FILM PROJECTOR UNIT

(Machine Code: A718)

1. SPECIFICATIONS

Acceptable Film Types:
- Type: Positive film/Negative film
- Size: 35 mm - Approx. 140 x 210 mm
  Others: 45 x 60 mm, 60 x 60 mm, 60 x 70 mm, 60 x 80 mm, 60 x 90 mm, 4" x 5"
  Max: 142 x 210 mm or 5.6" x 8.2"
- Mount: Yes (Up to 5 frames can be set in the film holder.)
- Strip: Yes (A series of 6 frames can be set in the film holder.)

Focusing: Fixed/Manual

Effective Film Area:
- 35 mm: Approx. 21.5 x 33.0 mm
- Other Sizes: Full Size

Projection Ratio
- 35 mm: Approx. x 6
- Other Sizes: x 1

Copy Image Size
- 35 mm mount: 120.8 x 192.7 mm
- 35 mm strip: 129.3 x 198.6 mm
- Other Sizes: Full Size

All the reproduction features of the copier are available.

Power Source: 115 V 60 Hz, more than 1.0 A
220 ~ 240 V 50/60 Hz, more than 0.6 A

Power Consumption: Maximum: less than 185 VA

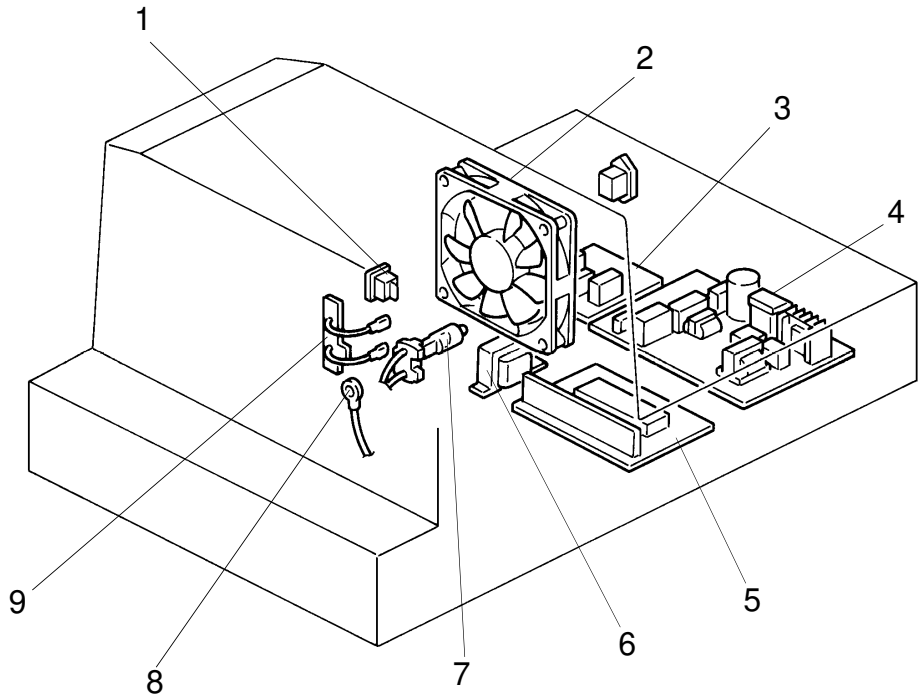
Dimensions (W x D x H): Projector: 300 x 442 x 212 mm
11.8" x 17.4" x 8.35"

Mirror Unit: 298 x 232 x 50 mm
11.73" x 9.13" x 1.97"

Weight: Projector: 10 kg, 22.1 lb
Mirror unit: 5 kg, 11.1 lb

Remarks: The holder is required for installation.

2. ELECTRICAL COMPONENT LAYOUT AND DESCRIPTIONS

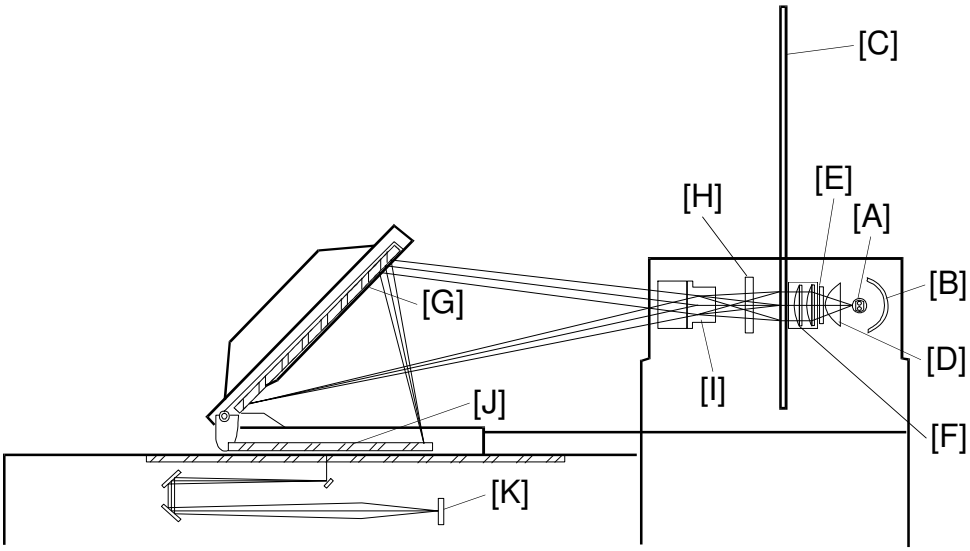


A718V500.img

Symbol	Name	Function	Index No.
PCB1	Projector Lamp Regulator	Supplies dc voltage to the projector lamp and lamp cooling fan.	4
PCB2	Projector Control Board	Controls the projector unit, communicating with the copier main board.	5
PCB3	Noise Filter Board (220–240V machine only)	Removes electrical noise.	3
M1	Lamp Cooling Fan	Blows air to the projector lamp section.	2
SW1	Projector Switch	Provides power to the projector unit.	1
L1	Projector Lamp	Applies light to the film for exposure.	7
TH1	Lamp Thermistor	Detects the temperature around the projector lamp to control the lamp cooling fan.	8
TF1	Lamp Thermofuse	Opens the projector lamp circuit if the projector lamp section overheats.	9
TR1	Transformer	Steps down the wall voltage to 17 ~ 18 V ac.	6

3. SECTIONAL DESCRIPTIONS

3.1 OVERVIEW



A718D500.wmf

This film projector unit allows making copies from the following kinds of films:

35 mm positive slides (both mount films and glass mount films)
35 mm negative or positive strip films
Positive or negative films of wide size
(45 x 60 / 60 x 60 / 60 x 70 / 60 x 80 / 60 x 90 mm / 4" x 5" /
maximum size of 142 x 210 mm or 5.6" x 8.2")

The light from the projector lamp [A] is reflected by the reflector [B] and reaches the film (35 mm) in the film/slide holder [C] through the non-spherical lens [D], heat filter [E], and condenser lenses [F]. The projected film image reaches the mirror [G] through the correction filter (positive or negative) [H] and projection lens [I]. Then the mirror reflects the image onto the exposure glass through the Fresnel lens [J]. The first scanner moves under the exposure glass to read the projected film image and the light of the image is converted to R/G/B electrical signals by the CCD [K].

The 35 mm film's image is enlarged about 6 times when projected onto the exposure glass.

In the case of wide films, the first scanner reads the film placed on the exposure glass directly using the light from the projector lamp.

The lamp cooling fan turns on and off depending on the temperature of the projector lamp section detected by the lamp thermistor. It turns on at around 45°C and turns off at around 44°C.

3.2 SHADING

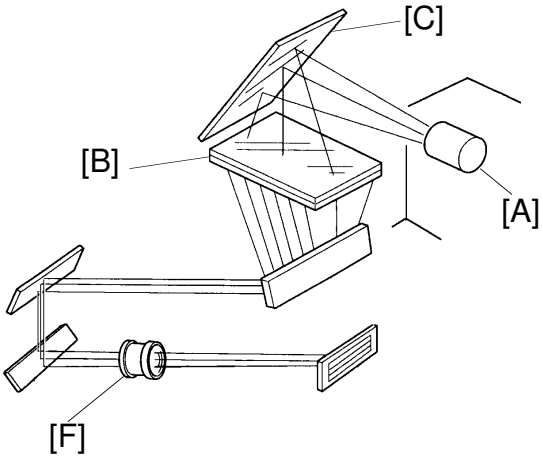
When the projector unit is selected, shading should be done after selecting the type of film. The shading should be done with a base film and the N-correction filter for the negative films and with the P-correction filter (without base film) for the positive films.

The N-correction filter corrects the color and intensity of the projected light. The P-correction filter corrects the light intensity of the projected light so that it becomes similar to that for the negative films.

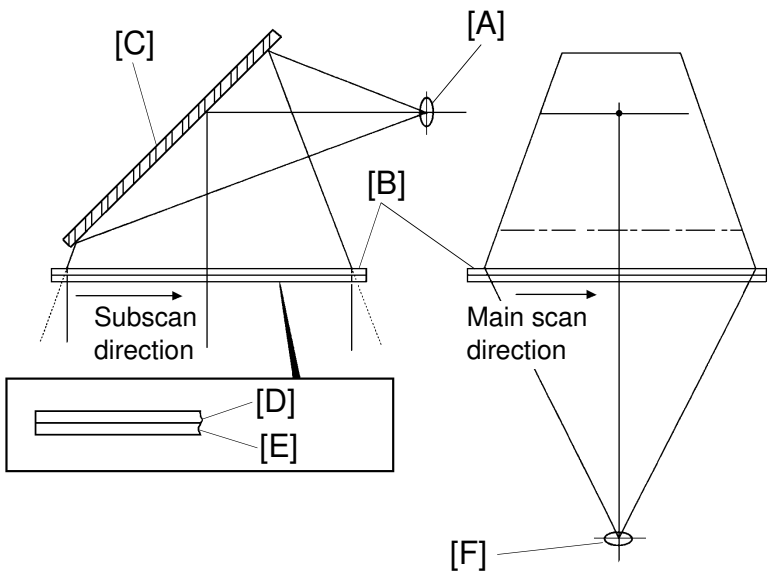
When "Shading" is performed, the first scanner moves and stops under the mirror unit. Then AGC (Auto Gain Control) for the light intensity from the projector lamp is performed. Shading for black and white levels is also performed after the AGC.

This "Shading" should be performed whenever the type of film is changed or the mirror unit is moved.

3.3 MIRROR UNIT



A718D501.img



A718D502.img

The film image projected through the projection lens [A] is reflected to the Fresnel lens [B] by the mirror [C].

The Fresnel lens consists of two components, a circle pitch Fresnel lens [D] and a parallel pitch Fresnel lens [E]. The circle pitch Fresnel lens changes the divergent light to parallel light. The parallel Fresnel lens collects the light from the circle pitch Fresnel lens in the main scan direction so that all the light reaches the color CCD lens [F].

The use of these two types of Fresnel lens makes the most of the light intensity from the projector lamp.

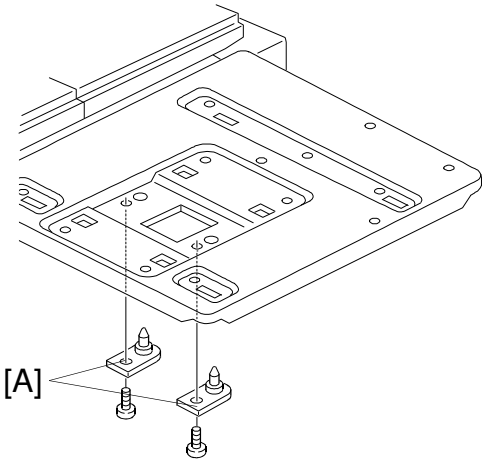
8. FILM PROJECTOR UNIT (A718) INSTALLATION

8.1 ACCESSORY CHECK

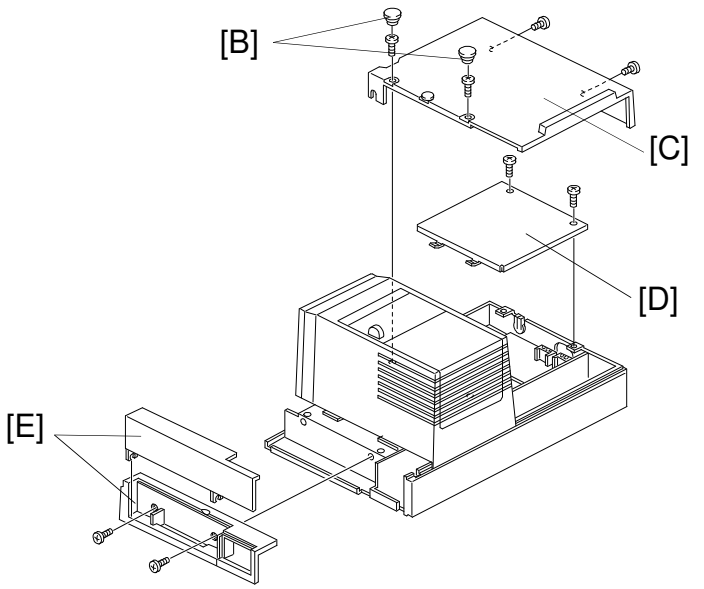
Make sure that each accessory listed in the following table is in the box. Also check the condition of each item.

1. Mirror Unit 1
2. Power Cord 1
3. Optical Fiber Cable 1
4. Film Strip Holder 1
5. Slide Holder 1
6. Glass Mount Holder 1
7. Base Film (FUJI, KODAK, AGFA) 3
8. Slide Mount 1
9. Correction Filter (P, N) 2
10. Blower Brush 1
11. Projection Lamp 1
12. Film Position Sheet 2
13. Positioning Pin 2
14. Spacer 4
15. Philips Pan Head Screw - M4 x 8 2
16. Philips Pan Head Screw - M4 x 12 4
17. Installation Procedure 1
18. New Equipment Condition Report 1 (-17/-27 only) 1

8.2 INSTALLATION PROCEDURE



A718I500.wmf



A718I502.wmf

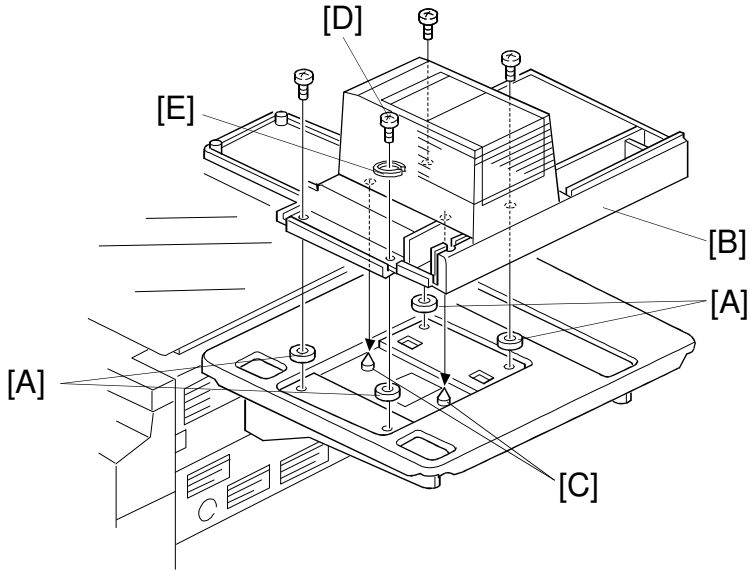
⚠ CAUTION

Unplug the copier power cord before starting the following procedure.

NOTE: The film projector table (A579) must be installed before starting the following procedure. (See section 3. Film Projector Table Installation Procedure.)

1. Install the two positioning pins [A] on the table as shown (2 screws - M3 x 5); these are included in the A579 accessories.

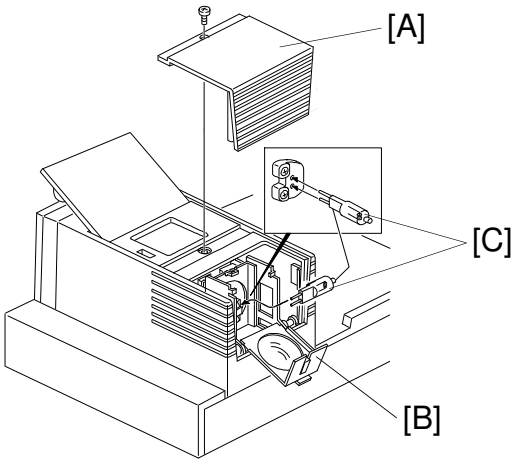
2. Remove the following parts.
   - Rubber caps [B]
   - Rear cover [C] (4 screws)
   - Shield plate [D] (2 screws)
   - Front covers [E] (2 screws)



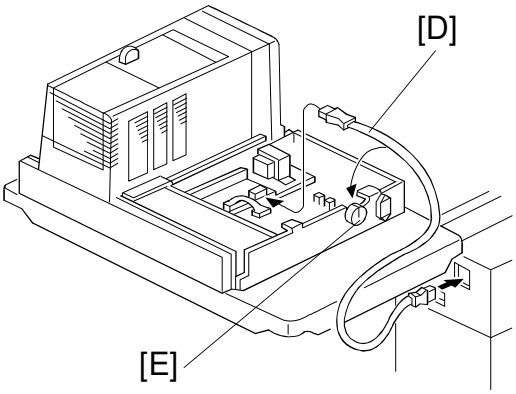
A718I501.wmf

3. Set the four spacers [A] at the four corners (in the indents provided).
4. Place the projector unit [B] on the table by aligning the holes in the projector base plate with the positioning pins [C]. Then secure the projector unit with four M4 x 12 screws.

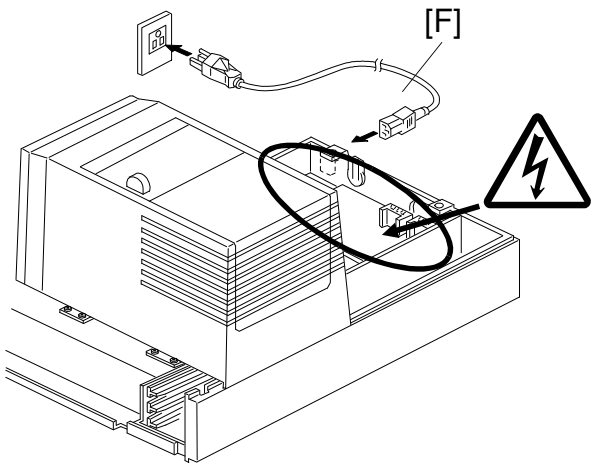
   NOTE: When securing the screw [D], insert the spring washer [E] between the screw and the projector unit. This spring washer grounds the projector unit frame.



A718I503.wmf



A718I506.wmf



A718I507.wmf

5. Remove the lamp cover [A] (1 screw) and open the reflector cover [B]. Then, plug the projection lamp [C] into the socket. Close the reflector cover.

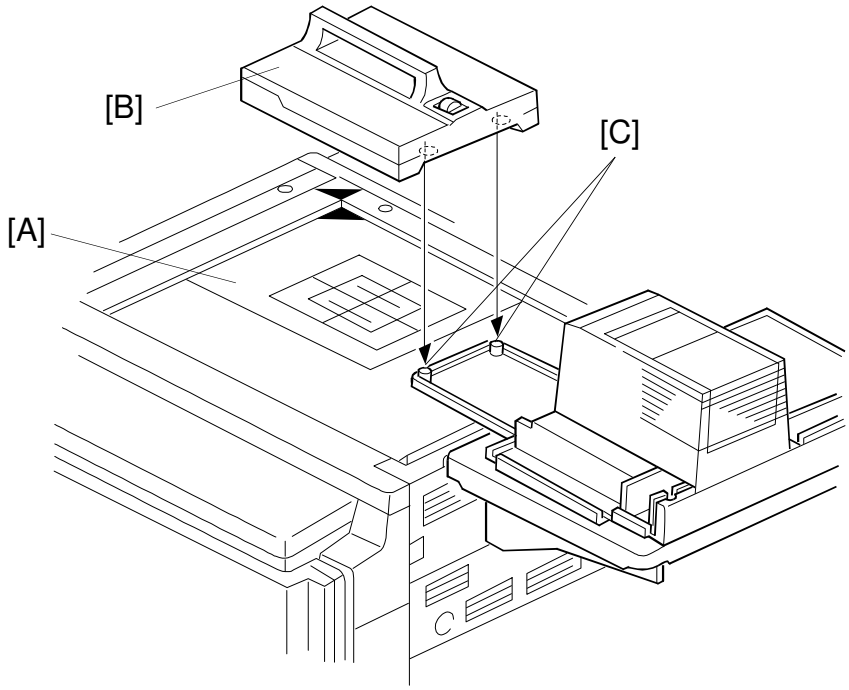
   NOTE: The projection lamp should be fully inserted.

6. Run the optical fiber cable [D] between the projector control board (CN6) and the copier through the rubber bushing [E], as shown.

7. Connect the power cord [F] to the power inlet and plug it into the wall outlet.

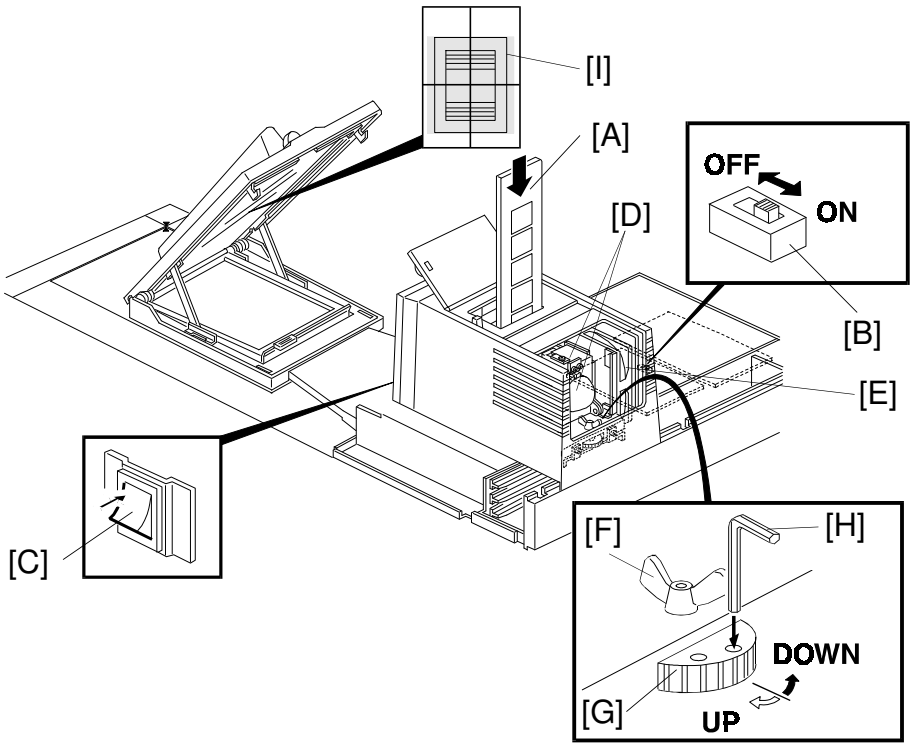
⚠ CAUTION

After plugging the power cord into the wall outlet, do not touch the electrical components inside the projector unit (other than the test switch used in steps 11 and 15). Otherwise, you might receive an electrical shock. ⚠



A718I509.wmf

8. Place the film position sheet [A] on the exposure glass, aligning it at the rear left corner.
9. Put the mirror unit [B] on the exposure glass by aligning the holes with the positioning pins [C] on the lens cover.



A718I511.wmf

10. Insert the film strip holder [A] into the film projector unit at the base film setting position.

    NOTE: Push the film strip holder gently to confirm that the film strip holder has been completely inserted.

11. Turn on the test switch [B] on the projector control board and turn on the projection unit main switch [C].

⚠ CAUTION

The lamp housing and reflector [D] will become very hot. The lamp cooling fan [E] will start turning suddenly when the lamp housing temperature becomes high. Keep hands away from these components to avoid any injury.

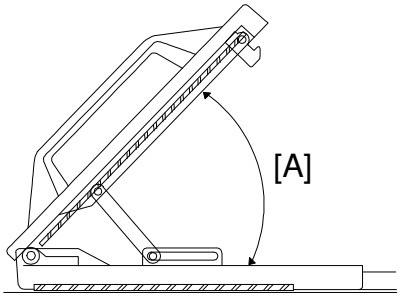
12. Loosen the wing nut [F].

13. Adjust the position of the projected light by turning the dial [G] with a hexagon wrench [H] until it is at the center of the 4" x 5" frame [I] reflected in the mirror unit.

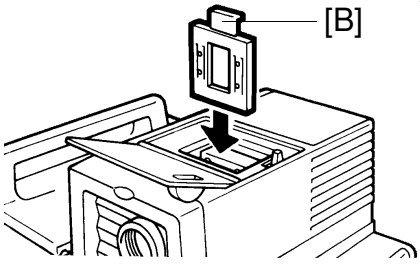
14. Tighten the wing nut [F].

15. Turn off the projector main switch and the test switch.

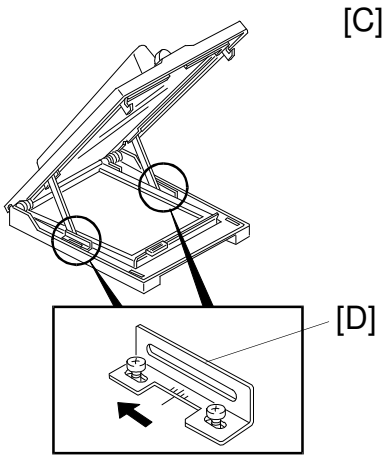
16. Reinstall the lamp cover and other covers.



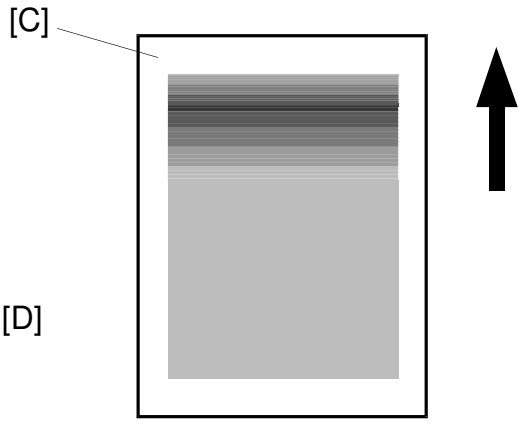
A718I512.wmf



A718I513.img

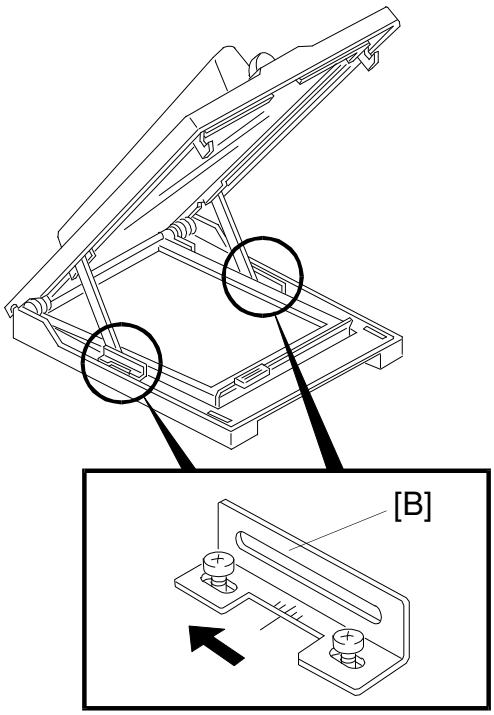


A718I514.wmf

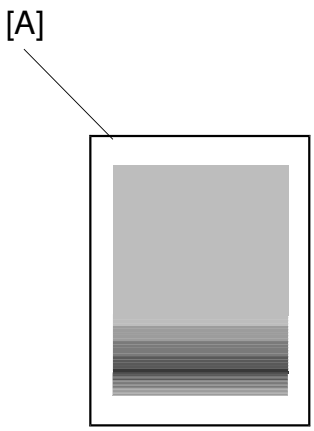


A718I515.wmf

17. Adjust the angle [A] of the mirror unit as follows:
    1) Turn on the copier main switch and wait for the ready condition.
    2) Open the lens cover and position the mirror unit on the exposure glass.
    3) Put the correction filter [B] (for positive film) in the filter slot.
    4) Turn on the projector main switch and press the option key.
    5) Perform shading using the positive 35 mm slides mode.
    6) Put one of the orange base films in the slide holder and position it in the projector unit.
    7) Make a copy of the orange film.
    8) Ensure that the orange image is even. If the image is uneven, adjust the mirror angle as follows:
        8-1) When the leading part of the image is dark (as shown in [C]).
            a) Move the front and rear arm guides [D] to the left so that the mirror angle is increased (2 screws each).
                NOTE: Position the arm guides in the same location at the front and rear, using the ruler decals. This prevents th mirror from being twisted.
            b) Make a copy of the orange film.
            c) Repeat steps a) and b) until the orange image is even.



A718I514-2.wmf



A718I516.wmf

8-2) When the trailing part of the image is dark (as shown in [A]).

a) Move the front and rear arm guides [B] to the right so that the mirror angle is reduced (2 screws each).

NOTE: Position the arm guides in the same location at the front and rear, using the ruler decals. This prevents the mirror from being twisted.

b) Make a copy of the orange film.

c) Repeat steps a) and b) until the orange image is even.

18. Check copy images from positive or negative films.

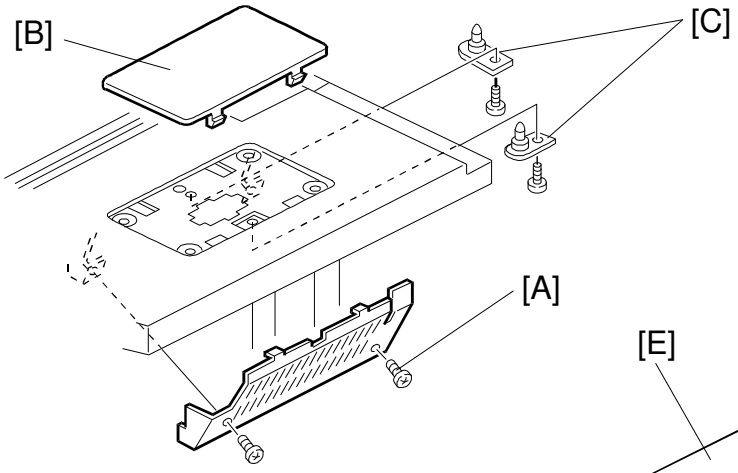
5. FILM PROJECTOR (A718)

5.1 ACCESSORY CHECK

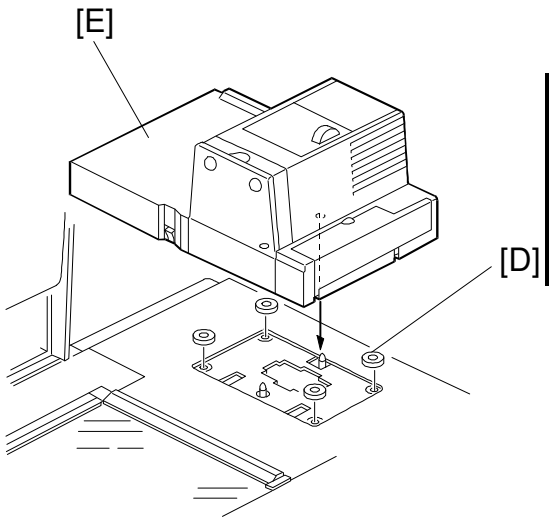
Make sure that each accessory listed in the following table is in the box. Also check the condition of each item.

Description	Q'ty
1. Mirror Unit	1
2. Power Cord	1
3. Optical Fiber Cable	1
4. Film Strip Holder	1
5. Slide Holder	1
6. Glass Mount Holder	1
7. Base Film (FUJI, KODAK, AGFA)	3
8. Slide Mount	1
9. Correction Filter (P, N)	2
10. Blower Brush	1
11. Projection Lamp	1
12. Film Position Sheet	2
13. Positioning Pin	2
14. Spacer	4
15. Philips Pan Head Screw - M4 x 8	2
16. Philips Pan Head Screw - M4 x 12	4
17. Spring Washer - M4	1
18. Installation Procedure	1
19. NECR (-17, -27 only)	1

5.2 INSTALLATION PROCEDURE



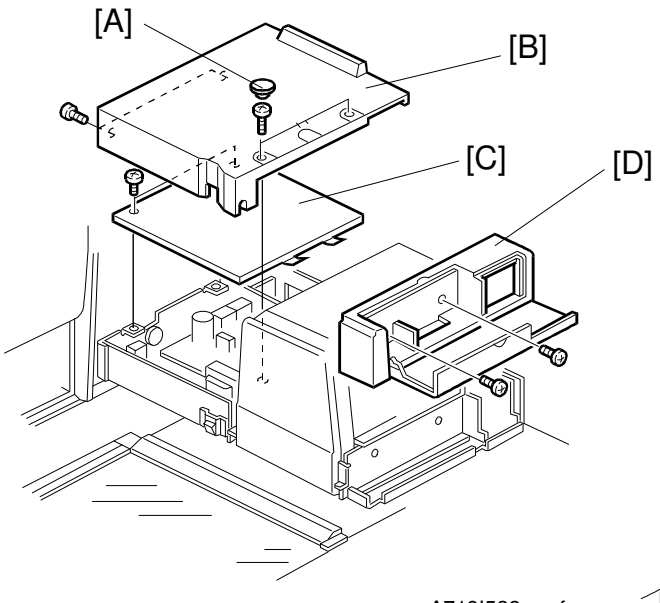
A718I520.wmf



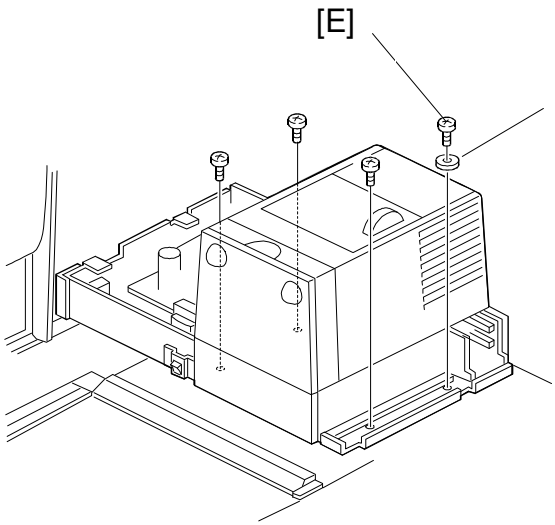
A718I521.wmf

NOTE: Holder Type C (A702-18) must be installed before starting the following procedure.

1. Remove the lower cover [A] from the holder bracket (2 screws).
2. Remove the cover plate [B] from the holder.
3. Install two positioning pins [C] on the holder bracket as shown (2 screws - M4 x 8) and reinstall the lower cover.
4. Set four spacers [D] at the four corners on the hollow surface of the holder.
5. Place the projector unit [E] on the holder by aligning the holes of the projector base plate with the positioning pins.



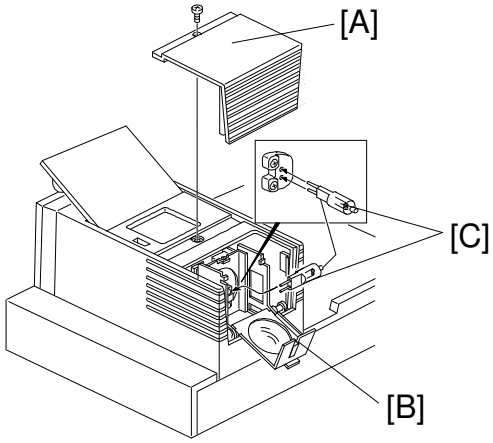
A718I522.wmf



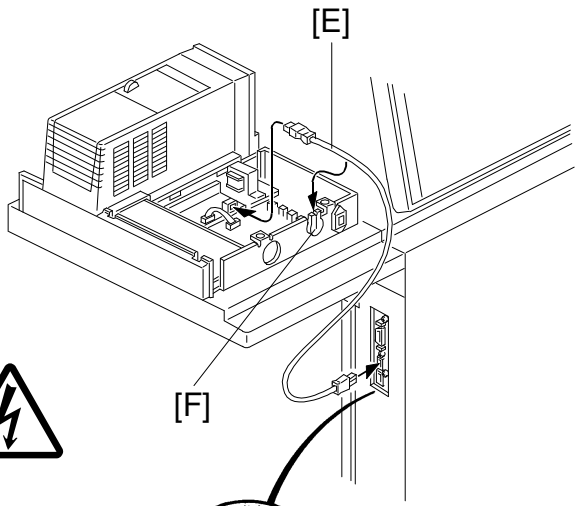
A718I523.wmf

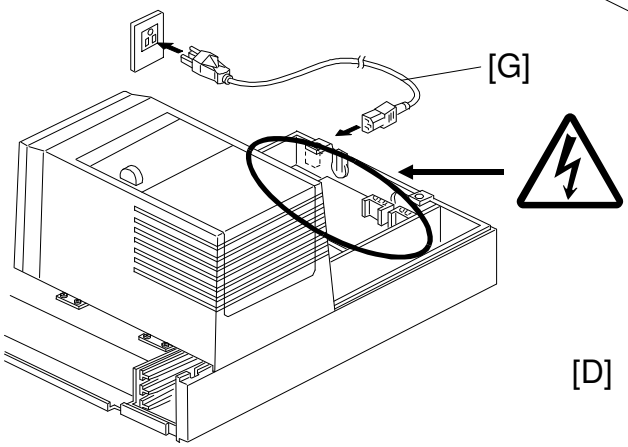
6. Remove two rubber caps [A] and cover [B] (4 screws).
7. Remove the shield plate [C] (2 screws).
8. Open the front cover and remove the front cover assembly [D] (2 screws).
9. ttach the projector unit to the holder with screws (M4 x 12).

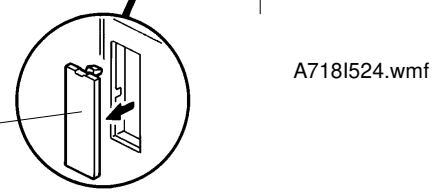
NOTE: When securing the screw [E], insert the spring washer [F] between the screw and the projector unit. This spring washer secures the grounding of the projector unit's frame.



A718I503.wmf







A718I524.wmf

A718I507.wmf

10. Remove the lamp cover [A] (1 screw) and open the reflector cover [B]. Then, plug the projector lamp [C] into the socket. Then close the reflector cover.

    NOTE: The projector lamp should be inserted horizontally until it stops.

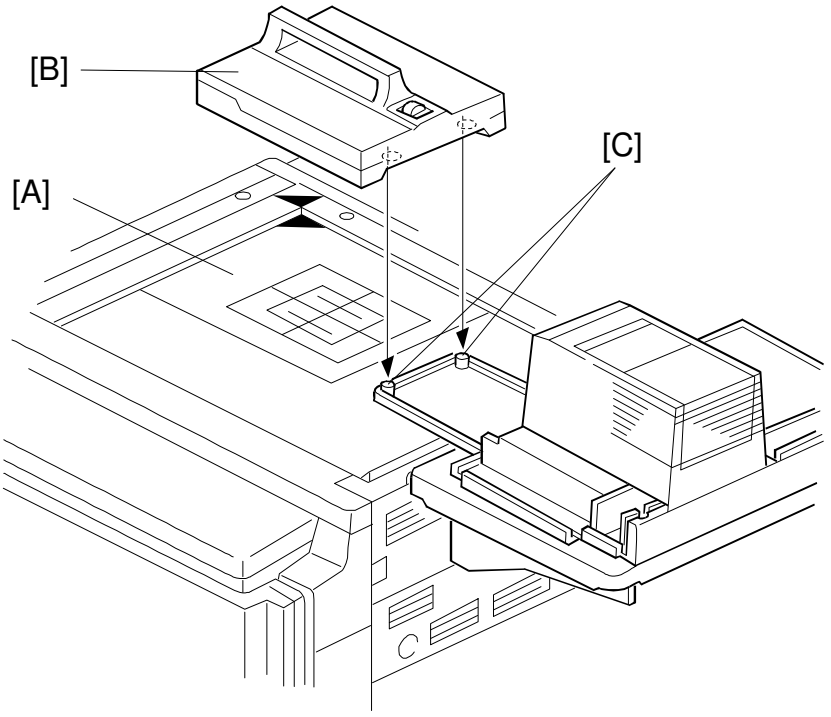
11. Remove the cap [D] from the upper right cover of the copier.

12. Run the optical fiber cable [E] between the projector control board (CN6) and the copier through the rubber bushing [F] as shown.

13. Connect the power cord [G] to the power inlet and plug it into the wall outlet.

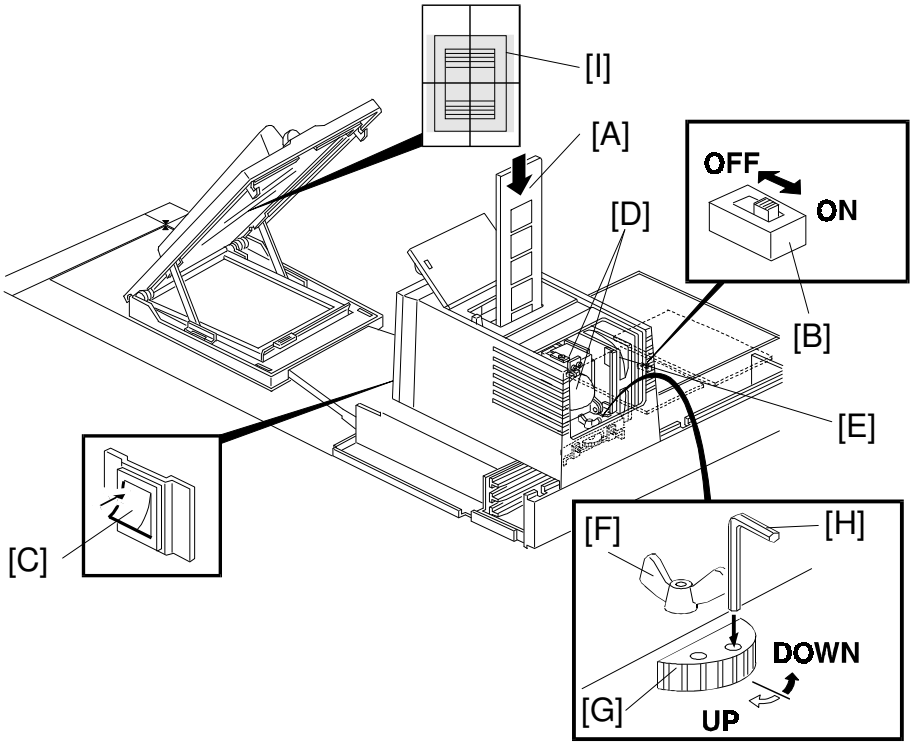
⚠ WARNING

After plugging the power cord into the wall outlet, do not touch the electrical components inside the projector unit other than the test switch used in steps 14-4) and -8). Otherwise, you might receive an electrical shock. ⚠



A718I509.wmf

14. Adjust the height as follows.
    1) Place the film position sheet [A] on the exposure glass, aligning it at the rear left corner.
    2) Put the mirror unit [B] on the exposure glass by aligning the holes with the positioning pins [C] on the lens cover.



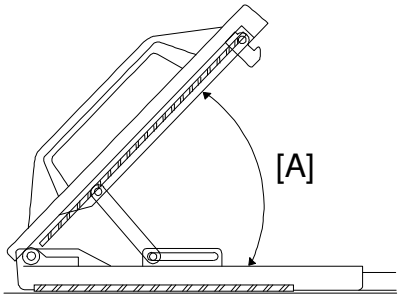
A718I511.wmf

3) Insert the film strip holder [A] into the film projector unit at the base film setting position.
   NOTE: Push the film strip holder gently to confirm that the film strip holder has been inserted correctly.
4) Turn on the test switch [B] on the projector control board and turn on the projector unit main switch [C].

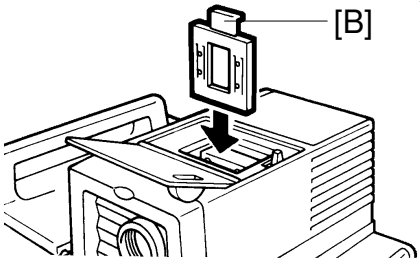
⚠ CAUTION

The lamp housing and reflector [D] will become very hot. The lamp cooling fan [E] will start turning suddenly when the lamp housing temperature becomes high. Keep hands away from those components to avoid any injury.

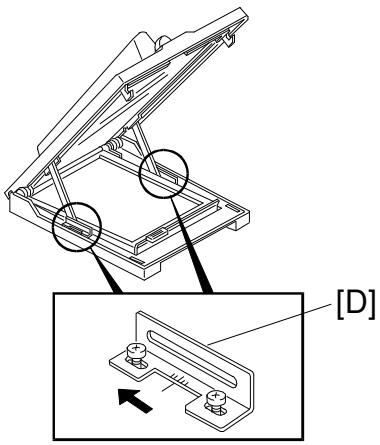
5) Loosen the wing nut [F].
6) Adjust the position of the projected light by turning the dial [G] with a hexagon wrench [H] until it is at the center of the 4" x 5" frame [I] which is reflected in the mirror unit.
7) Tighten the wing nut [F].
8) Turn off the projector main switch and the test switch.
9) Reinstall the lamp cover and other covers.



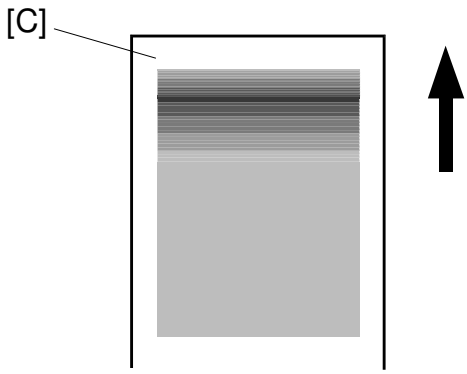
A718I512.wmf



A718I513.img

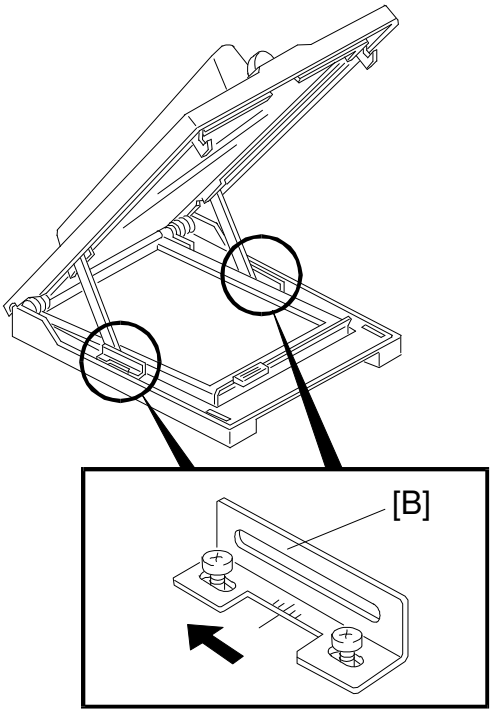


A718I514.wmf

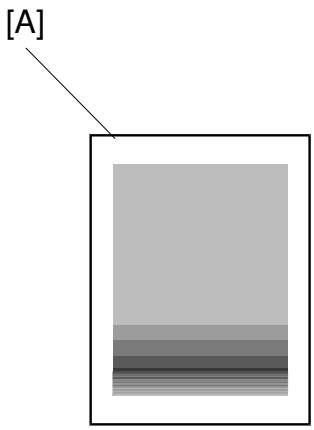


A718I515.wmf

15. Adjust the angle [A] of the mirror unit as follows:
    1) Turn on the copier main switch and wait for the ready condition.
    2) Open the lens cover and position the mirror unit on the exposure glass.
    3) Put the correction filter [B] for positive films in the filter slot.
    4) Turn on the projector main switch and press the option key.
    5) Perform shading using the positive 35 mm slides mode.
    6) Put one of the orange base films in the slide holder and position it in the projector unit.
    7) Make a copy of the orange film.
    8) Check if the orange image is even or not. If the image is uneven, adjust the mirror angle as follows:
        8-1) When the leading part is dark [C].
            a) Move the front and rear arm guides [D] to the left so that the mirror angle is increased (2 screws each).
            NOTE: Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.
            b) Make a copy of the orange film.
            c) Repeat steps a) and b) until the orange image becomes even.



A718I514.wmf

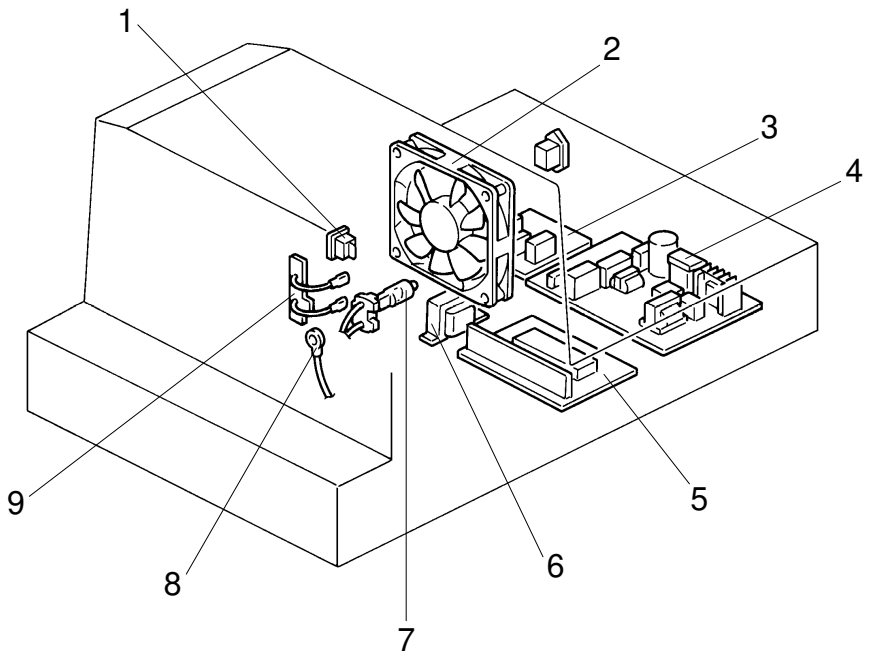


A718I516.wmf

8-2) When the trailing part is dark [A].
   a) Move the front and rear arm guides [B] to the right so that the mirror angle is reduced (2 screws each).
      NOTE: Position the arm guides at the same location at front and rear, using the ruler decals. This prevents the mirror from being twisted.
   b) Make a copy of the orange film.
   c) Repeat steps a) and b) until the orange image becomes even.

16. Check some copy images from positive or negative films.

FILM PROJECTOR UNIT ELECTRICAL COMPONENTS



A718S500.img

Index No.	Description	Symbol	P-to-P
1	Projector Switch	SW1	D1
2	Lamp Cooling Fan	M1	E2
3	Noise Filter Board (220–240V machine only)	PCB3	B4
4	Projector Lamp Regulator	PCB1	E3
5	Projector Control Board	PCB2	F6
6	Transformer	TR1	C6
7	Projector Lamp	L1	E2
8	Lamp Thermistor	TH1	G7
9	Lamp Thermofuse	TF1	G2