OLYMPUS

MAINTENANCE MANUAL

CLV-180

ISSUE 1

FR-1700

INTRODUCTION

Introduction

This manual is intended for Olympus-certified technicians. Use of this manual by other individuals is prohibited.

Precautions

Before Repair

(1) Notify the site manager of the intent to repair the unit and obtain his/her approval before commencing.

(2) During repair, there is a risk of injury from the various tools and parts in the vicinity, as well as from fluid leakage on the floor. Inform the relevant people to restrict access to the repair area.

(3) To prevent potentially dangerous health risks, avoid working in a closed room, i.e., select a well-ventilated location when using organic solvents.

(4) In general, it is advisable to record the function and operation settings before repair, to enable restoration of the settings after service.

(5) If the original settings cannot be known due to mechanical problems present at the time the unit was accepted for repair, apply the factory-set values, or the safest settings (such as the lowest output levels). In such a case, inform the user that the settings have been changed.

(6) Guard against static electricity.
Use a conductive mat or wristband to discharge static electricity to prevent damaging the boards or other electrical components if it is necessary to touch them.

During Repair

(1) To prevent potentially dangerous health risks, thoroughly rinse any bodily areas that have come into contact with organic solvents as soon as possible.

(2) When using organic solvents, handle flames such as those in alcohol lamps with caution, because these solvents may ignite if exposed to flame.
In addition, always replace the lids back onto organic solvent containers before leaving the work-bench.

(3) Beware of electric shock.
Turn off the power and unplug the power cord before removing the cover of the unit.

(4) Beware of residual voltages.
The unit may contain residual charges in capacitor components. Take care to avoid electric shock when opening the top cover.

(5) To avoid personal injury and damage to the unit, heavy units should always be assembled or disassembled by at least two people.

(6) Repair with extreme caution to avoid injury.
Use extra caution around metal parts because the edges may be sharp.

(7) Reassemble parts according to their original configuration. This regards the following items especially:
a) Insulators, such as insulating tubes and mylar sheets.
b) Cable rerouting, clamps, and cores.

c) Shield parts and cover screws with toothed washers.
Failure to attach parts in their original configurations, even if it does not impair product function, poses the risk of noise radiation and reduced electrical safety.

(8) Use specified parts.
The parts and components of this product are designed to operate under certain anticipated vibration, heat, chemical exposure, and voltage conditions. Always replace parts with those specified in the parts list.

(9) Always tighten nuts/screws to the specified torque and only use components of the specified dimensions.

(10) Do not reuse O-rings, E-rings, or packing. Always use new ones.

(11) When reusing components, remove sealing tape or sealing compound, and clean the components before use.

(12) Check that no screws or nuts are loose.

After Repair

(1) After repair, inform the site manager of the nature of the problems, the cause, the countermeasures taken, and the parts replaced.

(2) Always notify the site manager if, during repair, liquid disinfectants, cleaners, or alcohol were used. Inform the site manager that before using the unit, it is necessary to verify the concentration levels of disinfectants to ensure that they have not been diluted.

(3) Restore the original unit settings as they were recorded before repair. Request the presence of site manager to verify the settings with you.

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Chapter 1: Products Specifications

PRODUCT SPECIFICATIONS

1 Product Outline

Intended use:
When used in conjunction with an OLYMPUS endoscope, video system center, video monitor, accessories, and other related equipment, this product supports examination and endoscopic treatment by enabling observation through a fiberscope or through a video monitor.

Compatibility:
This product may be used in conjunction with EVIS 100/130/140 series videoscopes, EVIS EXERA 145/160 series videoscopes, EVIS EXERA II 165/180 series videoscopes, V series videoscopes, VISERA series videoscopes, rigid light guides, fiberscopes, as well as EVIS EXERA II CV-180/165, and endoscopic ultrasound systems.

Durability:
With adherance to the conditions listed below, this product has a usable life of 6 years from the manufactured/shipped date.
Conditions: During this product's usable life, the user must perform inspection before using, and regular subsequent inspections as outlined in the attached materials and the operation manual. Should the inspections reveal that repairs are required, the user must have those repairs performed.

2 Features

(1) This is a light source unit for exclusive use with the EVIS EXERA II VIDEO SYSTEM CENTER CV-180/165. However, this product is not to be used for surgery if used with the CV-165 (high-intensity function is not available).
(2) A mechanical detection unit is installed in the endoscope socket, enabling automatic switching to the maximum amount of light appropriate for any endoscope connected. It is capable of distinguishing between GI-type scope connectors, LG connectors for use with the SP high-intensity function, and LG connectors for use with the non-SP, high-intensity function.
(3) When videoscopes or OES fiberscopes (including OES connectors used with BF and CHF type endoscopes) are attached, the unit is capable of generating 1.3 times the output light intensity of the CLV-U4 EVIS 100 mode and the OES mode (OAI, OLA). It produces 1.6 times more maximum permissible illumination (white light) for the LG (non-OAI, OLA regions).
(4) When connected to a surgical fiberscope not compatible with the high-intensity RF connector, it produces an output light intensity of the maximum permissible illumination (white light) for the LG equivalent to the CLV-U4 EVIS 100 mode and the OES mode.
(5) When used with an endoscope and light guide compatible with the high-intensity RF connector, the high-intensity mode is available, creating a brighter illumination. Compared to the illumination of the CLV-U40 EVIS 100 mode or OES mode, approximately 2 times the maximum illumination (white light) is produced. In high-intensity mode, it is also possible to select equal brightness or double brightness of the CLV-U40 through the brightness mode switch.
(6) The optical filter used in NBI (narrowband imaging) observation has been loaded. NBI observations are enabled when an NBI-compatible endoscope is connected to the unit.
(7) The optical filter used in PDD (photodynamic diagnosis) observation can be loaded (OE market). One other optical filter for specialized observations may be loaded if required.
(8) The following modes may be selected:
a. Auto-ignition mode: the examination lamp automatically illuminates when the power is turned on.
b. Manual ignition mode: the examination lamp will illuminate when the lamp switch is pressed once power has been turned on.
(9) The examination lamp can be manually turned off by continously pressing the LAMP switch for approximately 1 second.
(10) Heat exhaust is through the rear (rear heat exhaust).
(11) The system automatically switches to the emergency lamp if the examination lamp does not come on after pressing the lamp switch. As an emergency response, this will provide sufficient brightness required for endoscope removal in situations when the examination lamp does not come on or if it turns off. This will be indicated on the panel.
(12) Brightness can be adjusted using the 17 steps of automatic and manual brightness available.
(13) The air supply can be stopped completely as well as changed between high, medium or low supply.
(14) Disconnection of the emergency lamp will be automatically indicated on the panel.
(15) The transillumination switch enables the transmitted light illumination function (for GI endoscopes

only).

(16) Panel settings are retained, and the light source unit will display at the previous settings the next time the unit is turned on. However filter switch settings are not backed up, and will revert to the regular filter.

(17) The exterior and the operating panel may be disinfected with ethanol (70% ethyl or isopropyl alcohol) or with a mild detergent.

(18) This product has passed the OLYMPUS Eco-Product standard (Environmentally-friendly design standard).

3 Operational Conditions

(1) Applicable video system centers: CV-180, CV-165

(2) Operational environment:

i) Use in a medical facility under the supervision of a medical doctor.

ii) Do not apply this light source directly to the heart.However, it may be used with the heart when used in combination with a TYPE CF applied part indicated by a mark on the instrument.

iii) The outer casing of the unit must be grounded for safety.

iv) Do not use the light source in a combustible atmosphere.

v) Do not use the light source with the following electronic equipment or endoscopes:

a. Any devices designed to apply electronic treatment of a patient for which safe usage with the CLV-180 has not yet been confirmed.

b. Any devices not designed to apply electronic treatment of a patient for which safety (e.g., leakage currents) has not yet be confirmed.

vi) Power supply:

Voltage:	100 – 120 V AC
Frequency:	50/60Hz
Input current:	500 VA
Power fluctuation:	Within ±10%
Frequency fluctuation:	Within ±1 Hz

vii) Environment

a. Operating environment

Ambient temperature:	10 – 40°C
Relative humidity:	30 – 85%
Air pressure:	700 – 1060 hPa

b. Storage environment

Ambient temperature:	25 – 70°C
Air pressure:	700 – 1060 hPa

4 Specifications

Item			Specification
1. Compatible endoscopes	1. Type of endoscopes	1. Videoscopes	1. EVIS 100, 130, 140 series videoscopes
			2. EVIS EXERA 145, 160 series videoscopes
			3. V series videoscopes
			4. EVIS EXERA II 165, 180 series videoscopes
			5. VISERA series videoscopes
		2. EUS Videoscopes	1. EUS 130, 140, 160 series videoscopes
		3. Fiberscopes	1. OES 10, 20, 30, 40, 60 series fiberscopes
			2. E, E2, E3 series fiberscopes
		4. Light guide for use with rigid endoscopes	High-intensity compatible light guides Note: The high-intensity mode can be set by pressing the high-intensity mode selection switch when connecting the light guide.
		5. Rigid endoscopes (Model names omitted)	Not compatible with rigid products other than those with high-intensity compatible light guides.
		6. High-intensity compatible fiberscopes (for stiff eyepiece endoscopes)	CHF-CB30L, CHF-CB30S, URF-P3 (LF-TP, LF-DP, LF-GP) *1 (ENF-GP) *2 *1 Applicable when used in combination with the following light guides: A3290, A3291, A3292, A3293, A3294, A3295, A3296, A3297, A3298. *2 Applicable when using in combination with light guide A3293.
		7. High-intensity compatible videoscopes	LTF-V, LTF-V2, LTF-V3 A4940A, A4941A, A4942A, A4943A, A4800A, A4801A, A4802A, A4803A, A4804A, A4805A, A50000A, A50001A, A50010A, A50011A, A50020A, A50021A
2. Illumination function	1. Optics	Illumination light path	Emergency lamp Condenser lens Optical filters Turret board (emergency lamp, filter, etc.) Diaphram Light-adjustment mesh turret (1) Each of the optical filters on the turret plate are automatically placed in the light path according to the normal observation mode (GI/SP), special observation mode (GI/SP), or high-intensity mode (SP) settings. (2) In accordance with the various observational modes above, the mesh filter with desired aperture ratio mounted on the mesh turret can be automatically placed in the light path. (3) The emergency lamp is automatically placed in the light path when the examination lamp malfunctions. (4) There are four special filter frames provided to enable the use of special filters.

2. Illumination function	2. Illumination light	Examination lamp	(1)	Type: Xenon short arc lamp with an eliptic mirror
			(2)	Model: MD-631
			(3)	Life: 500 hours (when lit continuously)
			(4)	The lamp will either illuminate when the power is switched on (auto-ignition funtion), or it can be turned on by pressing the LAMP switch on the front panel. The lamp can be turned off by pressing the LAMP switch continuously for one second.
		Emergency lamp	(1)	Type: Halogen 35 W (with reflector)
			(2)	Life: Average of at least 500 hours
	3. Brightness adjustment	Method	(1)	Manual adjusment only for fiberscopes and rigid-type endoscopes (excluding when used with a CV-180 and camera head).
			(2)	Automatic and manual adjustment available for videoscopes.
			(3)	Automatic adjustment is available when the CV-180 and camera head are used with rigid endoscopes and light-source cables.
		NBI special observation mode	(1)	The filter mode switch enables selection of the NBI special observation mode when a light adjustment cable and the CV-180 are connected to an NBI-compatible endoscope.
			(2)	When the NBI special observation mode is selected, the NBI special filter is placed in the illumination light path. Note: The CV-180 power switch must be ON.
		PDD normal observation mode (OE) → PDD is option 1 for non-OE regions	(1)	PDD normal observation mode will be activated when the light guide is connected to a light adjustment cable equipped with the PDD function, and a camera head for exclusive use during PDD special observation are connected to the CV-180.
			(2)	During PDD normal observation mode, the PDD normal filter is placed in the illumination light path. Note: The CV-180 power switch must be ON. • The PDD normal filter and PDD special filter are required for the PDD function.
		PDD special observation mode (OE) → PDD is option 1 for non-OE regions	(1)	From the PDD normal observation mode, the PDD special observation mode may be selected by pressing the filter mode switch.
			(2)	During PDD special observation mode, the PDD special filter is inserted in the illumination light path.
			(3)	Press the switch again to insert the PDD normal filter. The filters can be exchanged by pressing the switch. Note: The CV-180 power switch must be ON.
		PDD special observation mode (OE) (Fiberscope) → PDD is option 1 for non-OE regions	(1)	With the CV turned OFF, attach the light-supply cable with the PDD function. When the light guide is attached, pressing the filter mode switch will select the PDD special observation mode.
			(2)	During PDD special observation mode, the PDD special filter is inserted in the illumination light path. Note: The normal filter is used for PDD observation during observation through a fiberscope, rather than the PDD normal filter.
		Optional observation mode (OE) → PDD is option 2 for non-OE regions	(1)	This function is reserved for experimental use.

<table>
<tr><td rowspan="5">2. Illumination function</td><td rowspan="3">3. Brightness adjustment</td><td>High-intensity mode</td><td>(1) When a high-intensity compatible endoscope is inserted, the high-intensity mode may be selected by pressing the high-intensity switch. High-intensity mode may not be selected with endoscopes that are not high-intensity compatible.
(2) When a high-intensity compatible endoscope is inserted, the high-intensity mode switch illuminates. This enables the selection of the high-intensity mode (LED above the switch illuminates) or the normal mode (LED above the switch goes out).
(3) The current settings for the high-intensity mode switch are retained when the power is turned OFF. When a high-intensity compatible endoscope is inserted, illumination will either be the high-intensity mode or normal mode, depending on the settings retained by the system. Initial factory setting: normal mode.
(4) When the high-intensity mode is terminated (normal mode), illumination is equivalent to the CLV-U40 EVIS 100 and OES mode.
(5) High-intensity mode provides approximately twice the amount of illumination as the SP normal observation mode.</td></tr>
<tr><td>Manual adjustment</td><td>(1) Mechanical diaphram (set on the panel)
(2) 17 steps</td></tr>
<tr><td>Automatic adjustment</td><td>(1) Mechanical diaphram with constant illumination control (image illumination)
(2) 17 steps</td></tr>
<tr><td></td><td>Front panel display method in special observation mode</td><td><table><tr><td>Observation mode</td><td>Front panel display method</td></tr><tr><td>NBI special observation mode</td><td>• The NBI LED lights up (white)</td></tr><tr><td>PDD normal observation mode</td><td>• The PDD LED lights up (green) (OE only)</td></tr><tr><td>PDD special observation mode</td><td>• The PDD LED lights up (white) (OE only)</td></tr></table></td></tr>
<tr><td>4. Cooling</td><td>Equipment</td><td>(1) Forced air cooling with a fan (rear exhaust)</td></tr>
<tr><td rowspan="4">3. Air/Water supply function</td><td rowspan="3">1. Air</td><td>Air supply pump</td><td>(1) Diaphragm system</td></tr>
<tr><td>Air supply pressure</td><td>(1) Three air supply pressure levels (high, medium, low and stop)
(2) Maximum air supply pressure: less than 53.9 kPa</td></tr>
<tr><td>Control</td><td>(1) Through air supply switch settings</td></tr>
<tr><td>2. Water</td><td>Water supply</td><td>(1) Supply is available through the endoscope distal end when a water supply container is attached.</td></tr>
</table>

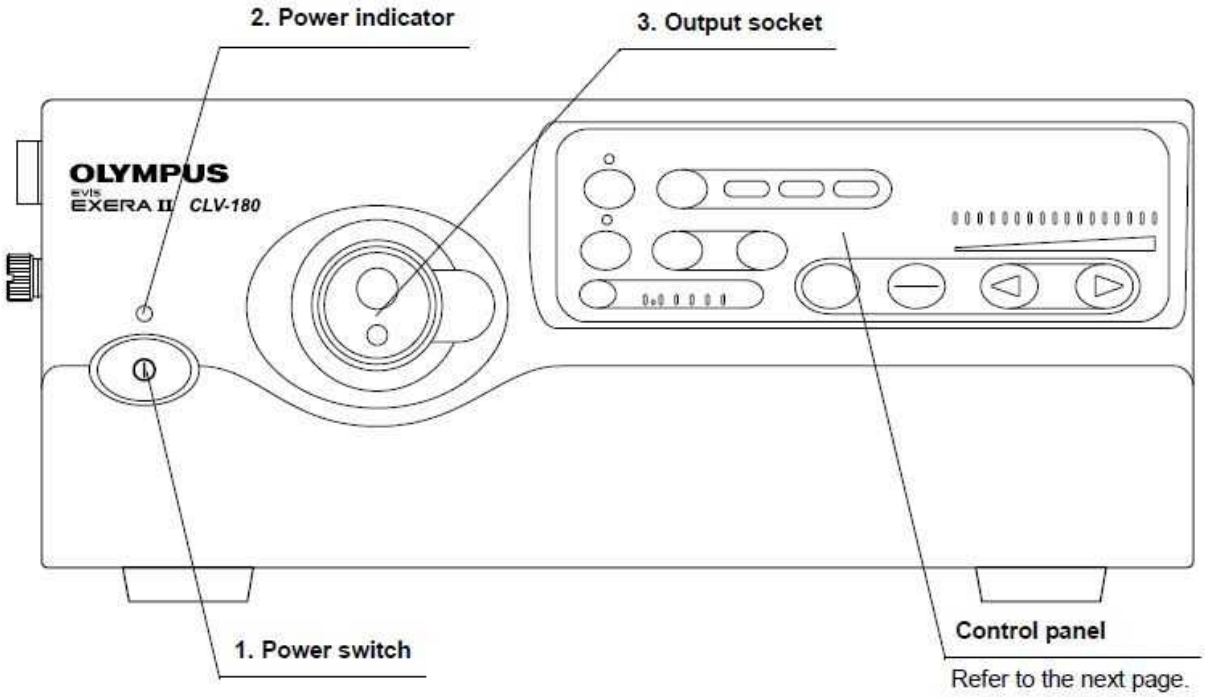
4. Connection	Endoscope and light guide			One-touch connection
	Light-supply cable (MAJ-1411)			Connector on the rear-panel (Light-supply cable for CV connection)
	Expansion cable (MAJ-202/972)			System connector on the rear-panel (compatible with Endo GATE/Endo ALPHA)
	Foot switch (MAJ-1391)			Foot switch connector on the rear-panel
5. Emergency indication	Emergency lamp indicator			Indicates if the emergency lamp is disconnected or if the emergency lamp is in use (when the main lamp will not illuminate). • Lit up: Emergency lamp in use (the main lamp will not illuminate). • Blinking: Emergency lamp is disconnected or has been removed.
6. Panel	Setting retention			(1) Settings prior to powering off the unit are retained. • Manual / automatic brightness settings • Airflow settings • Light intensity level • High-intensity mode setting • Special observation function display • Lamp life indicator (with the power ON, the indicator may be reset when the examination lamp is extinguished by continuously pressing the counter reset switch.)
	Switch illumination system (not including counter reset switch)			(1) All switches illuminated (not including counter reset switch)
7. Safety	1. Dimming	On endoscope removal		(1) When the endoscope is removed, the light emanating from the scope connector is dimmed by the dimmer plate located in the endoscope socket.
	2. Disinfection	Exterior		(1) Disinfect with ethanol for disinfection (70% ethyl or isopropyl alcohol) or with a mild detergent.
	3. Alarm	Temperature switch		(1) To ensure safety, when the internal temperature rises above the specified value, the temperature switch turns off and the electrical current supply to the lamp is terminated. The unit detects that the temperature switch has shut off, and sounds an alarm.
	4. Electrical shock	Protection		Class 1 unit (3P power supply)
	5. Applicable regulations	Region	Sold	MDD Class:II a (rule: 11-1) CE marking: CEO197
		1. EU/ EFTA	Y	
		2. Japan	N	Pharmaceutical Law (Application of the Pharmaceutical law to assist Asian market response)
		3. USA	Y	FDC laws

		4. Canada	Y	Canadian Medical Device and Equipment Regulation Class: II
		5. Singapore	Y	Singaporean medical device regulations
		6. Other	Y	K-FDA (Korea) SDA (China)
	6. Applicable external regulations	Common to all countries		IEC 60601-1 (Medical electrical equipment - Part 1: General requirements for safety): 1988 + A1, A2 IEC 60601-1-1 (Medical electrical equipment - Part 1-1: General requirements for safety): 2000 IEC 60601-1-2 (Medical electrical equipment - Part 1-2: General requirements for safety - Collateral standard: Electromagnetic compatibility - requirements and tests): 2001 IEC 60601-2-18 (Medical electrical equipment - Part 2: Particular requirements for the safety of endoscopic equipment): 1996 + A1 ISO 14971(Medical devices -- Risk management): 2000 ISO 9000-3(Software engineering -- Guidelines for the application of ISO 9001:2000 to computer software): 1997 ISO 8600-1(Optics and photonics -- Medical endoscopes and endotherapy devices -- Part 1: General requirements): 1997 ISO 7000(Graphical symbols for use on equipment) : 2004 IEC 60417-1: 2002, -2: 1998(Graphical symbols for use on equipment)+ A1, A2
		EU／EFTA		EN 980 (Graphical symbols for use on equipment): 2003
		2. Japan		JIS T1005 (Style manual for instruction manuals): 1983 JIS T0601-1 (Medical electrical equipment -- Part 1: General requirements for safety): 1999 JIS T0601-1-1(Medical electrical equipment -- Part 1-1: General requirements for safety -- Collateral standard: Safety requirements for medical electrical systems): 1999 JIS T0601-1-2(Medical electrical equipment -- Part 1: General requirements for safety -- 2. Collateral standard: Electromagnetic compatibility -- Requirements and tests): 2002
		3. USA		UL 60601-1: 2003
		4. Canada		CAN/CSA-C22.2 No.601.1-M90: 1990 CAN/CSA-C22.2 No.601.1-S1: 1994
		5. Other		Olympus Eco-Product Standard
8. Other	1. Usage restrictions	Ambient temperature		10 – 40°C
		Relative humidity:		30 – 85%
		Air pressure		700 to 1060hPa
		Usage environment		Do not use in a combustible atmosphere
		Type of protection against electrical shocks		Class 1 Degree of protection: Type BF applied part
		However, this instrument may be applied to the heart if it is used with equipment classified as TYPE CF applied part. (indicated by the symbol)		
		Voltage		100 – 240 V AC
		Frequency		50/60 Hz
		Power fluctuation		Within ±10%
		Frequency fluctuation		Within ±1 Hz
		Power consumption		500VA

	2. Par need replacment	User servicing	Examination lamp, fuses
		OLYMPUS servicing	Emergency lamp replacement, special filter attachment
	3. Other	Weight	Approximately 15.4 **kg**
		Dimensions	383 (W) × 536 (D) × 162 (D) mm (maximum) 370 () × 475 (D) × 150 (D) mm (standard)
		Panel	Panel selection varies by region AC 100 - 240 English (3E, 6E, 6LA) AC 100 - 240 Symbol (6S) AC 100 - 120 English (3OA) AC 100 English (1J)
		Power cord	Cord set with a 3-prong hospital grade With plug (1J, 3OA, 3E) Plug-less (6E, 6S,6LA)
		Fuse	Fuse capacity Littel (manufacturer) 215008: 8A
		Warranty period	As specified in the applicable laws for each country

5 Nomenclature and Functions

5-1 Front panel



1. Power switch

Pressing the power switch turns the light source ON. To turn the light source OFF, press the power switch once again.

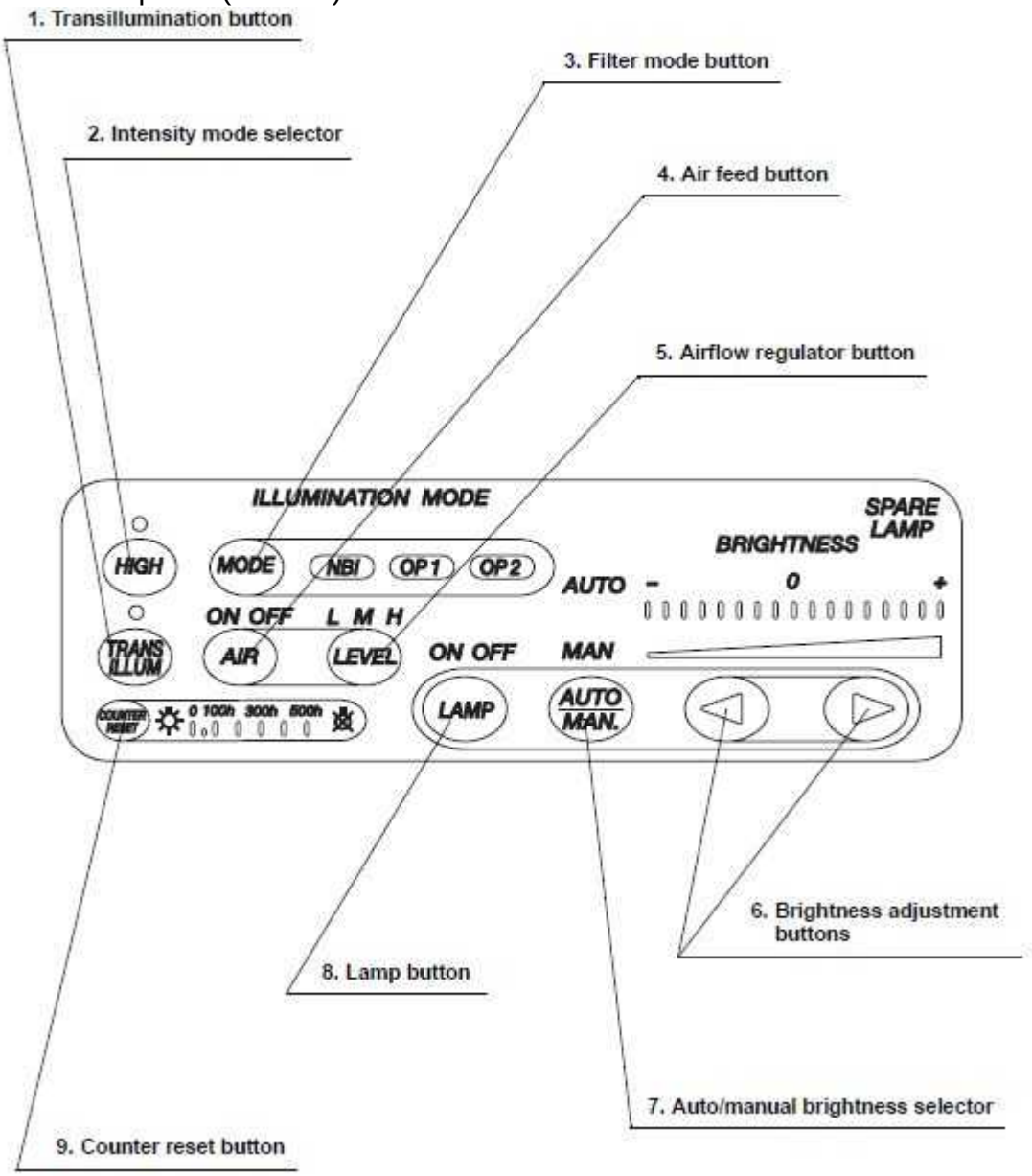
2. Power indicator

The power indicator lights when the light source is ON.

3. Output socket

This socket provides light and air to the endoscope.

5-2 Control panel (buttons)



(1) Transillumination button

When pressing this button, light emitted from the endoscope's distal end becomes brighter for 7 seconds, then returns automatically to its original brightness level.

(2) Intensity mode selector

Press to switch between the high-intensity mode and normal intensity mode when using an endoscope compatible with the high-intensity mode.

(3) Filter mode button

Pressing this button activates the NBI observation function.

(4) Air feed button

Pressing this button starts or stops the air feed from the endoscope's distal end.

(5) Airflow regulator button

This button is use to control the pressure of the air being fed from the endoscope.

(6) Brightness adjustment buttons

These buttons are pressed to adjust the brightness level.

(7) Auto/manual brightness selector

This selector is pressed to select automatic or manual brightness control.

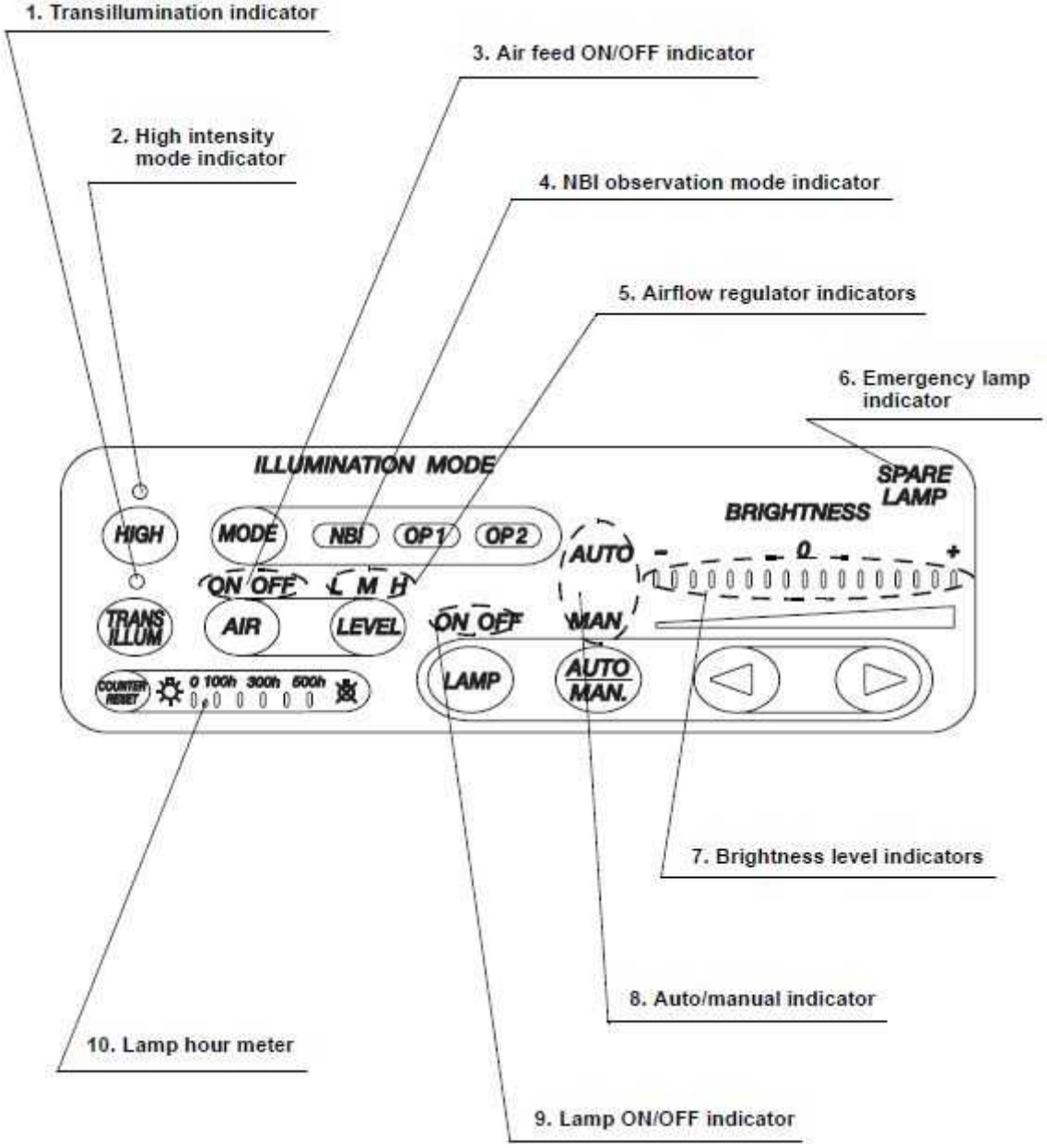
(8) Lamp button

This button is pressed to turn ON or OFF the examination (xenon) lamp.

(9) Counter reset button

After replacing the examination (xenon) lamp, the lamp hour meter is reset by pressing this button for 1.

5-3 Control panel (Indicators)



(1) Transillumination indicator
This indicator lights when the transillumination function is activated.

(2) High intensity mode indicator
The indicator lights when high-intensity mode is selected.

(3) Air feed ON/OFF indicator
This indicator lights when the air feed from the endoscope's distal end is activated.

(4) NBI observation mode indicator
This indicator lights in green to indicate that the light source can perform the NBI observation. This indicator lights in green continuously when an endoscope with the NBI observation compatibility is connected and the light source is ready for the NBI observation. Also, the indicator lights in white when NBI observation mode is active.
The "OP.1" and "OP.2" are prepared for future use.

(5) Airflow regulator indicators
One of these indicators lights to indicate the current airflow pressure level setting ("L" (Low), "M" (Medium) or "H" (High)).

(6) Emergency lamp indicator
This indicator lights when the emergency lamp (halogen) is in use, and blinks when the emergency lamp (halogen) is disconnected or not mounted.

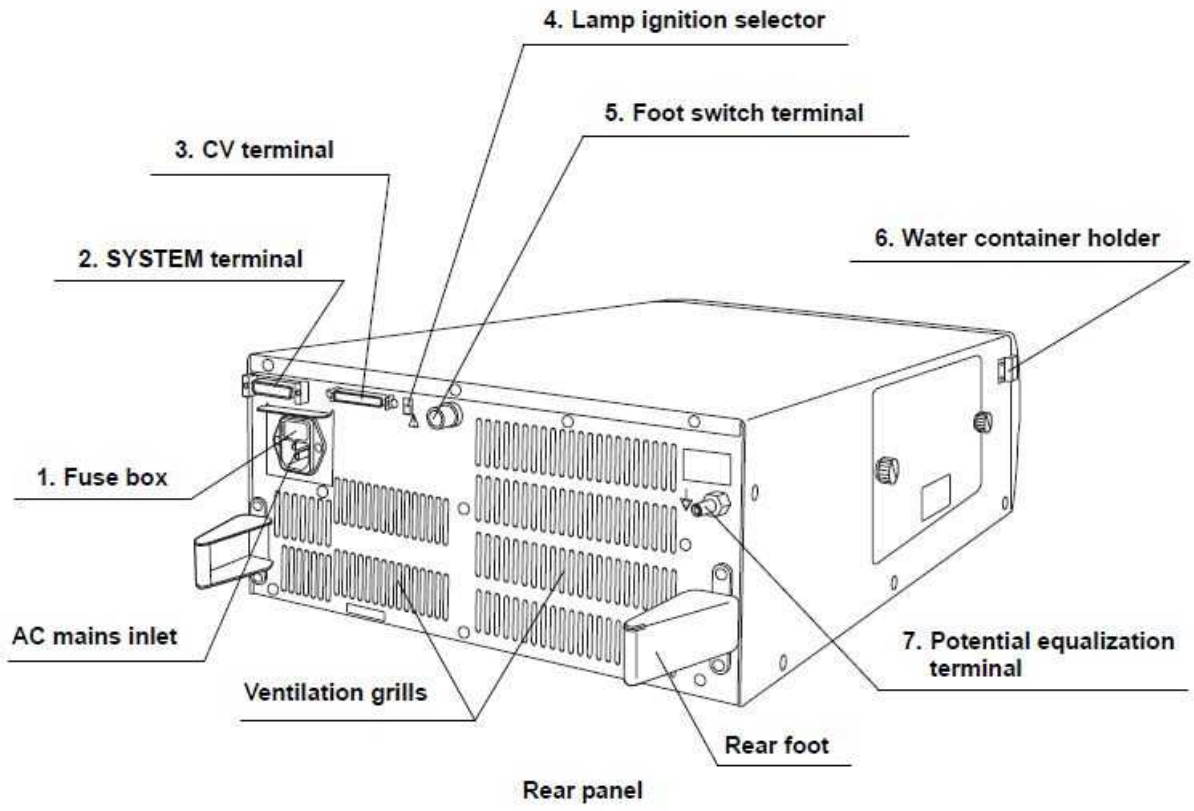
(7) Brightness level indicators
These indicators display the current brightness level.

(8) Auto/manual indicator
This indicator displays the brightness selector setting ("auto" or "manual").

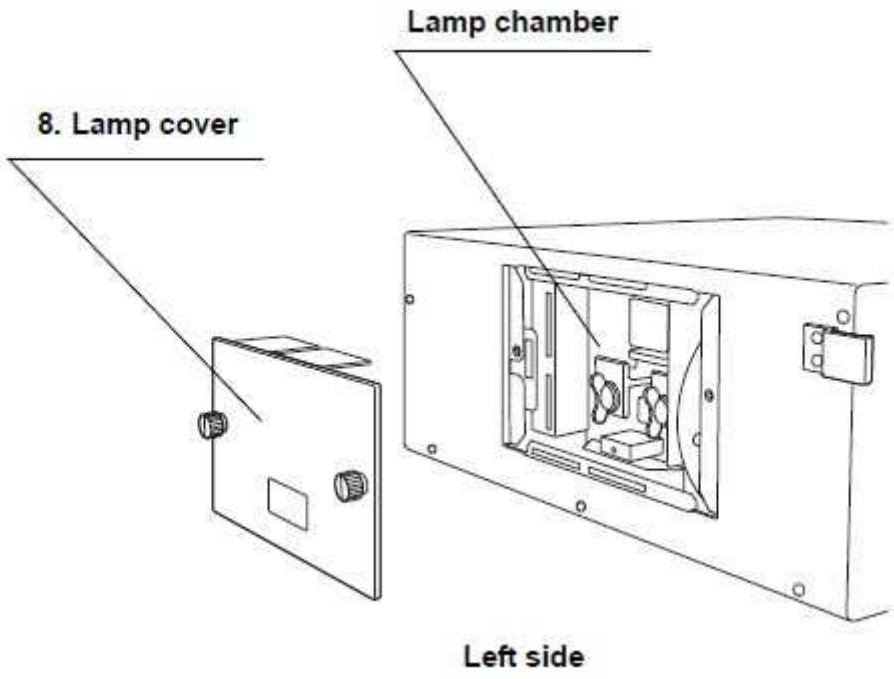
(9) Lamp ON/OFF indicator
This indicator lights when the examination lamp (xenon lamp bulb) lights.

(10) Lamp hour meter
This indicator displays the total working hours of the examination (xenon) lamp.

5-4 Rear and side panels



Rear panel



Left side

(1) Fuse box
The fuses protect the light source from electrical surges.

(2) SYSTEM terminal
The terminal accepts connection from an external unit.

(3) CV terminal
This terminal is the receptacle for the light source cable to connect the light source to the EVIS EXERA II video system center.

(4) Lamp ignition selector
This selector is set to select automatic or manual ignition of the examination lamp. When the automatic ignition is selected, turning ON the light source lights the examination lamp simultaneously. When the manual ignition is selected, pushing the lamp button on the control panel lights the examination lamp.

(5) Foot switch terminal
This connector is the receptacle for the foot switch (MAJ-1391) for use in the naked-eye PDD observation.

(6) Water container holder
This holder is used for the installation of the water container.

(7) Potential equalization terminal
For safety, this terminal is connected to a potential equalization terminal of the other equipment connected with the light source, and the electric potential of their equipment are made the same.

(8) Lamp cover
This cover has to be removed to replace the examination lamp.

Chapter 2: Troubleshooting

1. Contents

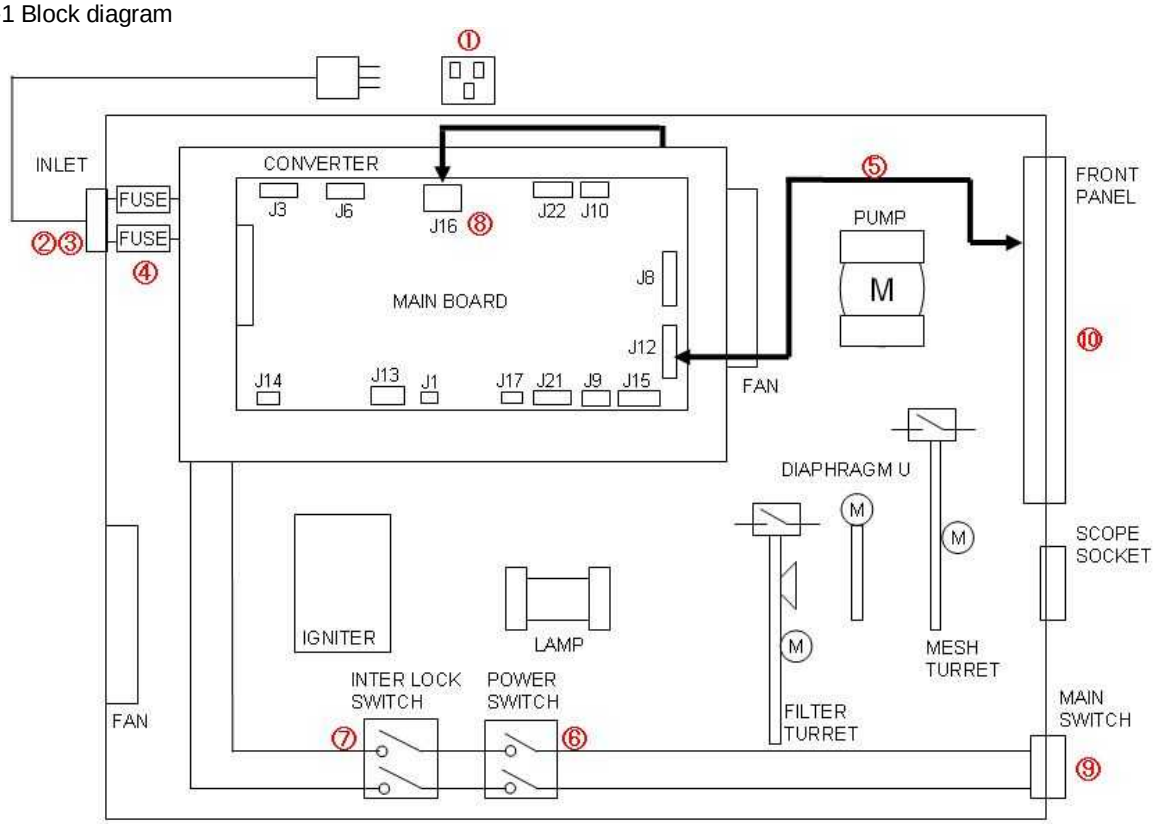
Symptom		Failure Mode
2-1	No power	Power input failure
2-2	Xenon Lamp not lit	Lamp failure
2-3	Lamp going out	Lamp going out
2-4	Scope not mounting	Scope connection failure
2-5	Incapability of discriminating GI, SP, or high-brightness SP <GI Scope> AIR button or Transillumination button cannot be selected when GI Scope is connected. <SP> AIR button, Transillumination button, and high-brightness button can be selected when SP Scope is connected. <High-brightness SP> High-brightness button cannot be selected when high-brightness Scope and Light Guide are connected.	Scope discrimination failure
2-6	Cooling fan not working	Cooling fan malfunction
2-7	Exit light from Light Source when Scope is removed	Shield failure at scope removal
2-8	Pump not working when Pump ON switch is pushed, or no change in air supply volume	Pump malfunction
2-9	Turret Board not rotating when Special Light Observation Scope is connected and Mode switch is pushed	Filter changing malfunction
2-10	No light from Scope	Exit light failure
2-11	View area is dark or excessively light	Manual Brightness failure
2-12	View area is dark or excessively light	Automatic Brightness failure
2-13	No change in LED display when switch is pushed	Panel malfunction
2-14	Emergency Lamp is not automatically lit when Xenon Lamp is put out	Emergency Lamp malfunction
2-15	Values set before shutdown are not saved when power shuts down	Back up malfunction
2-16	Time not changing to "0" when Lamp Life Meter Reset switch is pushed	Lamp Life Meter Reset malfunction
2-17	No change in light quantity when Trans Illumination switch is pushed	Transillumination malfunction

2. Troubleshooting CLV-180

2-1 Power input failure

Incapable to input power

2-1-1 Block diagram



2-1-2 Estimated location of failure

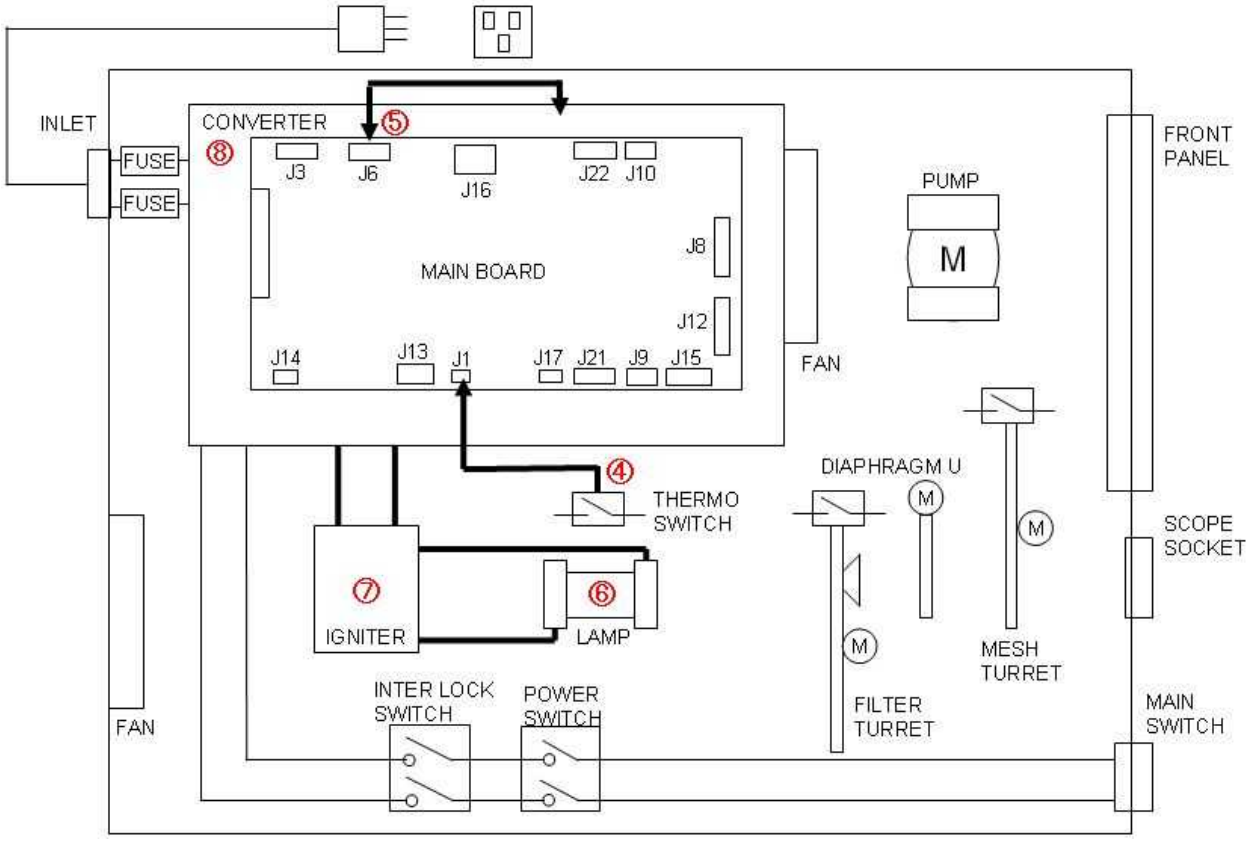
No	Estimated failure location		Inspection method
①	Input voltage	1	Verify the voltage of wall socket. * Conformity with commercial power voltage standard. Tester
②	Power Cable	1	Connect the Power Cable to wall socket and verify voltage at inlet side. * Conformity with commercial power voltage standard. Tester
③	Body Inlet Plug	1	Confirm that the inlet plug is not bend or distorted. Visual inspection
④	Fuse	1	Confirm that the fuse was not burned out. Tester
⑤	Power Switch	1	Confirm that the Power Switch inside the equipment is pushed when the Main Switch on the Front Panel is pushed. Visual Inspection
		2	Confirm conductivity of the Power Switch when power is ON. Tester
⑥	Interlock Switch	1	Confirm that the switch is pushed by the Lamp Door. Visual Inspection
		2	Confirm conductivity of the Interlock Switch when power is ON. Tester Interlock Jig
⑦	Flat Cable	1	Verify connection of the Flat Cable Visual Inspection Main Board (J12) <--> Front Panel

⑧	Main Board Converter	1	Confirm that the input voltage to Main Board J16 is correct. Tester J16 (Main Board) <- -> Converter) 1pin : DC +15V±0.75V 2pin : DC +12V±0.6V 3pin : DC + 5V±0.25V 4pin : GND 5pin : DC -15V±0.75V YES → Replace Main Board NO → Replace Converter
⑨	Power Switch LED	1	Confirm that the Power Switch LED is lit: NO → Replace the Power Switch LED
⑩	Front Panel Unit	1	Confirm that the Front Panel of LED is lit: NO → Replace the Front Panel

2-2 Lamp failure

Xenon Lamp of light source not lit

2-2-1 Block diagram



2-2-2 Estimated location of failure

No	Estimated failure location	Inspection method	
①	Power input failure		Refer to 2-1
②	Emergency Lamp Malfunction		Refer to 2-16
③	Panel malfunction		Refer to 2-13
④	Thermo Switch / Main Board	1	Status of Thermo Switch when buzzer is sounding Thermo Switch • Less than 85℃ Conductive • 85℃ or higher Non-conductive Within standard -> Replace Main Board Out of standard -> Replace Thermo Switch

⑤	Main Board	1	Confirm that the signals in the Main Board are correct: Main Board J6/2Pin HIGH : XENON Lamp lit *HIGH : approx. 5 V LOW : XENON Lamp not lit H -> L when the Ignition Button is pushed ON to turn on Lamp L -> H when the Ignition Button is pushed OFF to turn off Lamp (Long push) NO → Replace Main Board
⑥	Surrounding the Lamp	1	Verify Lamp attachment. • Confirm that Lamp is attached properly. • Confirm that heat compound is applied properly. • Confirm that the area surrounding the Xenon lamp contacts is clean. * Cleaning is required if the discoloration is found.
		2	Check the area surrounding the Lamp House. • No unnecessary objects (e.g. metal chip) • No leakage of high voltage pulse • Check connection with Terminal F and Terminal R • Confirm there is enough distance between Round Terminal and Lamp House
⑦	Xenon Lamp / Igniter	1	Clattering noise at ignition YES → Replace Xenon Lamp NO → Igniter
⑧	Converter	1	Xenon Lamp not lit even after procedures 1-7 YES → Replace Converter

2-3 Lamp malfunction

Lamp going out

2-3-1 Estimated location of failure

No	Estimated location failure	Inspection method	
①	Log	1	Verify frequency of Lamp failure errors. * Refer to EVIS communication Checker for verification method. Evis communication checker CLV-180 Communication Cable
②	Power input failure		Refer to 2-1
③	Emergency Lamp malfunction		Refer to 2-16
④	Cooling Malfunction		Refer to 2-6
⑤	Lamp failure		Refer to 2-2

2-4 Scope connection failure

Scope not mounting

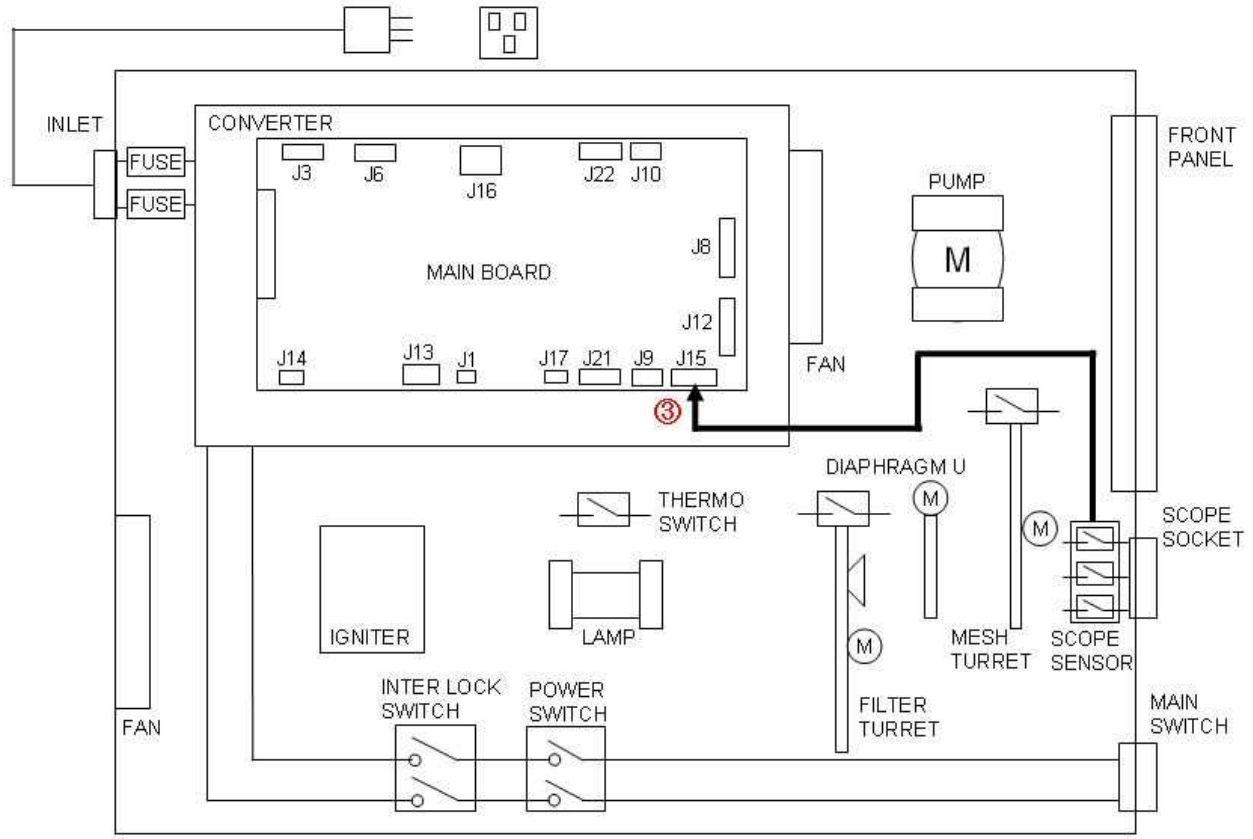
2-4-1 Estimated location of failure

No	Estimated location failure	Inspection Metod	
①	Scope	1	Confirm that Scope is a compatible one.
②	Scope Socket	1	Confirm that the Scope Socket is free of abnormalities. * Insert Heat Cover Positioning Jig to Scope Socket and confirm that it's not caught inside. Heat Cover Positioning Jig

2-5 High-brightness malfunction

Not changing to high-brightness function mode

2-5-1 Block diagram



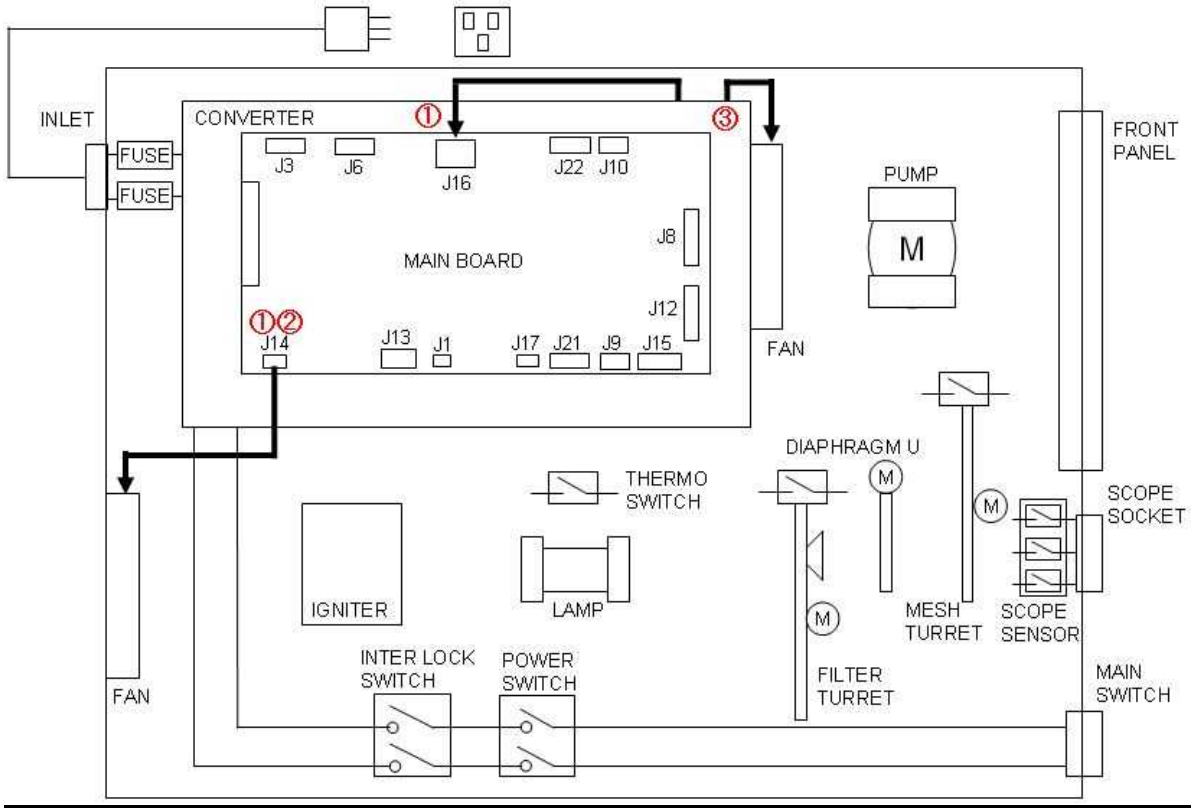
2-5-2 Estimated location of malfunction

No	Estimated location failure		Inspection Method
①	High-brightness scope	1	Confirm that scope is compatible for high-brightness.
②	Panel malfunction		Refer to 2-13
③	Scope Sensor / Main Board	1	Confirm following status of J15 connector on Main Board when high-brightness scope is connected: Tester Main Board J15 When high-brightness scope is connected Pin 2: HIGH Pin 5: LOW Pin 8: LOW Pin 9: GND * HIGH: approx. 5 V YES → Replace Main Board NO → Replace Scope Sensor

2-6 Cooling Fan malfunction

Cooling Fan not rotating

2-6-1 Block diagram



2-6-2 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Connector	1	Verify connection of connector. <Lamp House Fan> Converter <--> (J16) Main Board (J14) <--> Fan
②	Lamp House Fan / Main Board	1	Confirm output of +12 V at Main Board J14/Pin 1. YES → Replace Lamp House Fan NO → Replace Main Board
③	Converter	1	Confirm output of +12 V at connector of Converter Fan. NO → Replace Converter

2-7 Shield malfunction at Scope removal

Light not changing to minimum or no change in volume when removing Scope

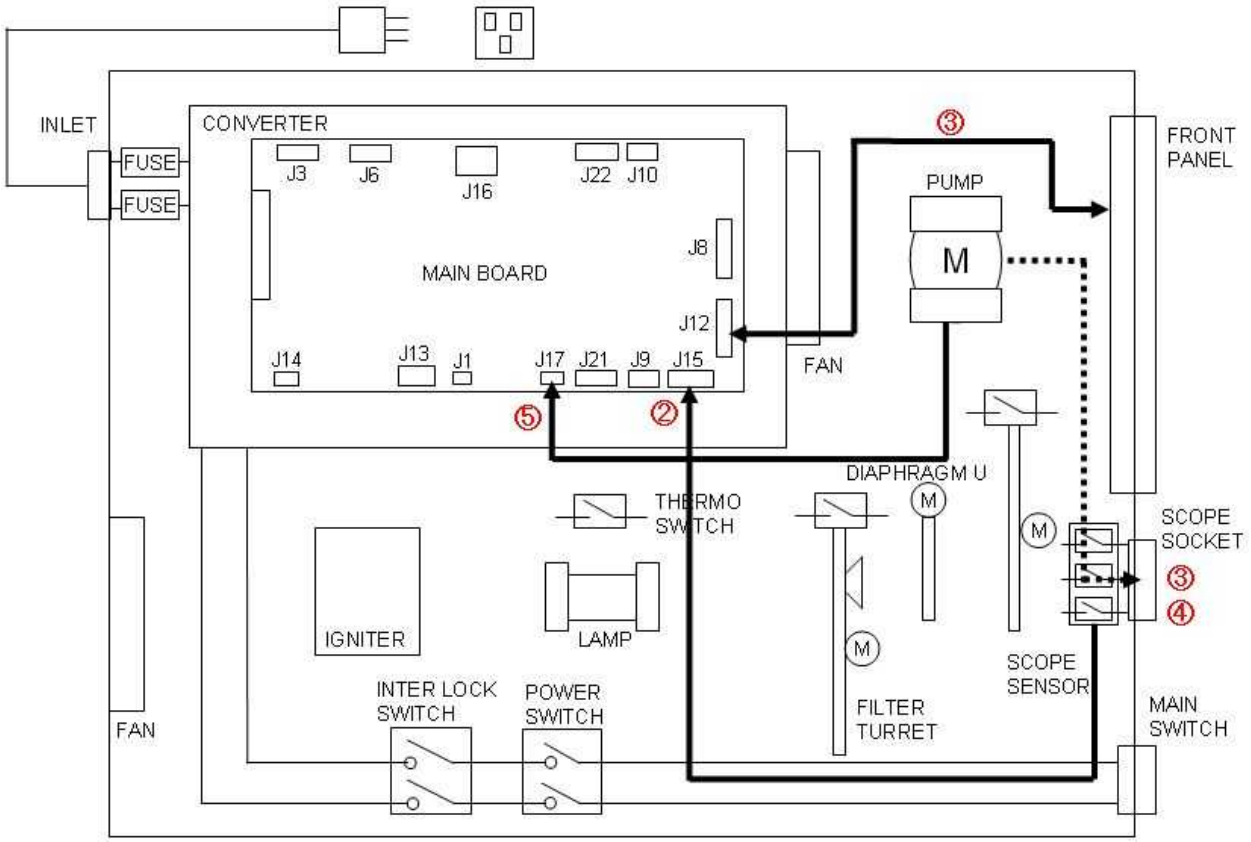
2-7-1 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Shield Plate	1	Confirm Shield Plate function. *Insert Heat Cover Positioning Jig to Scope Socket and verify movement of Shield Plate Heat Cover Positioning Jig NO → Replace Shield Plate

2-8 Pump malfunction

No movement of the pump, or no change in air supply volume when switching the pump ON.

2-8-1 Block diagram



2-8-2 Estimated location of failure

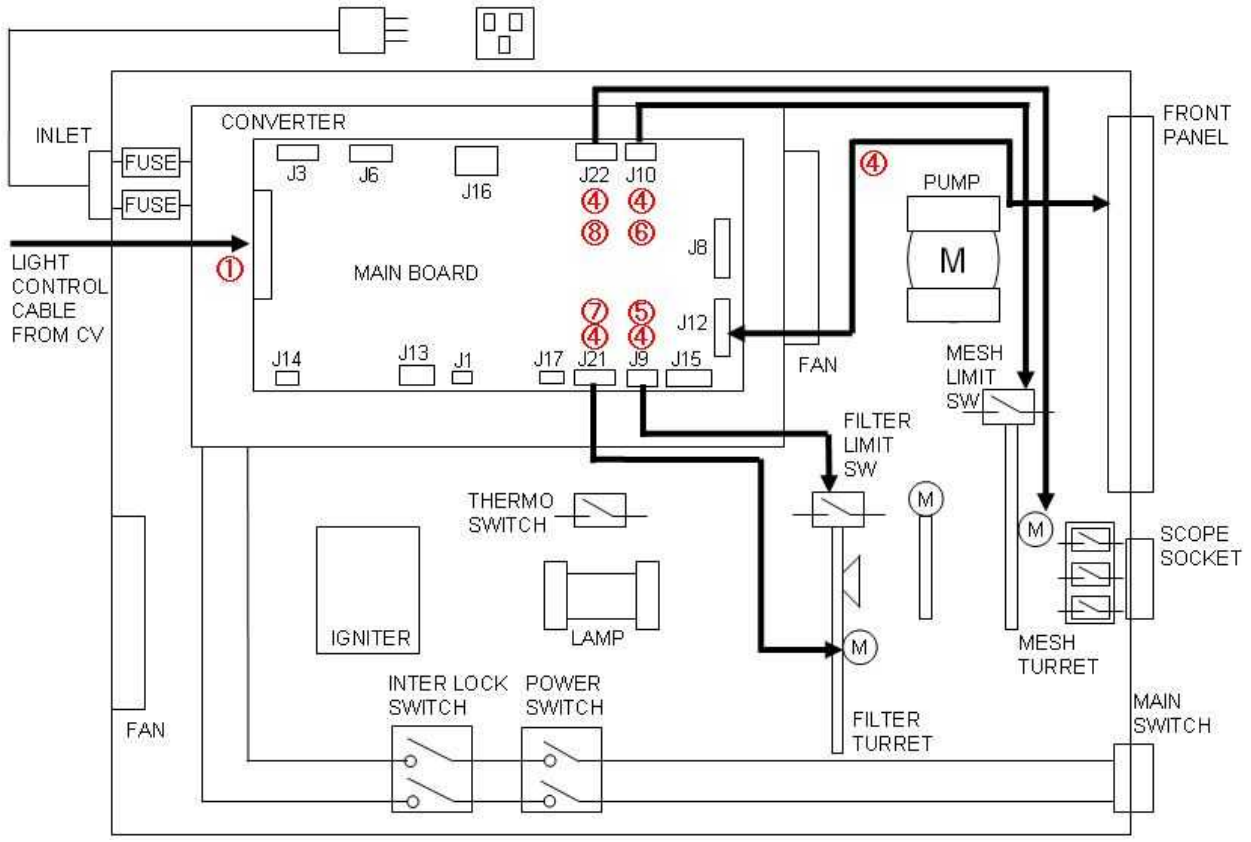
No	Estimated location failure		Inspection Method
①	Scope	1	Confirm that scope is compatible GI scope. *EVIS 100,130, 160, 180 Series
②	Scope Sensor	1	Set Pump Switch to "H".
		2	Confirm following status of J15 on Main Board: J15 on MAIN BOARD When GI scope is connected Pin 2: LOW Pin 5: HIGH Pin 8: LOW Pin 9: GND * HIGH: approx. 5 V NO → Replace Scope Sensor
③	Harness/ Tube	1	Verify Harness connection. Main Board (J12) <--> Front Panel
		2	Verify hose connection.
		3	Check stuffing of Reverse Stop Valve
		4	Verify rubber of Air Supply Mouthpiece.
④	Pump	1	Confirm that air supply pressure / volume conform standards when changing air supply setting to L, M, and H. Air Flow Checker Max pressure (at H) 53.9 kPa or less (air supply pressure locked) Volume L: 0.5 L/min or more (output pressure: set as 19.6-20.6 kPa) M: 0.68 L/min or more (output pressure: set as 21.6-22.6 kPa) H: 1 L/min or more (output pressure: set as 26.5-27.5 kPa)

⑤	Main Board / Pump	1	Confirm that the output voltage of Main Board J17/Pin 1 conforms to standards when changing air supply setting to L, M, and H. Main Board J17/Pin 1 Air supply level: Output voltage L: +5 V M: +8 V H: +12 V
			YES → Replace Pump NO → Main Board

2-9 Filter Change Malfunction

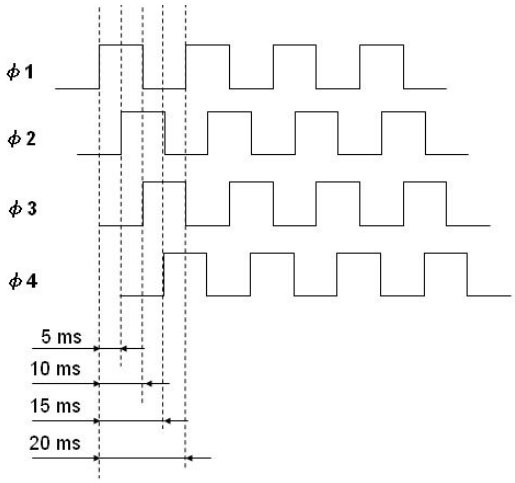
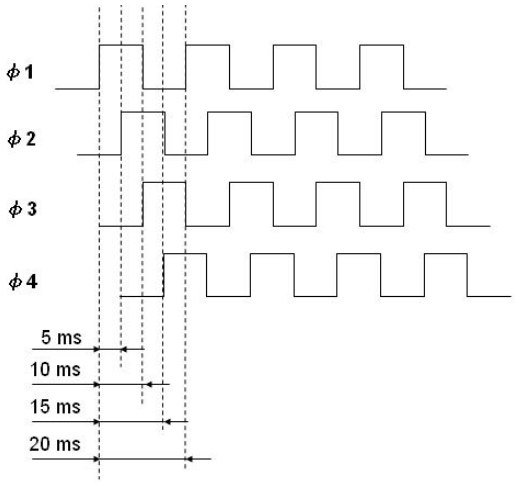
Turret Board not rotating when Mode Switch is pushed

2-9-1 Block diagram



2-9-2 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Light Source Cable	1	Verify connection of CV and Light Source Cable (MAJ-1411). Visual Inspection
②	Scope / Camera Head	1	Confirm that scope or camera head is compatible with special light.
③	Panel Lamp failure	1	Refer to 2-13
④	Harness	1	Verify connection of Harness. Visual Inspection Main Board (J22) <--> Mesh Turret Unit Main Board (J21) <--> Filter Turret Unit Main Board (J10) <--> Mesh Limit Switch Unit Main Board (J9) <--> Filter Limit Switch Unit Main Board (J12) <--> Front Panel
⑤	Filter Limit Switch	1	Confirm that J9/Pin 1 change to LOW when Filter Limit Switch is pushed. NO → Replace Filter Limit Switch
⑥	Mesh Limit Switch	1	Confirm that J10/Pin 1 change to LOW when Mesh Limit Switch is pushed. NO → Replace Mesh Limit Switch

⑦	Filter Turret Unit / Main Board	1	Enter Brightness Manual Mode. Input power by pushing "AIR Switch" and "Brightness UP Switch".
		2	Set Filter position at will through MODE Switch and generate control signal through AIR Switch. Then confirm following wave form at J21 of Main Board: Oscilloscope J21 Connector Pin 1 : φ1 Pin 2 : φ2 Pin 5 : φ3 Pin 6 : φ4  (Range : 5 V 10 ms) YES → Filter Turret Unit NO → Main Board
⑧	Mesh Turret Unit / Main Board	1	Enter Brightness Manual Mode. Input power by pushing "AIR Switch" and "Brightness UP Switch".
		2	Set Filter position at will through Counter Reset Switch and generate control signal through AIR Switch. Then confirm following wave form at J22 of Main Board: Oscilloscope J22Connector Pin 1 : φ1 Pin 2 : φ2 Pin 5 : φ3 Pin 6 : φ4  (Range : 5 V 10 ms) YES → Mesh Turret Unit NO → Main Board

2-10 Outgoing light failure

No light going out from Scope

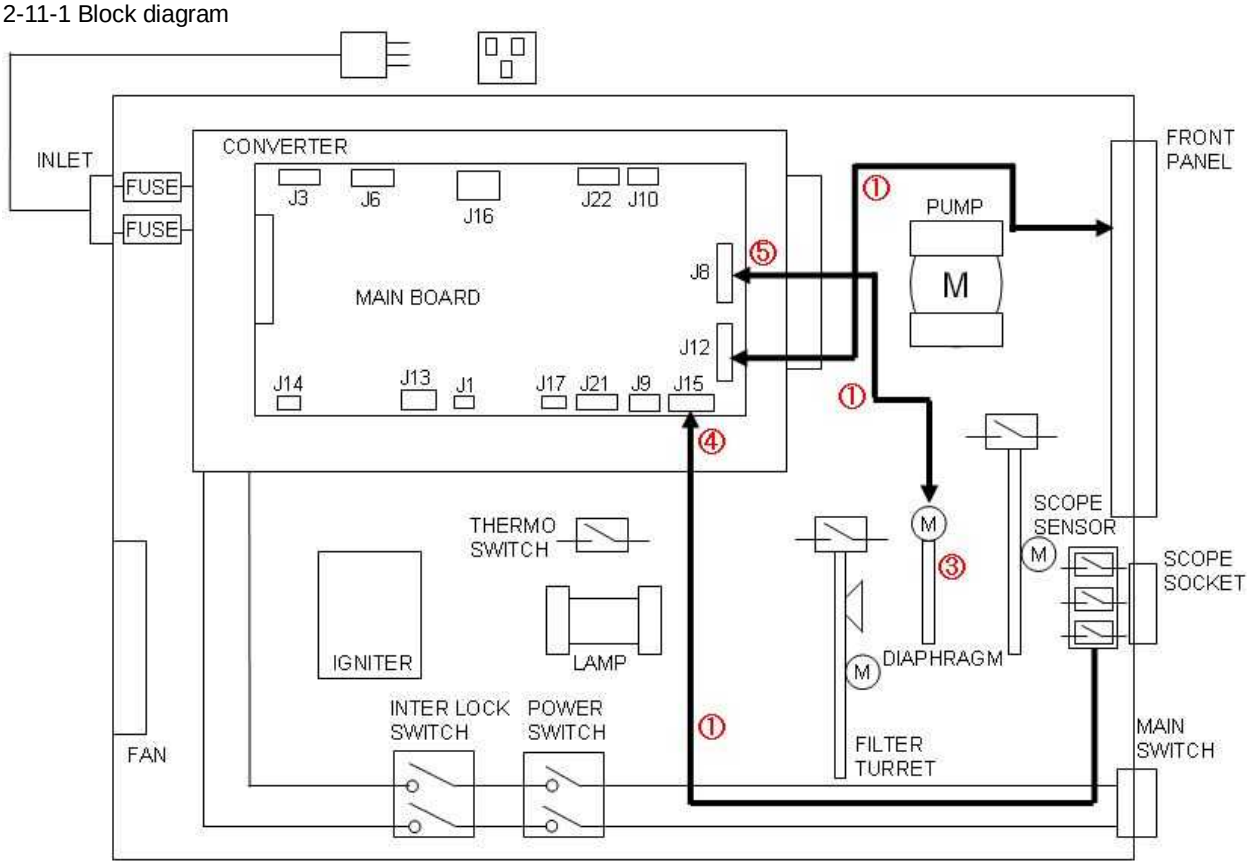
2-10-1 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Scope	1	Confirm that Scope is a compatible one.
②	Power input failure		Refer to 2-1
③	Lamp failure		Refer to 2-2
④	Filter change malfunction		Refer to 2-9
⑤	Manual Brightness failure		Refer to 2-11

2-11 Manual Brightness failure

View field is dark or excessively light.

2-11-1 Block diagram



2-11-2 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Harness	1	Verify connection of Harness. Main Board (J12) -> Front Panel Main Board (J8) -> Iris Unit
②	Panel light malfunction		Refer to 2-13
③	Iris Unit	1	Confirm that Iris Unit is mounted without distortion or inclination. Iris Wing Positioning Jig
④	Scope Sensor	1	Confirm the following status of Main Board at J15 when Scope Dummy is connected to Scope Socket: •GI Scope GI Scope Dummy J15 Pin 2：L Pin 5：H Pin 8：L • SP Scope Heat Cover Positioning Jig Pin 2：L Pin 5：L

			Pin 8：H •High-brightness SP Scope High brightness SP Scope Dummy Pin 2：H Pin 5：L Pin 8：L *H：approx. 5 V
			NO：Replace Scope Sensor
⑤	Iris Unit / Main Board	1	Confirm following status of J8 when Brightness is set to manual and light quantity from minimum to maximum: J8 Pin 2 ：Voltage change minus to plus.
			YES：Replace Iris Unit NO ：Replace Main Board

2-12 Automatic Brightness failure

View field is dark or excessively light

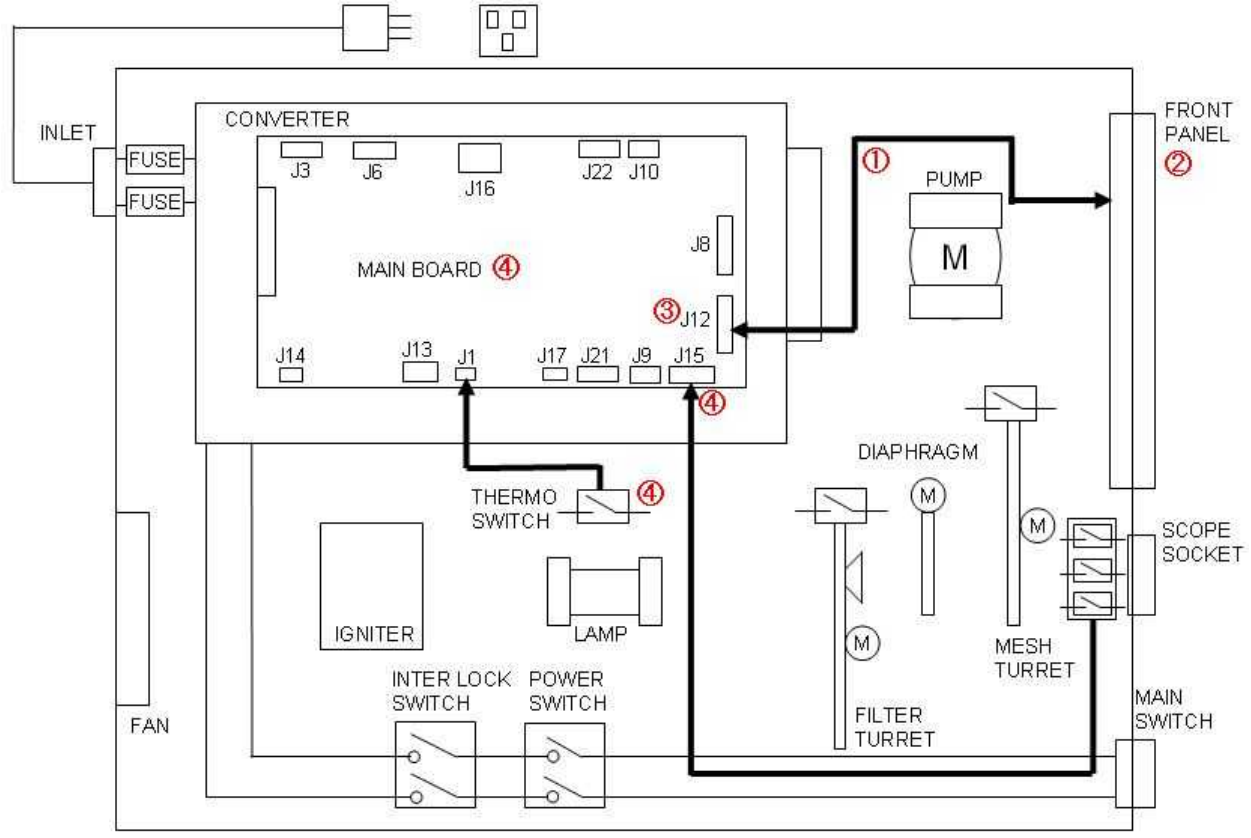
2-12-1 Estimated location of failure

No	Estimated location failure		Inspection Method
1	Light Source Cable CV-180		Confirm connection to system capable of automatic Brightness. CV-180 Light Source Cable
2	Manual Brightness failure		Refer to 2-11
3	Main Board		Confirm following status of J8 when scope move to the distance from vicinity: J8 Pin 2 ：Voltage change minus to plus.
			TES ：Replace Iris Unit NO ：Replace Main Board

2-13 Panel Malfunction

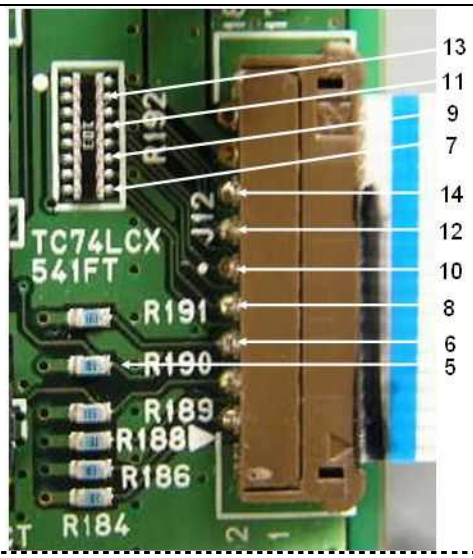
@ No change in LED when switch is pushed, or LED display not lit.
@ The whole Front Panel blinks not accepting buttons.

2-13-1 Block diagram



2-13-2 Estimated location of failure

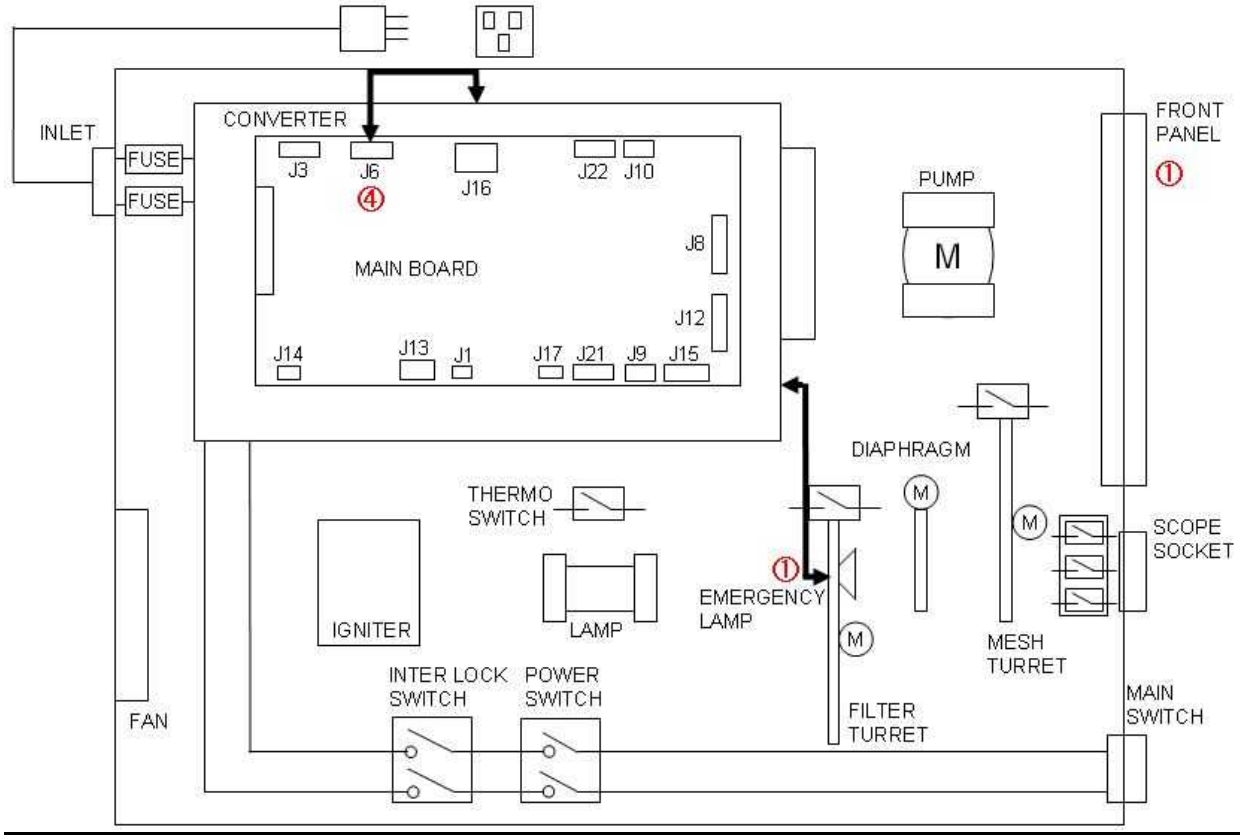
No	Estimated location failure	Inspection Method	
1	HARNESS	1	Verify connection of Harness. Main Board (J12) -> Front Panel
2	FRONT PANEL HARNESS	1	LED not completely lit when POWER is switched ON. No LED lit : Replace Harness Some LED lit : Replace Front Panel
3	MAIN BOARD FRONT PANEL	1	Confirm that the Pin corresponding to Main Board J12 change to H when button is pushed. *H: approx. DC +5 V Tester J12 Pin 5 ：AIR Pin 6 ：MODE Pin 7 ：AUTO/MANUAL Pin 8 ：BRIGHTNESS UP Pin 9 ：BRIGHTNESS DOWN Pin 10：LEVEL Pin 11：TRANSILLUMINATION Pin 12：LUMP Pin 13：COUNTER RESET Pin 14：HIGH

			 YES ： Replace MAIN BOARD NO ： Replace FRONT PANEL
4	SCORP SENSOR THERMO SENSOR MAIN BOARD	1	Front Panel blinks immediately after switching Power ON not accepting buttons. • Pin of Thermo Sensor not conductive: Replace Thermo Sensor Signals from Scope Sensor are not the following when each type of scope is connected to Scope Socket: Replace Scope Sensor Main Board J15 • GI Scope GI Scope Dummy J15 Pin 2：L Pin 5：H Pin 8：L • SP Scope Heat Cover Positioning Jig Pin 2：L Pin 5：L Pin 8：H • High brightness SP Scope High brightness SP Scope Dummy Pin 2：H Pin 5：L Pin 8：L *H：approx. 5 V • None of the above cases applicable: Replace Main Board

2-14 Emergency Lamp malfunction

Emergency Lamp not lit automatically when Xenon Lamp is off.

2-14-1 Block diagram



2-14-2 Estimated location of failure

No	Estimated location failure		Inspection Method
①	EMRGENCY LAMP HARNESS	1	Confirm that Emergency Lamp on Front Panel is blinking. YES ： Replace EMRGENCY LAMP Replace HARNESS(CONVERTER → EMERGENCY LAMP)
②	Panel malfunction		Refer to 2-13
③	Filter change malfunction		Refer to 2-9
④	CONVERTER MAIN BOARD	1	Confirm status of following pins at Main Board J6 when Emergency Lamp is not blinking: • (When Xenon Lamp is OFF) 2 ： H(Xenon Lamp ON order: ON order at L. L maintain while ON) 3 ： H(Emergency Lamp ON: L when ON) 6 ： H(Xenon Lamp ON: L when ON) 7 ： L(Emergency Lamp: L when no break down) Replace MAIN BOARD • (When Emergency Lamp is ON) 2 ： H 3 ： L 6 ： H 7 ： L Replace CONVERTER • (When Xenon Lamp is working normally) 2 ： L 3 ： H 6 ： L 7 ： L Replace CONVERTER or MAIN BOARD • Others Replace CONVERTER or MAIN BOARD

2-15 Back-up malfunction

Settings are not saved after switching Power OFF

2-15-1 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	MAIN BOARD	1	Replace MAIN BOARD

2-16 Lamp Life Meter Reset malfunction

Not changing to "0" when Lamp Life Meter Reset switch is pushed.

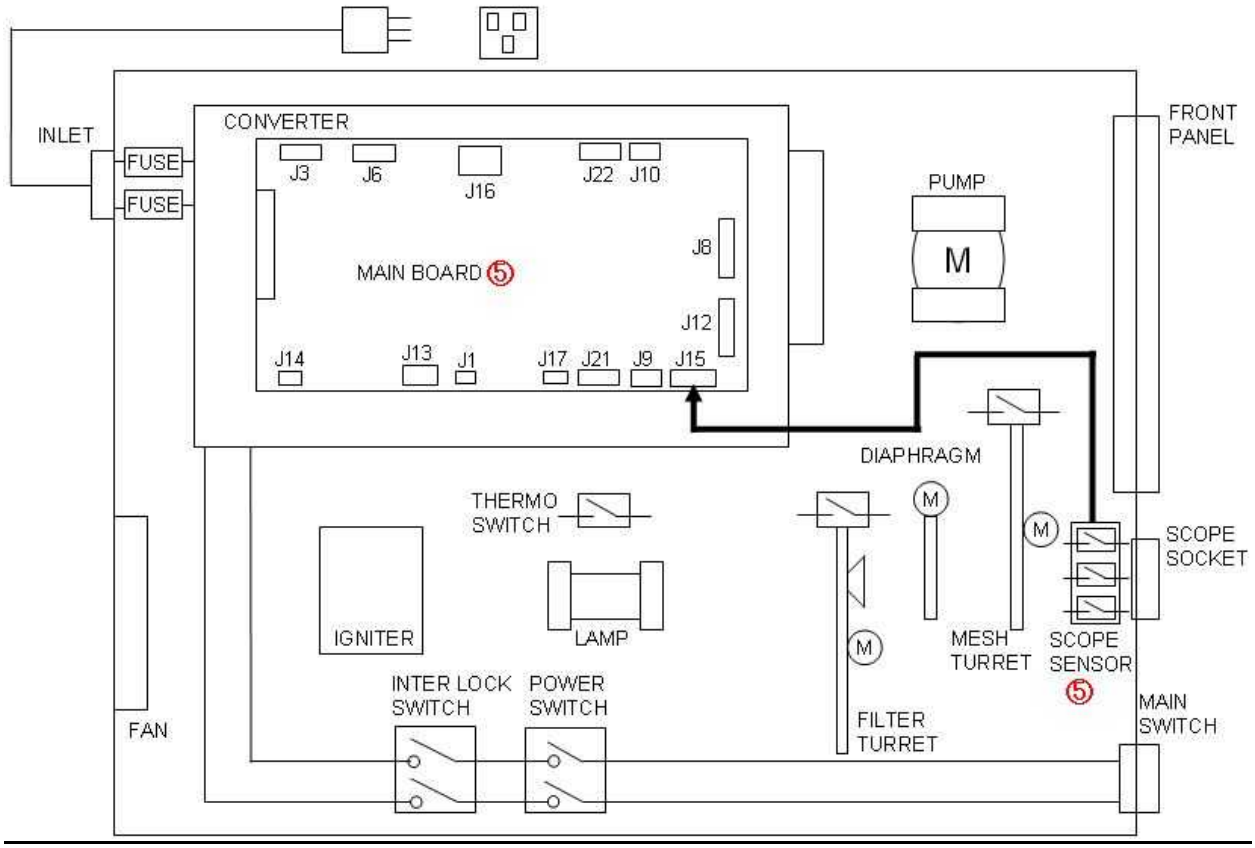
2-16-2 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	XENON LAMP	1	Confirm that Xenon Lamp is OFF.
②	Panel malfunction		Refer to 2-13
③	MAIN BOARD		Dose not reset when pushing Reset switch. YES ： Replace MAIN BOARD

2-17 Transillumination malfunction

No change in light quantity when Transillumination switch is pushed.

2-17-1 Block diagram



2-17-2 Estimated location of failure

No	Estimated location failure	Inspection Method	
①	Scope	1	Confirm that GI Scope is connected. GI Scope or GI Scope Dummy
②	Panel Malfunction		Refer to 2-13
③	Filter Change Malfunction		Refer to 2-9
④	Manual Brightness malfunction		Refer to 2-11
⑤	SCOPE SENSOR MAIN BOARD		Transillumination switch lit: NO → SCORP SENSOR **交換** YES → MAIN BOARD

Chapter 3: Precaution on disassembly and reassembly

1. Warning

(1) To prevent potentially dangerous health risks, select a well-ventilated location when using organic solvents.
(2) To prevent potentially dangerous health risks, rinse your body well under running water to wash away organic solvents if any adhere to your body.
(3) When using organic solvents, handle flames such as those in alcohol lamps with caution since these solvents may ignite if exposed to flame. In addition, be sure to put the lids on containers of organic solvents before leaving the workbench.

2. Caution

(1) Attach parts in their original configurations during reassembly. Pay particularly close attention to the following items:
  a) Insulators, such as insulating tubes and mylar sheets
  b) Cable rerouting, clamps, and cores
  c) Shielded parts and covered screws with toothed washers
  Failure to attach parts in their original configurations, even if it does not impair product functions, poses the risk of noise radiation and reduced electrical safety.
(2) Exercise extreme caution to prevent possible injuries during reassembly. Be particularly careful to avoid injuring yourself on the sharp edges of metal parts.
(3) Always use the specified components. The product is comprised of components designed to withstand anticipated vibration, heat, and voltage. When replacing any component, make sure the replacement component has the same characteristics as the original component, and always use the specified components.
(4) Use the specified jigs and tools. The use of any unspecified jigs or tools may damage the AR-TZ2 or the components under repair and prevent it from functioning properly or performing optimally.
(5) Be careful to avoid electrocution. Only remove the cover enclosing the OTV-SP1C after turning off the power and unplugging the power cord, unless it is critically important not to do so.
(6) Be careful about residual voltage. Even if the unit is turned off before the cover is opened, keep in mind that the capacitor may still hold a charge, so take care to avoid electrocution.
(7) Guard against static electricity. If it is necessary to touch the boards or other electrical components, to prevent damaging them, use a conductive mat or wristband to discharge static electricity.

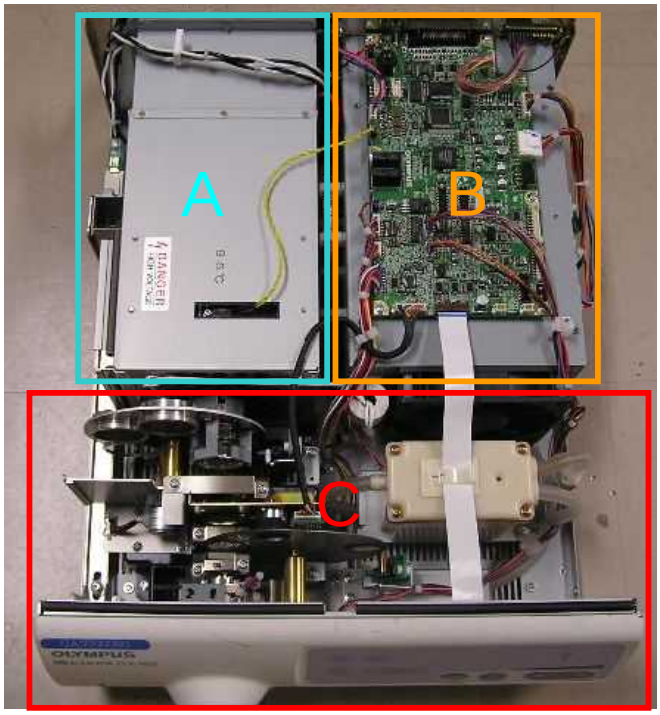
Chapter 4: Disassembly and Reassembly procedure

1. Jigs and Tools

No.	Name	Specification	Remark
1	Box bit	Size 5.5 mm	
2	Phillips bit (No1)		
3	Phillips bit (No2)		
4	Open head	10 mm, 14 mm	
5	Torque driver	0.02~0.15 [Nm]	
6	Torque driver	0.2~1.2 [Nm]	
7	Torque driver	0.6~2.6 [Nm]	
8	Long-nose Pliers		
9	Nipper		
10	Tweezers		
11	Filter retaining jig		
12	Diaphragm positioning jig		
13	Heat cover positioning jig		

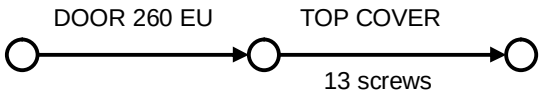
2. Areas

Disassembling procedure is described by 3 areas.

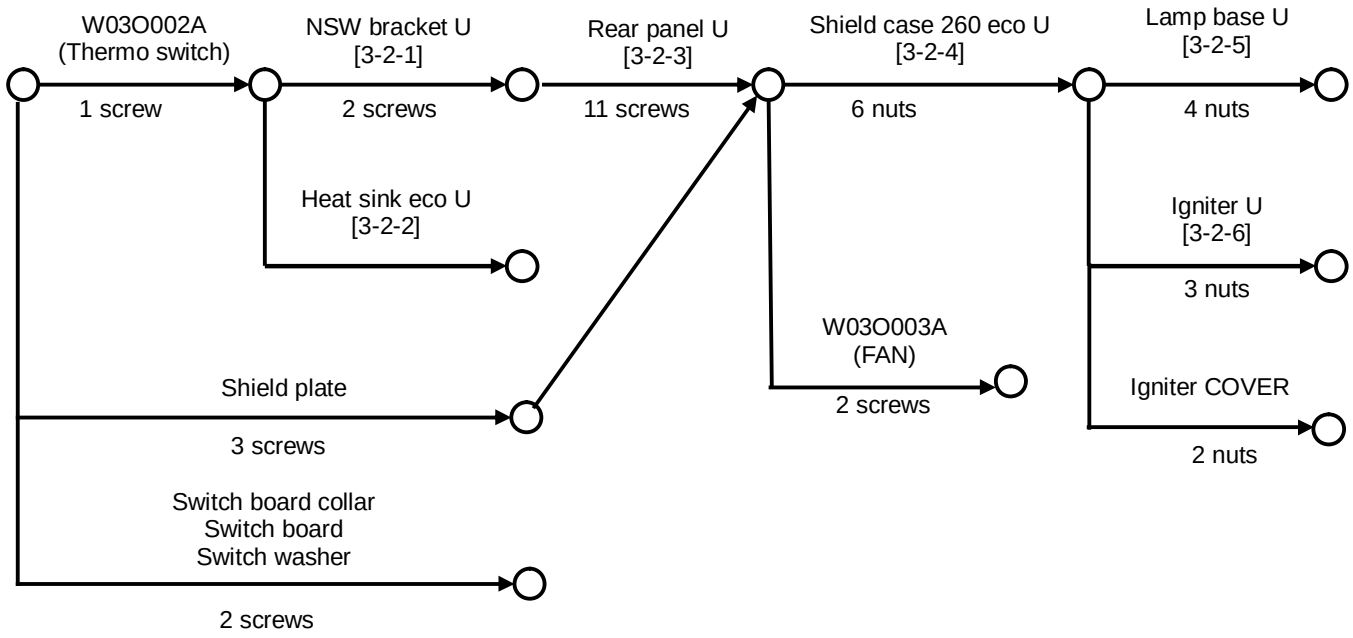


3. Disassembling and Reassembling procedure

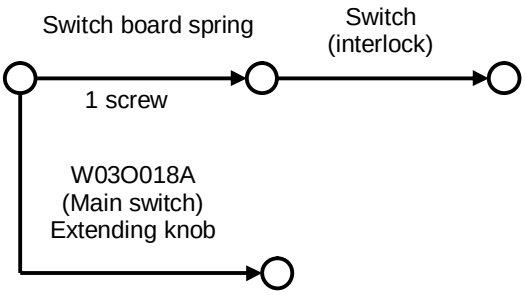
3-1 First step



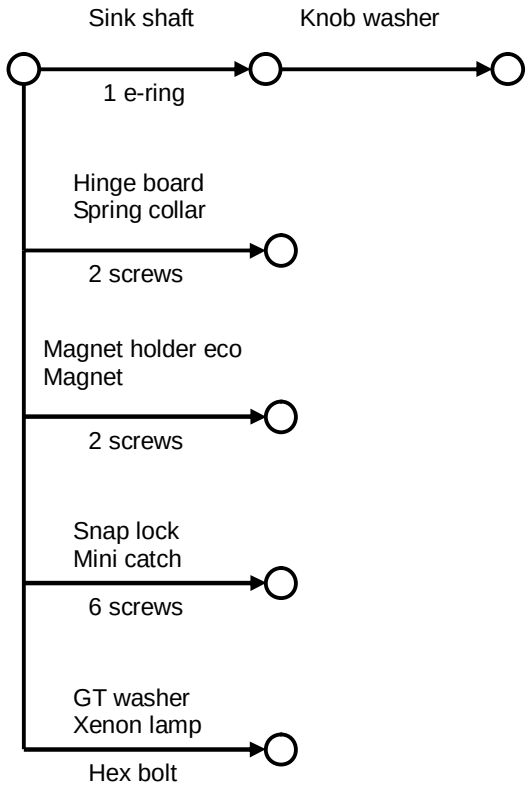
3-2 Area A



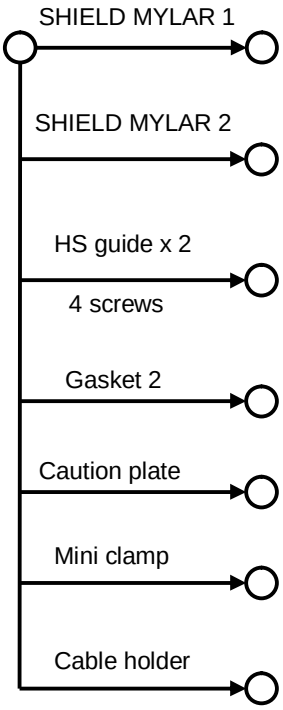
3-2-1 NSW bracket



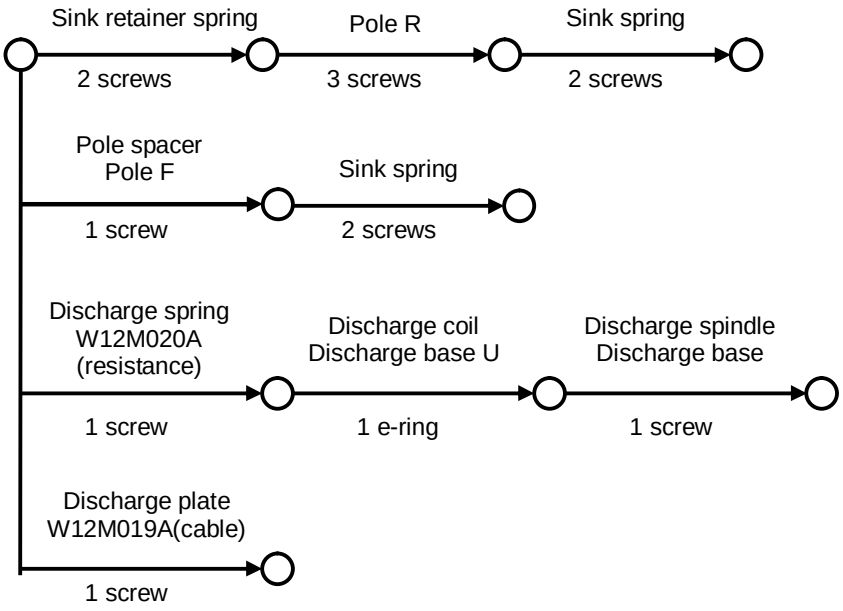
3-2-2 Heat sink eco U



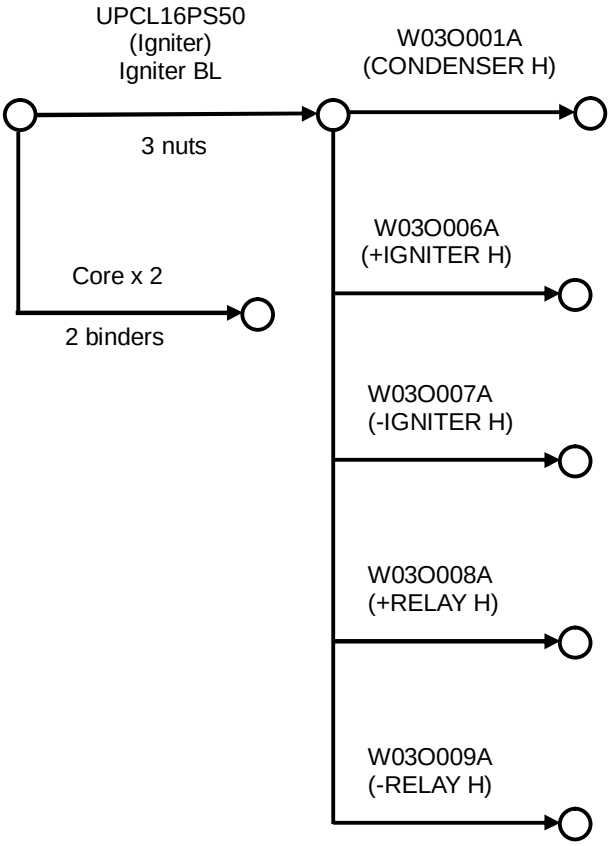
3-2-3 Shield case 260 eco U



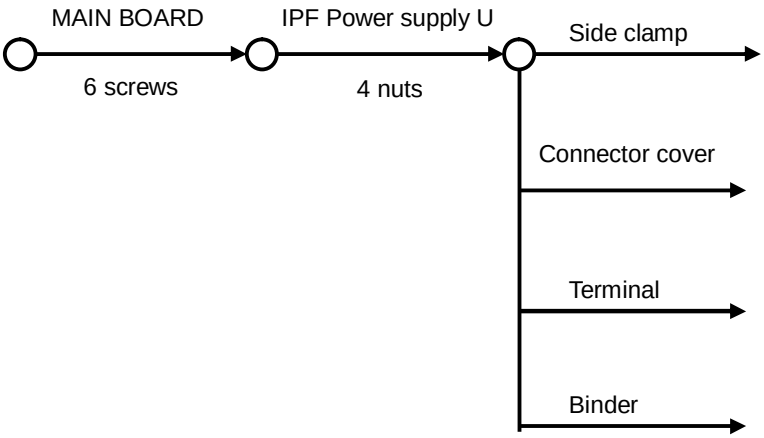
3-2-4 Lamp base U



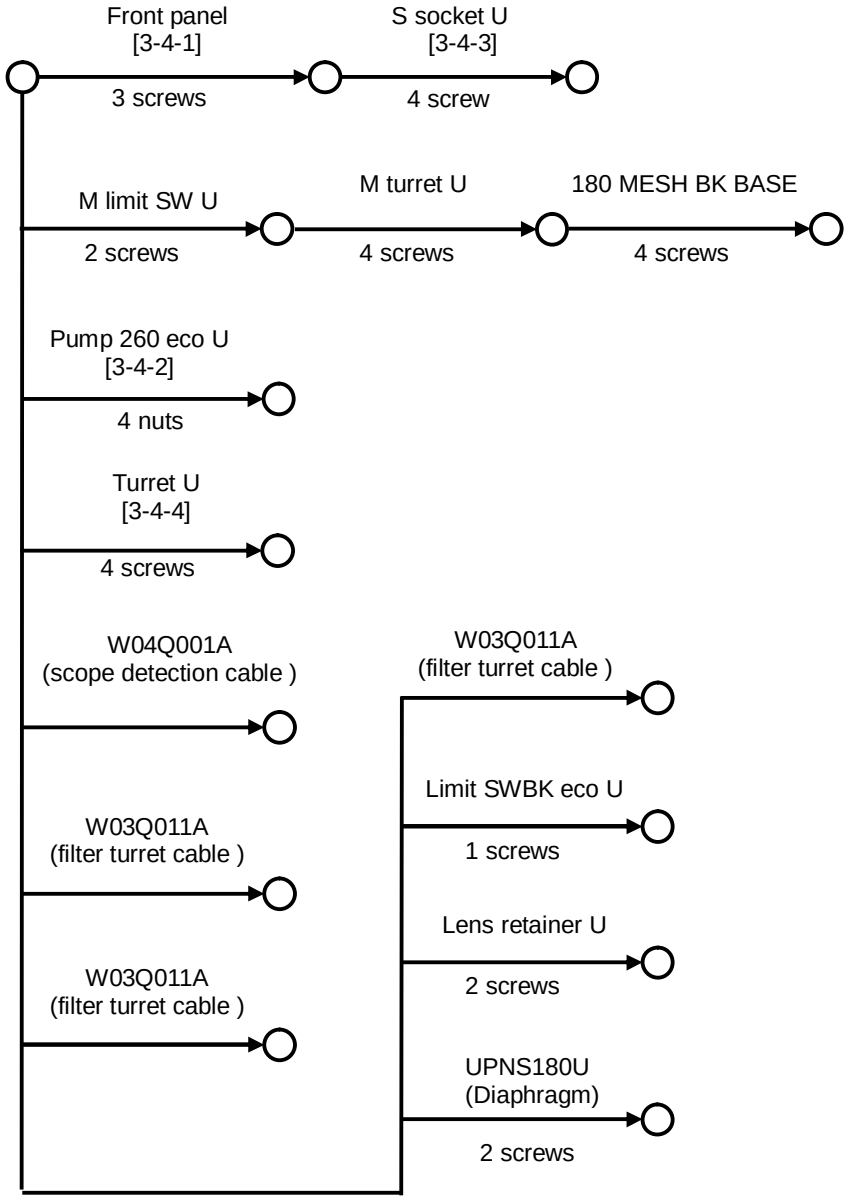
3-2-5 Igniter U



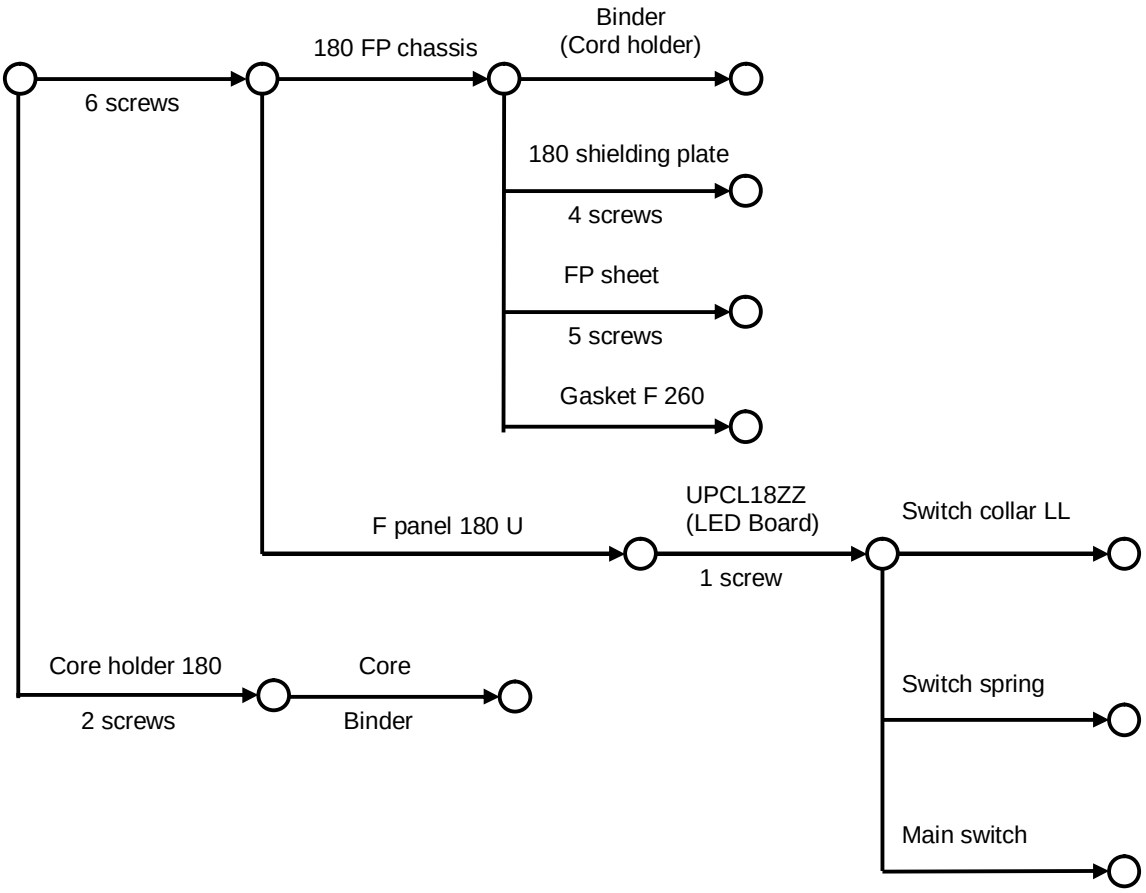
3-3 Area B



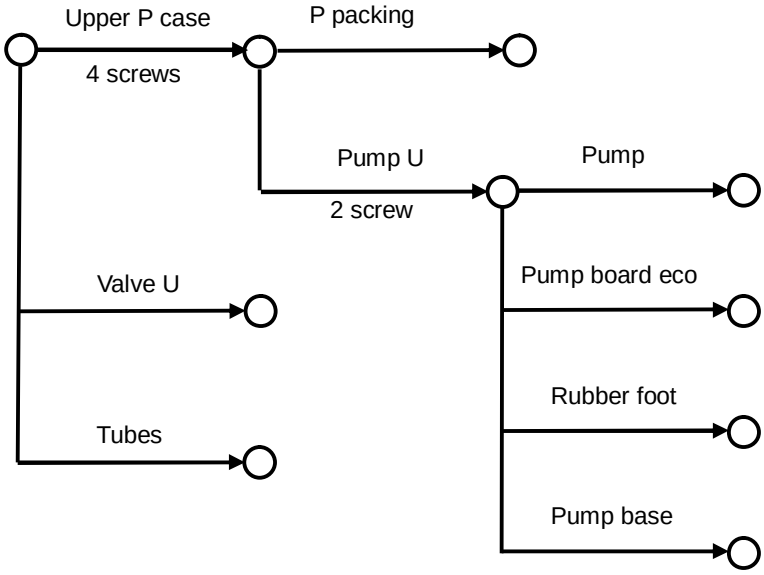
3-4 Area C



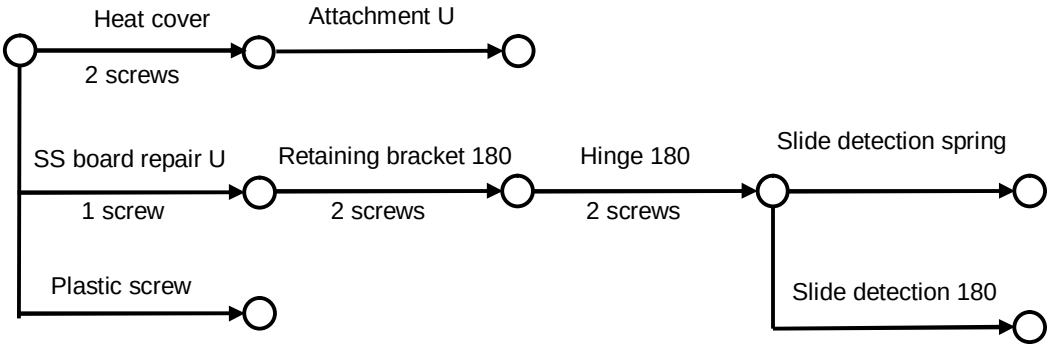
3-4-1 Front panel U



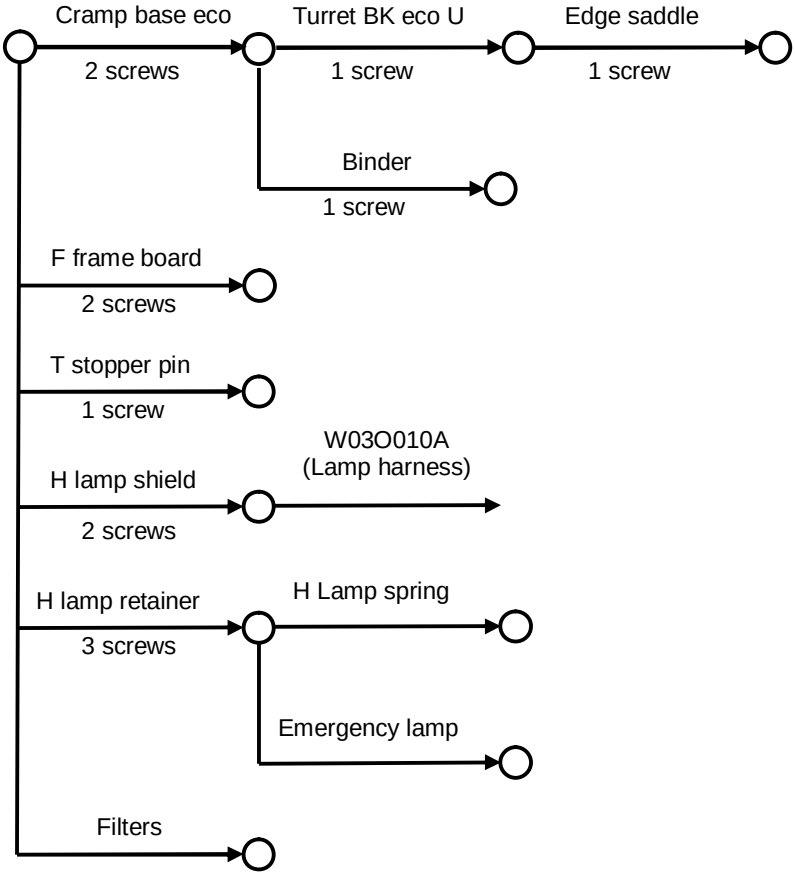
3-4-2 Pump 260 eco U



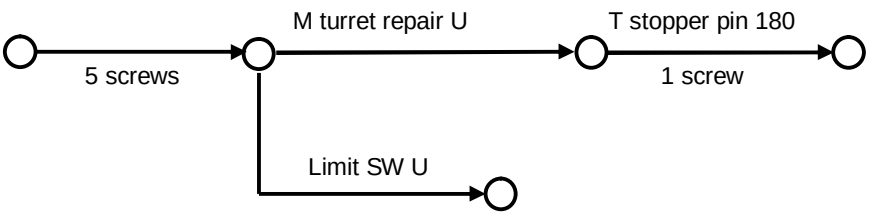
3-4-3 S socket U



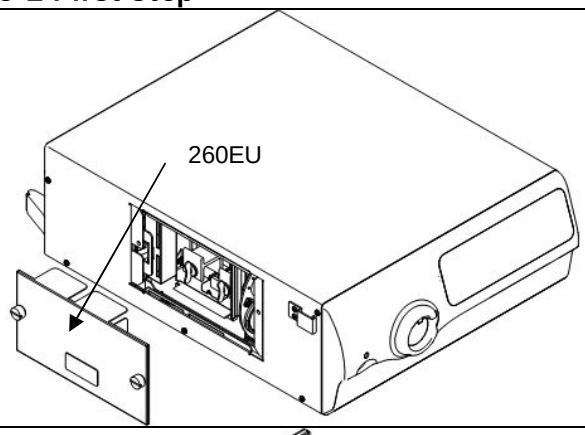
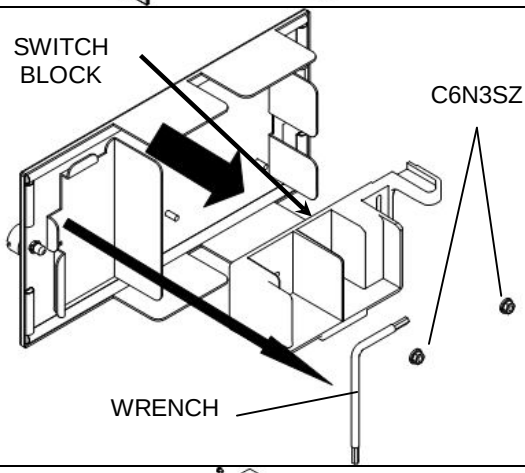
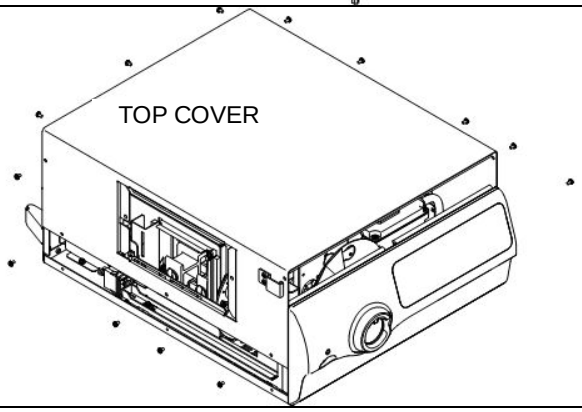
3-4-4 Turret U



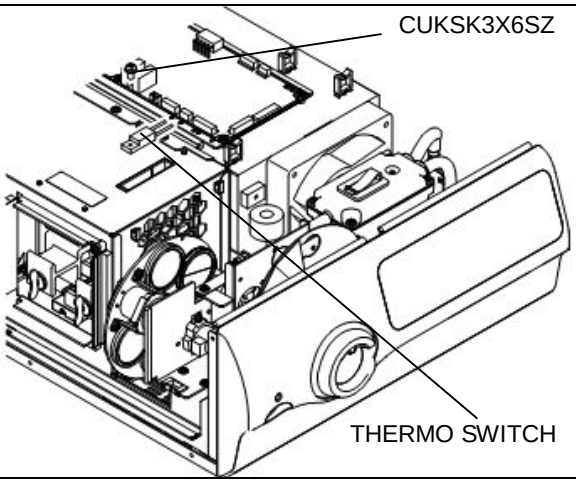
3-4-4 Turret U

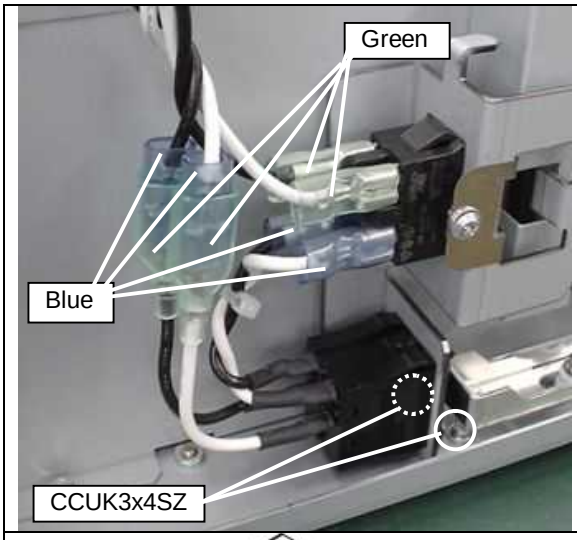


3-1 First step

	(1) Loosen the knot and take off 260EU
	(2) Take off WRENCH (3) Take off 2 NUTS (C6N3SZx2) and SWITCH BLOCK BOX bit (size 5.5 mm) Torque driver Tightening torque 0.6 Nm
	(4) Take off 13 SCREWS (HCBK3x6SAx10: 10 on the right and left side、3 on the back) and TOP COVER → 3-2 Area A → 3-3 Area B → 3-4 Area C Phillips bit (No.2) Torque driver Tightening torque 0.6 Nm

3-2 Area A

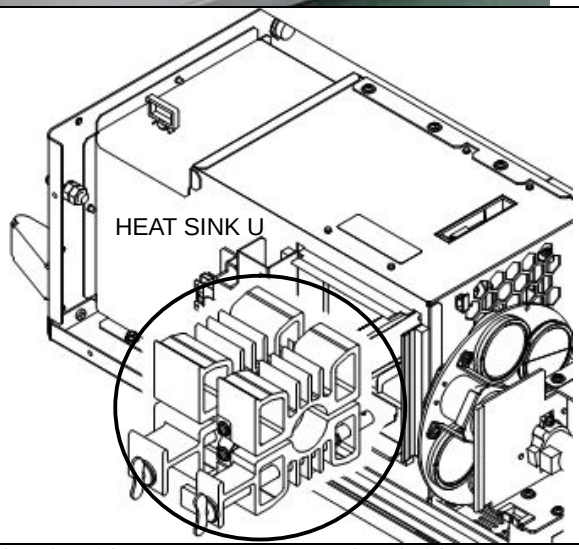
	(1) Take off 1 SCREW (CUKSK3X6SZ) and THERMO SWITCH Phillips bit (No.2) Torque driver Tightening torque 0.6 Nm



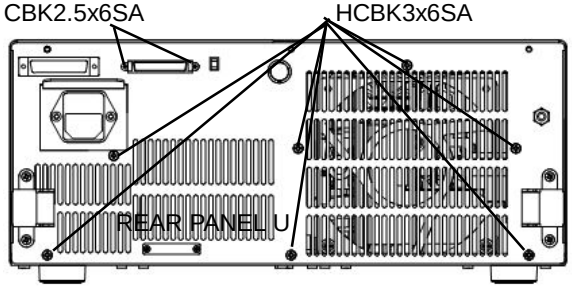
(2) Take off only junction part of FASTEN TERNMINAL

(3) Take off 2 SCREWS (CCUK3x4SZx2) and NSW BRACKET U

Phillips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

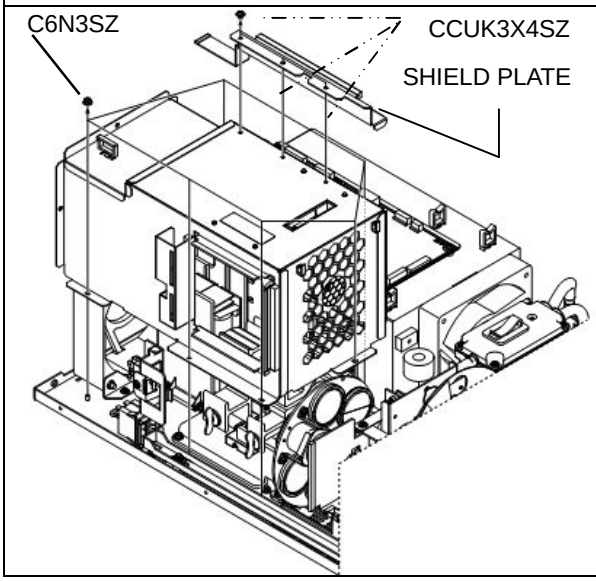


(4) Take off HEAT SINK U
→ Go to 3-2-2



(5) Take off 9 SCREWS (HCBK3x6SA:7, CBK2.5x6SA:2) and REAR PANEL U
→ Go to 3-2-3

Phillips bit (No.1)
Torque driver
Tightening torque 0.33 Nm
Phillips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

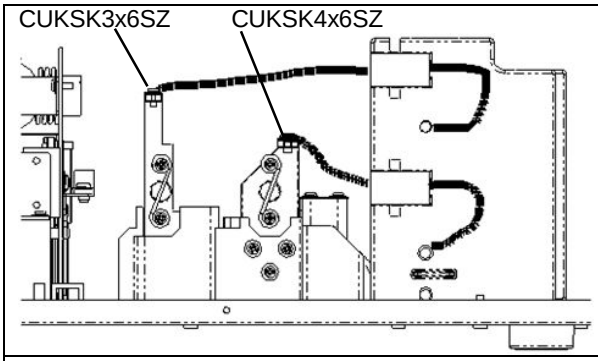


(6) Take off 3 SCREWS (CCUK3X4SZ) and SHIELD PLATE

Philips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

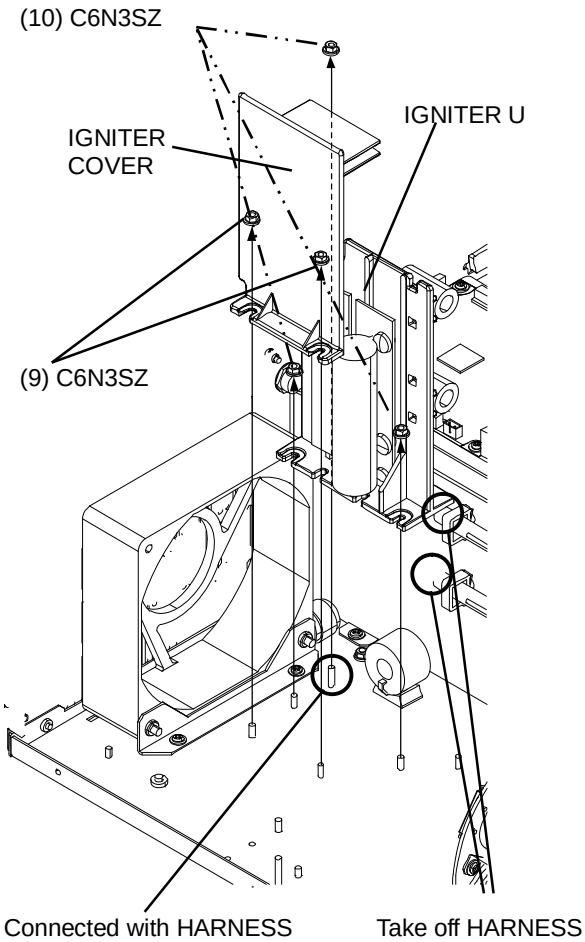
(7) Take off 6 NUTS (C6N3SZ) and SHIELD CASE 260 U
→ Go to 3-2-4

Box bit(Size 5.5 mm)
Torque driver
(Tightening torque:0.6 Nm)



(8) Take off 2 SCREWS (CUKSK3x6SZ, CUK¥SK4x6SZ) , and adjust HARNESS which is connected with LAMP BASE U

Phillips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

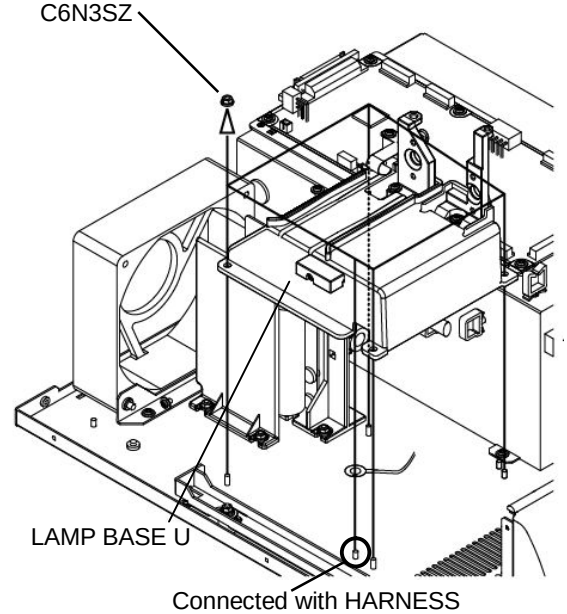


(9) Take off 2 NUTS (C6N3SZ) and IGNITER COVER

Box bit (Size 5.5 mm)
Torque driver
(Tightening torque:0.6 Nm)

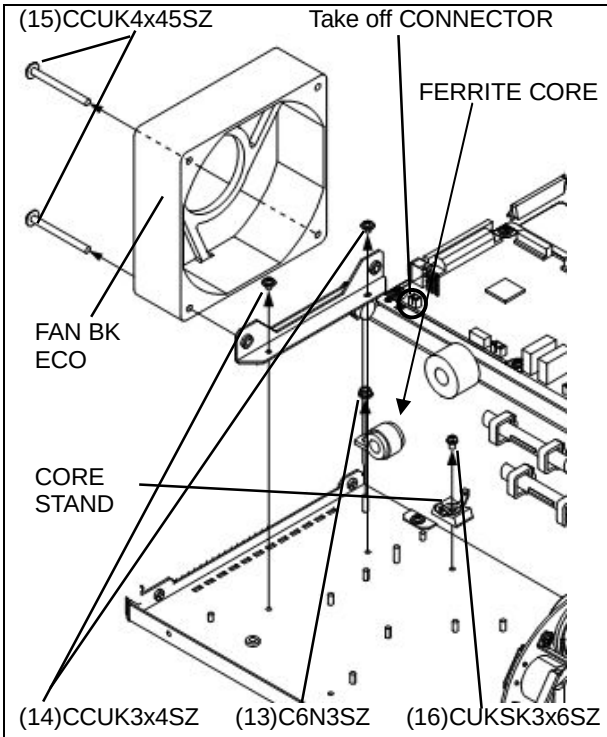
(10) Take off 3 NUTS (C6N3SZ) and IGNITER U
*At same time, take off HARNESS from POWER SUPPLY
→ Go to 3-2-6

Box bit (Size 5.5 mm)
Torque driver
(Tightening torque:0.6 N m)



(11) Take off 5 NUTS (C6N3SZ) and LAMP BASE U
*One of NUTS is connected with HARNESS
→ Go to 3-2-5

BOX bit (size 5.5 mm)
Torque driver
Tightening torque0.6 Nm



(12) Take off FAN CABLE from J14 of MAIN BOARD

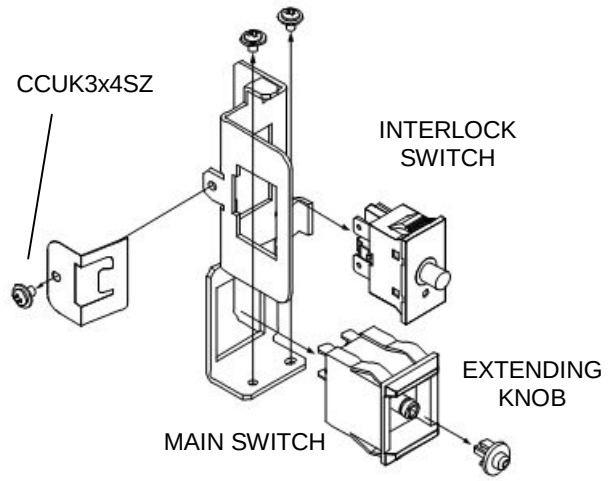
(13) Take off 1 NUTS (C6N3SZ) and FERRITE CORE
BOX bit (size 5.5 mm)
Torque driver
Tightening torque 0.6 Nm

(14) Take off 2 SCREWS (CCUK3x4SZ) and FAN ECO U
Phillips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

(15) Take off 2 SCREWS (CCUK4x45SZ) and FAN BK ECO
Phillips bit (No.2)
Torque driver
Tightening torque 1.4 Nm

(16) Take CORE out and take off SCREW (CUKSK3x6SZ) and CORE STAND
Phillips bit (No.2)
Torque driver
Tightening torque 0.6 Nm

3-2-1 NSW bracket

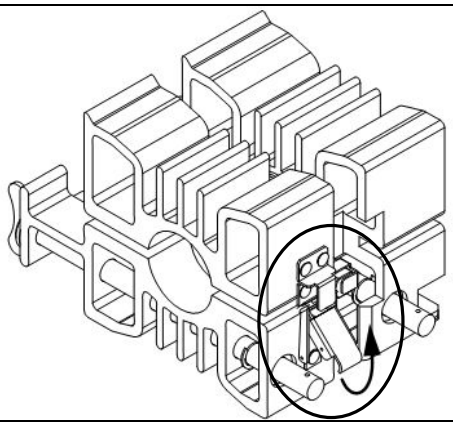


(1) Take off 1 SCREW (CCUK3x4SZ) and SW PLATE SPRING
Phillips bit(No.2)
Torque driver
Tightening torque 0.6 Nm

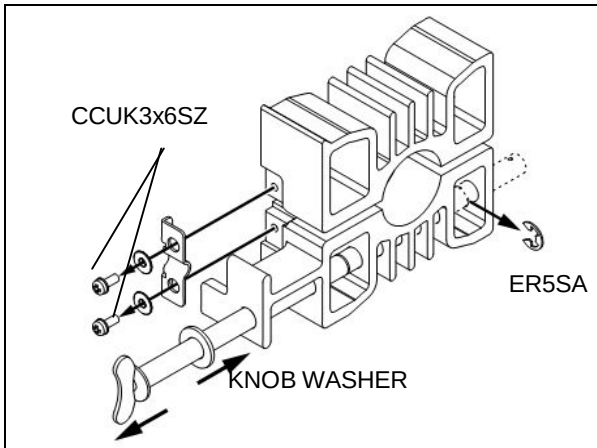
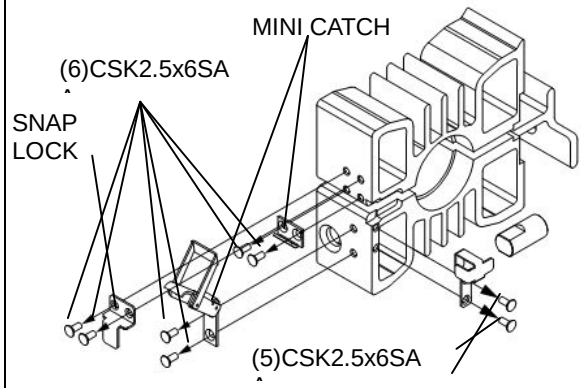
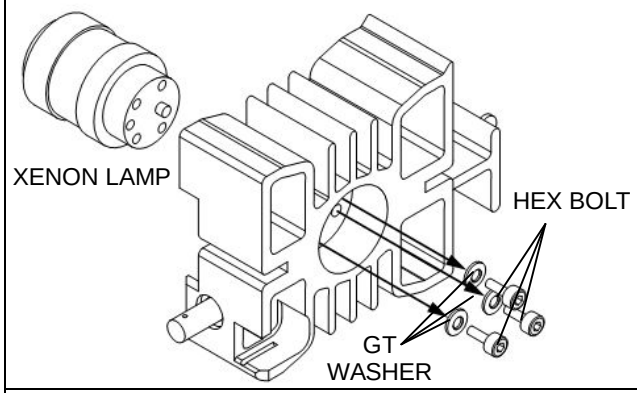
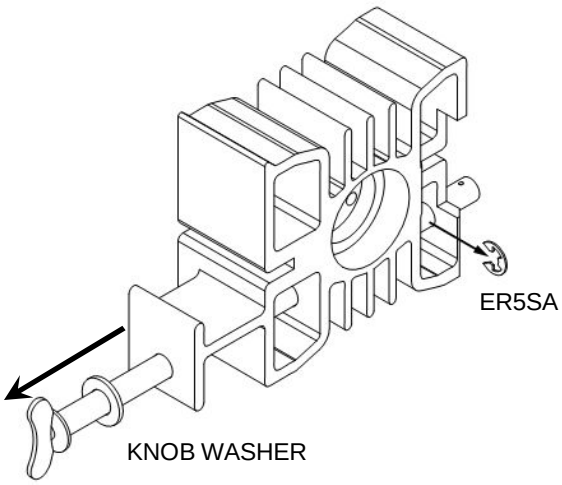
(2) Take off EXTENDING KNOB from MAIN SWITCH

(3) Take SWITCH (INTERLOCK SW) and MAIN SWITCH from N SWITCH BK
*Take off by pushing the trap on each upper and lower side

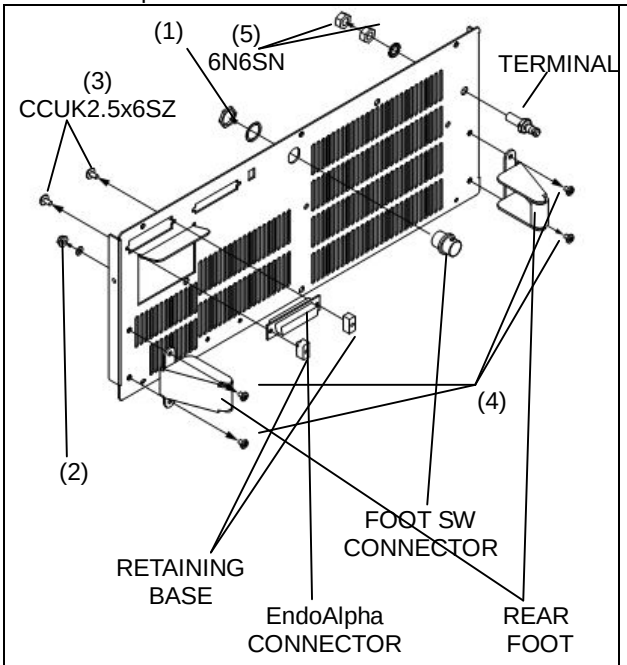
3-2-2 Heat sink eco U



(1) Unlock HEAT SINK F ECO U

	(2) Take off ER5SA from SINK SHAFT in HEAT SINK F ECO U Long-nose Pliers (3) Pull SINK SHAFT, then take off KNOB WASHER from SINK SHAFT (4) Take off 2 SCREWS (CCUK3x6SZ), HINGE PLATE and SPRING COLLAR Phillips bit (№2) Torque driver Tightening torque 0.6 Nm
	(5) Take off 2 SCREWS (CSK2.5x6SA), MAGNET HOLDER ECO and MAGNET Phillips bit (№1) Torque driver Tightening torque 0.33 Nm (6) Take off 6 SCREWS (CSK2.5x6SA) , SNAP LOCK and MINI CATCH Phillips bit (№1) Torque driver Tightening torque 0.33 Nm
	(7) Take off 3 HEX BOLT, GT WASHER and XENON LAMP Hex wrench (size 2.5 mm) Tightening torque 0.8 Nm
	(8) SINK SHAFT Take off ER5SA from SINK SHAFT on HEAT SINK F ECO U Long-nose Pliers (9) Pull SINK SHAFT, and take off KNOB WASHER from SINK SHAFT

3-2-3 Rear panel



(1) Take off NUT, WASHER and FOOT SW CONNECTOR

Open head (size 14 mm)
Torque driver
Tightening torque 1.2 Nm

(2) Take off 1 NUT(C6N3SZ) and GROUND CODE, and 1 WASHER

BOX bit (size 5.5 mm)
Torque driver
Tightening torque 0.6 Nm

(3) Take off 2 SCREWS (CCUK2.5x6SZ), EndoAlpha CONNECTOR and RETAINING BASE

Phillips bit (№2)
Torque driver
Tightening torque 0.4 Nm

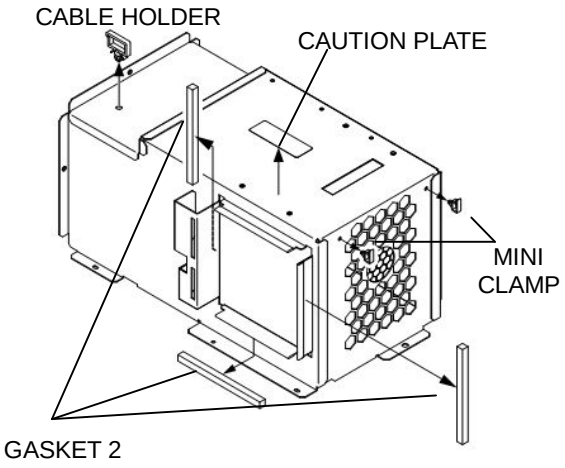
(4) Take off 4 SCREWS(CBK3x4SA) and REAR FOOT

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(5) Take off 2 NUTS(6N6SN), 1 WASHER and TERMINAL

Open head (size 10 mm)
Torque wrench
Tightening torque 5 Nm

3-2-4 Shield case 260 eco U

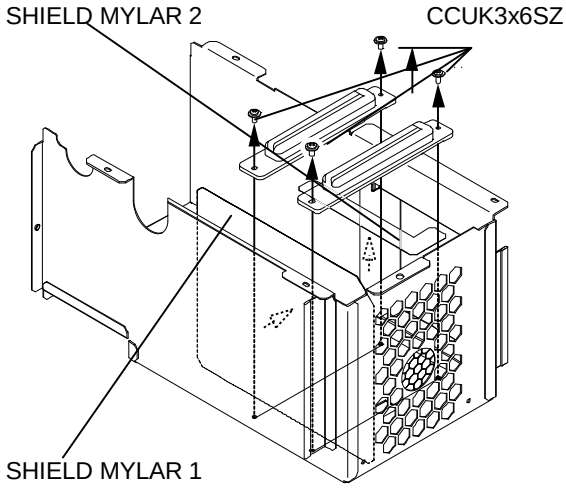


(1) Take off GASKET 2

(2) Take off CABLE HOLDER

(3) Take off MINI CLAMP

(4) Take off CAUTION PLATE

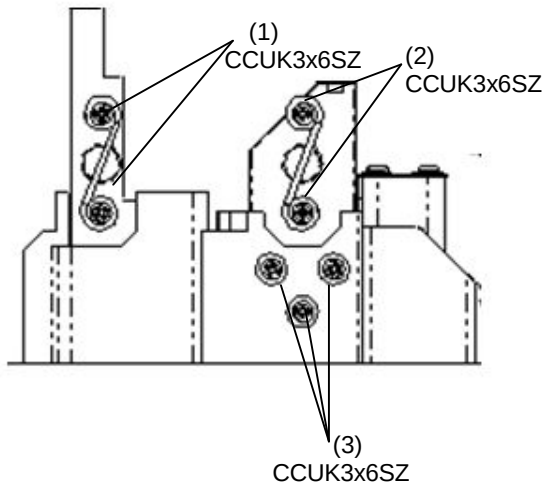


(5) Take off 4 SCREWS(CCUK3x6SZ), HS GUIDE
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(6) Take off SHIELD MYLAR 1

(7) Take off SHIELD MYLAR 2

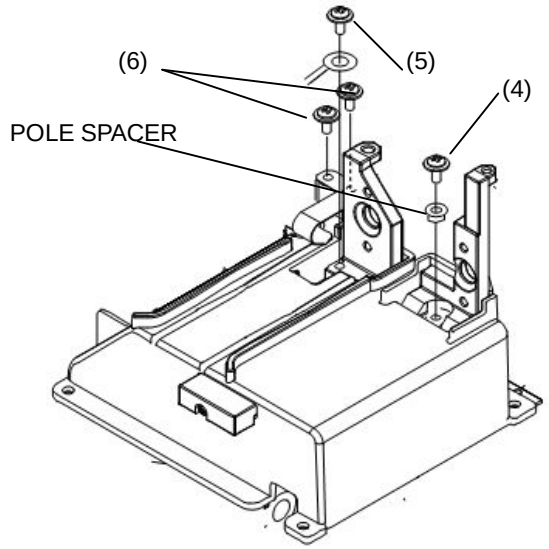
3-2-4 Lamp base U



(1) Take off 2 SCREWS(CCUK3x6SZ) and take off SINK SPRING from POLE F
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(2) Take off 2 SCREWS(CCUK3x6SZ) and take off SINK SPRING from POLE R
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

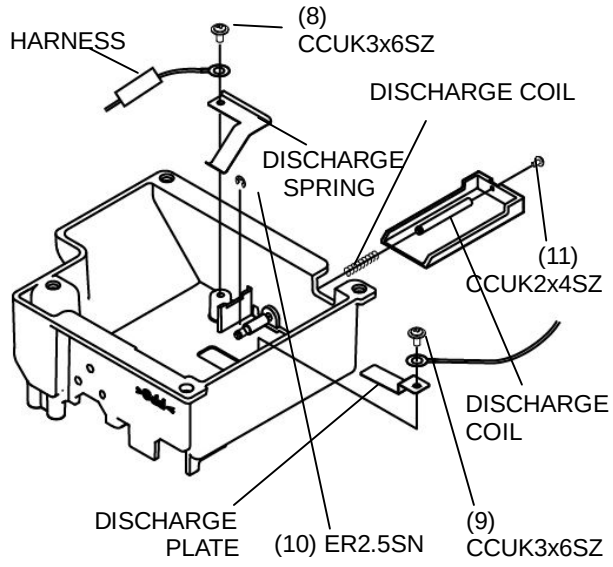
(3) Take off 3 SCREWS (CCUK3x6SZ)
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm



(4) Take off 1 SCREW (CCUK3x6SZ) and take POLE F and POLE SPACER off together.
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(5) First take off 1 SCREW (CCUK3x4SZ), and adjust HARNESS、and then take off POLE R
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(6) Take off 2 SCREWS (CCUK3x4SZ) and SINK RETAINER SPRING
Phillips bit (№2)
Torque driver
Tightening torque 0.6Nm



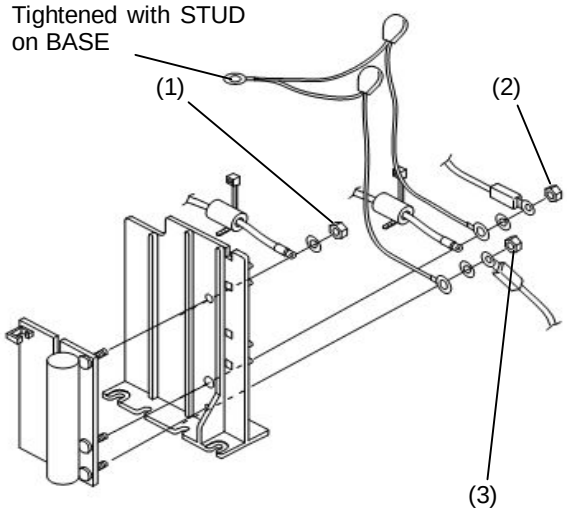
(7) Take off 1 SCREW (CCUK3x6SZ) , HARNESS and DISCHARGE SPRING
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(8) Take off 1 SCREW (CCUK3x6SZ)、HARNESS and DISCHARGE PLATE
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(9) Take off ER2.5SN, DISCHARGE BASE U and DISCHARGE COIL
Long-nose Pliers

(10) Take off 1 SCREW (CCUK2x4SZ), DISCHARGE SPINDLE
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

3-2-5 Igniter U

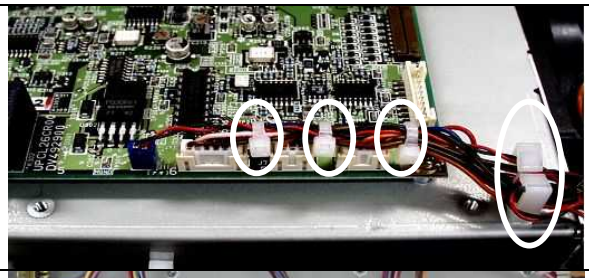


(1) Take off 1 NUT (6N$_1$5BN) and take off components as follows :
1 WASHER
- IGNITER HARNESS *terminal hole M3
BOX bit (size 8 mm)
Torque driver
Tightening torque 2.0 Nm

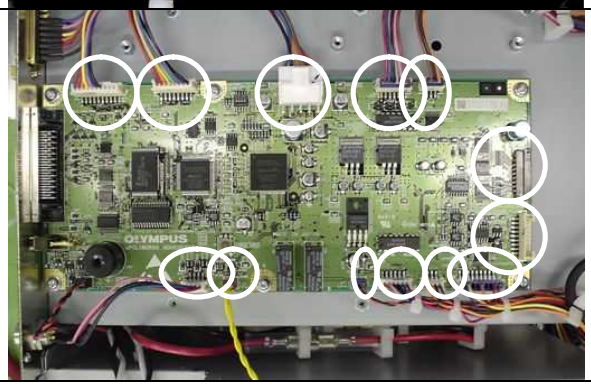
(2) Take off 1 NUT (6N$_1$5BN) and take off HARNESS as follows:
W03O008A (Red)
1 WASHER
CONDENSER HARNESS
+ IGNITER HARNESS *terminal hole M4
BOX bit (size 8 mm)
Torque driver
Tightening torque 2.0 Nm

(3) Take off 1 NUT (6N$_1$5BN) and take off HARNESS as follows:
Take off IGNITER
W03O009A (Black)
1 WASHER
CONDENSER HARNESS
BOX bit (size 8 mm)
Torque driver
Tightening torque 2.0 Nm

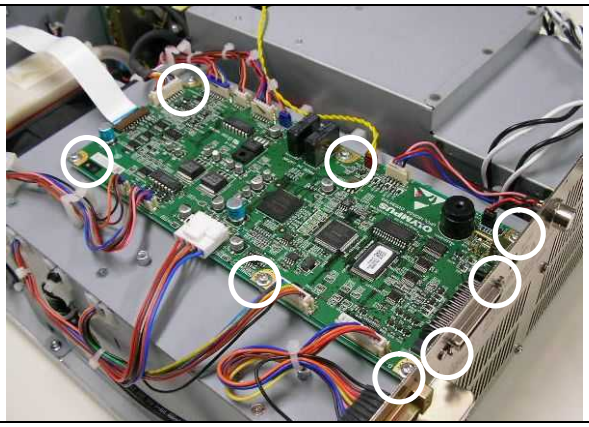
3-3 Area B



(1) Cut the BINDER and take off HARNESS from BINDER
Nipper



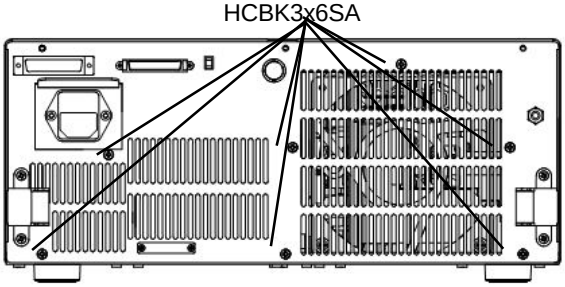
(2) Take off each HARNESS connected to MAIN BOARD



(3) Take off 8 SCREWS (CCUK3x6SZ:6, CBK2.5x6SA:2) and MAIN BOARD

Phillips bit (№1)
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

HCBK3x6SA

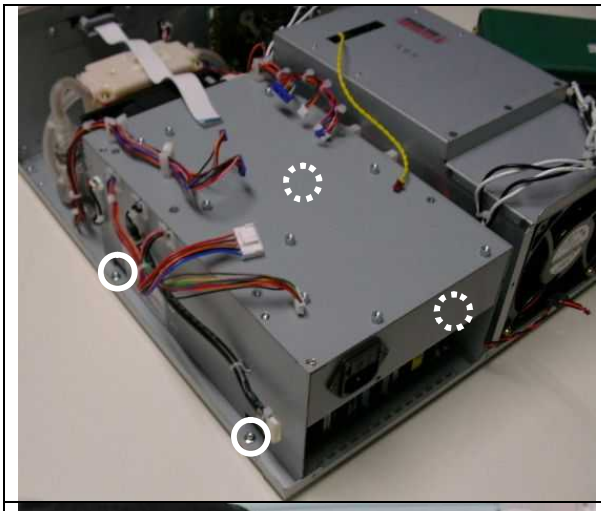
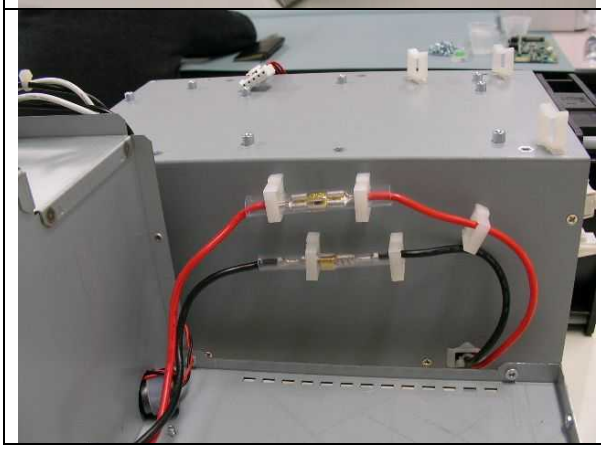


(4) Take off 7 SCREWS (HCBK3x6SA) and REAR PANEL U

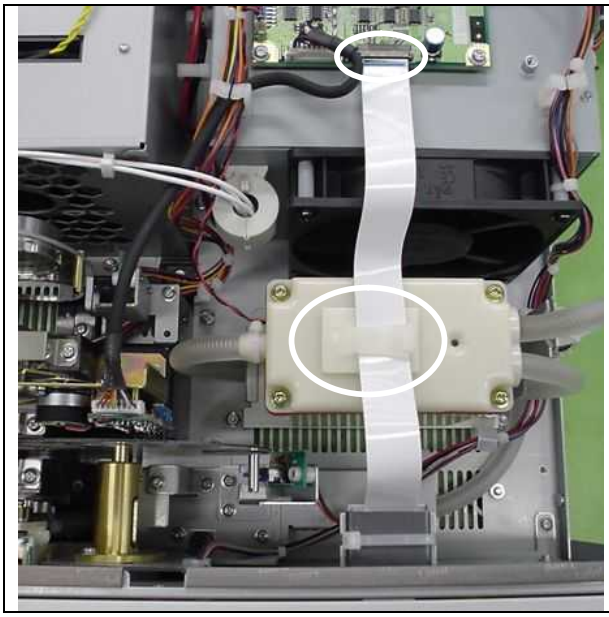
Phillips bit (№1)
Torque driver
Tightening torque 0.33 Nm
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

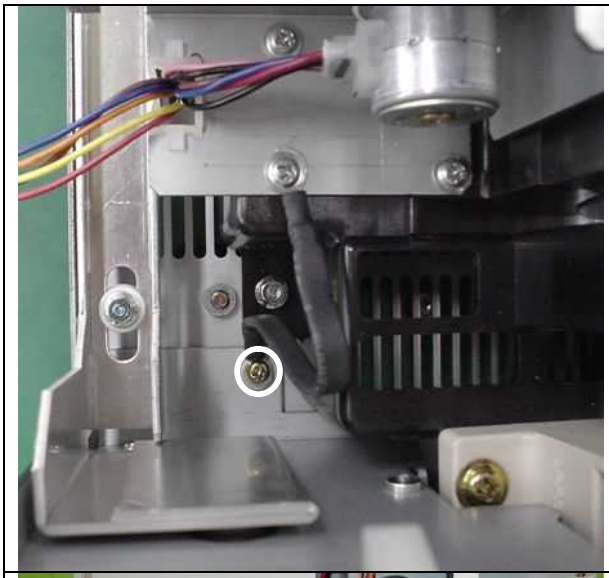
(5) Take off CORE
*Pull CONNECTOR by pushing upper side

Phillips bit (№1)
Torque driver
Tightening torque 0.33 Nm
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

	(6) Take off 4 NUTS (C6N3SZ) and CONVERTER BOX bit (size 5.5 mm) Torque driver Tightening torque 0.6 Nm
	(7) Take off IGNITER HARNESS which comes from CONVERTER *upper：red、lower：black

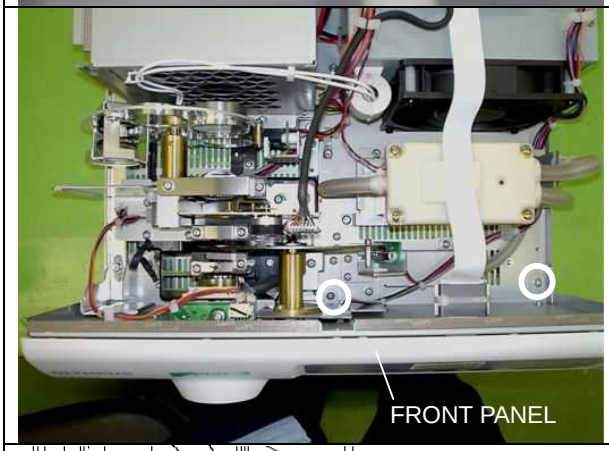
3-4 Area C

	(1) Take off FLAT CABLE which comes from FRONT PANEL



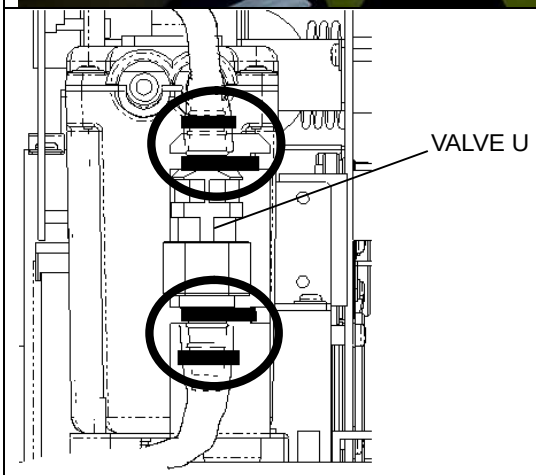
(2) Take off SCREW (CCUK3x6SZ)
(tightened with GROUND STRAP)

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm



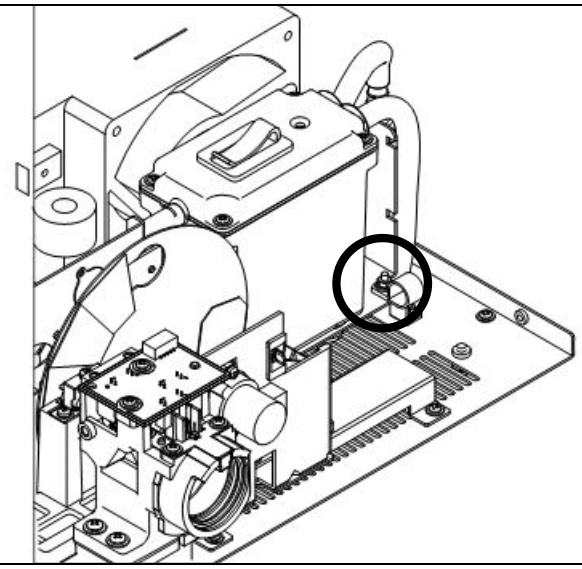
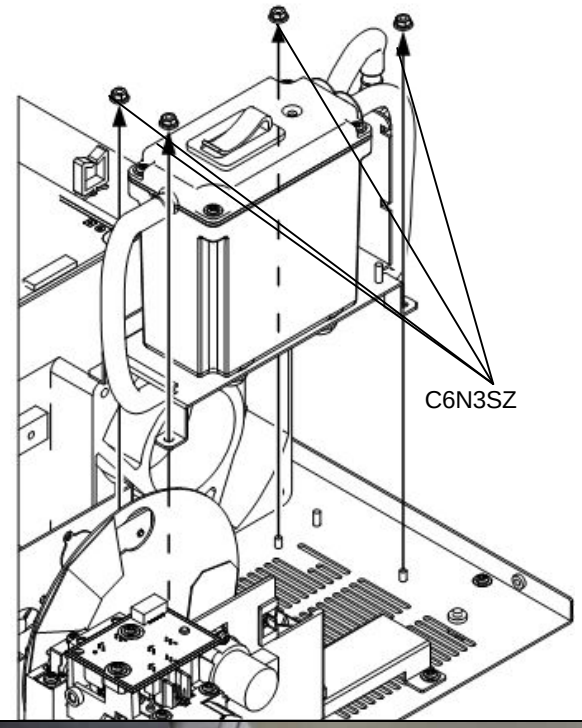
(3) Take off 2 SCREWS (CCUK3x4SZ) and FRONT PANEL
→ Go to 3-4-1

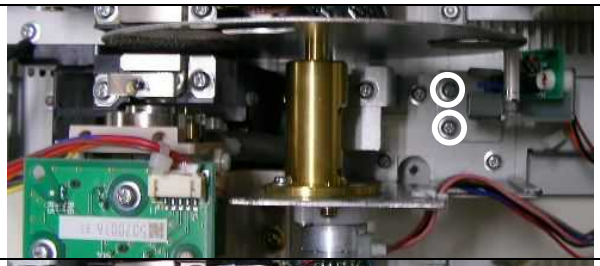
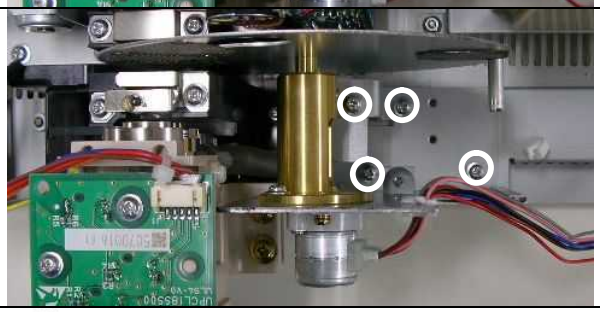
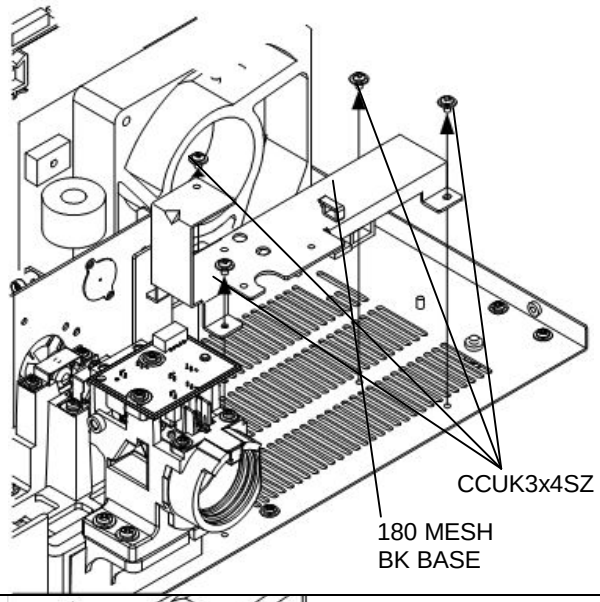
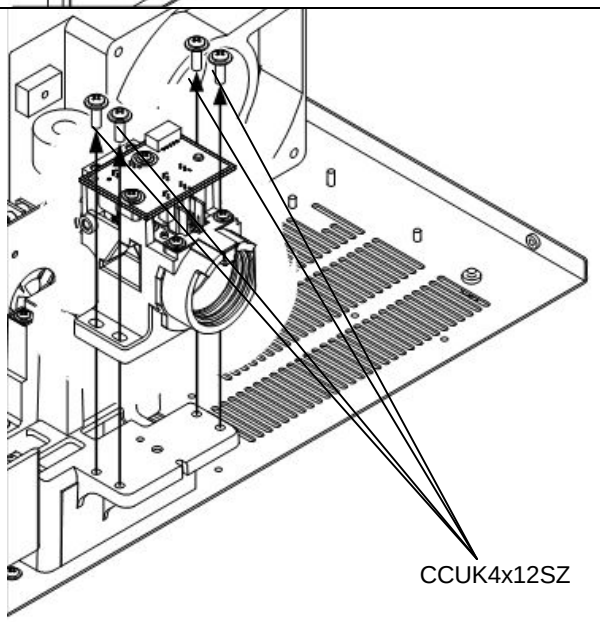
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

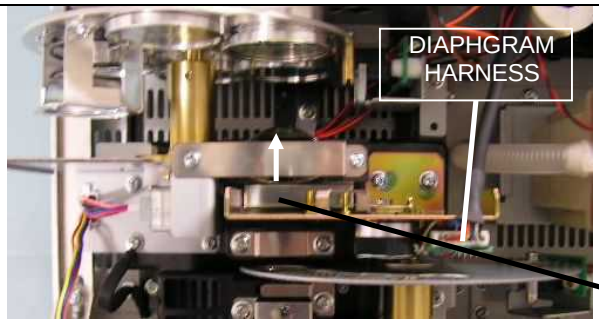


(4) Cut 4 BINDERS (left figure) and take off TUBE from VALVE U

Nipper

	(5) Take off 1 NUT (C6N3SZ, left figure) and CABLE from BINDER BOX bit (size 5.5 mm) Torque driver Tightening torque 0.6 Nm
	(6) Take off 4 NUTS (C6N3SZ) and PUMP 260 ECO U → Go to 3-4-2 BOX bit (size5.5mm) Torque driver Tightening torque 0.6 Nm
	(7) Cut the BINDER which holds CABLE connected with S SOCKET U, M LIMIT SWITCH, and take off CABLE from MINI CRAMP Nipper

	(8) Take off 2 SCREWS (CCUK3x4SZ) and M LIMIT SWITCH Phillips bit (№2) Torque driver Tightening torque 0.6 Nm
	(9) Take off 4 SCREWS (CCUK3x4SZ) and M TURRET U Phillips bit (№2) Torque driver Tightening torque 0.6 Nm
	(10) Take off 4 SCREWS (CCUK3x4SZ) and 180 MESH BK BASE Phillips bit(№2) Torque driver Tightening torque 0.6 Nm
	(11) Take off 4 SCREWS (CCUK4x12SZ) and S SOCKET 180U *Fix the S SOCKET 180U by pushing counterclockwise for Reassembly in order to align the optical axis . → go to 3-4-3 Phillips bit (№2) Torque driver Tightening torque 1.4 Nm

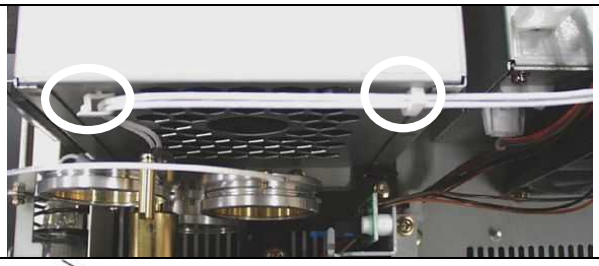


(12) Take off DIAPHRAGM HARNESS from DIAPHRAGM U

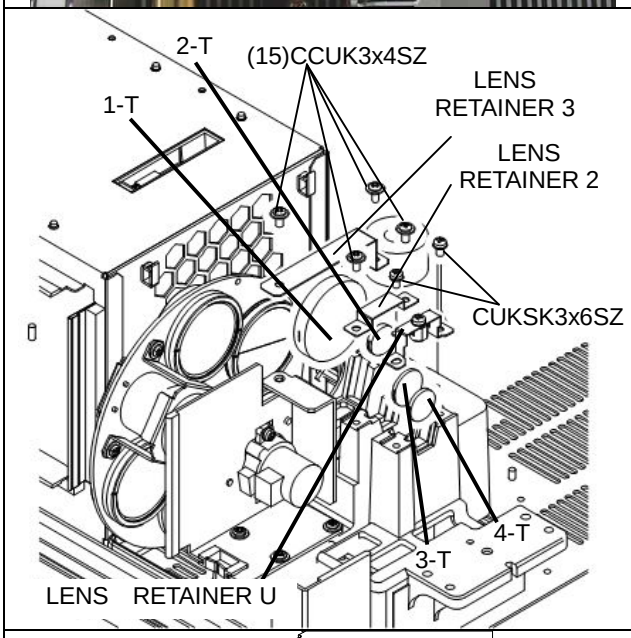
(13) Take off 2 SCREWS (CCUK3x6SZ) and DIAPHRAGM U

Phillips bit (№2)
Torque driver
Tightening torque 1.4 Nm
DIAPHRAGM POSITIONING JIG(for reassembly)

*Push the side that has no slit on JIG towards the rear and make the DIAPHGRAM stay inside the slit as seen from above.



(14) Take off EMERGENCY HARNESS from MINI CRAMP



(15) Take off 4 SCREWS (CCUK3x4SZ)、LENS RETAINER 2 and LENS RETAINER 3

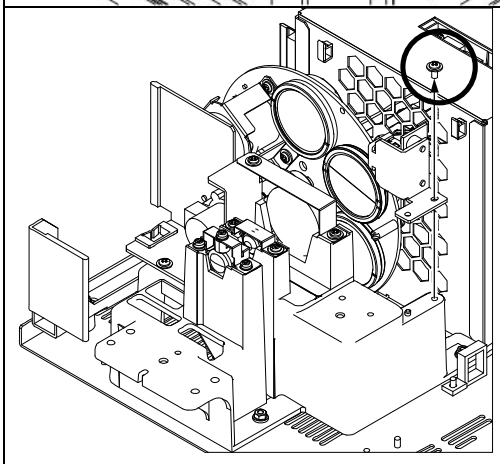
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(16) Take off 1-T and 2-T from LENS BASE

(17) Take off 2 SCREWS (CUKSK3x6SZ) and LENS RETAINER U

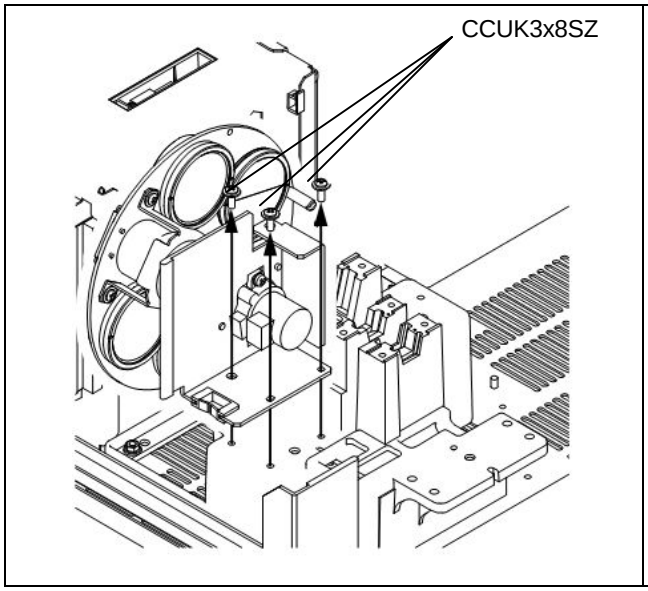
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(18) Take off 3-T and 4-T from LENS BASE



(19) Take off 1 SCREW (CCUK3x4SZ) and LIMIT SW U

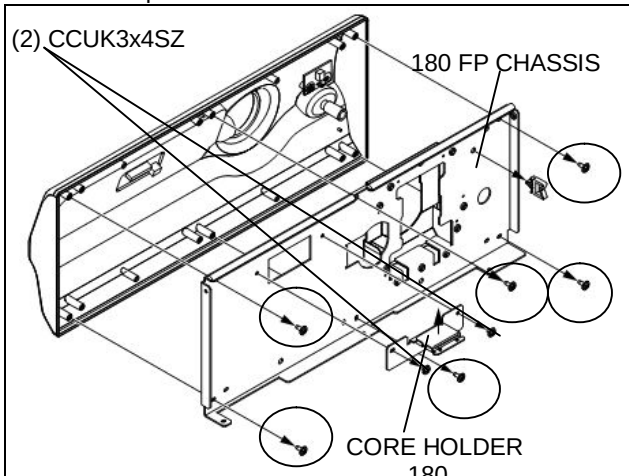
Phillips bit (№2)
Torque driver
Tightening toque 0.6 Nm



(20) Take off 3 SCREWS (CCUK3x8SZ) and TURRET 180U
→ Go to 3-4-4

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

3-4-1 Front panel U



(1) Take off 6 SCREWS (T2CCUK3x8SZ) and 180 FP CHASSIS

Phillips bit (№2)
Torque driver
Tightening torque 0.3 Nm

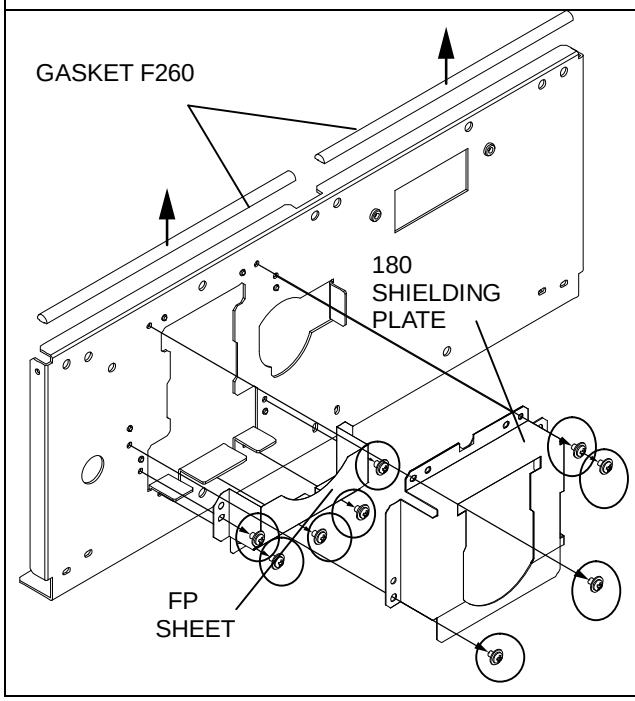
(2) Take off 2 SCREWS (CCUK3x4SZ) and CORE HOLDER 180

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(3) Cut BINDER and take off CORE

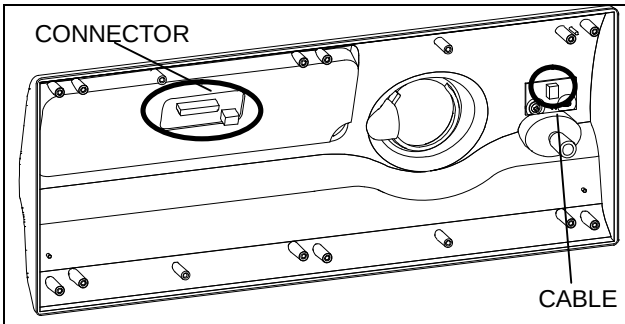
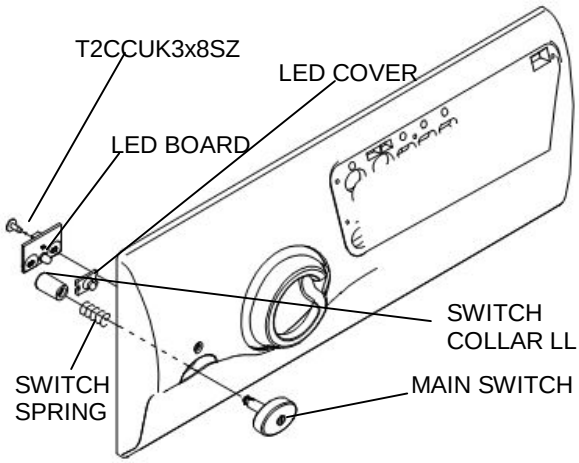
Nipper

(4) Take off BINDER



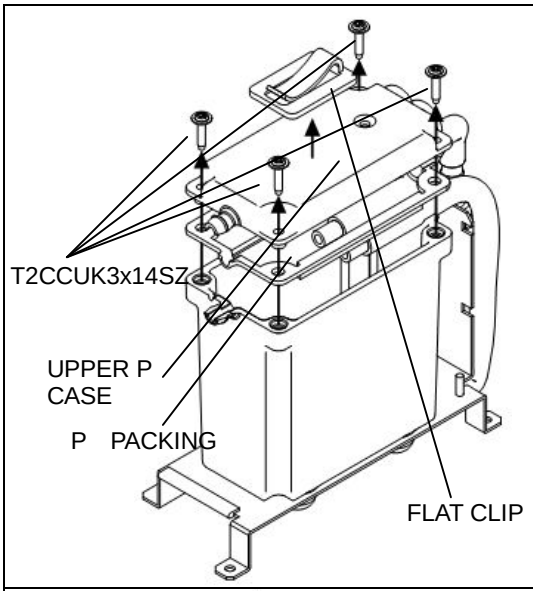
(5) Take off 9 SCREWS(CCUK3X4SZ), 180 SHIELDING PLATE and FP SHEET
* In case of trading FP CHASSIS, take off GASKET F260

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

	(6) Take off CONNECTOR (left figure) and CABLE
	(7) Take off 1 SCREW (T2CCUK3x8SZ), LED BOARD and LED COVER Phillips bit (№2) Torque driver Tightening torque 0.3 Nm (8) Take off SWITCH COLLAR LL, SWITCH SPRING, MAIN SWITCH Tweezers

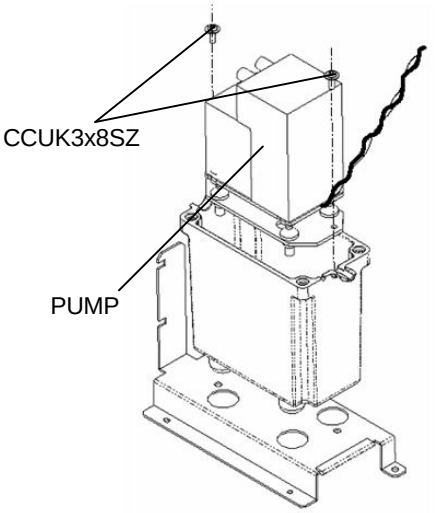
3-4-2 Pump 260 eco U

	(1) Cut BINDER (left figure) and take off TUBE Nipper



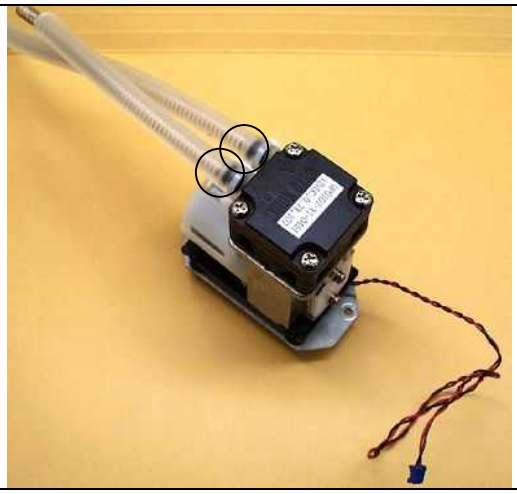
(2) Take off 4 SCREWS(T2CCUK3x14SZ), FLAT CLIP , UPPER P CASE and P PACKING

Phillips bit (№2)
Torque driver
Tightening torque 0.3 Nm



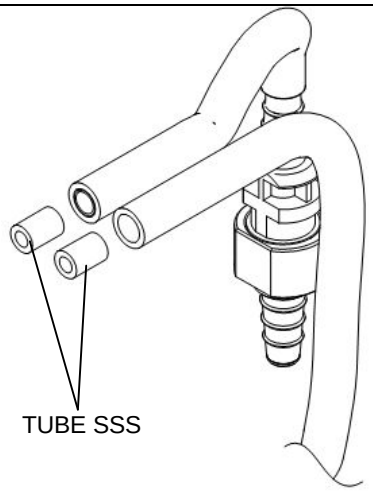
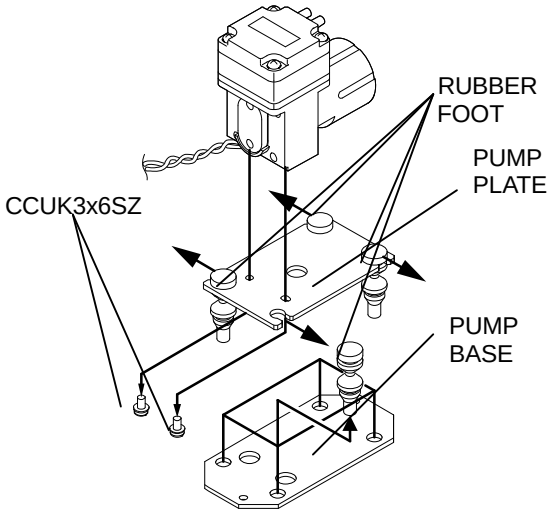
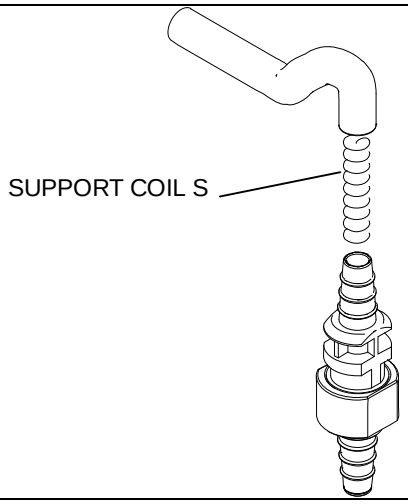
(3) Take off 2 SCREWS (CCUK3x8SZ) and take out PUMP

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

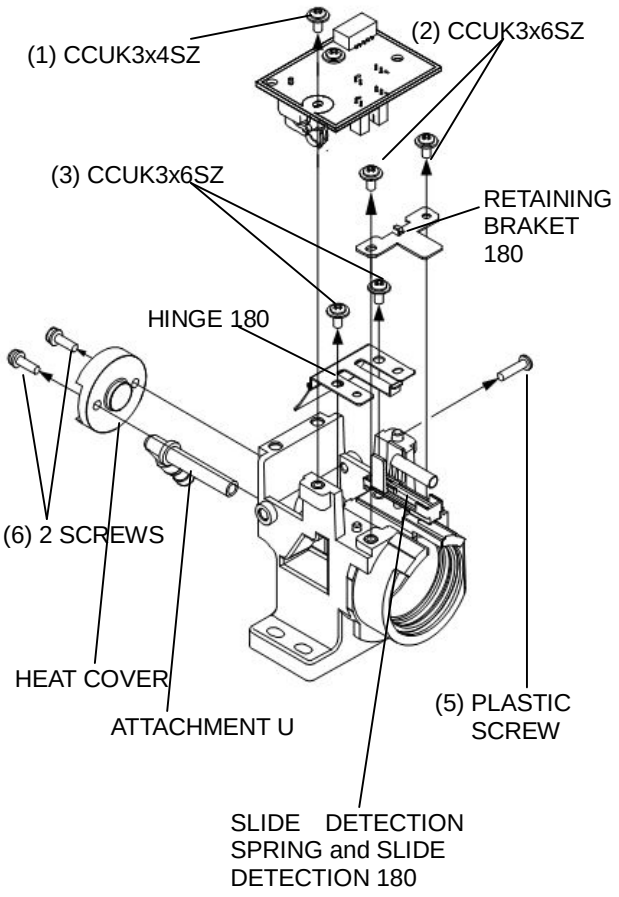


(4) Cut BINDER(left figure) and take off TUBE

Nipper

	(5) Take off TUBE SSS from TUBE, which was taken off from PUMP
	(6) Take off 2 SCREWS (CUKSK3x6SZ) and PUMP Phillips bit (№2) Torque driver Tightening torque 0.6 Nm (7) Take off RUBBER FOOT from PUMP BASE (8) Pull RUBBER FOOT from PUMP PLATE ECO Long-nose Pliers
	(9) Take off TUBE S from VALVE U and pull SUPPORT COIL S

3-4-3 S socket 180U



(1) Take off 1 SCREW (CCUK3x4SZ) and SS BOARD REPAIR U

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(2) Take off 2 SCREWS (CCUK3x6SZ) and RETAINING BRACKET180

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(3) Take off 2 SCREWS (CCUK3x6SZ) and HINGE 180

Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(4) Take off SLIDE DETECTION SPRING and SLIDE DETECTION 180

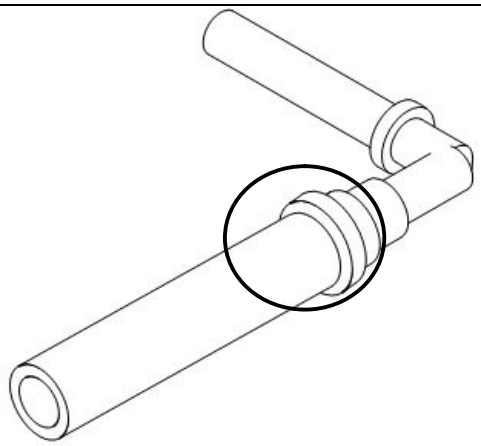
(5) Take off PLASTIC SCREW

Phillips bit (№2)
Torque driver
Tightening torque 0.2 Nm

(6) Take off 2 SCREWS, and then take off HEAT COVER and ATTACHMENT U

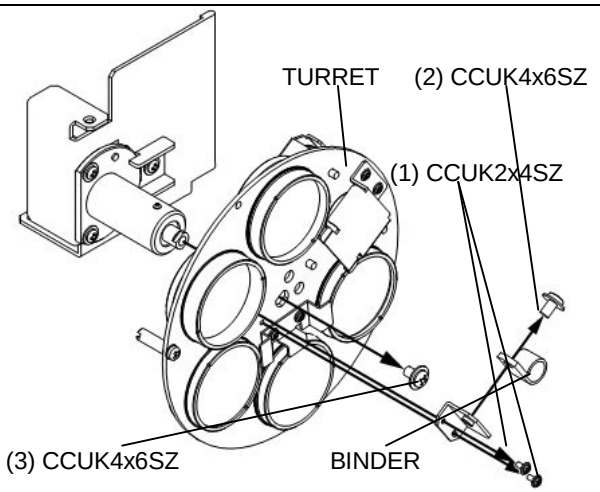
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm
HEAT COVER POSITIONING JIG

*When putting on the HEAT COVER、tighten the SCREW by inserting JIG into HEAT COVER



(7) Cut BINDER and pull TUBE

3-4-4 Turret U



(1) Take off 2 SCREWS (CCUK2x4SZ) and CRAMP BASE ECO

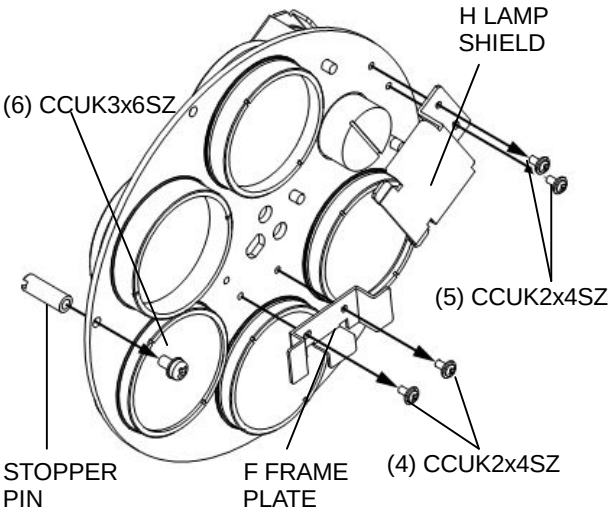
Phillips bit (№1)
Torque driver
Tightening torque 0.15 Nm

(2) Take off 1 SCREW (CCUK4x6SZ) and BINDER

Phillips bit (№2)
Torque driver
Tightening torque 1.4 Nm

(3) Take off 1 SCREW (CCUK4x6SZ) and TURRET

Phillips bit (№2)
Torque driver
Tightening torque 1.4 Nm



(4) Take off 2 SCREWS (CCUK2x4SZ) and F FRAME PLATE

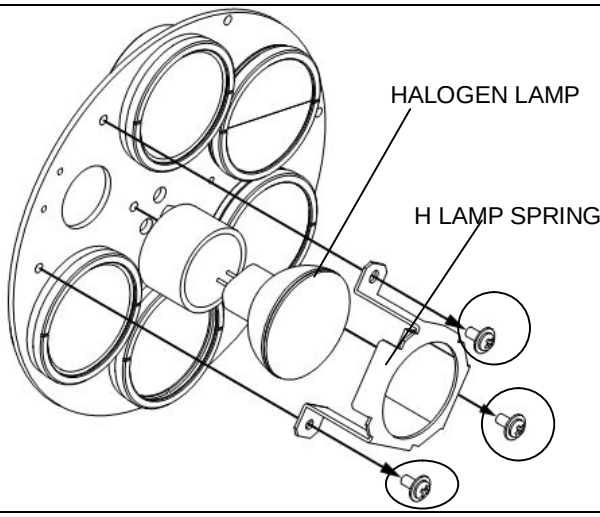
Phillips bit (№1)
Torque driver
Tightening torque 1.5 Nm

(5) Take off 2 SCREWS (CCUK2x4SZ) and H LAMP SHIELD

Phillips bit (№1)
Torque driver
Tightening torque 1.5 Nm

(6) Take off 1 SCREW (CUKSK3x6SZ) and T STOPPER PIN

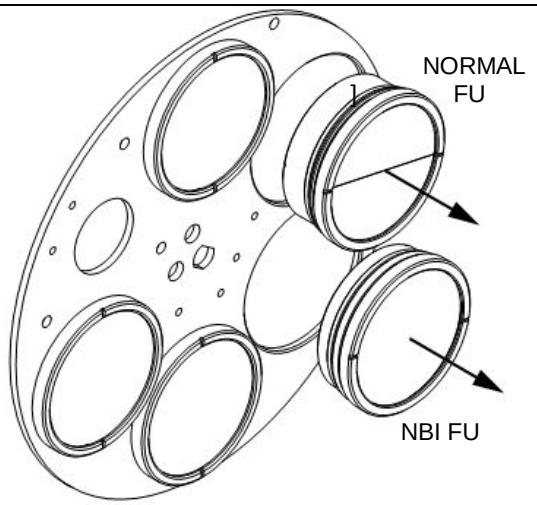
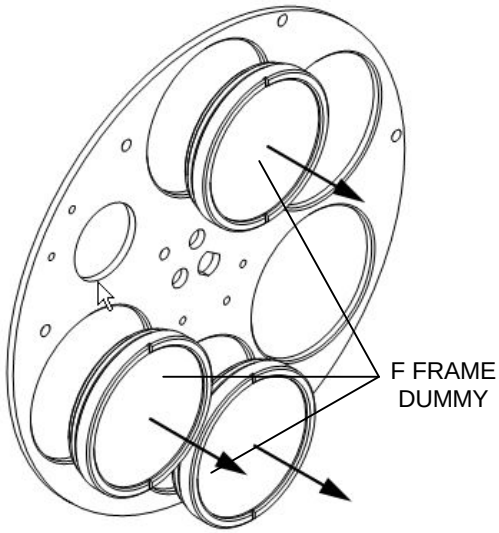
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm



(7) Take off 3 SCREWS (CCUK3x6SZ) and H LAMP RETAINER

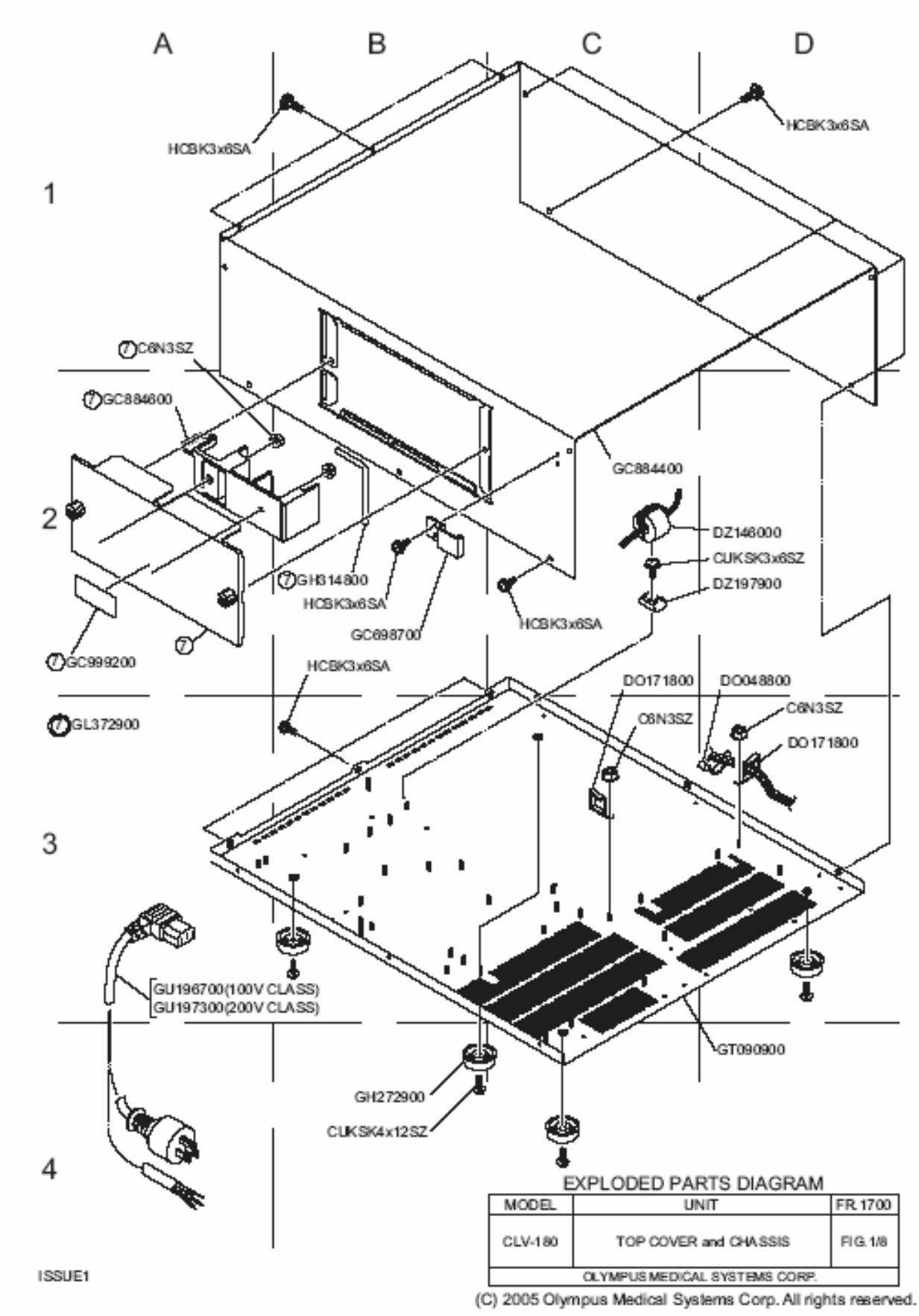
Phillips bit (№2)
Torque driver
Tightening torque 0.6 Nm

(8) Take off HALOGEN LAMP and H LAMP SPRING

	(9) Take off NORMAL FU and NBI FU Filter retaining jig Torque driver Tightening torque 0.8 Nm
	(10) Take off F FRAME DUMMY Filter retaining jig Torque driver Tightening torque 0.8 Nm

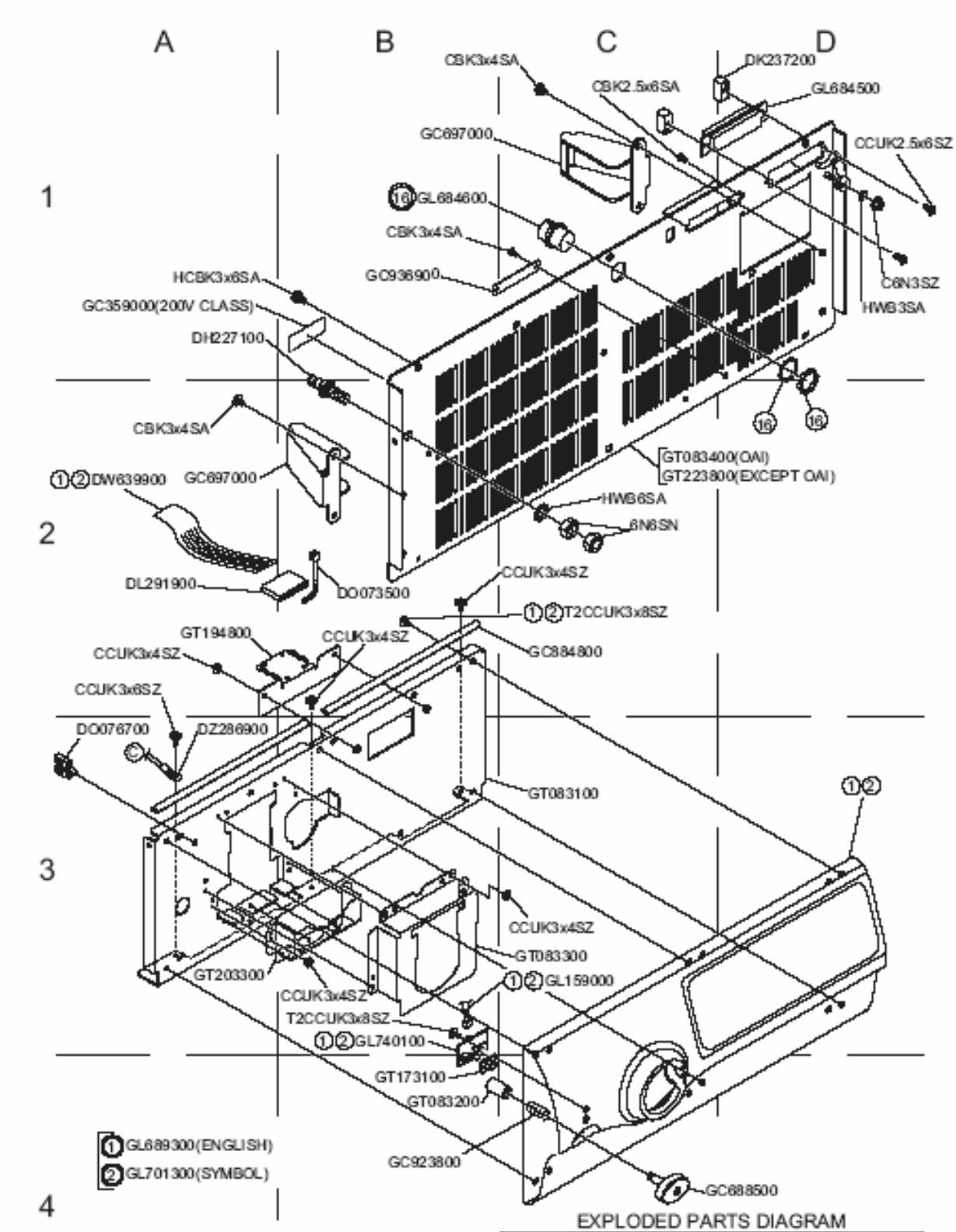
Chapter 5: Parts List

1. Exploded Parts Diagram



EXPLODED PARTS DIAGRAM

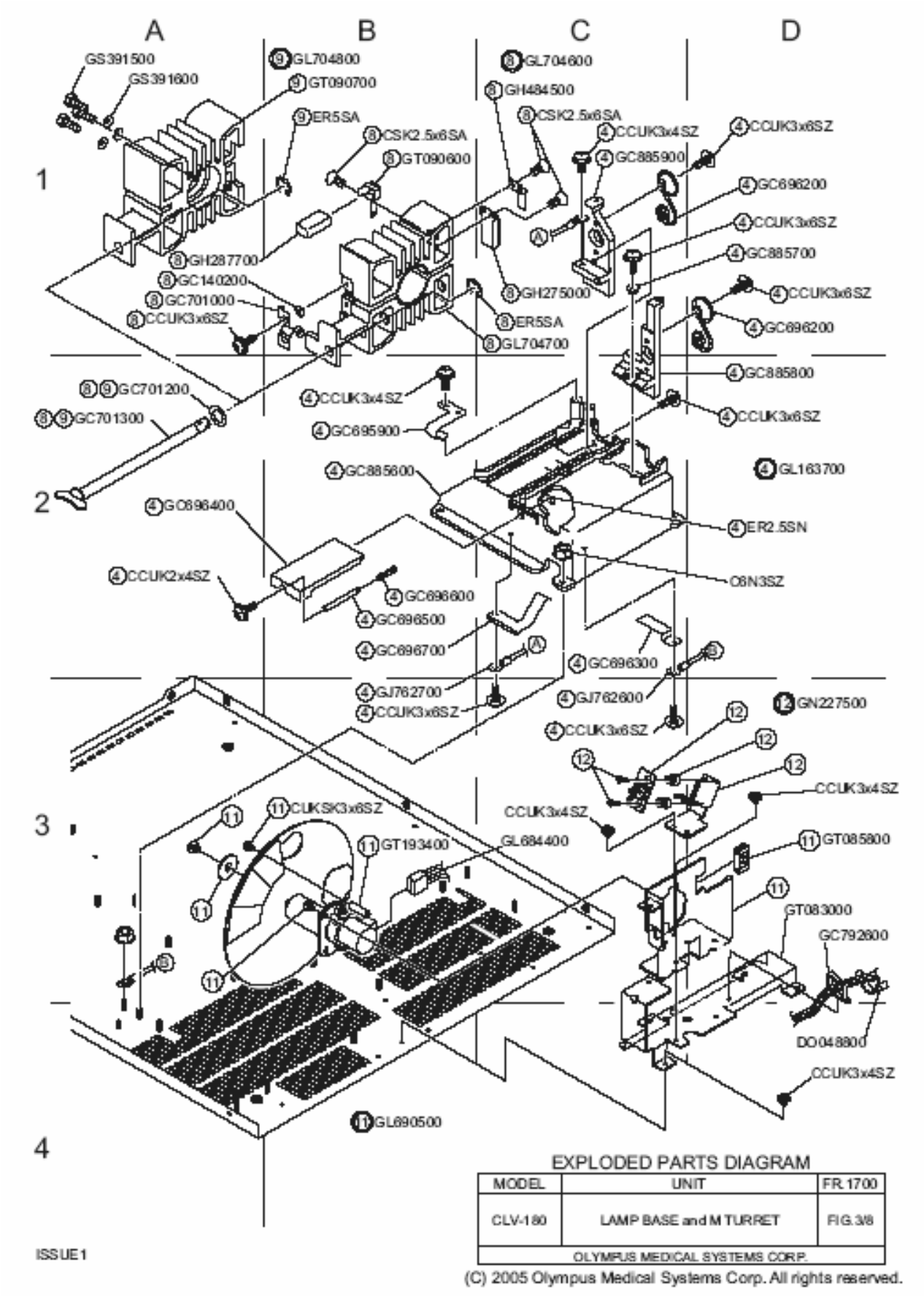
MODEL	UNIT	FR.1700
CLV-180	TOP COVER and CHASSIS	FIG.1/8
OLYMPUS MEDICAL SYSTEMS CORP.		



EXPLODED PARTS DIAGRAM

MODEL	UNIT	FR 1700
CLV-180	FRONT and REAR PANEL	FIG.2/8
OLYMPUS MEDICAL SYSTEMS CORP.		

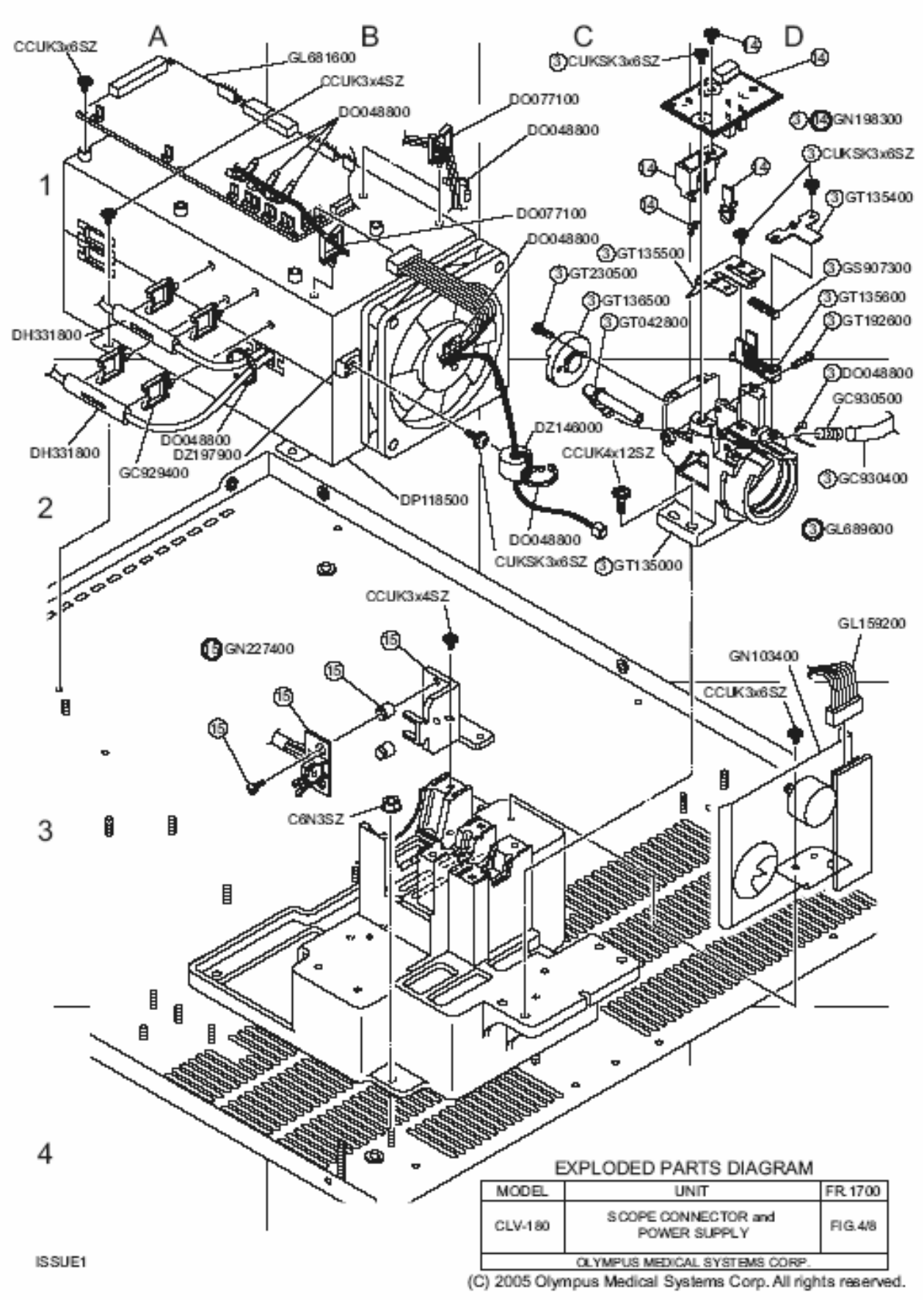
ISSUE1



EXPLODED PARTS DIAGRAM

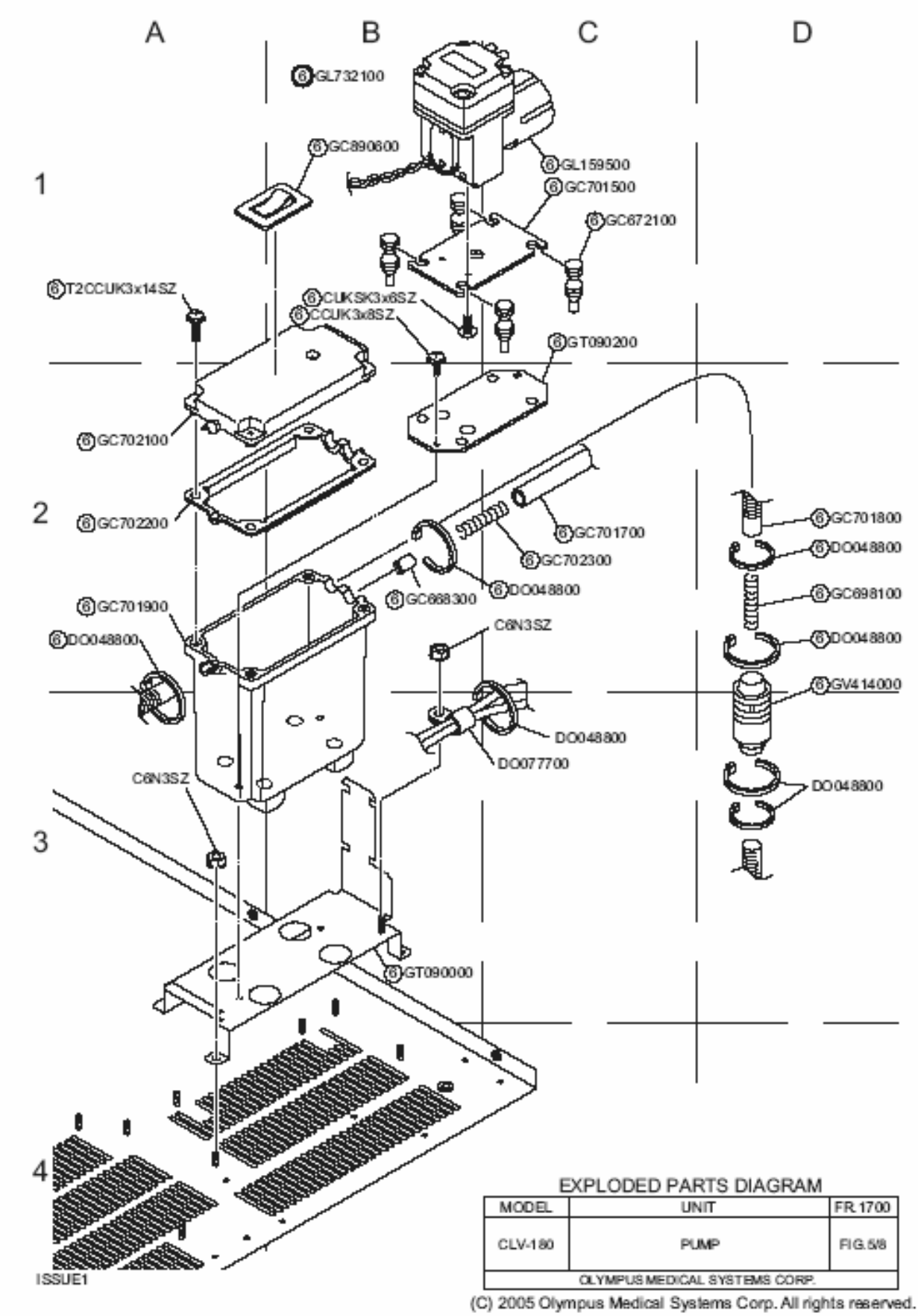
MODEL	UNIT	FR.1700
CLV-180	LAMP BASE and M TURRET	FIG.3/8
OLYMPUS MEDICAL SYSTEMS CORP.		

ISSUE1



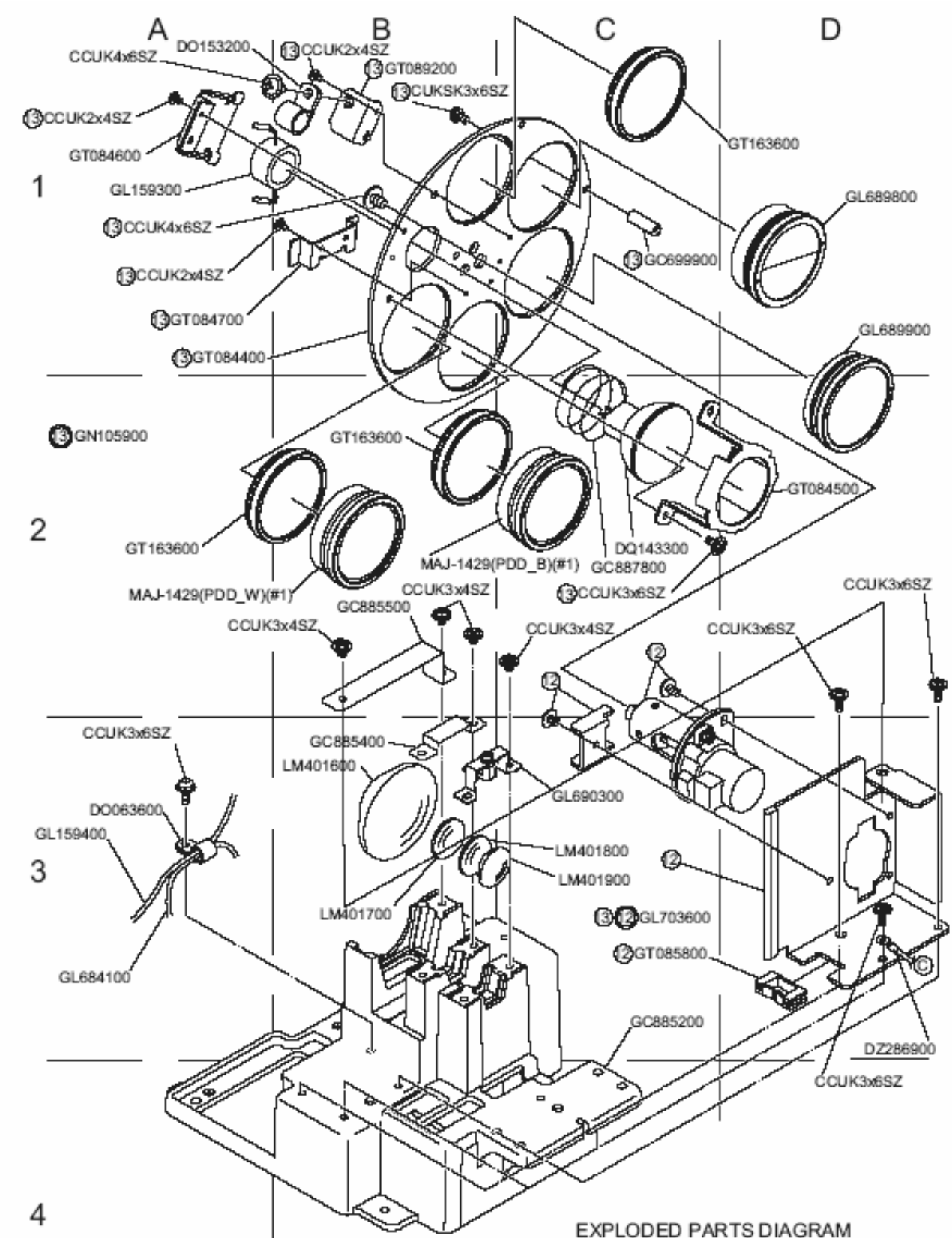
EXPLODED PARTS DIAGRAM

MODEL	UNIT	FR.1700
CLV-180	SCOPE CONNECTOR and POWER SUPPLY	FIG.4/8
OLYMPUS MEDICAL SYSTEMS CORP.		



EXPLODED PARTS DIAGRAM

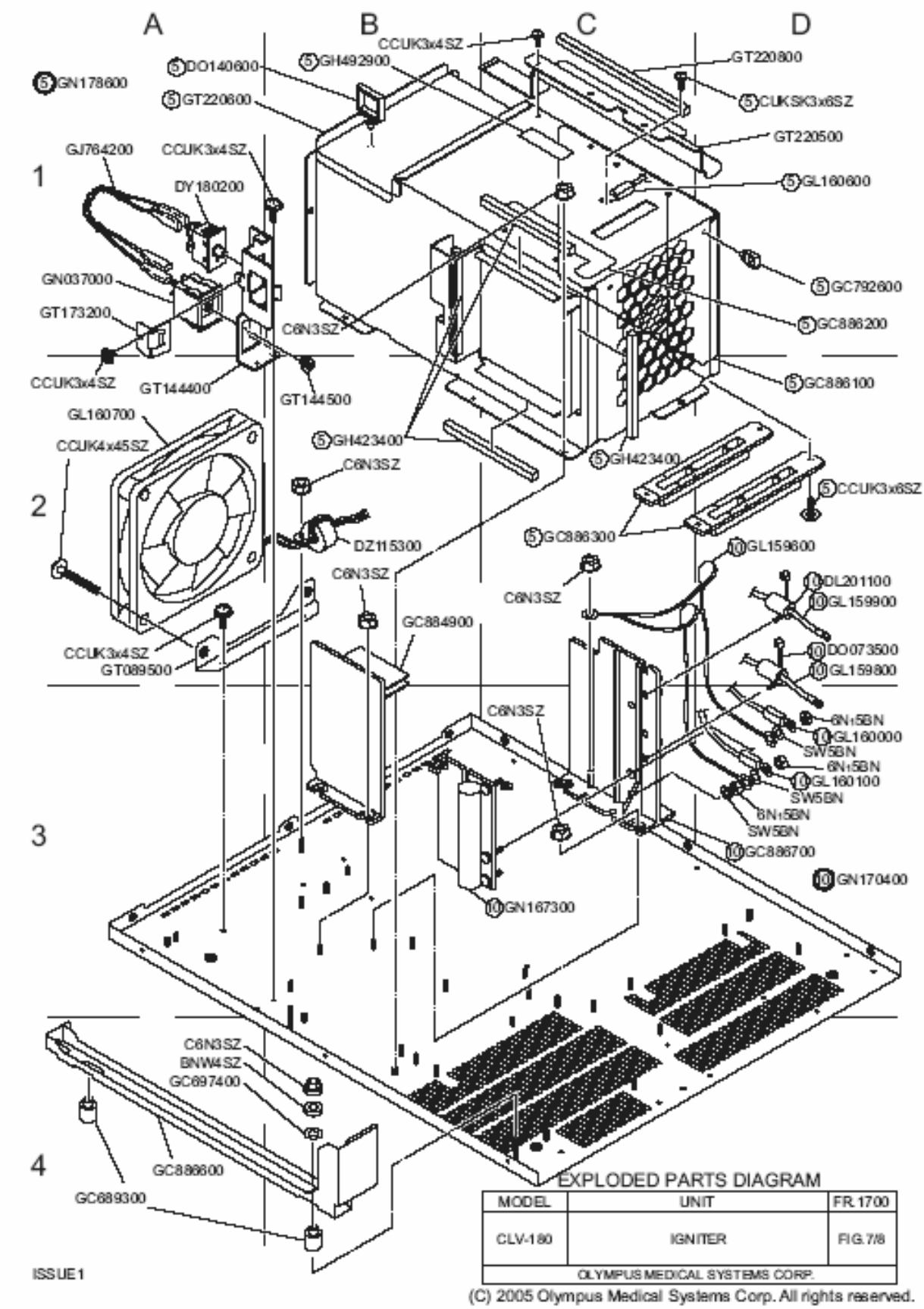
MODEL	UNIT	FR 1700
CLV-180	PUMP	FIG.5/8
OLYMPUS MEDICAL SYSTEMS CORP.		



EXPLODED PARTS DIAGRAM

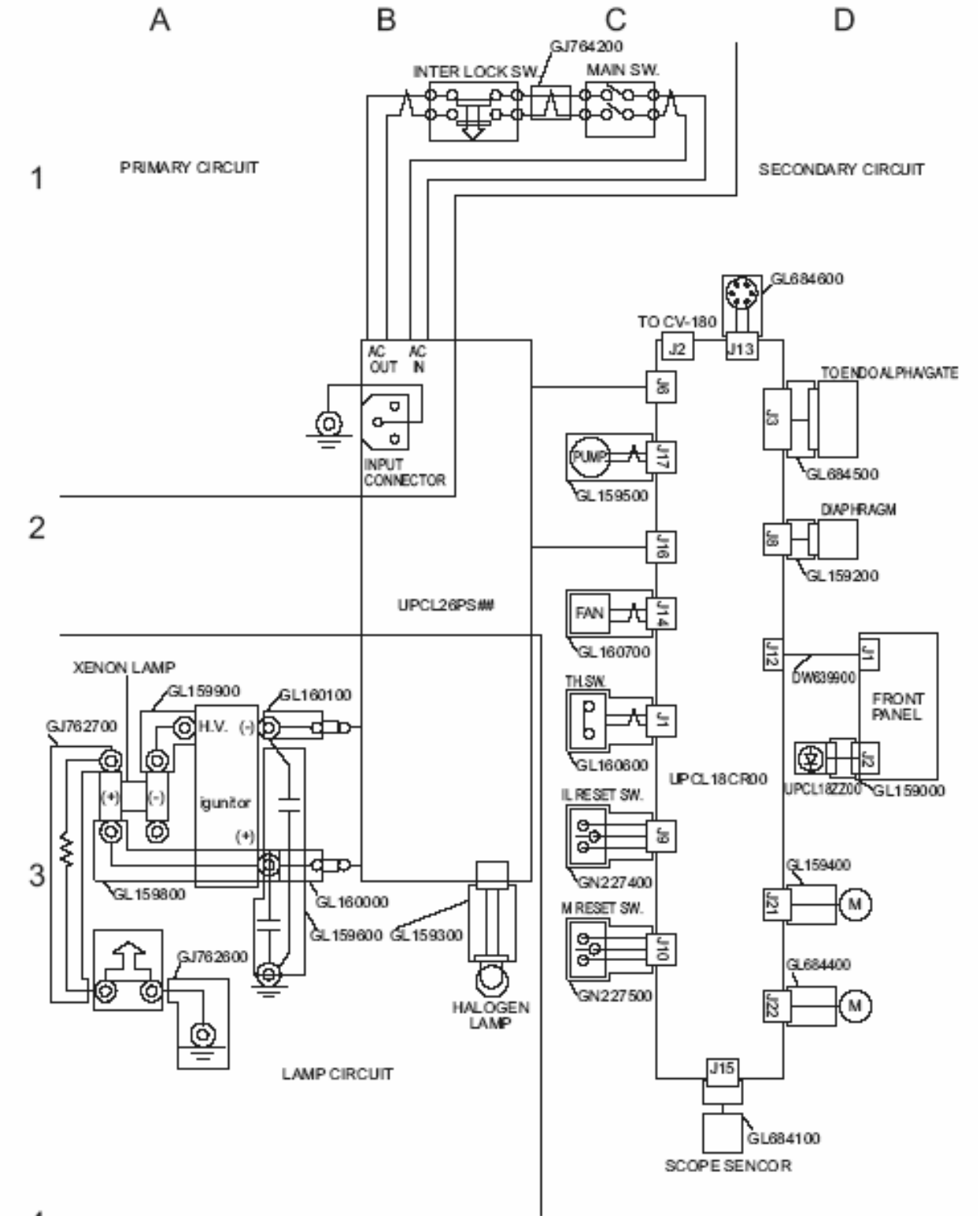
MODEL	UNIT	FR.1700
CLV-180	TURRET	FIG.6/8
OLYMPUS MEDICAL SYSTEMS CORP.		

ISSUE1



EXPLODED PARTS DIAGRAM

MODEL	UNIT	FR.1700
CLV-180	IGNITER	FIG.7/8
OLYMPUS MEDICAL SYSTEMS CORP.		



EXPLODED PARTS DIAGRAM

MODEL	UNIT	FR.1700
CLV-180	CABLE	FIG.8/8
OLYMPUS MEDICAL SYSTEMS CORP.		

ISSUE1

2. Parts List

CLV-180

PARTS No.	INDEX	PARTS NAME E.	SPECIFICATION	REMARK	CHECK
DH227100	2-A1	TERMINAL			
DH331800	4-A1	TERMINAL			
DK237200	2-D1	RETAINING BASE			
DL201100	7-D2	CORE			
DL291900	2-A2	CORE			
DO048800	1-D2	BINDER			
DO063600	6-A3	BINDER			
DO073500	2-B2	BINDER			
DO076700	2-A3	BINDER			
DO077100	4-C1	BINDER			
DO077700	5-C3	BINDER			
DO140600	7-A1	CABLE HOLDER			
DO153200	6-A1	BINDER			
DO171800	1-C2	BINDER			
DP118500	4-B2	CONVERTER			
DQ143300	6-C2	EMERGENCY LAMP			
DW639900	2-A2	FLAT CABLE			
DY180200	7-A1	SWITCH	INTERLOCK		
DZ115300	7-B2	CORE			
DZ146000	1-D2	CORE			
DZ197900	1-D2	CORE STAND			
DZ286900	2-A3	EARTH STRAP			
GC140200	3-A1	SPRING COLLAR			
GC3590	2-A1	CE LABEL MDD	200V CLASS		
GC668300	5-B1	TUBE SSS			
GC672100	5-C1	RUBBER FOOT			
GC688500	2-C4	MAIN SWITCH			
GC689300	7-A4	SWITCH BOARD COLLAR			
GC695900	3-B2	SINK RETAINER SPING			
GC696200	3-D1	SINK SPRING			
GC696300	3-C2	DISCHARGE PLATE			
GC696400	3-A2	DISCHARGE BASE			
GC696500	3-B2	DISCHARGE SPINDLE			
GC696600	3-B2	DISCHARGE COIL			
GC696700	3-B2	DISCHARGE SPRING			
GC697000	2-A2	REAR FOOT			
GC697400	7-A4	SWITCH WASHER			
GC698100	5-D2	SUPPORT COIL S			
GC698700	1-B2	TANK SOCKET			
GC699900	6-C1	T STOPPER PIN			
GC701000	3-A1	HINGE PLATE			
GC701200	3-A2	KNOB WASHER			
GC701300	3-A2	SINK SHAFT			
GC701500	5-C1	PUMP BASE			
GC701700	5-C2	TUBE L			
GC701800	5-D2	TUBE S			
GC701900	5-A2	LOWER P CASE			
GC702100	5-A2	UPPER P CASE			
GC702200	5-A2	P PACKING			
GC702300	5-C2	SUPPORT COIL L			
GC792600	3-D3	MINI CLAMP			
GC884400	1-C2	TOP COVER			
GC884600	1-A2	SW BLOCK			
GC884800	2-C2	GASKET F260			
GC884900	7-B2	IGNITER COVER			

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PARTS No.	INDEX	PARTS NAME E.	SPECIFICATION	REMARK	CHECK
GC885200	6-C3	LENS BASE U			
GC885400	6-B3	LENS RETAINER 2			
GC885500	6-B2	LENS RETAINER 3			
GC885600	3-B2	LAMP BASE			
GC885700	3-D1	POLE SPACER			
GC885800	3-D2	POLE F			
GC885900	3-C1	POLE R			
GC886100	7-D2	SHIELD MYLAR 1			
GC886200	7-D1	SHIELD MYLAR 2			
GC886300	7-C2	HS GUIDE			
GC886600	7-A4	SWITCH BOARD			
GC886700	7-D3	IGNITER BL			
GC887800	6-C2	H LAMP SPRING			
GC890600	5-B1	FLAT CLIP			
GC907300	4-D1	SLIDE DETECTION SPRING			
GC923800	2-B4	SWITCH SPRING			
GC929400	4-A2	SIDE CLAMP			
GC930400	4-D2	TUBE 350			
GC930500	4-D2	PROTECTION 360			
GC936900	2-B1	RATED PLATE			
GC999200	1-A2	LAMP PLATE XeJ			
GH272900	1-B4	FOOT LO			
GH275000	3-C1	MINI CATCH			
GH287700	3-A1	MAGNET			
GH314800	1-B2	WRENCH			
GH423400	7-B2	GASKET 2			
GH484500	3-C1	SNAP LOCK			
GH492900	7-B1	COUTION PLATE			
GJ762600	3-C3	W12M019A	Discharge H		
GJ762700	3-B3	W12M020A	Resistance H		
GJ764200	7-A1	W12M006A	INTERLOCK-MAIN SW		
GL159000	2-C3	W03O015A	Main SW LED H		
GL159200	4-D2	W03O016A	DIAPHRAGM H		
GL159300	6-A1	W03O010A	Emergency lamp H		
GL159400	6-A3	W03O011A	F turret moter H		
GL159500	5-C1	W03O004A	Pump		
GL159600	7-D2	W03O001A	CONDENSER H		
GL159800	7-D2	W03O006A	+IGNITER H		
GL159900	7-D2	W03O007A	-IGNITER H		
GL160000	7-D3	W03O008A	+RELAY H		
GL160100	7-D3	W03O009A	−RELAY H		
GL160600	7-D1	W03O002A	Thermo senser		
GL160700	7-A2	W03O003A	Fan		
GL163700	3-D2	LAMP BASE U			
GL372900	1-A3	DOOR 260 EU			
GL681600	4-B1	UPCL18CR00	Main board		
GL684100	6-A3	W04Q001A	Scope dltection H		
GL684400	3-C3	W04Q004A	M turret moter H		
GL684500	2-D1	W04Q005A	EndoAlpha connector		
GL684600	2-B1	W04Q006A	Foot SW connector		
GL689300	2-A4	F PANEL 180 EU	ENGLISH		
GL689600	4-D2	S SOCKET 180U			
GL689800	6-D1	NORMAL FU			
GL689900	6-D1	NBI FU			
GL690300	6-C3	LENS RETAINER U			

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PARTS No.	INDEX	PARTS NAME E.	SPECIFICATION	REMARK	CHECK
GL690500	3-B4	M TURRET U			
GL701300	2-A4	F PANEL 180 SU	SYMBOL		
GL703600	6-C3	TURRET BK ECO U			
GL704600	3-C1	HEAT SINK F ECO U			
GL704700	3-C1	HEAT SINK ECO U			
GL704800	3-B1	HEAT SINK R ECO U			
GL732100	5-B1	PUMP 260 ECO U			
GL740100	2-B3	UPCL16ZZ00 PBF	Main SW LED		
GN037000	7-A1	W03O018A	Main SW		
GN103400	4-D2	UPNS180U			
GN105900	6-A2	TURRET REPAIR U			
GN167300	7-C3	UPCL18PS00	IGNITER		
GN170400	7-D3	IGNITER NPFU			
GN178600	7-A1	SHIELD CASE 180 U			
GN198300	4-D1	SS BOARD REPAIR U			
GN227400	4-A2	LIMIT SW REPAIR U			
GN227500	3-D3	M LIMIT SW REPAIR U			
GS391500	3-A1	HEX BOLT			
GS391600	3-A1	GT WASHER			
GS907300	4-D1	SLIDE DETECTION SPRING			
GT042800	4-C1	ATTACHMENT U			
GT083000	3-D3	180 MESH BK BASE			
GT083100	2-C3	180 FP CHASSIS			
GT083200	2-B4	SWITCH COLOR LL			
GT083300	2-C3	SHIELDING PLATE			
GT083400	2-C2	REAR PANEL 3E	OAI		
GT084400	6-A1	180 TURRET			
GT084500	6-D2	H LAMP RETAINER			
GT084600	6-A1	H LAMP SHIELD			
GT084700	6-A1	F FRAME PLATE			
GT085800	3-D3	EDGE SADDLE			
GT089200	6-B3	CRAMP BASE ECO			
GT089500	7-A2	FAN BK ECO			
GT090000	5-B3	PUMP BK ECO			
GT090200	5-C1	PUMP PLATE ECO			
GT090600	3-B1	MAGNET HOLDER ECO			
GT090700	3-B1	HEAT SINK R ECO			
GT090900	1-D4	CHASSIS ECO			
GT135000	4-C2	S SOCKET 180			
GT135400	4-D1	RETAINING BRACKT 180			
GT135500	4-C1	HINGE 180			
GT135600	4-D1	SLIDE DETECTION 180			
GT136500	4-C1	HEAT COVER			
GT144400	7-A2	N SWITCH BK			
GT144500	7-B2	EXTENDING KNOB			
GT163600	6-A2	F FRAME DUMMY			
GT173100	2-B4	LED COVER			
GT173200	7-A1	SW PLATE SPRING			
GT192600	4-D1	PLASTIC SCREW			
GT193400	3-B3	T STOPPER PIN 180			
GT194800	2-A2	CORE HOLDER 180			
GT203300	2-A3	FP SHEET			
GT220500	7-D1	SHIELD PLATE			
GT220600	7-A1	SHIELD CASE 180			
GT220800	7-D1	GASKET			

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PARTS No.	INDEX	PARTS NAME E.	SPECIFICATION	REMARK	CHECK
GT223800	2-C2	REAR PANEL 6E	Except OAI		
GT230500	4-C1	SCREW			
GU196700	1-A3	POWER CABLE 1U	100V CLASS		
GU197300	1-A3	POWER CABLE 2U	200V CLASS		
GV414000	5-D2	VALVE U			
LM401600	6-B3	1-T			
LM401700	6-B3	2-T			
LM401800	6-C3	3-T			
LM401900	6-C3	4-T			
6N5BN	7-D3	NUT		WE502012	
6N6SN	2-C2	NUT		WE501034	
BNW4SZ	7-A4	WASHER		WE303014	
C6N3SZ	1-A1	WASHER		WE178001	
CBK3x4SA	2-A2	SCREW		WE128010	
CCUK2x4SZ	3-A2	SCREW		WE139047	
CCUK2.5x6SZ	2-C1	SCREW		WE139044	
CCUK3x4SZ	2-A2	SCREW		WE139018	
CCUK3x6SZ	2-A2	SCREW		WE139002	
CCUK3x8SZ	5-B1	SCREW		WE139006	
CCUK4x12SZ	4-C2	SCREW		WE139057	
CCUK4x45SZ	7-A2	SCREW		WE139010	
CCUK4x6SZ	6-A1	SCREW		WE139005	
CSK2.5x6SA	3-B1	SCREW		WE106143	
CUKSK3x6SZ	1-D2	SCREW		WE168011	
CUKSK4x12SZ	1-B4	SCREW		WE168003	
ER2.5SN	3-D2	E RING		WE307038	
ER5SA	3-B1	E RING		WE307017	
HCBK3x6SA	1-A1	SCREW		WE129002	
HWB3SA	2-D1	WASHER		WE306013	
HWB6SA	2-C2	WASHER		WE306016	
SW5BN	7-D3	WASHER		WE304058	
T2CCUK3x14SZ	5-A1	SCREW		WE155015	
T2CCUK3x8SZ	2-B3	SCREW		WE155001	

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