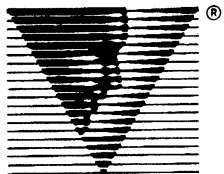
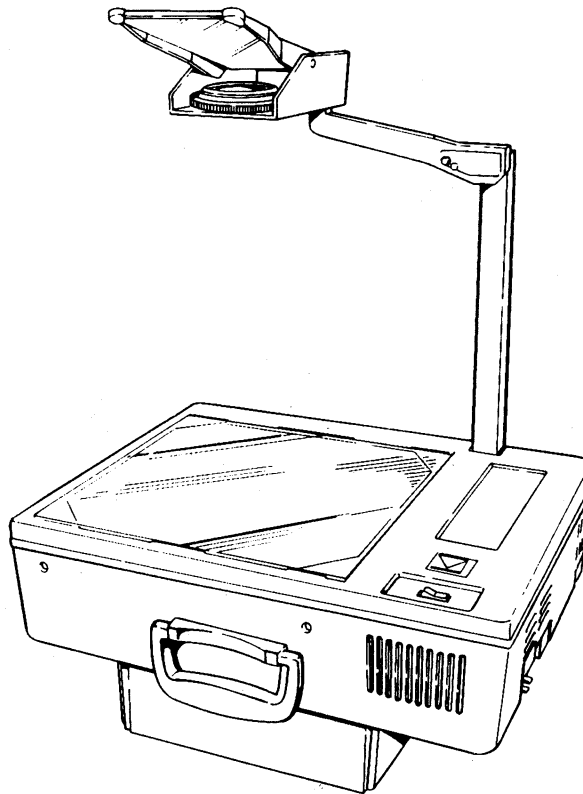


VIEWPOINT™

OVERHEAD PROJECTOR

**SERVICE
MANUAL**

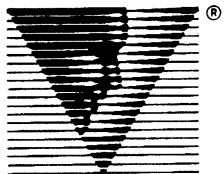
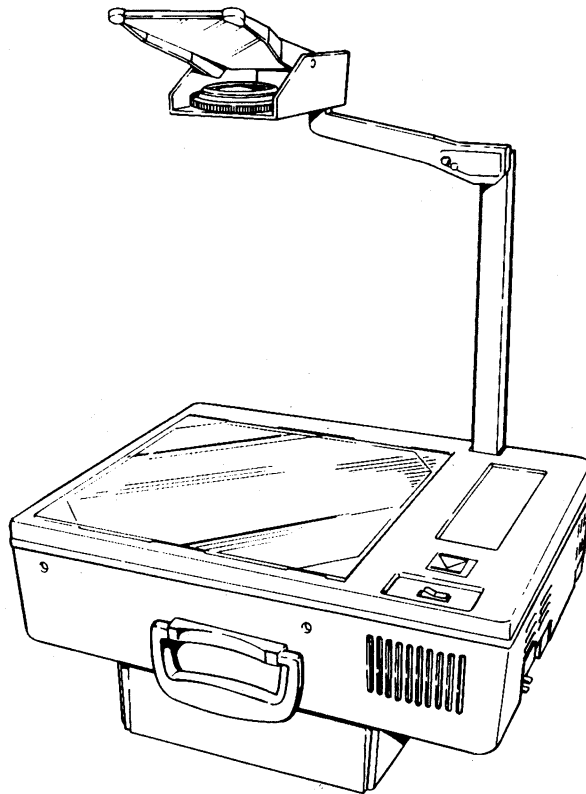


Varitronic Systems, Inc.

VIEWPOINT™

OVERHEAD PROJECTOR

**SERVICE
MANUAL**



Varitronic Systems, Inc.

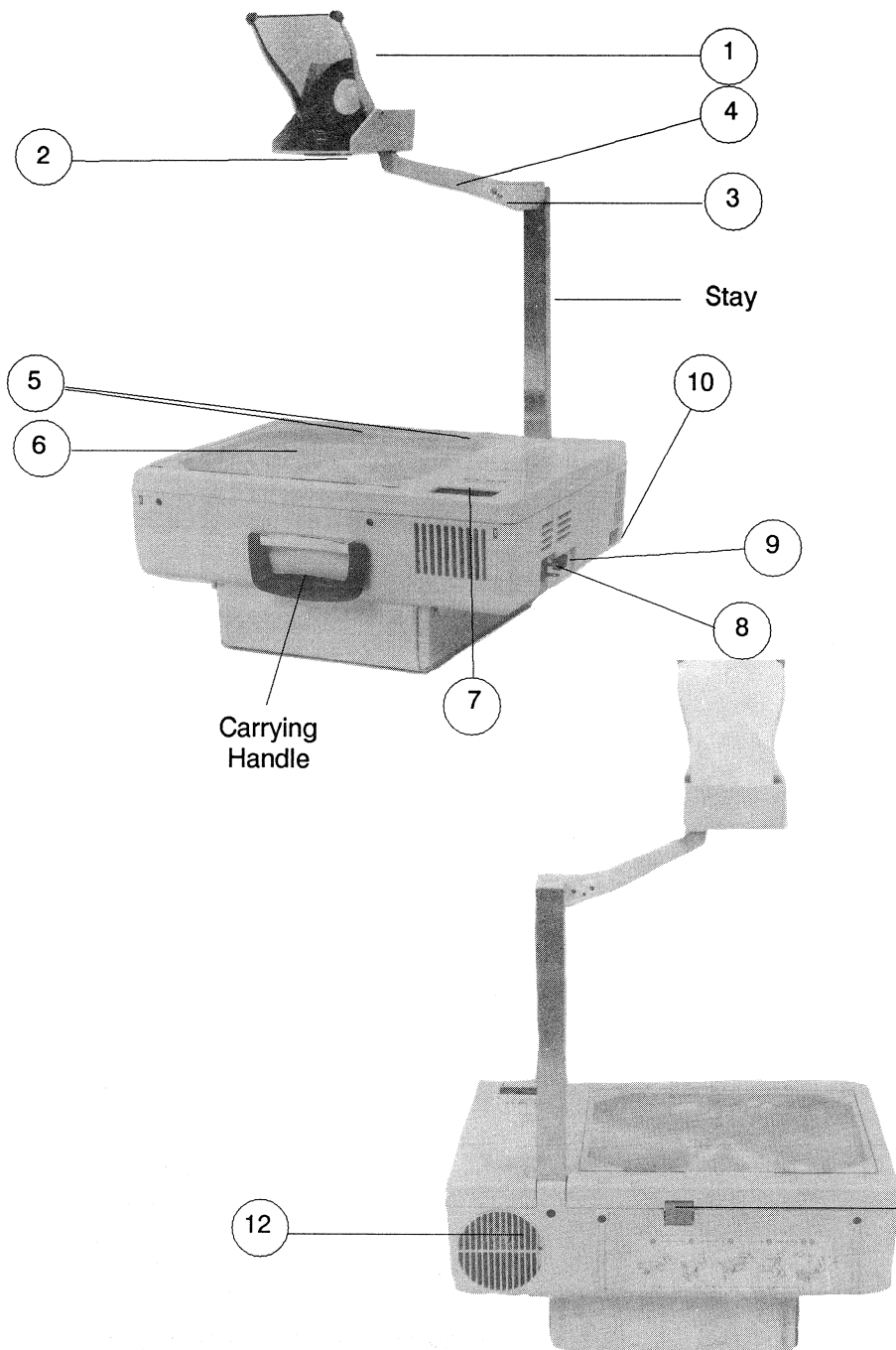
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SECTION I

GENERAL INFORMATION

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Recommended Maintenance	5
Projection Lamp Replacement	6



OPERATOR CONTROLS

1. Head Mirror: Allows the user to adjust the projection angle of the projecting surface.
2. Focusing Knob: Allows the user to adjust the focus.
3. Arm Lock Release Button: Allows the user to set the lens head.
4. Arm: Holds the lens head.
5. Transparency Positioning Pins: Used for constant positioning of materials to be mounted on the stage.
6. Stage: Used for mounting materials to be projected.
7. Main Switch: Used to light up the lamp for projecting materials.
8. Power Cord Receptacle: Used for supplying power to the system.
9. Lamp Change Lever: Allows the user to change the lamp to the standby lamp.
10. Stay Lock Lever: Allows the user to position the stay in or out of the main body.
11. Stage Frame Opening Latch: Allows the user to open the stage.
12. Vent: Allows airflow for cooling the internal mechanism.

SPECIFICATIONS

Power Source AC 120V 50/60 Hz

Power
Consumption 360W

Projection
Lamp 24V 300W Halogen Lamp

Projection
Lens f = 11 in 12.6 in (Variable
focus type, 3-element lens)

Light
Condensing
System Direct illuminating system

Projection
Angle Adjustable up to 20 degrees

Aperature Size 11.2 in x 11.2 in

Dimensions Folded: 5 in x 17.7 in x 14.1 in.
Raised: 26.7 in x 17.7 in x 14.1 in.

Weight 19.6 lbs

MAINTENANCE TOOLS AND SUPPLIES

The following tools and supplies are necessary to properly service and maintain the Viewpoint.

- Digital voltmeter
- Phillips screwdrivers
- Common blade screwdrivers
- Tie wraps
- Molykote grease (p.n. 4704-00)
- Glass cleaner
- 1mm Feeler gauge
- Spring hook

RECOMMENDED MAINTENANCE

These procedures should be performed after servicing or on a routine basis.

CLEANING

Clean the optical parts carefully by using a dry soft cloth. Isopropyl alcohol may be used if the parts are excessively dirty. Do not rub hard as this may scratch the soft surfaces of the fresnel lens, head mirror, condensor lens and reflector.

Stage Glass: To clean the bottom of the stage glass, open the stage and take out the fresnel lens by releasing the lens holder.

Fresnel Lens: When installing the fresnel lens after cleaning, see to it that the label at the corner faces downward into the projector.

Cabinet: Use a mild detergent to clean the outer cabinet surfaces.

LUBRICATION

Wherever there is a bottle with an "M" in the figure, that is where lubrication needs to be applied. Apply Molykote lubricant where indicated.

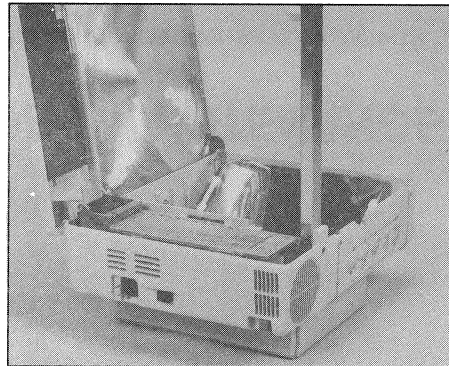
REPLACEMENT OF PROJECTION LAMP

NOTE: After the lamp has been turned off, wait until it cools off sufficiently before replacing it. Use only a Varitronics approved lamp.

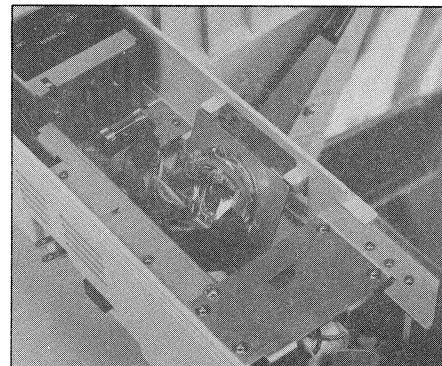
1. Turn off the system.
2. Open the stage.
3. Make sure that the lamp is cooled off before removing the lamp protection net.

IMPORTANT: When the stage is opened, the safety switch activates and cuts off the power to the main body to allow safe replacement of the lamp. At the time of replacement, hold the lamp with a soft cloth so finger prints are not left on the lamp.

4. Open the reflection mirror holder, and replace the lamp by setting the lamp firmly into the socket, taking care not to touch the mirror surface.
5. Install the lamp protection net.



Lamp Protection Wire Mesh



(Shown with an optional
standby lamp.)

SECTION II

PARTS REMOVAL

Stage Frame	9
Fan Motor Assembly	11
Lamp Assembly Holder	13
Power Supply Board	13
Main Switch	15
Cord Reel Assembly	15
Lens Head Assembly	17
Stay Assembly	17
Reflector Holder	19

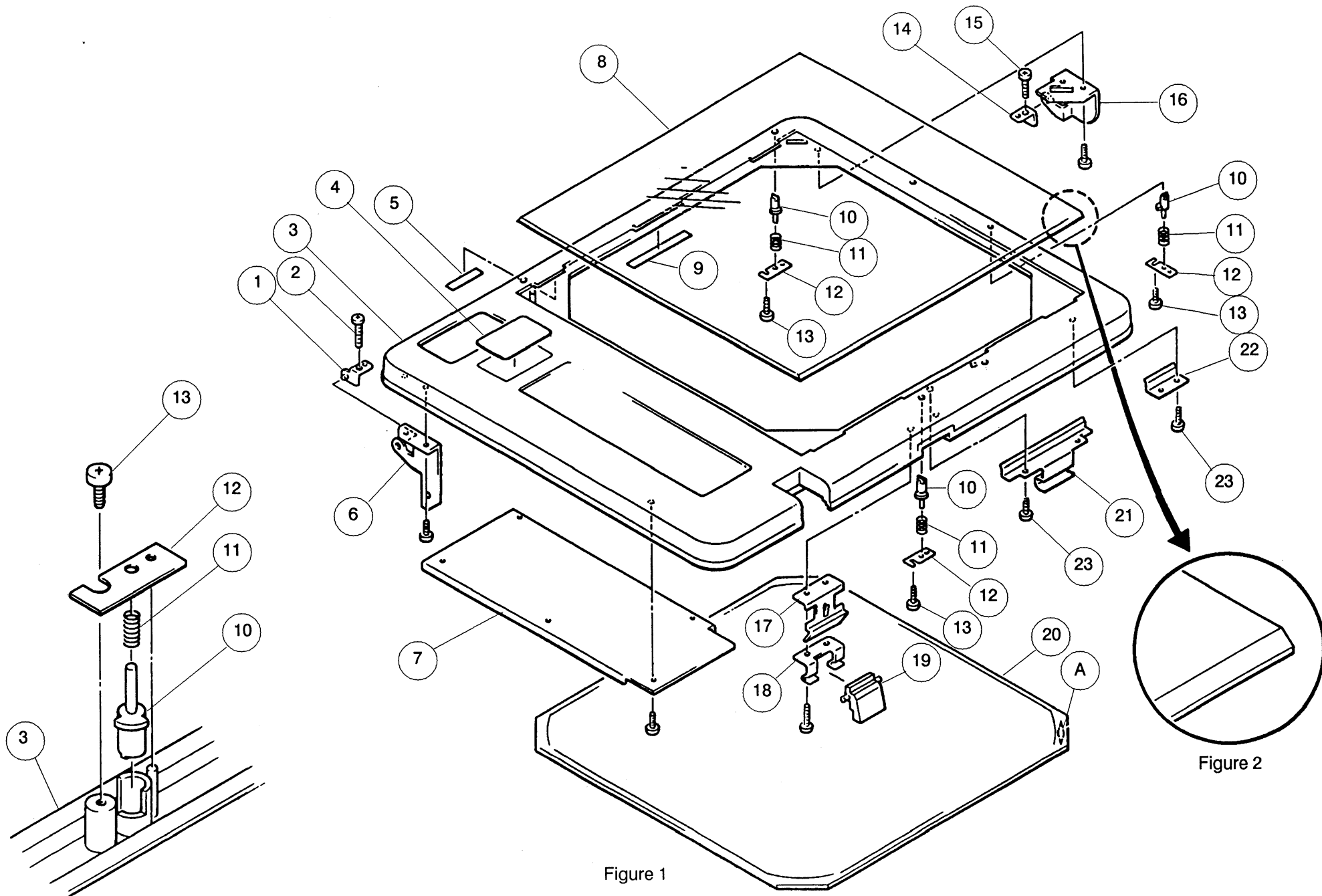


Figure 1

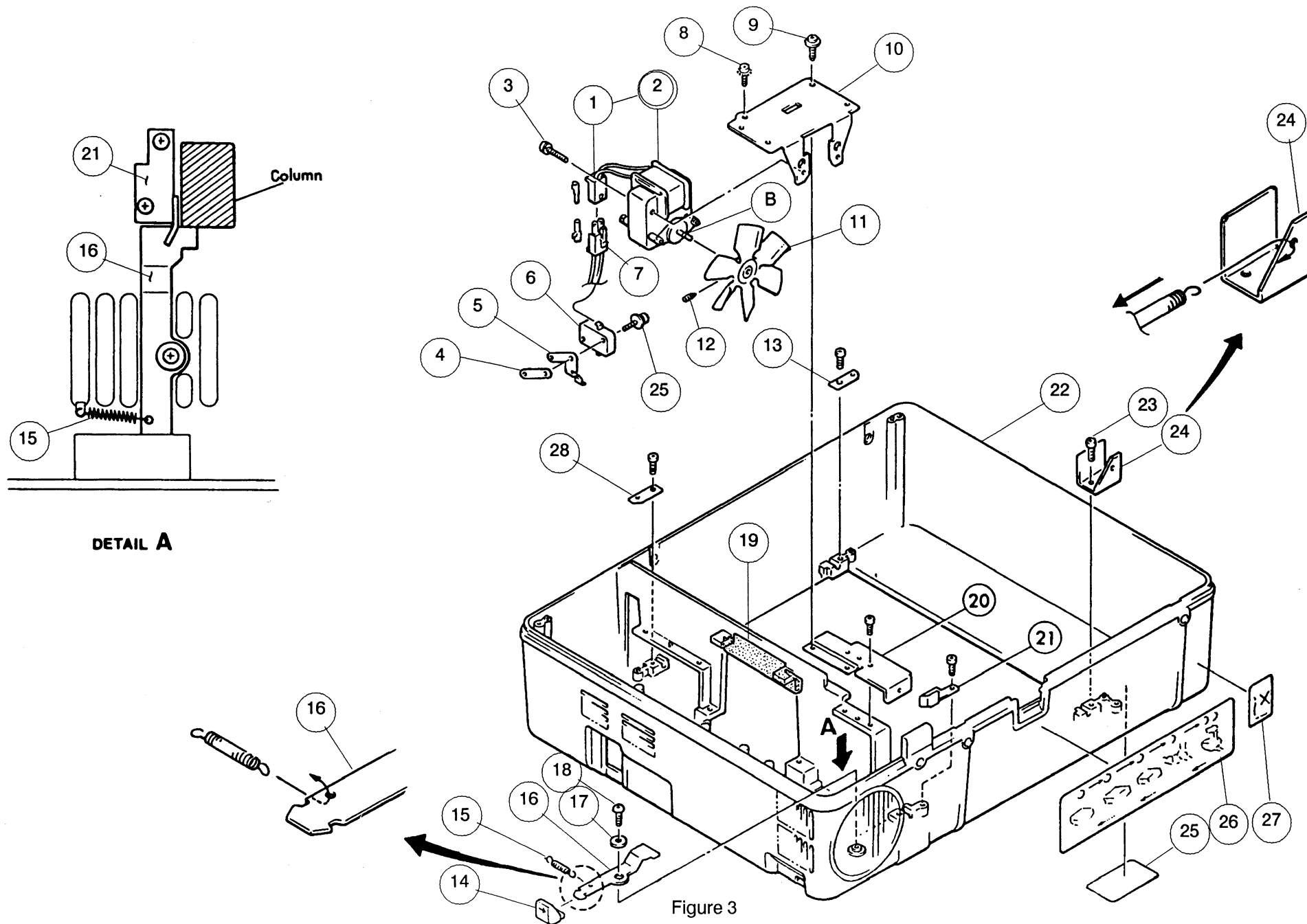
STAGE FRAME DISASSEMBLY

1. Raise the stage frame (3) and remove the fresnel lens (20). (Fig. 1)
2. Remove the two screws (2 and 15) that secure the left and right hinge assembly holders (1 and 14). (Fig. 1)
3. Remove the screw (4) that secures the stage frame stopper link (5). (Fig. 4)
4. Set the stage frame face down on a protected surface and remove the screws (23) that secure the stage glass springs (21 and 22). (Fig. 1)

Note: For further disassembly of the stage frame, refer to figure 1.

INSTALLATION INSTRUCTIONS

1. When installing the stage glass (8), make sure the stage glass springs (21 and 22) firmly grasp the angled side of the stage glass. (Fig. 2)
This will prevent any vibration during projection.
2. When installing the fresnel lens, the label side should be installed toward the main body.



FAN MOTOR ASSEMBLY REMOVAL

1. Raise the stage frame and remove the lamp protection net (17). (Fig. 5)
2. Remove the five screws that secure the fan motor holder (10). (Fig. 3)
3. Disconnect the fan motor connector (1). (Fig. 3)

Note: For further disassembly, refer to figure 3.

INSTALLATION INSTRUCTIONS

1. When installing a new fan blade (11), use a feeler guage to place a 1 mm gap between the fan blade and the motor shaft base.
(See B in Fig. 3)
2. After the fan motor assembly has been installed into the projector, make sure the fan blade (11) does not come into contact with anything inside the machine.

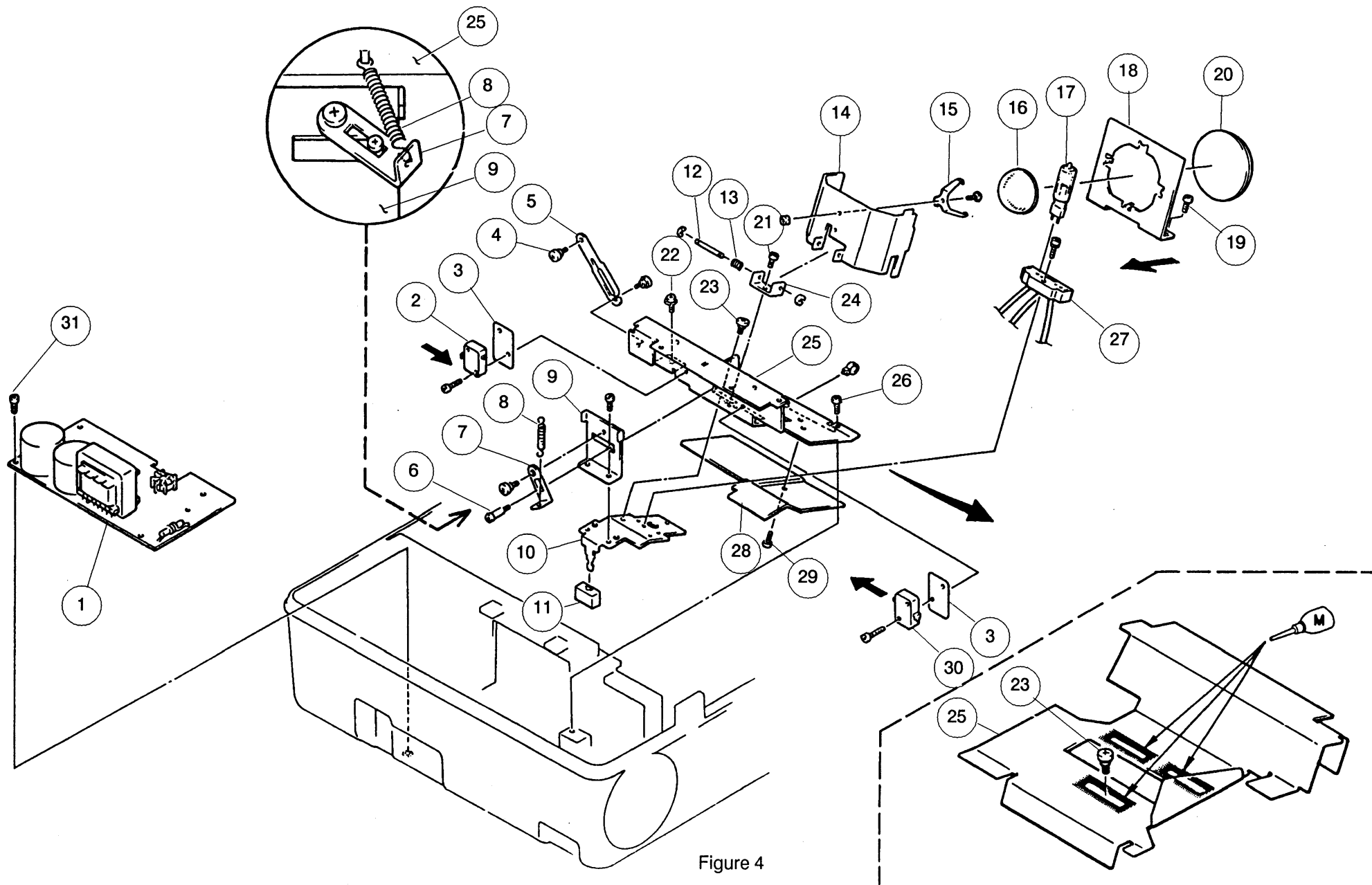


Figure 4

LAMP ASSEMBLY HOLDER AND POWER SUPPLY BOARD REMOVAL

1. Remove the fan motor assembly. (pg. 11)
2. Remove the five screws (26) that secure the lamp assembly holder (25) and the screw (4) that secures the stage frame stopper link (5). (Fig. 4)
3. Pull off the lamp change knob (11). (Fig. 4)
4. Gently lift out the lamp assembly holder (25) and disconnect the blue and white wires which connect it to the power supply board (1). (Fig. 4)
5. Disconnect the remaining three wires from the power supply board (1) and remove the four screws (31) that secure the board to the main body. (Fig. 4)

Note: For further disassembly of the lamp assembly holder, refer to figure 4.

INSTALLATION INSTRUCTIONS

1. Connect the terminals as shown in the Wiring Diagram. (pg. 24)

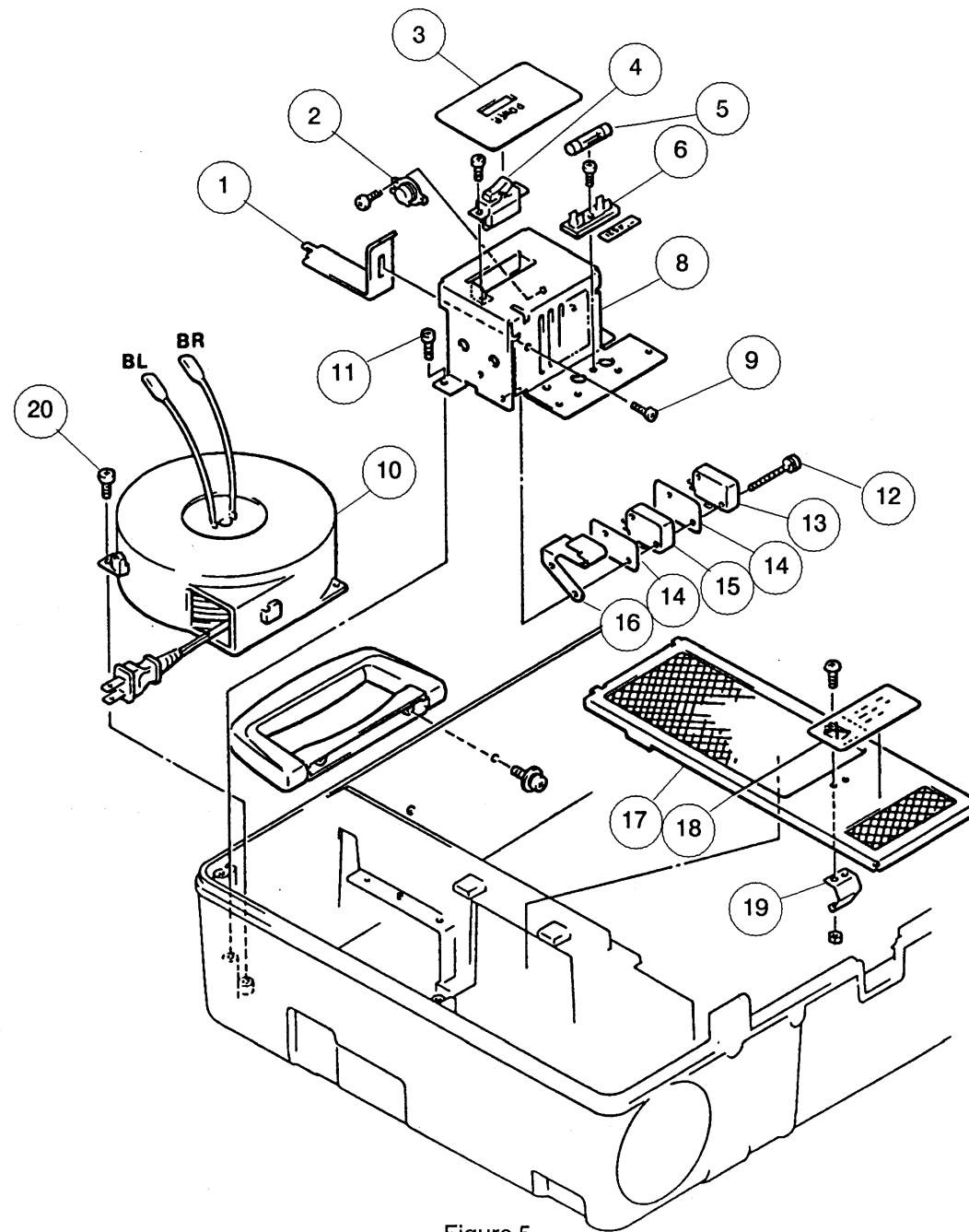


Figure 5

MAIN SWITCH AND CORD REEL ASSEMBLY REMOVAL

1. Remove the fan motor assembly. (pg. 11)
2. Remove the lamp assembly holder. (pg. 13)
3. Remove the three screws (11) that secure the main switch holder (8). (Fig. 5)
4. Loosen the two screws (25) that secure the set up switch (6), which is located beneath the fan motor assembly. (Fig. 3)
5. Disconnect the blue and brown wires connected to the two safety switches in the main switch holder and remove.
6. Remove the two screws (20) that secure the cord reel assembly (10) to the main body. (Fig. 5)
7. Pull out several inches of power cord and tilt the cord reel assembly up to remove.

Note: For further disassembly, refer to figure 5.

INSTALLATION INSTRUCTIONS

1. Connect the terminals as shown in the Wiring Diagram. (pg. 24)

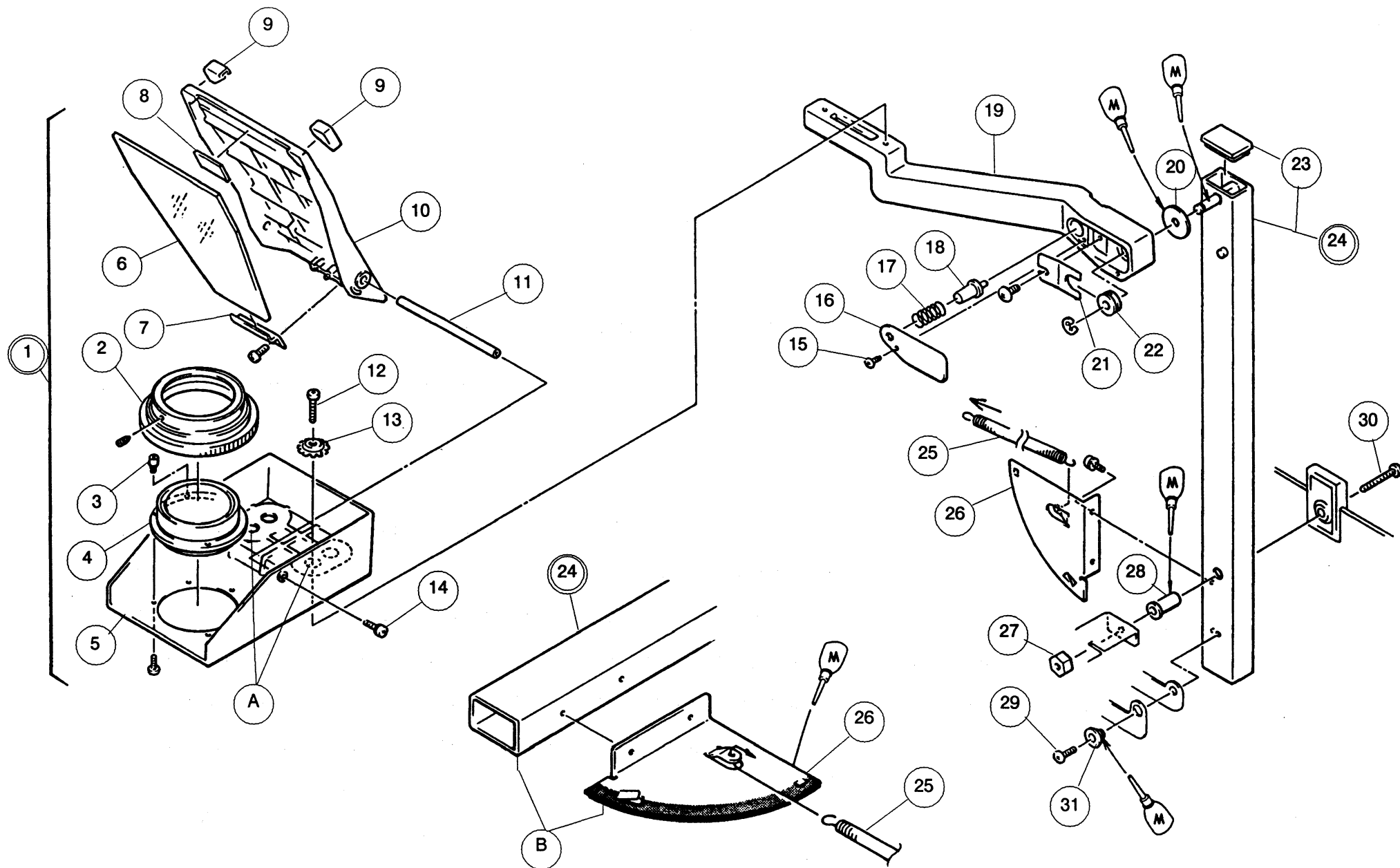


Figure 6

LENS HEAD AND STAY ASSEMBLY REMOVAL

1. Remove the two screws (12) and washers (13) that secure the lens head assembly (1) to the lens head arm (19). (Fig. 6)
2. Remove the fan motor assembly. (pg. 11)
3. Raise the stay assembly (24) and unhook the stay spring (25) to release excess tension. (Fig. 6)
4. Close the stay assembly (24) and remove the power lock screw (29) and link washer (31). (Fig. 6)
5. Remove the stay nut (27) and screw (30). (Fig. 6)

Note: For further disassembly refer to figure 6.

INSTALLATION INSTRUCTIONS

1. When installing the lens head to the arm, use the screw holes indicated by A in fig. 6.

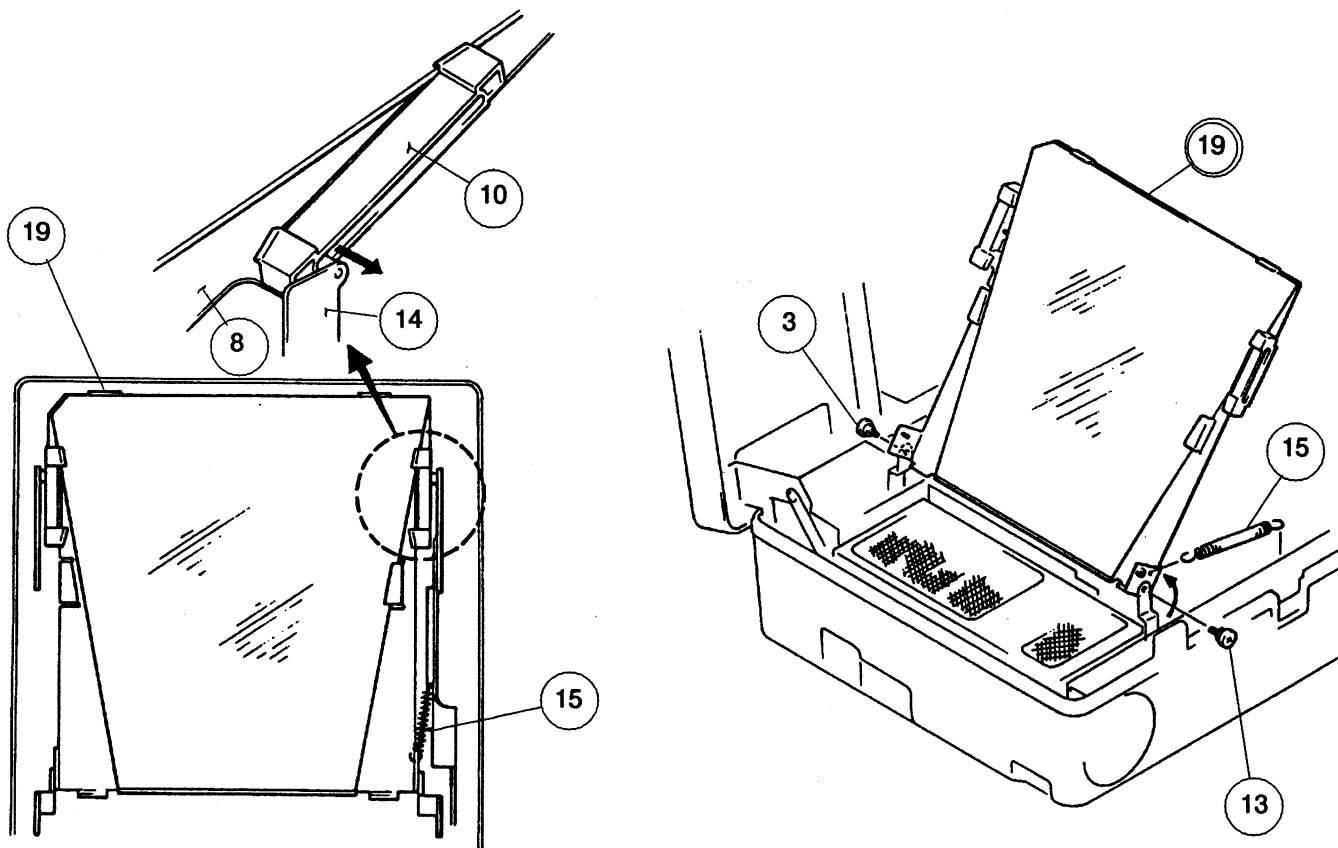


Figure 7

REFLECTOR HOLDER REMOVAL

1. Unhook the reflector holder spring (15). (Fig. 7)
2. Place the projector in a raised state.
3. Using your thumb, pry the guide pin (14) from the reflector holder guide (10). Perform the same procedure on both sides of the reflector holder (19). (Fig. 7)
4. Raise the reflector holder (19) as it is shown in figure 7 and place the projector in a semi-folded state.
5. Remove the two screws (3 and 13) that secure the reflector holder (19). (Fig. 7)
Note: To remove screw 3 it may be necessary to close the stage frame slightly, this will allow access through a small opening in the main body.

Note: For further disassembly, refer to figure 8. (pg. 20)

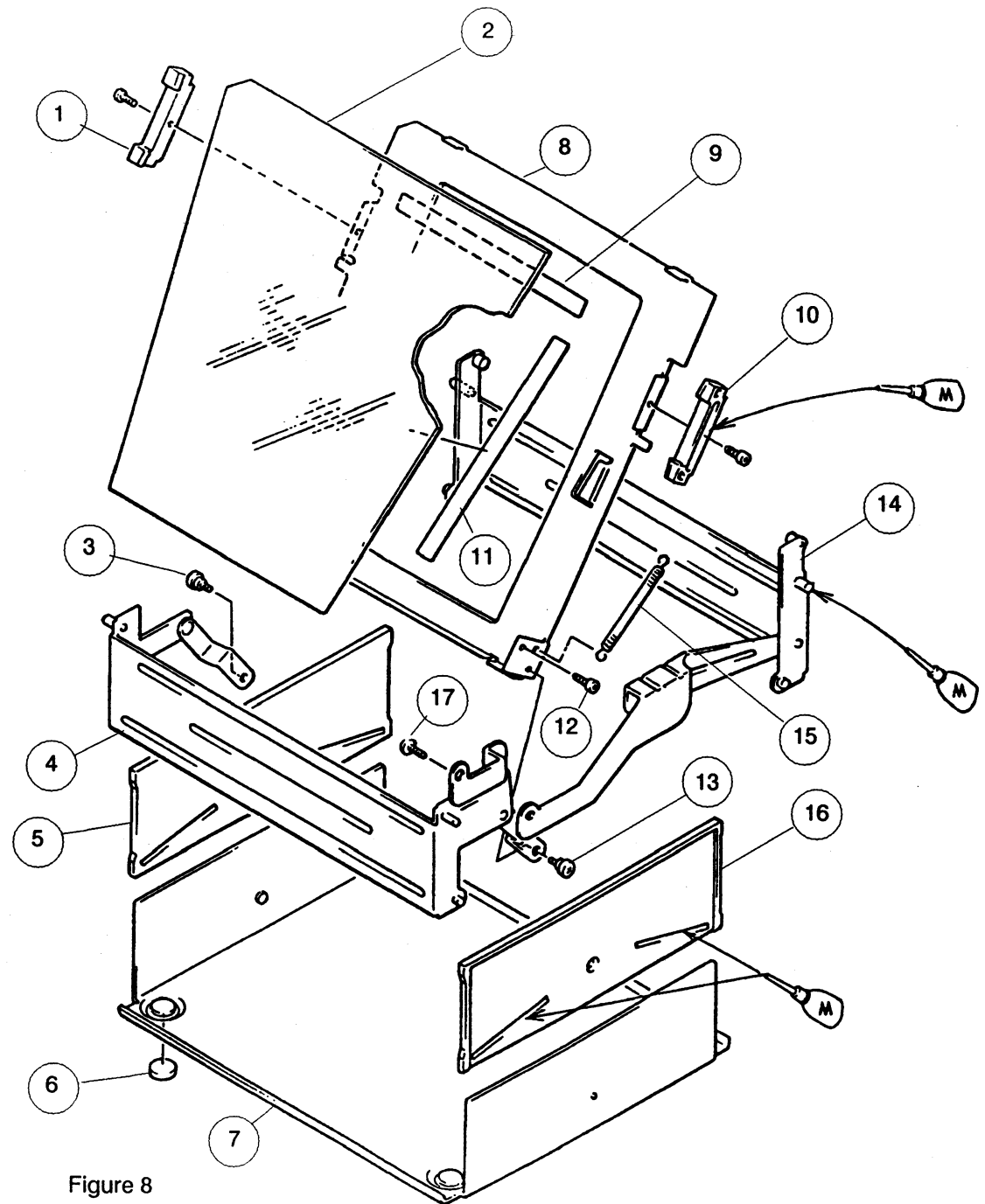
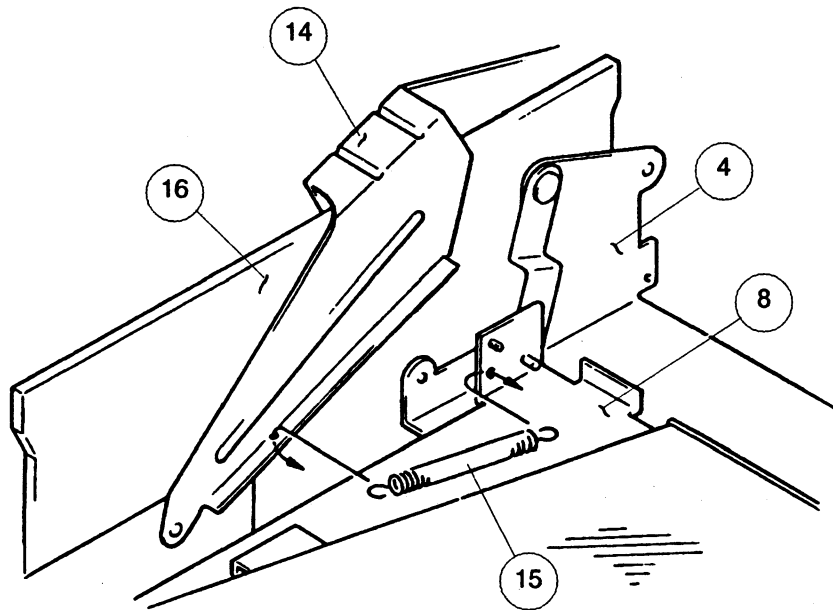


Figure 8

SECTION III

TROUBLESHOOTING

Test Points	22
Wiring Diagram	24
Troubleshooting Chart	25

TEST POINTS

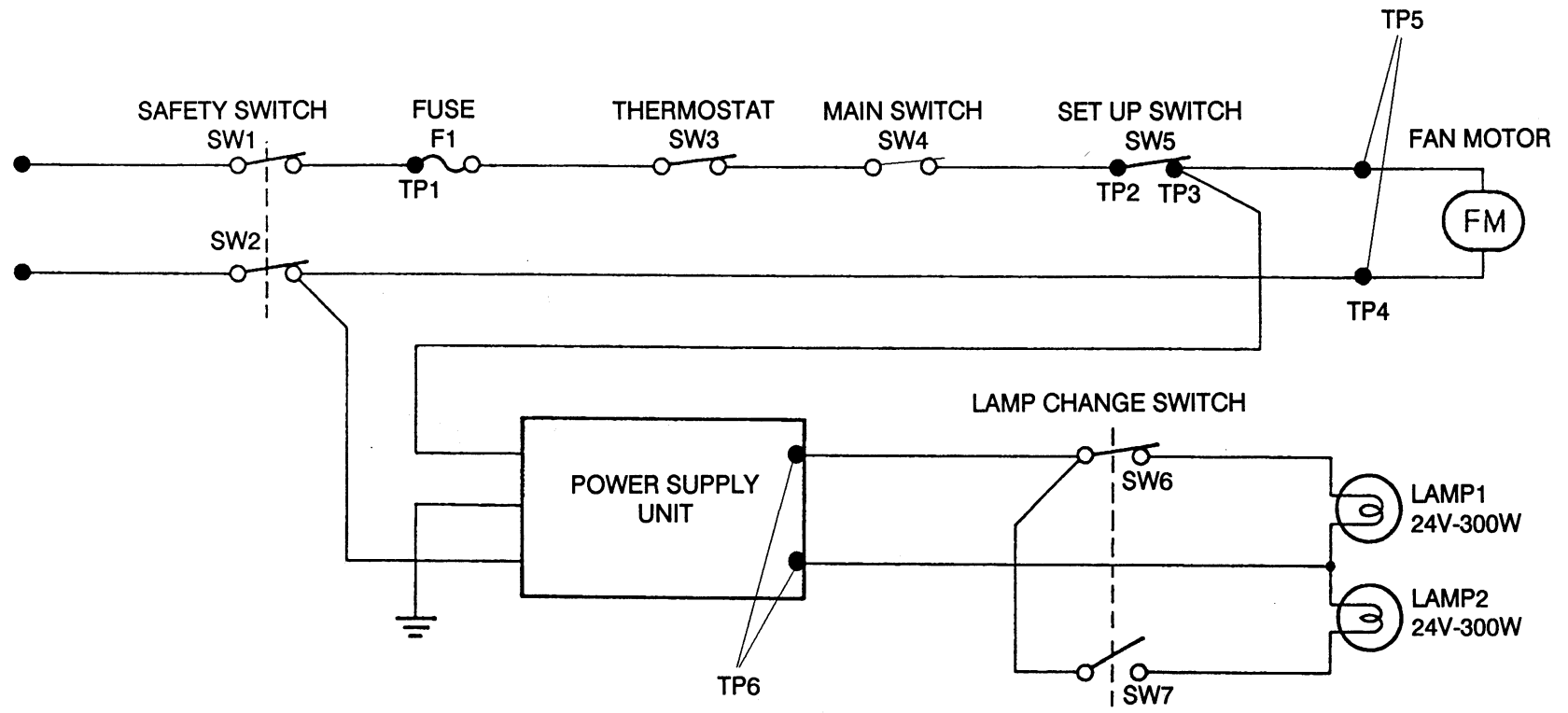


Figure 9

TEST POINTS

The test points listed below should be checked to help isolate problems within the projector's electronics. Always follow the three steps listed below and refer to figure 9 for the location of each test point.

1. Place the projector into an elevated state.
2. Remove the fan motor assembly (pg. 11).
3. Turn the main switch on and hold down the safety switch actuator located inside the main switch housing.

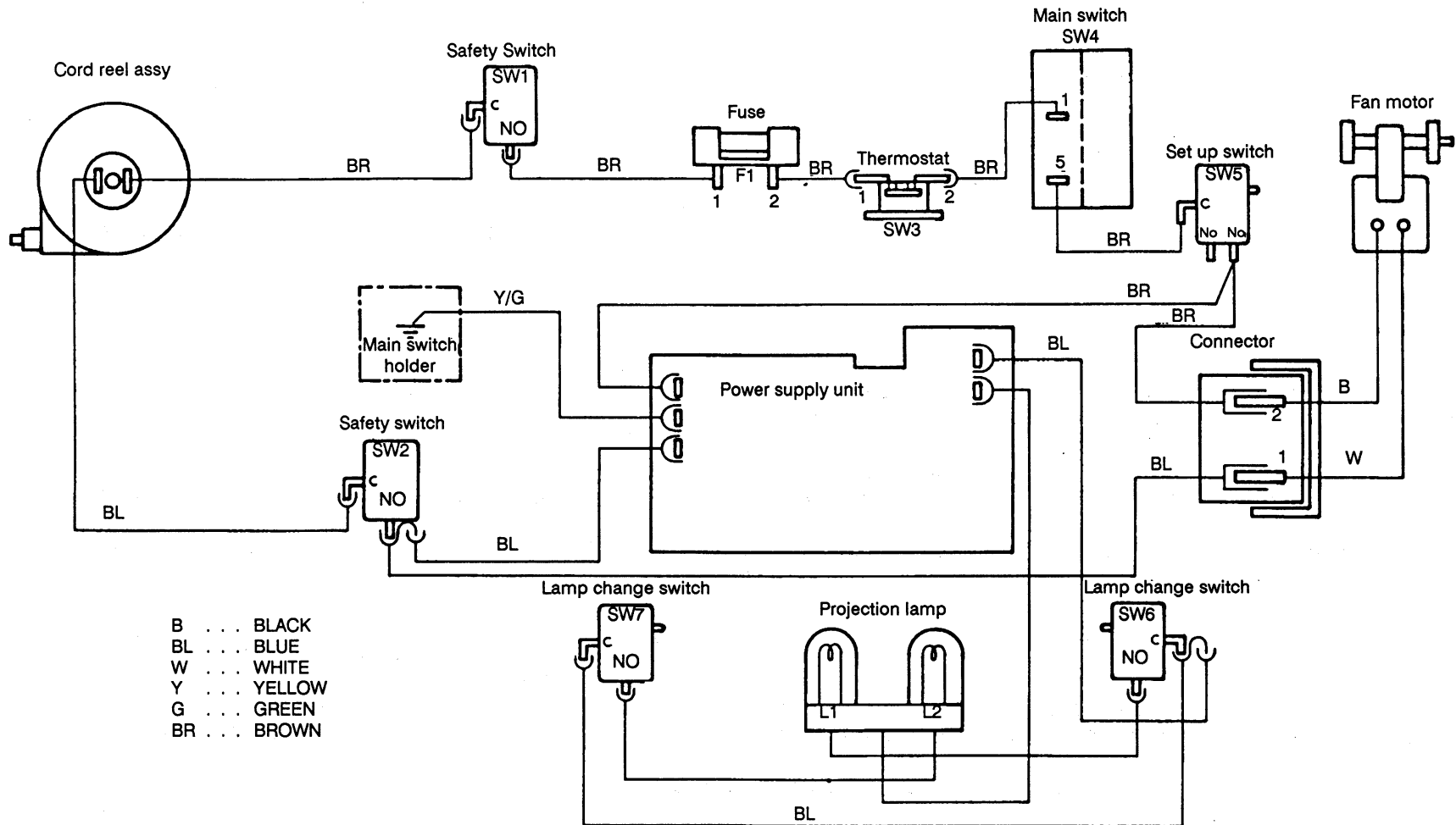
To perform the following tests, the projector should be unplugged and your meter must be truned to the ohm's function. One of the meter leads should be placed through both holes in the A.C. power plug prongs.

Test Point	Meter Connection	Testing Continuity of:
TP1	Side of F1	Safety switch SW1
TP2	Top terminal of set up switch SW5	Main switch SW4 and thermostat SW3
TP3	Side terminal of set up switch SW5	Set up switch SW5
TP4	Blue pin of fan motor connector	Safety switch SW2

To check test points 5 and 6, the projector should be plugged in and your meter must be turned to the A.C. voltage function.

Test Point	Meter Connections	Correct Voltage Reading	Testing
TP5	Blue & brown pins of fan connector	A.C. line voltage	A.C. voltage to fan motor
TP6	Output terminals to blue and white wires on power supply board	22 VAC ± 2 VAC	Power supply board output voltage

WIRING DIAGRAM



TROUBLESHOOTING CHART

This troubleshooting chart is intended to help you isolate and correct the most probable cause for projector malfunctions.

1. Locate the symptom on the chart.
2. Move through the possible problems in the order listed and perform the corresponding test or action.
3. If the test or action is satisfied, move on to the next possible problem. If a test or action is not satisfied, suspect the problem listed.

<u>SYMPTOM</u>	<u>POSSIBLE PROBLEM</u>	<u>TEST/ACTION</u>
Both the lamp and fan motor fail to function.	A. A.C. voltage not present.	Verify voltage is present at outlet.
	B. F1 is open.	Check fuse for continuity.
	C. Set up switch actuator is not functioning properly.	Verify proper actuator operation.
	D. Safety switch actuator is not functioning properly.	Verify proper actuator operation.
	E. Loose connection on power supply board or switches.	Check all connections.
	F. Thermostat SW3 is open (will occur during projection)	Allow projector to cool and try again.
	G. Defective safety switch SW1.	Verify continuity at TP1.
	H. Defective main switch SW4 or thermostat SW3.	Verify continuity at TP2.
	I. Defective set up switch SW5.	Verify continuity at TP3.

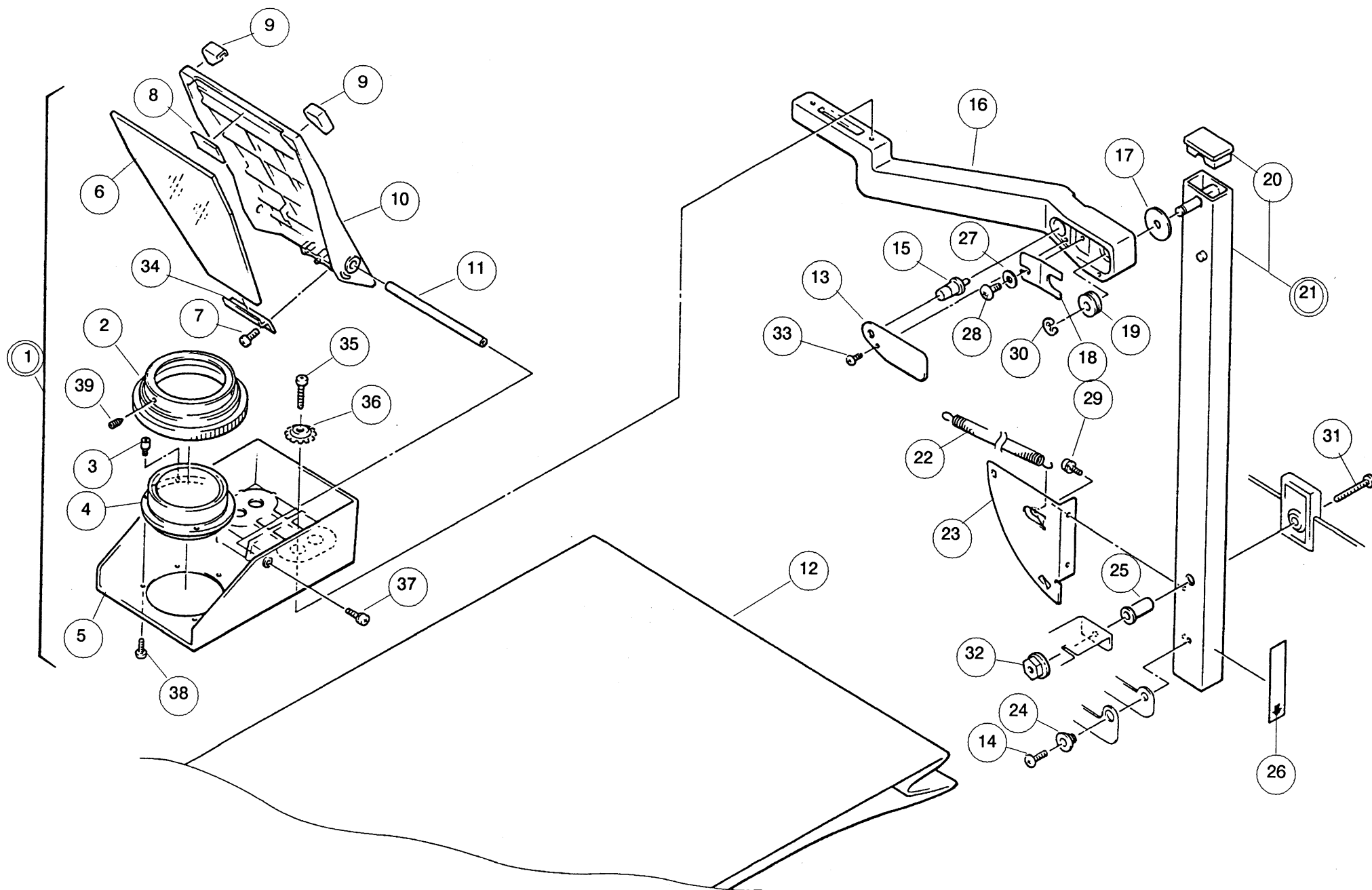
<u>SYMPTOM</u>	<u>POSSIBLE PROBLEM</u>	<u>TEST/ACTION</u>
Lamp lights but fan fails to function.	J. Defective safety switch SW2.	Verify continuity at TP4.
	K. Defective cord reel assembly.	Verify correct voltage at TP5.
	A. Loose fan motor connector.	Reconnect fan motor connector.
Lamp fails to light but fan functions.	B. Loose connection on safety switch SW2.	Reconnect connector.
	C. Defective fan motor.	Replace fan motor.
	A. Lamp change lever is not set correctly.	Set lamp change lever.
	B. Lamp is disconnected.	Reconnect lamp.
	C. Defective lamp.	Replace lamp.
	D. Loose connection on power supply board or lamp change switch SW6 or SW7.	Reconnect connectors.
	E. Defective lamp change switch SW6 or SW7.	Check switches for continuity.
Excessive noise during projection.	F. Defective power supply board.	Verify correct voltage at TP6.
	G. Defective lamp socket.	Replace lamp socket.
	A. Stage glass is loose due to improper installation.	Check for proper installation. Tighten screws that secure stage glass springs.
	B. Fan blade installed improperly.	Check for 1mm gap between fan and motor shaft base.

<u>SYMPTOM</u>	<u>POSSIBLE PROBLEM</u>	<u>TEST/ACTION</u>
Spots appear on projected image.	C. Fan blade touching motor.	Replace fan assembly.
	D. Defective fan motor.	Replace fan motor.
	A. Dirt or debris in projection path.	Carefully clean any dirt, debris or finger prints from lenses and mirrors.
Stay fails to lock.	B. Wiring is in projection path.	Route wiring out of projection path and tie wrap.
	A. Stay spring is detached.	Attach stay spring.
Lamp is lit with projector in a folded state.	B. Stage frame hinges are bent.	Replace stage frame hinges.
	A. Set up switch actuator is not functioning properly.	Verify proper actuator operation.
Lamp is lit with the stage frame open.	B. Set up switch SW5 is defective. (shorted)	Make sure switch performs on/off function.
	A. Safety switch actuator is not functioning properly.	Verify proper actuator operation.
Projected image is not clear.	A. Fresnel lens is installed wrong.	Install Fresnel lens label side down.
	B. Wrong lamp is being used.	Use only a Varitronics approved lamp.
	C. Defective reflector.	Replace reflector.

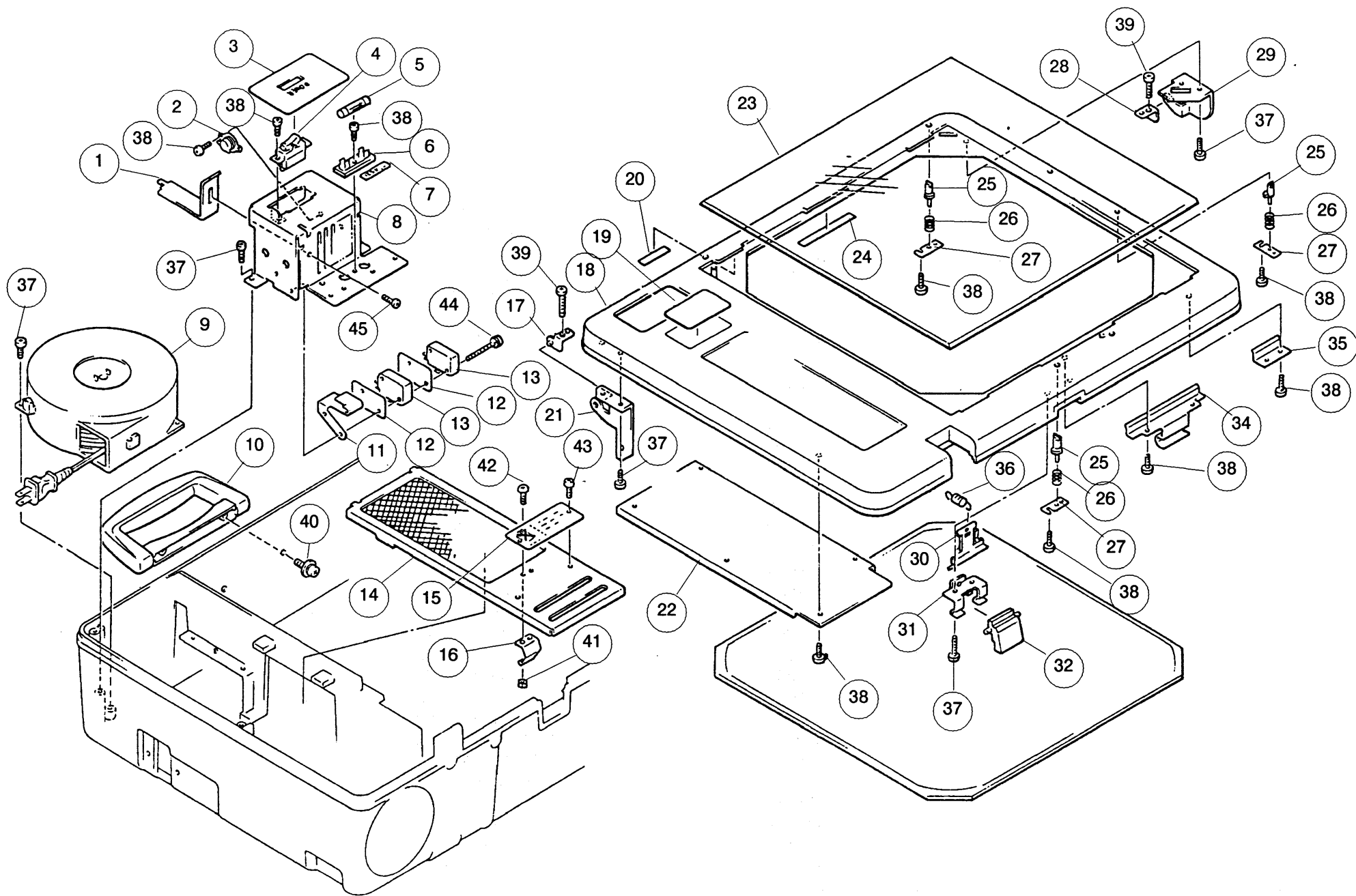
SECTION V

SERVICE PARTS

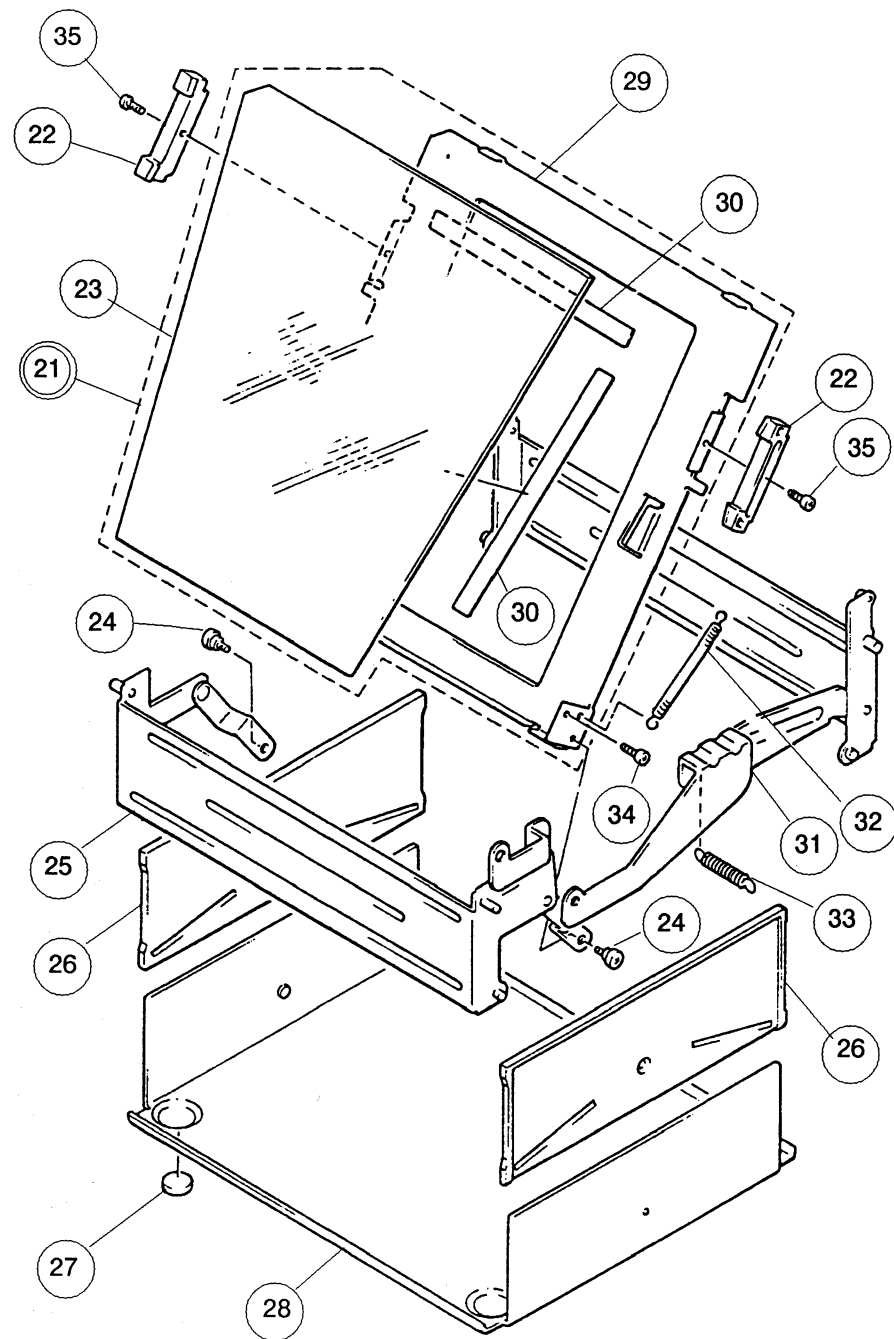
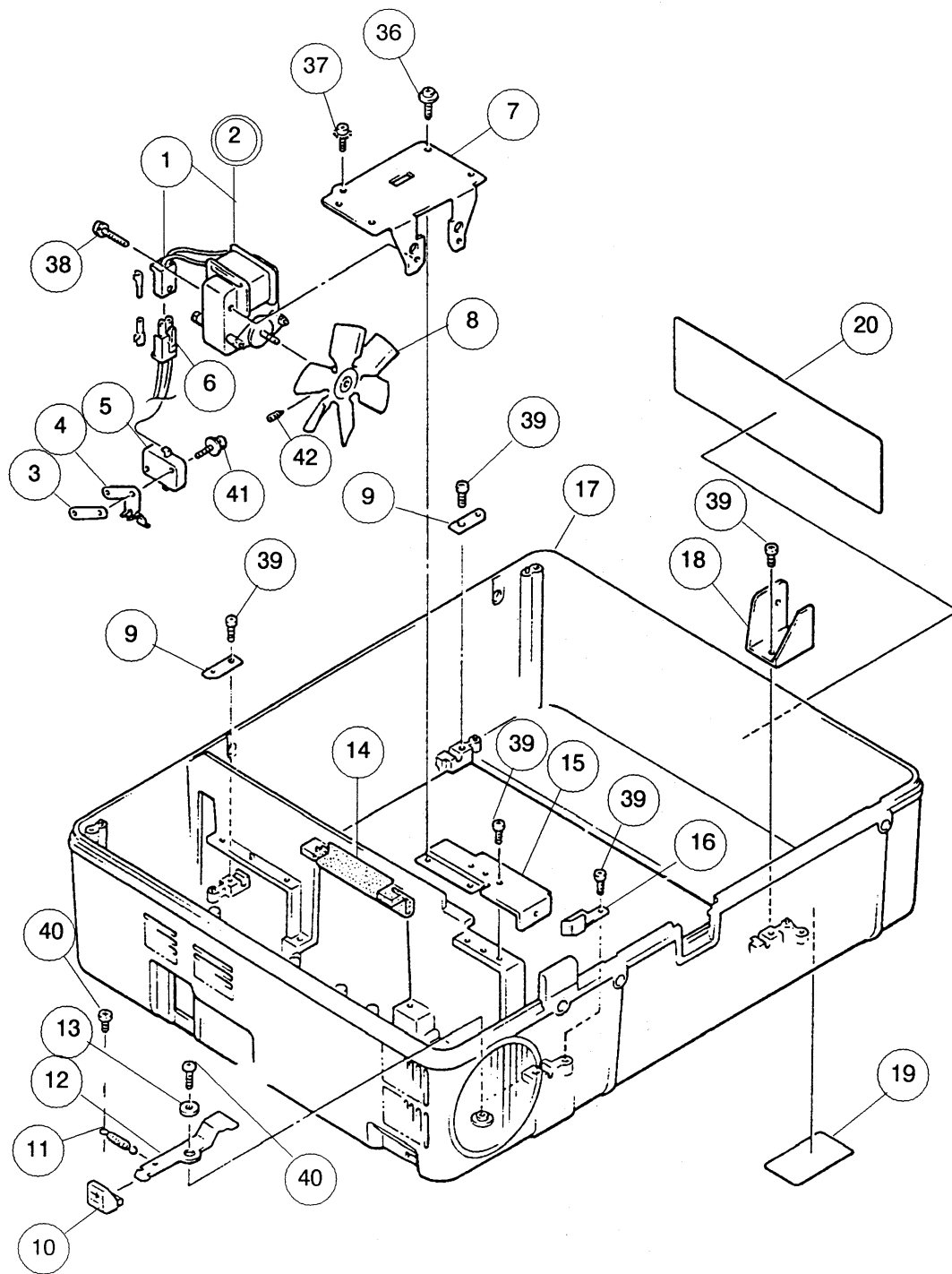
Service Parts List	30
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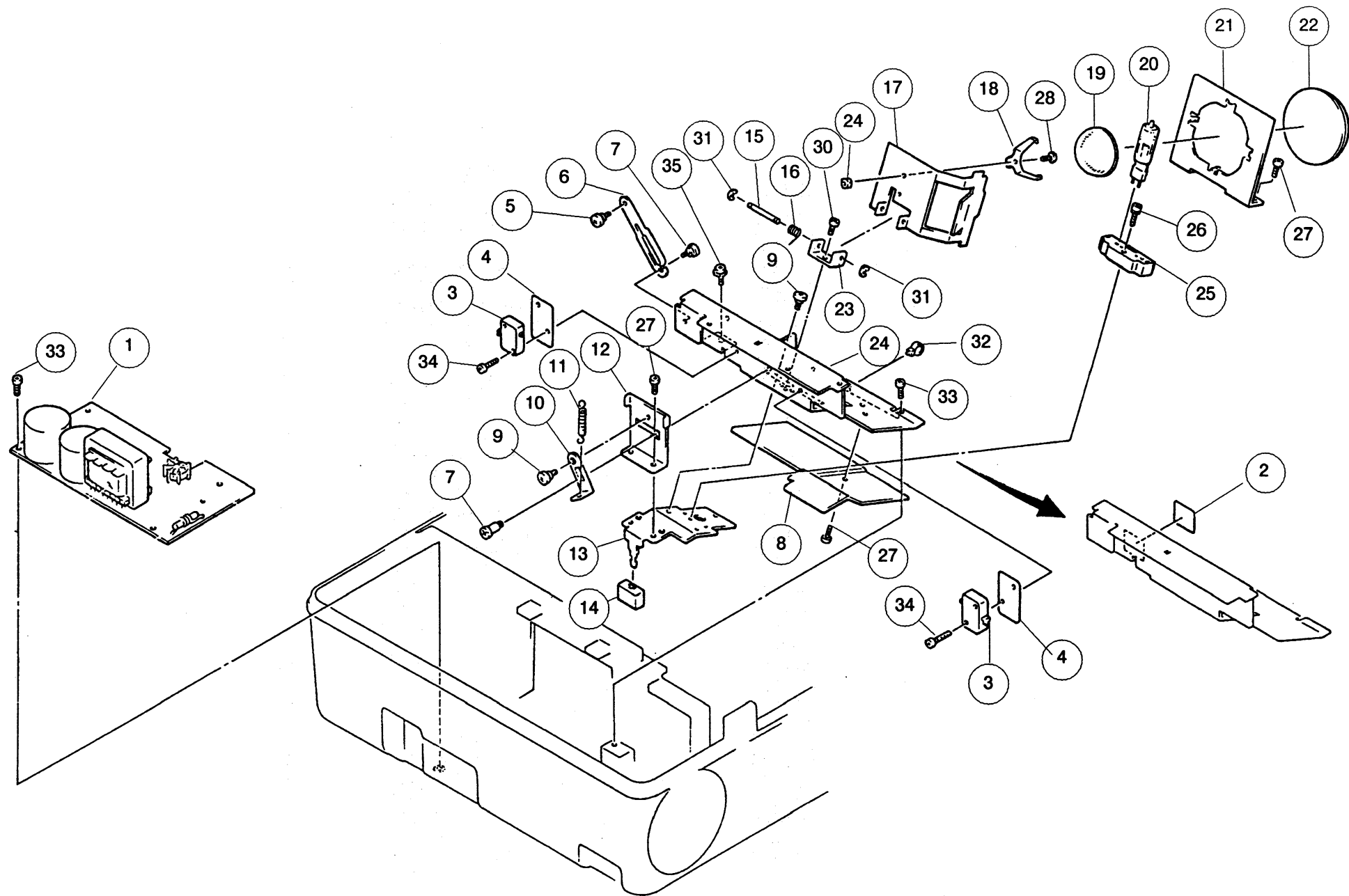
<u>Item No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Quantity</u>
1	Assy, Lens Head	4836-00	1
2	Ring, Focus	4989-00	1
3	Ring, Stopper Focus	4990-00	1
4	Assy, Projecting Lens	4991-00	1
5	Lens Head	4837-00	1
6	Mirror	4838-00	1
7	Attachment Reflector	4992-00	1
8	Pad Rasped, Plate	4993-00	1
9	Gum Holder, Mirror	4839-00	2
10	Mirror, Holder	4840-00	1
11	Mirror, Shaft	4995-00	1
12	Cover, Vinyl	4994-00	1
13	Cover, Arm	4996-00	1
14	Screw, Power Lock	4997-00	1
15	Lock Pin, Arm	4998-00	1
16	Arm, Lens Head	4841-00	1
17	Washer, Arm	4999-00	1
18	Lock, Spring	5000-00	1
19	Spacer, Arm	5001-00	1
20	Cap, Stay	4842-00	1
21	Assy, Stay	5002-00	1
22	Spring, Stay	5003-00	1
23	Stopper, Stay	5004-00	1
24	Washer, Link	5005-00	1
25	Shaft, Stay	5006-00	1
26	Label, Stay	5007-00	1
27	Washer, M4	5121-00	1
28	Screw, M4x6	5113-01	1
29	Screw, M4x8	1692-04	1
30	E-Ring, M6	1557-00	1
31	Screw, M5x35	1056-01	1
32	Nut, M5	5117-00	1
33	Screw, M3x4	5113-00	1
34	Screw, M3x8	4659-00	1
35	Screw, M4x14	1055-01	2
36	Washer	5008-00	2
37	Screw, M3x8	1691-02	2
38	Screw, M3x6	1055-02	3
39	Screw Allen, M3x5	1670-00	1



Item No.	Description	Part No.	Quantity
1	Actuator	5009-00	1
2	Thermostat	5010-00	1
3	Plate, Operations	5011-00	1
4	Switch	5012-00	1
5	Fuse 6A	4856-00	1
6	Cap, Fuse Holder	5013-00	1
7	Plate, Fuse	5014-00	1
8	Holder, Main Switch	5015-00	1
9	Reel, Cord	4844-00	1
10	Handle	4843-00	1
11	Actuator, Safety Switch	5016-00	1
12	Isolator, Switch	5017-00	2
13	Switch	5018-00	2
14	Net, Frame Protection	4845-00	1
15	Plate, Caution	5019-00	1
16	Spring, Protection Net	5020-00	1
17	Hinge, Holder	5021-00	1
18	Frame, Stage	4846-00	1
19	Label, Model	5022-00	1
20	Paper, Silver	5023-00	1
21	Hinge, Stage Frame	4847-00	1
22	Protector, Heat Stage	5024-00	1
23	Glass, Stage	4848-00	1
24	Paper, Silver	4849-00	1
25	Pin, Setting	5025-00	6
26	Spring, Setting Pin	5026-00	6
27	Holder, Setting Pin	5027-00	6
28	Hinge, Holder	5028-00	1
29	Hinge, Stage Frame	4850-00	1
30	Lock, Spring Stage	4852-00	1
31	Holder, Lock Button	4853-00	1
32	Latch, Lock Stage	4854-00	1
33	Lens, Frensel	4855-00	1
34	Spring, Stage Glass	5029-00	1
35	Spring, Stage Glass	5030-00	2
36	Spring, Holder Shoe	4851-00	1
37	Screw, M3x8	4659-00	5
38	Screw, M3x6	3032-00	9
40	Screw, M5x16	5112-01	2
41	Nut, M3	5118-00	1
42	Screw, M3x4	5113-00	2
43	Screw, M3x6	1675-02	2
44	Screw, M3x26	5115-00	2
45	Screw, M3x12	1677-00	1



Item No.	Description	Part No.	Quantity
1	Connector	5031-00	1
2	Motor	4857-00	1
3	Holder Switch	5032-00	1
4	Actuator, Switch	5033-00	1
5	Switch	5034-00	1
6	Connector	5035-00	1
7	Holder, Motor	5036-00	1
8	Blade, Fan	4858-00	1
9	Plate, Press Shaft	5037-00	2
10	Knob, Stay Release	5038-00	1
11	Spring, Lock Plate Stay	5039-00	1
12	Stay, Lock Plate	5040-00	1
13	Washer, Pilot Lamp Socket	5041-00	1
14	Protector, Heat Body	5042-00	1
15	Holder, Bearing Stay	5043-00	1
16	Guide, Stay	5044-00	1
17	Body	5045-00	1
18	Plate, Shaft	5046-00	1
19	Plate, Rating	5047-00	1
20	Label, Operating	5048-00	1
21	Assy, Holder Reflector	4859-00	1
22	Guide, Holder Reflector	4860-00	2
23	Reflector	4861-00	1
24	Screw, Link	5049-00	2
25	Assy, Side Plate	4862-00	1
26	Guide, Bottom Plate	4863-00	2
27	Leg, Body	4864-00	4
28	Assy, Bottom Plate	5050-00	1
29	Holder, Reflector	5051-00	1
30	Tape	4865-00	2
31	Assy, Side Plate	4866-00	1
32	Spring, Holder Reflector	5052-00	1
33	Spring, Lever Head	5053-00	1
34	Screw, M3x6	1675-02	2
35	Screw, M2.5x6	1673-02	2
36	Screw, M3x10	1693-00	4
37	Screw, M4x6	5113-01	1
38	Screw, M3x26	5115-00	2
39	Screw, M3x8	4659-00	5
40	Screw, M3x6	3032-00	2
41	Screw, M3x20	5112-00	2
42	Screw, Allen M3x5	1670-00	1



Item No.	Description	Part No.	Quantity
1	Power Supply Board	4867-00	1
2	Label, Fuse Caution	5060-00	1
3	Switch	5061-00	2
4	Isolator, Switch	5062-00	2
5	Screw	5063-00	2
6	Stopper, Link Stage Frame	4868-00	1
7	Guide, Roller Shaft	5064-00	1
8	Protector, Heat	5065-00	1
9	Screw, Lamp Socket	5066-00	1
10	Lever, Lamp Change	5067-00	1
11	Spring, Pressure Lever	5068-00	1
12	Holder, Lever	5096-00	1
13	Mount, Lamp Socket	5070-00	1
14	Knob, Change	5071-00	1
15	Shaft, Holder Reflector	5072-00	1
16	Spring, holder Reflector	5073-00	1
17	Holder, Reflector	5074-00	1
18	Supporter, Reflector	4869-00	1
19	Reflector	4870-00	1
20	Lamp, 24V 300W	4717-00	1
21	Holder, Condenser Lens	5075-00	1
22	Aspherical Condenser	4871-00	1
23	Mount, Holder Reflector	5076-00	1
24	Holder, Lamp Socket	5077-00	1
25	Socket, Lamp	4872-00	1
26	Screw, M3x4	1692-02	1
27	Screw, M3x6	3032-00	3
28	Screw, 2.5x4	5114-00	1
29	Nut, M2.5	5119-00	1
30	Screw, M3x4	1669-00	1
31	E-Ring, M2	5120-00	3
32	Tie Cable	3575-00	3
33	Screw, M3x8	4659-00	1
34	Screw, M3x4	1680-01	4
35	Screw, M4x8	5116-00	1

NOTES