INTRODUCTION

Introduction

Repair and maintenance of this product requires highly specialized knowledge and techniques. We recommend that you contact an Olympus service center in your area if a problem develops with the product.

If repairs or modifications are made by personnel not authorized by Olympus, the warranty is void, and Olympus shall not be liable for damage that occurs to or as a result of use of the modified product.

The information contained in this manual is subject to change at any time without notice. Later editions of this manual will contain revised and updated material.

Applicable Unit

- MAINTENANCE UNIT MU-1 AC120V with English
- MAINTENANCE UNIT MU-1 AC220-240V with Symbol

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Chapter 1: Product Outline

1. Product Overview

This product is used in combination with the AW channel cleaning adapter, leak tester and chemical tank to provide the following functions.

(1) This product can be combined with the AW channel cleaning adapter to drain water from the OES scope and EVIS scope air and water channel.
(2) This product can be combined with the leak tester to test OES scopes and EVIS scopes for water leaks by applying air pressure to the interior of the scopes and then submerging them in water to look for air bubbles.
(3) This product can be combined with the AW channel cleaning adapter and chemical tank to feed rubbing alcohol into the OES scope and EVIS scope air and water channel in order to dry them.

2. Features

(1) This product simplifies draining water from the OES scope and EVIS scope air and water pipelines. (AW channel cleaning adapter)
(2) This product simplifies the water leak tests for the OES scope and EVIS scope. (Using the leak tester.)
(3) The product can be installed on a wall near a sink with the included hanger.
(4) This product can be installed on the left or right side of a sink.
(5) This product simplifies feeding rubbing alcohol into the OES scope and EVIS scope air and water channel in order to dry them. (AW tube cleaning adapter, chemical tank)
3. Restrictions

(1) OES scopes and EVIS scopes can be used.
(2) Unless the AW channel cleaning adapter, leak tester and chemical tank are used, draining water from the air and water channel, leak inspections and feeding rubbing alcohol for drying the OES scope and EVIS scope are not possible.
(3) In order to drain the water feeding channel, cover the water supply connector with a finger. (Same as with the former model.)
(4) The ambient operation conditions are as follows:
   a) Temperature: 10 to 40 °C
   b) Humidity: 30 to 85%
   c) Atmospheric pressure: 700 to 1060 hPa
   d) Not to be used in an atmosphere with inflammmable gases.
(5) The power supply conditions are as follows:
   a) Rated power supply voltage: 100 V, 120 V, 220 to 240 V (according to the intended market)
   b) Rated input current: 0.4 A, 0.4 A, 0.2 A
   c) Frequency: 50/60 Hz
   d) Allowed voltage fluctuation: ±10%
4. Specifications

4-1 Main Unit Specifications

4-1-1 Applicable Endoscopes
OES Scope
EVIS Scope

4-1-2 Pump Used
Electromagnetic vibrator pump

4-1-3 Air Feeding Performance
At the scope socket:
2.84 x 10^4 Pa or greater at 0 ml/min;
1.76 x 10^4 Pa or greater at 2000 ml/min;
Note: Measured at the rated power supply voltage and a room temperature of 20 to 25 ºC

4-1-4 Control Method
By turning the power switch ON/OFF.

4-1-5 Hook Installation
Can be hung down by connecting the hanger to the hook installed in a wall.
(The hook is screwed into a wall and fixed.)

4-1-6 External Dimensions
Width 85 x Height 157 x Depth 170 mm

4-1-7 Weight
1.8 kg

4-1-8 Power Supply
Voltage: 100 V, 120 V, 220 to 240 V AC
Frequency: Both 50/60 Hz
Current: 0.4A (100 V, 120 V), 0.2A (220 V to 240 V)
Voltage fluctuation rate: within ±10%

4-2 Ambient Environment

4-2-1 Ambient Temperature
10 to 40ºC

4-2-2 Relative Humidity
30 to 85%
4-2-3 Atmospheric Pressure
700 to 1060 Pa

4-2-4 Inflammable Atmosphere
Use in an inflammable atmosphere is prohibited.
5. Names and Functions of Various Components

5-1 Front and Sides

Hook
Used when the maintenance unit is hung on a wall.
The included screw is used to install this hook near a sink if necessary.

Scope socket
An endoscope or leak tester is connected and air is supplied through the connector.

Power supply switch
Pushing the top will turn on the power supply and the power supply switch lamp will light at the same time. The pump will start to operate and air will come out of the hole at the bottom of the scope socket.

Hangers (on both sides)
Hangers are used to hang the maintenance unit on the hook or the chemical tank (MB-264) on the maintenance unit. Either the left or right hanger can be used.

Suction disk

Ventilation hole

Screw x 2

Hangers (on both sides)
5-2 Back

Power supply inlet

Breaker
6. System Chart

- Water-resistant Cap
- EVIS Videoscope
- Maintenance Unit (MU-1)
- Alcohol Container (MB-264) only
- EVIS Videoscope 100/200 series
- OES Fiberscope 10/20/30 series
- AW Channel Cleaning Adapter
- OES Fiberscope
- Leakage Tester (MB-155)
Chapter 2: Specifications

Refer to the “Specifications” of Instruction Manual.
Chapter 3: Installation and Connection

Refer to the “Installation and Connection” of Instruction Manual.
Chapter 4: Care, Storage and Disposal

Refer to the “Care, Storage and Disposal” of Instruction Manual.
Chapter 5: Inspection

Refer to the “Inspection” of Instruction Manual.

1. Inspection Check Sheet

Please copy and use check sheet on next page.

A check item may change with the destination and specifications.
There may be a check item which is on this list and is not in the instruction manual.
Please refer to the instruction manual (Chapter of Inspection or Inspection Before Use) for an actual check item and the check procedure.
There may be a blank column in a Check Sheet. Please utilize this blank column, if needed.
MU-1 INSPECTION CHECK SHEET

Serial number: ___________________________  Year & Month: /   

<table>
<thead>
<tr>
<th>Day</th>
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</tbody>
</table>
Chapter 6: Safety Check

1. External Leak Current

• Criteria
   External leak currents should not exceed the values indicated below.

<table>
<thead>
<tr>
<th>Inspection item</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>External leak current</td>
<td>Normal condition: 100 μA</td>
</tr>
</tbody>
</table>

• Inspection procedure
   Measure the leak current at the external screw that is farthest from the inlet.
   See the inspection procedures for leak current testing instrument for the measurement methods.

2. Grounding Leak Current

• Criteria
   Grounding leak currents should not exceed the values indicated below.

<table>
<thead>
<tr>
<th>Inspection item</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grounding leak current</td>
<td>Normal condition: 500 μA</td>
</tr>
</tbody>
</table>

• Inspection procedure
   Measure the leak current of the inlet grounding terminal.
   See the inspection procedures for leak current testing instrument for the measurement methods.
3. Grounding Resistance

- Criteria
  The resistance between the external case and grounding line should be 0.2 ohm or less.

- Inspection procedure
  Measure the resistance between the grounding terminal in the removable power supply cord and the screw that is farthest from the inlet.
  See the inspection procedures for grounding resistance testing instrument for the measurement methods.
## 4. Safety Check Sheet

<table>
<thead>
<tr>
<th>Date of inspection</th>
<th>Product</th>
<th>MU-1</th>
<th>Inspected by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Serial number</td>
<td></td>
<td>Checked by</td>
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</table>

### Electrical Safety Inspection

<table>
<thead>
<tr>
<th>Item</th>
<th>Criteria</th>
<th>Result</th>
</tr>
</thead>
<tbody>
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<td>2-1-1 External leak current</td>
<td>Normal Condition</td>
<td>100 ( \mu \text{A} ) or less</td>
</tr>
<tr>
<td></td>
<td>Single Fault</td>
<td>500 ( \mu \text{A} ) or less</td>
</tr>
<tr>
<td>2-1-2 Grounding leak current</td>
<td>Normal Condition</td>
<td>500 ( \mu \text{A} ) or less</td>
</tr>
<tr>
<td></td>
<td>Single Fault</td>
<td>1000 ( \mu \text{A} ) or less</td>
</tr>
<tr>
<td>2-1-3 Grounding Resistance</td>
<td>Between the external case and grounding line.</td>
<td>0.2 ( \Omega ) or less</td>
</tr>
</tbody>
</table>
Chapter 7: Troubleshooting

Refer to the “Troubleshooting” of Instruction Manual.