

INSTRUCTIONS

BX3-SSU

SCANNING STAGE WITH ULTRASONIC

This instruction manual is for the Olympus Scanning Stage with Ultrasonic Model BX3-SSU. To ensure the safety, obtain optimum performance and to familiarize yourself fully with the use of the scanning stage with ultrasonic, we recommend that you study this manual thoroughly before operating the microscope. In addition, be also sure to read the instruction manual for the microscope on which the scanning stage with ultrasonic is installed. Retain this instruction manual in an easily accessible place near the work desk for future reference.

Optical Microscope Accessory

[TYPE-2]



A X 8 2 1 3

This product is applied with the requirements of standard IEC/EN61326-1 concerning electromagnetic compatibility.

- Emission Class A, applied to industrial environment requirements.

- Immunity Applied to industrial environment requirements.

Some interference may occur if this product is used in domestic location.



In accordance with European Directive 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 product 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 product is operated in a commercial environment. This product 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 product 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 product.

For Korea only

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CONTENTS

IMPORTANT – Be sure to read this section for safe use of the equipment. – 1,2

1 MODULE NOMENCLATURE 3

2 CONTROLS 4,5

3 OPERATION OF SCANNING STAGE WITH ULTRASONIC 6

- 1** Turning the Power ON
- 2** Moving the Stage
- 3** Replacing the Fuses

4 COMPENSATION OF THE STAGE 7

- 4-1 When Using BX63 7
- 4-2 When Using IX83 8
- 4-3 When Touch Panel Controller is not available 8

5 OPTIONAL ACCESSORIES 9

- 1** Center Plate with 50mm Hole IX-CP50
- 2** Stage Clips IX-SCL

6 SPECIFICATIONS 10

7 TROUBLESHOOTING GUIDE 11

8 ASSEMBLY 12-16

- PROPER SELECTION OF THE POWER SUPPLY CORD 17,18

IMPORTANT



SAFETY PRECAUTIONS

(Fig. 1)

© This manual pertains only to the information related to the scanning stage with ultrasonic and associated modules.

Before using this instrument together with the microscope and associated modules, make sure that you have carefully read their manuals and understand how the system should be operated together.

CAUTION

To ensure the performance, we recommend that you have your Olympus representative assemble and adjust the scanning stage with ultrasonic.

1. Install the microscope on a level (inclination less than $\pm 2^\circ$) surface on a sturdy table or bench.

2. To prevent obstruction of the air vents ② on both sides of the control box ① for BX3-SSU, always install it longitudinally and make sure to leave at least 10 cm of free spaces around them.

Also, to prevent malfunction or electric shock, do not allow a wire or thin object to enter the air vents.

CAUTION

When installing the BX3-CBH/IX3-CBH and the control box for BX3-SSU side by side, always install the BX3-CBH/IX3-CBH on the left to enable effective heat radiation.

3. 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.

4. Always ensure that the **grounding terminal** of the instrument and that of the wall outlet are properly connected. If the equipment is not grounded, Olympus can no longer warrant the electrical safety performance of the equipment.

5. The power cord can be used to shut down the power supply in case of emergency. To make this possible, place the power cord plug in an easily accessible location.

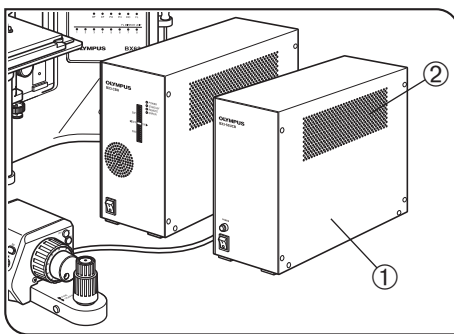


Fig. 1

Safety Symbols

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

Symbol	Explanation
	Indicates a non-specific general hazard. Follow the description given after this symbol or in instruction manual.
	Indicates that the main switch is ON.
	Indicates that the main switch is OFF.
	Indicates a potential fire hazard; when replacing fuses, be sure replacement fuses are of the specified rating.

1 Getting Ready

1. The scanning stage with ultrasonic is a precision instrument. Handle it with care and avoid subjecting it to sudden or severe impact.
2. When the scanning stage with ultrasonic needs to be packaged for forwarding to a remote location, it should be clamped using clamping hardware. Please contact Olympus (to obtain advice).
3. Do not use the instrument where it is subjected to direct sunlight, high temperature and humidity, dust or vibrations. Also avoid using it in the following places.

- (1) Near an air intake or outlet of an air conditioning facility, etc.
- (2) Place subject to important vibrations or changes in temperature.
- (3) Near a source (including equipment not manufactured by Olympus) of abnormal noise.
- (4) Place subject to direct sunlight.
- (5) Place exposed to excessive dust or high temperature/humidity.
- (6) Near a flammable substance (gasoline, lacquer thinner, alcohol, etc.).

4. Leave certain slack to the stage cable so that they are not over-tensioned when the stage is moved.
5. When the power is turned ON, do not move the stage by hands.
6. Whenever emergency stop is necessary during motorized movement, the stage can be stopped by holding it by hand.
7. Before replacing the fuse, be sure to set the main switch of the control box to "●" (OFF) and unplug the power cord for safety.
8. Do not touch the actuator of the stage barehanded, or do not attach foreign objects, such as oil, grease, etc. on it. Otherwise the stage could break down.
9. The operating sound of the stage may be louder depending on the use environments or the use status (moving speed of the stage), but this is not unusual.

2 Maintenance and Storage

1. To clean the parts, simply wipe them with a clean cloth. If a part is extremely dirty, do not use organic solvents but use a soft cloth slightly moistened with a diluted neutral detergent.
2. Do not disassemble any part of the microscope except for the parts that are specified to be disassembled in this manual, as this could result in malfunction or reduced performance.
3. Before disposing of this product, be sure to follow the regulations and rules of your local government.

3 Caution

If the instrument 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.

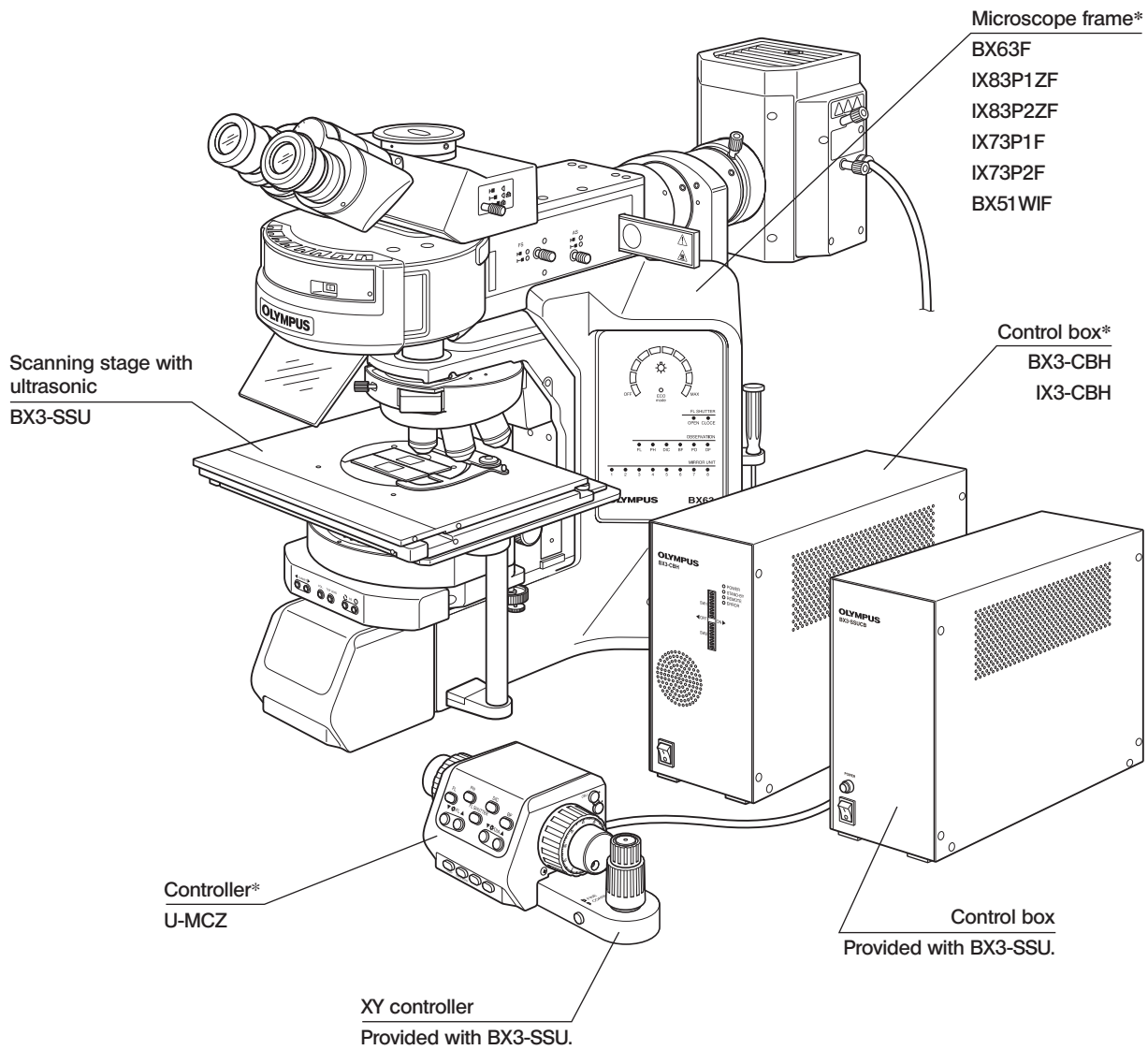
The following symbols are used to set off text in this instruction manual.

- CAUTION** : Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or damage to the equipment or furniture in the surroundings. This symbol is also used to warn against risky actions.
- ◎ : Indicates commentary (for ease of operation and maintenance).

1 MODULE NOMENCLATURE

©To ensure the performance, we recommend that you have your Olympus representative assemble and adjust the scanning stage with ultrasonic.

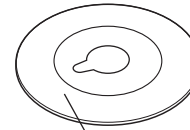
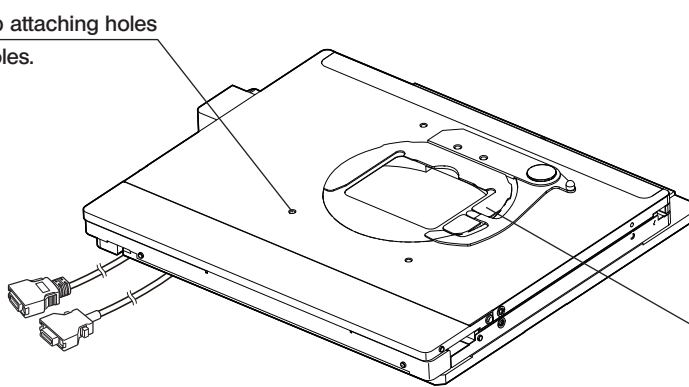
The modules marked * are not part of the scanning stage with ultrasonic product.



2 CONTROLS

Scanning Stage with Ultrasonic BX3-SSU

Stage clip attaching holes
Total 4 holes.

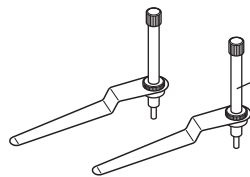


Center plate with 25 mm hole

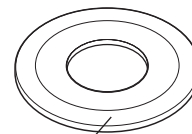
Slide holder (Detachable)*
For a slide glass sample.

* When using IX83 or IX73, the slide holder for a slide glass sample cannot be used.

Optional accessories

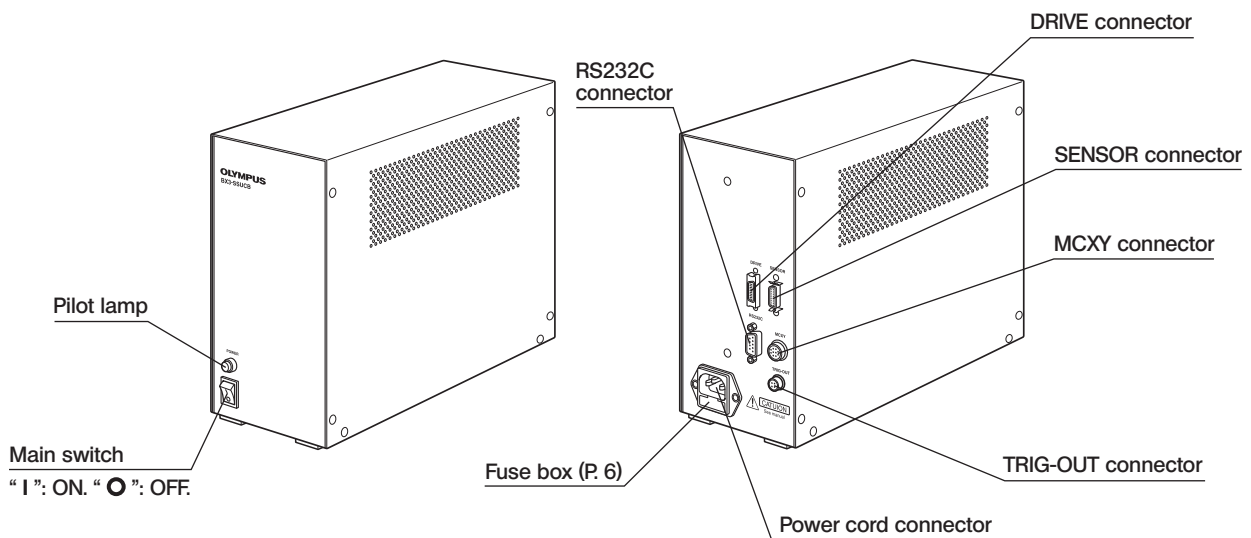


Stage clips
IX-SCL

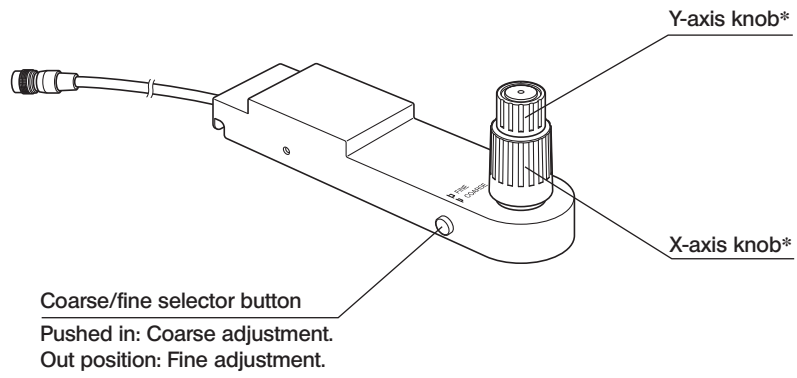


Center plate with
50 mm hole
IX-CP50

Supersonic stage control box (Provided with BX3-SSU)



XY controller (Provided with BX3-SSU)



* The factory settings of the stage displacement per turn are 10 mm for the coarse adjustment and 0.2 mm for the fine adjustment.

3 OPERATION OF SCANNING STAGE WITH ULTRASONIC

When you use BX3-SSU for the first time, be sure to perform the Compensation of the stage. For detail procedures, refer to "4 Compensation of the Stage" described in the next page.

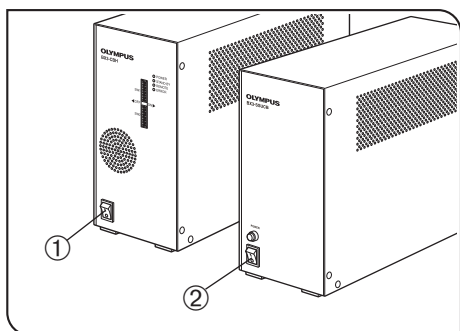


Fig. 2

1 Turning the Power ON (Fig. 2)

- ⊙ Ensure that the cables are connected correctly and securely.
- Set the main switches to " I " (ON) in the following sequence.

 1. Set the main switch ① of the BX3-CBH/IX3-CBH control box to " I " (ON).
 2. Set the main switch ② of the control box for BX3-SSU to " I " (ON).

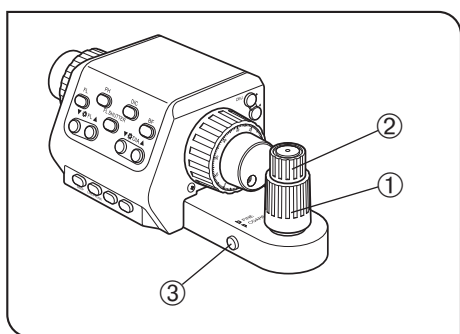


Fig. 3

2 Moving the Stage (Fig. 3)

1. Rotate the Y-axis knob ② and X-axis knob ① to move the stage.
 - Factory setting:** 10 mm displacement per turn for the coarse adjustment, 0.2 mm displacement per turn for the fine adjustment.
2. Press the coarse/fine selector button ③ to switch the knob functions between the coarse and fine adjustment.
 - Pushed in: Coarse adjustment.
 - Out position: Fine adjustment.

- ⊙ The tone occurred when operating the stage may vary drastically in some cases, but it does not cause any problem for the product performance.
- ⊙ The stage may be vibrated slightly in some cases when starting the stage, but the product is not damaged.

CAUTION The stage or the slide holder may be interfered by the objective lens depending on the type of the objective lens or the focus position.

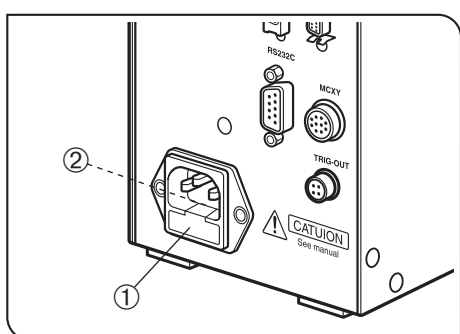


Fig. 4

3 Replacing the Fuses (Fig. 4)

1. Set the main switch of the control box for BX3-SSU to " O " (OFF) and unplug the power cord connector from the power outlet.
2. Draw out the fuse box ① by inserting a flat object such as a tip of screwdriver into the slit ② on the top surface of the fuse box.
3. Replace both of the fuses in the fuse box with new ones.

« Applicable fuses »
 T3.15A(H)250V (LITTELFUSE 2153.15)

CAUTION Using a non-specified fuse may cause a fire hazard.

4. Place the fuse box in the original position.

4 COMPENSATION OF THE STAGE

This stage is equipped with the operation parameters to provide the motorized operation.

If the stage operation parameters are displaced against your use environment, you may not obtain the best operational feeling, such that the stage does not move smoothly, etc. In that case, compensate the stage operation parameters.

4-1 When Using BX63



Fig. 5

When using BX63, the auto compensation of the stage can be performed from the touch panel controller.

CAUTION Before starting the auto compensation, install the stage on the BX63 and make sure nothing, including a specimen, is placed on the stage.

1. Open the [Menu] display by controlling the touch panel.
2. Tap the [System Setting] button ① to open the [System Setting] display.
3. Tap the [ECO, Others] tab ② on the [System Setting] display.
4. Tap the [Setting 2] tab ③ and then tap the [Auto Compensation] button ④.
5. When the auto compensation confirmation display appears, tap [OK] to start auto compensation.

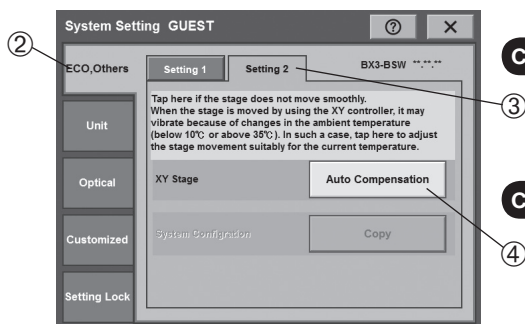


Fig. 6

CAUTION The stage moves automatically during the auto compensation (for a few minutes). Do not touch the stage during the movement.

6. When auto compensation completes, the touch panel screen shows the completion message.

CAUTION If the foreign substance is entered in the stage driving part, the status may not be recovered by performing the Auto Compensation. In this case, turn the power of BX3-SSU Control Box to "O" (OFF), and perform the Auto Compensation again after moving the stage from front to back and from side to side several times with a hand.

4-2 When Using IX83



Fig. 7

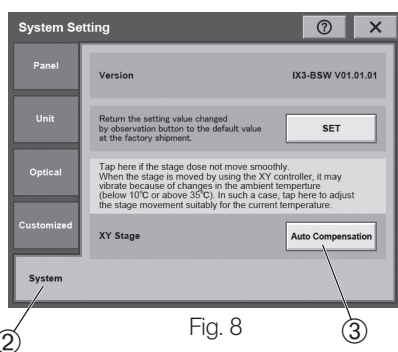


Fig. 8

When using IX83, the auto compensation of the stage can be performed from the touch panel controller.

CAUTION Before starting the auto compensation, install the stage on the IX83 and make sure nothing, including a specimen, is placed on the stage.

1. Open the [Menu] display by controlling the touch panel.
2. Tap the [System Setting] button ① to open the [System Setting] display.
3. Tap the [System] tab ② and then tap the [Auto Compensation] button ③.
4. When the auto compensation confirmation display appears, tap [OK] to start auto compensation.

CAUTION The stage moves automatically during the auto compensation (for a few minutes). Do not touch the stage during the movement.

5. When auto compensation completes, the touch panel screen shows the completion message.

CAUTION If the foreign substance is entered in the stage driving part, the status may not be recovered by performing the Auto Compensation. In this case, turn the power of BX3-SSU Control Box to “O” (OFF), and perform the Auto Compensation again after moving the stage from front to back and from side to side several times with a hand.

4-3 When Touch Panel Controller is not available

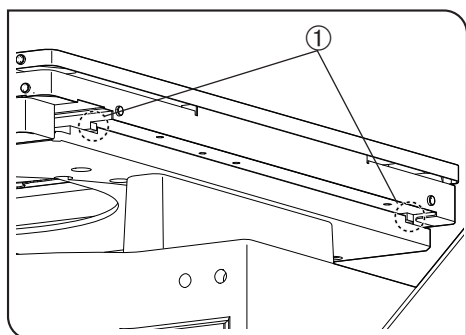


Fig. 9

1. Set the power of the control box for the scanning stage with ultrasonic to “O” (OFF).
2. Move the stage to the origin position with hands.
Horizontal direction: Align the edge on the upper level to the middle level of the stage.
Vertical direction: Align the guide part ① placed at the bottom of the middle level of the stage to the edge of the front side of the lower level.
3. Set the power of the control box for the scanning stage with ultrasonic to “I” (ON).

CAUTION If the power of the control box for the scanning stage with ultrasonic is set to “I” (ON) while the stage is not placed at the origin position, the origin position is misrecognized to limit the stage movement range.

5 OPTIONAL ACCESSORIES

1 Center Plate with 50mm Hole IX-CP50

◎When observing the wide range on the specimen in a large container, etc., use the center plate with 50mm hole IX-CP50.

CAUTION Be careful not to drop or apply a strong impact to the stage center plate. Otherwise, it may be deformed.

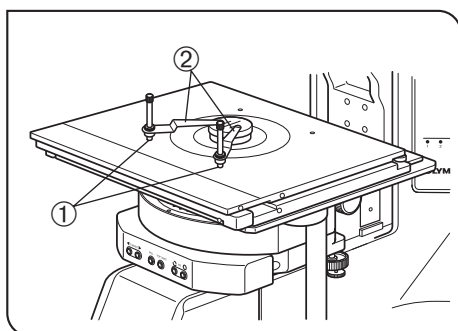


Fig. 10

2 Stage Clips IX-SCL

(Fig. 10)

◎The stage clips are used to fix a dish or petri dish sample.

1. Screw the stage clips ② into the two stage clip holes ① on the scanning stage with ultrasonic.

There are 4 screw holes ① on the stage. Use either 2 holes on the front side or 2 holes on the rear side.

CAUTION When using BX63, do not use 2 holes on the rear side. The objective lens will interfere with the stage clip.

6 SPECIFICATIONS

Item	Specification
Scanning stage with ultrasonic	
Applicable microscope frame	BX63F, IX83P1ZF, IX83P2ZF, IX73P1F, IX73P2F, BX51WIF
Slide holder	Slide glass specimen x 2 (total thickness 0.9 to 1.2 mm, cover glass thickness 0.17 mm)
Stage center plate	Center plate with 25 mm hole (BX3-SSU accessory) Center plate with 50 mm hole IX-CP50 (option)
Stage clips	IX2-SCL.
Stage drive stroke	X: 76 mm. Y: 52 mm. Stage drive resolution: 0.2 μm
Maximum stage load	1 kg
Dimensions & weight	268(W) x 251(H) x 29(D) mm, approx. 3.2 kg.
XY controller	
Stage control method	Rotary knobs (X-/Y-axis coaxial knobs), with coarse/fine selector button.
Displacement per turn	Coarse adjustment: 10 mm. Fine adjustment: 0.2 mm.
Dimensions & weight	223(W) x 88(H) x 54(D) mm, approx. 1 kg
Control box	
Rating	100-120/220-240 V ~ 50/60 Hz 0.35/0.2 A
Front panel	Main switch (" I " : ON. " O " : OFF), with pilot lamp LED.
Dimensions & weight	100(W) x 215(H) x 280(D) mm, approx. 3.9 kg
Operating environment	
<ul style="list-style-type: none"> • Indoor use. • Altitude: Max. 2000 meters • Ambient temperature: 5° to 40°C (41° to 104°F) • Maximum 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 IEC60664-1) • Installation/Overvoltage category: II (in accordance with IEC60664-1) 	

7 TROUBLESHOOTING GUIDE

Under certain conditions, performance of the scanning stage with ultrasonic may be adversely affected by factors other than defects. If problems occur, please review the following list and take remedial action as needed.

If you cannot solve the problem after checking the entire list, please contact your local Olympus representative for assistance.

Problem	Cause	Remedy	Page
1. Stage			
a) The stage cannot be moved by rotating the X-/Y-axis knobs.	Connection cable is disconnected.	Connect the cable.	12
	The stage is moved until the stopper at the end of stroke.	Use the area near the center of the stage.	6
	The error mode is entered because the stage was moved quickly by hand.	Turn power off then on again.	6
b) The coarse/fine adjustment cannot be switched by pressing the coarse/fine selector button.	Connection cable is disconnected.	Connect the cable.	12
c) The stage cannot be moved smoothly when a high-power objective is used.	The operating environmental temperature has changed drastically.	Perform the auto compensation in "System Setting" of the touch-panel controller.	-
d) The stage movement has become unsmooth after a long period of use.	Fine particles produced due to wear of the stage's sliding surfaces are deposited.	Set the control box to "○" (OFF) and move the stage manually into all of the front, rear, left and right directions (full strokes). And then, perform the Auto Compensation of the stage	-
e) The auto compensation of the stage fails.	The cable of the stage is stretched.	Loosen the cable and perform the auto compensation again.	-
	The auto compensation is not completed within the specified time.	Turn ON the power of each unit again and perform the auto compensation again. If you may fail in the auto compensation for several times, contact the Olympus sales office where you have purchased the device.	-
f) The stage movement range became narrow.	The stage origin position is misrecognized.	Compensate the stage.	7
2. Stage control box			
a) The pilot lamp does not light.	The main switch of the control box is not ON.	Set the main switch to "I" (ON).	6
	Power cord is connected improperly.	Connect the power cord properly.	12
	Fuse in control box is blown.	Replace the fuse with a new one.	6
	Cables are connected improperly.	Connect the cables properly.	12

8 ASSEMBLY

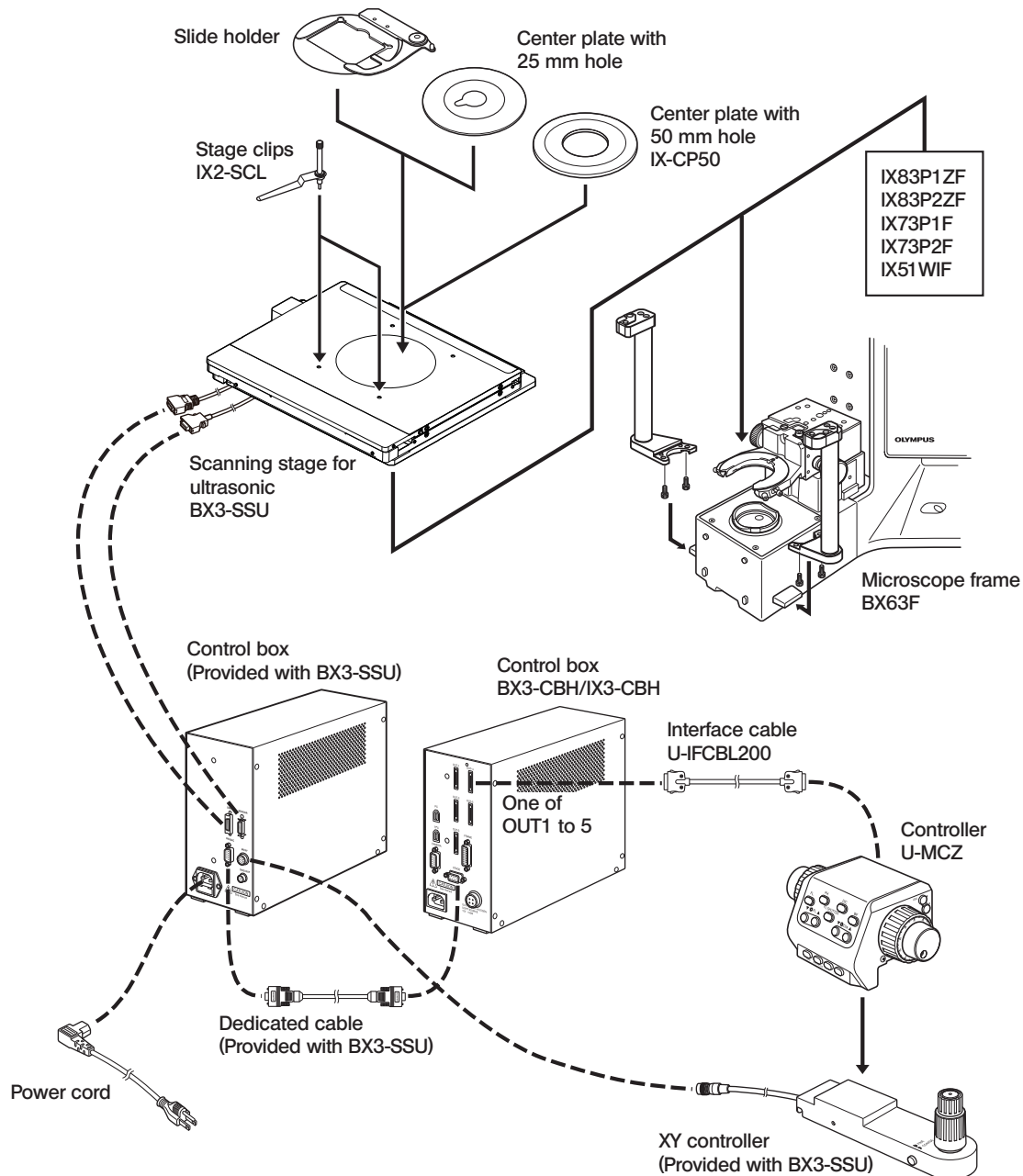
To ensure the performance, we recommend that you have your Olympus representative assemble and adjust the scanning stage with ultrasonic.

8-1 Assembly Diagram

CAUTION

- When assembling the scanning stage with ultrasonic, make sure that all parts are free of dust and dirt and perform the procedures cautiously.
- Connect only the designated modules. Connecting a non-designated module may cause malfunction.
- Be sure to set the main switches of the BX3-CBH/IX3-CBH and control box for BX3-SSU to “○” (OFF) before connecting the cables.

The following diagram shows only the cable connections associated with the scanning stage with ultrasonic. When connecting each connector, align the connector orientation correctly and insert the connector all the way. If a connector is equipped with lock screws, always tighten them firmly.



8-2 Detailed Assembly Procedures

1 Unlocking Transportation Lock

(Fig. 11)

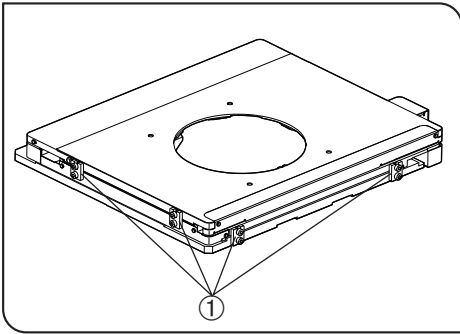


Fig. 11

- Remove the screw of fixtures ① (4 positions) with the commercially available Allen wrench.
- ⓄAs fixtures and screws will be used in transportation, be sure to keep them in a safe place.

2 Installing the scanning stage with ultrasonic (When using BX63)

(Fig. 12)

1. Place BX3-SSU over BX63 so that the respective screw numbers (see the Fig. 6) of BX3-SSU and BX63 are overlapped.
2. Tighten the screw hole ① with the clamping screw (attached with BX3-SSU) from the upper side of BX3-SSU. Use Allen wrench (40x70mm) attached with BX63 for tightening.
3. Tighten the screw holes ② and ③ with the clamping screw (attached with BX63) from the lower side of the stage fixing pillar of BX63. Use Allen wrench (40x70mm) attached with BX63 for tightening.

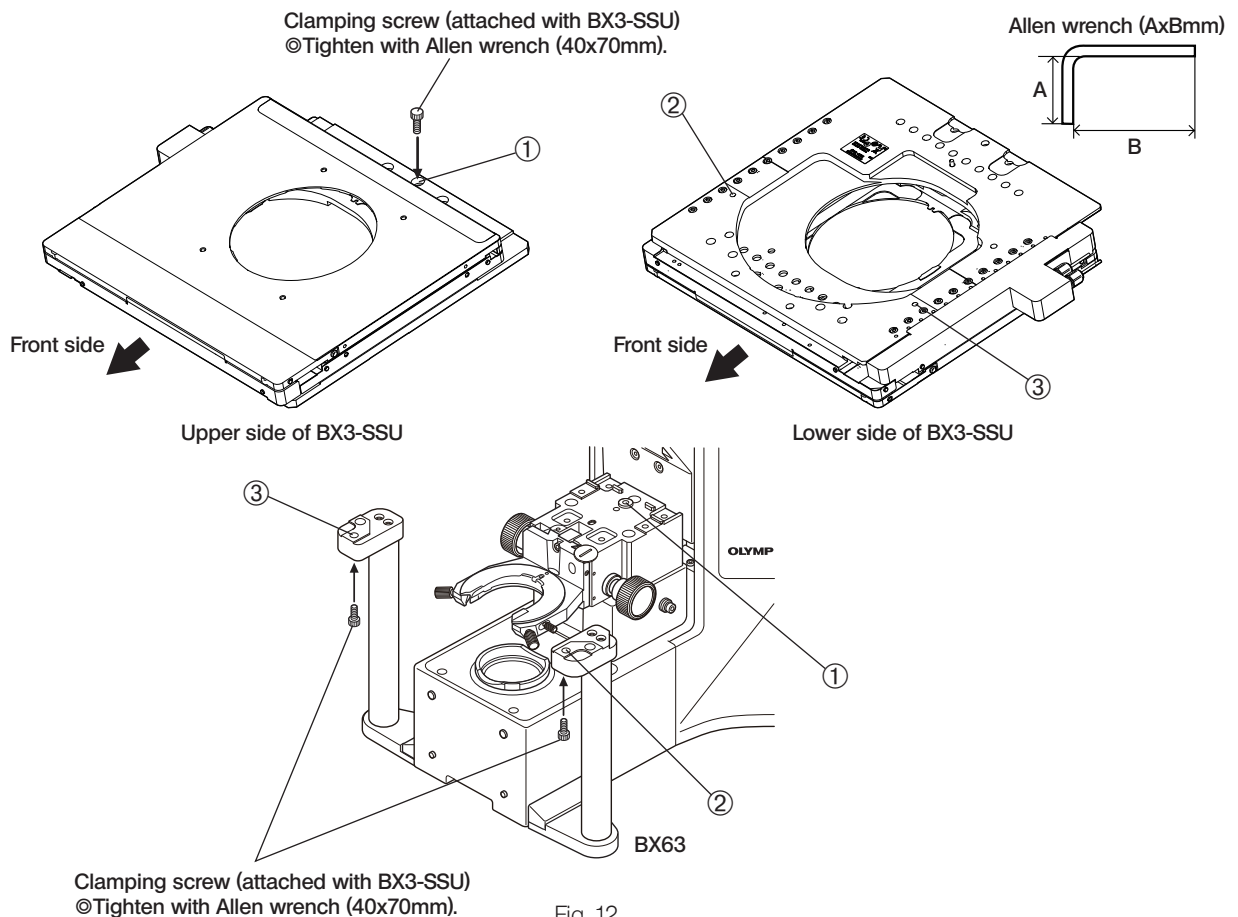


Fig. 12

3 Installing the scanning stage with ultrasonic (When using IX83, IX73 or BX51WI) (Fig. 13-19)

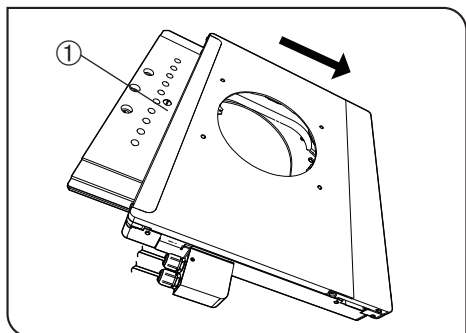


Fig. 13

Ⓞ This section describes the procedure to install the scanning stage with ultrasonic IX83 as an example. The same installation procedures apply to IX73 and BX51WI as well.

CAUTION As the objective may interfere with the stage depending on the focus position, be sure to operate carefully.

1. Move the stage to the front side, and remove the screw ① attached to the lower level of the stage by using the minus screwdriver.

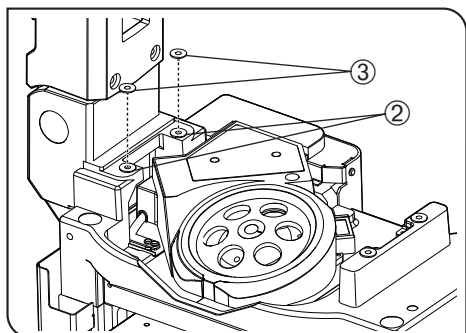


Fig. 14

2. Place the shim rings ③ provided with BX3-SSU over the screw holes ② on the rear side of the microscope.

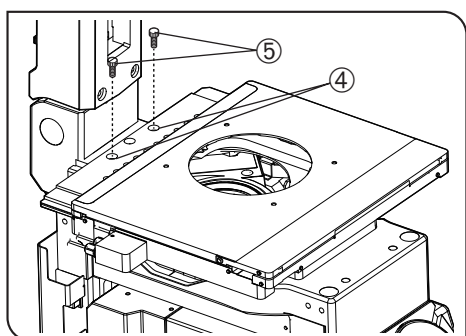


Fig. 15

3. Place the stage on the microscope so that the screw holes ④ of BX3-SSU overlaps the shim rings ③. And tighten the holes with the fixing screw ⑤ by using the Allen wrench provided with the microscope.

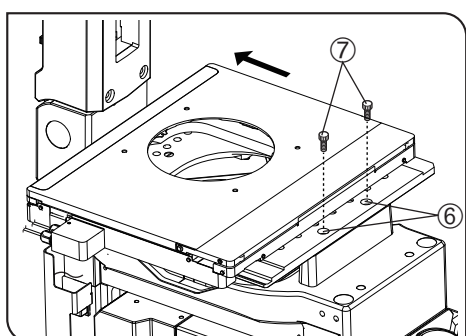


Fig. 16

4. Move the stage toward the rear side, and tighten the screw holes ⑥ with the fixing screws ⑦.
The fixing screws are provided with BX3-SSU.

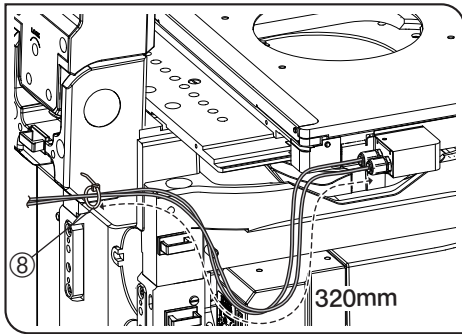


Fig. 17

Only for IX83 or IX73

- Bundle BX3-SSU cables at the position 320mm from the edge on the stage side with the cable binder ⑧ provided with BX3-SSU.

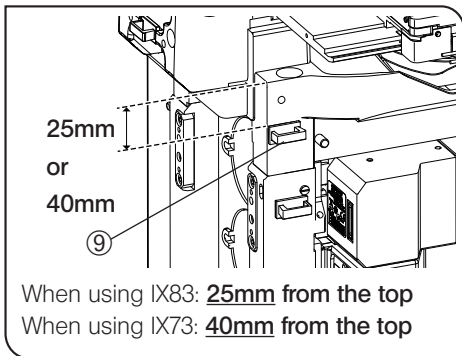


Fig. 18

- Attach the cable holder ⑨ provided with BX3-SSU on the microscope. See Fig.18 for the position to the attach.

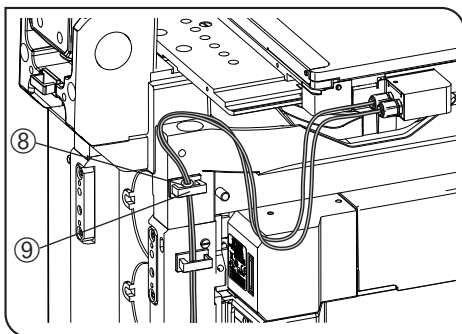


Fig. 19

- Pass the cables through the cable holder ⑨ so that the cable holder ⑧ is placed over the cable holder.

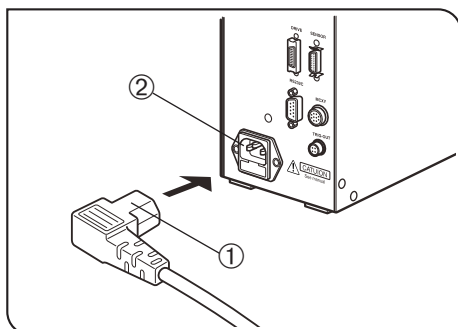


Fig. 20

4 Connecting the Power Cord (Figs 20 to 21)

- CAUTION**
- Be sure to set the main switch of the BX3-CBH control box to “O” (OFF) before connecting cables.
 - Cables and cords 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.

1. Insert the connector ① of the power cord firmly into the connector ②.

- CAUTION**
- The power cord should be connected to a grounded/earthed, 3-conductor power outlet. If the power outlet is not grounded/earthed properly, Olympus can no longer warrant the electrical safety performance of the equipment.

2. Plug the power cord plug ③ into the wall outlet ④.

- CAUTION**
- Should the power cord come in contact with the hot lamp housing, the power cord could melt and cause electric shock. Be sure to route the power cord away from the lamp housing.

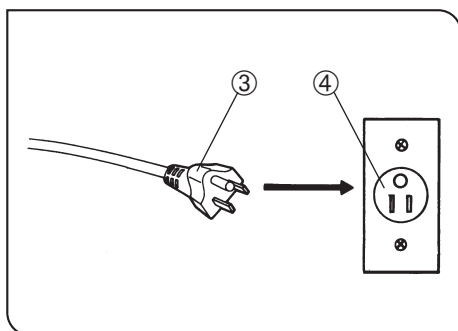


Fig. 21

■ 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. Prüstelle	<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
Osterreichischer 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 Materielkontroll (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)
Canadian Standards Association (CSA)

SV, SVT, SJ or SJT, 3 X 18AWG
SV, SVT, SJ or SJT, 3 X 18AWG

MEMO

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