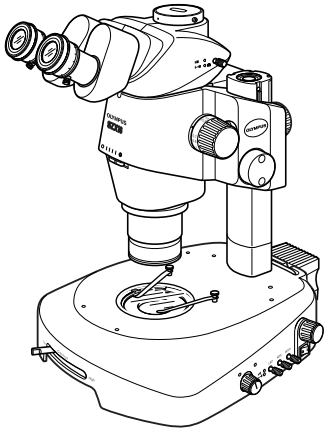
OLYMPUS®

Modules described in this manual

SZX2-ZB16A
SZX2-RFA16A
SZX2-FOA
SZX2-MDCU
SZX-MDHSW
SZX-MDFSW



INSTRUCTIONS

SZX2 MOTORIZED SYSTEM

This instruction manual is for the Olympus SZX2 motorized microscope system. To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of this system, we recommend that you study this manual thoroughly before operating the system.
Retain this instruction manual in an easily accessible place near the work desk for future reference.

AX7747

CONTENTS

EU ONLY

WEEE Directive

In accordance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment, this symbol indicates that the product must not be disposed of as unsorted municipal waste, but should be collected separately.

Refer to your local Olympus distributor in EU for return and/or collection systems available in your country.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC WARNING: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IMPORTANT

Combination of the SZX2 or MVX10 non-motorized microscope frame or SZX2-ZB16A motorized microscope frame with the motorized focusing module and control unit makes possible motorized control of both motorized zooming and motorized focusing or either of the motorized zooming or motorized focusing from the hand switch or foot switch.
The foot switch enables hands-free operation while the hand switch enables operation at the hand of the operator.

Warning Engravings/Stickers

This manual pertains only to the motorized control system.
For the operating instructions of the non-motorized stereo microscope, refer to the separate Instruction Manual.

⚠ SAFETY PRECAUTIONS

1. After the equipment has been used in an observation of a specimen that is accompanied with a potential of infection, clean the parts coming in contact with the specimen to prevent infection.
   - Moving this microscope is accompanied with the risk of dropping the specimen and causing infections. Be sure to remove the specimen before moving this product.
   - In case the specimen is damaged by erroneous operation, promptly take the infection prevention measures.
   - The microscope may become unstable when certain intermediate attachments and/or photography unit are mounted on it. Take the measures so that the microscope does not turn over.
   - Do not place the specimen on the cover on the left of the motorized focusing module. Otherwise, the specimen may drop, causing damage or scattering of the specimen.
   - Be careful not to have your foot caught by a cable connected to a motorized module. Otherwise, the microscope system may turn over or the specimen drop from the base, causing damage or scattering of the specimen.
2. The SZX2/MVX10 microscope frame section of the system moves up or down during focusing. To prevent contact with the unit during focusing, do not place anything near it. Do not put your hand or fingers in the space between the column and cover of the focusing module or the objective and specimen while system unit is functioning. If your hand is caught between them, an injury such as a bone fracture may result.
   The zoom knobs rotate spontaneously during motorized zooming operation. Do not approach an object that may be entangled by the knob, such as a hair.
3. Be sure to set the main switch of the SZX2-MDCU control unit to " O " (OFF) before connecting the cables.
4. Always ensure that the **grounding terminal** is properly connected. If the equipment is not grounded, Olympus can no longer warrant the electrical safety performance of the equipment.
5. Route the power cord away from the lamp housing. Should a power cord come in contact with the hot lamp housing, the power cord could melt and cause electric shock.
6. The SZX-MDFSW foot switch is not designed waterproof. Keep it away from water for this may cause malfunction or electric leak.
7. Always use the U-ACAD4515 AC power adapter.
   Rated voltage : INPUT 100-240 V ~ 1.0 A 50-60 Hz
   OUTPUT 15 V ⎓ 2.7 A DC
8. When transporting the SZX2-RFA16A motorized fluorescence focusing module, detach it from the base, pack it by placing it on the side panel and carry the package.
9. The zoom knobs rotate during motorized zooming operation of the SZX2-ZB16A. Do not attempt to forced stop the zoom knob rotation with your hand, etc.

Safety Symbols

The following symbols are found on the system. Study the meaning of the symbols and always use the equipment in the safest possible manner.

Symbol	Explanation
	Be careful not to have your finger or hand caught by the mechanism (the column and cover of the focusing module or between the objective and specimen).
	Before use, carefully read the instruction manual. Improper use could result in personal injury to the user and/or damage to the equipment.
I	Indicates that the main switch is ON.
O	Indicates that the main switch is OFF.

1 Getting Ready

1. Never replace a module, connect a cable or disconnect it while the main switch of the SZX2-MDCU control unit is set to " I " (ON), for this will result in malfunction.
2. To prevent malfunction, do not handle the foot switch violently. Press the foot switch pedals with a light force of the foot and do not apply an excessive force. Also clean the rubber feet of the foot switch periodically since attached dust makes the foot switch likely to glide on the floor.
3. The system is composed of precision instruments. Handle it with care and avoid subjecting it to sudden or severe impact.
4. Do not use the system where it is subjected to direct sunlight, high temperature and humidity, dust or vibrations.
5. Never attempt to disassemble a part for this will result in malfunction.

2 Caution

If the system is used in a manner not specified by this manual, the safety of the user may be imperiled. In addition, the equipment may also be damaged. Always use the equipment as outlined in this instruction manual.

The following symbols are used to set off text in this instruction manual.

⚠ : Indicates that failure to follow the instructions in the warning could result in bodily harm to the user and/or damage to equipment (including objects in the vicinity of the equipment).

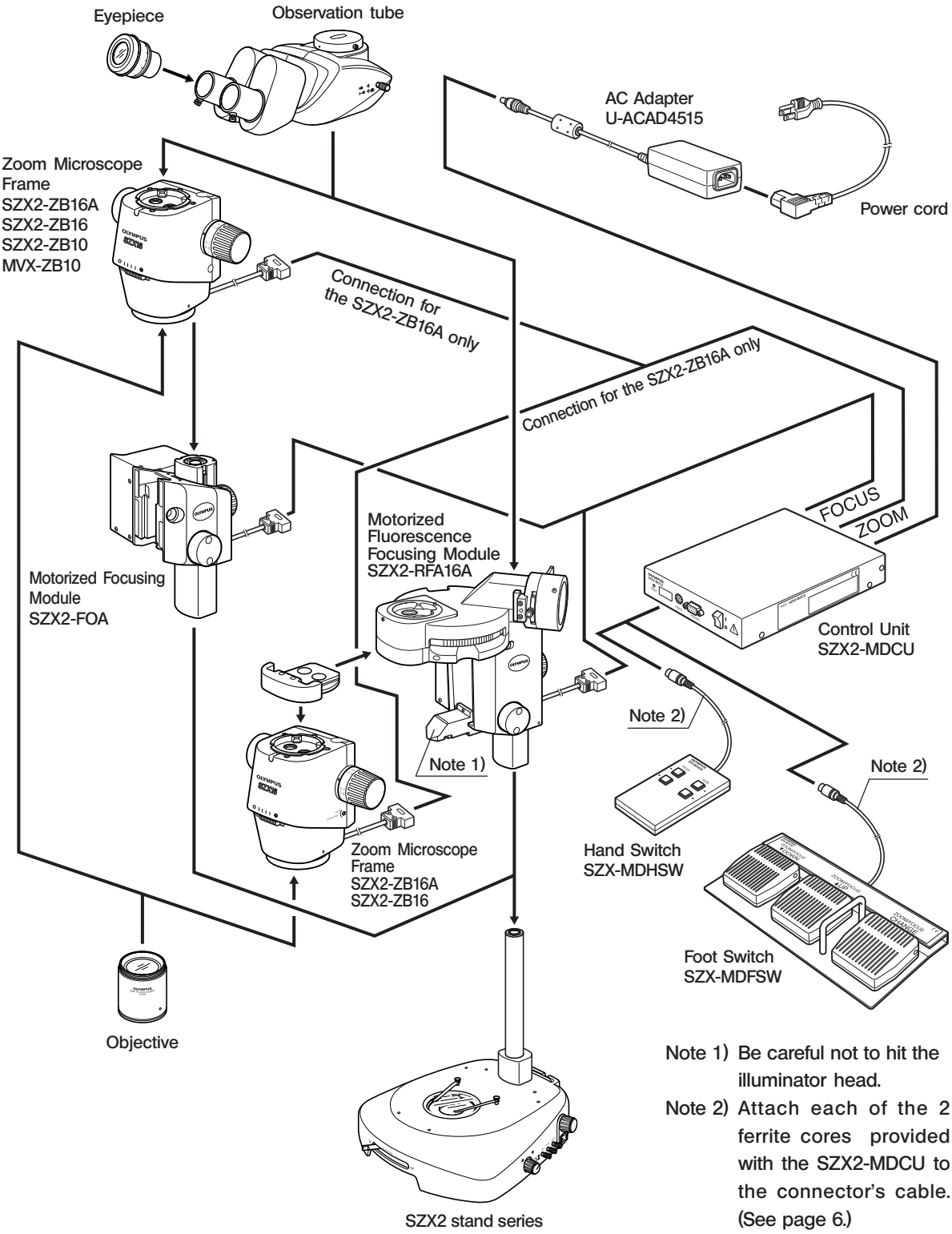
★ : Indicates that failure to follow the instructions could result in damage to the equipment.

◎ : Indicates commentary (for ease of operation and maintenance).

⚠ Be sure to connect the specified module to each connector. If equipment other than the specified module is connected, Olympus can no longer warrant any performance of the system.

⚠ Be sure to set the main switch of the SZX2-MDCU control unit to " ○ " (OFF) before connecting the cables. Align the orientation of the connector, push it all the way in until it is stopped and, if the connector is provided with lock screws, be sure to tighten them.

⚠ Distribute cables so that they do not come in the way of observation.



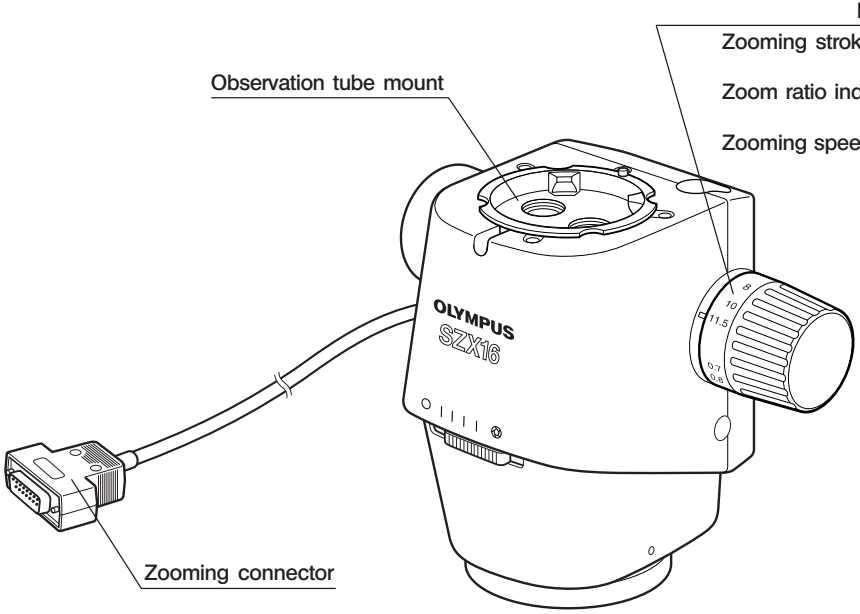
Note 1) Be careful not to hit the illuminator head.

Note 2) Attach each of the 2 ferrite cores provided with the SZX2-MDCU to the connector's cable. (See page 6.)

2 MOTORIZED MODULE CONTROLS

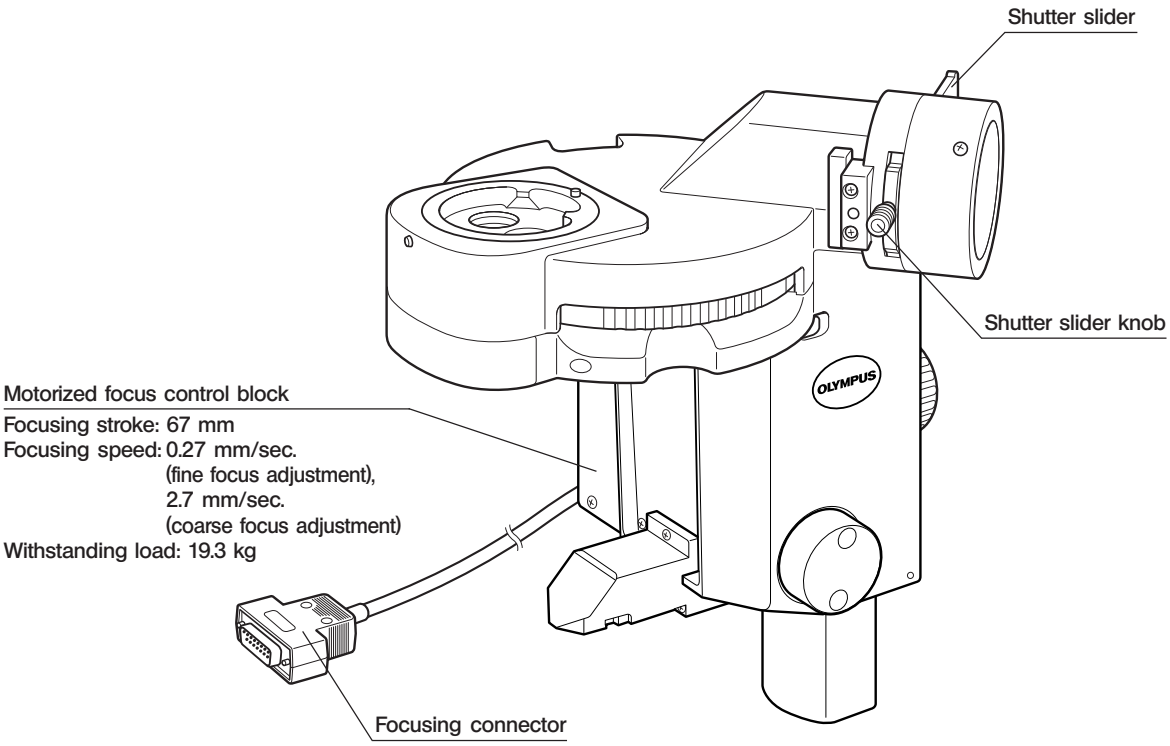
Motorized Zoom Microscope Frame SZX2-ZB16A

◎For the controls that are not described below, refer to the Instruction manual for the SZX16.



Motorized Fluorescence Focusing Module SZX2-RFA16A

◎For the controls that are not described below, refer to the Instruction manual for the SZX16 reflected light fluorescence system.



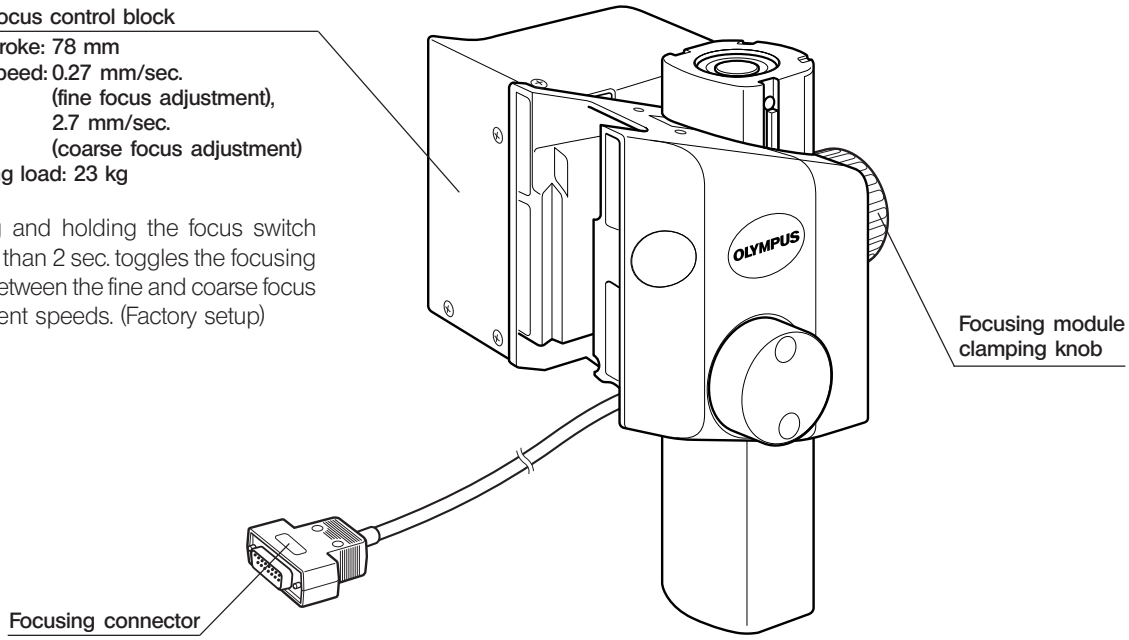
◎Pressing and holding the focus switch for more than 2 sec. toggles the focusing speed between the fine and coarse focus adjustment speeds. (Factory setup)

Motorized Focusing Module SZX2-FOA

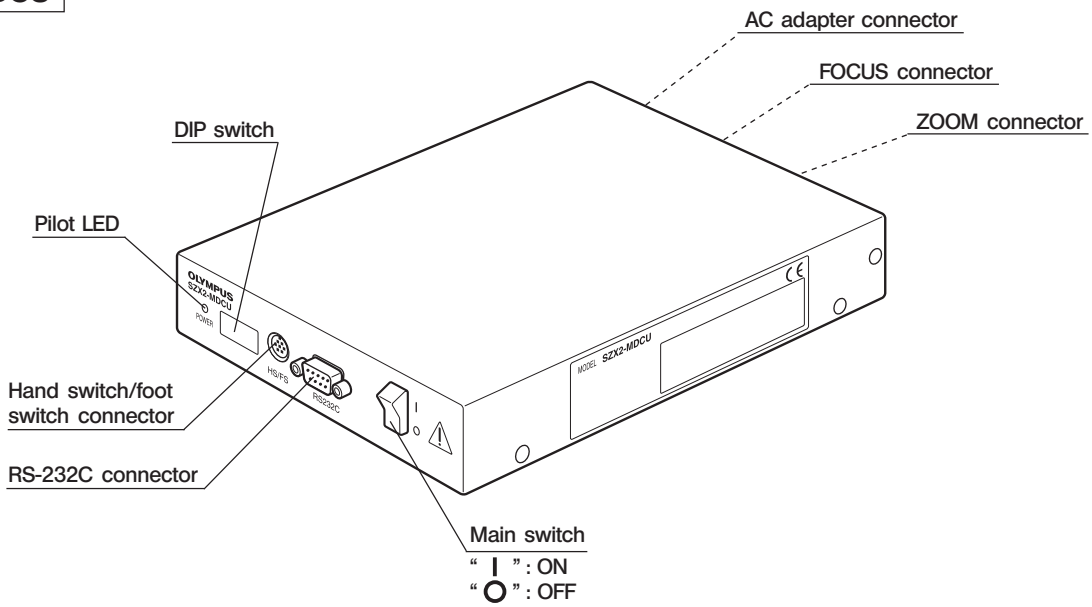
⚠ When using the 2X objective, be careful not to lower it too much to prevent it from interfering wit the base.

Motorized focus control block
Focusing stroke: 78 mm
Focusing speed: 0.27 mm/sec.
(fine focus adjustment),
2.7 mm/sec.
(coarse focus adjustment)
Withstanding load: 23 kg

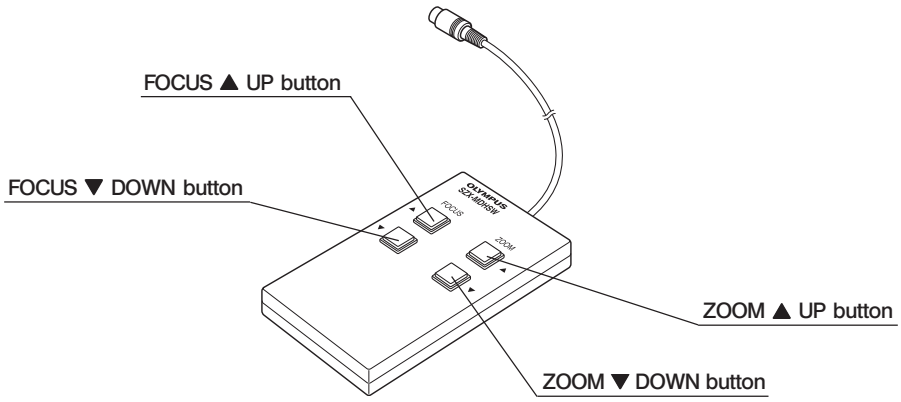
◎ Pressing and holding the focus switch for more than 2 sec. toggles the focusing speed between the fine and coarse focus adjustment speeds. (Factory setup)



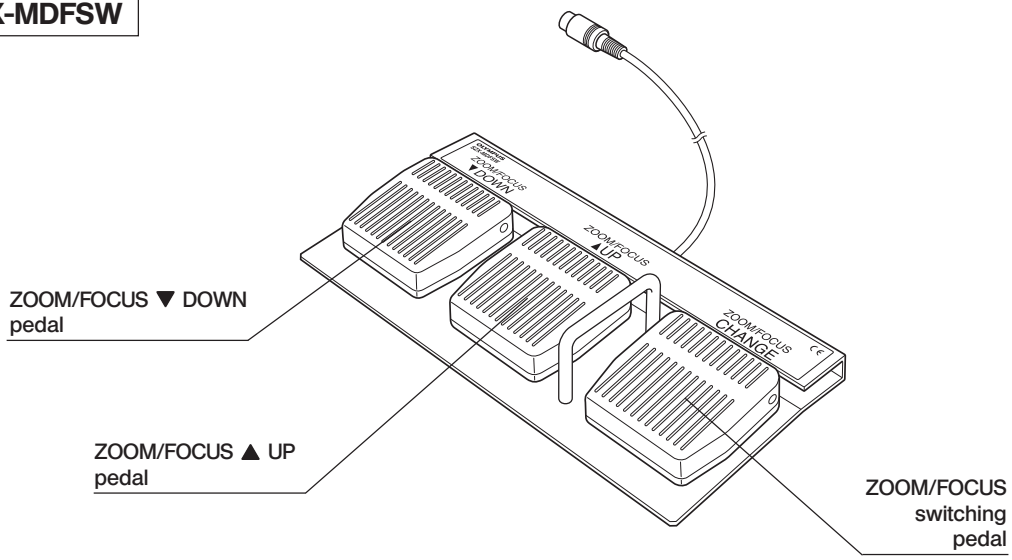
Control Unit SZX2-MDCU



Hand Switch SZX-MDHSW

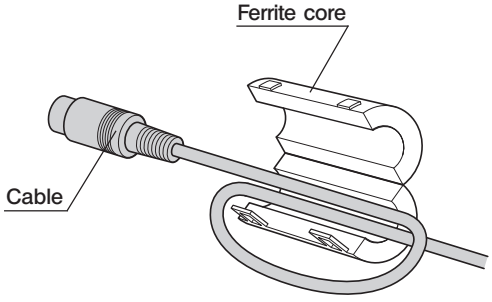


Foot Switch SZX-MDFSW



Attaching the ferrite core

Bundle the portion near the connector of the hand switch or foot switch and fit the ferrite core as shown in the figure.



3 MOTORIZED CONTROL OPERATIONS

3-1 Preparation

1. Remove the knob from the shutter slider provided with the motorized fluorescence focusing module by turning the knob counterclockwise.
   Position the shutter slider so that the click groove faces the bottom side and the threaded hole for the knob faces you, and insert the shutter slider into the back side of the insertion hole.
   Attach the knob again to the shutter slider by screwing the knob into the knob-fixing threaded hole. Slide the shutter slider and ensure that it stops at the click position.
2. Ensure that the modules and connection cables of the motorized control system are connected properly.

⚠ Cables are vulnerable when bent or twisted. Never subject them to excessive force.

⚠ Always use the power cord provided by Olympus. If no power cord is provided, please select the proper power cord by referring to the section "PROPER SELECTION OF THE POWER SUPPLY CORD" at the end of this instruction manual. If the proper power cord is not used, product safety performance cannot be warranted.

⚠ Always use a 3-conductor power cord and connect it to a grounded 3-conductor hospital-grade outlet. If the equipment is not grounded, Olympus can no longer warrant the electrical safety performance of the equipment.

3. Set the DIP switch. (Fig. 1)

◎With the factory setup, the focus speed varies at the fine adjustment speed (0.27 mm/sec.) for the first 2 seconds after the button or pedal is pressed and then changes to the coarse adjustment speed (2.7 mm/sec.).

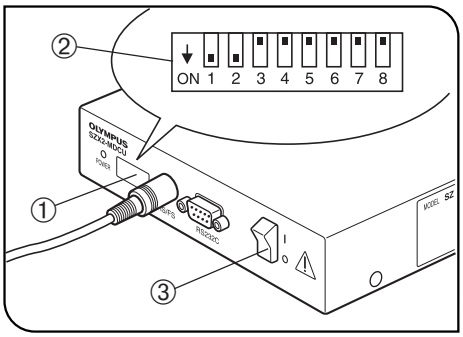


Fig. 1

To disable FOCUS operation mode or FOCUS coarse adjustment changing timing, change the setting of the DIP switch 2 under the DIP switch cover seal 1

DIP Switch Setting Method

★Set the main switch 3 to " O " (OFF) before changing the DIP switch setting. The setting is read and established when the main switch is set to " I " (ON).

- Set the main switch 3 to " O " (OFF).
- Set the DIP switch 2 to the required setting by referring the DIP switch assignment table. (on: 1 → Switch bit at the lower position)
- Set the main switch 3 to " I " (ON) to enable the setting.
- Attach the DIP switch cover seal 1

DIP Switch Assignment Table

Bit position (on: 1, off: 0)								Function	Setting Details
1	2	3	4	5	6	7	8		
0								Enable/disable electronic tone	Enable electronic tone
1									Disable electronic tone
	0							Focus operation mode	Fine → coarse operation
	1								Fine operation
		0						Focus coarse adjustment switching timing	2 seconds after switching ON
		1							1 second after switching ON
			0					Focus fine operation mode	Fine (high-speed mode): 0.27 mm/sec.
			1						Fine (low-speed mode): 0.067 mm/sec.*
				0				Reserved fro manufacturer	Fixed at off.
				1					
					0	0	0		

◎The meshed settings indicate the factory setting (all off).

* Recommended in case focusing is difficult when the total magnification is 100X or more (with visual observation) or 10X or more (with camera observation).

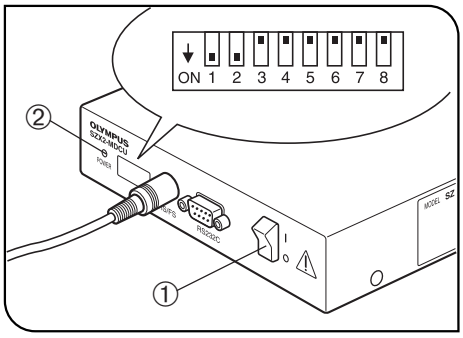


Fig. 2

4. If you do not want to set the DIP switch, set the main switch 1 of the SZX2-MDCU control unit to " I " (ON).
   The pilot LED 2 should light up to indicate the ON status of the unit.

3-2 Operation of Hand Switch SZX-MDHSW

⚠ The motorized parts rotate and move up and down during operation. Be careful not to have your fingers caught by them.

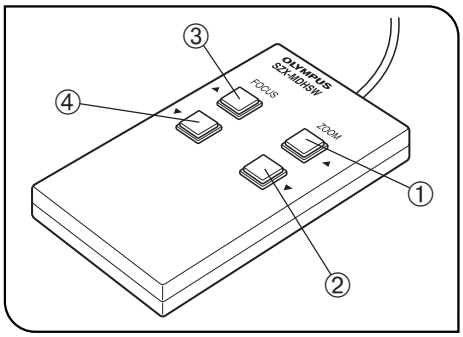


Fig. 3

◎When a ZOOM or FOCUS button is held until the upper or lower limit of control is reached, an electronic tone (short beep) is generated (provided that it is enabled by the DIP switch) and the control stops.

◎If buttons 1 and 2 or buttons 3 and 4 are pressed simultaneously, no control operation occurs to prevent malfunction.

ZOOM

Pressing and holding button 1 zooms up ▲ the image and pressing and holding button 2 zooms down ▼ the image.
To stop zooming control, simply remove your finger from the button.

FOCUS

Pressing and holding button 3 moves up ▲ the focus position and pressing and holding button 4 moves down ▼ the focus position.
To stop focusing control, simply remove your finger from the button.

◎Depending on the DIP switch setting, pressing and holding button 3 or 4 for 2 sec. (or 1 sec.) switches the focusing speed from the fine focus adjustment speed to the coarse focus adjustment speed.

3-3 Operation of Foot Switch SZX-MDFSW

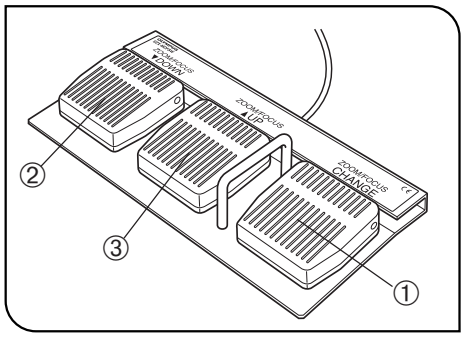


Fig. 4

◎When a ZOOM or FOCUS pedal is held until the upper or lower limit of control is reached, an electronic tone (short beep) is generated (provided that it is enabled by the DIP switch) and the control stops.

◎If pedals 2 and 3 are pressed simultaneously, no control operation occurs to prevent malfunction.

ZOOM/FOCUS switching

◎When the main switch is set to "I" (ON), the FOCUS control function is selected.

Each press of pedal 1 switches the functions of pedals 2 and 3 on the left between FOCUS → ZOOM and ZOOM → FOCUS. One short beep is generated when the pedal function is switched to ZOOM, and two short beeps are generated when the pedal function is switched to FOCUS (provided that it is enabled by the DIP switch).

DOWN pedal 2

Pressing and holding this pedal zooms down ▼ the image or moves down ▼ the focus position.

To stop control, simply remove your foot from the pedal.

UP pedal 3

Pressing and holding this pedal zooms up ▲ the image or moves up ▲ the focus position.

To stop control, simply remove your foot from the pedal.

◎Depending on the DIP switch setting when focusing, pressing and holding pedal 2 or 3 for 2 sec. (or 1 sec.) switches the focusing speed from the fine focus adjustment speed to the coarse focus adjustment speed.

■ **Operating Environment**

- Indoor use.
- Altitude: Max. 2000 meters.
- Ambient temperature: 5° to 40°C (41° to 104°F).
- Relative humidity: 80% for temperatures up to 31°C (88°F), decreasing linearly through 70% at 34°C (93°F), 60% at 37°C (99°F) to 50% relative humidity at 40°C (104°F).
- Supply voltage fluctuations: ±10%.
- Pollution degree: 2 (in accordance with IEC60664).
- Installation (overvoltage) category: II (in accordance with IEC60664)

PROPER SELECTION OF THE POWER SUPPLY CORD

If no power supply cord is provided, please select the proper power supply cord for the equipment by referring to " Specifications " and " Certified Cord " below:

CAUTION: In case you use a non-approved power supply cord for Olympus products, Olympus can no longer warrant the electrical safety of the equipment.

Specifications

Voltage Rating	125V AC (for 100-120V AC area) or, 250V AC (for 220-240V AC area)
Current Rating	6A minimum
Temperature Rating	60°C minimum
Length	3.05 m maximum
Fittings Configuration	Grounding type attachment plug cap. Opposite terminates in molded-on IEC configuration appliance coupling.

Table 1 Certified Cord

A power supply cord should be certified by one of the agencies listed in Table 1 , or comprised of cordage marked with an agency marking per Table 1 or marked per Table 2. The fittings are to be marked with at least one of agencies listed in Table 1. In case you are unable to buy locally in your country the power supply cord which is approved by one of the agencies mentioned in Table 1, please use replacements approved by any other equivalent and authorized agencies in your country.

Country	Agency	Certification Mark	Country	Agency	Certification Mark
Argentina	IRAM		Italy	IMQ	
Australia	SAA		Japan	JET, JQA, TÜV, UL-APEX / MITI	
Austria	ÖVE		Netherlands	KEMA	
Belgium	CEBEC		Norway	NEMKO	
Canada	CSA		Spain	AEE	
Denmark	DEMKO		Sweden	SEMKO	
Finland	FEI		Switzerland	SEV	
France	UTE		United Kingdom	ASTA BSI	
Germany	VDE		U.S.A.	UL	
Ireland	NSAI				

Table 2 HAR Flexible Cord

APPROVAL ORGANIZATIONS AND CORDAGE HARMONIZATION MARKING METHODS

Approval Organization	Printed or Embossed Harmonization Marking (May be located on jacket or insulation of internal wiring)		Alternative Marking Utilizing Black-Red-Yellow Thread (Length of color section in mm)		
			Black	Red	Yellow
Comite Electrotechnique Belge (CEBEC)	CEBEC	‹HAR›	10	30	10
Verband Deutscher Elektrotechniker (VDE) e.V. Prüfstelle	‹VDE›	‹HAR›	30	10	10
Union Technique de l´Electricite´ (UTE)	USE	‹HAR›	30	10	30
Instituto Italiano del Marchio di Qualita´ (IMQ)	IEMMEQU	‹HAR›	10	30	50
British Approvals Service for Electric Cables (BASEC)	BASEC	‹HAR›	10	10	30
N.V. KEMA	KEMA-KEUR	‹HAR›	10	30	30
SEMKO AB Svenska Elektriska Materielkontrollanstalter	SEMKO	‹HAR›	10	10	50
Österreichischer Verband für Elektrotechnik (ÖVE)	‹ÖVE›	‹HAR›	30	10	50
Danmarks Elektriske Materialkontroll (DEMKO)	‹DEMKO›	‹HAR›	30	10	30
National Standards Authority of Ireland (NSAI)	‹NSAI›	‹HAR›	30	30	50
Norges Elektriske Materiellkontroll (NEMKO)	NEMKO	‹HAR›	10	10	70
Asociacion Electrotecnica Y Electronica Espanola (AEE)	‹UNED›	‹HAR›	30	10	70
Hellenic Organization for Standardization (ELOT)	ELOT	‹HAR›	30	30	70
Instituto Portages da Qualidade (IPQ)	np	‹HAR›	10	10	90
Schweizerischer Elektro Technischer Verein (SEV)	SEV	‹HAR›	10	30	90
Elektriska Inspektoratet	SETI	‹HAR›	10	30	90

Underwriters Laboratories Inc. (UL) SV, SVT, SJ or SJT, 3 X 18AWG
Canadian Standards Association (CSA) SV, SVT, SJ or SJT, 3 X 18AWG

This device complies with the requirements of both directive 2004/108/EC concerning electromagnetic compatibility and directive 2006/95/EC concerning low voltage.

OLYMPUS®

OLYMPUS CORPORATION
Shinjuku Monolith, 3-1, Nishi Shinjuku 2-chome, Shinjuku-ku, Tokyo, Japan
OLYMPUS LIFE SCIENCE EUROPA GMBH
Postfach 10 49 08, 20034, Hamburg, Germany
OLYMPUS AMERICA INC.
3500 Corporate Parkway, P.O. Box 610, Center Valley, PA 18034-0610, U.S.A.
OLYMPUS SURGICAL & INDUSTRIAL AMERICA INC.
One Corporate Drive, Orangeburg, NY 10962, U.S.A.
OLYMPUS SINGAPORE PTE LTD.
491B River Valley Road, #12-01/04 Valley Point Office Tower, Singapore 248373
OLYMPUS AUSTRALIA PTY. LTD.
31 Gilby Road, Mount Waverley, VIC., 3149, Australia
OLYMPUS LATIN AMERICA, INC.
5301 Blue Lagoon Drive, Suite 290 Miami, FL 33126, U.S.A.

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