 Receipt of oil mist trap

Every care has been taken before shipping the oil mist trap, but check the following after unpacking it.

- (1) Is the unit the correct mode you ordered?
- (2) Are the prescribed accessories (O-ring P-50) supplied?
- (3) Is any part damaged in transit?
- (4) Is any part off position?

If any problem is found, contact your local ULVAC KIKO representative.

0.4.2 Storage, installation and environmental conditions during operation

Meet the following conditions during storage, installation and operation.

- (1) Ambient temperature during operation : 7°C to 40°C
- (2) Surface temperature during operation : Cannot be used at above 80°C
- (3) Others (during storage and operation)
 - a) To be free from corrosive or explosive gas
 - b) Not to be condensing dew on the oil mist trap
 - c) To be free from dust and dirt
 - d) To be indoors
 - e) Do not turn the oil mist trap sideways.
 - f) Do not expose to direct sunlight.
 - g) To be away from heat source
 - h) Not dry atmosphere
(Store the unit at a relative humidity of 10% or more.)

⚠ NOTE

Do not give impact to the oil mist trap. Damage or failure can result.

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1. FOR SAFE OPERATION

1.1 Danger Inherent to This Unit and Safety Measures

Before operating or checking this unit, carefully read this section and fully understand potential hazards and preventive actions.

1.1.1 ⚠ DANGER Hazardous gas, hazardous material

Hazard	Preventive actions
You may be injured by contact with pump oil that has been turned toxic in the oil mist trap or with toxic substance on the unit.	<ol style="list-style-type: none"> 1) Put on protective wear against toxic substances when inspecting the unit. 2) When repairing the unit or discarding toxic substances, have a wastes treatment specialist render it non-toxic. 3) Have wastes disposed of by authorized waste treatment specialist.

2. OVERVIEW OF OIL MIST TRAP

2.1 Design Basis

The Model OMI-100/OMI-200 oil mist trap separates oil mist discharged from an oil rotary pump during operation to reduce the discharge of oil mist. The oil that has collected in the oil mist trap is returned into the pump case. Being small in size, light in weight, and simple in structure, the unit can be easily maintained and repaired.

Table.1 Design Basis

Model No	OMI-100	OMI-200
Name	Oil mist trap	
Weight (kg)	1.20	1.47
Maximum flow rate (L/min)	120	240
Outside dimensions (mm)	$\phi 94 \times 177H$	$\phi 116 \times 178H$
Mounting position	Vertical	
Pump connecting screw	G-1	
Pipe connecting screw	G-1 (Female screw)	

⚠ NOTE

Replace the element if it is clogged with dust or the like. Otherwise, oil mist may be discharged.

2.2 Dimensional Drawing

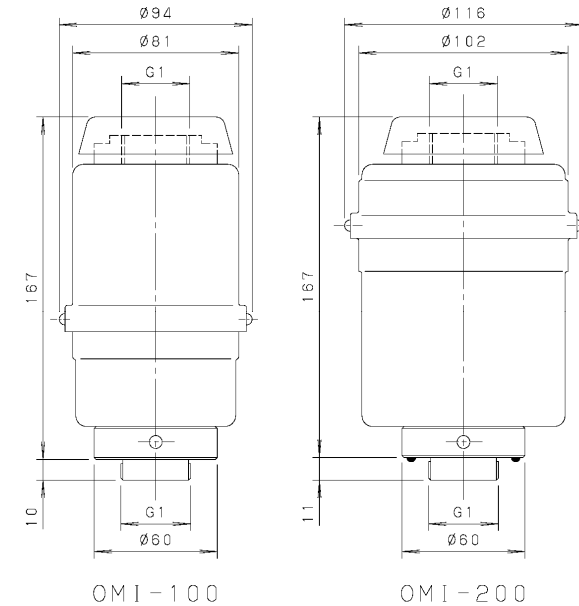


Fig. 1 Dimensional drawing for OMI-100/OMI-200

3. INSTALLATION

3.1 Installation

Select a place as free from dust and moisture as possible, where the oil mist trap can be easily installed, removed, checked, and cleaned, and install the unit perpendicularly to the pump.

The connecting screw for this unit is G1 by the ISO standard. Select a pump of which exhaust port connection is compatible with this standard.

Refer to "0.4.2 Storage, installation and environmental conditions during operation" for environmental conditions.

⚠ WARNING

The unit may be ruptured if the maximum flow rate of the unit is exceeded. The maximum flow rate for the OMI-100 is 120 L/min and that for the OMI-200 is 240 L/min.

⚠ WARNING

Do not plug the exhaust port nor operate the unit with a device that interferes with the passage of a gas connected to the exhaust port. The internal pressure of the oil mist trap will rise and the unit may be damaged or fail.
This unit is not explosion proof.

⚠ NOTE

If the oil mist trap is tilted or turned sideways or installed upside down, oil may overflow or gush out. Install it perpendicularly to the pump exhaust port.

3.2 Installing the Unit on ULVAC KIKO Vacuum Pump

Table 2 gives ULVAC KIKO vacuum pumps on which the OMI-100/OMI-200 can be mounted.

Table.2 ULVAC KIKO Vacuum Pumps to which OMI-100 or OMI-200 can be Attached

Model No	OMI-100	OMI-200
Model No of ULVAC KIKO pump	G-101S, G-101D GHD-100 series	GLD-136 series GLD-201 series

3.3 Installation and Removal

- (1) Make sure that the pump is at stop.
- (2) Mount an O-ring (P-50, accessory) in the connection of the oil mist trap.
- (3) Attach the oil mist trap to the pump exhaust port of which connection is compatible with the oil mist trap and turn it clockwise holding the case at the side.
- (4) Before removing the oil mist trap, make sure that the pump is at stop and turn it counterclockwise holding the case at the side.

3.4 Method of piping connection

- (1) Make sure that the pump is at stop.
- (2) Please turn a top cover to the left, remove it and attach a hose nipple for the connection part (G1) of Joint A.

4. PERFORMANCE OF OIL MIST TRAP

4.1 Limit of Pump Operation Hours

The pump operating time is limited when the pump is operated continuously at a high suction pressure.

Table 3 gives the relationship between the continuous operating time and the suction pressure of the pump.

Stop the pump once for more than 5 minutes within this time so that oil returns to the pump.

If the pump is continuously operated at a high pressure, oil may gush out through the exhaust port.

Table.3 Relationship between Continuous Operating Time and Suction Pressure of Vacuum Pump

Continuous suction pressure	Maximum operating time	
	OMI-100	OMI-200
10.6 kPa	Within 23 hours	Within 8 hours
8.0 kPa	Within 25 hours	Within 13 hours
5.3 kPa	Within 31 hours	Within 25 hours
2.7 kPa	Within 35 hours	Within 42 hours

NOTE : This table gives reference values, which vary with the pump throughput and operating conditions.

When the vacuum pump is pumped to below 40 Pa, the oil collected in the oil mist trap automatically returns to the pump case. The time required for the oil to return to the pump is more than 10 minutes.

5. INSPECTION AND MAINTENANCE

5.1 Maintenance

Check the following once a day during operation.

- (1) Oil leak in the connection with the vacuum pump.
- (2) Oil mist or oil gushing out from the case.
- (3) Unusual sound.

If any problem is found, take actions according to Table 5 Troubleshooting Checklist.

5.2 Scheduled Inspection

Check items should be changed according to the operating conditions of the oil mist trap, but check the following periodically. Scheduled inspection will serve to prevent troubles and prolong the life of the oil mist trap.

(1) Checking the oil mist trap

When piping is not connecting, if there is a large volume of oil mist or oil gush out from the case, stop the pump and restart it more than 30 minutes later. If a large volume of oil mist or oil gush out from the case again, replace the element with a new one.

(2) Scheduled replacement of element

Replace the element before it becomes 1500~2000hours. Scheduled replacement will serve to reduce oil mist. If an element is replaced periodically, oil mist can be lessened more. If an exhaust gas is continued after dust, moisture, etc. have mixed, an element is clogged and stops moreover, functioning.

When contamination of the oil mist trap according to suction gas in continuing the prolonged use other than the above check item is intense, it is effective in taking apart and cleaning maintaining a performance. For disassembly, contact your local ULVAC KIKO representative.

NOTE

**Be sure to turn off the power to the vacuum pump before inspection.
Never turn on the power during inspection. The vacuum pump may generate oil mist or cause injury.**

5.3 Consumables

Isn't there any breakage of the consumables shown in Table.4? When you have damaged, please refer to "5.4 Replacement of Element " and an "8.exploded view."

Table.4 List of Consumables

	Description	Q'ty
OMI-100	Element	1
	Check valve spring	1
	Gasket A	1
	Gasket B	1
	O-ring (P-50)	3
	O-ring (3071)	2
OMI-200	Element	1
	Check valve spring	1
	Gasket	2
	O-ring(P-20)	1
	O-ring(P-50)	3
	O-ring(3090)	2
	Seal washer(WF12×19×2)	1

5.4 Replacement of Element

If the element is clogged, the trap cannot separate oil mist completely. If much oil mist is discharged when restarting the pump after a pause for more than 20 minutes, replace the element. Scheduled replacement is recommended according to the element replacement frequency.

DANGER

If the vacuum pump is used to pump toxic gas, pump oil as well as oil mist trap will be toxic. Beware of it in maintenance.

⚠ CAUTION

When replacing the element, wear rubber gloves, goggles and other protective wear. If your hand is stained with vacuum pump oil, wash the stained portion with water and soap. If oil is admitted into your eye, wash your eye with clean water for at least 15 minutes and then see doctor for treatment.

<Replacement of element>

Refer to "8. EXPLODED VIEW" for the names of components.

- (1) Make sure that the pump is shut down. Remove an oil mist trap from a pump.
- (2) Remove pan head screws.
- (3) Remove the cover A.
- (4) Remove a bolt.
- (5) OMI-100 : Remove a gasket A, an element holder , an element, an element retainer and a gasket B.
 OMI-200 : Remove a seal washer, an element holder and an element..
- (6) OMI-100 : Put a gasket B on a middle board and carry an element retainer on it. Insert a bolt which attached a gasket A from the hole of element holder, thrust into Joint B and bolt tight.
 OMI-200 : Put a new element on an element retainer certainly, cover by an element holder, and bolt tight with a bolt into which a seal washer was put.
- (7) Cover to insert a cover A in a cover B
- (8) Bolt pun head screws.

⚠ WARNING

Please do not bolt a pun head screw too much. If it bolts tight too much, there are a top cover and a possibility that a case may be damaged.

5.5 Troubleshooting

Table 5 Troubleshooting Checklist

Symptom	Cause	Corrective action	See
Much oil mist and oil are discharged.	1) Element life is expired.	1) Replace element.	5.4
	2) The element is clogged with dust and dirt.	2) Replace or clean the element.	5.4
	3) The element is not reassembled properly.	3) Replace the element by reassembling the oil mist trap.	5.4
	4) The maximum flow rate of the oil mist trap is exceeded.	4) Lower the pump throughput to below the max. flow rate of oil mist trap.	2.1
	5) The check valve is not functioning properly.	5) Repair or clean the check valve.	
Oil is not recovered into the pump case.	1) The pump is running continuously at a high suction pressure.	1) Stop the pump temporarily (for 5 minutes). Or lower the pump intake pressure to below 40 Pa (for 10 minutes).	4.1
	2) Foreign matter is contained in the check valve area.	2) Repair or clean the check valve area.	
Unusual sound is heard.	1) Foreign matter is trapped in the oil mist trap.	1) Repair or clean the oil mist trap.	5.4
	2) Element is not properly reassembled.	2) Replace the element by reassembling the oil mist trap.	5.4
Oil leaks from the oil mist trap.	1) The O-ring is deteriorated.	1) Replace the O-ring.	3.3
	2) The oil mist trap is not securely mounted to the pump.	2) Securely mount the oil mist trap to the pump.	
	3) The maximum flow rate of the oil mist trap is exceeded.	3) Lower the pump throughput to below the max. flow rate of the oil mist trap.	2.1
	4) The element life is expired or the element is clogged.	4) Replace or clean the element.	5.4
	5) The oil mist trap was not reassembled properly when the element was replaced.	5) Replace the element by reassembling the oil mist trap.	5.4

6. DISPOSAL

Dispose of the oil mist trap in accordance with your local applicable laws and regulations.

⚠ CAUTION

If the oil mist trap was used to pump toxic gas that can be hazardous to human body, not only the oil mist trap, but also pump oil will be toxic. In that event, have it disposed of by specialist in waste treatment.

7. WARRANTY TERMS

- (1) The warranty for this product is valid for a period of one year after shipment from the factory.
- (2) If any trouble occurs under normal operating conditions due to defects in material or workmanship within the warranty period, ULVAC KIKO will correct it free of charge. Normal operating conditions are as follows.
 - a) Ambient temperature, relative humidity: 7°C~ 40°C, 85% RH or less
 - b) Type and temperature of exhaust gas from vacuum pump: Dry air or dry nitrogen, 7°C to 40°C
 - c) Use according to the instructions in this manual.
- (3) Troubles caused by the following are not covered by this warranty.
 - a) Malfunctions due to acts of God such as natural disasters and fire.
 - b) Special environment, such as salty air, pollution, etc.
 - c) Operating conditions that differ from those in the instruction manual (design basis, maintenance, inspection, etc.).
 - d) Malfunctions due to modification or repair by personnel other than those employed by the manufacturer or service companies.
 - e) In the case of replacement of an consumables.
 - f) Troubles deemed by ULVAC KIKO engineer not suited to the operating conditions of this unit.
- (4) Disclaimer
 - a) We shall not be liable for any malfunctions of our products caused by the customer, regardless if the malfunction does not fall within the warranty period, nor shall we be liable for any loss of opportunity for the customer's clients or for compensation for any damages to other products, labor costs, production loss, transportation expenses and other related work.
 - b) We shall not be liable for any claims and patent infringements, including secondary damages, filed a claim by a third party against the customer.

8. EXPLODED VIEW

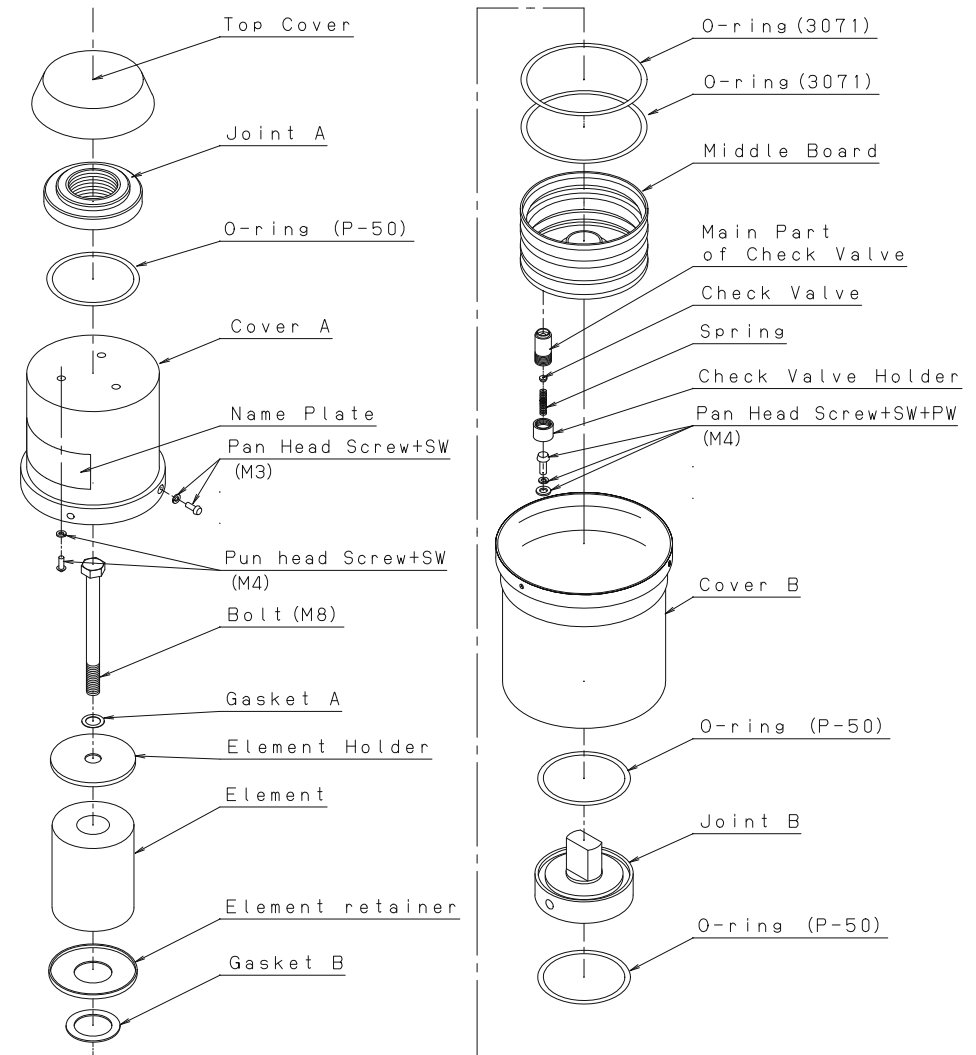
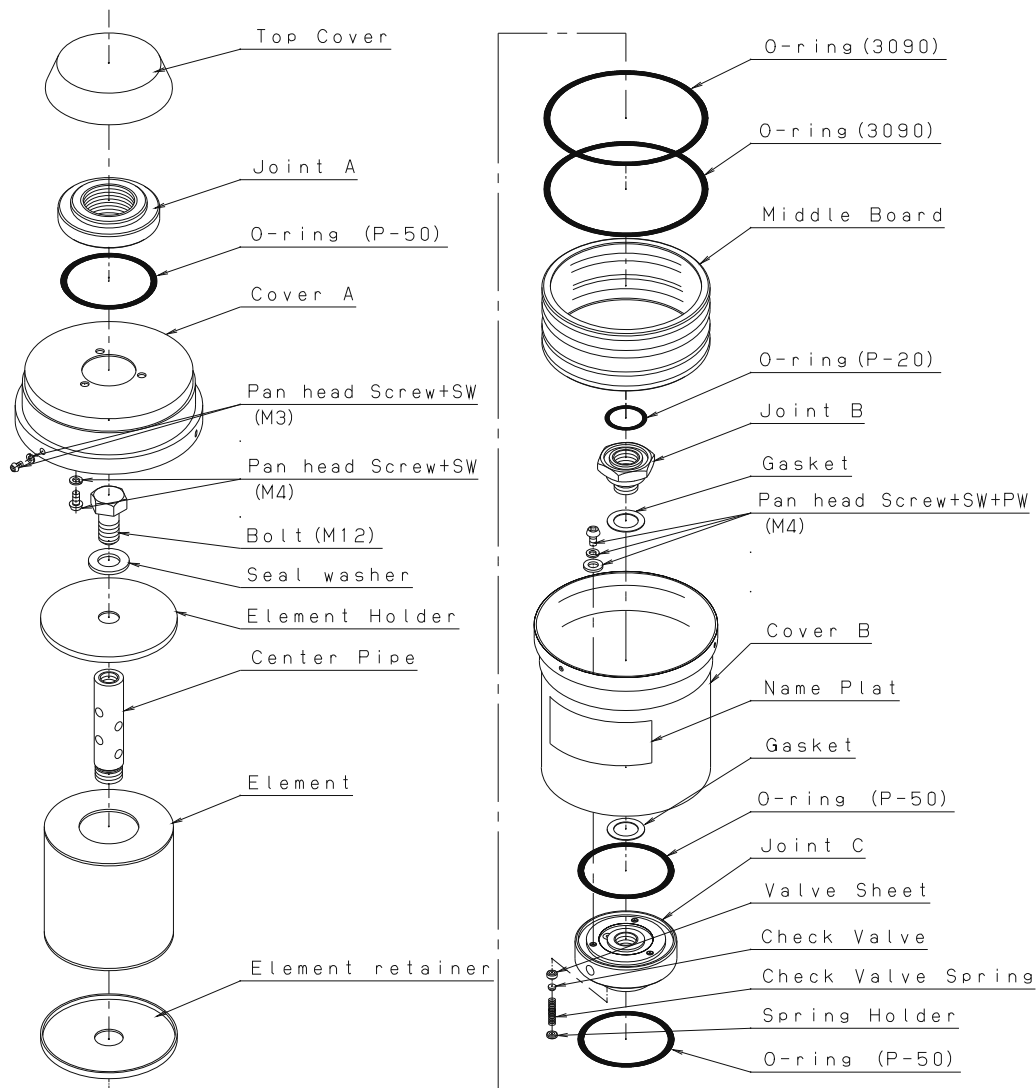


Fig. 2 Exploded view for OMI-100



ULVAC KIKO , Inc.

Head office
 291-7 Chausubaru Saito-city, Miyazaki 881-0037
 Japan
 Tel:+81-983-42-1411 Fax:+81-983-42-1422

Sales division
 1-10-4 Kitashinyokohama Kohoku-ku Yokohama-city, Kanagawa 223-0059
 Japan
 Tel: +81-45-533-0206 Fax: +81-45-533-0204

Fig. 3 Exploded view for OMI-200