OLYMPUS®

INSTRUCTIONS

SurgMaster

ELECTROSURGICAL UNIT

UES-40

USA: CAUTION: Federal law restricts this device to sale by or on the order of a physician.

Important Precautions Critical for Safety (Be sure to read this information before use.)

- Before performing electrosurgical therapy, thoroughly study the properties, purposes, effects and possible risks (the nature, extent and probability) of the planned treatment and any alternative therapeutic method that can be performed. Perform therapy only when its benefits outweigh its risks. During endoscopic treatment, continue to evaluate the potential benefits and risks, and stop the treatment if the risks become greater than the possible benefit to the patient.
- The flow or discharge of high-frequency current could injure the patient, operator and/or assistant. When handling this product, also pay close attention to all “DANGER”, “WARNING” and “CAUTION” statements given in this manual.
- Make sufficient preparations for treatment of unexpected emergencies such as burns, bleeding and puncturing before using this product.

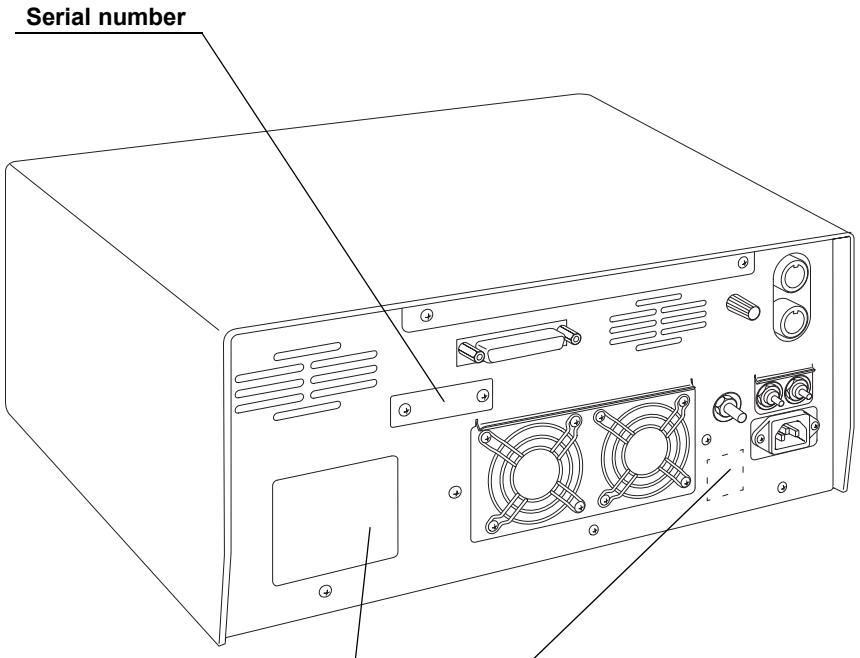
Contents

Labels and Symbols

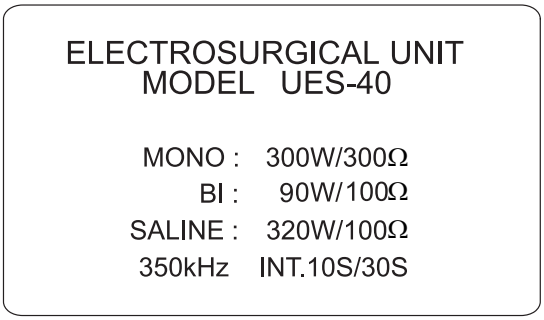
Safety-related labels and symbols are attached to the instrument at the location shown below.

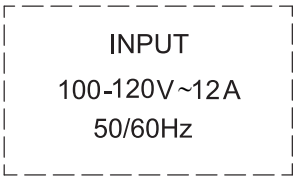
If labels or symbols are missing or illegible, contact Olympus.

❍ Rear side



Electrical rating plate





❍ Back cover of this instruction manual

Manufacturer

Authorized representative in the European Community

Important Information — Please Read Before Use

Intended use

This instrument has been designed for use in a medical facility under the supervision of a trained physician. It has been designed for general (open) and endoscopic surgery including urology, gynecology, respiratory and gastroenterology in conjunction with Olympus designed electrosurgical accessories, endoscopes (fiberscopes, videoscopes and rigid scopes) applicable for electrosurgery (cutting and coagulation), light sources and other ancillary equipment.
Do not use this instrument for any purpose other than its intended use.

Instruction manual

This instruction manual contains essential information on using this instrument safely and effectively. Before use, thoroughly review this manual and the manuals of all equipment which will be used during the procedure and use the equipment as instructed.
Keep this and all related instruction manuals in a safe, accessible location.
If you have any questions or comments about any information in this manual, please contact Olympus.

❍ Terms used in this manual

Wall mains outlet

An electrical outlet that has a terminal used exclusively for grounding.

User qualifications

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in electrosurgical procedures. This manual, therefore, does not explain or discuss endoscopic or electrosurgical procedures.

Instrument compatibility

Refer to the “System chart” in the Appendix to confirm that this instrument is compatible with the ancillary equipment being used.
Using incompatible equipment can result in patient injury and/or equipment damage.

This instrument complies with the EMC standard for medical electrical equipment; edition 2 (IEC 60601-1-2: 2001). However, when connecting to an instrument that complies with the EMC standard for medical electrical equipment; edition 1 (IEC 60601-1-2: 1993), the whole system complies with edition 1.

Repair and modification

This instrument does not contain any user-serviceable parts. Do not disassemble, modify, or attempt to repair it; patient or user injury and/or equipment damage can result.
Some problems that appear to be malfunctions may be correctable by referring to Chapter 7, “Troubleshooting”.
If the problem cannot be resolved using the information in Chapter 7, contact Olympus.

Signal words

The following signal words are used throughout this manual:

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.

NOTE

Indicates additional helpful information.

Dangers, warnings and cautions

Follow the dangers, warning and cautions given below when handling this instrument. This information is to be supplemented by the dangers, warnings and cautions given in each chapter.

DANGER

- The high-frequency (HF) equipment, when applied to a patient with a pacemaker implanted, may cause malfunction or failure of the pacemaker, seriously affecting the patient. Before proceeding, confirm with a cardiologist and the manufacturer of the pacemaker that it is safe to do so.
- To prevent shock hazards, never apply the UES-40 to the heart in combination with type B or type BF applied part.
- When using the UES-40 on or in the vicinity of the heart, be sure to use it with the minimum necessary output. Spark discharge during operation may affect the heart.
- The UES-40 is not explosion-proof construction. Never install or operate it where flammable gases are present.
- Never install or operate the UES-40 where:
  - the concentration of oxygen is high.
  - oxidizing agents (such as nitrous oxide [N_2O]) are present in the atmosphere.
  - flammable anesthetics and/or gases are present in the atmosphere.

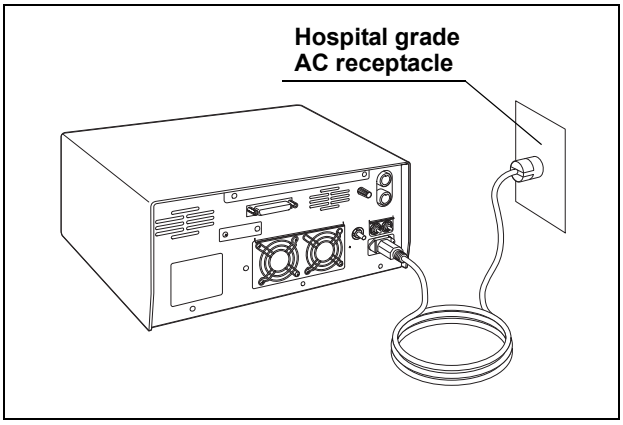
WARNING

- If absorbent cotton or gauze is used during the procedure, it can be ignited by a spark generated in the normal operation of the equipment.
- Prepare a spare UES-40 as a backup to ensure that the procedure can be completed without complication in case of a malfunction. If therapy is possible using non-electrosurgical equipment, it is also acceptable to prepare such equipment as a backup.
- Always have a defibrillator ready in case of a cardiac emergency. During operation of the defibrillator, remove the endoscope from the patient.
- Never attach the patient plate in the vicinity of a metal implant. The tissue in the vicinity of the metal implant may be burned.

- Be sure that this instrument is not used adjacent to or stacked with other equipment (other than the components of this instrument or system) to avoid electromagnetic interference.
- Electromagnetic may occur to this instrument near equipment marked with the following symbol or other portable and mobile RF communications equipment such as cellular phones. If radio interference occurs, mitigation measures may be necessary, such as reorienting or relocating this instrument or shielding the location.

- Keep the UES-40 and ancillary cords (A cord, bipolar cord, patient plate cord, hand piece cord) as far away as possible from other electromedical equipment and cords. If placed too close, high-frequency signals or spark discharge noise from the UES-40 may interfere with the operation of other equipment.
- To prevent patient burns, the UES-40 and ancillary cords (A cord, bipolar cord, patient plate cord, hand piece cord) should not come in contact with the patient or metal parts of the operating table. Furthermore, the patient should also be kept away from metallic parts of the operating table or other devices.
- Never loop the cords (A cord, bipolar cord, patient plate cord, hand piece cord) or bundle cords together with cords belonging to other medical equipment. The high-frequency signals or spark discharge noise generated by the UES-40 may interfere with the operation of other medical equipment.
- Do not apply excessive bending, straining, or squeezing force to any cords. It may cause malfunction.
- Always use the UES-40 as outlined in this instruction manual. Improper use will not only impede functions and prevent optimum performance, but may cause equipment damage and/or complications. Before each use, always inspect the equipment as outlined in this instruction manual.
- The UES-40 may interfere with electromedical equipment used in conjunction with it. Before use, thoroughly confirm the compatibility of all equipment.

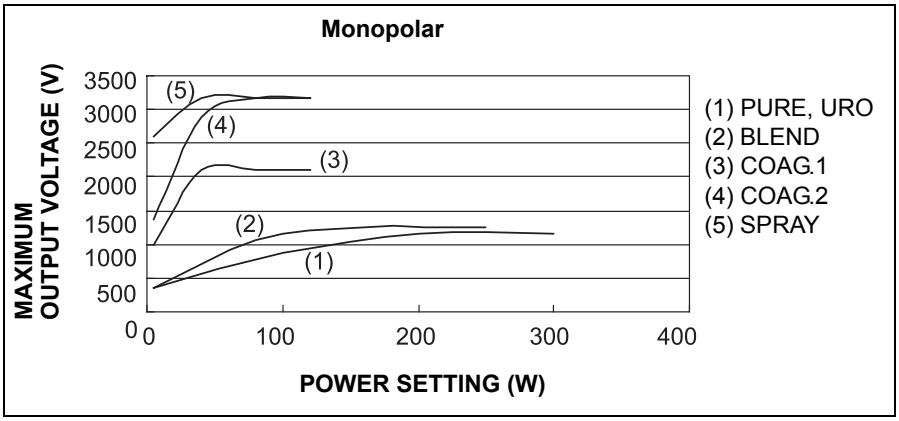
- To prevent the risk of electric shock, the housing of the UES-40 must be grounded. Always connect the power cord plug to a properly grounded hospital grade AC receptacle (wall mains outlet) as shown in the figure below. Do not use a 3-pin/2-pin adapter, as it can impair safe operation of the unit.

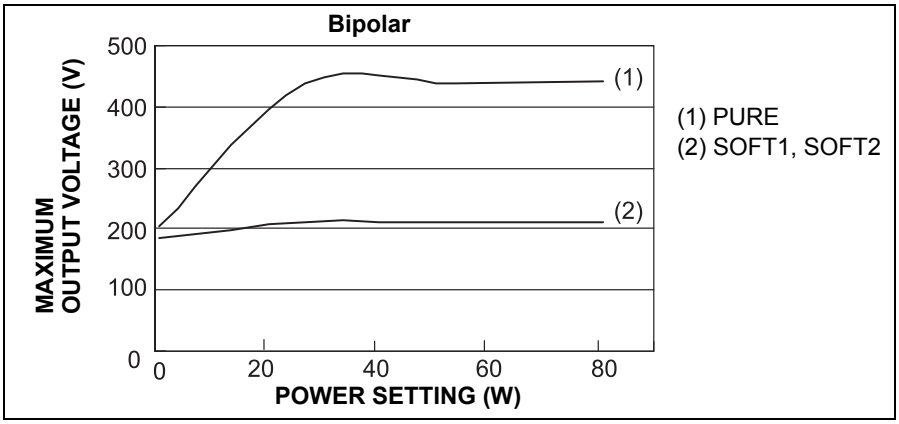


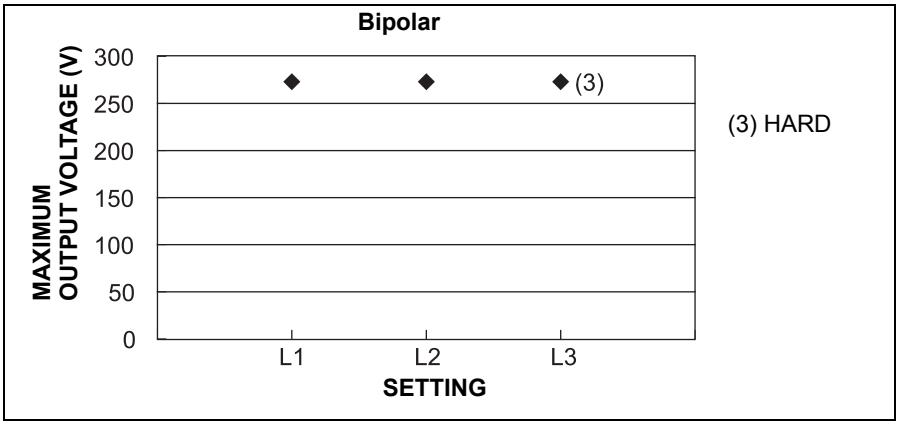
- To prevent electric shock, the UES-40 is designed to function with insulated connectors that have Type CF applied parts (A cord, hand piece, patient plate). Therefore, to prevent shock caused by leakage current from other electrical equipment applied to the patient, the connectors should not be grounded.
- Should any abnormal output be suspected during operation, immediately terminate the use of the equipment and turn OFF the power switch. Otherwise, malfunction of the equipment may cause an unintended increase in output.
- To prevent operator shock and instrument damage, keep liquids away from all electrical equipment. If liquid gets on or into the UES-40, terminate operation immediately and contact Olympus.
- To prevent patient burns, the patient's skin surfaces should not touch each other (e.g. bare arm and side of chest).
- To prevent patient burns, the operator and assistant should wear protective gloves during the procedure.
- To prevent patient burns during fiberscopic or videoscopic treatment, the patient's clothes must be dry.
- If the intestines contain a flammable gas, replace it with air or a non-flammable gas before performing the operation, to minimize the risk of fire or explosion.

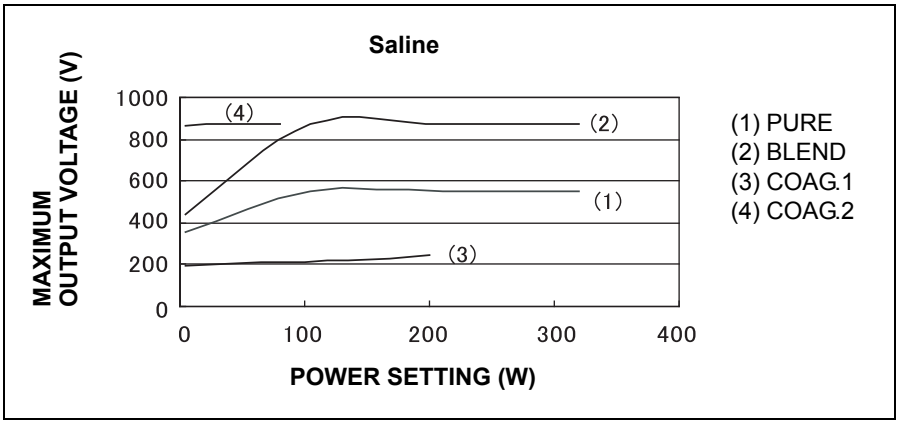
- During fiberscopic or videoscopic treatment, be sure that the distal end of the endoscope and metallic parts of the accessory do not touch the normal tissue surrounding the target tissue as this may cause severe burns.
- During fiberscopic or videoscopic treatment, be sure that the distal end of the endoscope or accessory does not contact bridging fluids surrounding the target tissue. Electric current may flow to the surrounding normal tissue via the fluids and cause burns.
- During fiberscopic or videoscopic treatment, never grasp the target tissue with non-insulated grasping forceps. Non-insulated grasping forceps will disperse the electric current and normal operation may be impeded.
- To ensure electrical safety, the UES-40 should not be used in conjunction with:
  - Electrical equipment whose safety against leakage current is not guaranteed.
  - Electrosurgical equipment whose safety in combined use is not guaranteed.
- The UES-40 should only be used under the conditions described in , “Operating environment” in the Appendix. Use under other conditions may impede normal performance and/or result in equipment damage.
- If the UES-40 is used in conjunction with a non-Olympus electrosurgical unit, keep the electrosurgical accessory away from the target area while the UES-40 is in operation. Do not activate output of both units simultaneously. Patient or operator injury may occur due to the concentration of electric current.
- When using an electrocardiograph or other physiological monitoring equipment simultaneously with the UES-40 on a patient, any monitoring electrodes should be placed as far away as possible from the electrodes (accessories/hand piece and patient plate) used with the UES-40. If placed too close, high-frequency signals or spark discharge noise from the UES-40 may interfere with the operation of an electrocardiograph or other physiological monitoring equipment. Needle monitoring electrodes should not be used, as they may cause patient burns. Physiological monitoring equipment incorporating high-frequency current limiting devices is recommended.

- The open-circuit voltage output characteristics of the UES-40 are shown below. When setting the output level, first set it to a low level and increase it gradually. If the output is initially set to a high level, the electrode's insulation may be damaged and cause operator and/or patient burns. Furthermore, it is recommended that you perform basic experiments before using the UES-40. If the instruction manual for the endoscopic accessory to be used stipulates a rated voltage, the output should be set so that it does not exceed that voltage.









- Flammable agents used for cleaning and disinfection must be allowed to evaporate before the UES-40 is used. Also ensure that flammable solutions are neither on the patient's skin nor in the patient's body cavity when the UES-40 is used.
- For surgical procedures where the high-frequency current could flow through parts of the body with a relatively small cross-sectional area, use of the bipolar mode may be desirable to avoid accidental coagulation.
- To prevent patient burns when the UES-40 is used in conjunction with a non-Olympus electrosurgical unit, ensure that each unit is supplied with power from separate electrosurgical units. Also ensure that each unit is supplied with power from separate breakers.
- During operation, temporarily unused electrodes should be stored in an electrically insulated container. Unused electrodes should never be placed on the patient. Otherwise, it may cause patient and/or operator burns.
- Studies have shown that smoke generated during electrosurgical procedures can be irritating and potentially harmful to surgical personnel. These studies recommend the use of surgical masks and adequate ventilation of smoke using surgical smoke evacuators or other means.

– William S. Sawchuk, et al., “Infectious Papillomavirus in the Vapor of Warts Treated With Laser or Electrocoagulation: Detection and Protection”, Journal of American Academy of Dermatology, Vol.21, No.1 (July, 1989): 41 – 49.
Yoshifumi Tomita, et al., “Mutagencity of Smoke Condensates Induced by CO_2-Laser Irradiation and Electrocauterization”, Mutation Research, Vol.89 (1989): 145 – 149.
Evaluation Report No.85 – 126. (National Technical Information Service, 1985): 1 – 28.

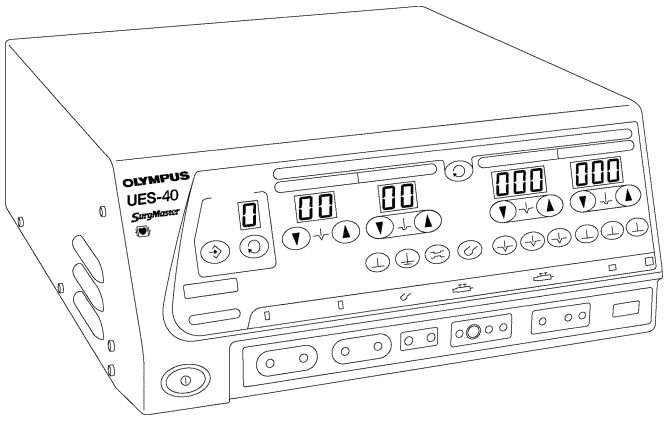
- When the patient is moved after the dispersive electrode has been attached, confirm that the dispersive electrode is still in proper contact with the patient. Otherwise, it may cause patient and/or operator burns.
- This instrument cannot be used with an endoscope equipped with the S cord connector receptacle.
- If the UES-40 is used with a rigid endoscope and is providing monopolar output, activation of the UES-40 when not in contact with target tissue or in a position to deliver energy to target tissue (fulguration) may cause capacitive coupling.
- Do not use the UES-40 in a location exposed to strong electromagnetic radiation (microwave or short-wave medical treatment equipment, MRI, radio or mobile phone equipment). These can impair operation of the unit.
- Always confirm that the unit is safe to use in the system configuration that you have arranged. In general, the unit should be used only with equipment shown in the “System chart” in the Appendix. Using the unit in a configuration that includes equipment not shown in the “System chart” may not only prevent the unit from performing as intended, it can cause patient or operator injury and/or equipment damage. When you intend to use the unit in a configuration that includes equipment other than that shown in the “System chart”, confirm that the unit functions safely in that system configuration before proceeding.
- Never bring the electrocautery tip in contact with a metallic clip, electrosurgical accessory or retractor. Doing so could cause burns to tissue in the vicinity.

CAUTION

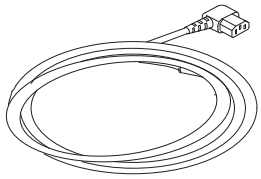
- To prevent instrument damage, never short-circuit electrodes (accessories, hand piece or patient plate).
- Repairs should be performed only by Olympus.

Chapter 1 Checking the Package Contents

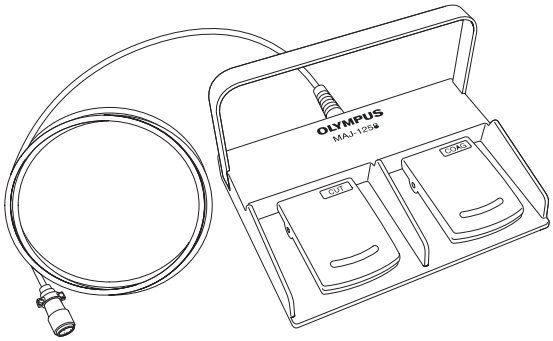
Match all items in the package with the components shown below. Inspect each item for damage. If the instrument is damaged, a component is missing or you have any questions, do not use the instrument; immediately contact Olympus.



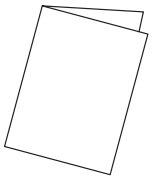
Electrosurgical unit (UES-40)



Power cord



Foot switch for UES-40 (MAJ-1258)



Instruction manual

The following Olympus items are optional items which may be purchased separately:

- A cord (A00012A, A00506A, A02915A (MAJ-860), A0335.1, A0336.1, A0358, A0393)
- Bipolar electrode (A5380, A5382, A5384, A5386, A5388, A5390, A5392, A5394, O5119)
- Bipolar cord (A00500A, A00504A, A5121.1, A5376, A5377)
- Bipolar foot switch for UES-40 (MAJ-1259)
- A adapter 2 (MAJ-619)
- Interactive cable (MAJ-877)
- Saline cord (WA00013A)
- Patient plate (MAJ-897)
- P cord (MAJ-814)

The following recommended non-Olympus items may also be purchased separately:

- Hand piece (for connection method, refer to Section 3.6, “Connection of the hand piece (for monopolar treatment)”)
- The patient plate (for compatible patient plates, refer to Section 3.5, “Connection of the patient plate (for monopolar treatment)”)
- The bipolar electrode (for compatible bipolar electrodes, refer to Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)”)
- Bipolar cord (for compatible bipolar cords, refer to Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)”)

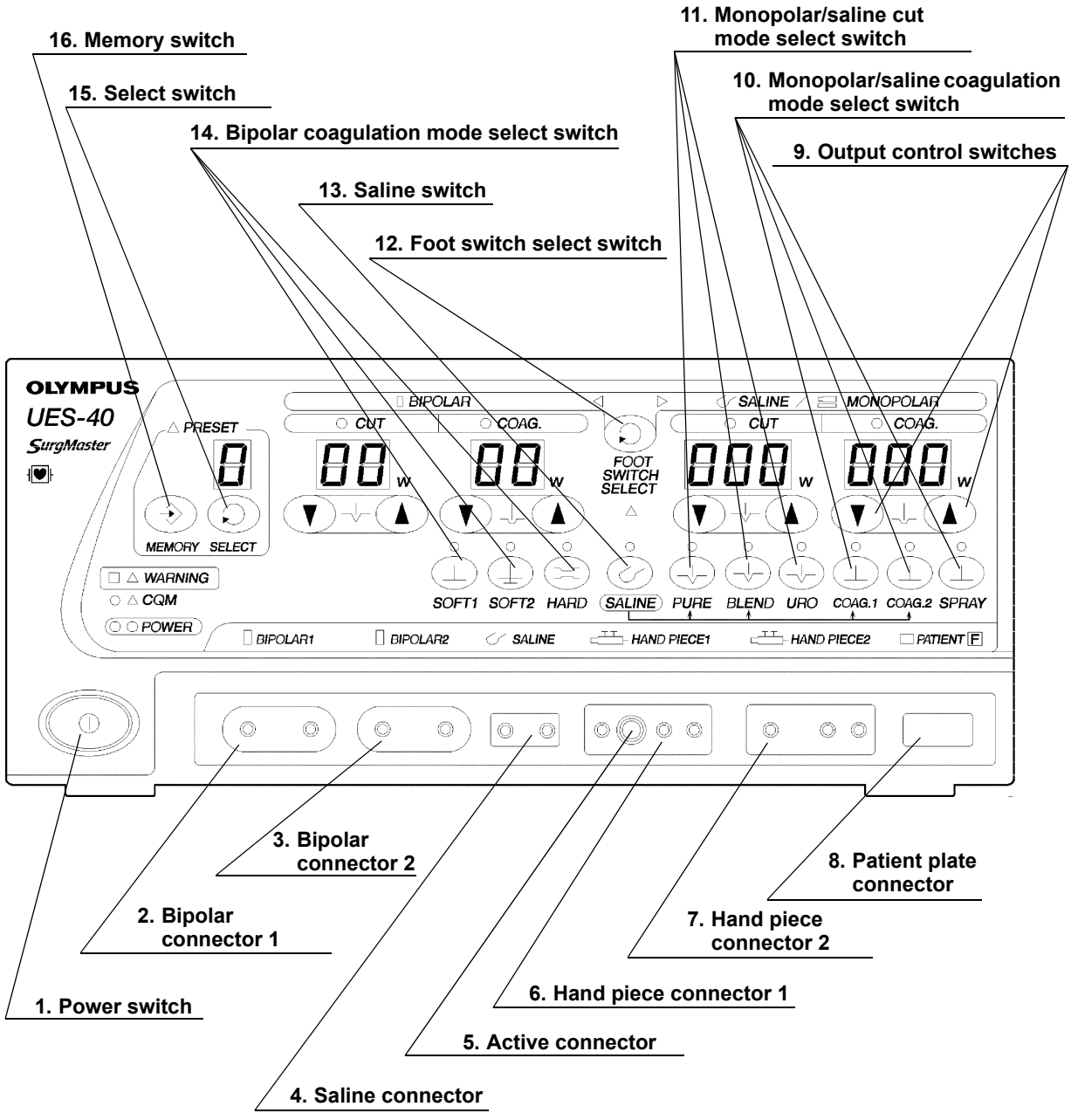
For other equipment combinations, refer to the “System chart” in the Appendix.

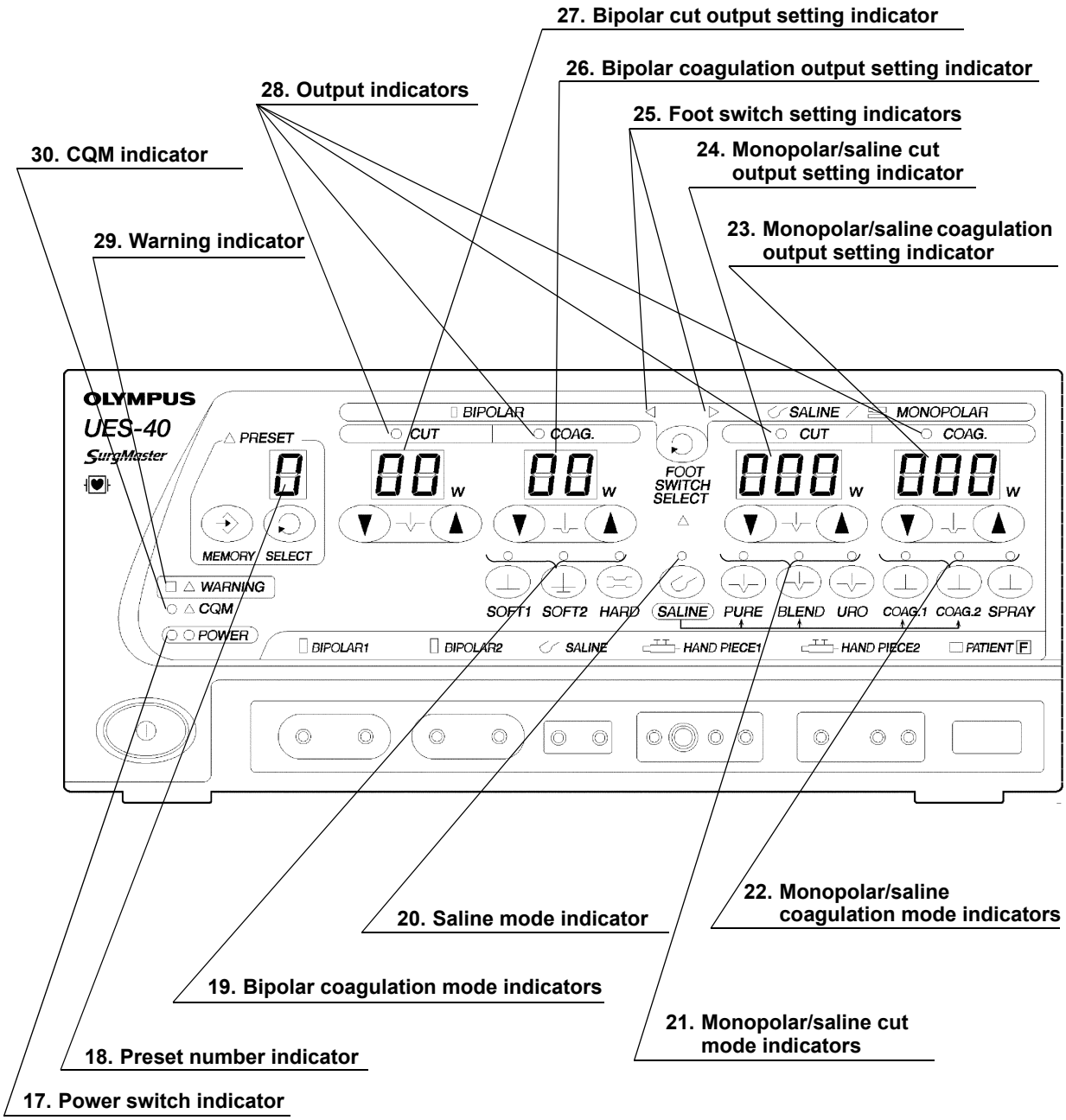
NOTE

- Place the instruction manual next to the UES-40 or in another easily accessible place.
- Before using an optional item, thoroughly review and understand the instruction manual provided with that item.
- Some products may not be available in some regions. Please contact the nearest Olympus office for details.
- Specifications, design and accessories are subject to change without any notice or obligation on the part of the manufacturer.

Chapter 2 Nomenclature and Functions

2.1 Front panel




27. Bipolar cut output setting indicator
26. Bipolar coagulation output setting indicator
28. Output indicators
25. Foot switch setting indicators
30. CQM indicator
24. Monopolar/saline cut output setting indicator
29. Warning indicator
23. Monopolar/saline coagulation output setting indicator
OLYMPUS
UES-40
SurgMaster
PRESET
BIPOLAR
CUT
COAG.
SALINE
MONOPOLAR
CUT
COAG.
FOOT SWITCH SELECT
MEMORY
SELECT
WARNING
CQM
POWER
SOFT1
SOFT2
HARD
SALINE
PURE
BLEND
URO
COAG.1
COAG.2
SPRAY
BIPOLAR1
BIPOLAR2
SALINE
HAND PIECE1
HAND PIECE2
PATIENT
22. Monopolar/saline coagulation mode indicators
20. Saline mode indicator
19. Bipolar coagulation mode indicators
21. Monopolar/saline cut mode indicators
18. Preset number indicator
17. Power switch indicator

1. **Power switch**
   Press this switch to turn the power ON. The power switch indicator will illuminate.
2. **Bipolar connector 1**
   Connect the plug of bipolar electrodes here.
3. **Bipolar connector 2**
   Connect the plug of bipolar electrodes here.
4. **Saline connector**
   Connect the saline cord plug here.
5. **Active connector**
   Connect the plug of the active electrode of the A cord here.
6. **Hand piece connector 1**
   Connect the hand piece plug here.
7. **Hand piece connector 2**
   Connect the hand piece plug here.
8. **Patient plate connector**
   Connect the patient plate plug here.
9. **Output control switches**
   When the "▲" switch is pressed, the value displayed on the output setting indicator increases. When the "▼" switch is pressed, the value displayed on the output setting indicator decreases.
10. **Monopolar/saline coagulation mode select switch**
    Press to select the coagulation mode.
11. **Monopolar/saline cut mode select switch**
    Press to select the cut mode.
12. **Foot switch select switch**
    Press to select either the saline/monopolar output or the bipolar output.
13. **Saline switch**
    Press to select the saline mode.
14. **Bipolar coagulation mode select switch**
    Press to select the coagulation mode.
15. **Select switch**
    Press to recall output settings and modes from memory.
16. **Memory switch**
    Press to store the current output settings and modes in memory.
17. **Power switch indicator**
    Lights when the power is ON.
18. **Preset number indicator**
    Displays the number of a memory preset ("1" to "5" or "P").

19. **Bipolar coagulation mode indicators**
Lights when the corresponding coagulation mode select switch is pressed.

20. **Saline mode indicator**
Lights when the corresponding saline mode switch is pressed.

21. **Monopolar/saline cut mode indicators**
Lights when the corresponding monopolar/saline cut mode select switch is pressed.

22. **Monopolar/saline coagulation mode indicators**
Lights when the corresponding monopolar/saline coagulation mode select switch is pressed.

23. **Monopolar/saline coagulation output setting indicator**
Displays the value set with the monopolar/saline output control switches.

24. **Monopolar/saline cut output setting indicator**
Displays the value set with the monopolar/saline output control switches.

25. **Foot switch setting indicators**
The lit indicator corresponds to the type of output that can be activated using the foot switch for the UES-40 (MAJ-1258).

26. **Bipolar coagulation output setting indicator**
Displays the value set with the bipolar output control switches.

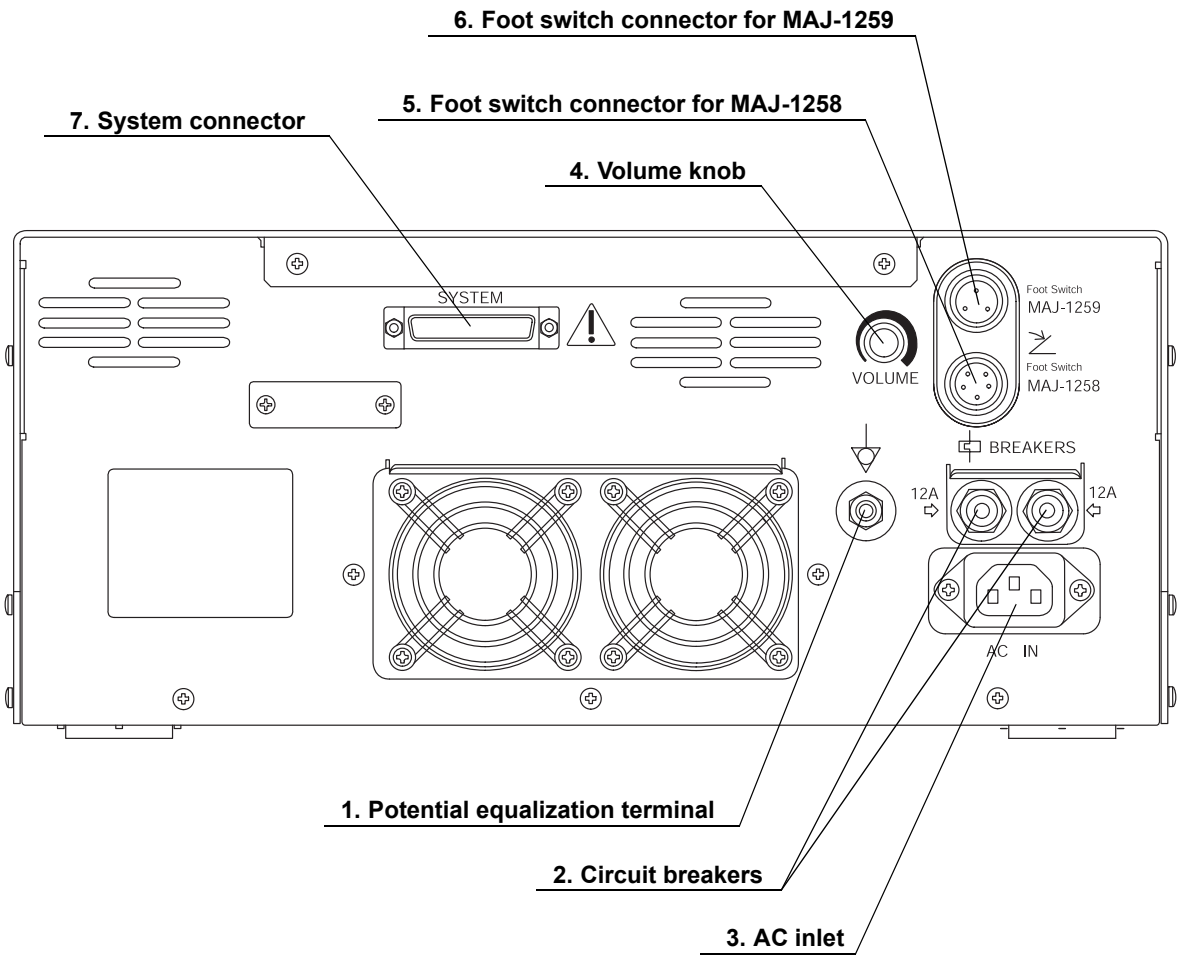
27. **Bipolar cut output setting indicator**
Displays the value set with the bipolar output control switches.

28. **Output indicators**
During output, the indicator corresponding to the selected output (cut or coagulation) is lit.

29. **Warning indicator**
Lights to indicate a defective device or broken wires in the patient plate.

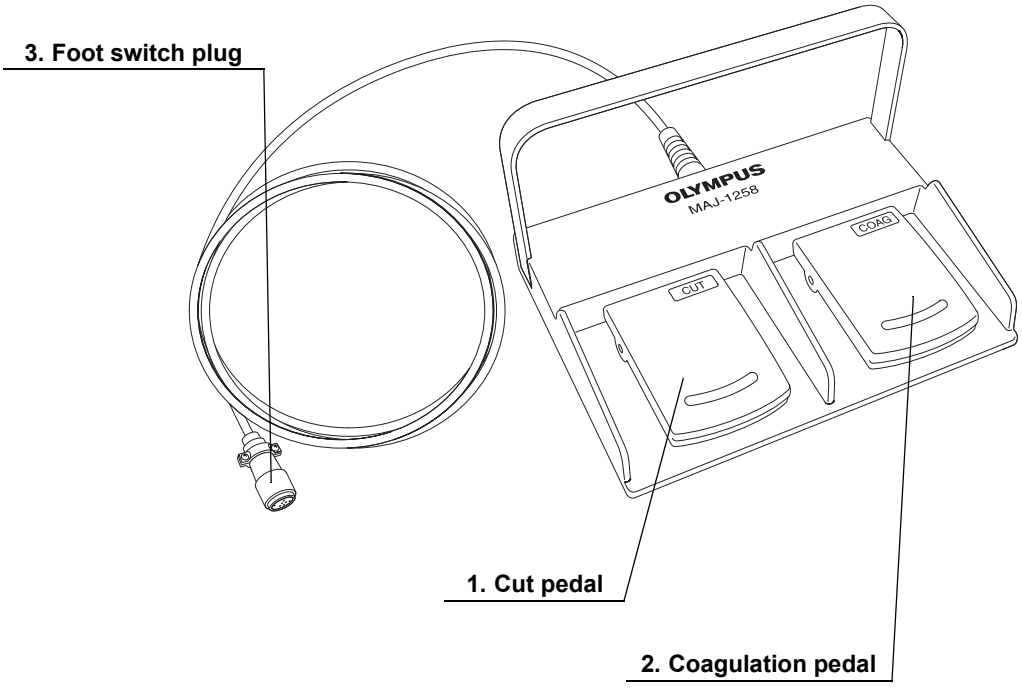
30. **CQM indicator**
Lights to indicate that the connection between the patient and the patient plate is correct when a split-type patient plate is connected.

2.2 Rear panel



1. **Potential equalization terminal**
   In case of equipotential, connect this terminal to a potential equalization busbar of the electrical installation.
2. **Circuit breakers**
   Prevents short-circuit within the unit if equipment malfunctions.
3. **AC inlet**
   Accepts the power cord.
4. **Volume knob**
   To adjust the sound volume.
5. **Foot switch connector for MAJ-1258**
   To connect the foot switch for UES-40, which is a standard item.
6. **Foot switch connector for MAJ-1259**
   To connect the bipolar foot switch for UES-40, which is available as an optional accessory.
7. **System connector**
   Accepts connection from an external control unit for remote access. Do not connect non-Olympus equipment to this connector.

2.3 Foot switch for UES-40 (MAJ-1258)

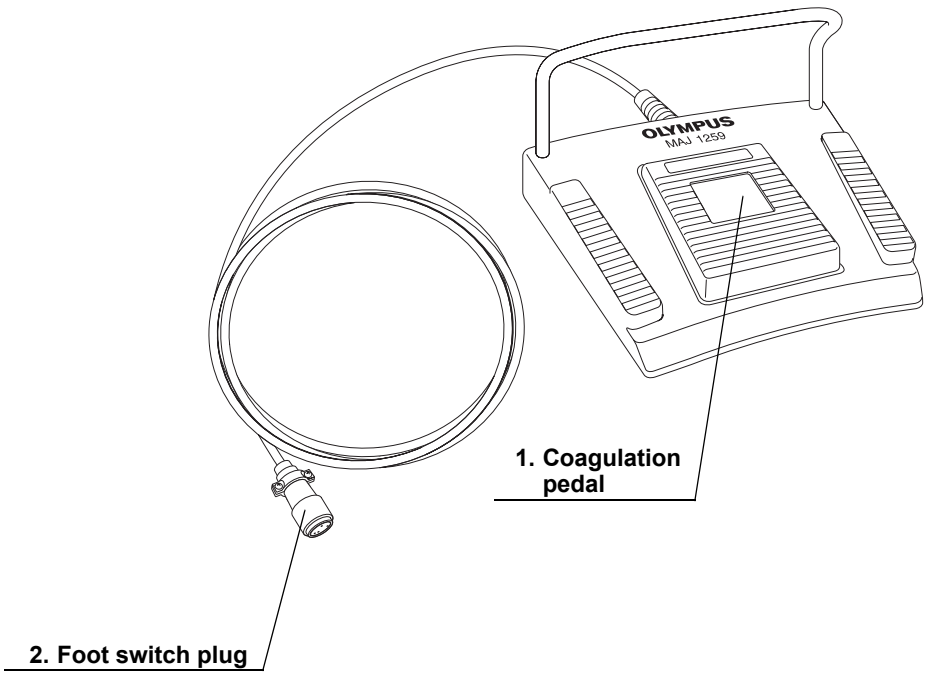


1. **Cut pedal**
Turn ON/OFF cutting output from hand piece connector 1, active connector, saline output connector or bipolar connector 1.

2. **Coagulation pedal**
Turn ON/OFF the coagulation output from hand piece connector 1, active connector, saline output connector or bipolar connector 1.

3. **Foot switch plug**
Connect to the foot switch connector for MAJ-1258 on the rear panel of the UES-40.

2.4 Bipolar foot switch for UES-40 (MAJ-1259)



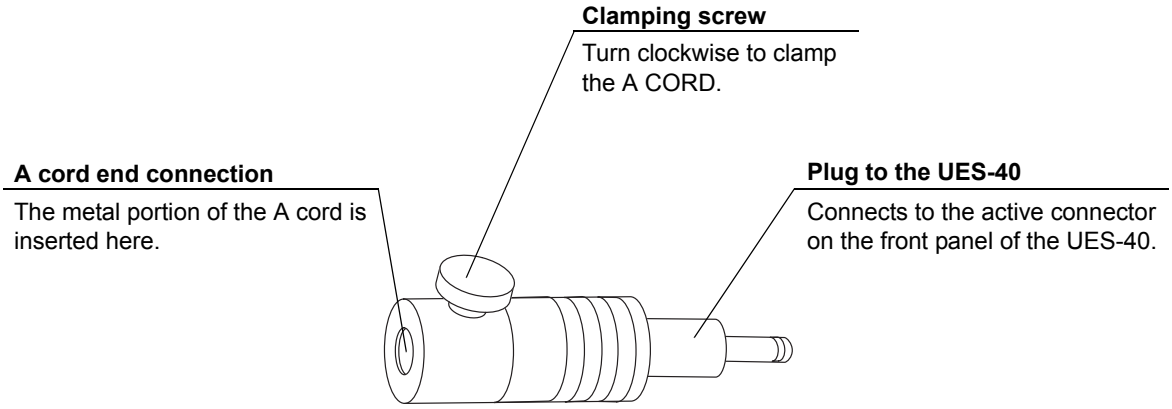
1. **Coagulation pedal**
Turn ON/OFF the coagulation output from bipolar connector 2.

2. **Foot switch plug**
Connect to the foot switch connector for MAJ-1259 on the rear panel of the UES-40.

2.5 A adapter 2 (MAJ-619)

This adapter makes it possible to connect one of the following A cords to the UES-40.

- A00010A
- A00505A
- A0130.1
- A0130.2
- A0139.1
- A0139.2
- A0355
- A0391
- A8406 (MH-969)
- MA-255



Chapter 3 Installation and Connection

Prepare the instrument and other equipment to be used with this instrument (shown in the “System chart” in the Appendix) before each use.
Refer to the instruction manuals for each piece of equipment, and install and connect all equipment as follows:

3.1 Installation of equipment

CAUTION

- Provide adequate ventilation for the rear side of the UES-40, ensuring that the airflow from the unit’s exhaust fan is directed away from the patient.
- Ensure that the air vents on the sides of the UES-40 are not obstructed. Obstructed air vents will result in instrument damage.
- If the UES-40 is placed on a cart, the cart must be of adequate strength and size to hold the unit securely.
- Never place the UES-40 on its side or upside down.

NOTE

Place the instruction manual near the UES-40 or in another easily accessible place.

1. Thoroughly read and understand the precautions given in “Dangers, warnings and cautions” and operate the UES-40 accordingly.
2. Place the UES-40 on a level, stable bench or cart.

3.2 Connection to an AC mains power supply

DANGER

Connect the power plug of the power cord directly to a grounded wall mains outlet. If the electrosurgical unit is not grounded properly, it can cause an electric shock and/or fire.

WARNING

- Firmly plug in the power cord so it will not accidentally be dislodged during the operation.
- Never apply excessive force to the power cord by bending, straining, twisting or pressing it.
- Always plug the power cord into a 3-pin outlet. Do not use a 3-pin/2-pin adapter, as it can impair the safe operation of the unit.
- Do not allow the power cord to become wet. Electric shock, equipment damage or fire can result.

CAUTION

- Always use the power cord provided with the UES-40. Never attempt to modify the power cord.
- If the same circuit breaker is used to supply power to other electrosurgical equipment, carefully consider the power requirements of the additional equipment and use circuit breakers that have ample capacity.
- If the voltage of the facility is different from the voltage indicated on the rating plate of the UES-40, contact Olympus.
- Connect the UES-40 directly to a hospital grade AC receptacle (wall mains outlet) rather than to a table tap.

1. Confirm that the power is OFF.
2. Connect the power cord to the AC inlet of the UES-40.
3. Connect the power cord plug directly to a hospital grade receptacle (wall mains outlet) which meets the power requirements indicated on the electrical rating plate on the rear panel of the UES-40 (see Figure 3.1).

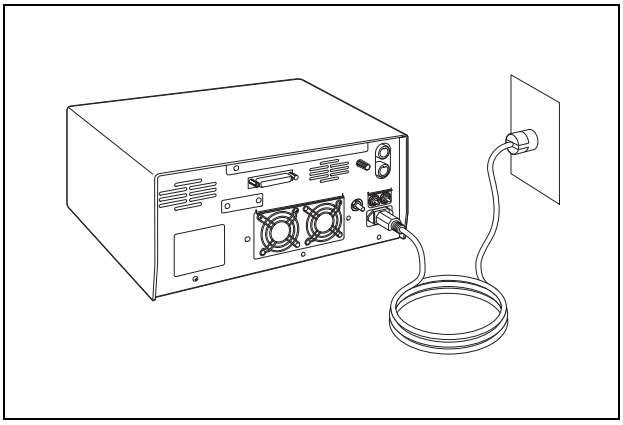


Figure 3.1

3.3 Connection of foot switch MAJ-1258

WARNING

- The foot switch plug is not waterproof, and liquid such as water must not get into the plug.
- Please do not connect products other than the foot switch for UES-40 (MAJ-1258) to the foot switch connector for MAJ-1258. Otherwise,the foot switch might not function and may cause patient injury and/or damage of the equipment.

Before connecting, confirm that the foot switch plug is free of scratches and cracks and that the foot switch pedals are not damaged. With the arrow on the plug facing upward, insert the foot switch plug into the foot switch connector for MAJ-1258 on the rear panel of the UES-40 until it clicks (see Figure 3.2).

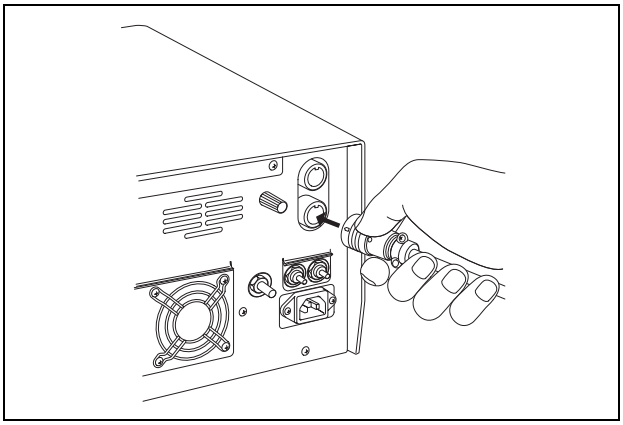


Figure 3.2

3.4 Connection of foot switch MAJ-1259

WARNING

- The foot switch plug is not waterproof, and liquid such as water must not get into the plug.
- Please do not connect products other than the foot switch for UES-40 (MAJ-1259) to the foot switch connector for MAJ-1259. Otherwise, the foot switch might not function and may cause patient injury and/or damage of the equipment.

NOTE

- When using both monopolar and bipolar, connect bipolar electrode to connector 2 and control by foot switch MAJ-1259. Also select “monopolar” by foot switch selection button on the front panel.
- When using two bipolar electrodes, the electrode connected to connector 1 can be controlled by the foot switch MAJ-1258. And the electrode connected to connector 2 can be controlled by foot switch MAJ-1259.

Before connecting, confirm that the foot switch plug is free of scratches and cracks and that the foot switch pedals are not damaged. With the arrow on the plug facing upward, insert the foot switch plug into the foot switch connector for MAJ-1259 on the rear panel of the UES-40 until it clicks (see Figure 3.3).

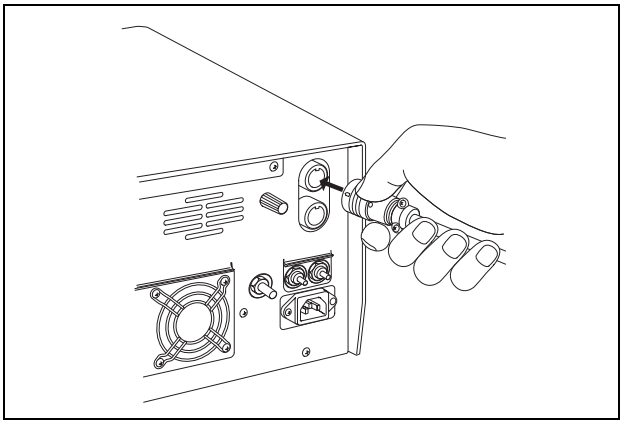


Figure 3.3

3.5 Connection of the patient plate (for monopolar treatment)

Improper connection between the patient plate and the patient's skin surface may cause burns. Always attach the patient plate as described below:

WARNING

- Do not use the patient plate if it has been damaged or modified. This may cause patient burns.
- Never attach the patient plate in the vicinity of a metal implant. The tissue in the vicinity of the metal implant may get burned.
- Ensure that the area of the patient's skin that will come in contact with the patient plate is completely dry.
- Body hair will impede proper contact with the patient plate. If necessary, shave all hair from the area to which the patient plate will be attached.
- Avoid placing the patient plate over bony prominences or scar tissue as proper contact will not be obtained.
- Do not fold or wrinkle the patient plate. Its entire surface should be in direct contact with the patient's skin.
- The patient plate should not be reused.
- Do not attach a patient plate for a bipolar only procedure.
- If the contact between the patient plate and the patient's skin is insufficient, the patient warning indicator will light. Set the power switch to OFF and reattach the patient plate or use a new plate. Incomplete contact between the patient plate and the patient's skin may result in burns.
- If the connection of the patient plate is improper, an alarm will sound, the warning indicator will light and the output setting indicator will display an error code when the monopolar output mode is selected. In this case, turn the power OFF and reconnect the patient plate.
- For further details on patient plates, refer to their respective instruction manuals. Please use the following patient plates when you use the patient plate other than the regular combination in "System chart" of "Appendix".

- The connectable patient plates are listed below:
  - 3M 7179, 9165

  These have been tested and found to be safe. When you intend to use the unit in a configuration that is not listed in the “System chart” in the Appendix, confirm that the unit functions safely in that system configuration before proceeding. Note that with certain patient plates, the CQM monitor may malfunction even when the power supply is normal.
- Do not cut a patient plate to reduce its size. Patient burns due to high current density may result.

1. After peeling off the protective paper from the patient plate, attach the plate to the patient’s thigh or place it under the patient’s buttocks.
2. After confirming that the patient plate cable and plug are free of scratches and cracks, fully insert the plug into the patient plate connector on the front panel of the UES-40 (see Figure 3.4).

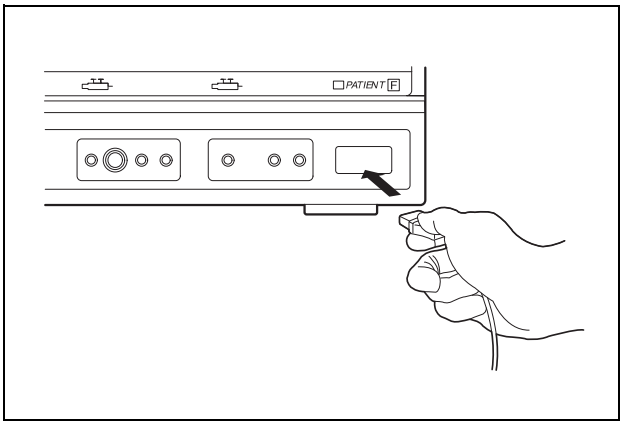


Figure 3.4

3. When a split-type patient plate is connected, verify that the CQM indicator is illuminated after the power is turned ON (see Figure 3.5).

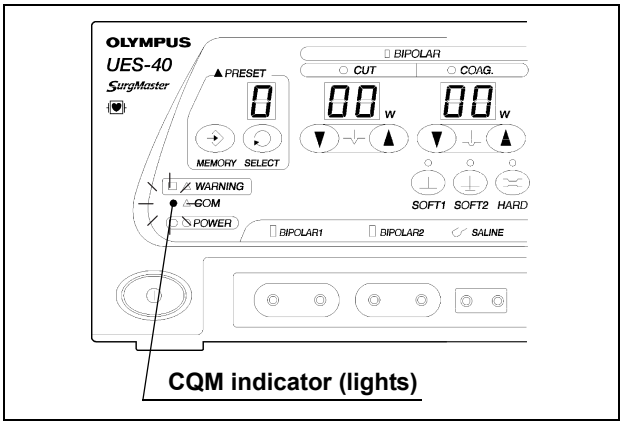


Figure 3.5

NOTE

When a split-type patient plate is connected to the UES-40, it is possible to detect separation of the patient plate from the patient.

3.6 Connection of the hand piece (for monopolar treatment)

WARNING

Use a hand piece that complies with IEC 60601-2-2.

1. Confirm that the cable and plug of the reusable hand piece are free of scratches and cracks. Insert an electrode into the tip of the hand piece and tighten securely. Insert the hand piece plug firmly into the hand piece connector 1 or hand piece connector 2 on the front panel of the UES-40 (see Figure 3.6).
2. When using a disposable-hand piece, confirm that the cable and the plug are free of scratches and cracks. Insert the hand piece plug firmly into the hand piece connector 1 or hand piece connector 2 on the front panel of the UES-40 (see Figure 3.6).

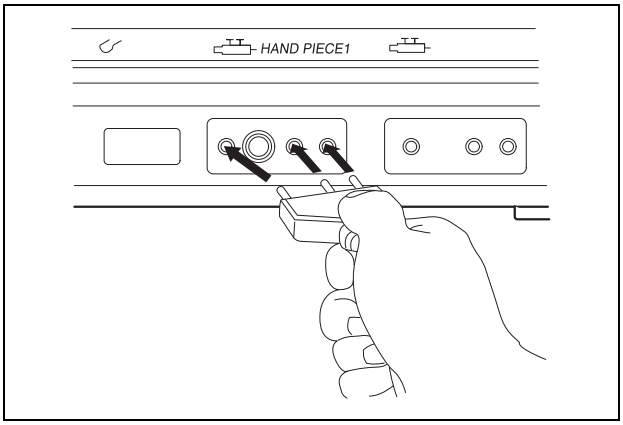


Figure 3.6

3.7 Connection of the A cord (for monopolar treatment)

Use only Olympus hand instruments for rigid scopes and endo-therapy accessories for fiberscopes or videoscopes. For further details on the accessory, refer to its instruction manual. If you have any questions concerning the compatibility of your accessory, please contact Olympus.

WARNING

- Wire disconnection in the A cord may result in abnormal heating, spark generation and decrease in the output level, which may also lead to unexpected burns, neural stimulation and/or bleeding. To prevent this, be sure to confirm that the A cord is not buckled, damaged or bent before use. If the cutting performance drops or noise is observed in the endoscopic image during operation, this may be an indication of wire disconnection of the A cord. In this case, do not use the A cord; replace it with a new one.
- Connect the A cord securely as described in the following procedure. Incomplete connection may result in abnormal heating, spark generation and decrease in the output level, which may also lead to unexpected burns, neural stimulation and/or bleeding.

Confirm that the A cord's cable and plugs are free of scratches and cracks. Insert the UES-40 side of the A cord plug all the way into the active connector on the UES-40's front panel until it clicks (see Figure 3.7). Attach the accessory side of the A cord plug to the accessory to be used with the fiberscope, videoscope or rigid endoscope.

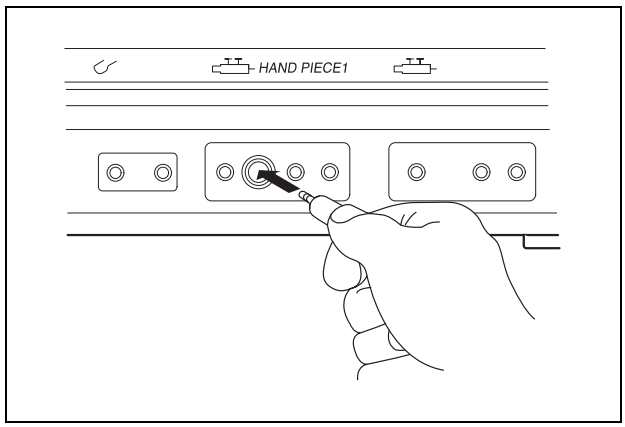


Figure 3.7

3.8 Connection of the A adapter 2 (MAJ-619)

CAUTION

Be careful not to drop the A adapter 2. Otherwise, the clamping screw may be damaged.

NOTE

The A adapter (MAJ-619) allows the following A cord models to be connected to the UES-40.

- A00010A
- A00505A
- A0130.1
- A0130.2
- A0139.1
- A0139.2
- A0355
- A0391
- A8406 (MH-969)
- MA-255

Before use, make sure the instruction manuals of the above mentioned A cord models are thoroughly reviewed, and closely follow the instructions contained in these manuals.

1. Turn the clamping screw of the A adapter 2 counterclockwise to loosen it.
2. Insert the metal portion of the A cord plug fully and properly into the A cord end connection of the A adapter.
3. Turn the clamping screw of the A adapter 2 clockwise to securely clamp the A cord. Take care not to overtighten the clamping screw as this could damage it (see Figure 3.8).
4. Connect the A cord's plug to the accessory being used with the fiberscope, videoscope or rigid endoscope. After confirming that the power switch of the UES-40 is set to OFF, insert the A adapter's plug into the active connector on the front panel of the UES-40 until it clicks into place (see Figure 3.9).

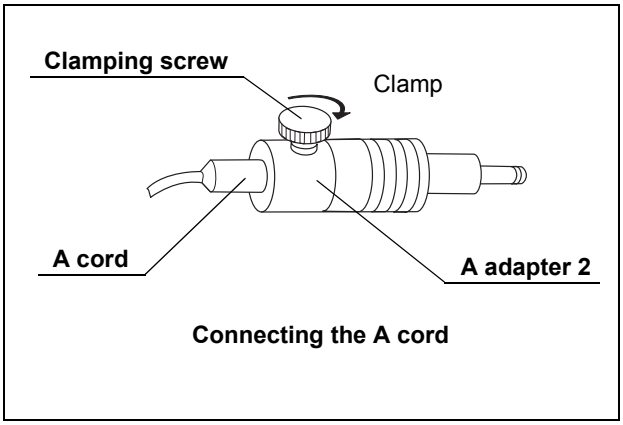


Figure 3.8

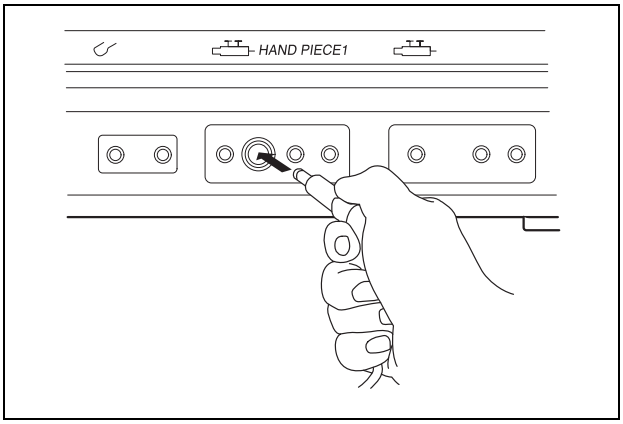


Figure 3.9

3.9 Connection of the bipolar electrode and bipolar cord (for bipolar treatment)

WARNING

Do not insert the bipolar cord plug on the UES-40 side into the wrong connectors on the UES-40 (e.g. saline connector, hand piece connector 1 or hand piece connector 2), as this may result in unexpected output and equipment damage.

NOTE

- Applicable bipolar electrodes are:

  A5380 Bipolar forceps, 5 mm × 330 mm, Micro Tweezers

  A5382 Bipolar forceps, 5 mm × 450 mm, Micro Tweezers

  A5384 Bipolar forceps, 5 mm × 330 mm, Tweezers, Thin

  A5386 Bipolar forceps, 5 mm × 450 mm, Tweezers, Thin

  A5388 Bipolar forceps, 5 mm × 330 mm, Tweezers, Thick

  A5390 Bipolar forceps, 5 mm × 450 mm, Tweezers, Thick

  A5392 Bipolar forceps, 5 mm × 330 mm, Hirsch

  A5394 Bipolar forceps, 5 mm × 450 mm, Hirsch

  O5119 HF-Electrode, 5 mm × 450 mm, Bipolar, Suction channel

- Applicable bipolar cords are:

  A5121.1

  A5377

- When using both monopolar and bipolar, connect bipolar electrode to connector 2 and control by foot switch MAJ-1259. Also select “monopolar” by foot switch selection button on the front panel.
- When using two bipolar electrodes, the electrode connected to connector 1 can be controlled by the foot switch MAJ-1258. And the electrode connected to connector 2 can be controlled by foot switch MAJ-1259.

Confirm that the cable and plug of the bipolar cord are free of scratches and cracks.
Insert the bipolar cord plug on the UES-40 side firmly into the bipolar connector 1 or bipolar connector 2 on the front panel of the UES-40 (see Figure 3.10).

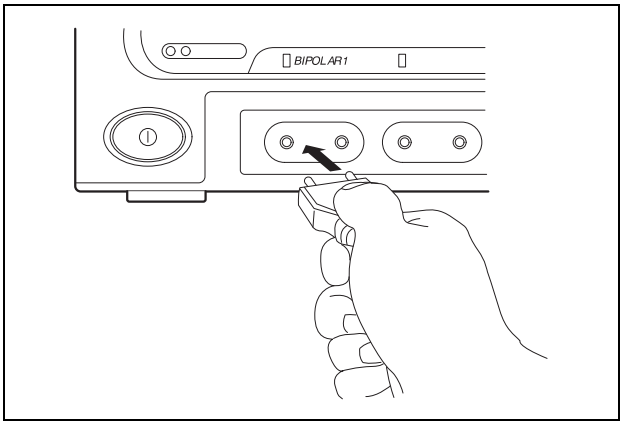


Figure 3.10

3.10 Connection of the saline electrode and saline cord (for saline treatment)

WARNING

When performing saline treatment, always remove the patient plate. Failure to do so may result in unexpected burns.

Confirm that the cable and plug of the saline cord are free of scratches and cracks.
Insert the saline cord plug on the UES-40 side firmly into the saline connector on the front panel of the UES-40 (see Figure 3.11).

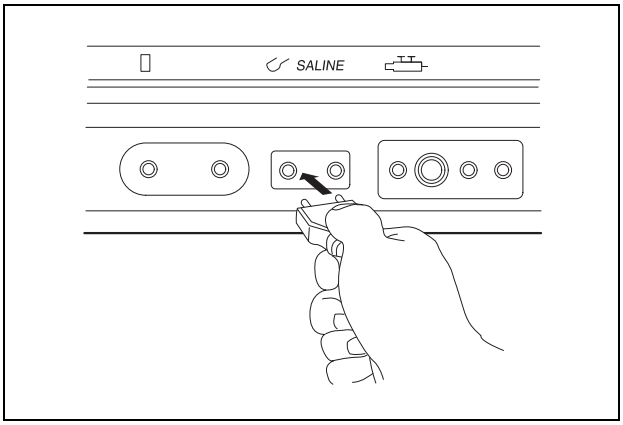


Figure 3.11

NOTE

Be sure to connect the saline cord to the saline connector and use it in combination with the saline working element and saline electrode.
If the other cord, working element or electrode is used, the high-frequency output cannot be performed.

Chapter 4 Inspection

WARNING

Before each case, inspect this instrument as instructed below. Inspect other equipment to be used with this instrument as instructed in their respective instruction manuals. Should the slightest irregularity be suspected, do not use the instrument and see Chapter 7, “Troubleshooting”. If the irregularity is still suspected after consulting Chapter 7, contact Olympus. Damage or irregularity may compromise patient or user safety and may result in more severe equipment damage.

4.1 Inspecting the connections

Prepare this instrument and other equipment to be used with this instrument (shown in the “System chart” in the Appendix), for the particular case. Refer to the respective instruction manuals for each item.

Confirm that the connections of the power cord, foot switch, patient plate, A cord, hand piece, adapter, bipolar electrode, bipolar cord and saline cord are secure and correct.

4.2 Inspection of the UES-40

Power supply

WARNING

When the power is turned ON, confirm that the output tone is working.
If electrosurgical therapy is started when the output tone is not working, you may not notice the high-frequency output and cause unintended burns, bleeding and/or perforation.
If the output tone is not produced, contact Olympus.

1. Set the power switch to ON. Confirm that the power switch illuminates (see Figure 4.1).

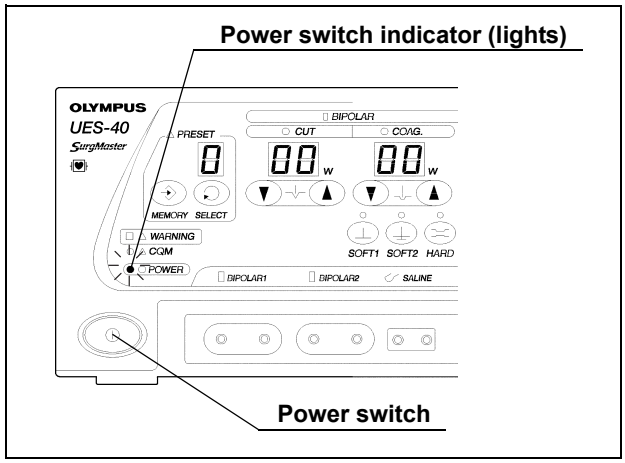


Figure 4.1

2. Confirm that a 2-step output tone (low, high) is heard after the power is turned ON. At the same time, all the indicators should light for approximately 3 seconds; then the output mode indicators should light alternately. Confirm that all the indicators are working correctly.

4.3 Inspection of the foot switch operation

WARNING

If there is a malfunction at the foot switch used in electrosurgical therapy, continuous output of high-frequency may cause unintended burns, bleeding and/or perforation of the patient and/or operator. If the high-frequency is not output during therapy, the endo-therapy accessory may cut the tissue mechanically, cause bleeding and/or perforation.

To inspect the foot switch operation, confirm the each output indicators display “0” W after the power switch is turned ON, press the cut pedal or coagulation pedal and confirm that the warning tone is produced and the display of the instrument becomes as shown below. If the display is not as shown below or the display shown below does not disappear after the foot switch pedal is released, the foot switch may be failed. Replace the foot switch in this case (see Figure 4.2).

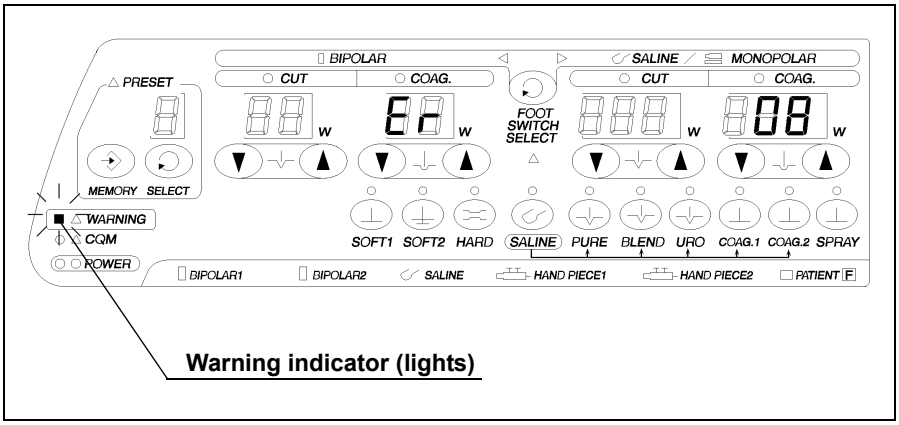


Figure 4.2

4.4 Bipolar setting

1. Press the power switch and confirm that the bipolar “CUT” and “COAG.” output setting indicators display “0” W.
2. Confirm that the “SOFT 1” bipolar coagulation mode indicator is lit (see Figure 4.3).

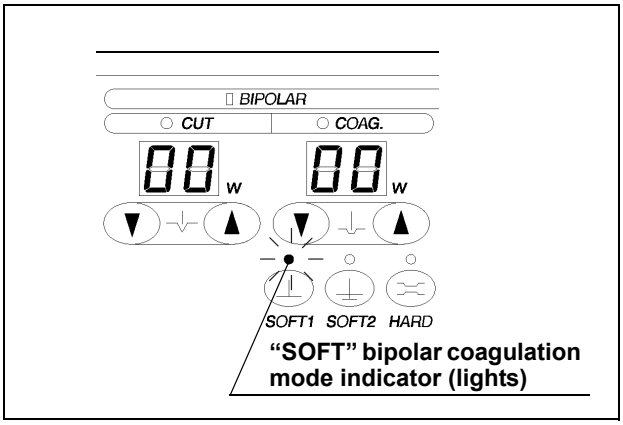


Figure 4.3

3. Press either the “SOFT 2” or “HARD” bipolar coagulation mode select switch and confirm that the respective bipolar coagulation mode indicator lights.
4. Press either the “▲” or “▼” “CUT” output control switch and confirm that a short beep is generated as the operation tone and the output level shown in the bipolar “CUT” output setting indicator increases or decreases in 1 W increments when the level is below 20 W, in 2 W increments when it is between 20 W and 30 W and in 5 W increments when it is above 30 W. However, if the “HARD” mode is selected, the output level shown in the bipolar “CUT” output setting indicator is always “0” W, and the bipolar “CUT” HF output cannot be performed. The output setting indicator does not change and a short beep is generated two times even if you press either “▲” or “▼”.
5. Select the “SOFT 1” or “SOFT 2” mode, press either the “▲” or “▼” “COAG.” output control switch and confirm that a short beep is generated. The output level on the bipolar “COAG.” output setting indicator increases or decreases in 1 W increments when the level is below 20 W, in 2 W increments between 20 W and 30 W and in 5 W increments when it is above 30 W.
6. Select the “HARD” mode and confirm that the bipolar “COAG.” output setting indicator displays “0” W.

7. Select the “HARD” mode, press either the “▲” or “▼” “COAG.” output control switch and confirm that a short beep is generated. The value on the bipolar “COAG.” output setting indicator changes between “L1” and “L3”. By increasing the output level, the time until the output tone changes gets longer, and the total output energy supplied to the tissue is increased.

NOTE

- Pressing an output control switch once varies the output setting by one increment.
  Holding an output control switch depressed varies the output setting continuously.
- When you set the output exceeding the range of the output setting, the output setting indicator does not change and a short deep is generated two times even if you press either “▲” or “▼”.

4.5 Monopolar setting

1. Press the power switch and confirm that the monopolar “CUT” and “COAG.” output setting indicators display “0” W.
2. Confirm that the “PURE” monopolar cut mode indicator is lit (see Figure 4.4).

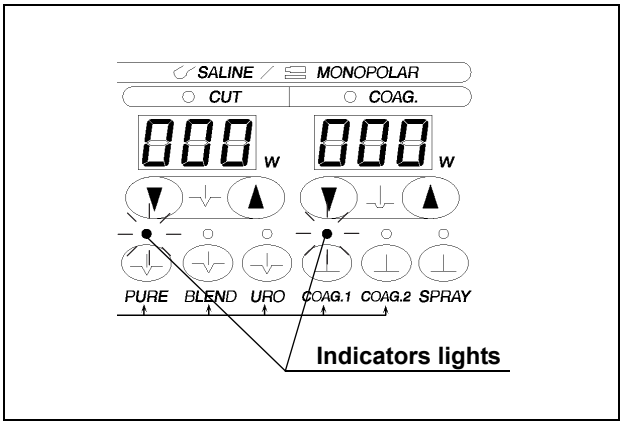


Figure 4.4

3. Confirm that the “COAG.1” monopolar coagulation mode indicator is lit.
4. Press either the “BLEND” or “URO” monopolar cut mode select switch and confirm that the respective monopolar cut mode indicator lights.
5. Press either the “COAG. 2” or “SPRAY” monopolar coagulation mode select switch and confirm that the respective monopolar coagulation mode indicator lights.

6. Press either the "▲" or "▼" "CUT" output control switch and confirm that a short beep is generated. The output level on the saline/monopolar "CUT" output setting indicator increases or decreases in 5 W increments.
7. Press either the "▲" or "▼" "COAG." output control switch and confirm that the output level on the saline/monopolar "COAG." output setting indicator increases or decreases in 5 W increments, as in Step 6. above.

NOTE

- Pressing an output control switch once varies the output setting by one increment.
  Holding an output control switch depressed varies the output setting continuously.
- When you set the output exceeding the range of the output setting, the output setting indicator does not change and a short deep is generated two times even if you press either "▲" or "▼".

4.6 Saline setting (when saline output mode is used)

CAUTION

- Use an electroconductive physiological saline solution (0.9% sodium chloride irrigation).
  Do not use a nonconductive solution, as this makes it impossible to obtain the HF output.
- The patient plate is not required for saline output because the high-frequencies are recovered by the sheath section of the resectoscope system for saline output. Please use an Olympus resectoscope system for saline output.

NOTE

The high-frequency output flows through the saline rather than the human tissue as shown below (see Figure 4.5).
UES-40 → Active electrode → (human tissue) →
Saline solution → Neutral electrode (sheath) → UES-40

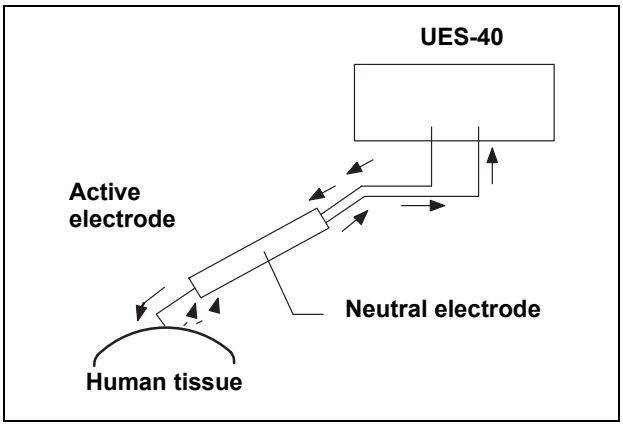


Figure 4.5

1. Connect the saline cord to the saline connector. This should cause the saline mode indicator to light (see Figure 4.6).

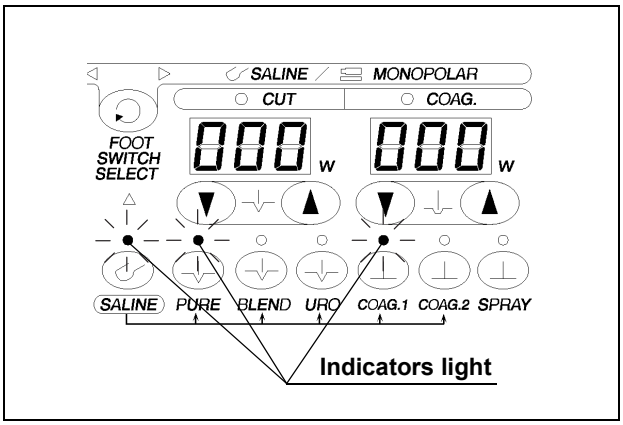


Figure 4.6

2. Press the saline output select switch and confirm that the indicators go out.
3. Press the same switch again and confirm that the indicators light.
4. Confirm that the saline “CUT” and “COAG.” output setting indicators display “0” W.
5. Confirm that the bipolar output setting indicators display “—” W.
6. Confirm that the “PURE” monopolar cut mode indicator and “COAG. 1” monopolar coagulation mode indicator in the saline/monopolar section are lit.
7. Press the “BLEND” monopolar cut mode select switch and confirm that the respective monopolar cut mode indicator lights.
8. Press the “COAG. 2” monopolar coagulation mode select switch and confirm that the respective monopolar coagulation mode indicator lights.

9. Press either the "▲" or "▼" "CUT" output control switch and confirm that a short beep is generated. The output level on the saline/monopolar "CUT" output setting indicator increases or decreases in 5 W increments.

10. Press either the "▲" or "▼" "COAG." output control switch and confirm that the output level on the saline/monopolar "COAG." output setting indicator increases or decreases in 5 W increments as in Step 9. above.

NOTE

- In the saline output mode, it is not possible to use the bipolar cut and coagulation modes as well as the "URO" monopolar cut mode and "SPRAY" monopolar coagulation mode.
- The foot switch select switch is disabled in the saline output mode.
- Pressing an output control switch once varies the output setting by one increment.
  Holding an output control switch depressed varies the output setting continuously.
- When you set the output exceeding the range of the output setting, the output setting indicator does not change and a short deep is generated two times even if you press either "▲" or "▼".

4.7 Inspection of warning function

Inspection of patient plate warning

WARNING

- Be sure to inspect the warning functions before use. If the warning functions are not normal, the unit's failure to detect equipment errors may result in unexpected burns, perforation and/or bleeding.
- If the foot switch is not working properly, it may be impossible to start or stop high-frequency output. If output cannot be stopped, it could result in unexpected burns, bleeding and/or perforation of the patient.

1. Disconnect the patient plate plug from the patient plate connector on the front panel of the UES-40.
2. Confirm that the warning indicator lights, the output setting indicator displays "Er01" and a warning tone is heard (see Figure 4.7).

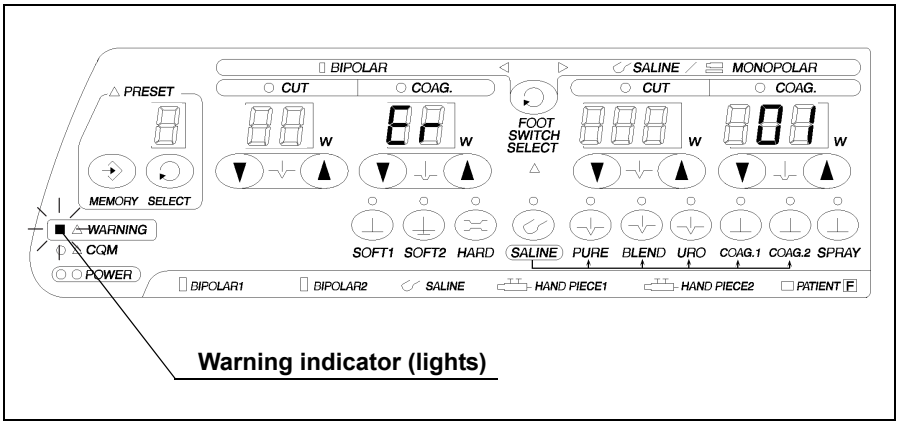


Figure 4.7

3. Re-insert the patient plate plug into the patient plate connector on the front panel and confirm that the warning indicator and the warning alarm go off.

4. When a split-type patient plate is used, confirm that the CQM indicator lights. The CQM indicator only lights when the contact between the patient plate and the skin of the patient is correct (see Figure 4.8).

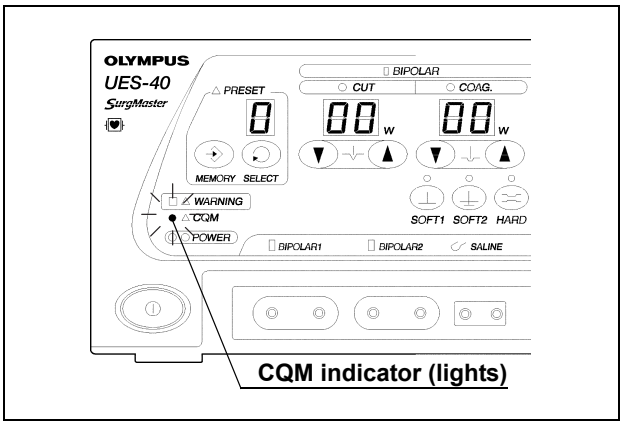


Figure 4.8

Chapter 5 Operation

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in clinical endoscopic technique.
This manual, therefore, does not explain or discuss clinical endoscopic procedures. It only describes basic operation and precautions related to the operation of this instrument.

DANGER

The HF equipment, when applied to a patient with a pacemaker implanted, may cause malfunctioning or failure of the pacemaker, seriously affecting the patient. Before proceeding, confirm with a cardiologist and the manufacturer of the pacemaker that it is safe to do so.

WARNING

- Wear personal protective equipment to guard against dangerous chemicals and potentially infectious material. During operation, wear appropriate protective equipment, such as eye wear, face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed.
- Laparoscopic surgery presents a risk of gas embolism because the procedure introduces gas into the abdominal cavity by the pneumoperitoneum technique. Before performing the procedure, confirm that the pneumoperitoneum equipment to be used is working properly.
- Avoid unintended contact of the electrode tip with patient tissue when high-frequencies are not output. Otherwise, the heat of the electrode tip may cause burns.
- Do not activate high-frequency output while the electrode is in contact with a piece of electroconductive equipment. Otherwise, unexpected burns may result.

5.1 Turn the power ON

After confirming that the accessories for the procedure have been connected correctly as described in Chapter 3, “Installation and Connection”, turn the power ON as described in Chapter 4, “Inspection”.

5.2 Automatic memory mode

The automatic memory mode enables previous output modes and settings to be recalled automatically.
To retrieve settings stored in memory, press the select switch (see Figure 5.1). “P” is displayed. The saved output mode, cut mode, coagulation mode, saline mode and output setting will be displayed.

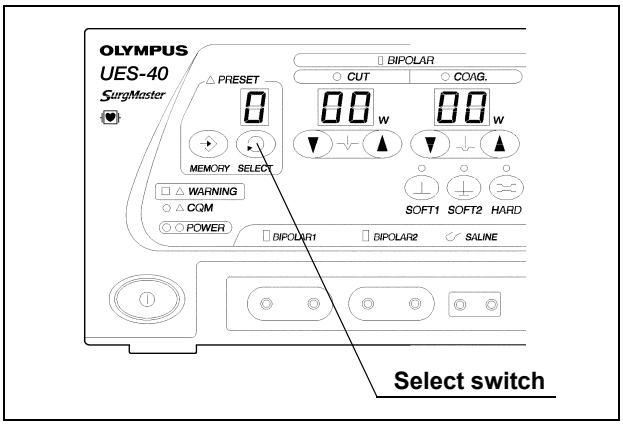


Figure 5.1

NOTE

The output mode and output settings are stored in memory only after output has been activated. They are not stored if the output is not activated.

5.3 Preset mode

To set the output using the preset mode, it is required to store the output setting values to be used in advance. Preset each output setting value as described in the following procedure.

Storing settings in memory

Preset mode is divided into memory areas 1 to 5.
The default initial output settings are 0 W.

1. Turn the power ON.
2. Press the mode select switch and output control switch so that the desired output setting and output mode are displayed on the output setting indicator.
3. Display the desired output settings and output mode on the indicators and press the memory switch.
4. Press the select switch and confirm that the preset number indicator cycles through “1” → “2” → “3” → “4” → “5” → “1” in this order, and then select the preset number to be used.
5. Press the memory switch while the preset number indicator is blinking (for 5 seconds).
6. The display of the selected preset number is lit from blinking and the settings and mode are stored under the selected preset number.

NOTE

- The settings cannot be stored unless the memory switch is pressed.
- The settings cannot be stored unless a preset number is displayed.
- If the memory switch is not pressed while the preset number is blinking, the setting and mode cannot be stored. If the preset number disappears, restart the procedure from Step 2.
- To preset another output setting, restart the procedure from Step 1.

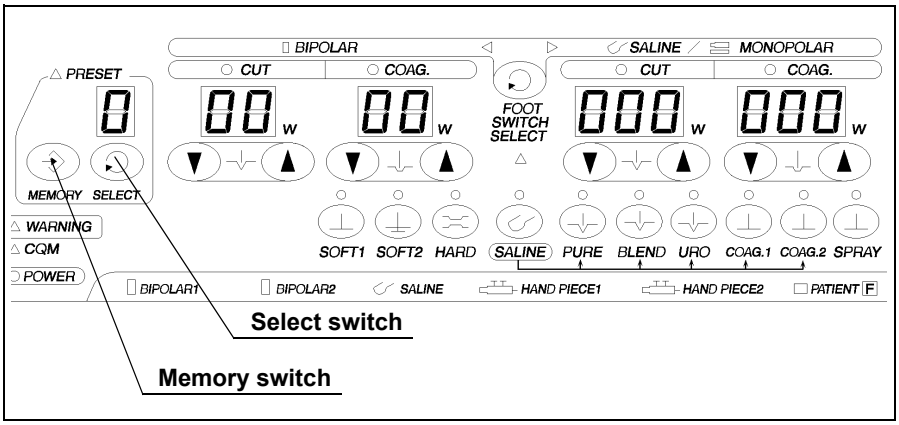


Figure 5.2

Recalling settings from memory

Settings can be recalled as described below.

1. Turn the power ON.
2. Press the select switch to display the preset number containing the desired settings.
3. The output setting indicators and the output mode indicators display the recalled output settings (see Figure 5.3).

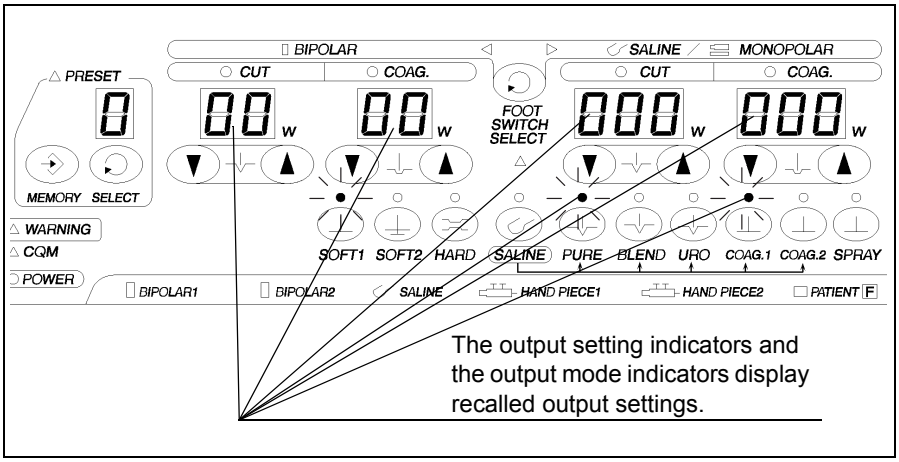


Figure 5.3

NOTE

- When preset settings are recalled while the saline output selection indicator is not lit, the bipolar and monopolar settings are displayed together with the current mode indication.
- To recall preset settings in the saline mode, light up the saline output selection indicator as described in Section 4.6, “Saline setting (when saline output mode is used)” on page 41.

Changing settings in memory

Stored settings can be modified as described below.

1. Press the select switch to display the preset number containing the modified settings.
2. Select the preset number and activate the desired output setting and output mode.
3. Press the memory switch.
4. Press the select switch, select the preset number in which you want to store the new settings and mode.
5. Press the memory switch while the preset number indicator is blinking (for 5 seconds).
6. The display of the selected preset number is lit from blinking and the settings and mode are stored under the selected preset number.

5.4 Selection of saline mode

The UES-40 has a switch for selecting the saline mode.

1. When the saline cord is connected to the saline output connector, the saline output indicator lights and the UES-40 is ready for saline output.
2. When the saline mode select switch is pressed, the saline output indicator is extinguished and the UES-40 is ready for monopolar or bipolar output.
3. When the saline mode select switch is pressed again, the saline output indicator is lit and the UES-40 is ready for saline output again.

NOTE

Check the saline mode indicator and select the output, when using the saline switch.

5.5 Selection of foot switch output

The UES-40 has a switch for selecting the foot switch output. This feature allows the foot switch for the UES-40 (MAJ-1258) to supply either monopolar, bipolar or saline output.

1. When the monopolar or saline output is required, press the foot switch select switch so that the right foot switch setting indicator lights (see Figure 5.4).
2. In this mode, the monopolar output is available from hand piece connector 1, the A cord connector and saline connector.
3. When the bipolar output is required, press the foot switch select switch so that the left foot switch setting indicator lights (see Figure 5.5).
4. In this mode, the bipolar output is available from bipolar connector 1.

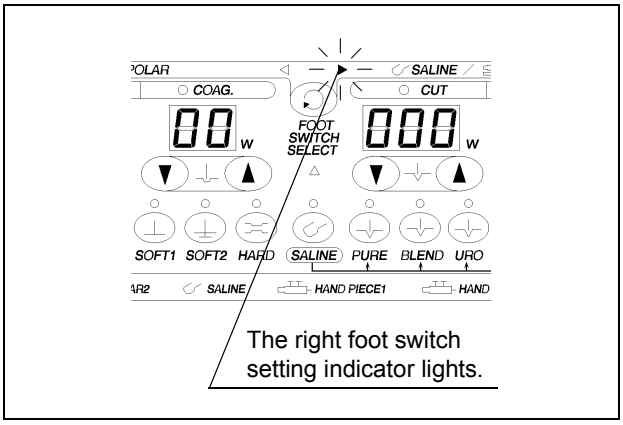


Figure 5.4

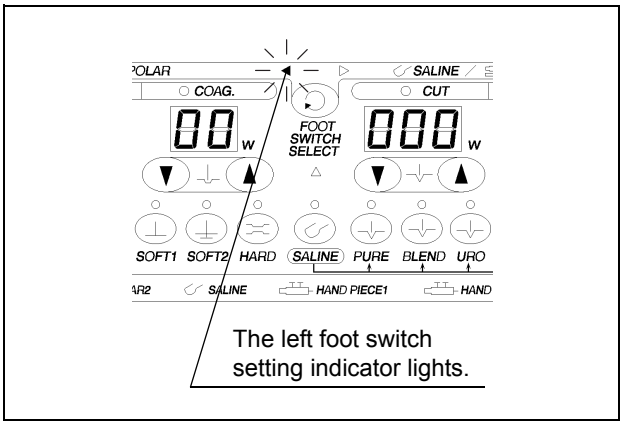


Figure 5.5

NOTE

- The foot switch for the UES-40 (MAJ-1258) cannot switch the outputs from the hand piece 2 and bipolar 2 connectors.
- To switch the output from the bipolar 2 connector, use the bipolar foot switch (MAJ-1259, optional).

5.6 Selection of cut mode

NOTE

Please refer to the “Output mode chart” in the Appendix for more-detailed information on each mode.

❍ Following monopolar treatment

Using the monopolar cut mode select switches on the front panel of the UES-40, select the appropriate cut mode (“PURE”, “BLEND” or “URO”) for the type of surgery to be performed and the accessories to be used (see Figure 5.6).

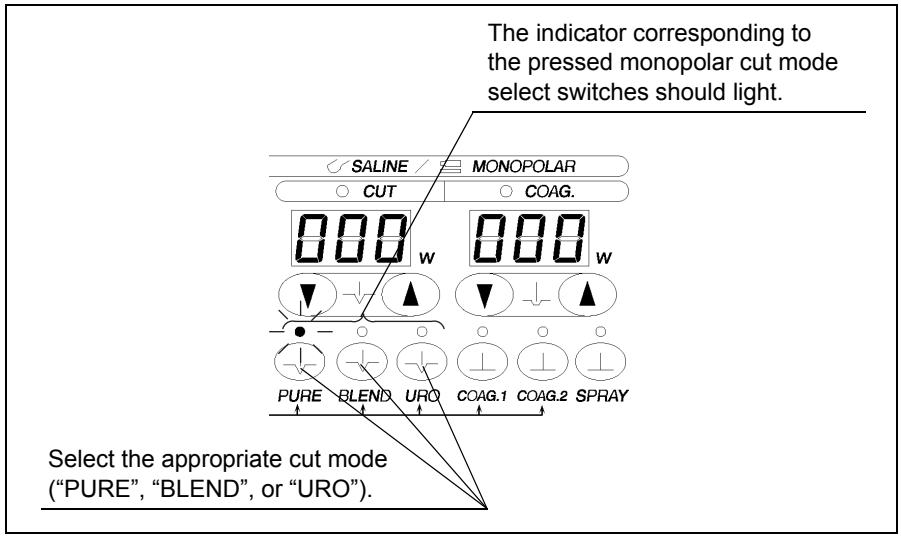


Figure 5.6

The “PURE”, “BLEND” and “URO” modes have the following characteristics:

PURE:	Cut wave-form containing virtually no hemostatic elements.
BLEND:	Cut wave-form containing some hemostatic elements.
URO:	Cut wave-form suitable for cutting tissue in non-electrolyte solution.

❍ Following bipolar treatment

Use the “PURE” cut mode according to the technique and treated region. The “PURE” cut mode has the following characteristics:

PURE:	Cut wave-form containing virtually no hemostatic elements.

NOTE

In bipolar treatment, the mode is not able to be selected but fixed at “PURE”.

❍ Following saline treatment

Select the optimum cut mode (“PURE” or “BLEND”) according to the technique and treated region using the monopolar cut mode select switch on the front panel. The “PURE” and “BLEND” cut modes have the following characteristics:

PURE:	Cut wave-form containing virtually no hemostatic elements in the conductive solution.
BLEND:	Cut wave-form containing some hemostatic elements in the conductive solution.

NOTE

The “URO” monopolar cut mode cannot be selected in the saline mode.

5.7 Selection of coagulation mode

NOTE

Please refer to the “Output mode chart” in the Appendix for more-detailed information on each mode.

❍ Following monopolar treatment

Using the monopolar coagulation mode select switches on the front panel of the UES-40, select the appropriate coagulation mode (COAG.1, COAG.2 or SPRAY) for the type of surgery and accessories to be used (see Figure 5.7).

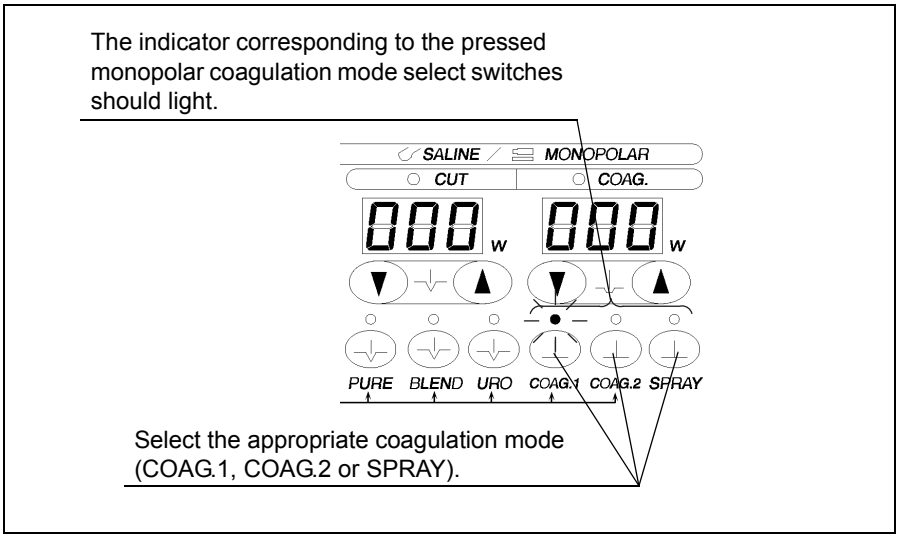


Figure 5.7

The “COAG.1”, “COAG.2” and “SPRAY” coagulation modes have the following characteristics:

COAG.1:	Coagulation output with weak separation elements.
COAG.2:	Coagulation output with strong separation elements.
SPRAY:	Select to evenly coagulate a wide area of tissue with a spray of sparks. This mode offers optimum fulguration over a wider area and with less spot penetration than normal.

❍ Following bipolar treatment

CAUTION

- Hold the targeted tissue firmly during bipolar treatment. If the electrodes on the distal end are shorted, it will not be possible to obtain the intended output level and the bipolar forceps may be damaged.
- When using tweezers forceps with a small grasping tip, do not select HARD mode. Doing so could cause spark discharge from the electrode and burns to tissue.
- Hold the targeted tissue firmly during coagulation output in the “HARD” mode. If the tissue is not holded firmly, it will become impossible to obtain the intended output energy and the tissue may not be coagulate sufficiently.
- When the tissue is sticking to the forceps, do not remove the tissue by main force from the forceps. If the tissue removed by main force from forceps, it may result in unintended damages and/or bleeding.

Using the bipolar coagulation mode select switches on the front panel of the UES-40, select the appropriate coagulation mode (SOFT1, SOFT2 or HARD) for the type of surgery and accessories to be used (see Figure 5.8).

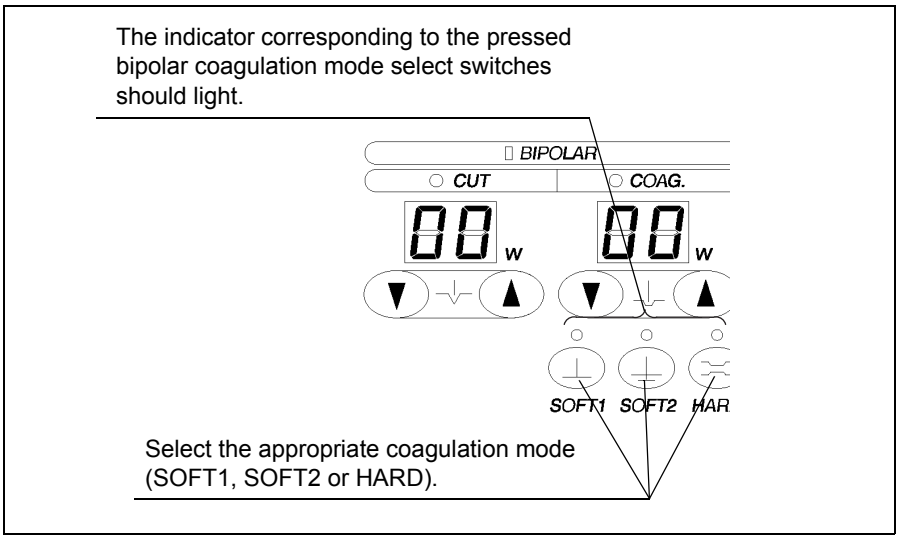


Figure 5.8

The “SOFT1” “SOFT2” and “HARD” coagulation modes have the following characteristics:

SOFT1: Coagulation for desiccating the area of tissue that is pinched between the two electrodes without burning the tissue.

SOFT2: Coagulation for use in hemostasis with a stronger tissue burn prevention effect than SOFT1.

HARD: Coagulation featuring repetition of indirect outputs to apply a high energy output.

- Always select the SOFT1 coagulation mode to prevent insufficient when using bipolar cutting scissors and similar instruments.
- Select the SOFT1 or SOFT2 coagulation mode to prevent insufficient when using bipolar.
- When a change in the tissue status is detected during coagulation output in the “SOFT2” or “HARD” mode, the output tone changes, and the output is decreased automatically. The time to change the output tone depends on the targeted tissue, the operative field, the holding condition, the output setting and so on.
- The output tone change is a reference to indicate the tissue status changed. Confirm the tissue status with your own eyes whether the tissue is coagulated sufficiently.

❍ Following saline treatment

Using the saline coagulation mode select switches on the front panel of the UES-40, select the appropriate coagulation mode (COAG.1, COAG.2) for the type of surgery and accessories to be used.

The “COAG.1” “COAG.2” modes have the following characteristics:

COAG.1: Coagulation without spark discharge.

COAG.2: Coagulation with spark discharge.

NOTE

The “SPRAY” monopolar coagulation mode cannot be selected in the saline mode.

5.8 Setting output

WARNING

Use the lowest appropriate output level to achieve the desired effect. Using a higher output level than required may result in unexpected burns to the patient or operator, or perforation and/or bleeding of the patient.

Press the “CUT” and “COAG.” output control switches to set the output levels (see Figure 5.9).

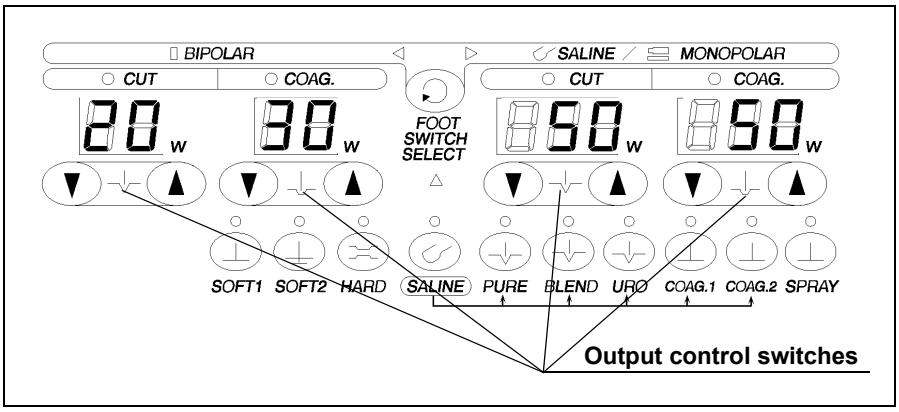


Figure 5.9

NOTE

- If a control switch is pressed while the output setting is “0” W, output is not activated. Instead, the alarm tone is generated, the alarm indicator lights and the output setting indicator displays “Er08” (see Figure 5.10).
- The output level setting cannot be changed while output is active.
- The maximum possible output level in all output modes is as shown in Section 5.9, “Maximum output”.

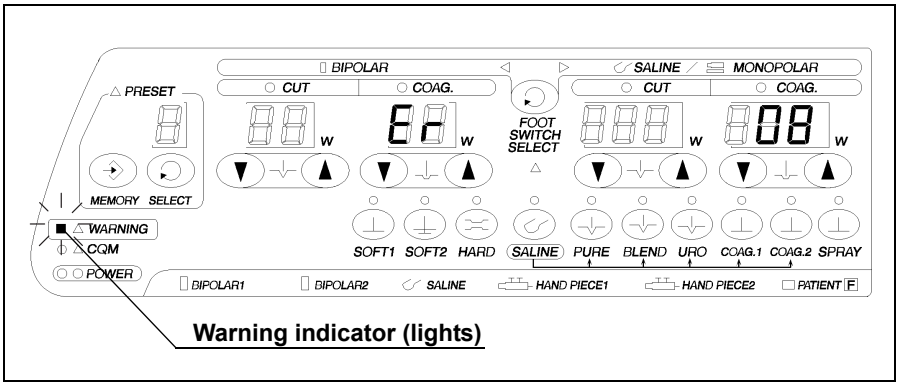


Figure 5.10

5.9 Maximum output

Monopolar

Cut mode

PURE	BLEND	URO
300 W	250 W	300 W

Coagulation mode

COAG.1	COAG.2	SPRAY
120 W	120 W	120 W

Bipolar

Cut mode

PURE
90 W

Coagulation mode

SOFT1	SOFT2	HARD
90 W	90 W	60 W

Saline

Cut mode

PURE	BLEND
320 W	320 W

Coagulation mode

COAG.1	COAG.2
200 W	80 W

5.10 Electrosurgery

WARNING

- If the output does not stop when the switch is released, immediately turn the electrosurgical unit OFF to prevent patient burns.
- If a function is not working as expected during the procedure, do not increase the output; patient burns could result. Inspect the cord connections, the contact between the patient and the patient plate and the UES-40 settings for any abnormalities.
- If the output indicator lights or the output sound is heard, when the control switch is not operating, immediately stop the procedure, turn the power OFF to prevent patient burns.
- If the tissue and the bubble adhere to the surface of the electrode, immediately remove them and use the instrument. Otherwise the function might not be working as expected.

CAUTION

- Short-circuiting electrodes (accessories/hand piece and patient plate) while current is activated will cause the UES-40 to malfunction.
- To prevent patient burns, be sure that you see the tips of the electrosurgical accessories in the endoscopic image during output.
- The sound volume can be adjusted by turning the volume knob on the rear panel of the UES-40. The sound serves as an important reminder while output is active, and should always be audible. The volume knob does not adjust the volume of the warning alarm.
- The maximum output time should be 10 seconds and there should be an interval of 30 seconds between outputs.
- When the continuous output time exceeds 10 seconds in the Saline cut mode, the active tone will changes from continuous into intermittent. When the intermittent tone goes off, release the output control switch and take an interval between the output. Otherwise, it may cause a malfunction of the electrosurgical unit.
- Hold the treated site firmly during bipolar treatment. If the electrodes on the distal end are shorted, it would become impossible to obtain the intended output level and the bipolar forceps may be damaged.

- Hold the targeted tissue firmly during coagulation output in the “HARD” mode. If the tissue is not holded firmly, it will become impossible to obtain the intended output energy and the tissue may not be coagulate sufficiently.
- Do not apply excessive bending, straining, or squeezing force to any cords. It may cause malfunction.

NOTE

- Simultaneous outputs from more than one connector are not available. When using the foot switch or hand piece, the output controlled by the first switch/pedal pressed will be activated.
- Panel settings cannot be changed during output.

1. Confirm that the settings on the front panel are correct before activating the output.
2. Individual control switches (foot switch and hand piece) control the output terminals as follows:

Control switch	Output terminal
Foot switch for the UES-40 (MAJ-1258)	Bipolar connector 1 Hand piece connector 1 Active connector Saline connector
Hand piece	Hand piece connector 1 Hand piece connector 2
Bipolar foot switch for the UES-40 (MAJ-1259)	Bipolar connector 2

3. Output will be active while the control switch is pressed. During output, the output indicator will light and an output sound will be heard. Output will stop when the switch is released.

5.11 Automatic exhaust

This product, combined with the UHI-3/UHI-2 via aeration cable MAJ-877, can exhaust fumes and mist generated in the body cavity by synchronizing the high-frequency output and the exhaust function.

CAUTION

When using the automatic exhaust, also refer to the instruction manual of the high flow insufflation unit (UHI-2 or UHI-3). Incorrect usage or equipment connection may compromise the functionality and performance of this feature and could lead to equipment damage and/or patient injury.

Attach the both connectors of the interactive cable (MAJ-877) to the system connector of the UHI-3 or UHI-2 and the system connector of the UES-40. Then tighten the fixing screws on both connectors (see Figure 5.11).

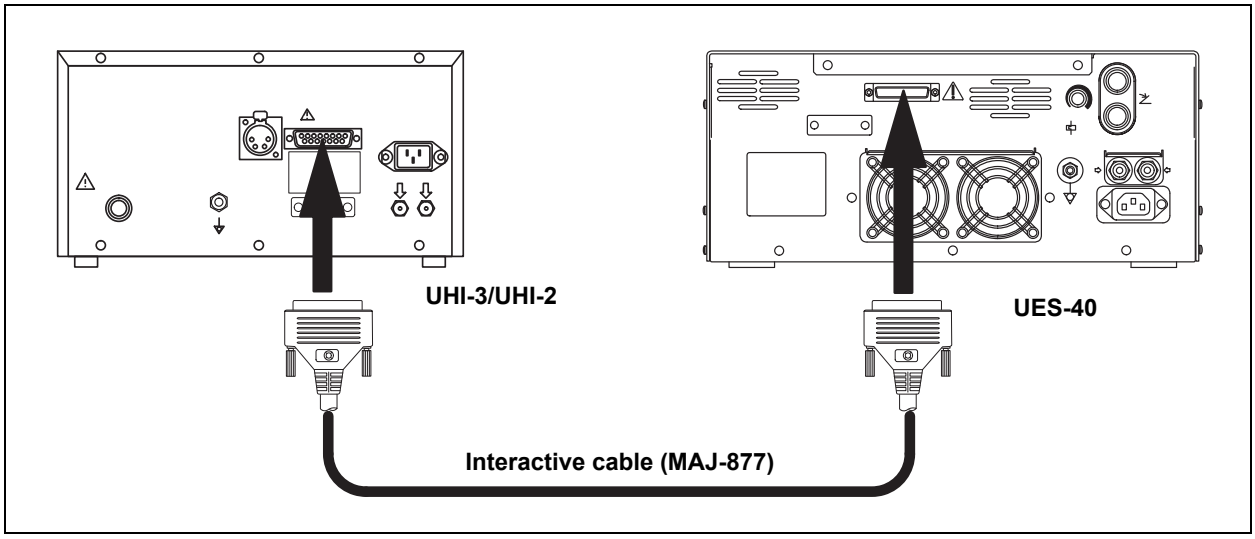


Figure 5.11

When the pedal of the foot switch for UES-40 (MAJ-1258) is pressed, the exhaust function of the UHI-3/UHI-2 is activated to exhaust fumes. After the pedal is released, the exhaust function continues operating for about 5 seconds. When UHI-3/UHI-2 is set to stop mode, its flow setting is LOW or abdominal pressure is below 3 mmHg, this function is disabled.

NOTE

- When the abdominal pressure exceeds the set pressure of the UHI-3/UHI-2 by 5 mmHg, the excessive pressure warning lamp of the UHI-3/UHI-2 will light and an alarm will sound.
- High-frequency output is performed under the assumption that only the insufflation tube is inserted into the patient after the first trocar is inserted (therefore, no suction tube is connected). In this case, select the LOW flow setting or press the STOP switch to temporarily disable the automatic exhaust function.

5.12 Procedure after use

WARNING

- Always discard used disposable patient plates. Never attempt to reprocess or reuse them. It may cause patient burns.
- Do not use the patient plate cable as a tool to remove the patient plate from the patient. If utilized in this fashion, skin injuries can occur.

CAUTION

If the UES-40 is not to be used for a long period, disconnect the power cord plug from the hospital grade receptacle (wall mains outlet).

1. Turn the power OFF.
2. When the foot switch is no longer needed, pull the ring on the foot switch plug outward and disconnect the foot switch from the foot switch connector on the rear panel of the UES-40.

❍ Following monopolar treatment:

1. Following monopolar treatment, remove the patient plate from the patient and disconnect the patient plate plug from the patient connector on the front panel of the UES-40.
2. Following monopolar treatment, disconnect the plug of the hand piece from hand piece connector 1 or hand piece connector 2 on the front panel of the UES-40.

3. Following monopolar treatment, disconnect the A cord's plug on the accessory side from the accessory for the rigid endoscope, fiberscope or videoscope. Disconnect the A cord's plug on the UES-40 side from the active connector on the front panel of the UES-40.
4. Following monopolar treatment, disconnect the A cord's plug from the accessory for use with fiberscopes, videoscopes or rigid endoscopes. Then disconnect the A adapter's plug from the active connector on the front panel of the UES-40.
5. Turn the clamping screw counterclockwise and pull the A cord out from the A cord end connection of the A adapter (MAJ-619, MAJ-620).

❍ Following bipolar treatment:

Following bipolar treatment, disconnect the bipolar cord's plug on the electrode side from the bipolar electrode and disconnect the bipolar cord's plug on the UES-40 side from bipolar connector 1 or bipolar connector 2 on the front panel of the UES-40.

❍ Following saline treatment:

Following saline treatment, disconnect the saline cord's plug on the electrode side from the saline electrode and disconnect the saline cord's plug on the UES-40 side from the saline connector on the front panel of the UES-40.

Chapter 6 Care, Storage and Disposal

After each use, perform the following cleaning procedures immediately. If cleaning is delayed, debris encrustation may become a source of infection. Encrustation may also result in electrosurgical unit malfunction.
For maintenance and storage of other optional items than those described below, refer to the respective instruction manuals.

6.1 Care

WARNING

After cleaning the electrosurgical unit, dry it thoroughly before using it again. If it is used when wet, there is the risk of an electric shock.

CAUTION

- Never immerse the electrosurgical unit in water, clean or disinfect by immersion, gas sterilization or autoclaving. It may cause equipment damage.
- Do not wipe the external surface with hard or abrasive wiping material. The surface will be scratched.

1. Turn the electrosurgical unit OFF and disconnect the power cord from the receptacle (wall mains outlet).
2. If the equipment is soiled with blood or other potentially infectious materials, first wipe off all gross debris using neutral detergent, then wipe its surface with a lint-free cloth moistened with a surface disinfectant.
3. To remove dust, dirt and non-patient debris, wipe the electrosurgical unit and foot switch using a soft, lint-free cloth moistened with 70% ethyl or isopropyl alcohol.
4. Make sure that the electrosurgical unit and foot switch are completely dry before storage.

6.2 Storage

WARNING

Do not store the electrosurgical unit in the shipping case. Storing these devices in the humid and unventilated environments of their shipping cases may encourage the growth of microorganisms and pose an infection control risk.

CAUTION

- Do not store the electrosurgical unit in a location exposed to direct sunlight, X ray, radioactivity, liquids or strong electromagnetic radiation (e.g. near microwave medical treatment equipment, short-wave medical treatment equipment, MRI equipment, radio or mobile phones). Damage to the electrosurgical unit may result.
- Do not apply excessive bending, straining, or squeezing force to any cords during storage. It may cause malfunction.

1. Disconnect the power cord.
2. Store the equipment at room temperature in the horizontal position in a clean, dry and stable location.

6.3 Care of A adapter 2

CAUTION

- The A adapter cannot be sterilized by ETO gas or autoclaving. These methods will cause deformation and damage that will render the A adapter useless.
- Make sure that foreign matter does not enter the A cord end connection as this will result in poor connection.

1. After each procedure, wipe with a soft, clean, lint-free cloth. If dirt persists, moisten the cloth with 70% ethyl or isopropyl alcohol and wipe again.
2. Dry thoroughly after wiping. An A adapter that is not completely dry may cause an electric shock.

6.4 Storage of A adapter 2

WARNING

Never store the A adapter in the shipping box as this may pose an infection control risk.

1. Store under the conditions given in “Specifications” in the Appendix, away from direct sunlight and sources of liquids.
2. Store the A adapter with the clamping screw attached.

6.5 Disposal

When disposing of this electrosurgical unit, or any of its components (such as fuses), follow all applicable national and local laws and guidelines.

Chapter 7 Troubleshooting

If the electrosurgical unit is visibly damaged, does not function as expected or is found to have other irregularities during the inspection described in Chapter 3, “Installation and Connection” and Chapter 4, “Inspection”, do not use the electrosurgical unit. Contact Olympus.
Some problems that appear to be malfunctions may be correctable by referring to Section 7.1, “Troubleshooting guide”.
If the problem cannot be resolved by the described remedial action, stop using the electrosurgical unit and send it to Olympus for repair.
Olympus does not repair accessory parts. If an accessory part becomes damaged, contact Olympus to purchase a replacement.

DANGER

Never use the electrosurgical unit if an abnormality is suspected. The patient can be fatally or seriously injured.

7.1 Troubleshooting guide

The following table shows the possible causes of and counter measures against troubles that may occur due to equipment setting errors or deterioration of consumables.
Troubles or failures due to other causes than those listed below should be serviced. As repair performed by persons who are not qualified by Olympus could cause patient or user injury and/or equipment damage, be sure to contact Olympus for repair according to Section 7.3, “Returning the UES-40 for repair”.

When the error code is displayed

Indication of bipolar cut output setting indicator	Indication of monopolar/ saline cut output setting indicator	Indication of monopolar/ saline coagulation output setting indicator	Possible cause	Solution
Er		01	• The wires in the patient plate cord are broken. • The connection of the patient plate is incorrect.	Turn the electrosurgical unit OFF and refer to Section 3.5, “Connection of the patient plate (for monopolar treatment)”.
			The split-type of patient plate is not in proper contact with the patient’s skin (in monopolar output mode only).	Turn the electrosurgical unit OFF and connect the patient plate properly as described in Section 3.5, “Connection of the patient plate (for monopolar treatment)”. Reattach the patient plate or replace it with a designated patient plate.
Er		02	The saline is activated while the active and/or neutral electrode is put in the air.	Use an electroconductive physiological saline solution (0.9% sodium chloride irrigation) and always immerse the active and/or neutral electrode (sheath) in saline. If the problem still persists, contact Olympus.
			The saline electrode and saline cord is not connected.	Turn the electrosurgical unit OFF and connect the saline electrode and saline cord as described in Section 3.10, “Connection of the saline electrode and saline cord (for saline treatment)”.
			The saline cord is broken.	Replace the saline cord with a new one.
			The saline cord is not a designated type.	Replace it with a designated saline cord.
			The saline electrode is not a designated type.	Replace it with a designated saline electrode.

Indication of bipolar cut output setting indicator	Indication of monopolar/ saline cut output setting indicator	Indication of monopolar/ saline coagulation output setting indicator	Possible cause	Solution
Er		02	The tissue and the bubble adhere to the surface of the electrode.	Remove the adhesion from the surface of the electrode, and make the output actively again.
Er		04	Output has been continued for more than 60 seconds. (in monopolar/saline output mode only)	Immediately stop the output and wait for a while before restarting it. If the problem still persists, contact Olympus.
			Output has been continued for more than 15 seconds (in bipolar output mode “HARD” only).	Confirm the treated tissue status. If coagulation is not sufficient, be sure to hold the treated site firmly before restarting the output.
			The connection between the bipolar cord and UES-40 is incorrect (in bipolar output mode “HARD” only).	Turn the electrosurgical unit OFF and connect the bipolar cord properly as described in Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)” and Section 5.5, “Selection of foot switch output”.
			The electrode on the distal end of the bipolar forceps are shorted (in bipolar output mode “HARD” only).	Immediately stop the output. Be sure to hold the treated site firmly during bipolar treatment.
Er		08	The output level is set to 0 W.	Set the output level to a value above 0 W. If the problem persists, contact Olympus.
			• The power switch is set to ON while one of the output switches is pressed. • The output switch has failed.	Turn the power switch ON while none of the output switches are pressed. If the hand piece is in use, replace it. If the problem persists, contact Olympus.
Er		10	More than one switch was pressed on the foot switch or hand piece.	Make sure to press only the target switch on the foot switch or hand piece.

Indication of bipolar cut output setting indicator	Indication of monopolar/ saline cut output setting indicator	Indication of monopolar/ saline coagulation output setting indicator	Possible cause	Solution
Er		20	• The power switch is set to ON while one of the front panel switches is pressed. • One of the front panel switches has failed.	Turn the power switch ON while none of the front panel switches is pressed. If the problem persists, contact Olympus.
Er Er Er Er Er Er Er	01 02 04 08 10 20 40		Circuitry inside the instrument has failed.	Turn the electrosurgical unit OFF and then ON again. If the problem persists, contact Olympus.

NOTE

- When one of the above error codes is displayed, the warning indicator lights up, the warning tone is produced and the high-frequency output stops.
- When an error code other than the above is displayed, inspect the instrument again as described in Chapter 4, “Inspection”. If the problem should still be solved, contact Olympus.

Irregularity description	Possible cause	Solution
The power fails to come on.	The power cord is not connected.	Connect the power cord to a wall mains outlet as described in Section 3.2, “Connection to an AC mains power supply”.
	The power cord is broken.	Replace the power cord with a new one.
	The electrosurgical unit is not turned ON.	Turn the electrosurgical unit ON.
	The circuit breaker has tripped.	Reset the circuit breaker.
Indicators do not light.	The power cord is not connected.	Connect the power cord to a wall mains outlet as described in Section 3.2, “Connection to an AC mains power supply”.
	The power cord is broken.	Replace the power cord with a new one.
	The electrosurgical unit is not turned ON.	Turn the electrosurgical unit ON.
	The circuit breaker is open.	Reset the circuit breaker.
No output	The foot switch is not connected.	Connect the foot switch as described in Sections 3.3, “Connection of foot switch MAJ-1258” and 3.4, “Connection of the foot switch for MAJ-1258/MAJ-1259”.
	The hand piece is not connected.	Connect the hand piece as described in Section 3.6, “Connection of the hand piece (for monopolar treatment)”.
	The bipolar cord is not a designated type.	Replace it with a designated bipolar cord.

Irregularity description	Possible cause	Solution
Output sounds and output is inhibited.	The A cord is not connected to the UES-40.	Connect the A cord as described in Section 3.7, “Connection of the A cord (for monopolar treatment)”.
	The A cord is not connected to the accessory.	Connect the A cord as described in Section 3.7, “Connection of the A cord (for monopolar treatment)”.
	The patient plate is in contact with metal.	Separate the patient plate and the metal.
	The patient plate is not in proper contact with the patient’s skin.	Reattach the patient plate.
	The patient plate is not a designated type.	Replace it with a designated patient plate.
	The bipolar electrode is not connected.	Connect the bipolar electrode as described in Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)”.
	The bipolar electrode is not a designated type.	Replace it with a designated bipolar electrode.
	The bipolar cord is not connected.	Connect the bipolar cord as described in Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)”.
	The wires in the A cord are broken.	Replace the A cord with a new one.
	The A cord is not a designated type.	Replace it with a designated A cord.
Output continues.	The foot switch is short-circuited.	Replace the foot switch with a new one.
	The hand piece is short-circuited.	Replace the hand piece with a new one.

NOTE

- For a list of designated patient plates, refer to Section 3.5, “Connection of the patient plate (for monopolar treatment)”.
- For a list of designated A cords, refer to Section 3.7, “Connection of the A cord (for monopolar treatment)”.
- For a list of designated bipolar electrodes, refer to Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)”.
- For a list of designated saline cords, refer to Section 3.10, “Connection of the saline electrode and saline cord (for saline treatment)”.

7.2 Alarm functions

Patient plate connection error

NOTE

The patient plate connection warning does not work when bipolar mode or saline mode is selected.

Irregularity description	Possible cause	Solution
The warning indicator lights, the output setting indicator displays “Er01”, the alarm sounds and the high-frequency output is stopped (see Figure 7.1).	• The wires in the patient plate cord are broken. • The connection of the patient plate is incorrect.	Turn the electrosurgical unit OFF and refer to Section 3.5, “Connection of the patient plate (for monopolar treatment)”.
	The split-type of patient plate is not in proper contact with patient’s skin.	Turn the electrosurgical unit OFF and refer to Section 3.5, “Connection of the patient plate (for monopolar treatment)”. Reattach the patient plate or replace it with a designated patient plate.

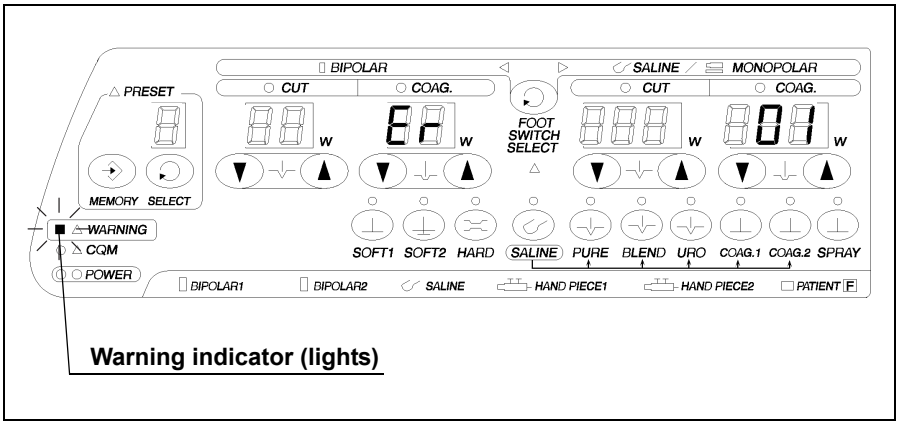


Figure 7.1

Saline output error

NOTE

The saline output warning does not work when monopolar mode or bipolar mode is selected.

Irregularity description	Possible	Solution
The warning indicator lights, the output setting indicator displays “Er02” the alarm sounds and the high-frequency output is stopped.	The saline is activated while the active and/or neutral electrode is put in the air.	Use an electroconductive physiological saline solution (0.9% sodium chloride irrigation) and always immerse the active and/or neutral electrode (sheath) in saline. If the problem still persists, contact Olympus.
	The saline electrode and saline cord is not connected.	Turn the electrosurgical unit OFF and connect the saline electrode and saline cord as described in Section 3.10, “Connection of the saline electrode and saline cord (for saline treatment)”.
	The saline cord is broken.	Replace the saline cord with a new one.
	The saline cord is not a designated type.	Replace it with a designated saline cord.
	The saline electrode is not a designated type.	Replace it with a designated saline electrode.
	The tissue and the bubble adhere to the surface of the electrode.	Remove the adhesion from the surface of the electrode, and make the output actively again.

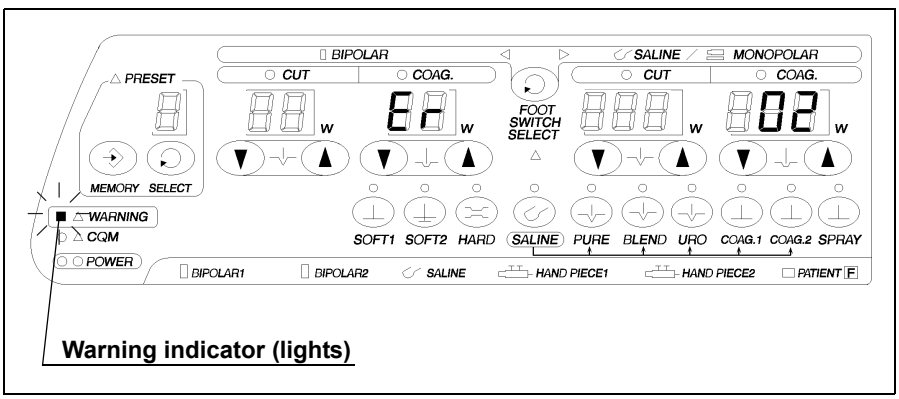


Figure 7.2

Output time error

❍ Monopolar/Saline

Irregularity description	Possible cause	Solution
The warning indicator lights, the output setting indicator displays “Er04” the alarm sounds and the high-frequency output is stopped (see Figure 7.3).	Continuous output for more than 60 seconds.	Immediately stop the output and wait for a while before restarting it.

❍ Bipolar

Irregularity description	Possible cause	Solution
The warning indicator lights, the output setting indicator displays “Er04” the alarm sounds and the high-frequency output is stopped (see Figure 7.3).	The electrodes on the distal end of the bipolar forceps are shorted.(In bipolar output mode “HARD” only)	Immediately stop the output. Be sure to hold the treated site firmly during bipolar treatment.
	Continuous output for more than 15 seconds (in bipolar output mode “HARD” only).	Confirm the treated tissue status. If coagulation is not sufficient, be sure to hold the treated site firmly before restarting the output.
	The connection between the bipolar cord and UES-40 is incorrect (in bipolar output mode “HARD” only).	Turn the electrosurgical unit OFF and connect the bipolar cord properly as described in Section 3.9, “Connection of the bipolar electrode and bipolar cord (for bipolar treatment)” and Section 5.5, “Selection of foot switch output”.

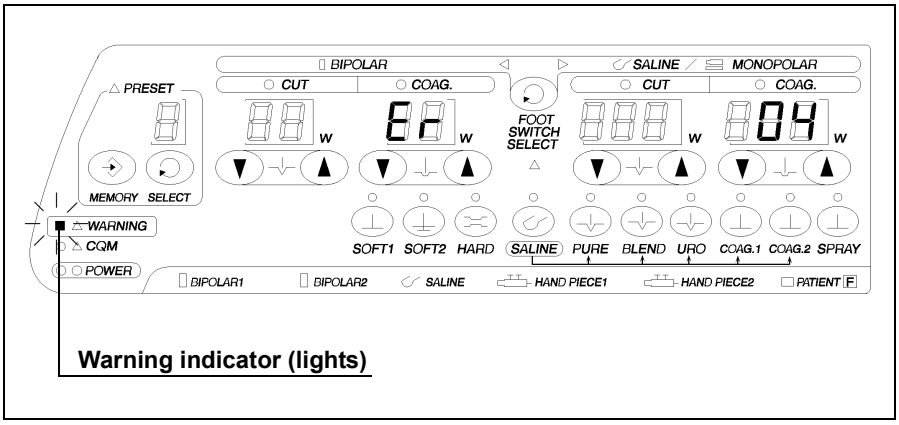


Figure 7.3

Output switch short-circuit error

NOTE

This detection is active from the time the electrosurgical unit is turned ON until output settings are completed. It is not active during output.

Irregularity description	Possible cause	Solution
The warning indicator lights, the output setting indicator displays “Er08” the alarm sounds and the high-frequency output is stopped (see Figure 7.4).	The output level is set to 0 W.	Set the output level to a value above 0 W. If the problem persists, contact Olympus.
	• The power switch is set to ON while one of the output switches is pressed. • The output switch has failed.	Turn the power switch ON while none of the output switches are pressed. If the hand piece is in use, replace it. If the problem persists, contact Olympus.

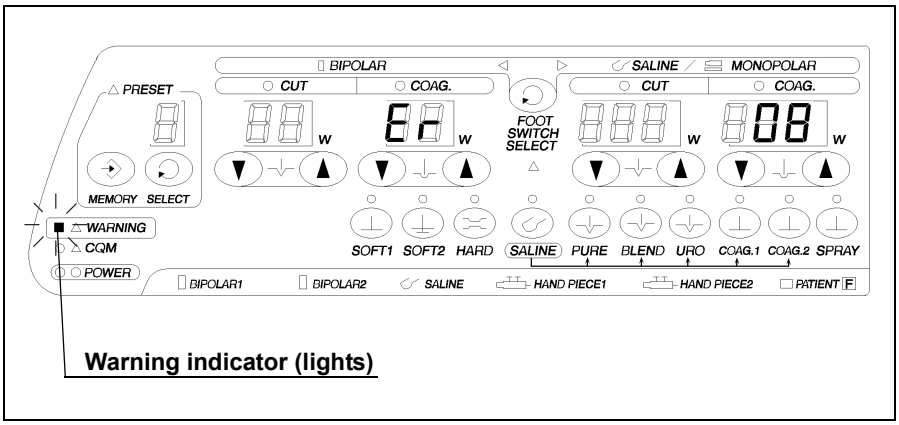


Figure 7.4

7.3 Returning the UES-40 for repair

WARNING

Thoroughly clean this product before returning it for repair. Improperly reprocessed equipment presents an infection control risk to each person who handles the product within the hospital or at Olympus.

CAUTION

Olympus is not liable for any injury or damage which occurs as a result of repairs attempted by non-Olympus personnel.

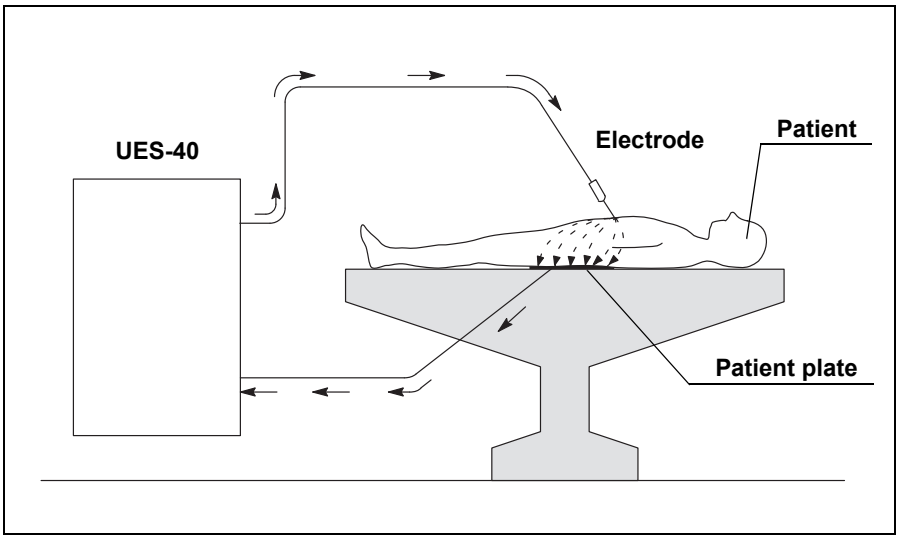
When returning the UES-40 for repair, include a description of the malfunction or damage and the name and telephone number of the individual at your location who is most familiar with the problem. Also include a repair purchase order.

Appendix

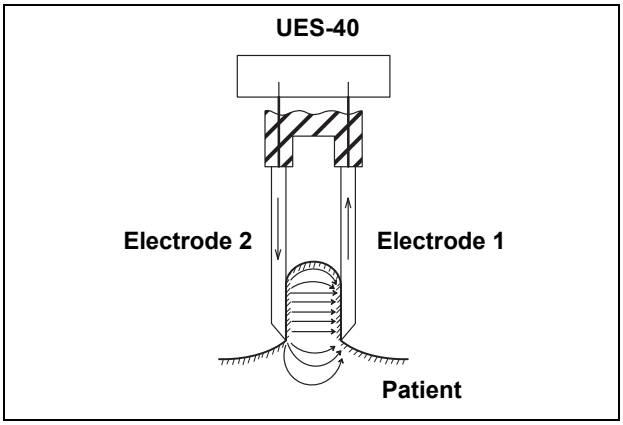
Construction

High-frequency current

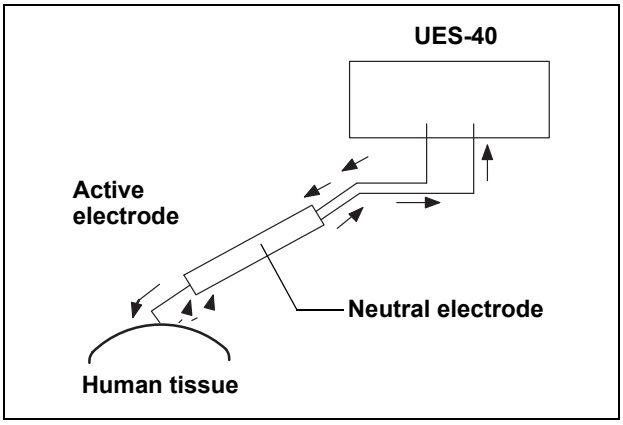
- **Monopolar**



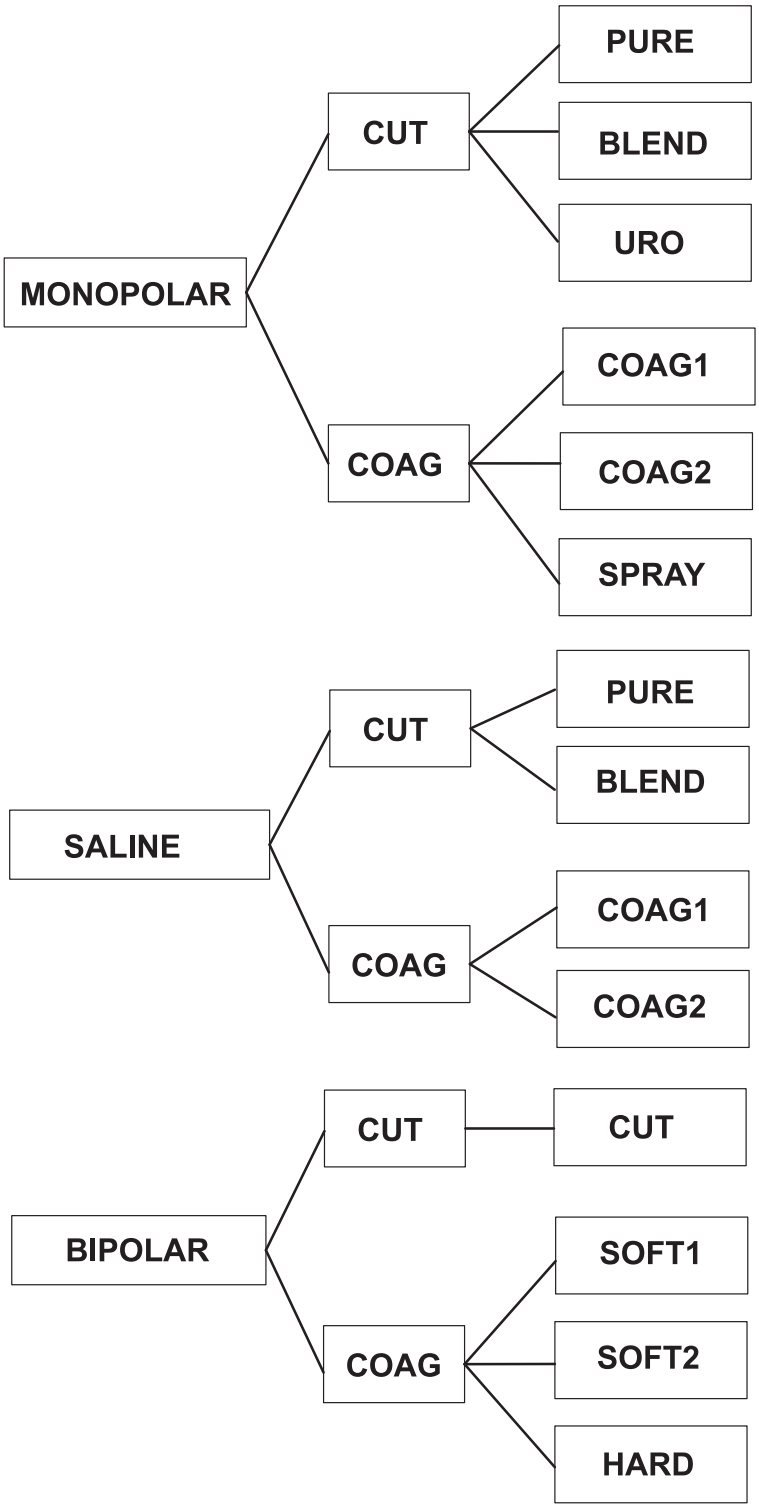
- **Bipolar**



❍ Saline



Output mode chart



Monopolar coagulation with little cutting ability.

Monopolar coagulation with greater cutting ability than COAG1.

SOFT1 with automatic output reduction.

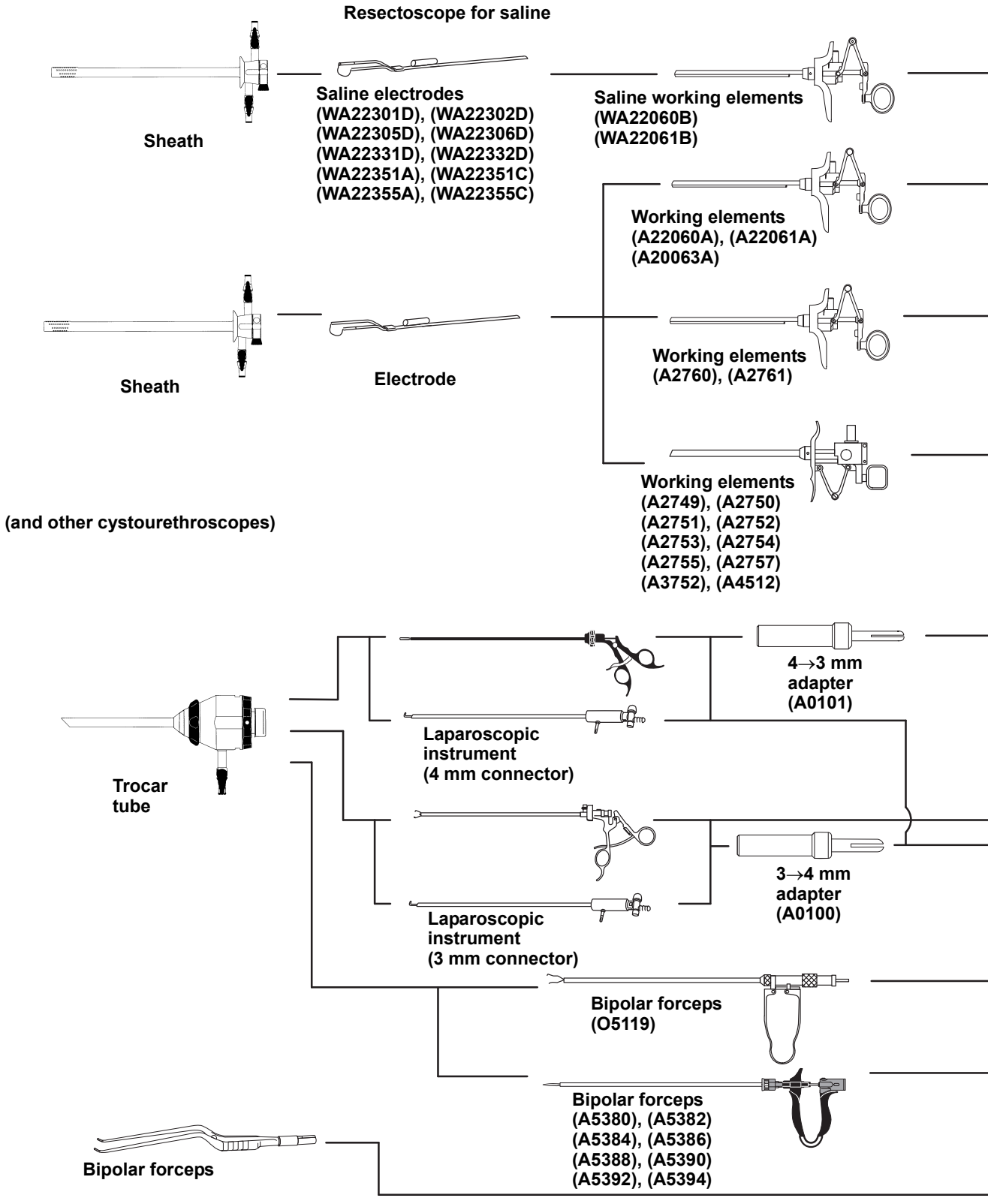
System chart

The recommended combinations of equipment and accessories that can be used with this instrument are listed below. New products released after the introduction of this instrument may also be compatible for use in combination with this instrument. For further details, contact Olympus.

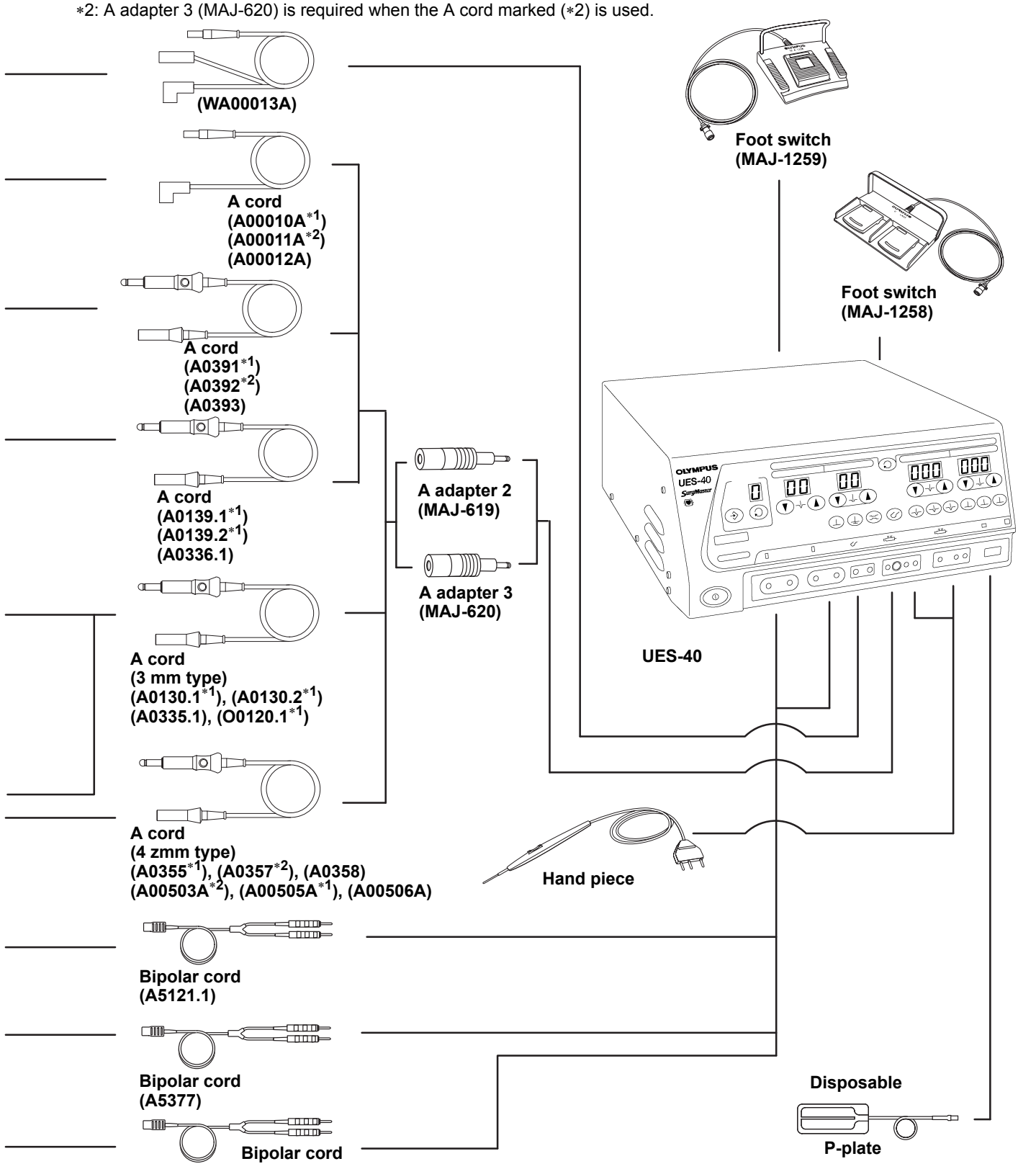
WARNING

If combinations of equipment other than those shown below are used, the full responsibility is assumed by the medical treatment facility.

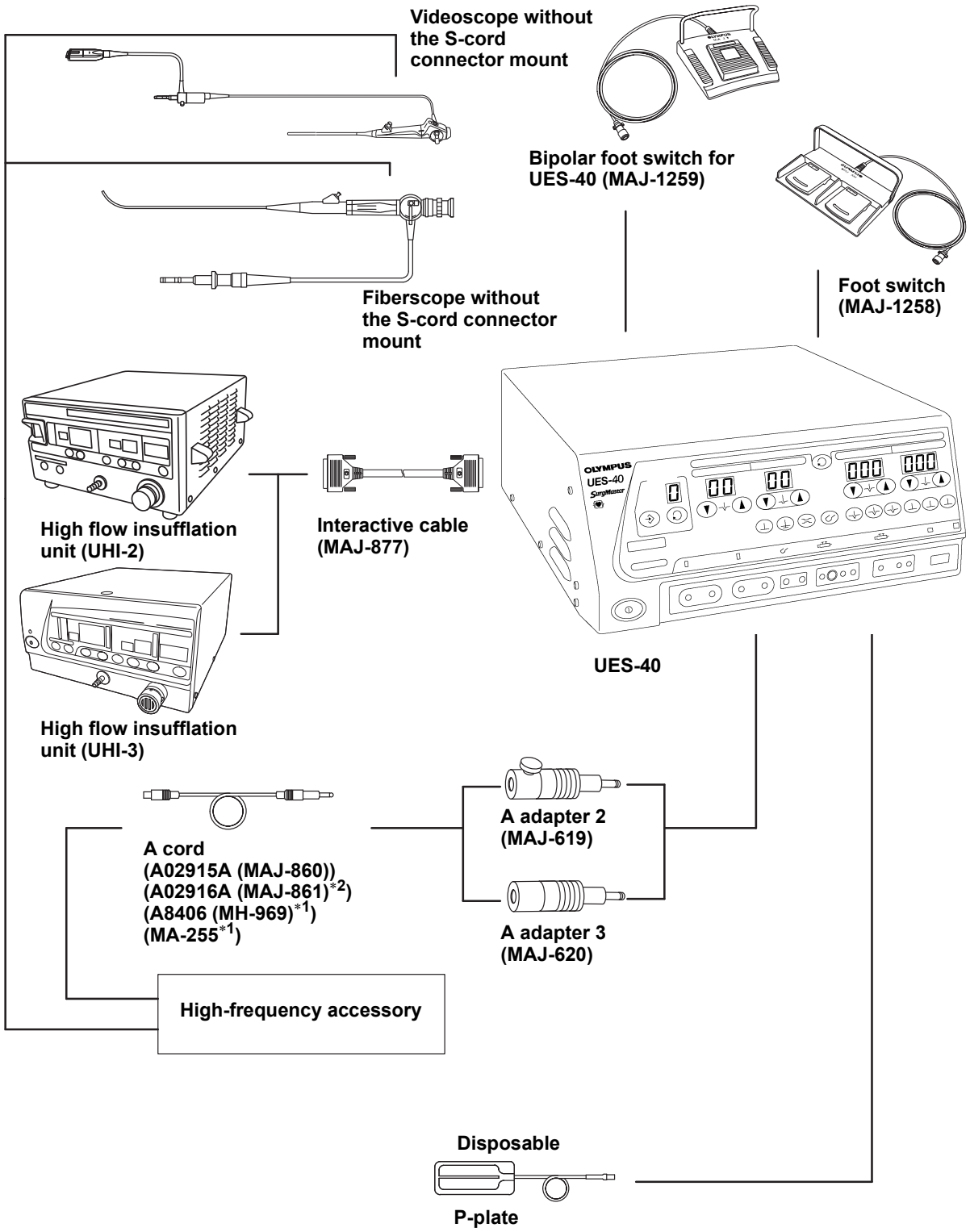
Electrosurgical treatment with UES-40 system chart



A adapter (MAJ-1) is not available in some countries.
∗1: A adapter 2 (MAJ-619) is required when the A cord marked (∗1) is used.
∗2: A adapter 3 (MAJ-620) is required when the A cord marked (∗2) is used.



Endoscopic treatment with UES-40 system chart



Some products may not be available in some regions. Please contact the nearest Olympus office for details. Specifications, design and accessories are subject to change without any notice or obligation on the part of the manufacturer.

Operating and storage environments

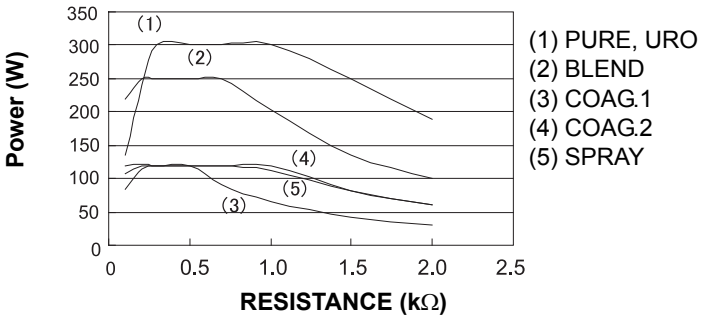
Operating environment	**Ambient temperature**	10 – 40°C (50 – 104°F)
	Relative humidity	30 – 85%
	Atmospheric pressure	700 – 1060 hPa
Storage environment	**Ambient temperature**	–25 to +70°C (–13 to +158°F)
	Relative humidity	10 – 90%
	Atmospheric pressure	700 – 1060 hPa

Specifications

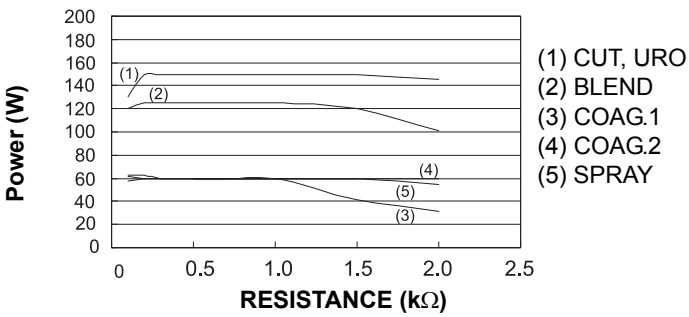
❍ UES-40 main unit

Item		Specification	
Applicability	Applicable fields	General and endoscopic electrosurgery (restricted to endoscopes suitable for electrosurgery).	
High-frequency output	Output method	Bipolar, monopolar and saline modes	
	Output types	Monopolar	Cut modes: 3 modes (PURE, BLEND, URO) Coagulation modes: 3 modes (COAG.1, COAG.2, SPRAY)
		Bipolar	Cut mode: 1 mode (PURE) Coagulation modes: 3 modes (SOFT1, SOFT2, HARD)
		Saline	Cut modes: 2 modes (PURE, BLEND) Coagulation modes: 2 modes (COAG.1, COAG.2)
	Fundamental frequency	350 kHz/1 MHz (for SPRAY)	
High-frequency output	Output characteristics	Monopolar	

Monopolar: Max

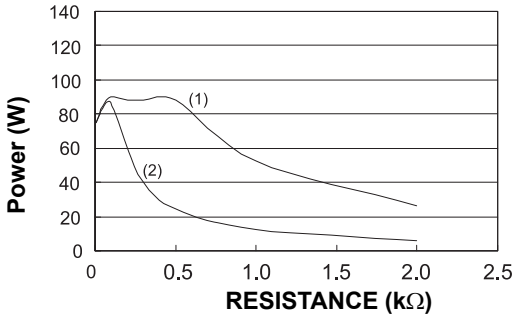


Monopolar: MAX/2



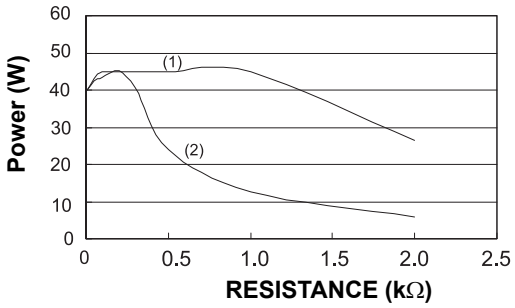
Item		Specification
High-frequency output	Output characteristics	Bipolar

Bipolar: MAX



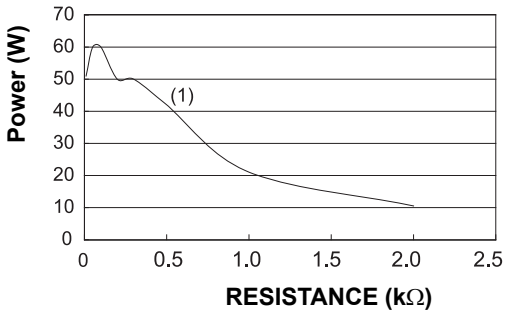
(1) PURE
(2) SOFT1, SOFT2

Bipolar: Half

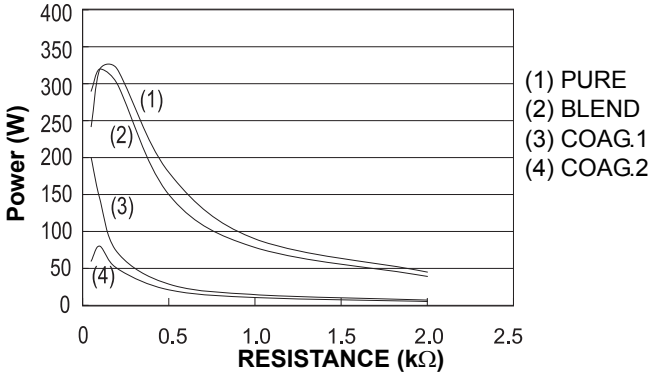
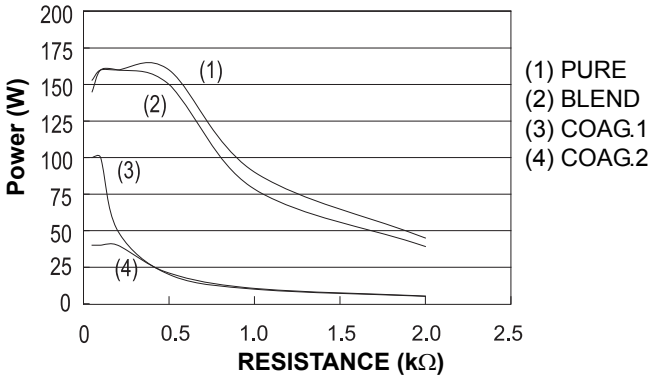


(1) PURE
(2) SOFT1, SOFT2

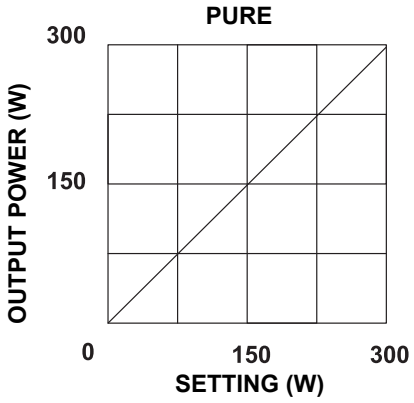
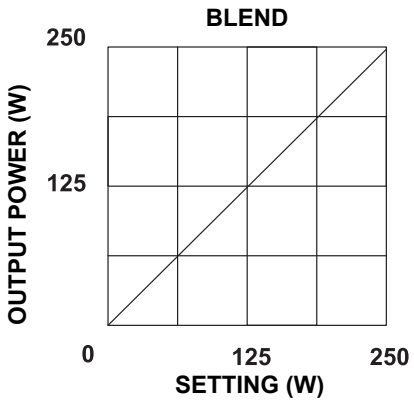
Bipolar: Hard



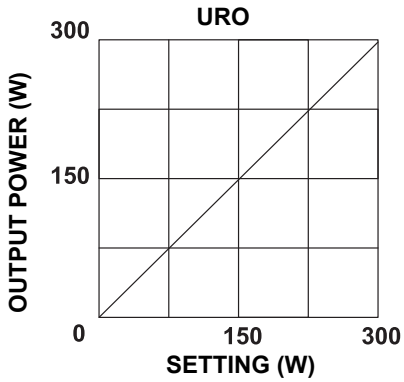
(1) L1, L2, L3

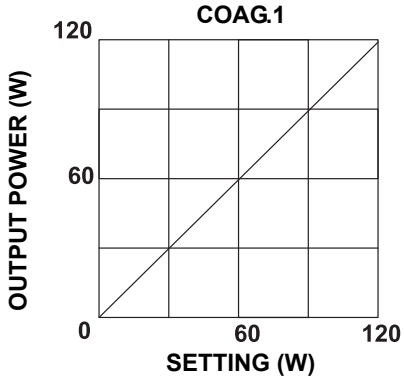
Item		Specification
High-frequency output	Output characteristics	Saline **Saline: MAX**  **Saline: Half** 

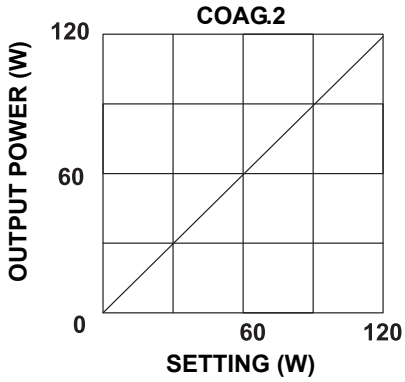
Item		Specification		Adjustment steps
High-frequency	Maximum output	Monopolar		5 W increments
			PURE: 300 W	
			BLEND: 250 W	
			URO: 300 W	
			COAG.1: 120 W	
			COAG.2: 120 W	
			SPRAY: 120 W	
		Bipolar		
			PURE: 90 W	0 – 20 [W] 1 W increments 20 – 30 [W] 2 W increments 30 – 90 [W] 5 W increments
			SOFT1: 90 W	
			SOFT2: 90 W	
			HARD	1 LEVEL increments
			L1: 60 W	
			L2: 60 W	
			L3: 60 W	
		Saline		5 W increments
			PURE: 320 W	
			BLEND: 320 W	
			COAG.1: 200 W	
			COAG.2: 80 W	

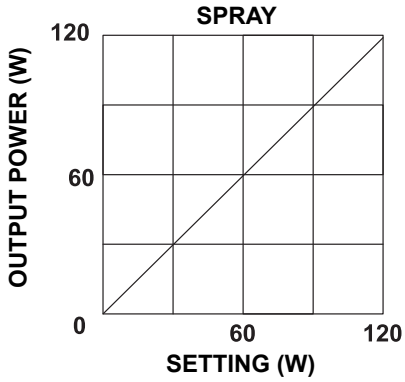
Item		Specification
High-frequency output	Output control	Control by foot switch, hand switch or hand piece. The following terminals can be controlled with the switches: Foot switch for the UES-40 (MAJ-1258) • Bipolar connector 1 • Hand piece connector 1 • Active connector • Saline connector Hand piece for monopolar • Hand piece connector 1 • Hand piece connector 2 Bipolar foot switch for the UES-40 (MAJ-1259) • Bipolar connector 2
	Output time	10 seconds ON, 30 seconds OFF (in case of continuous output, keep the output time below 10 seconds)
	Output power vs setting	Monopolar (Rated load resistance 300 Ω)  

Item		Specification
High-frequency output	Output power vs setting	Monopolar (Rated load resistance 300 Ω)

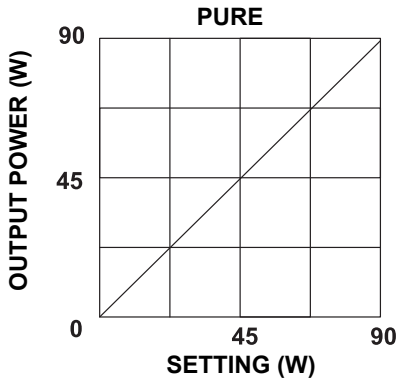


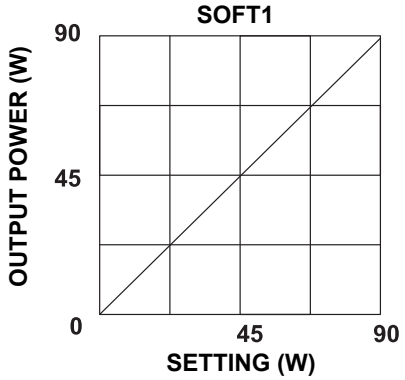


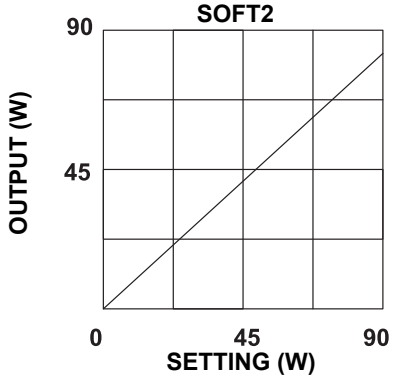


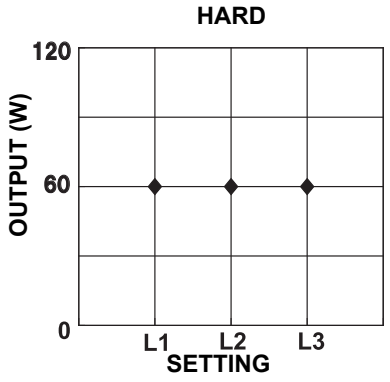


Item		Specification
High-frequency output	Output power vs setting	Bipolar (Rated load resistance 100 Ω, HARD 50 Ω)

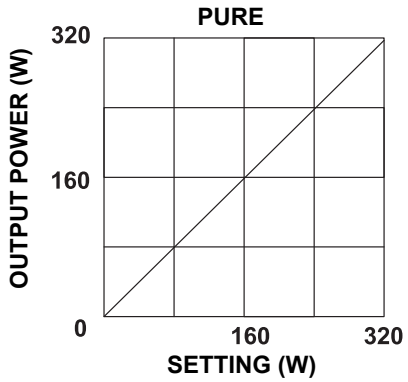


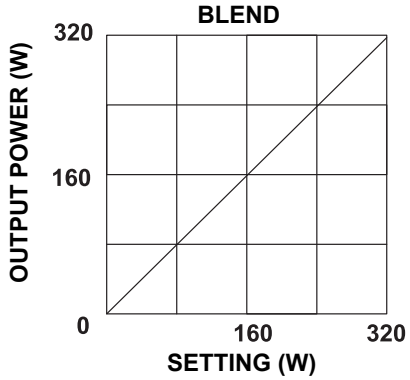


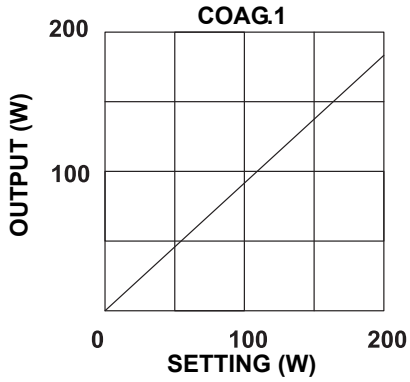


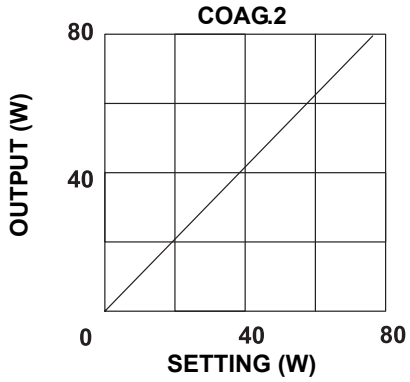


Item		Specification
High-frequency output	Output power vs setting	Saline (Rated load resistance 100 Ω, COAG.1 50 Ω)









Item		Specification
Safety functions	Patient monitor (monopolar mode)	Detects improper connections of cords and/or broken wires in the patient plate. Activates the following functions if irregularities are detected: • An error code will be displayed. • Warning indicator will light or flash. • An alarm will sound. • Output will be disabled.
	High-frequency output monitor	Determines whether the output level matches the output setting. Activates the following functions if irregularities are detected: • An error code will be displayed. • Warning indicator will light. • An alarm will sound. • Output will be disabled.
	Output time monitor (monopolar mode)	Detects the high-frequency output time. Activates the following functions if the continuous output time exceeds 60 seconds: • An error code will be displayed. • Warning indicator will light. • An alarm will sound. • Output will be disabled.
	Control switch monitor	Detects short-circuit of the control switches (foot switch, hand piece). Activates the following functions if a short-circuit is detected: • An error code will be displayed. • Warning indicator will light. • An alarm will sound. • Output will be disabled.
	CQM monitor	The CQM indicator is turned on when a split-type patient plate is used, and the connection between the patient and patient plate is correct. This function activates the following operations upon detection of separation of the split patient plate. • An error code will be displayed. • Warning indicator will light. • An alarm will sound. • Output will be disabled.

Item		Specification
Safety functions	Self-check monitor	The function detects whether the safety monitor functions mentioned above are working correctly or not. It activates the following functions if abnormalities are detected: • An error code will be displayed. • Warning indicator will light. • An alarm will sound. • Output will be disabled.
Additional functions	Automatic memory mode	Restores the previous output mode (CUT/COAG. and setting).
	Preset mode	Stores settings in the memory for recalling them any time later.
Classification (Electromedical equipment)	Type of protection against electric shock	Class I (3 pin power cord)
	Degree of protection against electric shock	Type CF applied part Note: Direct application to the heart should not be attempted as spark discharge during electrosurgery may affect the cardiac function of the patient. (Refer to “Dangers, warnings and cautions” and EN standard (EN60601-1)).
	Degree of protection against explosion	Never use the UES-40 in an environment where flammable gases are present.
	Additional	Defibrillation-proof Type CF applied part
	Output circuit	Neutral electrode isolated from earth at high-frequency.

Item		Specification
Power supply	Voltage	100 – 120 V
	Frequency	50/60 Hz
	Input current	12 A
	Voltage fluctuation	Within ±10%
Size	Dimensions	350 (W) × 150 (H) × 400 (L) mm
	Dimensions (maximum)	358 (W) × 153.2 (H) × 400 (L) mm
	Weight	12.0 kg
EMC	Applied standards; IEC 60601-1-2: 2001 IEC 60601-2-2: 1998	This instrument complies with the standard listed in the left column. CISPR 11 of emission: Group 1, Class B (It is switched on but HF output is not activated under the test.) This instrument complies with the EMC standard for medical electrical equipment; edition 2 (IEC 60601-1-2: 2001). However, when connecting to an instrument that complies with the EMC standard for medical electrical equipment; edition 1 (IEC 60601-1-2: 1993), the whole system complies with edition 1.
Year of manufacture	**1412345** ↑	The last digit of the manufacturing year is the second digit of the serial number.

❍ Foot switch for UES-40 (MAJ-1258)

Item		Specification
Classification (Electromedical equipment)	Protection against fluid ingress	IEC 60529 IPX8 (except for connector section)
	Protection against hazard of ignition	IEC 60601-1 AP equipment
Size	Dimensions	256 (W) × 135 (H) × 182 (D) mm
	Weight	2.15 kg
	Cord length	4 m

❍ Bipolar foot switch for UES-40 (MAJ-1259)

Item		Specification
Classification (Electromedical equipment)	Protection against fluid ingress	IEC 60529 IPX8 (except for connector section)
	Protection against hazard of ignition	IEC 60601-1 AP equipment
Size	Dimensions	190 (W) × 119 (H) × 165 (D) mm
	Weight	1.2 kg
	Cord length	4 m

EMC information

❍ Magnetic emission compliance information and recommended electromagnetic circumstances.

Emission standard	Compliance	Guidance
RF emissions CISPR 11	Group 1	This instrument uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Radiated emissions CISPR 11	Class B	This instrument's RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
Main terminal conducted emissions CISPR 11		
Harmonic emissions IEC 61000-3-2	Not applicable	Power supply specification of this instrument is less than 220 VAC, and this instrument is exempt from requirements of IEC 61000-3-2.
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Same as above	Power supply specification of this instrument is less than 220 VAC, and this instrument is exempt from requirements of IEC 61000-3-3.

❍ Electromagnetic immunity compliance information and recommended electromagnetic circumstances.

Immunity test	IEC 60601-1-2 test level	Compliance level	Guidance
Electrostatic Discharge (ESD) IEC 61000-4-2	Contact: ±2, ±4, ±6 kV Air: ±2, ±4, ±8 kV	Same as left	Floors should be made of wood, concrete, or ceramic tile that hardly produce static. If floors are covered with synthetic material that tends to produces static, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	Same as left	Mains power quality should be that of a typical commercial (original condition feeding the facilities) or hospital environment.
Surge IEC 61000-4-5	Differential mode: ±0.5, ±1 kV Common mode: ±0.5, ±1, ±2 kV	Same as left	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, Short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5% U_T (> 95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles < 5% U_T (> 95% dip in U_T) for 5 sec	Same as left	Mains power quality should be that of a typical commercial or hospital environment. If the user of this instrument required continued operation during power mains interruptions, it is recommended that this instrument be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	Same as left	It is recommended to use this instrument by maintaining enough distance from any equipment that operates with high current.

NOTE

U_T is the a.c. mains voltage prior to application of the test level.

❍ Cautions and recommended electromagnetic environment regarding portable and mobile RF communications equipment such as a cellular phone.

Immunity test	IEC 60601-1-2 test level	Compliance level	Guidance
			Formula for recommended separation distance (V_1=E_1=3 according to the compliance level)
Conducted RF IEC 61000-4-6	3 Vrms (150 kHz – 80 MHz)	3 V (V_1)	$d = \left[\frac{3.5}{V_1}\right]\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m (80 MHz – 2.5 GHz)	3 V/m (E_1)	$d = \left[\frac{3.5}{E_1}\right]\sqrt{P}$ 80 MHz – 800 MHz $d = \left[\frac{7}{E_1}\right]\sqrt{P}$ 800 MHz – 2.5 GHz

NOTE

- Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).
- This instrument complies with the requirements of IEC 60601-1-2. However, under the electromagnetic environment that exceeds its noise level, electromagnetic interference may occur to this instrument.
- Electromagnetic interference may occur to this instrument near a high-frequency electrosurgical equipment and/or other equipment marked with the following symbol:

❍ Recommended separation distance between portable and mobile RF communications equipment and this instrument.

Rated maximum output power of transmitter P (W)	Separation distance according to frequency of transmitter (m) (calculated as V_1=3 and E_1=3)		
	150 kHz – 80 MHz	80 MHz – 800 MHz	800 MHz – 2.5 GHz
	$d = 1.2\sqrt{P}$	$d = 1.2\sqrt{P}$	$d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

NOTE

- The guidances may not apply in some situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
- Portable and mobile RF communications equipment such as cellular phones should be used no closer to any part of this instrument, including cables than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

OLYMPUS®

Manufactured by

OLYMPUS MEDICAL SYSTEMS CORP.
2951 Ishikawa-cho, Hachioji-shi, Tokyo 192-8507, Japan
Fax: (042)646-2429 Telephone: (042)642-2111

Distributed by

OLYMPUS AMERICA INC.
3500 Corporate Parkway, P.O. Box 610, Center Valley, PA
18034-0610, U.S.A.
Fax: (484)896-7128 Telephone: (484)896-5000

OLYMPUS LATIN AMERICA, INC.
5301 Blue Lagoon Drive, Suite 290 Miami, FL 33126-2097, U.S.A.
Fax: (305)261-4421 Telephone: (305)266-2332

EC REP **OLYMPUS EUROPA HOLDING GMBH**
(Premises/Goods delivery) Wendenstrasse 14-18, 20097 Hamburg, Germany
(Letters) Postfach 10 49 08, 20034 Hamburg, Germany
Fax: (040)23773-4656 Telephone: (040)23773-0

KEYMED LTD.
KeyMed House, Stock Road, Southend-on-Sea, Essex SS2 5QH, United Kingdom
Fax: (01702)465677 Telephone: (01702)616333

OLYMPUS MOSCOW LIMITED LIABILITY COMPANY
117071, Moscow, Malaya Kaluzhskaya 19, bld. 1, fl.2, Russia
Fax: (095)958-2277 Telephone: (095)958-2245

OLYMPUS (BEIJING) SALES & SERVICE CO., LTD.
A8F, Ping An International Financial Center, No. 1-3, Xinyuan South Road,
Chaoyang District, Beijing, 100027 P.R.C.
Fax: (86)10-5976-1299 Telephone: (86)10-5819-9000

OLYMPUS KOREA CO., LTD.
Olympus-Tower, 114-9 Samseong-Dong, Gangnam-Gu, Seoul 135-090 Korea
Fax: (02)6255-3494 Telephone: (02)6255-3210

OLYMPUS SINGAPORE PTE LTD.
491B, River Valley Road #12-01/04, Valley Point Office Tower, Singapore 248373
Fax: 6834-2438 Telephone: 6834-0010

OLYMPUS AUSTRALIA PTY. LTD.
31 Gilby Road, Mount Waverley, VIC., 3149, Australia
Fax: (03)9543-1350 Telephone: (03)9265-5400

GT2902 07

Printed in Japan 20110624 *0000