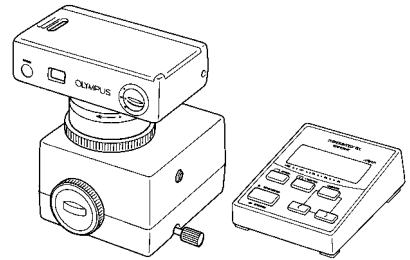


# OLYMPUS<sup>®</sup>



## INSTRUCTIONS PM10SP AUTOMATIC PHOTOMICROGRAPHIC SYSTEM

This instruction manual is for the Olympus PM10SP Photomicrographic System. To ensure safety, obtain optimum performance and 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.



A X 9 6 4 8




# IMPORTANT

## 1 Getting Ready

1. Like a microscope, the photomicrographic system consists of precision instruments. Handle it with care and avoid subjecting it to sudden or severe impact.
2. The operating environment should be maintained within a temperature range between 0 and 40°C and humidity range between 15% and 85% (without condensation).
3. Always use the AC power adapter and power cord provided by Olympus. Otherwise the intended electrical safety performance cannot be attained.
4. Before plugging or unplugging cords and cables, make sure that the main switch is set to “○” (OFF).
5. Be sure to ground the system to avoid potential shock hazard. This is particularly important when using the system in electrically noisy environments or in the vicinity of other equipment that is particularly sensitive to electrical noise.
6. The cords and cables are easily damaged by excessive bending or twisting. Avoid subjecting them to unnecessary strain.
7. An error in operating procedure is usually the cause when the alarm buzzer sounding or the control keys not accepting input. If this occurs, verify correct operating procedures and then try again. With particularly complicated procedures, error messages are displayed in the event of incorrect operation.

### Safety Symbols

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

Symbol	Explanation
	Carefully read the instruction manual before use.
	Use a DC power supply (15 V, 1.0 A/0.5 A).
	Indicates an input jack.

## 2 Maintenance and Storage

1. Clean all glass components by wiping gently with gauze. To remove fingerprints or oil smudges, wipe with gauze slightly moistened with a mixture of ether (70%) and alcohol (30%) or EE System Cleaner (Olympus EE-6310).
- ▲ Since solvents such as ether, alcohol and EE-6310 are highly flammable, they must be handled carefully. Be sure to keep these chemicals away from open flames or potential source of electrical sparks — for example, electrical equipment that is being switched on or off. Also remember to always use these chemicals only in a well-ventilated room.**
2. If any part of the equipment (other than glass components) gets dirty, wipe it with a clean cloth without using organic solvents. Particularly, a plastic part should be cleaned with a cloth lightly moistened with a diluted neutral detergent.
  3. Do not disassemble any part of the equipment. This could result in malfunctions or reduced performance.
  4. When not using the unit, keep it covered with the dust cover provided.
  5. The plastic shock absorbing material for use in long distance transportation generates static electricity. As the automatic exposure body is sensitive to static electricity, be sure to use anti-static bag when handing it.

### 3 Caution

If the equipment 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.

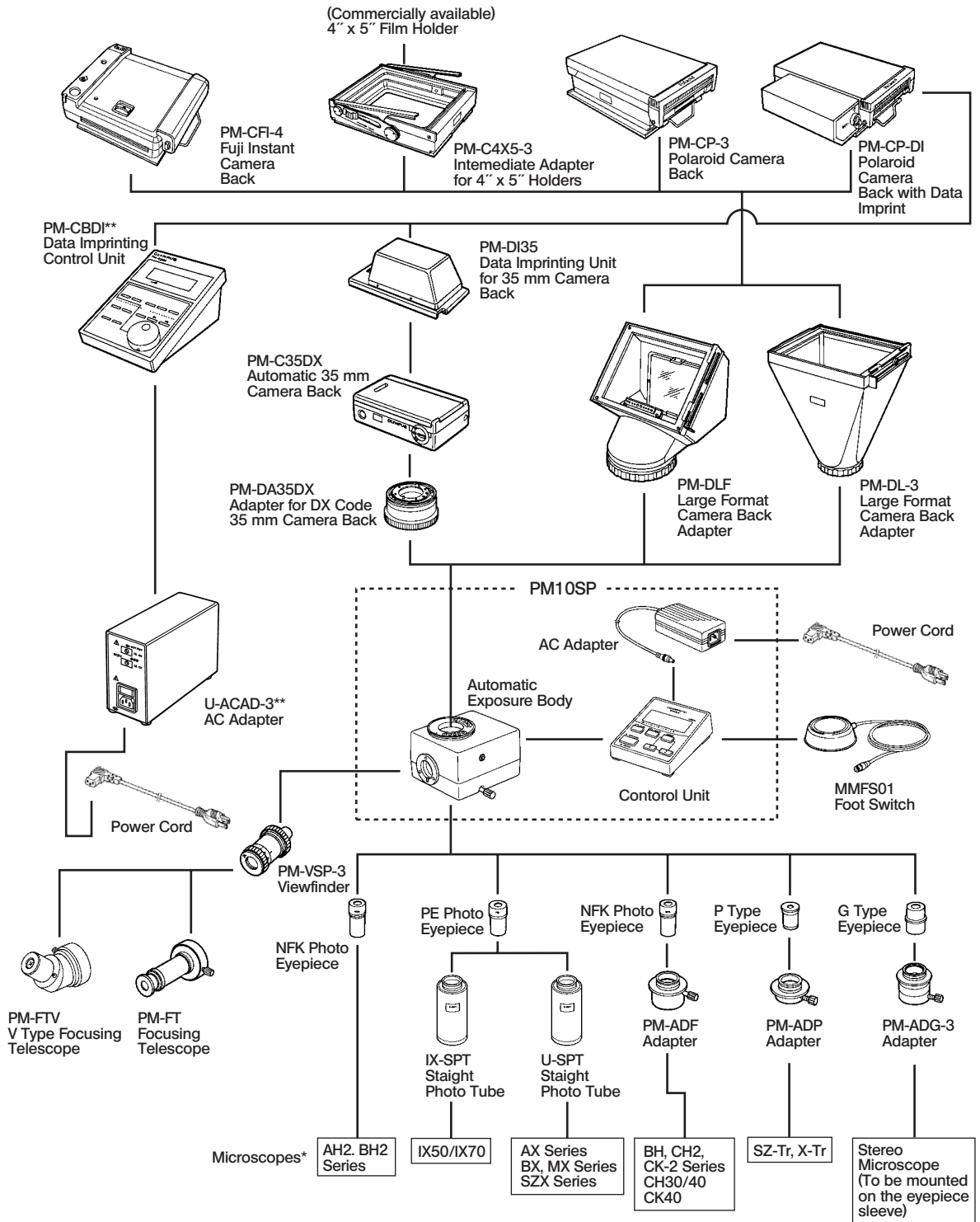
The following symbols are used to set off text in this instruction manual.

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

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# 1 SYSTEM DIAGRAM



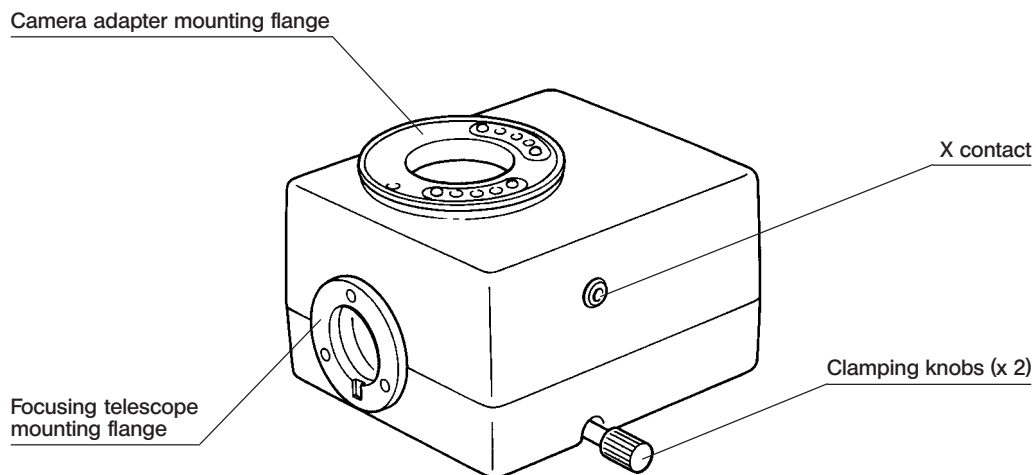
\* Other microscopes than those listed above may also be used. Please consult your local Olympus representative.

\*\* Required when the PM-DI35 or PM-CP-DI is used.

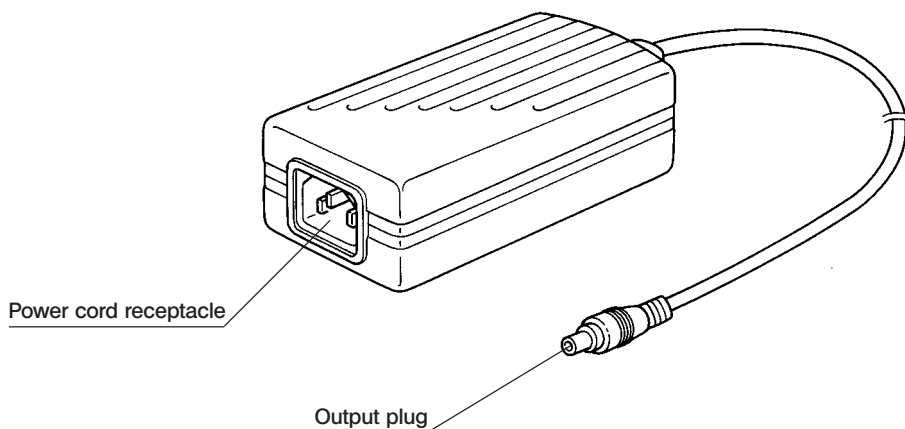
# 2 MODULE NOMENCLATURE

## Automatic Photomicrographic System PM10SP

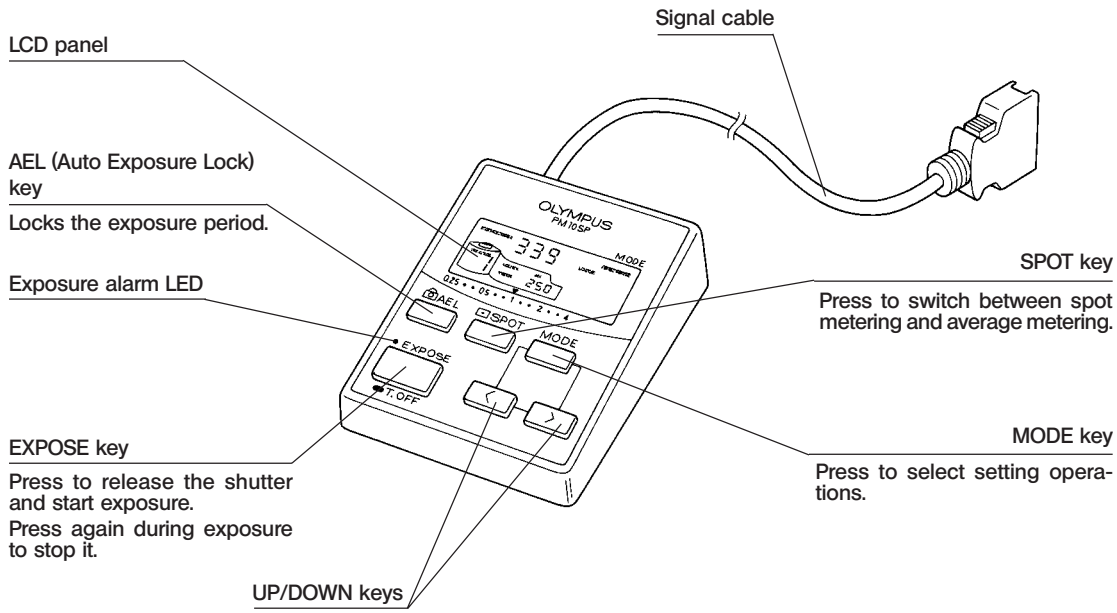
### Automatic Exposure Body



### AC Adapter

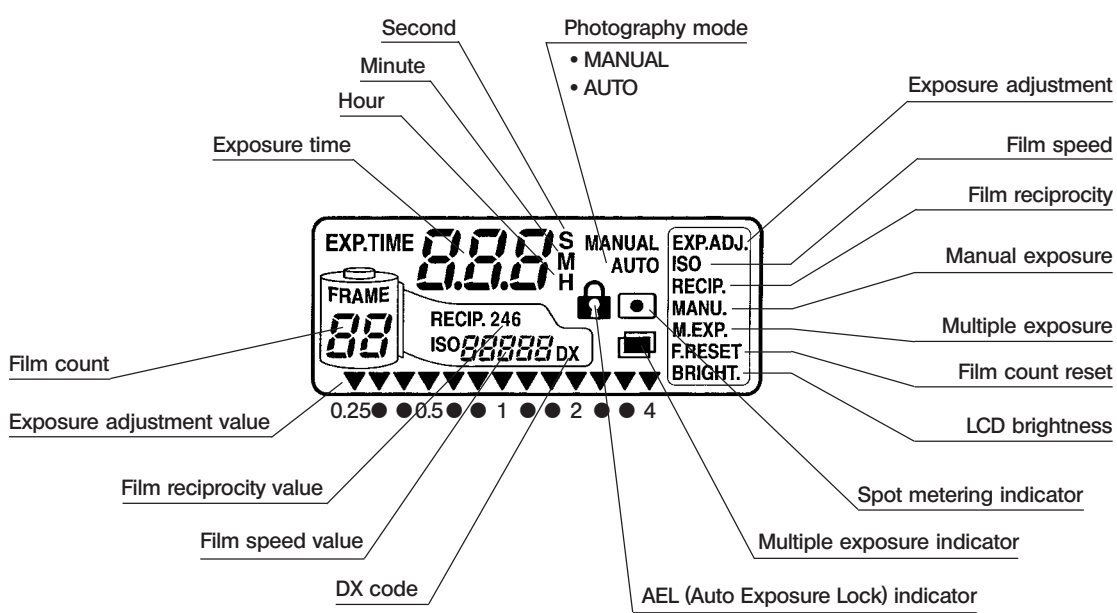


**Control Unit**

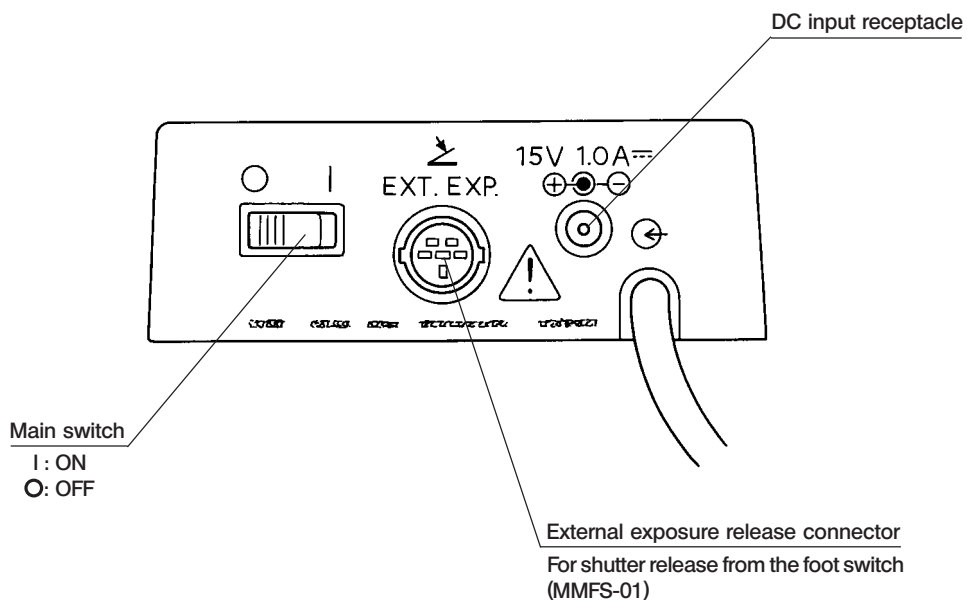


LCD Panel Display

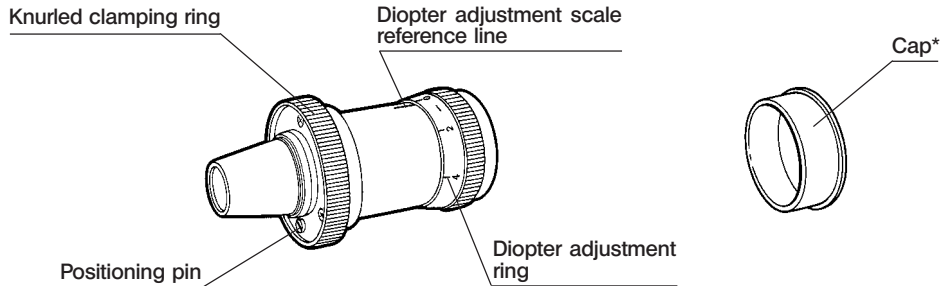
★ The illustration shows the status in which all display segments are lit. In actual operation, however, only the application information is displayed.



Control Unit Rear Panel



## Viewfinder PM-VSP-3

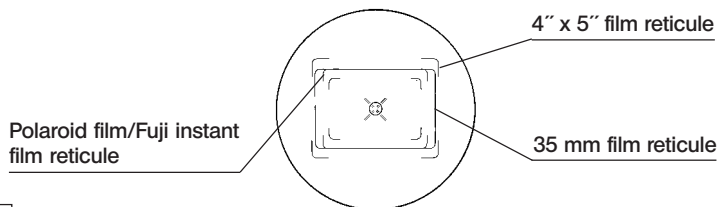


\* Retain the cap carefully because it will be required in metering and exposure in a very bright room or for a very long period. Be sure to attach the cap to the automatic exposure body when it is not used.

## Photographic Range

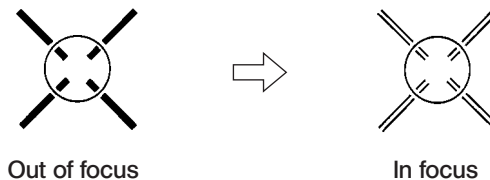
When observing through the viewfinder, you will see several reticules indicating various photographic ranges. Select the correct reticule for framing in accordance with the camera in use.

The sizes of the above reticules are approximately 90% of the actual sizes as seen in the viewfinder.



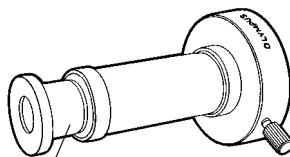
## How to Focus

1. Turn the diopter adjustment ring until the double cross lines in the viewfinder can be clearly distinguished as separate lines.



2. Since the cross lines and film plane are in precise alignment, adjust the focus until both double cross lines and the specimen are in focus. The same procedure applies to a microscope which can be focused through the viewfinder eyepiece.

**Focusing Telescope  
U-FT**



Focusing telescope

© Accurate focusing is difficult when using a 4X or lower-magnification objective due to the large depth of focus. In such a case, mount the focusing telescope on the viewfinder in order to focus more precisely on the specimen. When using the focusing telescope, slide the end of the telescope in or out until the two reticule lines are clearly distinguishable as double lines in the viewfinder as shown in Fig. 1 below.

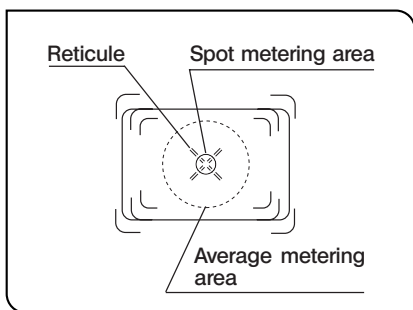


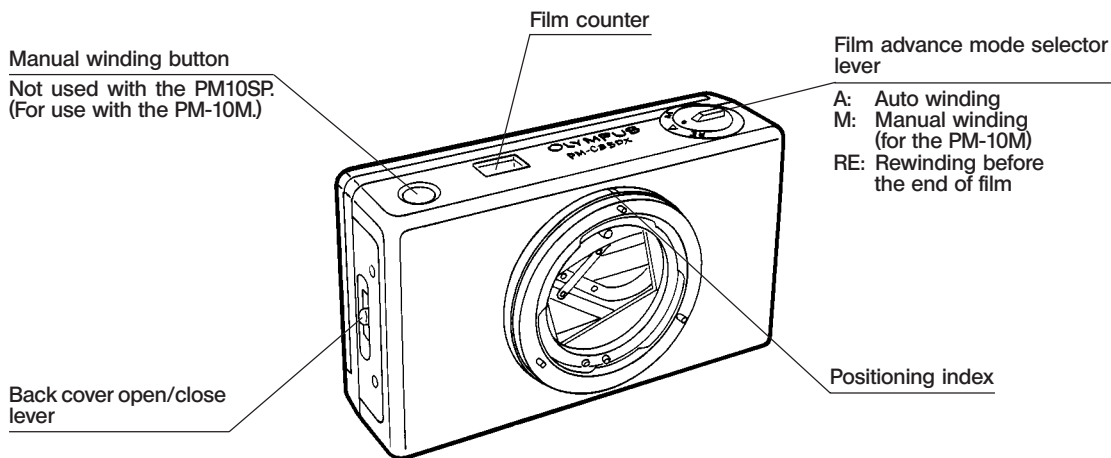
Fig. 1

**Metering Area**

The view through the viewfinder (PM-VSP-3) appears as shown on the left.

- **Spot metering area**  
The circle at the center shows the 1% area of the frame that is used for spot exposure metering.
- **Average metering area**  
With average metering, the average metering area is within the dotted circle (approx. 30%). (Fig. 1)

**Automatic 35 mm Camera  
PM-C35DX**



(Note) The large format camera pages are explained on later pages.

# 3 ASSEMBLY (35 mm CAMERA BACK)

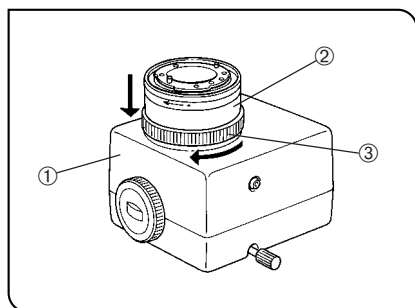


Fig. 2

## 1 Attaching the PM-DA35DX Adapter for DX Code 35 mm Camera Back (Fig. 2)

Align the positioning pin on the camera adapter ② with the positioning groove on the camera adapter mounting flange of the automatic exposure body ①, then secure the adapter with the clamping ring ③.

★ While pressing down the adapter ② in the direction of the arrow, firmly tighten the knurled clamping ring ③.

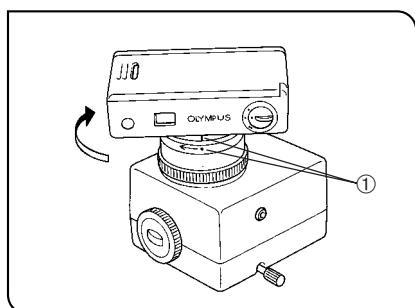


Fig. 3

## 2 Attaching the PM-C35DX Automatic 35 mm Camera Back (Figs. 3, 4)

1. Align the positioning indices ① on the camera adapter and camera back, then turn the camera back clockwise as indicated by the arrow while pressing lightly on its back. The locking pin automatically locks the camera back in place. (Fig. 3)

2. Once attached, the camera back's light blocking plate opens automatically.

### Removing the Camera Back

While pressing the release lever ② on the rear end of the camera adapter, turn the camera back in the counterclockwise until the positioning indices are aligned, then remove the camera back.

★ The camera back should not be attached and detached repeatedly with the power on. Otherwise malfunction may result.

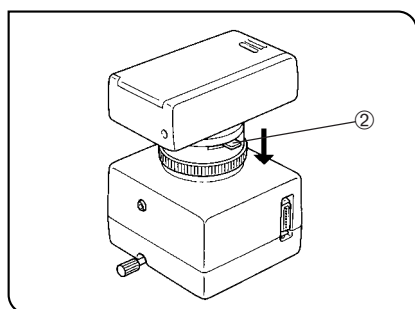


Fig. 4

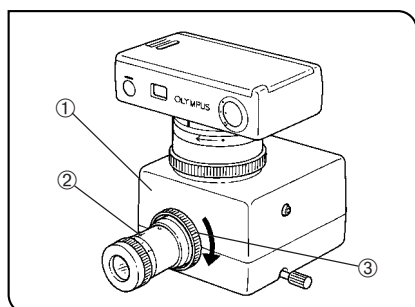


Fig. 5

## 3 Attaching the PM-VSP-3 Viewfinder (Fig. 5)

◎ With the AX, BX and MX series microscopes with which focusing can be adjusted using the right-hand viewfinder eyepiece, it is not required to attach the viewfinder so the cap should be left in place. However, when a 4X or lower-magnification objective is used, focusing can be facilitated by attaching the viewfinder together with the U-FT focusing telescope.

1. Align the positioning pin on the viewfinder with the positioning groove on the viewfinder mount of the automatic exposure body ①, verify that the diopter correction reference line ② is at the top of the viewfinder, then secure the viewfinder with the clamping ring ③.

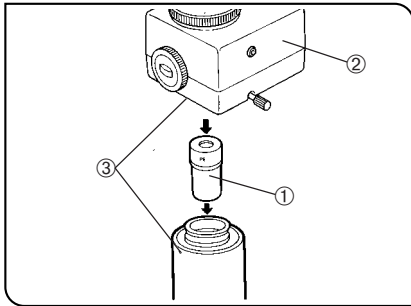


Fig. 6

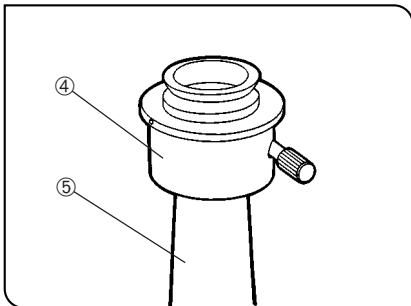


Fig. 7

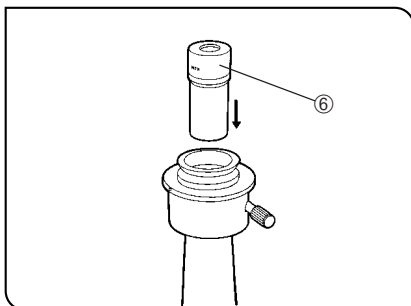


Fig. 8

## 4

## Attaching the Automatic Exposure Body

(Figs. 6-8)

Ⓞ Depending on the design of the photo tube on the microscope, the automatic exposure body can be either mounted directly or via an adapter. (See the system diagram.)

## Direct Mounting (Fig. 6)

1. Insert the selected photo eyepiece ① into the straight photo tube.
- ★ **The sizes of the PE photo eyepieces and NFK photo eyepieces are not the same. With the BX, MX and SZX series microscopes, be sure to use a PE photo eyepiece.**
2. Attach the automatic exposure body ② onto the photo tube. When doing so, align the index marking ③ on the automatic exposure body with the index marking ③ on the photo tube.

## Mounting via an Adapter (such as the PM-ADF)

1. Fit the adapter ④ onto the straight photo tube sleeve ⑤, then clamp with the index marking facing the front. (Fig. 7)
2. Insert the selected photo eyepiece ⑥ into the adapter from the top, then align the index marking on the automatic exposure body with that on the adapter and clamp the automatic exposure body to the adapter. (Fig. 8)

Ⓞ When changing the photo eyepiece, you must first remove the automatic exposure body; however, it is not necessary to remove the adapter.

## 5 Connecting the Cables and Cords

(Fig. 9)

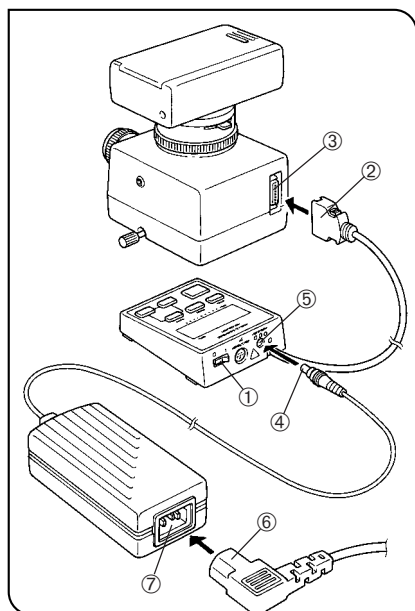


Fig. 9

▲ Cables and cords are vulnerable when bent or twisted. Never subject to them to excessive force.

▲ Make sure that the main switch ① of the control unit is set to “O” (OFF) before connecting cables.

▲ Always use the AC power adapter and 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. Plug the signal cable connector ② from the rear of the control unit into the connector ③ on the rear of the automatic exposure body.
2. Plug the power output plug ④ from the AC adapter into the DC input receptacle ⑤ on the control unit.
3. Plug the connector ⑥ of the power cord into the power cord receptacle ⑦ on the AC adapter.
4. Insert the power cord plug into a wall outlet.

▲ Connect the power cord correctly and ensure that the grounding terminal of the power cord plug and that of the wall outlet are properly connected. If the equipment is not grounded, Olympus can no longer warrant the electrical safety and performance of the equipment.

### ■ Table of 35 mm Photographic Magnification Combinations

#### Film Plane Magnification

PE and NFK photo eyepieces: Objective magnification x PE or NFK eyepiece magnification

P eyepiece magnification: Objective magnification x P eyepiece magnification x 0.5

G eyepiece magnification: Objective magnification x G eyepiece magnification x 0.5

Objective	PE Photo Eyepiece				NFK Photo Eyepiece			
	PE2.5X	PE3.3X	PE4X	PE5X	NFK2.5X	NFK3.3X	NFK5X	NFK6.7X
1X	-	-	-	-	2.5X	3.3X	5X	6.7X
1.25X	3.1X	4.1X	5X	6.3X	-	-	-	-
1.3X	-	-	-	-	3.3X	4.3X	6.5X	8.7X
2X	5X	6.6X	8X	10X	5X	6.6X	10X	13.4X
2.5X	6.3X	8.3X	10X	12.5X	6.3X	8.3X	12.5X	16.8X
4X	10X	13.2X	16X	20X	10X	13.2X	20X	26.8X
5X	12.5X	16.5X	20X	25X	12.5X	16.5X	25X	33.5X
10X	25X	33X	40X	50X	25X	33X	50X	67X
20X	50X	66X	80X	100X	50X	66X	100X	134X
40X	100X	132X	160X	200X	100X	132X	200X	270X
50X	125X	165X	200X	250X	125X	165X	250X	335X
60X	150X	198X	240X	300X	150X	198X	300X	402X
100X	250X	330X	400X	500X	250X	330X	500X	670X

# 4 PREPARATION (35 mm CAMERA BACK)

## 4-1 Loading Film in the 35 mm Camera Back

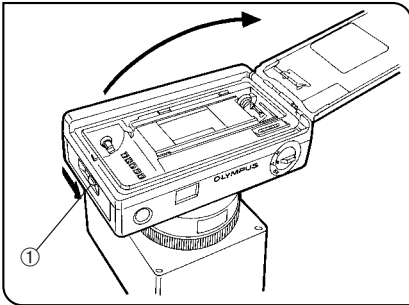


Fig. 10

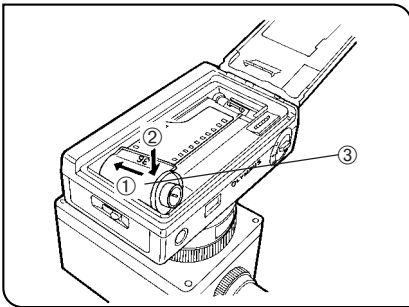


Fig. 11

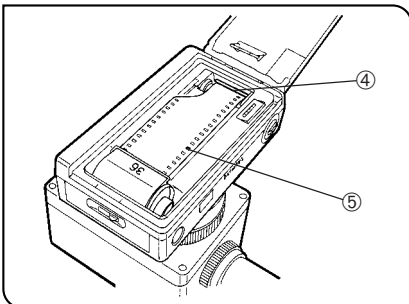
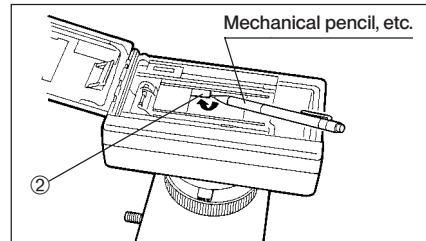


Fig. 12

1. Press the back cover release lever ① on the camera back in the direction of the arrow and open the back cover. (Fig. 10)

### ◎ Setting the masking plate

When the PM-DI35 data imprint unit is used and if you want to mask the area where the data is to be imprinted, set the masking plate ② before loading the film.



- ★ The masking plate can be set or removed only before the film is loaded. Using a pointed object such as the tip of a mechanical pencil, flip up the masking plate and let the magnet hold it in position.

2. Correctly insert the film cartridge ③ in the film chamber. (Fig. 11)

3. Adjust the length of the leading section of the film so that its end is aligned with the red film loading index ④. (The film may not wind properly if the end is not properly aligned with the index.)

- ★ If the camera back has been removed from the automatic exposure body to load the film, attach the camera back now to allow the film to be advanced.
- ★ When loading the film, make sure that the film is seated flush with the film guide rails inside the camera back and that the film perforations are aligned with the sprocket teeth ⑤. (Fig. 12)

4. Close the back cover.

The film automatically advances.

If the film does not advance properly, the film counter does not show "1" but a blinking "E" is displayed and the film count display on the control unit shows "0". In this case, reload the film correctly.

- ★ The control unit must be turned on in order for the film to advance.

- ◎ You can check the type of film loaded by looking through the window in the back cover.

### Rewinding the Film

#### 1. Automatic rewinding

When the end of the film is reached, the film rewinds automatically.

- Ⓞ After rewinding, the end of the film leader section remains outside the cartridge. To ensure that you do not accidentally mistake an exposed roll for a new one, it is recommended that you fold the film end after removing the cartridge from the camera back.

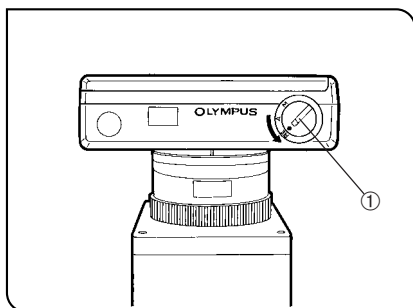


Fig. 13

#### 2. Rewinding before the end of the film is reached (Fig. 13)

If you want to rewind the film before it is completely shot, turn the film advance mode selector lever on top of the camera back to RE.

- ★ When rewinding starts, the film advance mode selector will turn back automatically to "A"; leave it in this position.

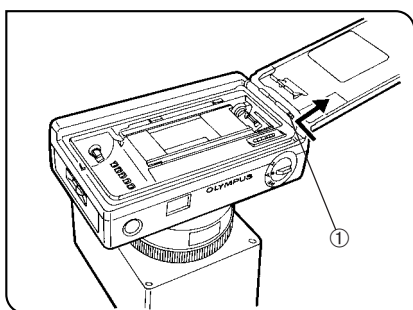


Fig. 14

### Attaching the PM-DI35 Data Imprinting Unit for 35 mm Camera Back (Fig. 14)

- ★ To attach the PM-DI35, remove the camera back from the automatic exposure body or set the main switch of the control unit to "O" (OFF) before proceeding.

1. Open the back cover, then press downward on the back cover hinge pin ① to remove the cover.
  2. Replace the back cover with the PM-DI35 data imprinting unit.
- Ⓞ Be sure to refer to the instruction manual for the control unit for data imprinting (PM-CBDI) before actually taking photographs.

## 4-2 Initial Programming of the Control Unit

- ◎The factory setup consists of: Film speed (ISO): 35 mm camera = DX. Large format camera = ISO 3200.  
Exposure adjustment (EXP. ADJ.): 1  
Film reciprocity (RECIP): 4  
Metering area: Average metering  
Film count reset (F. RESET): 35 mm camera = Empty. Large format camera = 1.  
LCD brightness (BRIGHT): 6

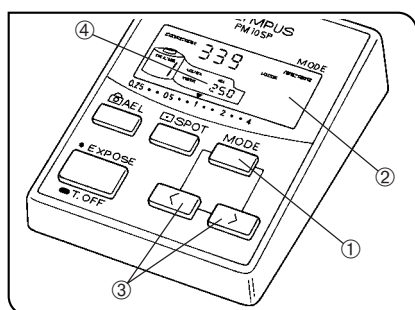


Fig. 15

### 1 Setting the LCD Brightness (BRIGHT.) (Fig. 15)

◎The brightness of the LCD panel can be set in 8 steps. Select the brightness level that can facilitate the reading.

1. Press the **MODE** key ① repeatedly until the MODE display ② shows **BRIGHT.**
2. Press the **<** or **>** UP/DOWN key ③ repeatedly until the desired brightness is obtained.
3. Press the **MODE** key ① to return to the previous status.

◎To enable exposure adjustment by the automatic exposure, it is recommended to set so that the MODE display shows **EXP. ADJ.**

### 2 Setting the Film Speed (ISO) (Fig. 15)

◎When a 35 mm camera back is used together with a DX coded film, the ISO value is set automatically so this operation is not necessary.

**NOTE** In photomicrography of a specimen under fluorescence, it is recommended to set the ISO value to about 4 times the rated film speed for the film in use. (Example: Set to ISO 400 with an ISO 100 film.)

Note that this system has been optimized for brightfield specimens. To allow optimum photomicrography of specimens and prevent fading of their colors under fluorescence, we recommend setting a different ISO value than that rated on the film in case of specimens under fluorescence.

1. Press the **MODE** key ① repeatedly until the MODE display ② shows **ISO**.
  2. Press the **<** or **>** UP/DOWN key ③ repeatedly until the desired ISO value appears in display area ④.
  3. Press the **MODE** key ① to return to the previous status.
- ◎To enable automatic exposure adjustment, we recommend setting the **MODE** display to show **EXP. ADJ.**

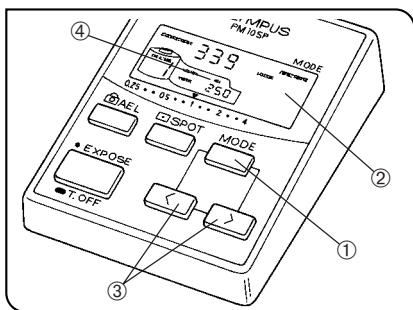


Fig. 16

### 3 Setting the Film Reciprocity (RECIP.) (Fig. 16)

⊙ In general, when a film is exposed for more than 1/2 second, the film's sensitivity tends to drop and the actual required exposure time may become longer than the time calculated based on the film speed (ISO value). This characteristic is referred to as the reciprocity law failure. As this characteristic differs depending on the film brands, compensation for the difference in reciprocity using this feature is required.

⊙ Factory setup "4" can be used without a problem with most of normal brightfield photomicrography.

1. Press the [MODE] key ① repeatedly until the MODE display ② shows [RECIP.] .

2. Press the [↑] or [↓] UP/DOWN key ③ repeatedly until the rated film reciprocity for the film in use appears in display area ④.

★ For the film reciprocity ratings, see the list on the attached sheet.

Only 2, 4 and 6 setting values are available with this feature. If another value is rated for the film in use, set a RECIP. value as shown below.

(Ratings 1 and 3 → 2, 5 → 4, 7 → 6.)

★ If the film in use is not listed, set the standard value of "4".

★ In special cases, you can also set other value than recommended according to your needs.

3. Press the [MODE] key ① to return to the previous status.

⊙ To enable exposure adjustment by the automatic exposure, we recommended setting the MODE display to show [EXP. ADJ.] .

### 4 Notes on Dark Specimens and Room Environment

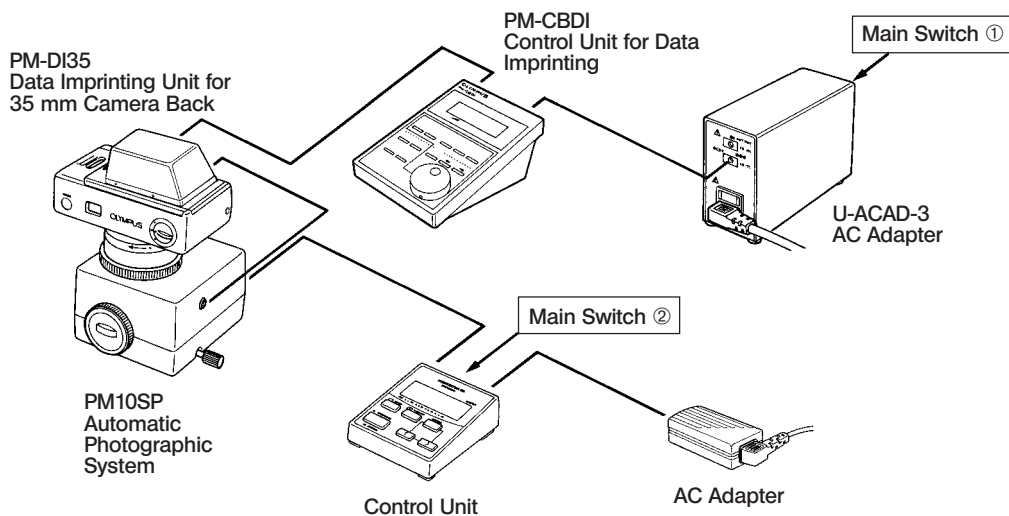
★ During photomicrography of dark specimens\* of fluorescence or darkfield observation, stray light from nearby fluorescent lamps, etc. may enter the microscope or photomicrographic system and cause error in photomicrography or exposure. Similar troubles are also experienced in photomicrography in an extremely bright room\*. In case of such an error or trouble, take treatments as described below.

- Conduct photomicrography in a dark room such as an anechoic chamber.
- Set the light path selector knob of the observation tube to the Camera 100% path or cap the eyepiece.  
(If you do not have the eyepiece caps, please contact your local Olympus representative.)
- After framing, attach the provided cap to the viewfinder before proceeding to the metering and exposure.

\* To check the metering and exposure errors, cover the viewfinder with your hand, etc. and compare the expected exposure time values before and after the covering. If the value is altered by the covering, the above treatments are required.

## 5 Note on Using the PM-DI35 Data Imprinting Unit

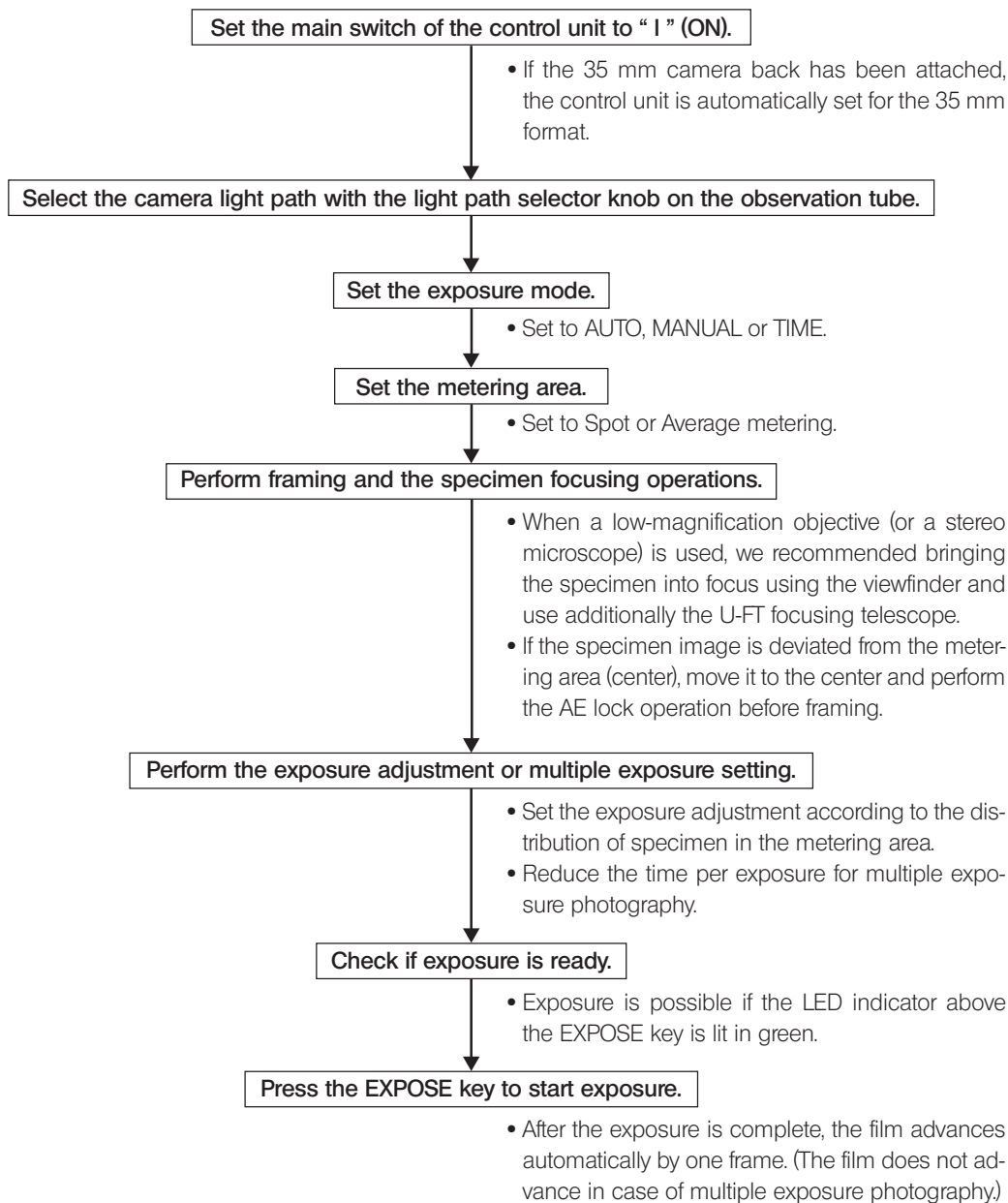
★ If the order in which the main switches are set to “ I ” (ON) is reversed when the PM-DI35 data imprinting unit is connected to the PM-10SP automatic photographic system, the ISO sensitivity data (DX) will not be correctly transmitted to the control unit.



### How to set the main switches

1. Make sure the main switches ① and ② are set to “ O ” (OFF) when the units are connected.
2. Set the U-ACAD-3 AC adapter’s main switch ① to “ I ” (ON).
3. Wait at least 5 seconds, then set the control unit’s main switch ② to “ I ” (ON).

- Complete optical adjustments of the microscope before proceeding.
- Engage the LBD color temperature conversion filter in the light path, and set the voltage selector to the ☒ marking position or the specified voltage for photography.  
(With monochrome photomicrography, precise color temperature setting is basically unnecessary. However, better results can be obtained by performing this setting operation.)
- For photomicrography of a dark specimen or in a very bright room, see section 4 on page 13.



#### Notes for photomicrography of specimens under fluorescence

1. Be sure to set the film reciprocity (RECIP).
2. Set the film speed (ISO) to about 4 times the ISO rating of the film in use.

# 6 FEATURE DESCRIPTIONS

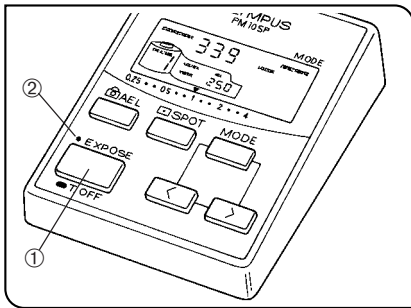


Fig. 17

## 1 Using Automatic Exposure (AUTO) (Fig. 17)

- The control unit is set automatically to the auto exposure mode unless it has been set specifically to the manual exposure mode.
- Auto exposure is executed at the moment the **EXPOSE** key ① is pressed after the required setup.

### Automatic Exposure Time Range

- This is between 1/125 second and 21 minutes and 12 seconds under the conditions of a 35 mm camera back, ISO of 100, exposure adjustment of 1 and reciprocity of 4.

### Light Distribution

Operation	Camera	Viewfinder	Metering
Metering	0%	50%	50%
Exposure	100%	0%	0%

### Exposure Alarm LED ②

- **Optimum exposure:** Steady lighting of green LED. The green LED blinks during exposure.
- **Overexposure:** Blinking of red LED. "000 S" displayed in the EXP. TIME area of the LCD panel. Intermittent buzzer beeps for 5 times. Exposure not accepted.

#### Treatment

- Reduce illumination using an ND filter.
- With a black and white film, the voltage can be reduced.
- **Underexposure:** Continuous lighting of red LED. "999 H" displayed in the EXP. TIME area of the LCD panel. Continuous buzzer beep for 5 seconds. Exposure not accepted.

#### Treatment

- Increase illumination.
- Use the manual or time exposure mode.

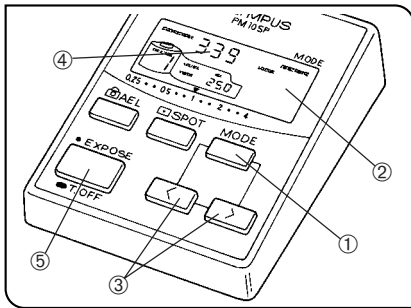


Fig. 18

## 2 Using Manual Exposure (MANU) (Fig. 18)

1. Press the **MODE** key ① repeatedly until the MODE display ② shows **MANU.**
2. Press the **UP/DOWN** key ③ repeatedly until the desired exposure time appears in the EXP. TIME display area ④.

★ **Since manual exposure is possible only when the MODE display ② shows **MANU.**, the MODE key should not be pressed like other mode setting features.**

3. Press the **EXPOSE** key ⑤ to start exposure for the selected exposure time.

## 3 Using Time Exposure (TIME) (Fig. 18)

1. Press the **MODE** key ① repeatedly until the MODE display ② shows **TIME.**
2. Press the **UP/DOWN** key ③ repeatedly until "0.00 S" appears in the EXP. TIME display area ④.

★ **Similarly to the manual exposure setting, the MODE key should no longer be pressed.**

3. Press the **EXPOSE** key ⑤ to start exposure. The exposure time display ④ increments as the exposure continues (max. exposure time 999 Hours).

The exposure alarm LED blinks in green during the time exposure.

4. When the desired exposure time has been reached, press the **EXPOSE** key (which functions as the timer exposure off switch at this point) and hold it for more than 0.7 second to complete the time exposure.

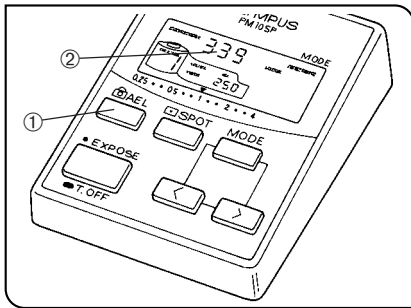


Fig. 19

4

### Using the Automatic Exposure Locking (AEL)

(Figs. 19 &amp; 20)

⊙ Use the AEL key to take photomicrographs with a constant exposure time. This enables semi-automatic memory photomicrography.

#### Locking the Expected Exposure Time

- When the [AEL] key ① is pressed in other condition than in the middle of automatic exposure, the currently displayed exposure time ② is locked and the AEL marking "🔒" appears in the LCD panel.

#### Locking the Actual Exposure Time

- The actual exposure time used in photomicrography is displayed for 2 seconds after completion of exposure. You can lock in the actual exposure time by pressing the AEL key before the display disappears. The AEL marking "🔒" appears in the LCD panel in this case, too.

★ You cannot lock the actual exposure time unless you press the [AEL] key within 2 seconds after the completion of previous exposure. If you want to perform more than one exposure using the same period, we recommend locking the AE time before starting the first exposure.

#### Releasing the AE Locking

- Press the [AEL] key ① again to release the AE locking.

#### « Application Examples »

- When you want to take photomicrographs of a single specimen by varying the framing or assemble panoramic photomicrographs from a number of exposures, select framing with average specimen distribution and lock the expected automatic exposure time there.
- When the specimen with which spot metering is required cannot be located at the image center due to framing considerations, move the specimen at the center, lock the expected exposure time at the center, then reframe the specimen and execute the exposure. (Fig. 20)

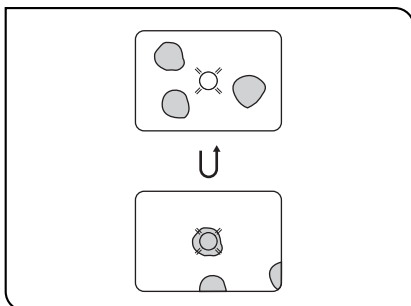


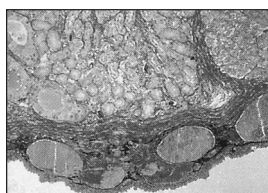
Fig. 20

## 5 Setting the Spot/Average Metering Area (Fig. 21)

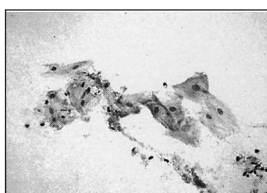
**NOTE** The spot/average metering mode selection is not accepted in the manual exposure mode.

Ⓞ Select the spot or average metering mode that is appropriate for the specimen distribution condition.

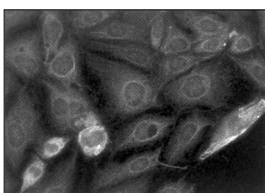
(Examples)



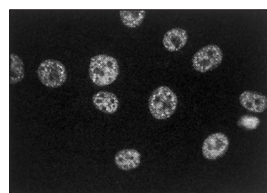
Brightfield average metering



Brightfield spot metering



Fluorescence average metering



Fluorescence spot metering

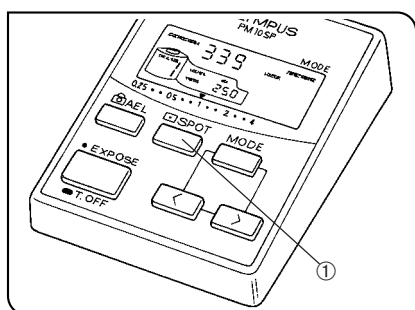


Fig. 21

1. Pressing the **[SPOT]** key ① in the average metering mode sets the spot metering mode and displays the spot metering marking "■" on the LCD panel.
2. When the **[SPOT]** key ① is pressed in the spot metering mode, the average metering mode is set and the spot metering marking "■" appears on the LCD panel.

Ⓞ Metering capabilities in automatic exposure mode

The metering capabilities of the spot and metering modes are identical.

The minimum exposure time is 0.01 second; however, the maximum exposure time varies according to the film reciprocity and film speed.

★ The table below shows the capabilities when the exposure adjustment value is 1.0.

Camera Back Used	Typical Film Speed (ISO)	Film Reciprocity		
		2	4	6
35 mm	3	8 hr. 00 min.	–	–
	100	8 min. 25 sec.	21 min. 12 sec.	53 min. 25 sec.
	400	1 min. 40 sec.	3 min. 30 sec.	7 min. 00 sec.
	800	45.7 sec.	1 min. 25 sec.	2 min. 35 sec.
	3200	9.2 sec.	13.6 sec.	20.1 sec.
	25600	0.8 sec.	0.9 sec.	1.0 sec.
Large format	3	–	–	–
	100	1 hr. 02 min.	–	–
	400	18 min. 40 sec.	52 min. 30 sec.	2 hr. 27 min.
	800	8 min. 23 sec.	21 min. 12 sec.	53 min. 22 sec.
	3200	1 min. 42 sec.	3 min. 27 sec.	7 min. 00 sec.
	25600	9.2 sec.	13.6 sec.	20.1 sec.

★ If it becomes necessary to employ exposure time that exceeds the automatic exposure metering capability, use the manual exposure mode.

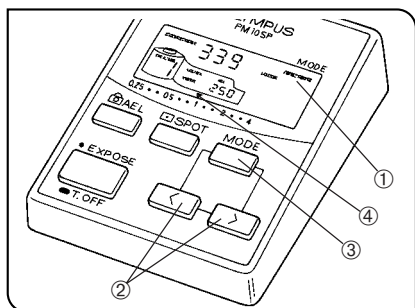


Fig. 22

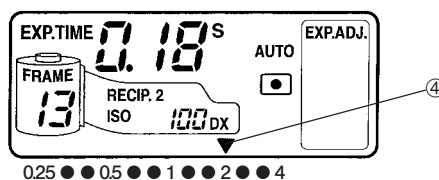
## 6 Setting the Exposure Adjustment (EXP. ADJ.) (Fig. 22)

⊙ Exposure can be adjusted for a wide range of specimen contrast patterns, for example when only small portions of a specimen exhibit intense brightness under darkfield or fluorescence illumination or when the background of chromosomes lacks contrast in brightfield illumination.

1. Make sure that the MODE display ① shows [EXP.ADJ.], and press the [←] or [→] UP/DOWN key ② repeatedly until the desired exposure adjustment value is obtained.

★ If [EXP.ADJ.] is not displayed, press the [MODE] key ③ repeatedly until it is displayed.

2. The exposure adjustment value refers to the value outside the LCD panel. The exposure adjustment value indicator ④ moving inside the LCD panel points to this value.



Display example when exposure adjustment value is 2

### ■ Exposure Adjustment with an ISO 100 Film

Specimen Distribution	ESP. ADJ. Value	Effective ISO Film Speed	Exposure Variation
Spotty, dark specimen in brightfield	0.25	25	2 steps over
Scattered specimen in brightfield	0.5	50	1 step over
Specimen evenly distributed over the entire field	1	100	Normal
Scattered specimen in darkfield	2	200	1 step under
Spotty specimen in darkfield	4	400	2 steps under

★ The exposure can be adjusted in increments of 1/3 steps. If the adjustment using the UP/DOWN keys ② is inadequate, the exposure can also be adjusted by varying the film speed (ISO) setting.

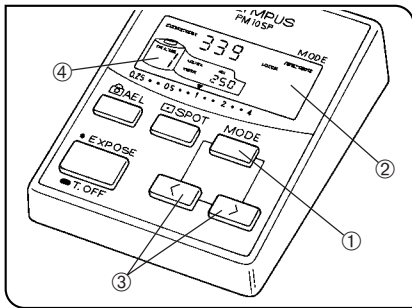


Fig. 23

## 7

### Setting the Multiple Exposure Photography (M. EXP)

(Fig. 23)

- Ⓞ The multiple exposure setting described below is required with a 35 mm camera back. With large format camera backs, multiple exposure photography is always possible provided that the light-excluding slide is set in place.
- 1. Press the **[MODE]** key ① repeatedly until the MODE display ② shows **[M. EXP.]**.
- 2. Press the **[↑]** UP/DOWN key ③ to set the multiple exposure mode. The multiple exposure marking “**■**” appears on the LCD panel.
- 3. In the current condition, the 35 mm film will not advance, so as many multiple exposures can be shot on a single frame as is required.
- Ⓞ In order to avoid overexposure during multiple exposure photography, reduce the time per exposure by setting a higher film speed.
- 4. To cancel the multiple exposure mode after using the control unit in another mode, display **[M. EXP.]** again and press the **[↓]** UP/DOWN key ③. The multiple exposure marking disappears, the film advances 1 frame and the multiple exposure mode is released.
- Ⓞ If the multiple exposure setting is canceled without exposure being performed, the film will not advance.

## 8

### Resetting the Film Count (F. RESET)

(Fig. 23)

- Ⓞ The film count reset operation described below is not operable with a 35 mm camera back because its film count is set automatically according to the frame count signal from the camera back.
- With a large format camera back, the displayed frame count is recalled from the memory of the last film count. This count can be changed to 1 or any number up to 99.
- 1. Press the **[MODE]** key ① repeatedly until the MODE display ② shows **[F. RESET]**.
- 2. Press the **[↑]** UP/DOWN key ③ repeatedly until the desired film count is displayed in display area ④.
- ★ **Simply pressing the **[↓]** key once resets the film count to “1”.**
- 3. Press the **[MODE]** key ① to return to the previous status.
- Ⓞ To enable exposure adjustment by the automatic exposure, we recommend setting the MODE display to show **[EXP. ADJ.]**.

# 7 FILTERS AND FILMS

## 1 Using Contrast Filters for Black and White Films

To use a B/W contrast filter, place a filter appropriate for the stain into the filter mount on the microscope.

### ■ Contrast filters applicable for various stains

Stain \ Contrast Filter	Green	Orange	Yellow
Orange G	○		
Azocalmine G	○		
Eosine	○		
Acid fuchsin	○		
Aniline blue	○	○	○
Hematoxylin	○	○	○
Methylene blue		○	○
Light green SF		○	

### ■ Contrast filters applicable for various stains

Stain \ Contrast Filter	Green	Orange	Yellow
H-E	○	X	○
Giemsa	○	X	
Azan	○	△*1	
M.G.	○	○	
Papanicolaou	△*2	△*2	
EIA (DAB)	△*3	X	X

X: Not appropriate. ○: Appropriate. △: Varies according to applications.

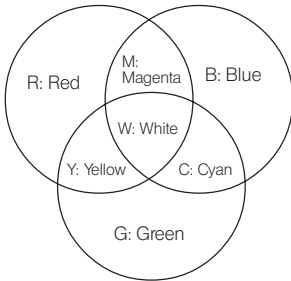
△\*1: Aniline blue will enhance contrast on fiber, mucus or glass-like substances, whereas Azocarmine G and Orange G will decrease contrast on erythrocytes, cytoplasm and nuclei.

△\*2: Various staining methods are employed for difference cells. A single filter cannot be used for all of them. Use the filter most suitable for a particular staining method.

△\*3: Use of the 45IF436 available as an option is recommended.

## 2 Color Tones of Positive Color Films

In the case of film whose color reproduction requires some improvement, a commercially available color compensation (CC) filter may be used. Here are some points to remember when using such filters for color compensation.



The filters may be classified roughly into three types, as shown in the figure:

{ Cyan (CC-C)  
Magenta (CC-M)  
Yellow (CC-Y)

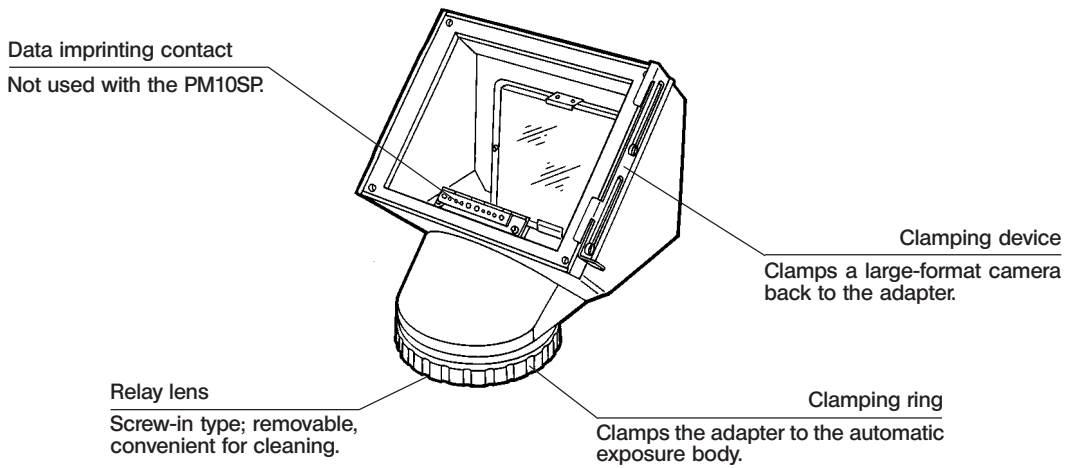
The filters absorb their complementary colors.

{ Cyan ↔ Red  
Magenta ↔ Green  
Yellow ↔ Blue

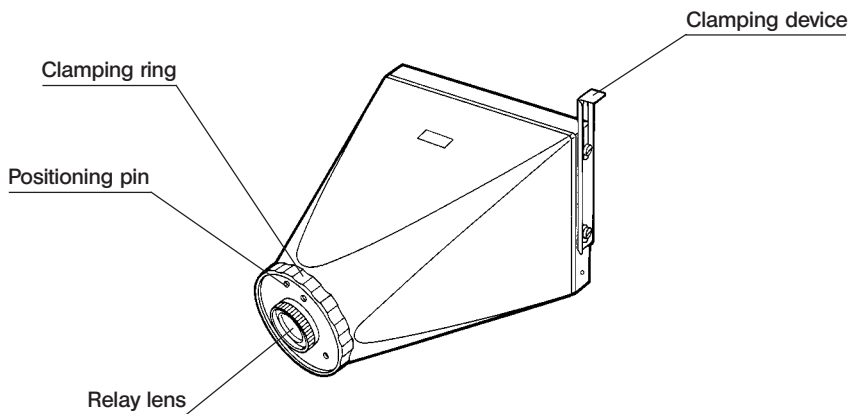
- The degree of color density of the filter is identified by a number. The larger the number, the greater the density. The magenta filters for example are assigned numbers CC-M5, CC-M10, CC-M15 (two filters, CC-M5 + CC-M10 placed on over the other). The maximum range of magenta filters that can be used for photomicrography is currently from 5 to 15.
- Looking at a micrographic transparency (which, of course, has been correctly exposed), combine it with CC filters one after another to choose the proper filter or combination filters suitable for the color you want to eliminate.  
For practical purposes, you can estimate the effectiveness of a CC filter by placing a transparency on a light box and placing the filter(s) on the transparency. insert the selected filter in the light path of the microscope and make an exposure using the same photomicrographic conditions.
- Even the same brand of color film may have slightly different color reproduction characteristics, depending on the emulsion numbers. It is therefore advisable to purchase a large quantity of film at one time and store them in a refrigerator, and use film of the same production number for photomicrography. However, it is important that the film be allowed to warm to room temperature before use.
- This, however, does not apply to negative color film printing. It is recommended that you ask your processing laboratory to print the negative color film, while supplying them with a sample transparency for reference.

### A. Large Format Adapters

#### 1. Large Format Camera Back Adapter (PM-DLF)



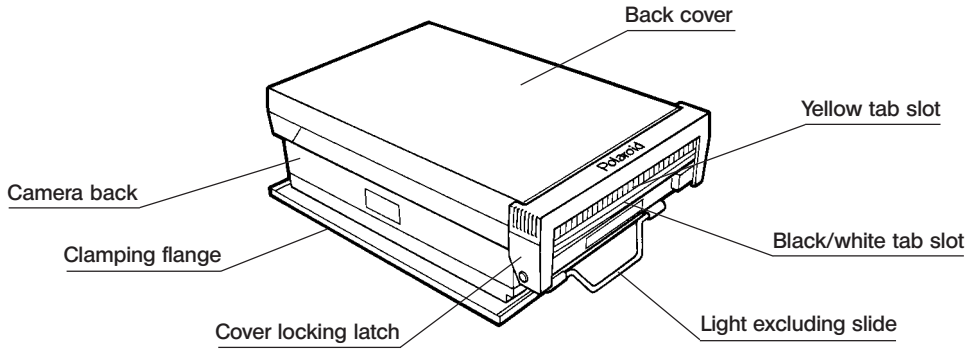
#### 2. Large Format Camera Back Adapter (PM-DL-3)



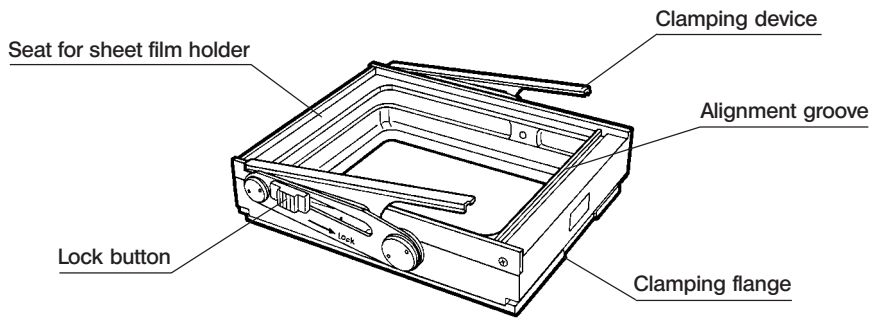
One of these adapters must be attached when using a large format camera back.

## B. Large Format Camera Backs

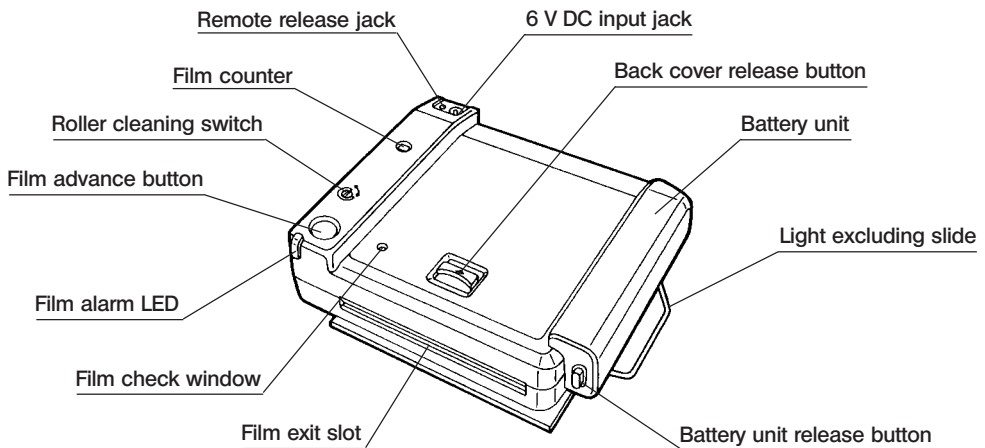
### 1. Polaroid camera (PM-CP-3)



### 2. Intermediate Adapter for 4" x 5" Holders (PM-C4X5-3)



### 3. Fuji Instant Camera Back (PM-CFI-4)



# 9 ASSEMBLY (LARGE FORMAT CAMERA BACKS)

★ For the modules attached below a large format camera back, read section 3, "ASSEMBLY (35 mm CAMERA BACK)" (page 7).

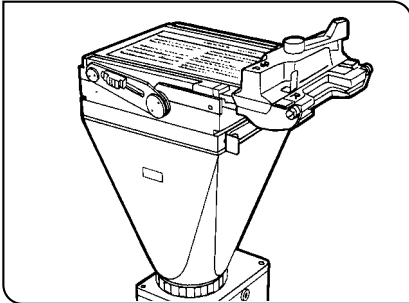


Fig. 24

Replace the 35 mm camera adapter with the large format adapter and mount the large format camera back on it. The picture size varies with the type of the camera back used, but the magnification at the film plane remains the same for all as described below.

- When a PE or NFK photo eyepiece is used, magnification at the film plane is equal to:  
Objective magnification x PE or NFK photo eyepiece magnification x 3  
With this formula the magnifications as tabulated below can be obtained by combining objectives and photo eyepieces.

## ■ Photomicrographic Magnification with Large Format Camera Backs

Objective	Total photomicrographic magnification	PE Photo Eyepiece				NFK Photo Eyepiece			
		PE2.5X	PE3.3X	PE4X	PE5X	NFK2.5X	NFK3.3X	NFK5X	NFK6.7X
1X		-	-	-	-	75X	10X	15X	20X
1.25X		9.4X	12.4X	15X	18.7X	-	-	-	-
1.3X		-	-	-	-	9.8X	12.9X	19.5X	26X
2X		15X	20X	24X	30X	15X	20X	30X	40X
2.5X		18.8X	25X	30X	37.5X	18.8X	25X	37.5X	50X
4X		30X	40X	48X	60X	30X	40X	60X	80X
5X		37.5X	50X	60X	75X	37.5X	50X	75X	100X
10X		75X	100X	120X	150X	75X	100X	150X	200X
20X		150X	200X	240X	300X	150X	200X	300X	400X
40X		300X	400X	480X	600X	300X	400X	600X	800X
50X		375X	495X	600X	750X	375X	495X	750X	1005X
60X		450X	594X	720X	900X	450X	594X	900X	1206X
100X		750X	1000X	1200X	1500X	750X	1000X	1500X	2000X

# 10 PREPARATION (LARGE FORMAT CAMERA BACKS)

## 10-1 Loading Film in Large Format Camera Backs

### 1 Polaroid Camera Back (PM-CP-3) (Figs. 25-27)

● Picture size: 3-1/4" x 4-1/4" (73 mm x 95 mm)

● Film used: 8.3 cm x 10.8 cm pack (Standard series)

★ Read the instructions provided with the film pack carefully before proceeding.

1. Open the film pack case and take out the film pack.
2. Push the cover locking latch ① downward with both hands to flap it down in the direction of the arrow. (Fig. 25)
3. Open the camera back cover all the way.

★ The back cover can be damaged if it is thrown open carelessly. Support the cover with one hand when opening it.

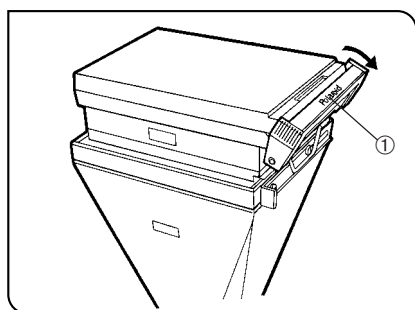


Fig. 25

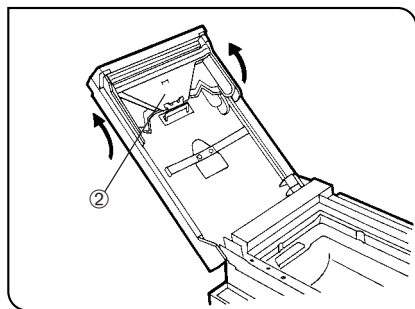


Fig. 26

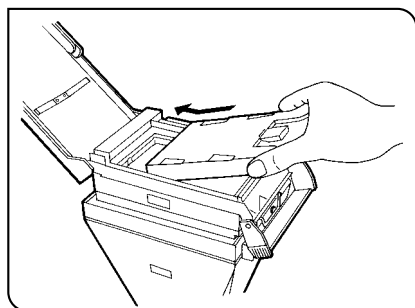


Fig. 27

#### ⊙ Cleaning the rollers

It is essential to keep the rollers clean, for dirty rollers will produce irregularities on the picture.

1. To clean the rollers, lift the roller assembly ② upward in the direction of the arrow and remove. (Fig. 26)
2. Wipe the rollers first with a wet cloth and then with a dry cloth.

★ Do not scratch the rollers with a metallic object or fingernail. After cleaning, push in the roller assembly ① in the original position.

4. Next, holding the film pack by the edges so that the safety cover side bearing the legend "SAFETY COVER... THIS SIDE FACES LENS" faces the camera's masking plate, insert the film pack against the plate spring beneath the back cover. (Fig. 27)

5. Push the film pack into the camera until the film pack snaps into place.

★ Make sure that the white tabs are not caught between the film pack and the camera.

6. Close the camera back cover and snap the cover locking latch securely.

★ The black tab of the safety cover should protrude from the small slot.

If this is not the case, open the back cover once again and make sure that the black tab is sticking out.

7. Hold the black tab of the safety cover and pull it straight out of the camera back.

★ After the black tab is pulled out, a white tab should emerge from the tab slot.

Do not pull out the white tab because it is to be pulled out only after having made an exposure. Now the camera back is ready for exposure.

2

**Intermediate Adapter for 4" x 5" Holders (PM-C4X5-3)**

(Figs. 28-30)

- This adapter enables photomicrography using a film holder in compliance with the 4" x 5" international standard.  
Picture size: 4" x 5"

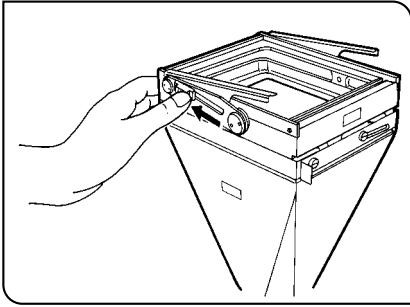


Fig. 28

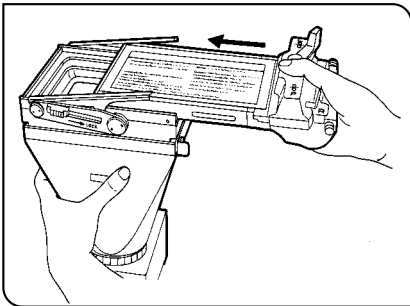


Fig. 29

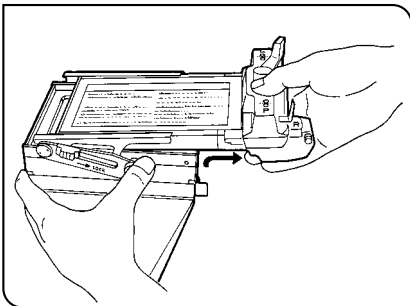


Fig. 30

1. Slide the lock buttons (on both sides) of the intermediate adapter in the direction opposite to locking (releasing side). At the end of their travel, press the buttons and the clamping device will lift up, widening the film holder insertion opening. (Fig. 28)

In case of a Graphmatic film holder, this operation is not required because it can be inserted into position without lifting the clamping device. (Fig. 29)

2. Insert the film holder all the way until it stops.  
This will engage a protrusion on the film holder with a mating groove on the intermediate adapter.
3. Slide the lock buttons back to clamp the film holder down.

**Detaching the Holder**

1. Slide the lock buttons on both sides in the direction opposite to locking.
2. Hold the film holder by the right edge and pull it out while lifting it slightly. (Fig. 30)

### 3 Fuji Instant Camera Back (PM-CFI-4) (Figs. 31-33)

- Film used: Fuji Instant Color Film ACE (ISO800)
- ★ Previous films such as the FI-800 cannot be used.
- Picture size: 69 x 91 mm
- Batteries: AM3 (SUM-3) alkaline batteries (LR6)

#### Loading Batteries (Figs. 31 & 32)

1. Press the battery unit release button ① and remove the battery unit.
2. Open the battery holder plate as shown in Fig. 31. (When replacing batteries, removal is easier if you use a pointer object such as the tip of a mechanical pencil as a lever.)
3. Insert four AM3 (SUM-3) alkaline batteries ("LR6"-size) into the battery unit as shown by the illustration inside it.
4. Close the battery holder plate.
5. Attach the battery unit to the camera back. First insert the tab ② on the side with the contact into its slot as shown in Fig. 32, then push the side with the release button ③ into place. (Functions such as film ejection will not work if the contact side of the battery unit is not properly seated.)
6. Manganese or NiCd batteries can also be used in place of alkaline batteries.

#### Loading Film (Fig. 33)

1. Open the film pack case and take out the film pack.
2. Press the back cover release button ④ toward OPEN and open the camera back cover.
3. Align the line on the film pack with the line on the camera back and insert the film pack.
4. Press the film advance button. This ejects the film pack's masking plate automatically and makes the camera back ready for exposure.

#### Film Alarm LED

- The LED blinks for 15 seconds when the film counter indicates "E" or "E".

#### Roller Cleaning Switch

- Fluid leaking from the film may settle on and contaminate the roller surfaces. In this case, open the camera back cover and invert the film back. Set the roller cleaning mode to "R (Reverse)" and then wipe with a cotton swab or gauze moistened with water by rotating the rollers in the opposite direction to normal operation. Do not set the switch to "R" except for cleaning. After cleaning, make sure to set it back to "F (Forward)".

Also clean the rollers if regular patterns with an interval of about 3 mm appears on photographs.

#### Remote Release Operation

- If you want to use a remote release, use one equipped with a 2.5 mm diameter plug.
- Connect the plug of the remote release to the remote release jack.

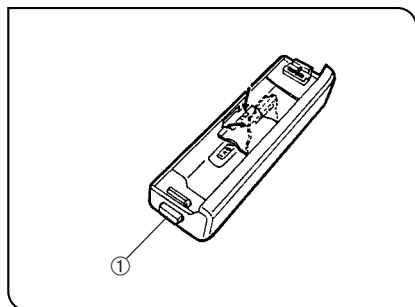


Fig. 31

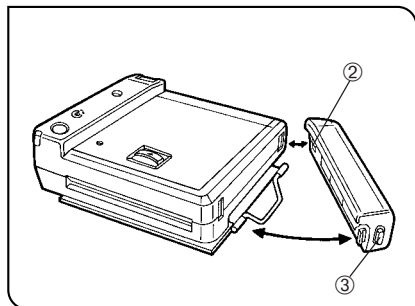


Fig. 32

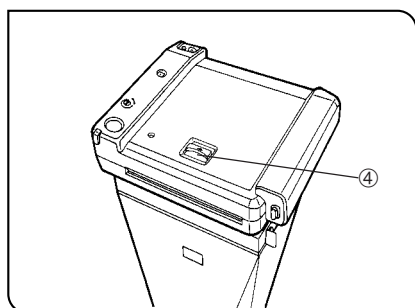


Fig. 33

## 10-2 Operations After Exposure

### 1 Polaroid Camera Back (PM-CP-3)

After exposure, develop the film in the following manner.

1. Grasp the white tab emerging from the camera back with thumb and index finger of the right hand and pull it out completely in one motion.
2. After the white tab is pulled out, a yellow tab emerges.

★ **If the yellow tab is in sight already visible, do not pull the white tab.**

**Pulling out the white tab does not commence development; it is a preparatory step for pulling the yellow tab.**

3. Hold the center of the yellow tab and pull it out from the camera back quickly in one motion. This begins development from the point when the yellow tab is pulled out all the way. For the development time, follow the instructions provided with the film.

The speed of pulling should be about equal to the time of saying "pull out". If many white spots appear in the picture, pull out a little more slowly.

### 2 Intermediate Adapter for 4" x 5" Holders (PM-C4X5-3)

For the operations after exposure, refer to the instructions provided with the sheet film holder in use.

### 3 Fuji Instant Camera Back (PM-CFI-4)

1. Press the film advance button on the camera back to eject the exposed film.
2. The image usually starts to appear in about 15 seconds, and stabilizes in about 1 minute.
3. After taking all exposures (10 photographs), replace the film pack.

★ **Note that the structure of the film holder causes the film counter to be upside-down.**

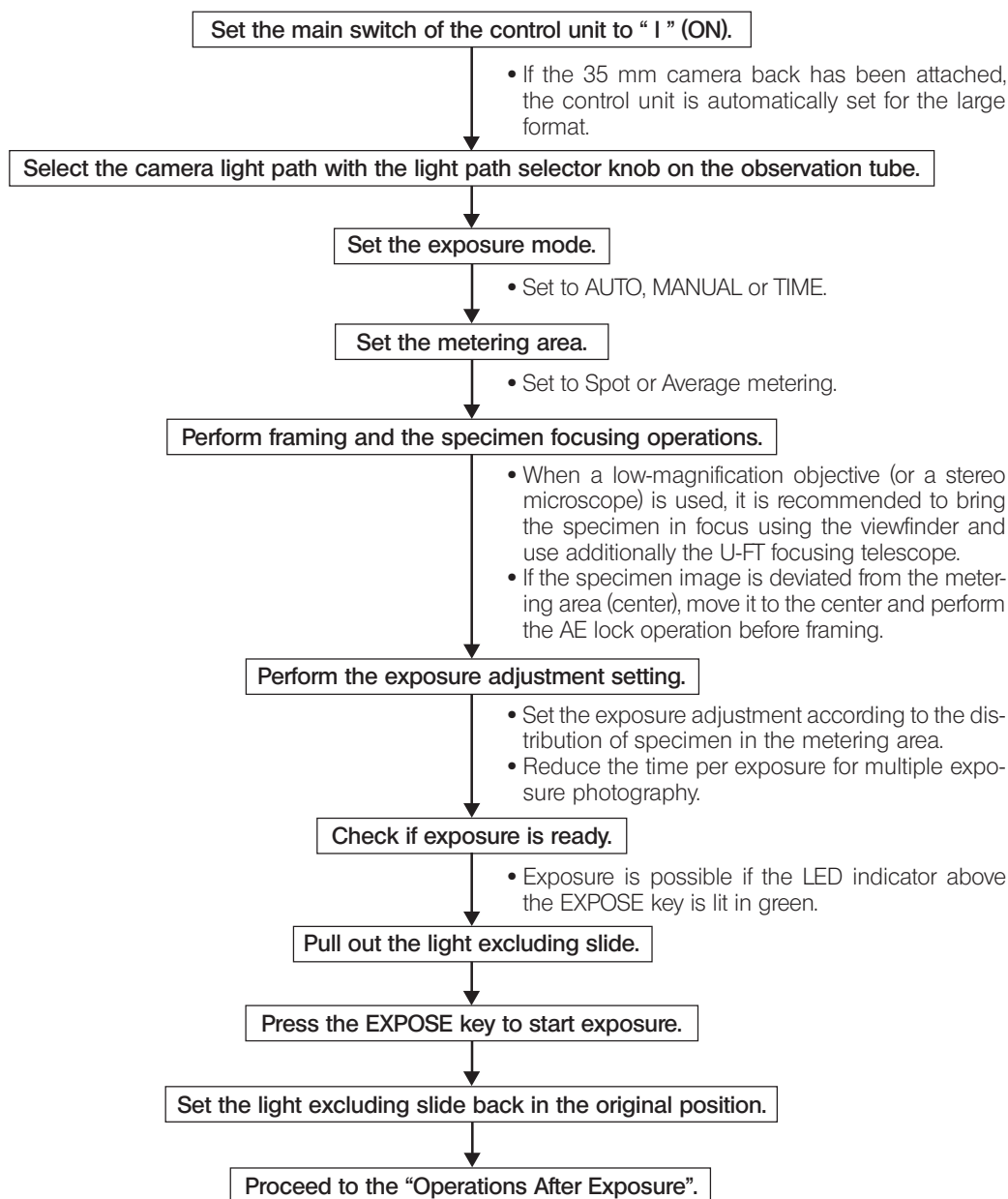
★ **Handle ejected films by the edges; do not touch the face of the film.**

#### NOTE

With this film, magenta tones tend to be enhanced when the exposure time is longer than 0.1 second. In this case, we recommend the use of a color correction filter(s) in the range between CC-10G and CC-30G.

# 11 PHOTOMICROGRAPHY USING LARGE FORMAT CAMERA

- Complete the optical adjustments of the microscope before proceeding.
- Engage the LBD color temperature conversion filter in the light path, and set the voltage selector to the ☒ marking position or the specified voltage for photography.  
(With monochrome photomicrography, precise color temperature setting is basically unnecessary. However, better results can be obtained by performing this setting operation.)
- For photomicrography of a dark specimen or in a very bright room, see section 4 on page 13.



## Notes for photomicrography of specimens under fluorescence

1. Be sure to set the film reciprocity (RECIP).
2. Set the film speed (ISO) to about 4 times the ISO rating of the film in use.

# 12 SPECIFICATIONS

Item		Specifications												
Exposure modes		AUTO, MANUAL, TIME, AEL (AE Lock)												
Light detection element		1%/30% split, concentric SPD (Silicon Photo Diode)												
Automatic exposure	Metering area	2 modes (Electrical selection using a control unit key) Spot metering: 1% area of 35 film plane Average metering: 30% area of 35 mm film plane												
	Metering method	Memory based metering (Automatic light path selection by mirror flapping)												
	Automatic exposure range	1/125 sec. to 21 min. 12 sec. (35 mm camera back, ISO 100, EXP. ADJ. 1, RECIP. 4)												
Light distribution		<table border="1"> <thead> <tr> <th>Operation</th> <th>Camera</th> <th>Viewer</th> <th>Metering</th> </tr> </thead> <tbody> <tr> <td>Metering</td> <td>0%</td> <td>50%</td> <td>50%</td> </tr> <tr> <td>Exposure</td> <td>100%</td> <td>0%</td> <td>0%</td> </tr> </tbody> </table>	Operation	Camera	Viewer	Metering	Metering	0%	50%	50%	Exposure	100%	0%	0%
Operation	Camera	Viewer	Metering											
Metering	0%	50%	50%											
Exposure	100%	0%	0%											
ISO speed setting	Setting range	35 mm: 3 to 25600, in 1/3 steps Large format: 25 to 25600, in 1/3 steps												
	Setting method	Automatic setting based on DX code (35 mm only). Manual setting using the UP/DOWN switches.												
Exposure adjustment (EXP. ADJ.)		0.25 to 4 (in 1/3 steps)												
Film reciprocity (RECIP)		3 steps, including 2, 4 and 6.												
AE lock (AEL)		Locks the expected exposure time. Locks the actual exposure time while it is displayed (within 2 sec. after each exposure).												
Manual time setting		0.01 sec. to 40 min. Time exposure also available.												
Exposure indication	Display unit	M (min.) and S (sec.) with both AUTO and MANUAL exposure. (Hexadecimal, 3 significant digits)												
	Display method	AUTO exposure mode (i) Before exposure: Expected (calculated) exposure time (ii) During exposure: Remaining exposure time (iii) After exposure: Actual exposure time												
	Display method	MANUAL exposure mode (i) Before exposure: Set exposure time (0.01 S - 40 M) (ii) During exposure: Remaining exposure time (iii) After exposure: Actual exposure time (for 2 sec.) TIME exposure mode (i) Before exposure: "0.00 S" set by manual setting. (ii) During exposure: Elapsed exposure time after the EXPOSE key is pressed. (iii) After exposure: Actual exposure time after the EXPOSE key is pressed (for 2 sec.).												
	Exposure alarm	Overexposure: Blinking of red LED. "000 S" displayed in the EXP. TIME area of the LCD panel. Intermittent buzzer beeps for 5 times. Exposure not accepted. Underexposure: Continuous lighting of red LED. "999 H" displayed in the EXP. TIME area of the LCD panel. Continuous buzzer beep for 5 seconds. Exposure not accepted.												

Item	Specifications
Data backup	<p>The following data is backed up after the main switch is set to "O" (OFF):</p> <ul style="list-style-type: none"> <li>• Film count in a large format camera back</li> <li>• ISO speed*</li> <li>• EXP. ADJ. value</li> <li>• RECIPI. value</li> <li>• Spot/average metering mode</li> <li>• BRIGHT. (LCD panel brightness)</li> </ul> <p>The following modes cannot be recalled once the main switch is set to "O" (OFF):</p> <ul style="list-style-type: none"> <li>• The initial mode is always EXP. ADJ.</li> <li>• The AEL and MANUAL exposure mode are not backed up after power off.</li> </ul> <p>* The ISO speed of 35 mm film is backed up only when the last setting is based on other method than the DX code detection.</p>
Operating environment	<ul style="list-style-type: none"> <li>• Indoor use.</li> <li>• Altitude: Max. 2000 meters.</li> <li>• Ambient temperature: 5 to 40°C (41 to 104°F)</li> <li>• Maximum relative humidity 80% for temperatures up to 31°C (88°F), decreasing linearly through 70% (at 34°C), 60% (at 37°C) to 50% (at 40°C).</li> <li>• Supply voltage fluctuation: ±10%.</li> <li>• Pollution degree: 2 (in accordance with IEC664).</li> <li>• Installation (overvoltage) category: II (in accordance with IEC664)/</li> </ul>
Rated input	<p>Control unit: 15 V ±0.15 V DC, 1.33 A  AC adapter: 100-120 V/220-240 V, ~ 1.0 A/0.5 A</p>
Dimensions & weight (excluding the protrusion dimensions)	<p>Automatic exposure body:  105(W) x 108(D) x 80(H) mm, 900 grams  Control unit: 84(W) x 108(D) x 32(H) mm, 280 grams  AC adapter: 60(W) x 120(D) x 38(H) mm, 240 grams</p>

# 13 TROUBLESHOOTING GUIDE

Under certain conditions, performance of this system may be adversely affected by factors other than defects. If a problem occurs, 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
1. During preparation		
a) Characters are not displayed in the LCD after the main switch is set to "I" (ON).	Improper cord connection.	Connect the cords correctly.
	Cord is disconnected or damaged.	Contact your local Olympus representative to obtain a new cord.
b) Expected exposure time is not displayed immediately.	With extremely dark fields, it may take 2 or 3 seconds for the expected exposure time to appear.	This is not a malfunction. In any case, regardless of the field brightness, it always takes 2 or 3 seconds for the first calculation of the expected exposure time after removal and reattaching of camera back.
c) ISO film speed for a 35 mm film is not displayed when ISO of 10 and EXP. ADJ. of 0.25 are set with the UP/DOWN switch.	The film speed resulting from these settings is outside the permissible range, which is defined as "ISO speed x EXP. ADJ.". It is ISO 3 to 25600 with a 35 mm camera back and ISO 25 to 25600 with a large format camera back.	Use settings that can result in an ISO speed within the permissible range, or use the manual exposure mode.
d) Exposure time is displayed even though the field is dark.	Stray light leaking in from somewhere, for example through the viewfinder, may be detected.	Darken the room with long exposures.
	High humidity is affecting the photometering circuit.	The photomicrographic results are usually not affected. The indication will return to normal when the humidity drops (to below 85%). However, if the exposure time is displayed with a film speed setting of ISO400, there is a problem with the equipment; have it checked by your local Olympus representative.
e) String-like imprints appear over the film perforation.	This derives from the structure of the camera back.	This does not affect the actual image.
2. During operation		
a) Remaining exposure time is not decremented.	Exposure time does not decrement when it is set to 0.5 sec. or less.	This is not a malfunction.

Problem	Cause	Remedy
b) The buzzer beeps.	Because of underexposure, the exposure alarm LED lights in red and the buzzer beeps continuously for 5 sec.	The specimen is too dark. If brightness cannot be increased, select the manual exposure mode.
	Because of overexposure, the exposure alarm LED blinks in red and the buzzer beeps intermittently for 5 sec.	The specimen is too bright. If brightness cannot be reduced, use an ND filter or lower the voltage.
	Exposure is not adjusted properly.	For specimens that fill 1/2 of the 1% area, double EXP. ADJ. For those that fill 1/4 of the 1% area, quadruple EXP. ADJ. For smaller specimens which need further adjustment, raise the ISO speed setting instead.
	Underexposure occurred because the specimen is too dark.	Use a faster film.
c) The EXPOSE key is locked.	This occurs when the end of film is reached when using the PM-C35DX; set a new film.	The PM-C35DX is a fully automated camera back and this function is provided to prevent accidental operation mistake (it is not a malfunction). Correct by loading a new film.
	Not enough time (more than 1 second) has passed since the setting was changed.	When the setting is changed, the exposure time will be adjusted automatically. Wait for more than 1 second.
d) Film speed is not set automatically.	The film in use is not a DX film.	Use a DX film or set the ISO speed manually.
	The DX code section of the DX film or the contacts on the camera back are dirty.	Clean the dirty section. (Set the power switch to "○" (OFF) before cleaning the camera back contacts.)
e) Some keys or switches are locked out when pressed.	Inputs from some keys and switches are not accepted depending on the specific conditions set.	Check the current setting condition.
f) All keys and switches are locked out after the 35 mm camera back has been attached.	Unnecessary removal and attaching of the camera back resulted in erroneous communication between the camera back and PM10SP.	Remove the camera back and attach it again. If this does not correct the problem, set the power switch to "○" (OFF) then "I" (ON) again.
g) Keys and switches are locked out for a few seconds after the PM-C35DX is attached.	Inputs from all keys switches are not accepted for about 4 seconds after the PM-C35DX is attached due to the properties of communications between the PM-C35DX and PM10SP.	Wait for the automatic exposure indicator to light. If the indicator does not light in 4 seconds, the cause may be as explained in f) above.

Problem	Cause	Remedy
h) The imprinted data brightness is too high or too low.	The imprinted data brightness has not been adjusted correctly.	Adjust correctly.
	The film speed setting is incorrect.	Set correctly.
	Because the unit cannot detect the film speed (DX code) properly, the film speed setting is incorrect. ("DX" will be displayed on the LCD panel when the unit speed is correctly detected.)	Set the main switch correctly as instructed in item <b>5</b> on page 14.
l) Data cannot be imprinted.	The data imprinting unit is not turned on.	Set the main switch correctly as instructed in item <b>5</b> on page 14.
	The X contact cable is not connected.	Connect the automatic photomicrographic system's main unit and data imprinting unit (PM-DI35 or PM-CP-DI) using the X contact cable.
<b>3. Results</b>		
a) Image is not sharp.	Dirty lens components.	Clean them.
	Poor focusing.	Adjust the focus so that both the reticule lines and specimen image are clearly visible.
	Incorrect adjustment of the aperture iris diaphragm.	Adjust it correctly.
	Standard dry objectives being used with a smear specimen.	Use a no-cover objective with smear specimens.
	Improper matching between the photo eyepiece in use and the microscope.	Use the photo eyepiece designed for the microscope in use.
b) Poor contrast or insufficient resolution.	In B/W photomicrography, an improper contrast filter is being used.	Select a proper filter.
	Incorrect adjustment of the aperture iris diaphragm.	Open it properly.
	Incorrect adjustment of the field iris diaphragm.	Open it properly.
	Specimen itself lacks contrast.	Stop down aperture iris diaphragm.

Problem	Cause	Remedy
c) Poor color reproduction.	The microscope voltage is not set to the "Ⓜ" marking position or to the specified voltage.	Set it correctly.
	Contrast filter for B/W film is used with a color film.	Do not use the filter.
	Incorrect setting of RECIP.	Set it correctly.
	CC filter required for the film is not being used.	Use as designated.
d) Under- or overexposure.	Incorrect EXP. ADJ. setting that does not match the specimen distribution.	Set properly according to the specimen distribution.
	Incorrect RECIP. setting.	Set properly.
	Incorrect EXP. ADJ. setting.	Set properly.
e) Film is not exposed.	With a large format camera back, the masking plate has not been pulled out.	Be sure to pull out the masking plate.
f) Only the central portion of film is exposed.	Photo eyepiece is not used.	Attach a photo eyepiece.
	Field iris diaphragm is stopped down excessively.	Do not stop it down to an area less than the frame reticle.
g) Exposed frames overlap.	Too much of the tip of the film leader section was inserted into the take-up spool when loading the film.	Read the instructions on the film loading again.
h) Overexposure occurs during fluorescence photomicrography.	RECIP. is not set.	Set it properly.
	ISO speed is input without correction.	With fluorescence photomicrography, set an ISO speed of about 4 times the rated speed.

This device complies with the requirements of both directive 89/336/EEC concerning electromagnetic compatibility and directive 73/23/EEC concerning low voltage. The CE marking indicates compliance with the above directives.

## ■ 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
Fitting Configuration	Grounding type attachment pulg 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 equivalent and authorized agencies in your country.

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

**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)	CEVEC	<HAR>	10	30	10
Verband Deutscher Elektrotechniker (VDE) e.V. Prüfstelle	<VDE>	<HAR>	30	10	10
Union Technique de d'Electricite' (UTE)	USE	<HAR>	30	30	10
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 (ÖVK)	<ÖVE>	<HAR>	30	10	50
Danmarks Elektriske Materielkontrol (DEMKO)	<DEMKO>	<HAR>	30	10	30
National Standards Authority of Ireland (NSAI)	<NSAI>	<HAR>	30	30	50
Norges Elektriske Materiekkontroll (NEMKO)	NEMKO	<HAR>	10	10	70
Asociacion Electrotecnica Y Electronica Espanola (AEE)	<UNDE>	<HAR>	30	10	70
Hellenic Organization for Standardization (ELOT)	ELOT	<HAR>	30	30	70
Instituto Portugues da Qualidade (IPQ)	I np I	<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*

# *MEMO*

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