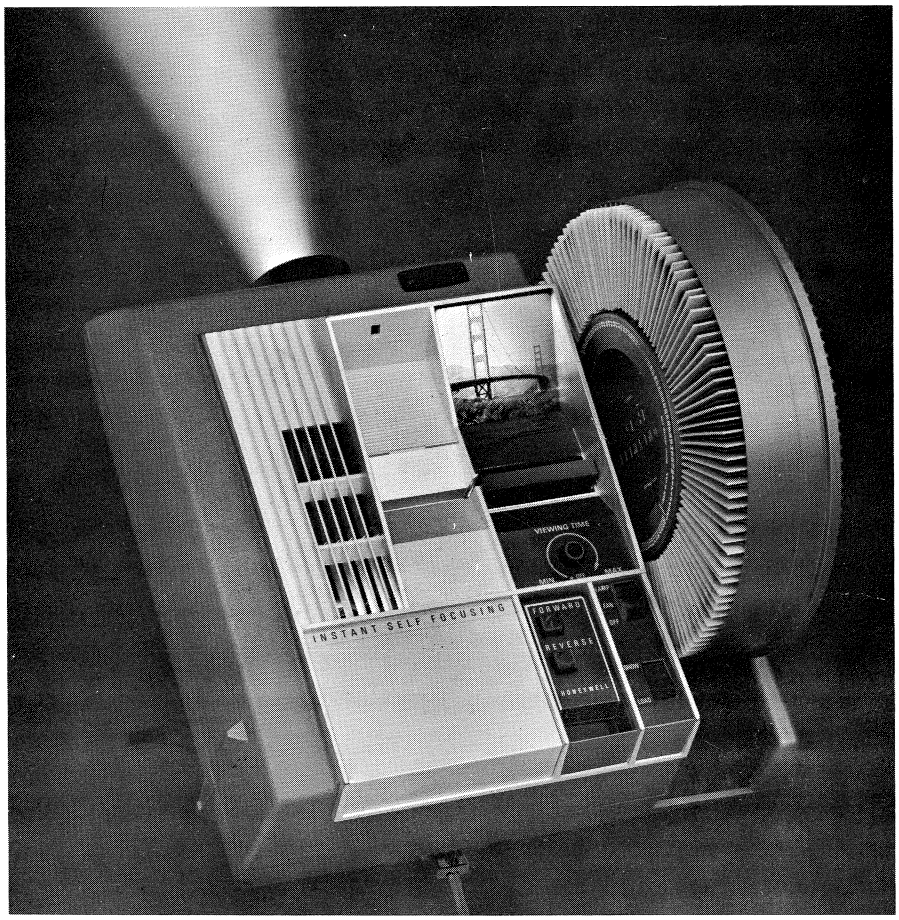
Technical Manual

MAINTENANCE INSTRUCTIONS FOR
PREVIEW SERIES SLIDE PROJECTORS
MODELS 610/620/630/640/600



Honeywell PHOTOGRAPHIC PRODUCTS DIVISION
P. O. BOX 1010 • LITTLETON, COLORADO • 80120

73001029-001

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MAINTENANCE INSTRUCTIONS FOR
PREVIEW SERIES SLIDE PROJECTORS
MODELS 610/620/630/640/600

MAY 1970

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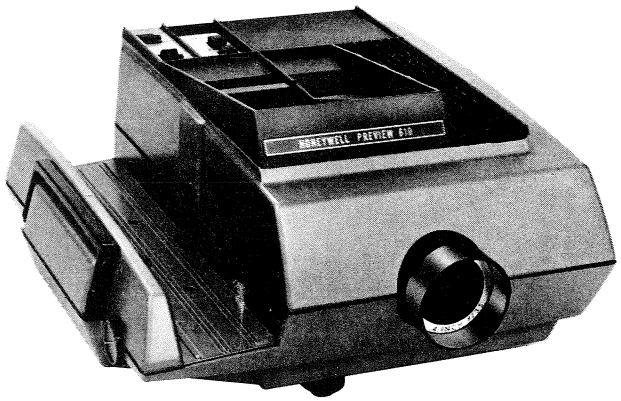
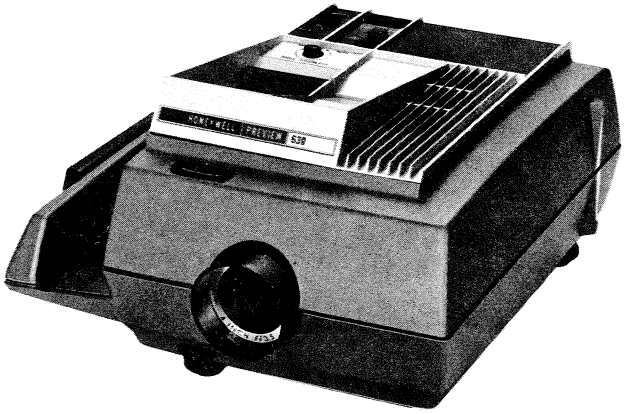


Model 610



Model 630

Model 600
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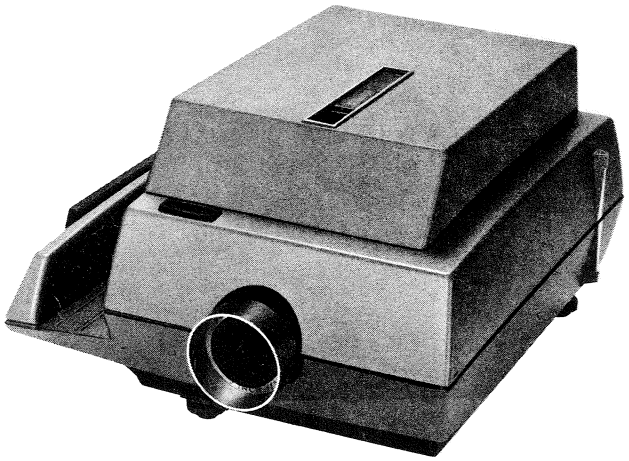
Model 620



Model 640

Figure 1-1. 600 Series Honeywell Preview Projector

SECTION I

INTRODUCTION

1-1. SCOPE OF MANUAL

This manual provides maintenance instructions for the Honeywell Preview Series Projectors, Models 600, 610, 620, 630, and 640. It includes principles of operation, operational checkout, troubleshooting, disassembly, repair, adjustments, recommended equipment, and a parts list.

1-2. UNIT DESCRIPTION

Honeywell Series 600, 2 by 2 slide projectors are portable, AC powered, 500 watt units that use either standard DAK projection lamps or EGH halogen cycle lamps (quartz lamps). They accept straight trays, circular trays (with either plastic or cardboard mounted slides) or a stack loader with cardboard-mounted slides only (available in the near future).

1-3. FEATURES

A. Powered Slide Changing (All Models). Pressing a button on the detachable slide-change control box accomplishes slide changing, powered by a 12 VDC motor.

B. Remote Control (All Models). Connecting the accessory remote extension cord between the projector and the detachable control box provides remote control of slide changing.

C. Preview Screen (All Models). While a slide is being projected to the room screen, the next slide (going forward) in the tray is projected to the preview screen.

D. Editor (All Models). A slide being projected to the preview screen can be removed from the projector, permitting reorientation of the slide or replacement. Pulling up the edit handle operates the editor. This procedure does not disturb the image on the room screen. The editor can be pulled up only with the projector in the SHOW mode, and the VIEWING TIME in the OFF position (630 and 640).

E. Instant Auto Focus (620, 630, and 640). An electronically controlled servomechanism focuses each slide on the room screen; only the first slide must be focused manually.

F. Automatic Timer (630 and 640). When the projector has been put into operation, the VIEWING TIME (at the operator's choice) will change slides at about 5 to 20 second intervals, adjustable by a control on top of the projector.

G. Variable Aperture On Preview Screen (630 and 640). The variable aperture varies the preview screen brightness from maximum to completely off.

H. Room Lamp Socket (640 Only). The room lamp circuit is switched on only in the OFF and FAN position of the power switch.

I. Automatic Cord Reel (640 Only). The cord reel stores the power cord beneath the projector, and is spring loaded to reel in the cord. Swinging the cord toward the slide tray channel locks the cord. Pulling the cord straight out releases the latching lever.

1-4. CONTROLS

A. OFF-FAN-LAMP Switch (Power Switch, All Models). With the power switch set to OFF position, all circuits are switched off except the room lamp socket on the Model 640. With the power switch set to FAN position, all circuits except the lamp are switched on. With the power switch set to LAMP position, all circuits except the room lamp socket (640) are switched on.

B. LOAD-SHOW Switch (All Models). The LOAD-SHOW switch sets the projector in the LOAD or SHOW mode, but operates only with the slide change control box plugged in.

C. Detachable Slide-Change Control Box (All Models). The slide-change control box initiates slide changing in either local or remote operation. The slide-change control box can override the VIEWING TIME circuit (630 and 640).

D. Manual Focus Control (All Models). The manual focus control focuses the image on the room screen. The manual focus control can operate independently of the auto-focus.

E. Elevation Control (All Models). The front foot on the projector is on a threaded shaft. Turning the foot raises or lowers the front of the projector for vertical adjustment of image on the room screen.

F. Fast Elevation Control (630 and 640). Pressing the release button on the front of the projector releases the release slide that engages the threaded shaft on the front foot, allowing fast vertical adjustment. The manual elevation control is still used for fine adjustments.

G. Tilt Control (All Models). The left rear foot of the projector is on a threaded shaft for tilt adjustment.

H. Preview Screen Brightness Control (630 and 640). A sliding preview aperture button on top of the projector controls the preview screen variable aperture for screen brightness.

1-5. SPECIFICATIONS

A. Voltage: 117 (±12) VAC, 60 Hz.

B. Power: Not to exceed 615 watts at 117 VAC.

C. Image dimension of slide: 1.5 inches square.

D. Straight trays: Honeywell (40 slide capacity), Sawyers "Easy Edit," Crestline, Wards, Sears, Eatons of Canada.

NOTE

Maximum thickness of slides used in round trays is not to exceed 0.080 inch.

E. Round trays: Honeywell (120 slide capacity), Sawyers "Rototray," Sears, Wards, Eatons of Canada, Crestline.

F. VIEWING TIME interval: Approximately five to twenty seconds. Individual projectors may have an interval as long as forty-five seconds.

1-6. DESIGN CHANGES

Many design changes have been made to improve the operation and reliability of the projector. At one point in the development of the design, a number of significant changes were made simultaneously in production. To distinguish between the projectors made before and after this group of changes, this manual refers to an "Old" and a "New" version.

Old version descriptions and illustrations depict the projector in a configuration very similar to the first units made. New version descriptions and illustrations depict the latest configuration.

In servicing a given projector, examination of the circuitry or the mechanism will reveal whether it is an Old or New version.

SECTION II

OPERATION

2-1. GENERAL

This section explains the operation of the Honeywell Series 600 projectors. Refer to paragraph 1-3 for features and paragraph 1-4 for controls.

2-2. OPERATION WITH ROUND TRAY

A. Remove the rigid dust cover (if using Model 640).

B. Connect projector power cord to AC wall outlet.

C. Set VIEWING TIME to OFF (Models 630 and 640).

D. Set OFF-FAN-LAMP switch to FAN.

NOTE

The slide change control box must be installed for LOAD-SHOW switch to operate.

E. Set LOAD-SHOW switch to LOAD.

F. Place round tray with its open side toward projector aperture. Rest tray on top of the two tray supports.

G. Rotate tray slightly to insure that the teeth on tray engage tray index pinion.

H. Rotate tray until number 1 (or other desired number) is opposite index mark on projector.

I. Set OFF-FAN-LAMP switch to LAMP.

J. Set LOAD-SHOW switch to SHOW.

K. Press FORWARD or REVERSE button on the slide change control box to initiate slide change cycle.

L. To remove round tray from projector:

1. Set OFF-FAN-LAMP switch to FAN.

2. Set LOAD-SHOW switch to LOAD.

3. Lift tray from projector.

2-3. OPERATION WITH STRAIGHT TRAY

A. Perform steps A through E of paragraph 2-2.

B. With its open side toward projector aperture, slide tray into either end of tray channel.

C. Position tray so that the teeth on tray engage tray index pinion.

D. Slide tray to number of slide slot desired opposite index mark on projector.

E. Perform steps I through K of paragraph 2-2.

F. To remove straight tray from projector:

1. Set OFF-FAN-LAMP switch to FAN.

2. Set LOAD-SHOW switch to LOAD.

3. Slide tray out of tray channel in either direction.

2-4. AUTOMATIC TIMER OPERATION

With projector in operation using either round or straight trays (paragraphs 2-2 and 2-3), position VIEWING TIME control to desired view time.

NOTE

Timer can be overridden by pressing FORWARD or REVERSE button on slide change control box, without changing view time of next slide.

2-5. REMOTE OPERATION

A. Remove slide change control box from projector console by pulling it toward the rear of projector.

B. Connect one end of remote control cord to projector console and the other end to slide change control box.

C. With remote control cord connected, operation of projector is identical to non-remote operation.

2-6. PREVIEW EDITOR

NOTE

To operate editor, LOAD-SHOW switch must be in SHOW position and OFF-FAN-LAMP switch in FAN or LAMP. Editor can operate with switch in FAN poition but preview screen will not be illuminated until switch is in LAMP position.

A. Position VIEWING TIME control to OFF (Models 630 and 640).

B. Set OFF-FAN-LAMP switch to LAMP.

C. Set LOAD-SHOW switch to SHOW.

D. Pull up editor.

E. Install slide in editor.

F. Push editor down and view slide on preview screen.

SECTION III

PRINCIPLES OF OPERATION

3-1. SYNOPSIS

The Honeywell Model 600 Series Projectors operate on AC, 108 to 126 volts, 60 Hz. The OFF-FAN-LAMP switch provides power for the lamp, fan, and drive mechanism. The fan draws air through the lamp chamber and out the top of the projector. A 12 volt motor powers the slide-changing mechanism through a series of gears and levers. The LOAD-SHOW switch determines the mode of operation. The VIEWING TIME control puts the projector into automatic operation, changing slides automatically at intervals determined by the setting of the VIEWING TIME control knob. The auto-focus system uses a phase-locked circuit employing a bridge with a photo-sensitive cell to unbalance the bridge in either direction. When the bridge is unbalanced, a DC motor drives the projection lens mount in the right direction to correct the unbalance.

3-2. OPTICAL SYSTEMS (See Figure 6-1)

3-3. VIEWING OPTICS

Reflected and direct light from the lamp go through two condenser lenses to illuminate the slide in the viewing position. The rear condenser lens serves as an infrared filter, to reduce radiant heating of the slide in the SHOW position. The projection lens projects an image of the slide to the room screen.

3-4. PREVIEW OPTICS

Light from the projection lamp is reflected from a mirror and through a condenser lens to illuminate the slide in the editor. A small objective lens projects an image of the slide through an adjustable aperture (preview screen brightness control, Models 630 and 640) and to a mirror which reflects the image to the preview screen.

3-5. AUTO-FOCUS OPTICS (See Figure 6-1)

The function of the auto-focus system is to maintain constant distance between the main projector lens and the slide being viewed on the room screen. That distance is determined by the distance to the room screen and the focal length of the lens. As the projector has no means of detecting the distance to the room screen, the first slide must be focused manually.

The projection lamp provides light for the auto-focus system. Light from the projection lamp reflects from auto-focus mirrors No. 1 and No. 2 and goes through auto-focus lens No. 1. The light beam reflects off the slide in the SHOW position, goes through auto-focus lens No. 2 (mounted to the lens carriage), and finally to the photo-cell.

Assume that there is a flat slide in the SHOW position, the light beam is near the center of the photo-cell, and the image on the room screen is in focus. If the projector is cycled, and a buckled slide is introduced (or the flat slide "pops" to a buckled position), then the image on the room screen will be out of focus. The light beam on the photo-cell will be deflected off center, creating a signal to drive the auto-focus motor. The motor will drive the projection lens in the direction to correct the focus regardless of which direction the slide is buckled. If the slide buckles in the opposite direction, the light beam will deflect in the opposite direction, and the auto-focus system will drive in the opposite direction to correct the focus. See paragraph 3-13 for further information.

3-6. SLIDE-CHANGING MECHANISM (See Figures 6-2 and 6-3)

The function of the slide-changing mechanism is to change slides at the operator's discretion, and while doing so, to blank the room screen.

3-7. GEAR TRAIN AND SLIDER ASSEMBLY

The gear train transfers forces from the drive motor to the tray advance index pinion and the slider assembly. The index pinion advances one tooth for each slide-change cycle, advancing the slide tray one slide. A crank, fixed to the drive gear but beneath the mechanism plate, moves the slider assembly back and forth as the drive gear rotates. The drive gear, idler gear, and index gear make one revolution for each slide-change cycle.

A. The slider assembly performs several functions:

1. It carries the jaws that pull the slides out of the slide tray and into viewing and previewing positions.

2. It carries the slide ejector which pushes the slides back into the slide tray.

3. It operates the shutter to open in the SHOW position and close in the LOAD position.

4. On the Old version, it operates limit switches (S3A and S4) and auto-focus limit switch (S3B). On the New version, it operates an additional switch (S4B), as a brake for the drive motor.

3-8. SLIDE-CHANGE OPERATION

A. LOAD - The purpose of the LOAD mode is to allow installation or removal of a slide tray. In the LOAD mode, the shutters are closed, the edit handle (4, Figure 6-21) is locked in so it cannot be pulled up, and the auto-focus circuit is open.

B. LOAD TO SHOW - Setting the LOAD-SHOW switch to SHOW causes the projector to enter the SHOW mode. The slider assembly moves from the LOAD position (Figure 6-2) to the SHOW position (Figure 6-3), and in doing so, grasps two slides from the slide tray, deposits the slides in the preview and SHOW positions, frees the edit handle, closes the auto-focus circuit, and opens the shutters.

C. SHOW - In the SHOW mode the shutters are open, the edit handle is freed, and the auto-focus circuit is operating. Each slide-change cycle begins and ends in the SHOW mode, showing a slide on the room screen and a slide on the preview screen. The projector must be in the SHOW mode to begin a slide-change cycle.

D. SLIDE-CHANGE CYCLE - With the projector in the SHOW mode, press the FORWARD or REVERSE button on the slide-change control box to initiate a slide-change cycle. The slider assembly moves to the LOAD position and back to the SHOW position before coming to rest and completing a slide-change cycle. The following steps take place during the cycle:

1. As the slider assembly moves away from the SHOW position, it closes the SHOW limit switch (S3A) and allows the spring-loaded shutters to close.

2. The slide ejector rises to push both slides into the slide tray, then drops.

3. The index pinion is advanced one tooth, advancing the slide tray one slide.

4. As the jaw assembly (mounted to the slider assembly) grasps two slides pushed from the tray by the pusher arm, the slider assembly reaches the LOAD position and starts to move back toward the SHOW position.

5. As the slider assembly moves toward the SHOW position, each of the two slides hits a stop, pulling it from the jaw assembly and leaving it in its desired location for viewing.

6. As the slider assembly approaches the SHOW position, it opens the shutters, closes the auto-focus circuit, opens the SHOW limit switch, and comes to rest in the SHOW position, completing a slide-change cycle.

E. SHOW TO LOAD - Setting the LOAD-SHOW switch to LOAD causes the projector to enter the LOAD mode. The slider assembly moves from the SHOW position (Figure 6-3) to the LOAD position (Figure 6-2), closing the shutters, opening the auto-focus circuit, pushing the slides back into the slide tray, and blocking the edit handle, preventing its removal.

3-9. CIRCUIT DISCUSSION

3-10. POWER CIRCUIT (See Schematic Diagrams)

Connector J1 introduces line voltage to the unit. With S1 set to OFF, line voltage is applied only to the room light receptacle (Model 640). With S1 set to FAN, all circuits except the projection lamp have voltage applied. With S1 set to LAMP, all circuits except the room light receptacle have voltage applied. With S1 set to FAN or LAMP, the auto timer circuit has voltage applied only when the auto timer knob is adjusted away from the OFF position.

A transformer, which is part of the fan motor, powers the drive motor and auto-focus motor with their associated circuitry. With the transformer, diodes CR1 and CR2 form a full wave rectifier with their common cathodes as the positive end of the DC output and the secondary center tap as the negative end. Capacitor C1 filters the DC output. Capacitor C2 protects the heavy-current section of S1 when the projection lamp is turned off.

3-11. SLIDE-CHANGE CIRCUIT (See Figure 6-4)

A. LOAD - With the projector in the LOAD mode, the following conditions exist:

1. The LOAD-SHOW switch (S2) is in the LOAD position.

2. The LOAD limit switch (S4) is open, opening the drive motor circuit and stopping the slider assembly in the LOAD position. On the New version, this has been replaced with a double switch and is designated as S4A; the second switch is designated as S4B.

3. On the New version, motor brake switch (S4B) is closed, shorting the drive motor and stopping the slider assembly in the LOAD position.

4. The auto-focus limit switch (S3B) is open, opening the auto-focus circuit.

5. The SHOW limit switch (S3A) is closed.

B. LOAD TO SHOW - When the LOAD-SHOW switch is set to SHOW:

1. The drive motor circuit is completed through the SHOW limit switch (S3A). The slider assembly begins to move away from its LOAD position, closing S4 (on the Old version). On the New version, S4A closes and S4B opens.

2. As the slider assembly approaches its SHOW position, it closes the auto-focus limit switch (S3B), putting the auto-focus circuit into operation. It also opens the SHOW limit switch (S3A), opening the drive motor circuit and stopping the motion of the slider assembly in the SHOW position.

C. SHOW - With the projector in the SHOW mode, the following conditions exist:

1. The LOAD-SHOW switch (S2) is in the SHOW position.

2. The SHOW limit switch (S3A) is open.

3. The auto-focus limit switch (S3B) is closed, closing the auto-focus circuit.

4. The LOAD limit switch (S4) is closed (on the Old version).

5. On the New version, S4 is S4A that is closed, and the added motor brake switch (S4B) is open.

D. SLIDE-CHANGE CYCLE - With the projector in the SHOW mode, if either button on the slide-change control box (FORWARD or REVERSE) is depressed, pushbutton S7 is closed, closing the drive motor circuit. The following steps take place during the cycle:

1. As the slider assembly begins to move toward the LOAD position, the SHOW limit switch (S3A) closes, shorting S7 and allowing the operator to release pushbutton switch S7 without interrupting the slide-change cycle.

2. Immediately after the SHOW limit switch (S3A) closes, the auto-focus limit switch (S3B) opens, opening the auto-focus circuit so that the auto-focus will not run during the slide-change cycle.

3. The slider assembly travels to the LOAD position and returns to the SHOW position without stopping. As the slider assembly approaches the SHOW position, it closes the auto-focus circuit, and opens the SHOW limit switch (S3A) to open the drive motor circuit.

4. The drive motor stops, the motion of the slider assembly stops in the SHOW position, and the slide-change cycle is complete.

E. SHOW TO LOAD - When the LOAD-SHOW switch (S2) is set to LOAD:

1. The drive motor circuit is completed through the LOAD limit switch (S4), or through LOAD limit switch (S4A) on the New version. As the slider assembly begins to move toward the LOAD position, the SHOW limit switch (S3A) closes, and the auto-focus limit switch (S3B) opens, opening the auto-focus circuit.

2. As the slider assembly approaches the LOAD position, it opens the LOAD limit switch (S4, on the Old version), opening the motor circuit and stopping the slider assembly in LOAD position. On the New version S4 is S4A that opens, opening the motor circuit just before S4B closes, shorting the drive motor and stopping the slider assembly in LOAD position.

F. COMMENTS

1. The slide-change control box must be plugged in to allow the slide changing mechanism to work, as the drive motor circuit is open with the reversing switch (S5) removed.

2. With the projector in LOAD mode, pressing the FORWARD or REVERSE button on the slide changing control box will not operate the slide changing mechanism, because it does not complete the drive motor circuit.

3. Event sequence of the slide-change cycle is the same in the FORWARD mode as in the REVERSE mode. The only differences are in the direction of rotation of the drive motor, the gears in the gear train, and the direction the slide tray is advanced.

3-12. TIMER CIRCUIT (See Schematic Diagrams)

With the projector in the SHOW mode and the viewing time control (S6) positioned away from OFF, the timer circuit is put into operation. Capacitor C4 charges at a rate depending on the setting of potentiometer R7. When the voltage across C4 reaches approximately 7.0 volts (break-down voltage of CR5), CR5 conducts, the gate of SCR3 becomes positive with respect to cathode, and SCR3 turns on, shorting out S7 and initiating the slide-change cycle -- refer to paragraph 3-11, D. After the cycle starts, S3A closes, shorting SCR3, thereby shutting off SCR3 and discharging C4. When S3A opens at the end of the slide-change cycle, the timer circuit begins another cycle.

Capacitor C5 is a filter capacitor to keep SCR3 from starting a slide-change cycle initiated by noise. Resistor R9 discharges C5 and maintains a no-voltage condition from gate to cathode of SCR3 until CR5 conducts. The function of CR5 is to increase the voltage threshold of operation for the timer circuit. Diode CR6 discharges capacitor C4 when S3A closes to reset the timer circuit. Capacitor C8 limits the rate of voltage rise applied to SCR3 and prevents a pulse from triggering SCR3.

3-13. AUTO-FOCUS CIRCUIT (See Schematic Diagrams)

The function of the auto-focus system is to maintain constant distance between the main projector lens and the slide being viewed on the room screen. That distance is determined by the distance to the room screen and the focal length of the lens. As the projector has no means of detecting the distance to the room screen, the first slide must be focused manually.

The photo-cell is the sensing device for the auto-focus system. It is a single, center-tapped, photo-resistive cell, electrically functioning as two cells, R3A and R3B. The two cells, with part of the power transformer secondary, form a bridge. If the light beam (controlled by the auto-focus optics) hits the photo-cell off center so that one side is illuminated more than the other, the bridge is unbalanced, creating a signal that activates the auto-focus circuit and drives the auto-focus motor. When the motor drives, the main projection lens moves, carrying with it auto-focus lens No. 2 (see Figure 6-1). As auto-focus lens No. 2 moves, the light beam to the photo-cell moves. When the light beam reaches the center of the photo-cell, the bridge is balanced, the motor stops, and the beam stays at the center of the photo-cell. If the slide "pops," the beam is deflected off center, and the circuit starts the cycle again to correct the focus.

Assume that more light is falling on R3A than on R3B; R3A will then be of lower resistance than R3B. Their common point (Q1 base) will be of the same phase, with respect to the transformer secondary center tap, as SCR1 anode and SCR2 cathode. When Q1 base goes negative, Q1 turns on, conducting through R5 and CR3, establishing a gate-to-cathode voltage that turns on SCR2. SCR2 then acts as a switch, passing current for the auto-focus drive motor (M2) during the half cycle when R3A is negative with respect to R3B. On the other half cycle, when R3A is positive with respect to R3B, Q1 is turned off, SCR2 is turned off, and no current goes through the motor.

If more light falls on R3B than on R3A, making R3B of lower resistance than R3A, Q1 turns on during the other half cycle. The triggering circuit then passes through R12, R6, and CR4, turning on SCR1, and driving the motor in the opposite direction.

Capacitors C3 and C7 are filter capacitors to help prevent SCR2 and SCR1 from triggering on noise. Resistors R5 and R6 also act to decrease sensitivity of SCR2 and SCR1 to help prevent triggering on noise. Resistor R1 is a current-limiting resistor for Q1. Resistor R10 maintains stability of Q1 when Q1 is off. R11 provides transistor reference for Q1 when S3B is open. R12 is a damping resistor serving as a brake when voltage is removed from the motor, M2. C9, on M1, is a filter capacitor to prevent spiking and motor brush noise from affecting the auto-focus circuit.

SECTION IV

CHECKOUT AND TROUBLESHOOTING

4-1. TEST EQUIPMENT AND TOOLS

A volt ohmmeter, such as a Triplett Model 630-NA, or equivalent, and an oscilloscope are recommended for troubleshooting. No special tools are required. Ordinary screwdrivers, diagonal cutters, long nose pliers, a soldering iron, and other common hand tools are adequate. A ¼ inch socket wrench with an 8 inch extension and a ¼ inch open end and box end wrench can be an added advantage.

4-2. OPERATIONAL CHECKOUT

4-3. SLIDE-CHANGING FUNCTIONS

Apply power to the projector, install either a straight tray or round tray with slides, and operate the projector. Locate the malfunction with the aid of the troubleshooting data, paragraph 4-7.

4-4. AUTO-FOCUS

With the projector operating in SHOW mode and a slide in the normal viewing position, grasp the lens in one hand and force it in and out. If auto-focus is working, it will resist this action in both directions.

4-5. AUTOMATIC TIMER

With projector operating in SHOW mode, operate the automatic timer. Refer to paragraph 4-12.

4-6. TROUBLESHOOTING

Look first for obvious things: broken wires, broken or discolored components, or evidence of physical damage. Faults such as arcing and burned out resistors or transformers are often detected by sight, smell, or sound. Some must be located by voltage and resistance measurements. Check electrical connections at connectors. For mechanical difficulties, look for loose screws and loose components. Isolate the section of the projector or circuit at fault.

A 6-32 Heli-Coil (part number 7551-06) using 6-32 inserts can be used to tighten loose screws that have stripped out. It is manufactured by Heli-Coil Insert Products Division, Danbury, Connecticut 06810.

4-7. TROUBLESHOOTING DATA (See Schematic Diagrams)

4-8. SLIDE-CHANGE MECHANISM NOT WORKING

A. From SHOW to LOAD

1. S4 (Old version), S4A (New version), not closing.

2. S4B (New version), shorted.

B. From LOAD to SHOW

S3A not closing.

C. C9 shorted - motor shorted.

D. Defective motor (M1).

E. No voltage from transformer.

F. Defective switch, S7 or S2.

4-9. SLIDE-CHANGE MECHANISM DRIVES CONTINUOUSLY

A. In SHOW mode.

1. S3A not opening at end of slide-change cycle.

2. Auto timer circuit malfunction (refer to paragraph 4-12).

3. Switch stuck in slide-change control box (S7).

B. In LOAD mode.

1. Old version, S4 not opening at end of LOAD cycle.

2. New version, S4A not opening and S4B not closing.

4-10. SLOW SLIDE-CHANGE CYCLE

A. CR1 or CR2 open: voltage to drive motor would be low.

B. A section of the transformer secondary shorted or open: voltage to the motor would be low.

C. Resistance of S3A (SHOW mode):

1. With projector in LOAD position, the power cord and slide-change control box removed: Check from pin 4 to pin 5 of the slide-change control box connector; the ohmmeter should read less than ½ ohm.

D. In LOAD mode, resistance of S4 (Old version) S4A (New version.

With projector in SHOW position, the power cord and slide-change control box removed: Check from pin 5 on slide-change control box connector to the white lead on the circuit board; ohmmeter should be less than ½ ohm.

E. Check the drive motor (M1) from pin 2 to pin 3 of the slide-change control box connector; resistance should be 10 ohms. If resistance is too low, check C9 and drive motor separately.

F. Look for mechanical interference, slider assembly misalignment, or moving parts that need lubrication (refer to paragraph 5-2).

G. Capacitor C1 open.

4-11. AUTO-FOCUS MALFUNCTIONS

A. No auto-focus.

1. In SHOW mode, S3B not closing.

2. Auto-focus motor (M2) open: Disconnect one side of motor from circuit board and check resistance of the motor; should be one ohm.

3. Q1 failure, may put AC on auto-focus motor.

4. SCR1 or SCR2 shorted, AC on motor.

5. R12 shorted.

6. R1 open, Q1 cannot conduct.

7. R3A or R3B open, Q1 cannot conduct.

B. Auto-focus drives only in one direction.

1. SCR1 or SCR2 open.

2. R6 or R5 open.

3. C3, or R5 shorted: SCR2 cannot turn on. C7 or R6 shorted: SCR1 cannot turn on.

4. CR3 or CR4 open, no path provided for current in one direction.

C. Auto-focus erratic.

C3 or C7 open or shorted.

D. Auto-focus runs continuously.

1. R3A or R3B shorted.

2. CR3 shorted, turns on SCR1.

3. CR4 shorted, turns on SCR2.

4. C3 or R5 open, SCR2 will trigger by noise or static electricity.

5. C7 or R6 open, SCR1 will trigger by noise or static electricity.

E. Auto-focus runs during slide-change.

1. S3B not opening during slide-change.

2. R11 shorted.

F. Auto-focus hunting or oscillating.

1. R12 open.

2. No slide in SHOW aperture.

NOTE

In some projectors, when no slide is in the SHOW aperture, the auto-focus will hunt, seeking a balanced reading. Should not occur with slide in SHOW aperture.

4-12. TIMER MALFUNCTIONS

A. Projector works only on manual.

1. S6 defective.

2. R7, R8, CR5, or SCR3 open.

3. Cr, C5, or R9 shorted.

B. Projector runs continuously.

1. CR5, CR6, C8, or SCR3 shorted.

2. C4 or C5 open.

3. S3A not closing, to short SCR3 and C4.

C. Erratic timing.

C5 open.

D. Timer operates at minimum time only.

R7 shorted.

E. Time interval adjustable to zero time.

R8 shorted.

F. Time interval consistently short.

CR6 open, timer circuit does not reset when S3A is closed, C4 voltage continues to increase.

4-13. COMPONENT REACTIONS

A. R1 shorted, may damage Q1.

B. R11 open, may damage Q1.

C. M1 shorted, may damage CR1, CR2, or SCR3.

D. R10 open, may damage Q1.

E. C9 open (620, 630, 640), may cause erratic auto-focus.

SECTION V

MAINTENANCE

5-1. TEST EQUIPMENT AND TOOLS

Maintenance of the Honeywell Series 600 projectors requires no special tools. Ordinary screwdrivers, diagonal cutters, long nose pliers, a soldering iron, and other common hand tools are adequate. A ¼ inch nut driver, 8 inches long; a ¼ inch open end and box end wrench would be an added convenience. Special alignment tools, available from the factory, simplify alignment procedures.

5-2. LUBRICANTS

Apply a light coat of water-soluble wax to all screws that go into plastic material. To prevent stripping threads in plastic material, replace all screws with new screws; or clean the screw threads before replacing. Maintain a light coat of AC type silicone grease (medium) on the following parts:

A. Pulley gear.

B. Gear with pinion.

C. Drive gear.

D. Drive gear washer.

E. Index gear.

F. Idler gear.

G. Index pinion and ball detent.

H. Cam.

I. Auto-focus worm gear.

J. Upper slide guide.

K. Crank roller.

L. Crank roller guides.

5-3. DISASSEMBLY

5-4. TOP ASSEMBLY (See Figure 6-18)

Remove the slide-change control box (1) by pulling it toward the rear of the projector. Remove the top assembly (21) by lifting it from the flange at the rear of the projector.

This is as far as the unit need be disassembled to clear most malfunctions. To operate the projector with the top assembly off, replace the slide-change control box.

5-5. UPPER HOUSING (See Figure 6-18)

With the slide-change control box and top assembly removed, remove five screws (16) on the bottom of the base sub-assembly. With the upper housing removed, the three main assemblies are visible: the blower assembly, the aperture assembly, and the mechanism plate assembly.

When replacing the upper housing, seat the five brackets (14) in the alignment grooves on the base sub-assembly, and the circuit board in the alignment grooves in the upper housing. There are two flanges at the right rear of the upper housing that straddle the power switch bracket.

If the upper housing must be replaced with a new part, replace the preview aperture button (11, Figure 6-18) to insure that the slot for the button in the upper housing is fully covered.

NOTE

Do not remove or loosen the aperture assembly unless it is absolutely necessary. Realignment is difficult without alignment tools. It is not necessary to remove the aperture assembly, to remove the blower, or mechanism plate assembly.

5-6. SWITCH HOUSING ASSEMBLY (See 22, Figure 6-19)

The Old version switch housing assembly H73000149001, with three pins on the LOAD-SHOW switch is no longer available. The New version (-002) has six pins on the LOAD-SHOW switch and can replace the Old version (3 pins) by referring to the Old and New version wiring diagrams, and use only pins one, two, and three of the New version switch.

5-7. BLOWER ASSEMBLY (See Figure 6-19)

A. Remove the upper housing as described in paragraph 5-5.

B. Remove lamp cover (8).

NOTE

Old version rail (-001) must be used with Old version base, New version rail (-002) must be used with New version base. Spacers, H73000515-001, are used with Old version only, delete for New version. If

Old version base is replaced by New version, the Old version rail must be replaced by New version. The letter H is molded in the New version base sub-assembly, just under the tray channel and opposite the blower assembly. The letter H is also molded inside the New version rail, just under the handle.

CAUTION

When replacing the rail, be careful not to tighten the screws too tight. On Old version with spacers, it will crack the base. On New version, it will bind the tray channel, and/or strip the threads.

C. Remove the rail (20, Figure 6-18) by removing four screws (17 and 18).

D. Remove the tray channel (49) by removing four screws (45).

E. Remove five screws (42, 44 [qty. 3] and /11/, Figure 6-19), holding blower assembly to the base sub-assembly.

F. Remove screw (11) holding blower assembly to the aperture assembly.

G. Remove the edit plate assembly (4, Figure 6-21) and screw (25) holding the tie bracket (26).

H. Lift blower assembly out.

5-8. BLOWER MOTOR (See Figure 6-19)

A. Remove blower assembly as described in paragraph 5-7.

B. Remove two screws (41) holding motor (35) to the blower housing (34).

C. The blower wheel (33) is held by friction and can be pressed on or off.

D. The blower wheel (33) can be replaced by removing three screws (11) holding lamp housing (29) to the blower housing (34).

5-9. CORD REEL ASSEMBLY (640) (See Figure 6-22)

A. Remove blower assembly as described in paragraph 5-7.

B. Remove wire nut from the three black leads.

C. Disconnect the lead to cord reel (copper wires) and replace wire nut on two leads with silver wires temporarily, to maintain grouping.

D. Remove wire nut from two leads; one black and one white.

E. Disconnect cord reel lead (black with copper wires).

F. Remove four screws (38) holding cord reel assembly to base sub-assembly.

G. Lift cord reel assembly (Figure 6-22), watching for the four spacers at the four screw positions. Watch for the cord lock (9) and roller (10) to fall out.

H. Pull the cord out through the bottom of the base sub-assembly.

I. To replace cord reel assembly, install cord lock and roller. Pull cord out a short distance, allow cord to return against the cord lock until it is locked. This will hold the lock and roller in place.

J. Position the four spacers, thread cord through bottom of base sub-assembly, align cord reel assembly and secure with four screws.

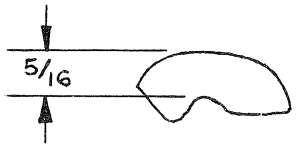
K. Route cord along the bottom of the base sub-assembly, and as close to under the aperture assembly as possible, to have clearance for wiring harness on the blower assembly.

L. Reconnect leads.

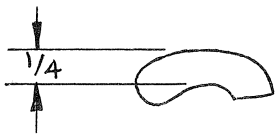
5-10. MECHANISM PLATE ASSEMBLY (See Figure 6-20)

IMPORTANT

The Old version mechanism plate has been discontinued. The New version mechanism plate will accept both the New and Old shutter assembly. The New version shutter assembly will not operate on the Old version mechanism plate.



Shutter arm slot on New version mechanism plate. (H73001466-001)



Shutter arm slot on Old version mechanism plate. (H73000968-001)

The mechanism plate assembly need be removed only to repair or replace the drive gear (19), slider assembly (56), or the crank assembly (64).

The aperture assembly need not be disturbed when removing the mechanism plate assembly.

Insure that the edit plate assembly (4, Figure 6-21) is down, to hold the interlock arm (18) up.

A. Remove the upper housing as described in paragraph 5-5.

B. Remove the rail and tray channel as described in paragraph 5-7, C and D.

C. Move the slide-changing mechanism to SHOW position.

D. Extend the elevate leg (40, Figure 6-18) to clear the hole in the mechanism plate assembly.

E. Remove five screws (9, Figure 6-20) and one screw (28, Figure 6-20) that hold the mechanism plate assembly to the base sub-assembly.

F. See Figure 6-5 for removal reference and lift the corner of the upper slide guide to free the slider assembly, and slide the mechanism plate toward the front of the projector and lift.

5-11. APERTURE ASSEMBLY (See Figure 6-21)

NOTE

Unless absolutely necessary, do not remove or loosen aperture assembly. Realignment is difficult without special alignment tools.

Either the mechanism plate assembly, or the blower assembly must be removed to remove the aperture assembly.

If the blower assembly is removed as described in paragraph 5-7, only two more screws (24) hold the aperture assembly to the base sub-assembly.

If the mechanism plate assembly is removed as described in paragraph 5-10, proceed as follows:

A. Remove two screws (24) holding aperture assembly to base sub-assembly.

B. Remove one screw (42, Figure 6-19) holding the aperture and blower assemblies to the base sub-assembly.

C. Remove tie bracket adjusting screw (Figure 6-10).

D. Remove screw (11 , Figure 6-19) holding aperture assembly to the blower assembly.

E. Slide aperture assembly toward the front of the projector to remove.

F. When replacing aperture assembly, insert the edit plate assembly (4, Figure 6-21) to raise the interlock arm.

5-12. DRIVE BELT (See Figure 6-20)

A. Remove upper housing as described in paragraph 5-5.

B. Move slider assembly to SHOW position.

NOTE

Be sure to replace the same screw with the light baffle, a longer screw will protrude through the mechanism plate assembly and jam the slider mechanism.

C. Remove Old version light baffle (70) by removing screw (6). Remove New version light baffle (87) by removing screw (88).

D. Remove shutter return spring (25).

E. Clip the two push-on retainers (24) holding the shutter assembly (21 and 23) and remove shutter assembly.

F. Remove drive motor (29) by removing three screws (28).

G. Remove switch retainer (17) holding switch S3A - S3B (55).

H. Manually turn gear with pinion (20) to move the slide changing mechanism away from SHOW position, allowing switch S3A - S3B to drop. Tilt switch and remove.

I. Clip one push-on retainer (24) holding gear with pinion. Remove drive belt (26).

J. Replace new drive belt on pulley gear (27) and drive motor pulley (32). Pull drive motor to its mount and replace screws.

K. Replace gear with pinion and new push-on retainer.

L. Position switch S3A - S3B in its receptacle and return slide changing mechanism to SHOW position by turning gear with pinion to support switch S3A - S3B. Replace switch retainer.

M. To install shutter assembly, move slide changing mechanism away from SHOW position to insure clearance for SHOW shutter actuating arm through the mechanism plate assembly slot.

5-13. PROJECTION LAMP

When replacing the projection lamp, handle with a clean, dry cloth or tissue to avoid getting skin oil on the lamp. Skin oil left on the lamp etches the envelope when the lamp is hot, and increases the probability of breakage. If fingerprints do get on the lamp, wipe it with a clean, dry cloth before installing the lamp.

CAUTION

Replace the lamp cover assembly after projection lamp replacement to prevent heat from melting or warping the rear of the upper housing.

5-14. LIGHT BAFFLE

The light baffle and associated parts are not interchangeable between the Old and New versions except as noted in the parts list on page 6-41. If the mechanism plate assembly has been replaced with the New version, a New version light baffle must be supplied. Refer to Figure 6-20 to determine with new parts are required.

5-15. ADJUSTMENTS

5-16. GEAR TRAIN ALIGNMENT

The drive gear, idler gear, and index gear should be aligned as shown in Figure 6-17.

5-17. UPPER PUSHER ARM ADJUSTMENT

A. Without alignment gauge (Figures 6-6 and 6-7). A Sawyers "Easy Edit" straight tray with the top part removed is used because of its slight variants from most popular trays, its wider septums, and its accessible top removal. When the projector is aligned for Sawyers trays, it is certain to be aligned for other popular trays.

NOTE

If upper pusher arm has not been loosened, no adjustment should be necessary.

1. Remove rail as described in paragraph 5-7, C.

2. Move slide changing mechanism to LOAD position.

3. Insert a Sawyers straight tray (Figure 6-6) in the tray channel (Figure 6-7).

4. Check to see that the back surface of the upper pusher (7, Figure 6-20) is aligned or flush with the same surface on the lower pusher (2), see Figure 6-7.

5. Press the upper pusher toward the rear of the projector, and into the slide tray. It should swing freely over the tray septums.

6. If adjustment is necessary, loosen the two screws (6) holding the upper pusher to the lower pusher. Adjust upper pusher to swing clear of the tray septums, when pressed toward rear of the projector, making sure the rear surfaces of the upper and lower pusher are aligned or flush.

B. With alignment gauge (Figures 6-11 and 6-12). Alignment tool number T-50443-4 is used for pusher arm adjustment.

1. Remove rail as described in paragraph 5-7, C.

2. Insert alignment tool in the tray channel with its grooves aligned on the index pinion (12, Figure 6-20).

3. Flip the upper pusher into the gauge without moving it to one side or the other. If it goes easily into the gauge about 1/8 inch, it is correctly aligned.

4. If adjustment is necessary, loosen the two screws (6) holding the upper pusher (7) to the lower pusher (2). Insure the rear surfaces of the upper and lower pushers are aligned or flush, see Figure 6-12.

5. Adjust upper pusher alignment as described in step number 3 above.

5-18. APERTURE ASSEMBLY ALIGNMENT

A. Without alignment tools (Figures 6-6, 6-7, and 6-10). A Sawyers straight tray, described in paragraph 5-18, is used as illustrated in Figure 6-7).

IMPORTANT

Always recheck the ejector arm stroke (paragraph 5-19) if aperture assembly alignment, or tray back-up adjustment (paragraph 5-20) has been altered.

NOTE

The upper housing must be installed to properly align the aperture assembly.

1. Set the projector in LOAD position, insert straight tray, and set projector in SHOW position.

2. Remove top assembly (21, Figure 6-18). Set S2 to LAMP for better observation.

3. Refer to Figure 6-7, and determine if the center line of the lower slide guide is in line with the tray septum center line and the aperture assembly is parallel to the mechanism plate assembly.

4. Set projector to LOAD position and remove slide tray. With lamp on, place a right triangle in the tray channel and check vertical alignment by sighting the center lines of the jaw assembly, upper slide guide, and the lower slide guide (Figure 6-10).

5. If adjustments are necessary:

   a. Insert a Sawyers straight tray in the tray channel.

   b. Set S2 to SHOW and S1 to LAMP.

   c. Loosen two screws (24, Figure 6-21) holding aperture assembly to the base sub-assembly.

   d. Loosen one screw (42, Figure 6-19) holding blower assembly and aperture assembly to the base sub-assembly, and one screw (⟨11⟩) holding aperture assembly to the blower assembly.

   e. Loosen tie bracket adjusting screw (Figure 6-10).

   f. Position aperture assembly to align center lines of slide guide and tray septum, and parallel to the mechanism plate assembly, see Figure 6-7.

g. Partially tighten and screw (42, Figure 6-19) holding both blower and aperture assemblies to the base sub-assembly.

h. Recheck aperture assembly alignment and partially tighten screw on the opposite end of aperture assembly.

i. Recheck alignment and tighten the two screws, then tighten the center screw.

6. Position the aperture assembly in vertical alignment as described in step d and tighten tie bracket adjusting screw.

a. Repeat step number 3. If further adjustment is made, step number 4 will have to be repeated.

b. Tighten screw (⟨11⟩ , Figure 6-19) holding aperture assembly to blower assembly.

c. Replace tray back-up adjustment bracket (Figure 6-13) and adjust tray back-up clearance as described in paragraph 5-20.

B. With alignment tools (See Figures 6-8 and 6-9). Place alignment tool T506114 (Figure 6-8) in the tray channel as illustrated in Figure 6-9. Make sure the alignment tool is seated firmly in the tray channel.

If the aperture assembly does not center the pointer within the limits of the calibration marks on the alignment tool, and is not parallel to the mechanism plate, follow procedures described in paragraph 5-18, A, 5, c through i.

The aperture vertical adjustment is the same as described in paragraph 5-18, A, 6, a through c.

5-19. SLIDE EJECTOR ADJUSTMENT

IMPORTANT

If slide ejector adjustment is made, it will move the auto-focus bracket assembly (9, Figure 6-21). It will have to be readjusted as described in paragraph 5-21. Always recheck slide ejector stroke if aperture plate alignment or tray back-up adjustment has been made.

A. Without alignment tools (Figure 6-13). Place a straight tray with a slide in the tray channel and insure that the edit plate assembly is in place.

1. Push the slide a short distance toward the slide guide.

NOTE

The ejector arm stroke is often longer in REVERSE than FORWARD. To manually cycle the unit in REVERSE, turn the gear with pinion (Figure 6-17) counterclockwise.

2. Move the slide changing mechanism in REVERSE to transport the ejector arm from the SHOW side of the ejector arm guide to the LOAD side. When ejector arm falls, the slide should be just seated to the rear of the tray.

3. To insure the ejector arm stroke is not too short in FORWARD, turn the gear with pinion clockwise to transport the ejector arm from the SHOW side of ejector guide to the LOAD side. When the ejector arm falls, the slide should be no more than 1/32 inch from the rear of the slide tray.

NOTE

If ejector arm adjustment is necessary, and the upper housing is not removed, clear the tray back-up adjustment bracket by loosening the tray back-up adjusting screw (Figure 6-13).

4. To make a minor change in the stroke length, loosen the slide ejector arm adjusting screw nearest the tray channel. Push the upper slide guide down to lengthen the stroke or up to shorten the stroke.

5. To make a major change in the stroke length, loosen both ejector arm adjusting screws that hold the upper slide guide to the aperture plate.

6. Move the upper slide guide toward the tray channel to lengthen the stroke or away from the tray channel to shorten it.

7. Partially tighten the two adjusting screws, and recheck steps 3 and 4, tighten screws.

B. With alignment gauge (Figure 6-15). Use alignment gauge T-50567-10 (Figure 6-14). Seat the gauge tray channel with its flush pin centered on the slide guide. Insure that the edit plate assembly is in place.

NOTE

The ejector arm stroke is often longer in REVERSE than FORWARD. To manually cycle the unit in REVERSE, turn the gear with pinion (Figure 6-17) counterclockwise.

1. Move the slide changing mechanism in REVERSE to transport the ejector arm from the SHOW side of the ejector arm guide to the LOAD side. When the ejector arm falls, the flush pin should be within its go/no-go limits.

NOTE

If ejector arm adjustment is necessary and the upper housing is not removed, clear the tray back-up adjustment bracket by loosening the tray back-up adjusting screw.

2. Make ejector arm stroke adjustments as described in paragraph 5-19, A, 4 through 7.

5-20. TRAY BACK-UP CLEARANCE (Figure 6-16)

A. Place a round tray in the tray channel.

B. Check the clearance between the tray and tray channel as illustrated in Figure 6-16.

C. Loosen tray back-up adjusting screw (Figure 13).

D. Move tray back-up adjustment bracket toward tray channel to increase the clearance or away from tray channel to decrease the clearance. Tighten adjusting screw.

E. Insure that the tray is not in a bind and can be turned in both directions easily.

5-21. AUTO-FOCUS ALIGNMENT (See Figure 6-1)

NOTE

It will always be necessary to readjust the auto-focus lens bracket assembly (9, Figure 6-21) and check auto-focus after an ejector arm adjustment.

Tool number 50724 (or a .030 to .032 2 inch square) flat reflective surfaced metal slide with a ¼ inch square scribed in the center is used as a target slide.

A. Place the target slide in the show slide guide making sure slide is against the stop in SHOW position.

B. Set S2 to SHOW and S1 to LAMP.

C. Reflected light beam through the first auto-focus lens (Figure 6-1) should be within the ¼ inch square on the target slide.

To adjust, loosen screw (⟨15⟩, Figure 6-21) holding auto-focus bracket assembly (9).

D. The light beam through the second auto-focus lens (Figure 6-1 and 51, Figure 6-20) should be near the center of the photo-cell (13, Figure 6-23).

If vertical adjustment of the beam on the photo-cell is necessary, bend the mirror on the auto-focus bracket assembly.

E. The index (timing mark) on auto-focus gear (44, detail B, Figure 6-20) should be at top dead center, aligned with the vertical edge of the auto-focus motor bracket (40).

If index mark is within two or three teeth of top dead center, loosen two screws (36) holding photo-cell strap (35) and adjust photo-cell to position the index mark to top dead center.

F. Recheck steps C, D, and E. Deflect light beam with a pencil or tool driving auto-focus system in both directions. Index mark should return to top dead center when deflection is removed.

G. If index mark is off more than three teeth or auto-focus system does not align properly, the system must be realigned as follows:

1. Set S2 to SHOW and S1 to LAMP.

2. Check the auto-focus mirror number one (Figure 6-1) attached to the lamp housing (29, Figure 6-19) to determine light uniformity on the square hole in the aperture assembly between the two condenser lens holders (1, Figure 6-21). If a shadow touches one edge of the hole, bend the mirror slightly so that both edges of the hole are free from shadows.

3. Insert the target slide described in paragraph 5-21,A.

4. Adjust auto-focus bracket (9, Figure 6-21) to center the light beam within the ¼ inch square on the target slide as described in paragraph 5-21, C.

5. Disengage the auto-focus motor (42, Figure 6-20) from the auto-focus gear (44) by loosening the two screws (36, 41) and swing auto-focus motor away so the auto-focus gear turns freely.

6. Place a white card directly in back of auto-focus lens number two (Figure 6-1, and 51, Figure 6-20). Rotate the auto-focus gear completely around by hand, watching the light spot on the card. The light spot should remain circular during the complete revolution of the auto-focus gear.

   If a flat sided pattern appears, the shutter is blocking part of the light; bend the shutter slightly forward, just enough to clear the light path.

7. Position the auto-focus gear with its index (timing mark) (44, detail B, Figure 6-20) at top dead center.

   To prevent rotation of the auto-focus gear due to vibration of the auto-focus motor, a folded piece of cardboard or book of matches can be wedged between the lens carriage (47) and the auto-focus motor bracket (40).

8. Check to see if the light beam is vertically centered on the photo-cell.

   If vertical adjustment is necessary, bend the mirror on the auto-focus bracket assembly.

9. Recheck steps 6 and 8.

10. Loosen two screws (36) holding photo-cell strap (35) and adjust photo-cell to center light beam, and the auto-focus motor stops running.

11. Slide the auto-focus motor to engage its worm gear (43) with the auto-focus gear just far enough that the two screws (36, 41) holding the motor are approximately parallel to the front of the projector and tighten the two screws.

12. Remove the temporary wedge between the lens carriage and motor bracket, and recheck position of the index (timing mark) on the auto-focus gear. If it is not within plus or minus one tooth of top dead center, readjust photo-cell to position it within plus or minus one tooth of top dead center.

If the photo-cell cannot be adjusted to position the auto-focus gear index within this tolerance, adjust the photo-cell so that index is as close as possible to top dead center and tighten the photo-cell screws. Then adjust the auto-focus bracket, maintaining the light beam still within the ¼ inch square on the target slide, until the auto-focus gear index is within plus or minus one tooth of top dead center.

13. Check the sensitivity of the auto-focus system. Move a narrow strip of cardboard, about ½ inch wide, slowly across the photo-cell from the left driving the auto-focus system off balance. Remove the cardboard, note the position of the auto-focus gear index by counting the teeth to the motor edge. Move the cardboard slowly across the photo-cell from the right, driving the auto-focus system in the opposite direction. Remove the cardboard, note the position of the auto-focus gear index by counting the teeth to the motor edge. If a difference in the two positions is greater than two teeth, the auto-focus sensitivity is not correct. Repeat the auto-focus adjustment procedure.

Honeywell Slide Projector Models 600-610-620-630-640

Replacement of drive belt.

Remove top by lifting it from it's spring clips at rear of projector.

Remove upper housing by removing 5 screws from bottom of projector. When replacing the upper housing, seat the 5 brackets in the grooves on the base housing and the circuit board in the grooves in the upper housing. There are two flanges at the right rear of the upper housing that straddle the power switch bracket.

Move slider assembly to show or project position, all the way in.

Remove the light baffle, one screw.

Remove the shutter return spring.

Remove 2 push on retainers holding shutter assembly and remove the assembly.

Remove drive motor, 3 screws.

Remove spring clip that holds switch that is between drive motor and gear train.

Manually turn gear with pinion to move slider assembly toward tray allowing switch to drop. Tilt switch and remove.

Remove retainer and lift off gear with pinion. Lift off pulley gear.

Place new drive belt on pulley gear and drive motor pulley.

Upon reassembly, position switch in it's slot and return slider assembly to show or project position, all the way in. This will support the switch when the spring clip retainer is being replaced.

The drive belt part number is H73000237002, cost 60 cents.

The push on clip part number is H16761204002.

SECTION VI

PARTS LIST AND DIAGRAMS

This section includes a list of replaceable parts, assemblies, and schematic diagrams. When ordering spare or replacement parts, specify the unit model number, item description, and Honeywell's part number. The following explains the column heads used in the parts list:

INDEX REF - Lists the number of each part as shown in the diagram.

SCHEM REF - Lists the schematic reference designator of electrical parts.

HONEYWELL PART NO. - Lists the number by which an item may be ordered from Honeywell - Photographic Products Division, Denver, Colorado.

DESCRIPTION - Lists the part name and specifications required for identification.

QTY/UNIT - Lists the total quantity of each item used in the unit or assembly.

All parts listed are interchangeable between the Old version and the New version except as noted. Determine which version you are repairing and replace with the appropriate parts.

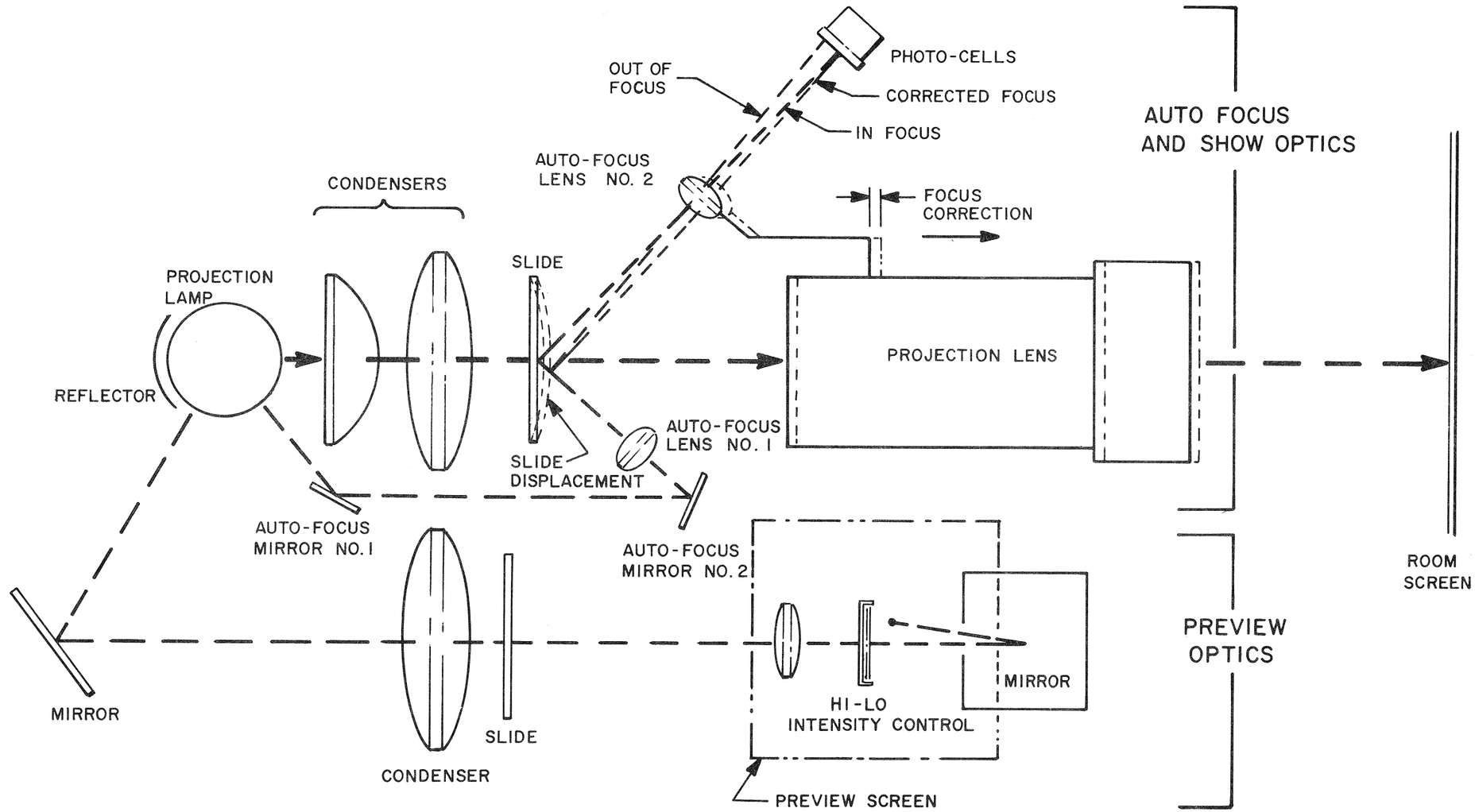


Figure 6-1.
Optical Systems Functions

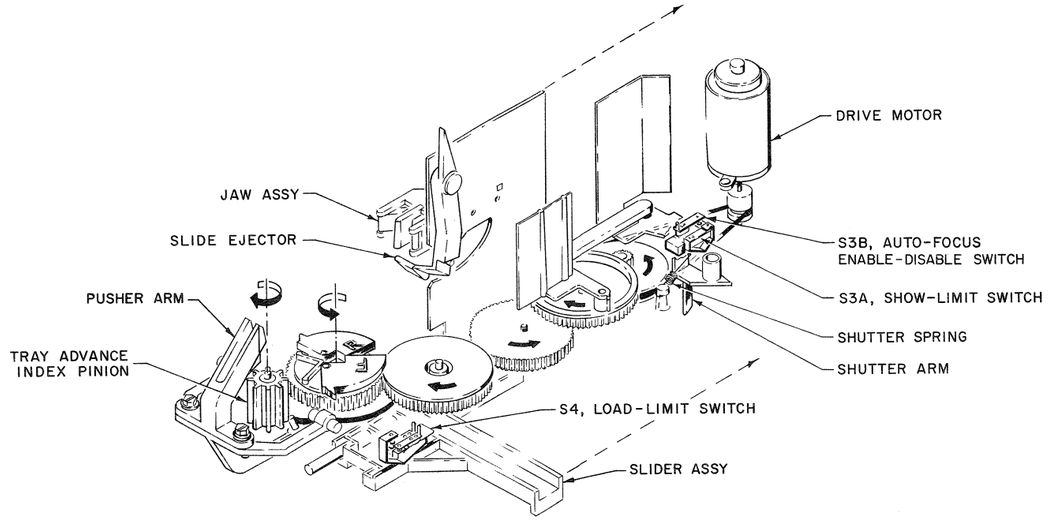


Figure 6-2.
Load Mode Mechanical Functions

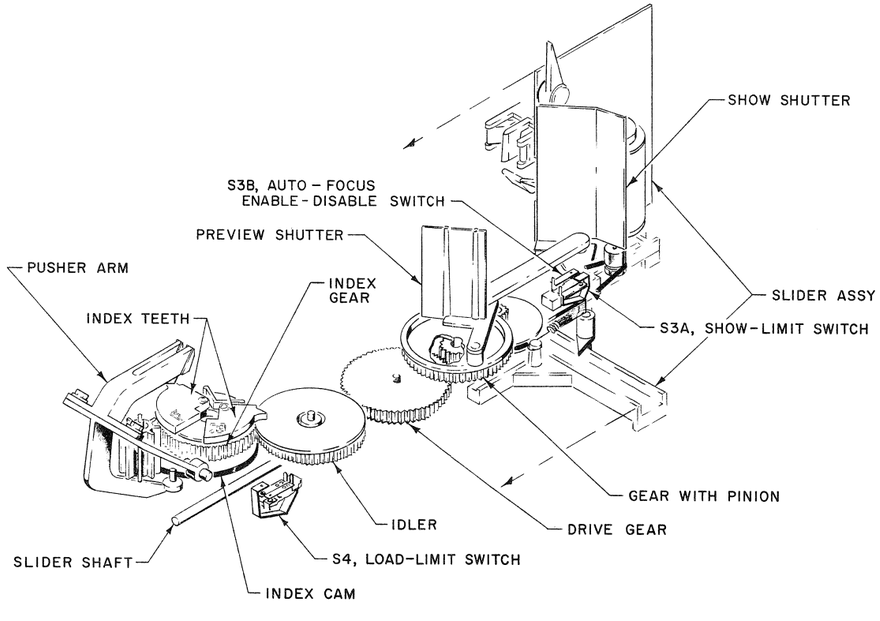


Figure 6-3.
Show Mode Mechanical Functions

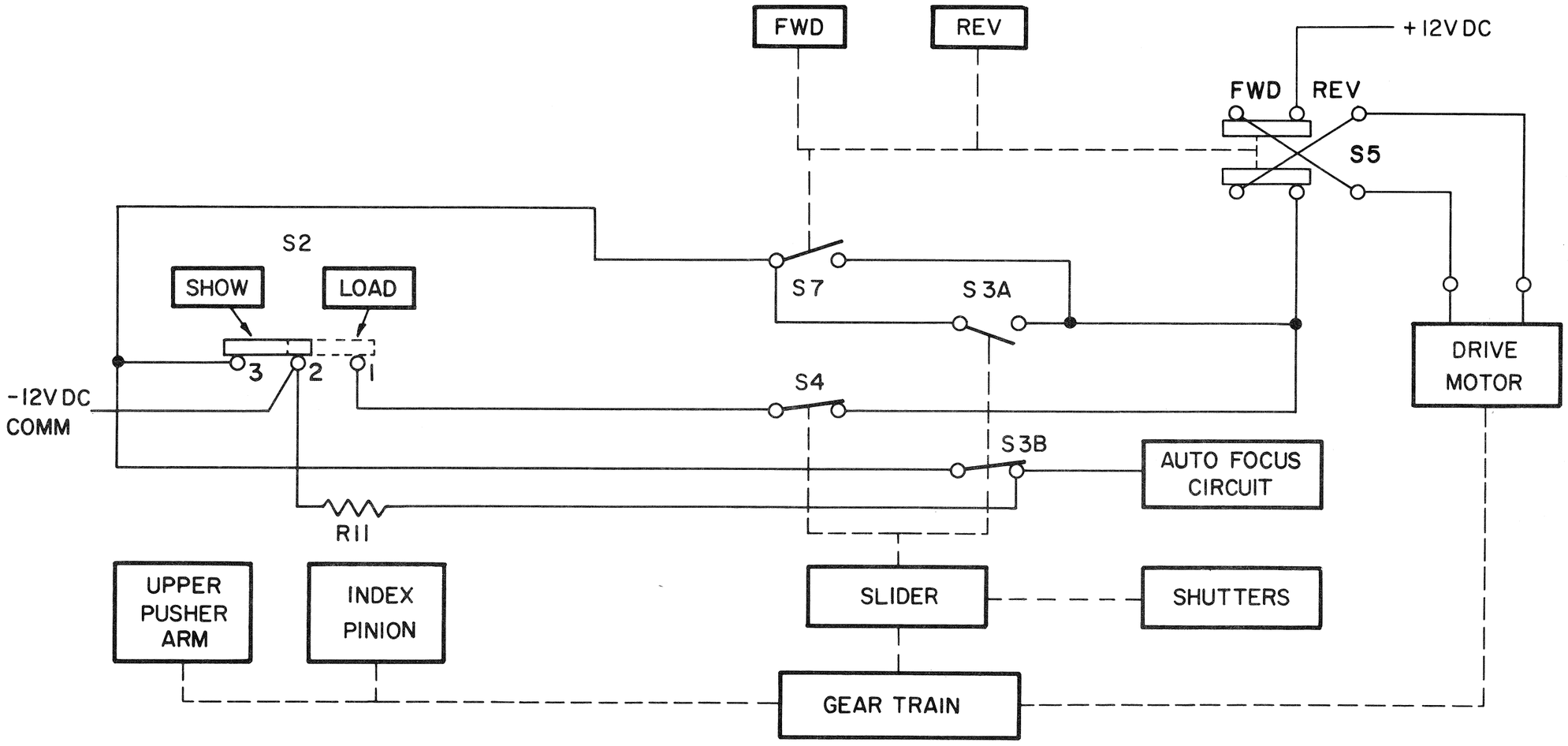


Figure 6-4.
Slide-Changing Electrical Functions
(Old Version)

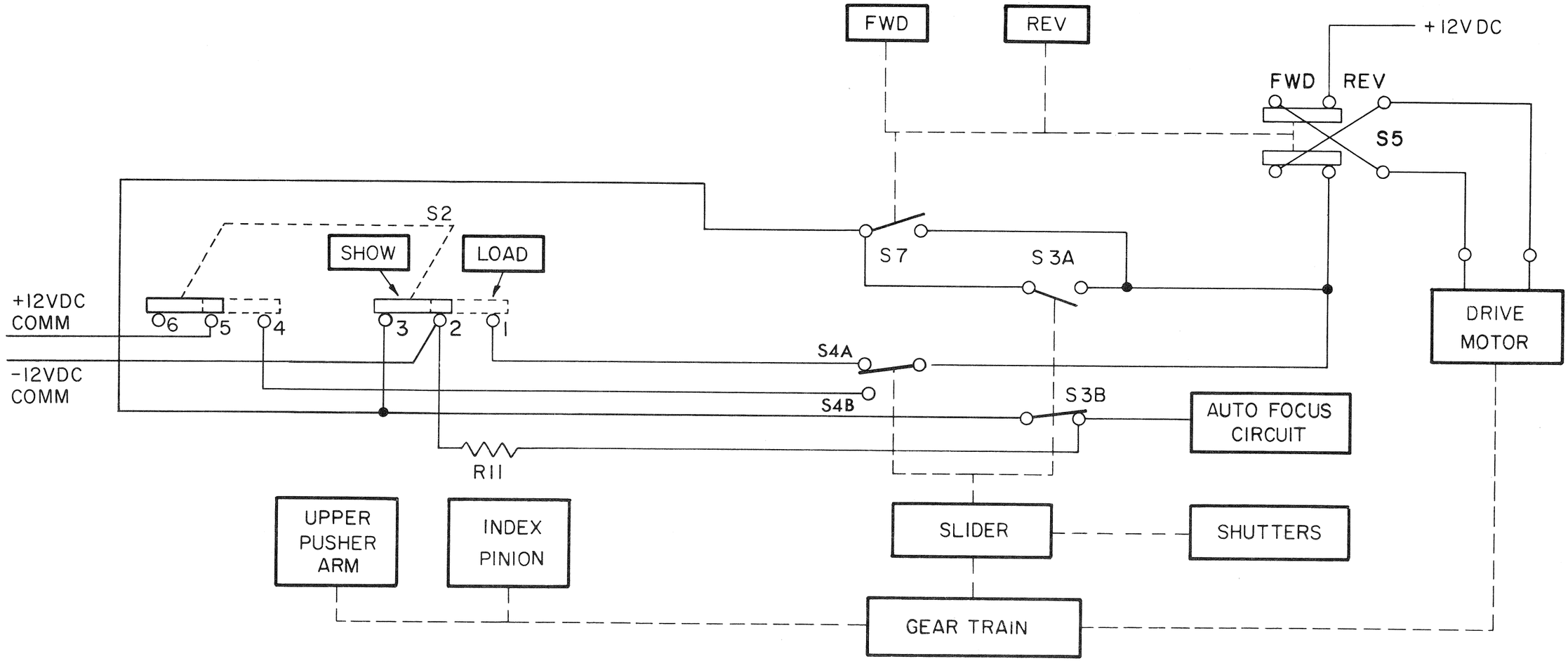


Figure 6-4A.
Slide-Changing Electrical Functions
(New Version)

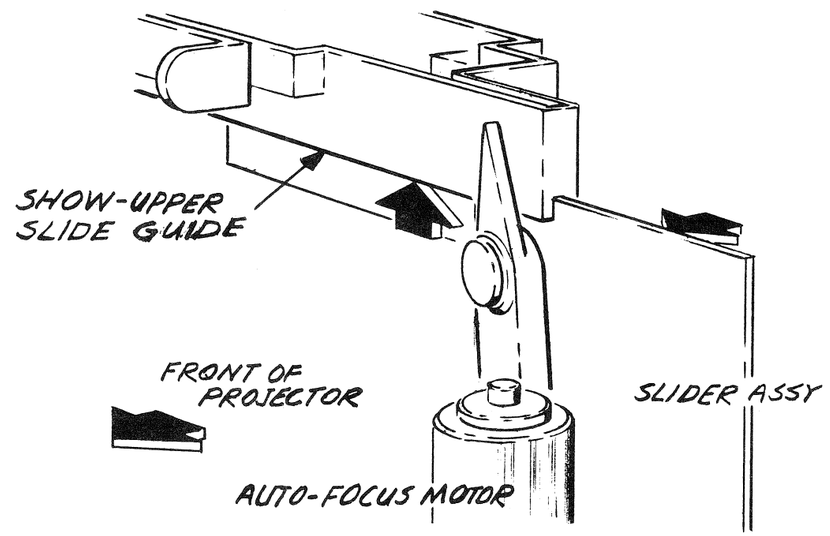


Figure 6-5.
Mechanism Plate Assembly Removal

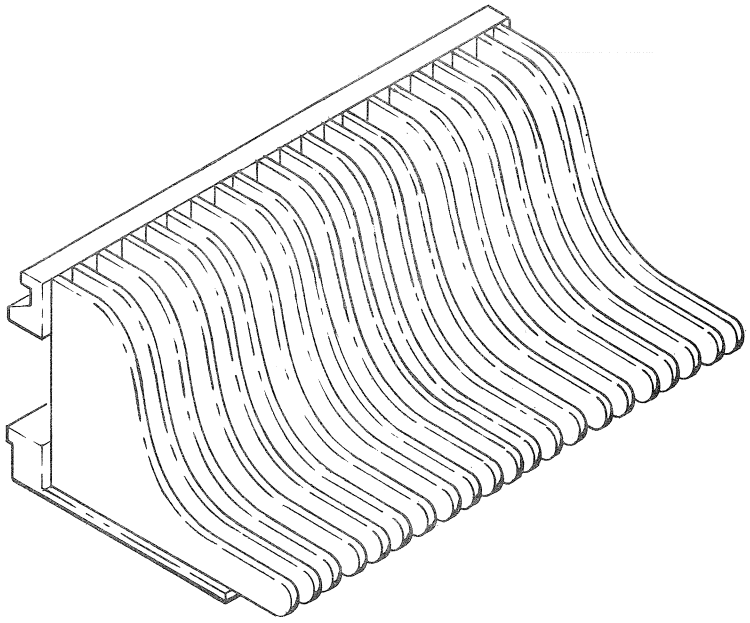


Figure 6-6.
Sawyer Easy Edit Tray
(Aperture Assembly Horizontal Alignment
and Upper Pusher Arm Adjustment)

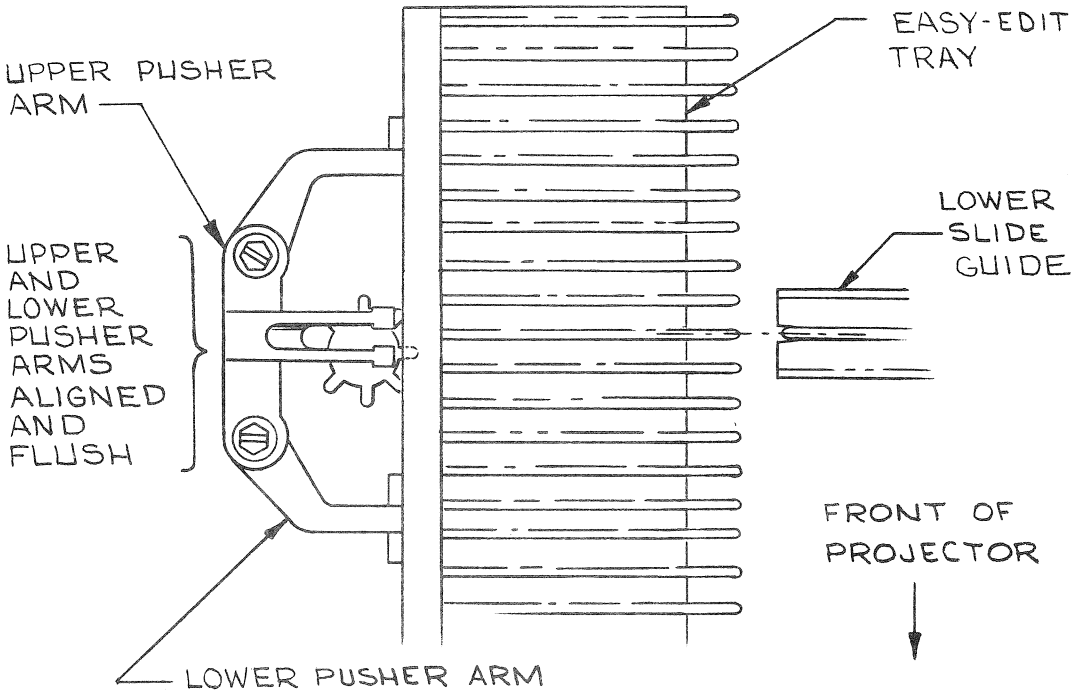


Figure 6-7.
Upper Pusher Arm Alignment
(without alignment tool)

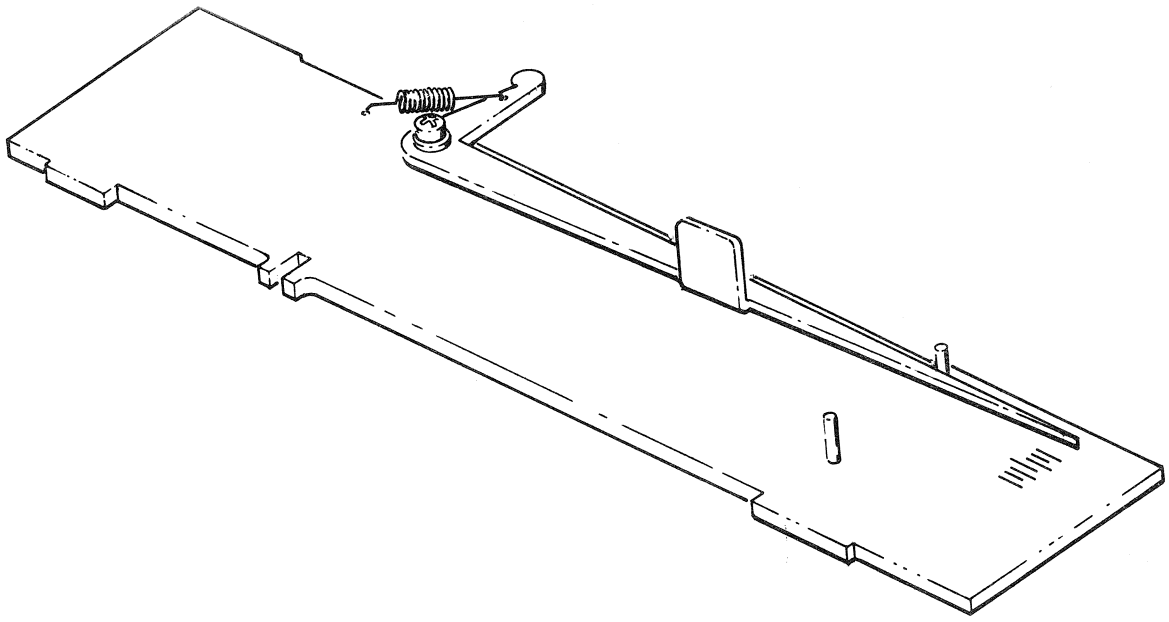


Figure 6-8.
Aperture Assembly Alignment Tool

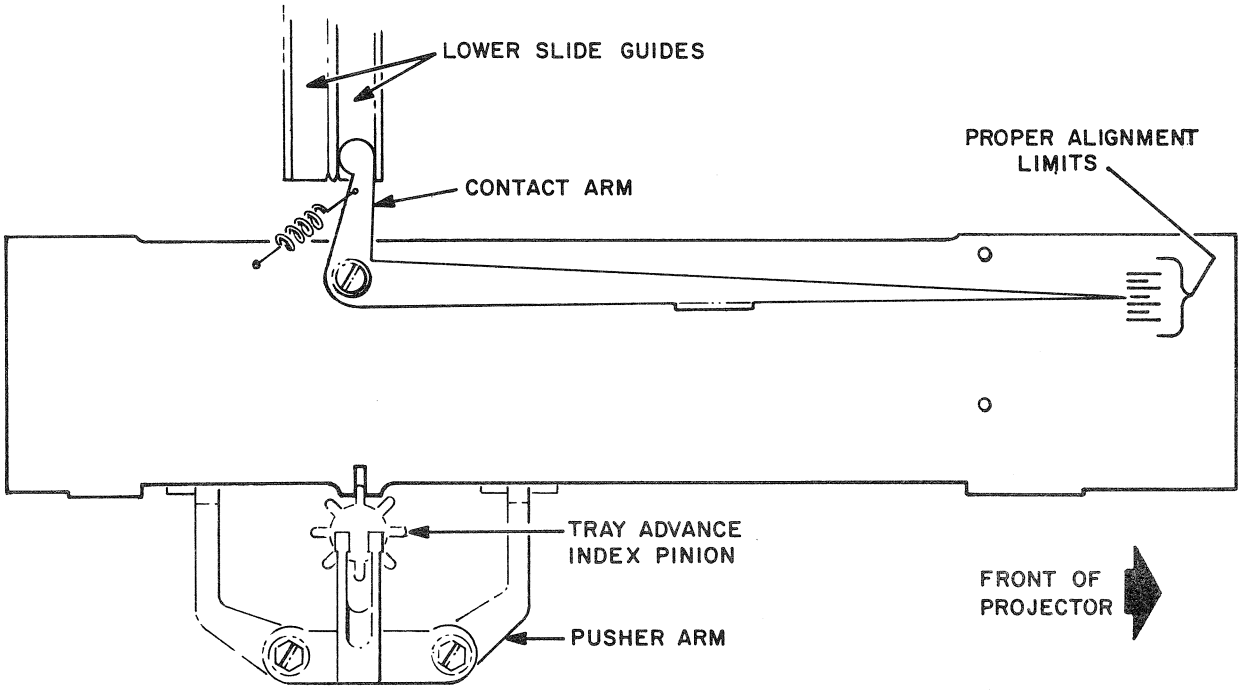


Figure 6-9.
Aperture Assembly Alignment Procedure
(with alignment tool)

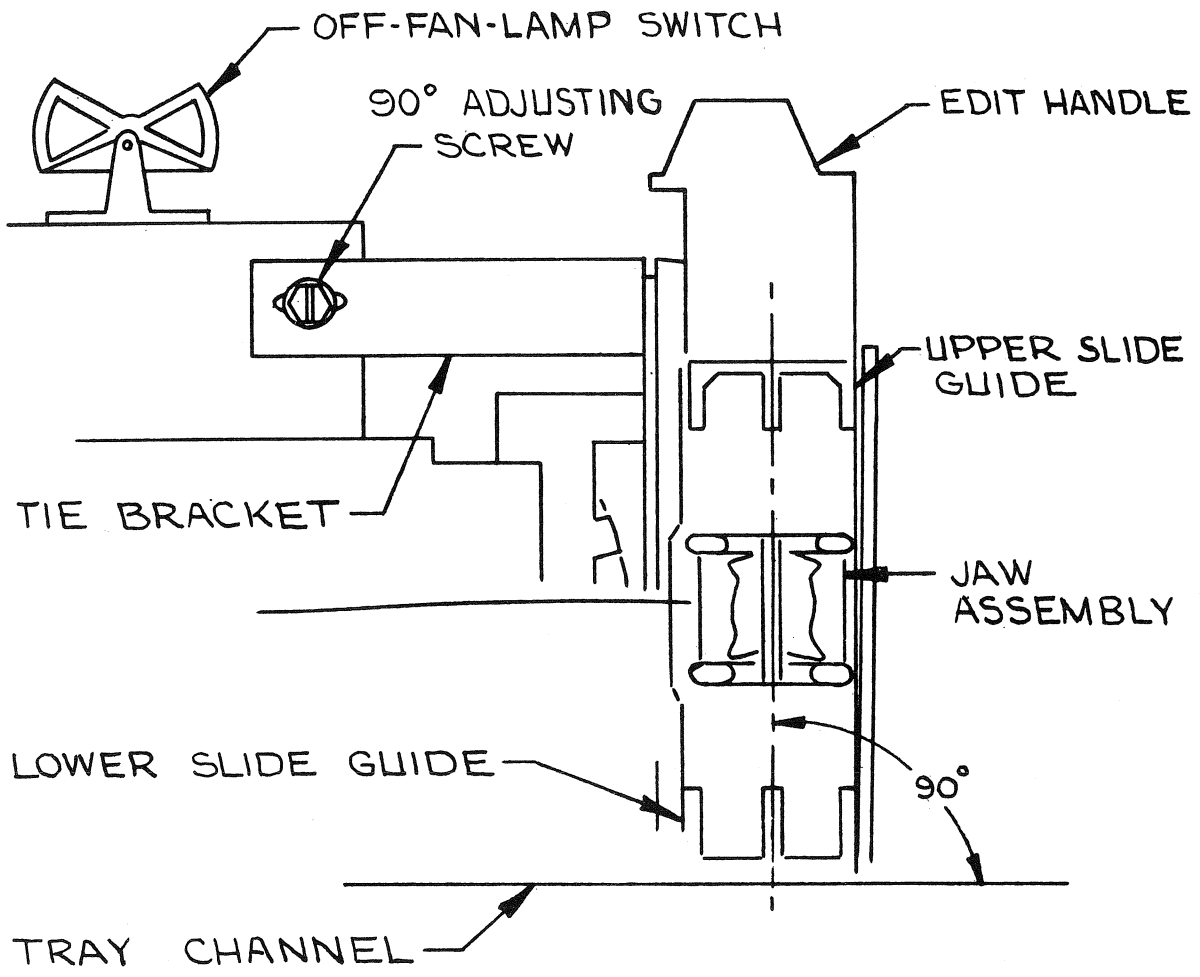


Figure 6-10.
Aperture Assembly Horizontal Alignment

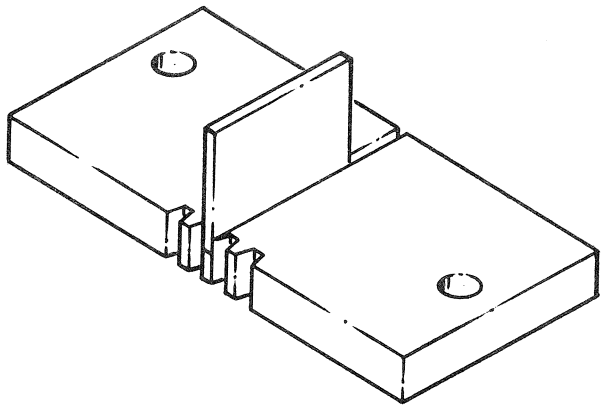


Figure 6-11.
Upper Pusher Arm Alignment Tool

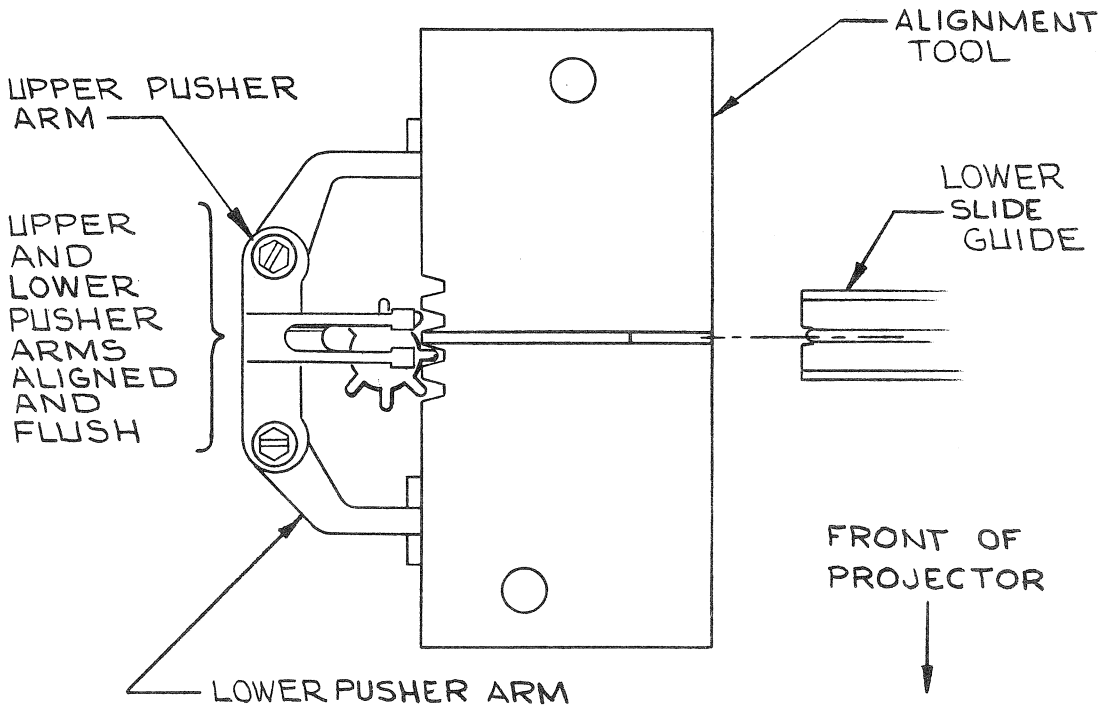


Figure 6-12.
Upper Pusher Arm Alignment Procedure
(with alignment tool)

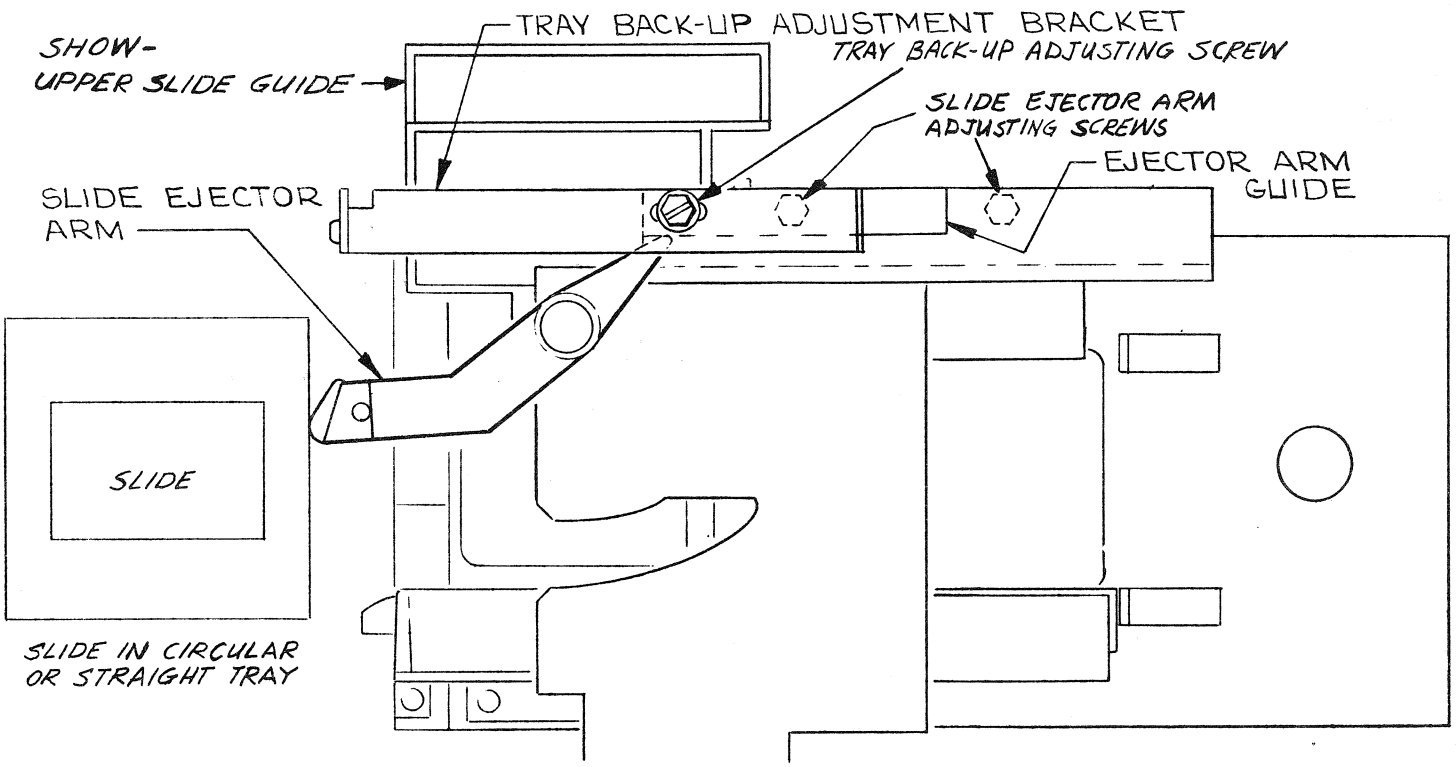


Figure 6-13.
Slide Ejector Adjustment Procedure
(without alignment tool)

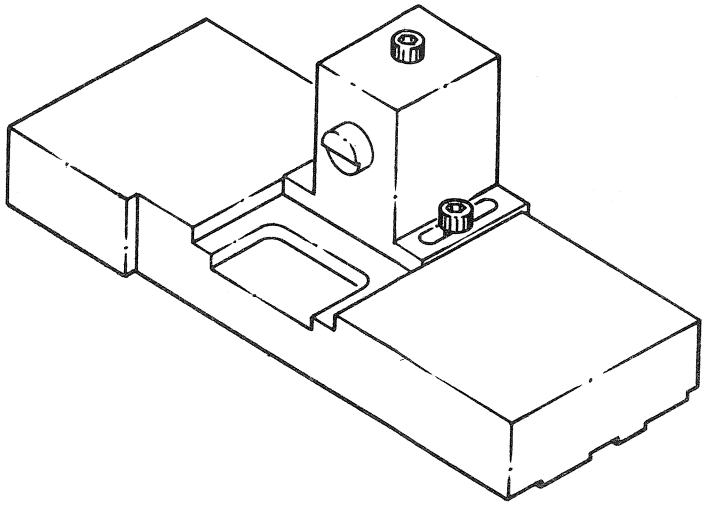


Figure 6-14.
Slide Ejector Adjustment Tool

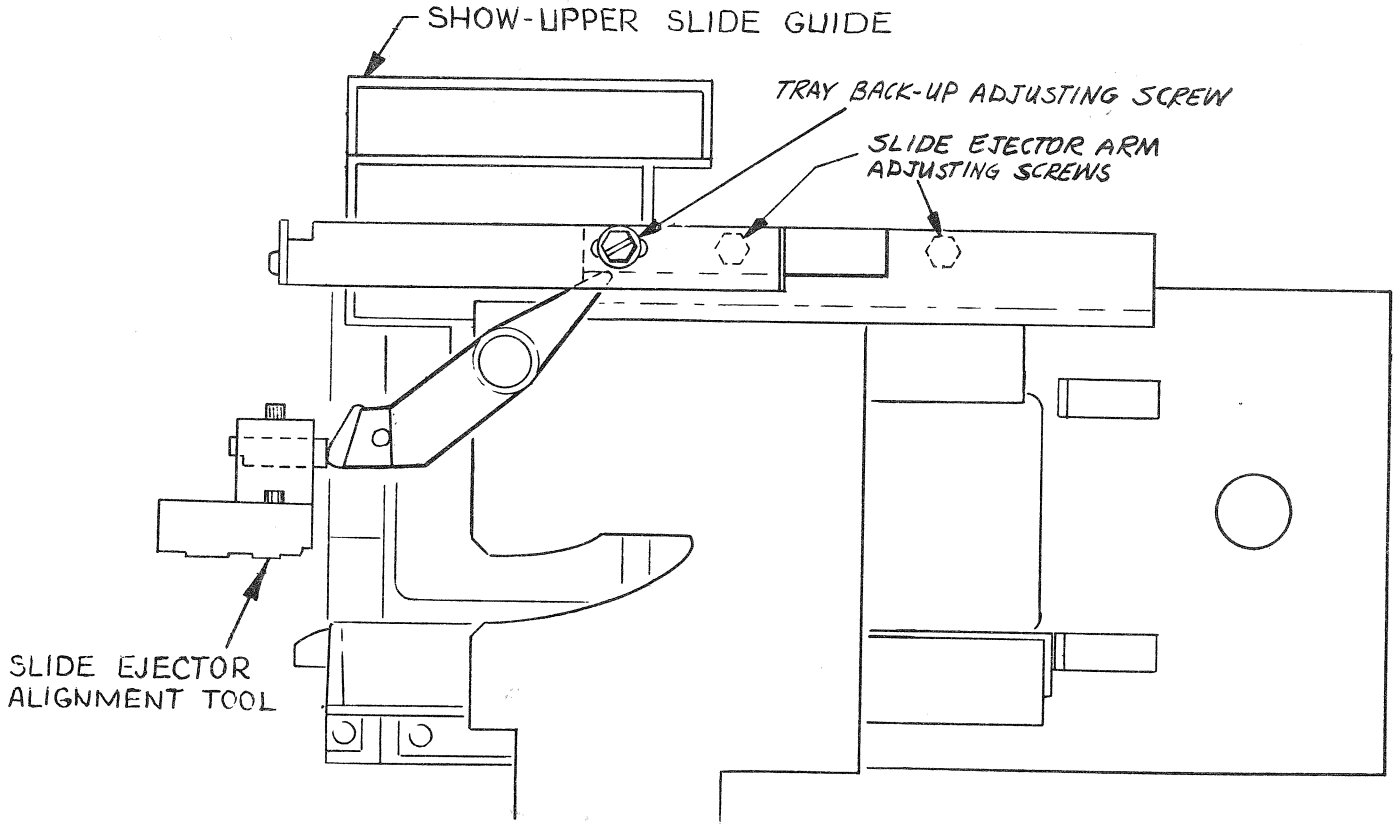


Figure 6-15.
Slide Ejector Adjustment Procedure
(with alignment tool)

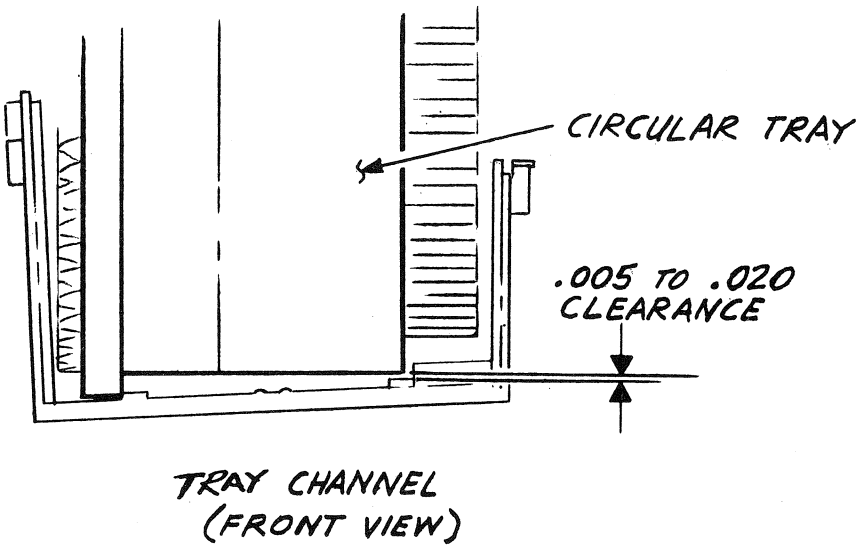


Figure 6-16.
Tray Back-Up Clearance

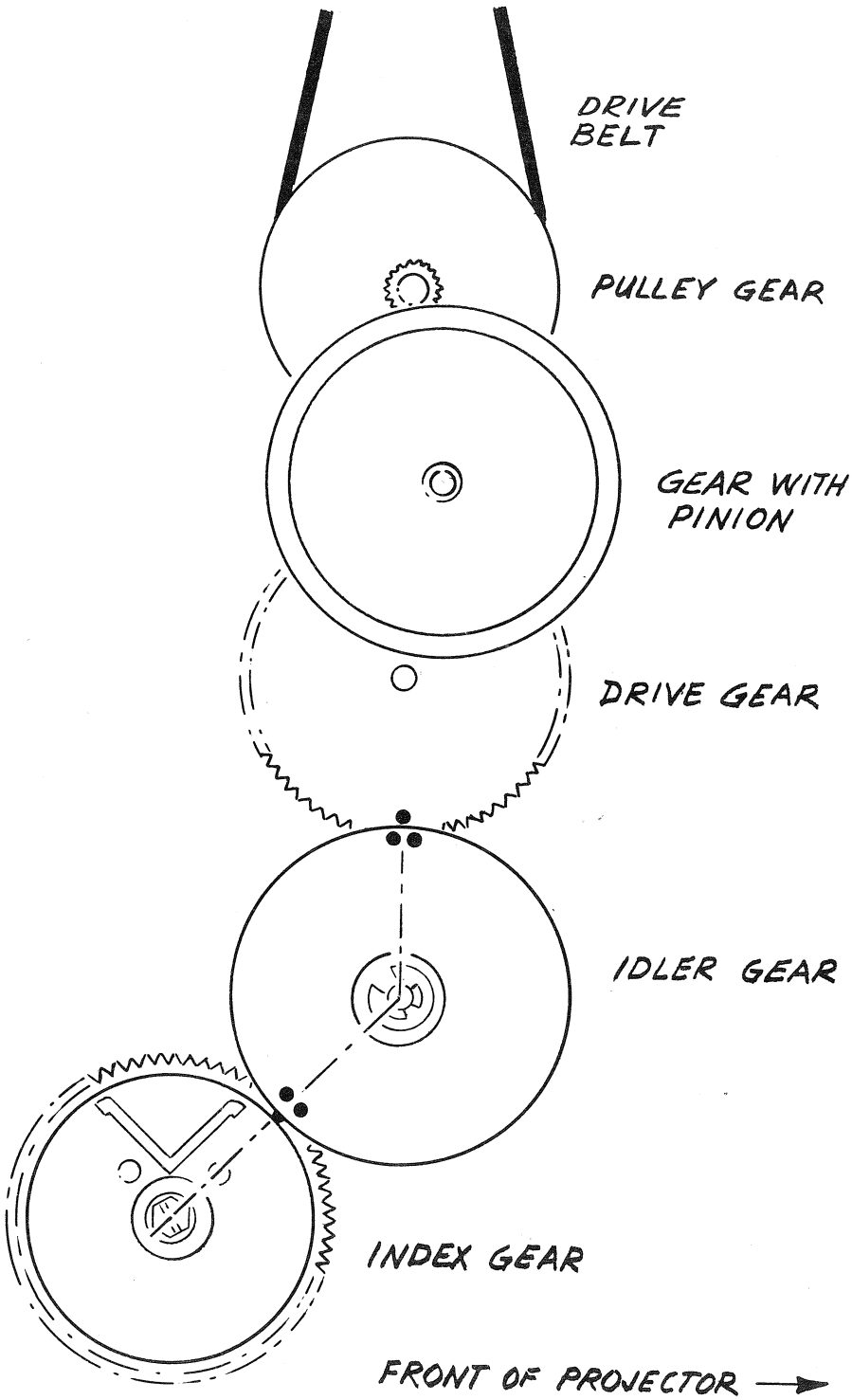


Figure 6-17.
Gear Train Alignment

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		Not Supplied	Projector Assembly	1	1	1	1	1
1		H73001421001	Remote Control Assembly		1			
1		H73001421002	Remote Control Assembly			1	1	
1		H73001421003	Remote Control Assembly	1				1
2		H73000302001	Nameplate, Remote Control Assy		1			
2		H73000302002	Nameplate, Remote Control Assy			1	1	
2		H73000302003	Nameplate, Remote Control Assy	1				1
3		H73000334001	Cover, Control Panel					1
4		H73000926001	Nameplate					1
5		H73000337001	Latch, Cover					1
6		Not Supplied	Cover					1
7		H73000487001	Spring, Latch					1
8		H73000486001	Clip, Latch					1
9		H73000399001	Push-On					1
10		H73001099002	Upper Housing ⟨1⟩	1	1	1		
10		H73001099003	Upper Housing ⟨1⟩				1	1
11		H73000455003	Button, Preview Aperture ⟨1⟩				1	1
12		H73001097001	Plate, Preview Control				1	1
13		H73000899001	Push-On				1	1
14		H73000310001	Bracket, Front	2	2	2	2	2
		H73000311001	Bracket, Side (Not Shown)	2	2	2	2	2
		H73000423001	Bracket, Rear (Not Shown)	1	1	1	1	1
15		H73000829306	Screw, Tapping, 6-20 X 3/8" Lg	5	5	5	5	5
16		H73000420306	Screw, Flat Head, Tapping, 6-20 X 3/8" Lg	5	5	5	5	5
17		H73000420324	Screw, Flat Head, Tapping, 6-20 X 1½" Lg	1	1	1	1	1
18		H73000420332	Screw, Flat Head, Tapping, 6-20 X 2" Lg	3	3	3	3	3
19		H73000312001	Handle	1	1	1	1	1
20		H73000843001	Rail ⟨2⟩	1	1	1	1	1
20		H73000843002	Rail ⟨3⟩	1	1	1	1	1
21		H73000320001	Top Assembly		1			
21		H73000320002	Top Assembly			1		
21		H73000320003	Top Assembly				1	
21		H73000320004	Top Assembly					1
21		H73000320005	Top Assembly	1				

⟨1⟩ If the Upper Housing is replaced, the Preview Aperture Button must be replaced to insure that the slot in the housing is fully covered by the button.

⟨2⟩ Used on Old Version.

⟨3⟩ Used on New Version.

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
22		Not Supplied	Top	1	1	1	1	1
23		Not Supplied	Clip	1	1	1	1	1
24		Not Supplied	Rivet	3	3	3	3	3
25		H73000326001	Nameplate, Top		1			
25		H73000326002	Nameplate, Top			1		
25		H73000326003	Nameplate, Top				1	
25		H73000326004	Nameplate, Top					1
26		H73000850001	Screen, Preview	1	1	1	1	1
27		H73000488001	Bracket, Preview Screen ⟨1⟩	1	1	1	1	1
27		H73001460001	Bracket, Preview Screen ⟨2⟩	1	1	1	1	1
		H73001080001	Baffle, Preview Screen (Not Shown)	1	1	1	1	1
28		H73000399001	Push-On	2	2	2	2	2
29		H73000827001	Trim Plate					1
30		H73000325001	Plate, Timer				1	
30		H73000325002	Plate, Timer					1
31		H73000324001	Plate, Switch	1	1	1		
31		H73000324002	Plate, Switch				1	1
32		H73000327001	Trim, Decorative			1		1
32		H73000327002	Trim, Decorative				1	1
33		H73000323001	Latch, Spring	1	1	1	1	1
34		H73000544001	Push-On	1	1	1	1	1
		H73000048018	Tape, Aluminum (Approx 4½" Lg) (Not Shown)	1	1	1	1	1
35		H73000292001	Base Assembly		1			
35		H73000292002	Base Assembly			1		
35		H73000292003	Base Assembly				1	
35		H73000292004	Base Assembly					1
35		H73000292005	Base Assembly	1				
36		H73000399001	Push-On	1	1	1	1	1
37		H16755674010	Washer, Flat, #8	1	1	1	1	1
38		H73000828314	Screw, Flat Head, Tapping 6-20 X 7/8" Lg					4
39		H73000847001	Cord Reel Assembly (See p. 6-51/6-52)					1
40		H73000298001	Elevate Leg Assembly	1	1	1		
40		H73000298002	Elevate Leg Assembly				1	1

⟨1⟩ Used on Old Version.

⟨2⟩ Used on New Version.

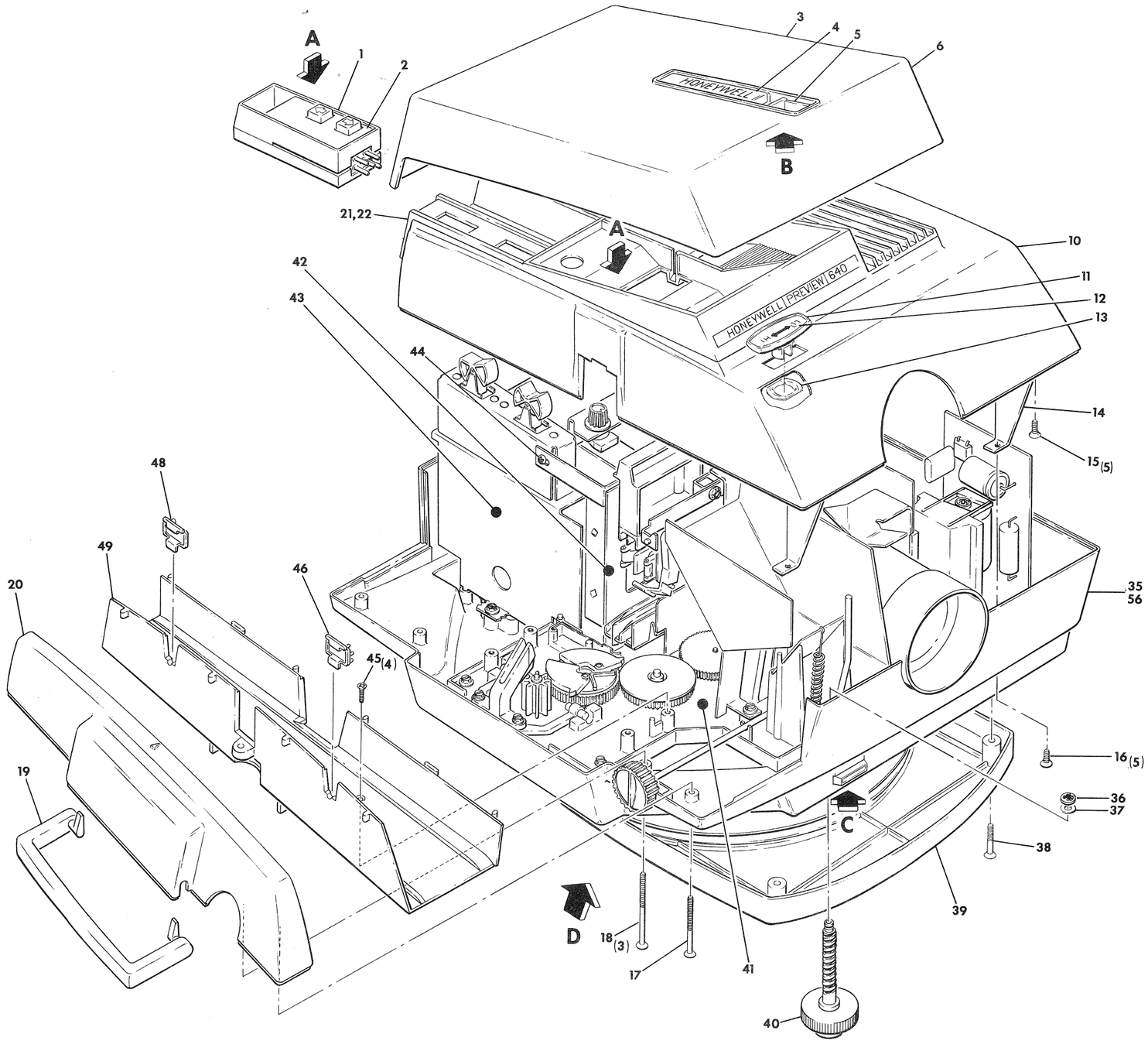
Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
41		Not Supplied	Mechanism Plate Assembly (See p. 6-43/6-44)		1			
41		Not Supplied	Mechanism Plate Assembly (See p. 6-43/6-44)			1		
41		Not Supplied	Mechanism Plate Assembly (See p. 6-43/6-44)				1	1
42		H73000174002	Aperture Assembly (See p. 6-47/6-48)	1	1	1	1	1
43		H73000126001	Blower Assembly (See p. 6-37/6-38)	1	1			
43		H73000126002	Blower Assembly (See p. 6-37/6-38)			1		
43		H73000126003	Blower Assembly (See p. 6-37/6-38)				1	
43		H73000126004	Blower Assembly (See p. 6-37/6-38)					1
44		H16761247046	Screw	1	1	1	1	1
45		H73000828310	Screw, Flat Head, Tapping 6-20 X 5/8" Lg	4	4	4	4	4
46		H73000318003	Button, Tray Forward ⟨2⟩	1	1	1	1	1
47		⟨1⟩						
48		H73000319003	Button, Tray Rear ⟨2⟩	1	1	1	1	1
49		H73000997001	Channel, Tray	1	1			
49		H73000997002	Channel, Tray			1	1	1
50		H73000307001	Foot, Rubber	1	1	1	1	1
51		H73000829310	Screw, Tapping, 6-20 X 5/8" Lg	1	1	1	1	1
52		Not Supplied	Plate, Specification	1	1	1	1	1
53		H73000419002	Leg Assembly, Tilt	1	1	1	1	1
54		H16755674010	Washer, Flat, #8	1	1	1	1	1
55		H73000399001	Push-On	1	1	1	1	1
56		H73000293001	Base Sub-Assembly		1	1		
56		H73000293002	Base Sub-Assembly (includes fast elevation control mechanism)				1	
56		H73000293003	Base Sub-Assembly (includes fast elevation control mechanism)					1
56		H73000293004	Base Sub-Assembly	1				
57		Not Supplied	Base	1	1	1	1	1
58		H73000417001	Spring, Release				1	1
59		Not Supplied	Bushing, Slotted				1	1
60		Not Supplied	Slide, Release				1	1
61		H73000300001	Button, Release				1	1

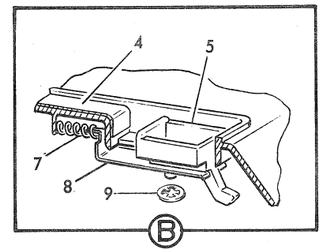
⟨1⟩ Index number 47 not used.

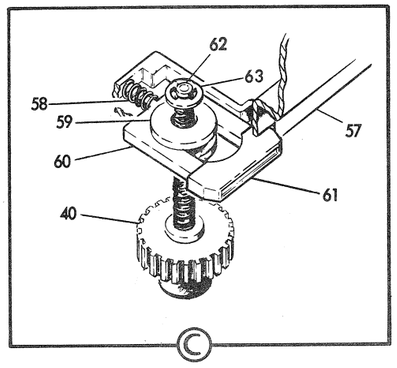
⟨2⟩ If either item requires replacing, both must be replaced.

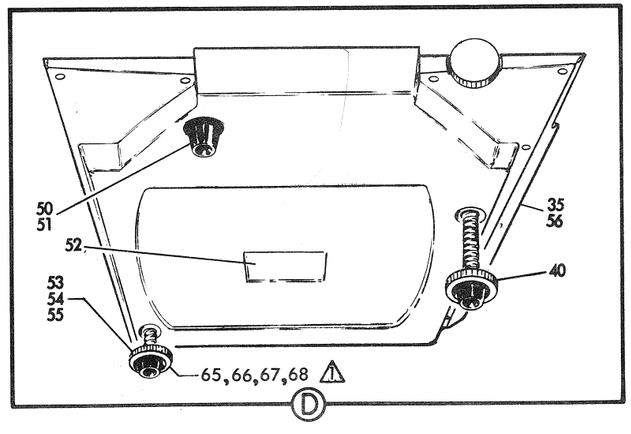
Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
62		H73000399001	Push-On				1	1
63		H16755674010	Washer, Flat, #8				1	1
64		⟨1⟩						
65		H73001965410	Screw, 8-32 X 5/8" Lg	1				
66		H73001966108	Nut, 8-32	1				
67		H73000516007	Washer, Flat, #8	1				
68		H73001969001	Foot, Rubber	1				

⟨1⟩ Index number 64 not used.



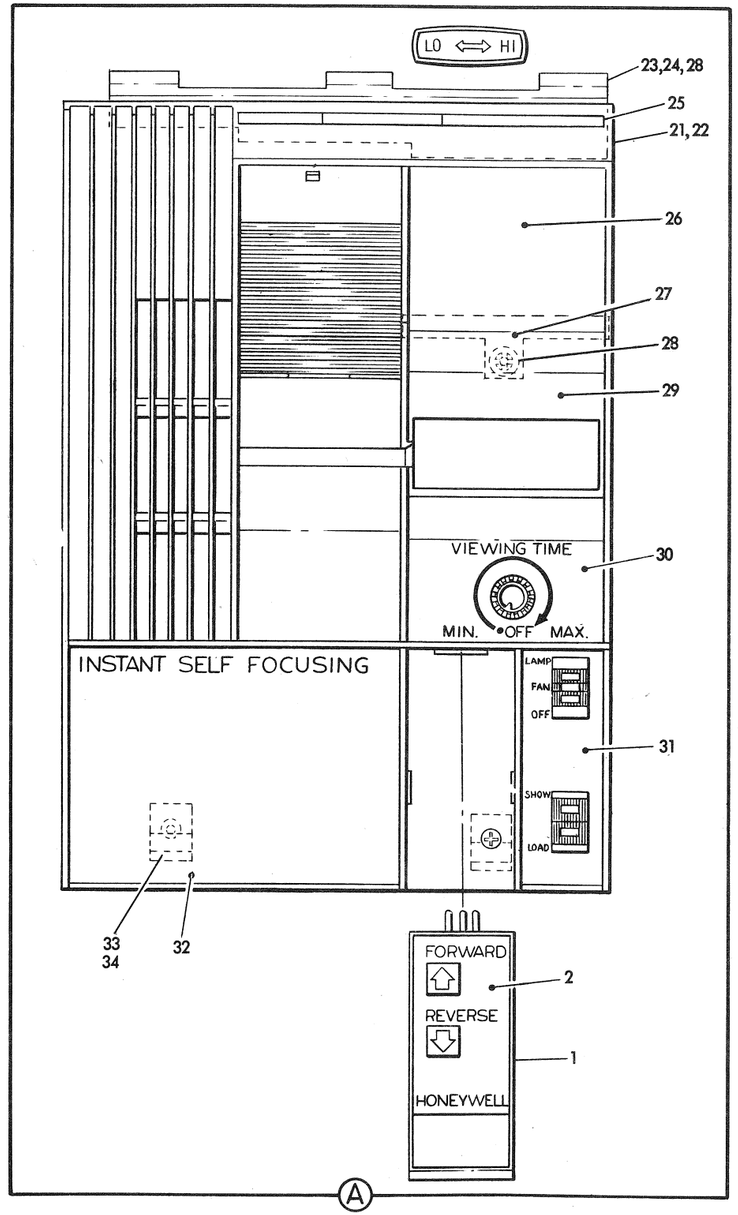






⚠1 Model 600 Only

Figure 6-18.
Projector, Exploded View


LO ⟺ HI
23,24,28
25
21,22
26
27
28
29
VIEWING TIME
30
MIN. OFF MAX.
INSTANT SELF FOCUSING
LAMP
FAN
OFF
31
SHOW
LOAD
33
34
32
FORWARD
2
REVERSE
1
HONEYWELL
A

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		H73000126001	Blower Assembly (Ref)	1	1			
		H73000126002	Blower Assembly (Ref)			1		
		H73000126003	Blower Assembly (Ref)				1	
		H73000126004	Blower Assembly (Ref)					1
1		H73000135001	Floor Lamp Socket Assembly	1	1	1	1	
1		H73000135002	Floor Lamp Socket Assembly					1
2		Not Supplied	Rivet	2	2	2	2	2
3	J1	Not Supplied	Plug, 2 Pin	1	1	1	1	
3	J1	Not Supplied	Socket, 2 Pin					1
4		Not Supplied	Floor	1	1	1	1	1
5		Not Supplied	Lamp Socket, 4 Pin	1	1	1	1	1
6		Not Supplied	Rivet	2	2	2	2	2
7	DS1	H73000154001	Lamp, DAK	1	1	1	1	
7	DS1	H73000507001	Lamp, EGH					1
8		H73000140002	Cover Assembly, Lamp	1	1	1	1	1
9		Not Supplied	Cover, Lamp	1	1	1	1	1
10		Not Supplied	Condenser, First	1	1	1	1	1
11		H73000829306	Screw, Tapping, 6-20 X 3/8" Lg	11	11	11	11	11
12		H73000315001	Preview Mirror No. 1	1	1	1	1	1
13		H73000145001	Bracket Assembly	1	1	1		
13		H73000145002	Bracket Assembly				1	1
14		Not Supplied	Bracket, Switch	1	1	1	1	1
15		Not Supplied	Rivet	2	2	2	2	2
16		Not Supplied	Socket, 5 Pin	1	1	1	1	1
17		Not Supplied	Rivet	2	2	2	2	2
18		H73000261001	Knob, Timer				1	1
19		Not Supplied	Bracket, Socket	1	1	1	1	1
20	R7	H73001055001	Potentiometer, 25k, ¼W				1	1
21		H73000891011	Grommet	1	1	1	1	1
22		H73000149002	Switch Housing Assembly	1	1	1	1	1
23	S2	Not Supplied	Switch, 2P2T	1	1	1	1	1
24		Not Supplied	Housing, Switch	1	1	1	1	1
25	S1	Not Supplied	Switch, 2P3T	1	1	1	1	1
26		Not Supplied	Rivet	4	4	4	4	4
		Not Supplied	Sleeving	1	1	1	1	1
		Not Supplied	Wire (Not Shown)	1	1	1	1	1
	C2	H73000513310	Capacitor, .01uf, 400 WV (Not Shown)	1	1	1	1	1
27		H73000143001	Cover, Retainer	1	1	1	1	1
28		H73001658001	Lamp House and Tie Assembly	1	1			

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
29		Not Supplied	Housing, Lamp	1	1			
30		Not Supplied	Tie, Lamp Housing	1	1			
28		H73001658002	Lamp House and Tie Assembly			1	1	1
29		Not Supplied	Housing			1	1	1
30		Not Supplied	Tie, Lamp Housing			1	1	1
31		H73000128001	Motor and Housing Assembly	1	1			
31		H73000128003	Motor and Housing Assembly			1	1	1
32		H73001720001	Motor and Housing Sub-Assembly	1	1			
32		H73001720003	Motor and Housing Sub-Assembly			1	1	1
33		H73001393001	Wheel, Blower	1	1	1	1	1
34		H73000127001	Housing, Blower	1	1	1	1	1
35		H73000129002	Motor, Blower	1	1			
35		H73000752001	Motor and Contact Assembly			1	1	1
36		H73001492001	Terminal Strip Assembly	1	1			
36		H73001492002	Terminal Strip Assembly			1	1	1
37	C1	H73001132002	Capacitor, 1200uf, 20V	1	1	1	1	1
38		Not Supplied	Strip, Terminal	1	1	1	1	1
39	R11	H16758183580	Resistor, Carbon, 18k, ½W,5%			1	1	1
40	CR1 CR2	H16756961001	Diode, 50V, 1N4001	2	2	2	2	2
41		H16761247052	Screw, Tapping, 6-32 X 1" Lg	2	2	2	2	2
42		H73000829310	Screw, Tapping, 6-20 X 5/8" Lg	1	1	1	1	1
43		H73000301001	Extension, Blower	1	1	1	1	1
44		H73000829308	Screw, Tapping, 6-20 X ½" Lg	3	3	3	3	3

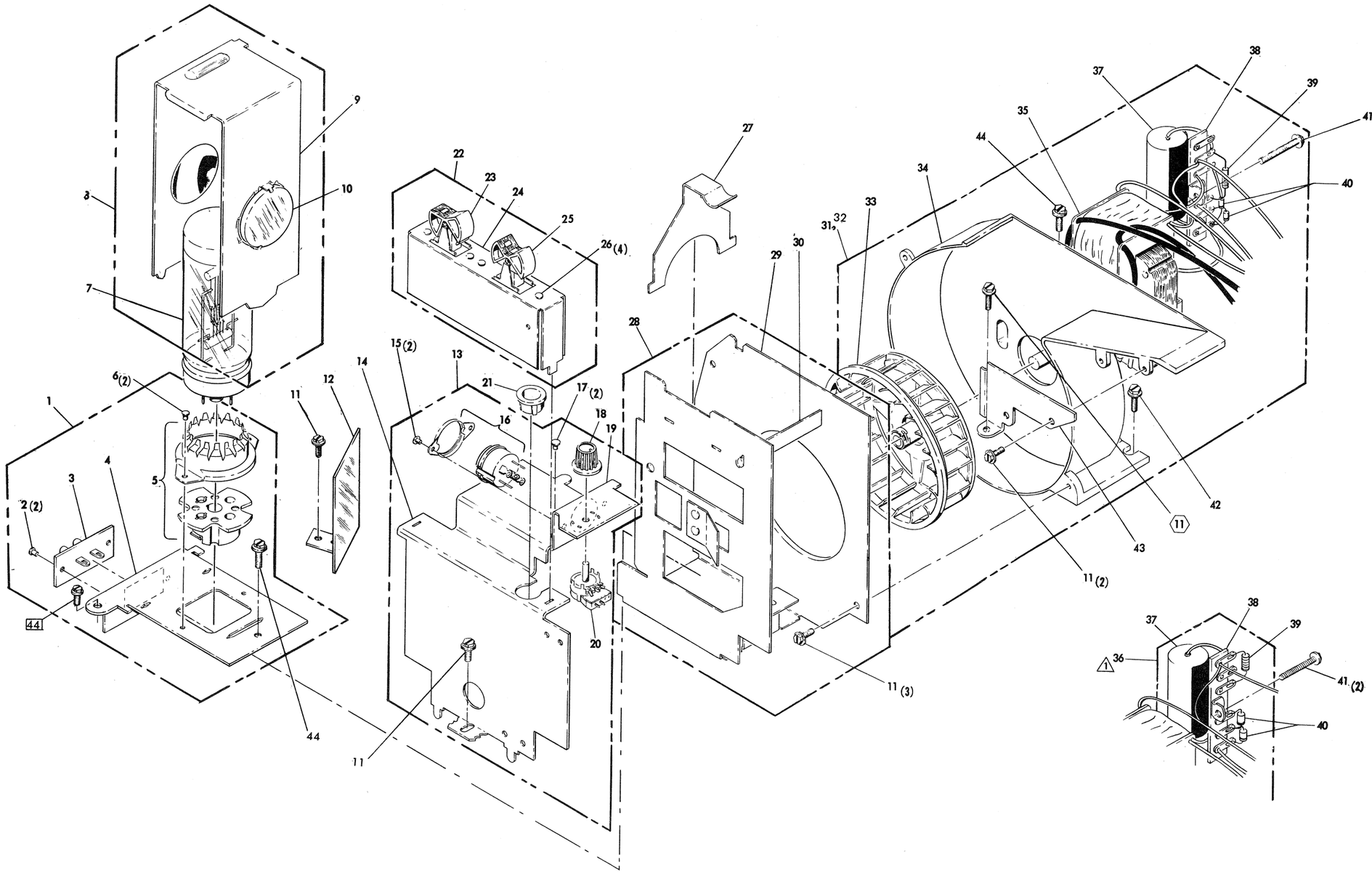


Figure 6-19.
Blower Assembly, Exploded View

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		Not Supplied	Mechanism Plate Assembly (Ref)	1	1			
		Not Supplied	Mechanism Plate Assembly (Ref)			1		
		Not Supplied	Mechanism Plate Assembly (Ref)				1	1
1		H73000521001	Pusher Arm Assembly	1	1	1	1	1
2		Not Supplied	Arm, Pusher	1	1	1	1	1
3		Not Supplied	Pin, Grooved	1	1	1	1	1
4		H73000516001	Washer, Flat	1	1	1	1	1
5		H73000515002	Washer, Flat	2	2	2	2	2
6		H73000829306	Screw, Tapping, 6-20 X 3/8" Lg	5	5	6	6	5
7		H73000257002	Pusher, Arm	1	1	1	1	1
8		H73000258001	Spring, Return	1	1	1	1	1
9		H73000829308	Screw, Tapping, 6-20 X 3/8" Lg	11	11	11	11	11
10		H16750499208	Ball, 5/16" Dia	1	1	1	1	1
11		H73000252001	Spring, Detent	1	1	1	1	1
12		H73000250002	Pinion, Index	1	1	1	1	1
13		H73000245001	Gear, Index	1	1	1	1	1
14		H73000249002	Tooth, Rear Drive	1	1	1	1	1
15		H73000248002	Tooth, Forward Drive	1	1	1	1	1
16		H73000254001	Spring, Cocking	1	1	1	1	1
17		H73000233001	Retainer, Switch	1	1	2	2	2
18		H73000244001	Gear, Idler	1	1	1	1	1
19		H73000239001	Gear, Drive	1	1	1	1	1
20		H73000243001	Gear (with Pinion)	1	1	1	1	1
21		H73000281001	Shutter, Preview	1	1	1	1	1
22		H73000284001	Link, Shutter	1	1	1	1	1
23		H73000277002	Show Shutter Assembly ⟨1⟩		1			
23		H73001473004	Show Shutter Assembly ⟨2⟩			1	1	1
23		H73001473003	Show Shutter Assembly ⟨2⟩	1	1			
24		H16761204002	Push-On, 1/8"	3	3	4	4	4
25		H73001744001	Spring, Shutter Return	1	1	1	1	1
26		H73000237002	Belt, Drive	1	1	1	1	1
27		H73000238001	Pulley, Gear	1	1	1	1	1
28		H73000829310	Screw, Tapping, 6-20 X 5/8" Lg	6	6	6	6	6
29	M1	H73000234001	Drive Motor Assembly	1	1			
29	M1	H73000234003	Drive Motor Assembly			1	1	1
30		Not Supplied	Motor Drive	1	1	1	1	1
31		Not Supplied	Plate, Motor	1	1	1	1	1
32		Not Supplied	Pulley, Motor	1	1	1	1	1
33		H16759343001	Grommet, Motor Mount	3	3	3	3	3

⟨1⟩ Used on early models.

⟨2⟩ Used on late models.

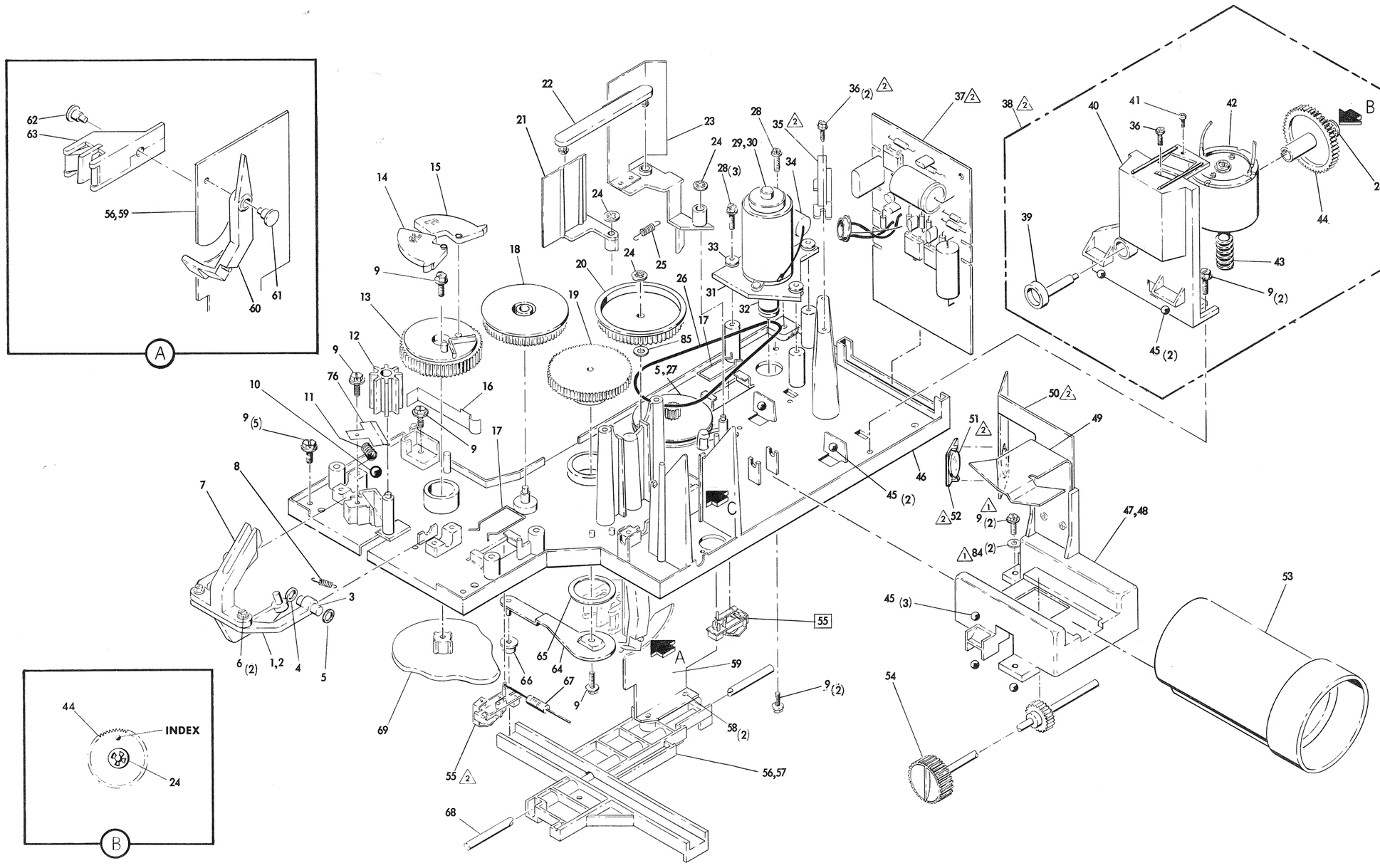
Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
34	C9	H73000205001	Capacitor, 10uf, 50V			1	1	1
35		H73000303001	Strap, Photo-Cell			1	1	1
36		H73000829206	Screw, Tapping, 4-24 X 3/8" Lg			3	3	3
37		H73000942001	Circuit Card Assembly, Timer (See p. 6-55/6-56)			1		
37		H73000942002	Circuit Card Assembly, Timer (See p. 6-55/6-56)				1	1
38		H73001496001	Drive Assembly, Auto-Focus			1	1	1
39		H73000272001	Cam, Auto-Focus			1	1	1
40		H73000271001	Bracket, Auto-Focus Motor			1	1	1
41		H73000829104	Screw, Tapping, 2-32 X ¼" Lg			1	1	1
42		H73000274001	Motor Assembly, Auto-Focus (with contacts)			1	1	1
43		Not Supplied	Worm Gear, Auto-Focus			1	1	1
44		H73000273001	Gear, Auto-Focus			1	1	1
45		H16750499205	Ball, 3/16" Dia			7	7	7
46		H73001466001	Mechanism Plate Sub-Assembly 1		1	1	1	1
46		H73001514001	Mechanism Plate Sub-Assembly 2	1	1	1	1	1
47		H73000230001	Carriage Assembly, Lens	1	1			
47		H73000230002	Carriage Assembly, Lens			1	1	1
48		Not Supplied	Carriage	1	1	1	1	1
49		Not Supplied	Spring, Lens	1	1	1	1	1
50		Not Supplied	Bracket, Auto-Focus			1	1	1
51		H16761022001	Lens, Condenser			1	1	1
52		H73000266002	Clip, Lens			1	1	1
53			Lens (See Accessory List, p. 6-85/6-86)	1	1	1	1	1
54		H73000268001	Shaft Assembly, Focus	1	1	1	1	1
55		H73000165001	Switch Assembly, Limit	1	1			
55		H73000165002	Switch Assembly, Limit			2	2	2
56		H73000212001	Slider Assembly ⟨1⟩		1	1	1	1
56		H73001475001	Slider Assembly ⟨2⟩	1	1	1	1	1
57		H73000214001	Slider ⟨1⟩		1	1	1	1
57		H73001441001	Slider ⟨2⟩	1	1	1	1	1
58		H73000402014	Rivet	2	2	2	2	2
59		H73001346002	Plate, Cross	1	1	1	1	1
60		H73000221003	Arm, Ejector	1	1	1	1	1
61		H73000183001	Rivet, Shoulder	1	1	1	1	1
62		H73001032002	Stud, Movable Jaw	1	1	1	1	1
63		H73000216001	Jaw Assembly	1	1	1	1	1

⟨1⟩ Used on Old Version.

⟨2⟩ Used on New Version.

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		H73000217003	Separator, Jaw (Not Shown)	1	1	1	1	1
		H73000218003	Cover, Jaw (Not Shown)	1	1	1	1	1
		H73000219001	Spring, Jaw (Not Shown)	2	2	2	2	2
		H73000220002	Jaw (Not Shown)	2	2	2	2	2
		H73001251308	Screw, Pan Head, Tapping 6-20 X ½" Lg (Not Shown)	1	1	1	1	1
64		H73000240001	Crank Assembly ⟨1⟩		1	1	1	1
64		H73001474001	Crank Assembly ⟨2⟩	1	1	1	1	1
65		H73000515003	Washer, Flat	1	1	1	1	1
66		H73000267001	Roller, Crank	1	1	1	1	1
67	R13	H73001126008	Resistor, 10 ohm, 2W, 10% ⟨3⟩		1	1	1	1
67	R13		Resistor, 13 ohm ⟨3⟩		1	1	1	1
68		H73000260001	Rod, Slider	1	1	1	1	1
69		H73000246002	Cam	1	1	1	1	1
70		H73001207001	Baffle Assembly, Light ⟨1⟩			1	1	1
70		H73001207002	Baffle Assembly, Light ⟨1⟩		1			
71		H73000365001	Plate, Leaf ⟨1⟩		1	1	1	1
72		H73000364002	Leaf, Aperture Long				1	1
73		H73000363001	Leaf, Aperture Short				1	1
74		H73000402008	Rivet				1	1
75		H73000940002	Back-Up, Spring			1	1	1
76		H73000262002	Plate, Pressure	1	1	2	2	2
77		H73000283001	Crank, Preview				1	1
78		H73000287001	Mirror, Preview #2 ⟨1⟩		1	1	1	1
79		H73000876001	Spring, Mirror ⟨1⟩		1	1	1	1
80		H73000497001	Plate, Pressure				1	1
81		H73000362002	Barrel, Bottom ⟨1⟩		1	1	1	1
82		H73000975001	Lens, Preview	1	1	1	1	1
83		H73000361001	Barrel, Top ⟨1⟩		1	1	1	1
84		H73000516005	Washer	2	2			
85		H73000515——	Washer ⟨4⟩	1	1	1	1	1
86		H73001459001	Aperture Plate, Stationary ⟨2⟩	1	1	1	1	1
87		H73001457001	Baffle, Molded ⟨2⟩	1	1	1	1	1
88		H73000829316	Screw, Tapping, 6-20 X 1" Lg ⟨2⟩	1	1	1	1	1
89		H73001513001	Mirror, Preview #2 ⟨2⟩	1	1	1	1	1

⟨1⟩ Used on Old Version.
⟨2⟩ Used on New Version.
⟨3⟩ Examine the projector to determine the resistor value and replace with that value resistor. Do not add a resistor if the projector does not have one.
⟨4⟩ Used appropriate (-003, -006, -007) washer to compensate for tolerance stack-up.



1 Used on Models 600, 610 Only

2 Used on Models 620, 630, 640 Only

3 Used on Models 630, 640 Only

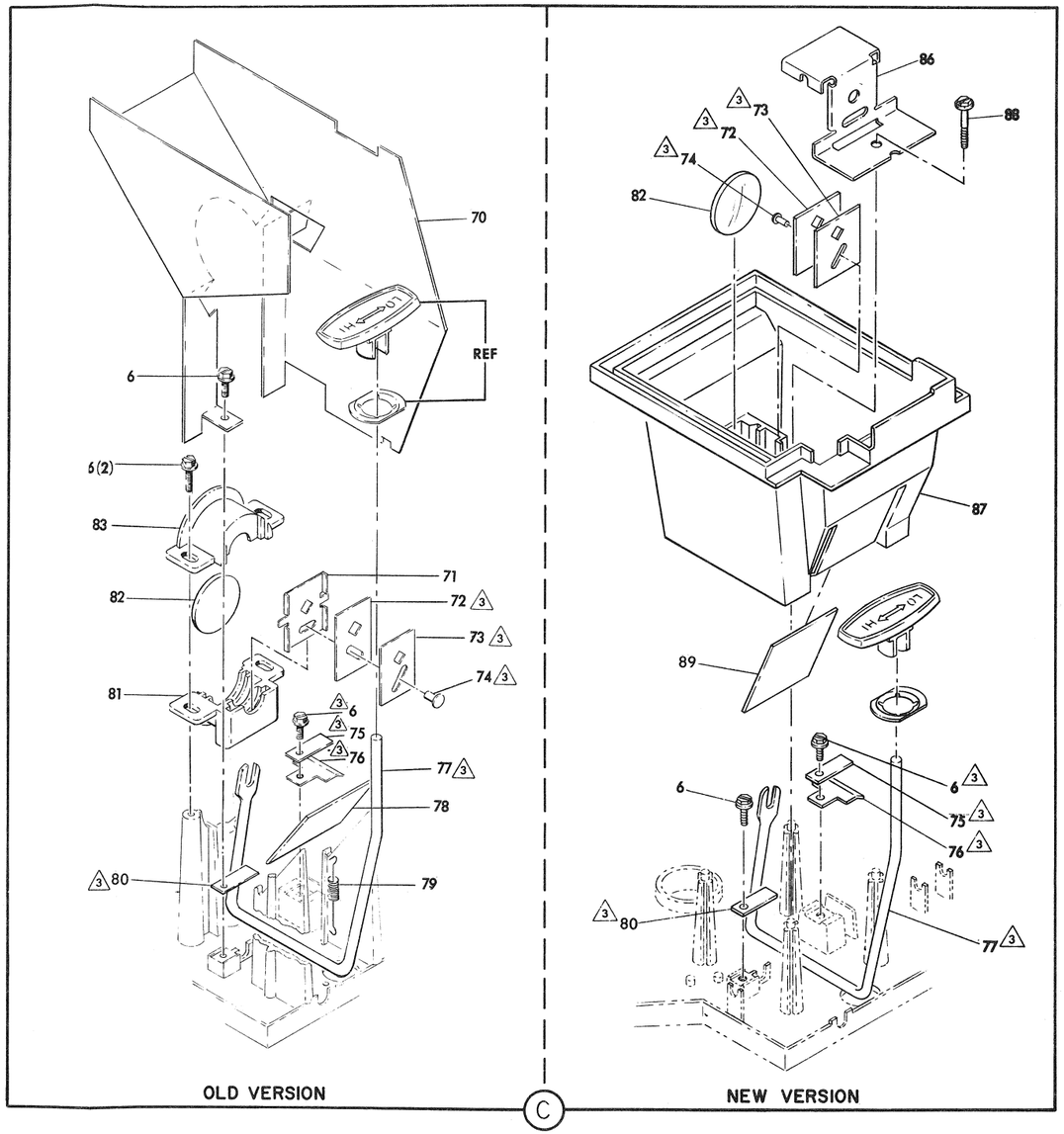
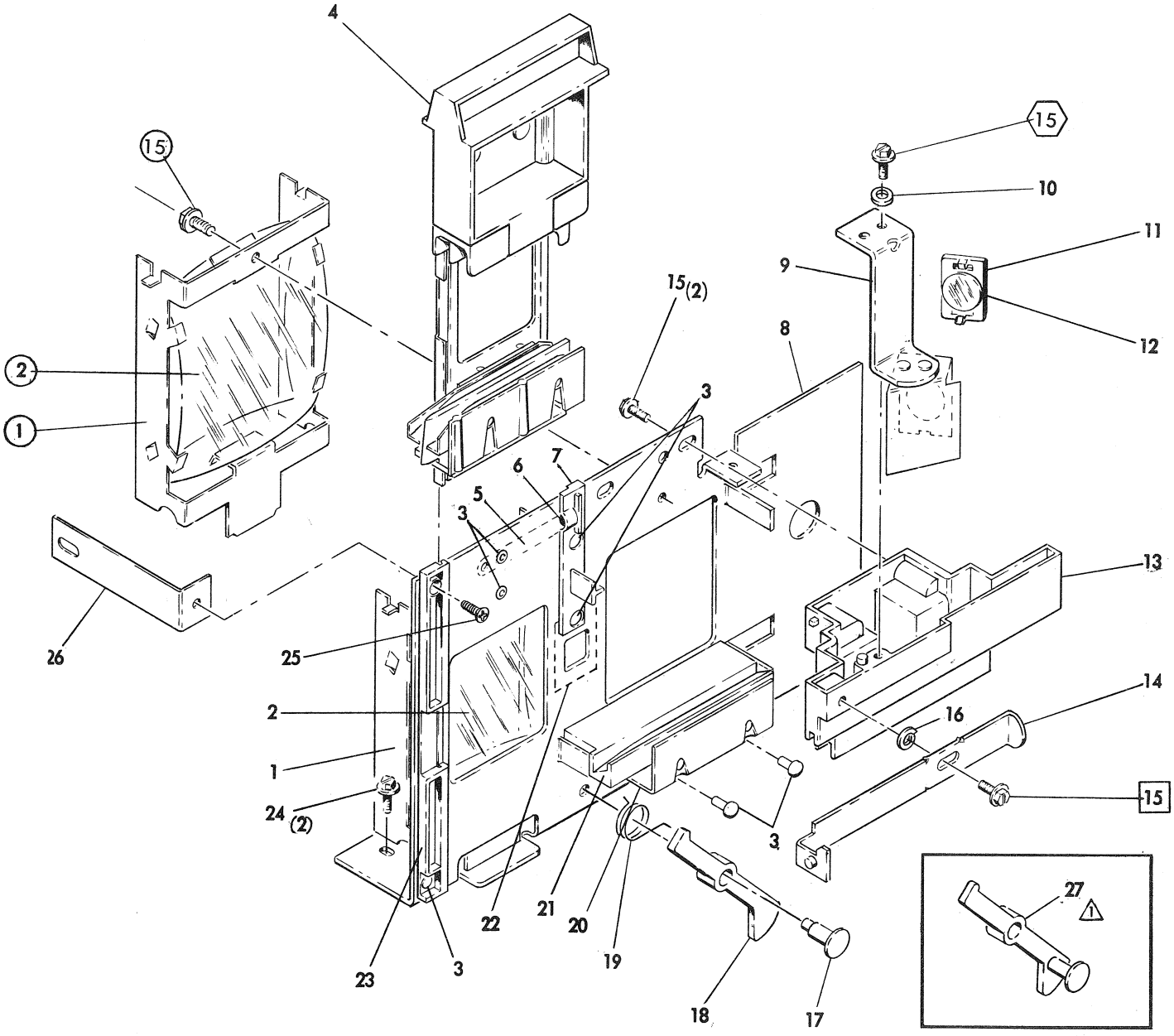


Figure 6-20.
Mechanism Plate Assembly, Exploded View

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		H73000174001	Aperture Assembly (Ref)	1	1			
		H73000174002	Aperture Assembly (Ref)			1	1	1
1		H73000197001	Holder, Lens	2	2	2	2	2
2		H73000198001	Lens, Condenser	2	2	2	2	2
3		H73000402001	Rivet	7	7	7	7	7
4		H73000188001	Plate Assembly, Edit	1	1	1	1	1
5		H73000179001	Spring, Leaf	1	1	1	1	1
6		H16750499205	Ball	1	1	1	1	1
7		H73000178001	Track, Short	1	1	1	1	1
8		Not Supplied	Plate, Aperture	1	1	1	1	1
9		H73000263001	Bracket Assembly, Auto-Focus			1	1	1
10		H73000516005	Washer, Flat, #6			1	1	1
11		H73000266002	Clip, Auto-Focus Lens			1	1	1
12		H16761022001	Lens, Auto-Focus			1	1	1
13		H73000966002	Slide Guide, Show-Upper	1	1	1	1	1
14		H73000978001	Adjustment, Tray	1	1	1	1	1
15		H73000829306	Screw, Tapping, 6-20 X 3/8" Lg	4	4	5	5	5
16		H73001254105	Washer, Lock, #6	1	1	1	1	1
17		H73000183001	Rivet, Shoulder	1	1	1	1	1
18		Not Supplied	Arm, Interlock	1	1	1	1	1
19		Not Supplied	Spring, Interlock	1	1	1	1	1
20		H73000180001	Support, Guide	1	1	1	1	1
21		H73000181002	Slide Guide, Show-Lower	1	1	1	1	1
		H73000194001	Spring, Slide Guide (Not Shown)	2	2	2	2	2
22		H73001117001	Cover, Auto-Focus Hole	1	1			
23		H73000177001	Track, Long	1	1	1	1	1
24		H73000829308	Screw, Tapping, 6-20 X ½" Lg	2	2	2	2	2
25		H73000420306	Screw, Flat Head, Tapping 6-20 X 3/8" Lg	1	1	1	1	1
26		H73000765001	Bracket, Tie	1	1	1	1	1
27		H73001347001	Arm Assembly, Interlock	1	1	1	1	1



⚠1 Item 27 can replace items 18 and 19 on all units.

Figure 6-21.
Aperture Assembly, Exploded View

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		H73000847001	Cord Reel Assembly					1
1		Not Supplied	Screw, Tapping, 6-20 X 3/8" Lg					1
2		Not Supplied	Washer, Flat, #6					1
3		Not Supplied	Reel Retainer					1
4		Not Supplied	Cord Assembly					1
5		Not Supplied	Reel Hub					1
6		Not Supplied	Reel Plate					1
7		Not Supplied	Power Spring					1
8		Not Supplied	Washer					1
9		H73000789001	Lock					1
10		H73000790001	Roller					1
11		Not Supplied	Case					1
		H73000388001	Cord, Power (Not Shown)		1	1	1	
		H73000388002	Cord, Power (Not Shown)	1				

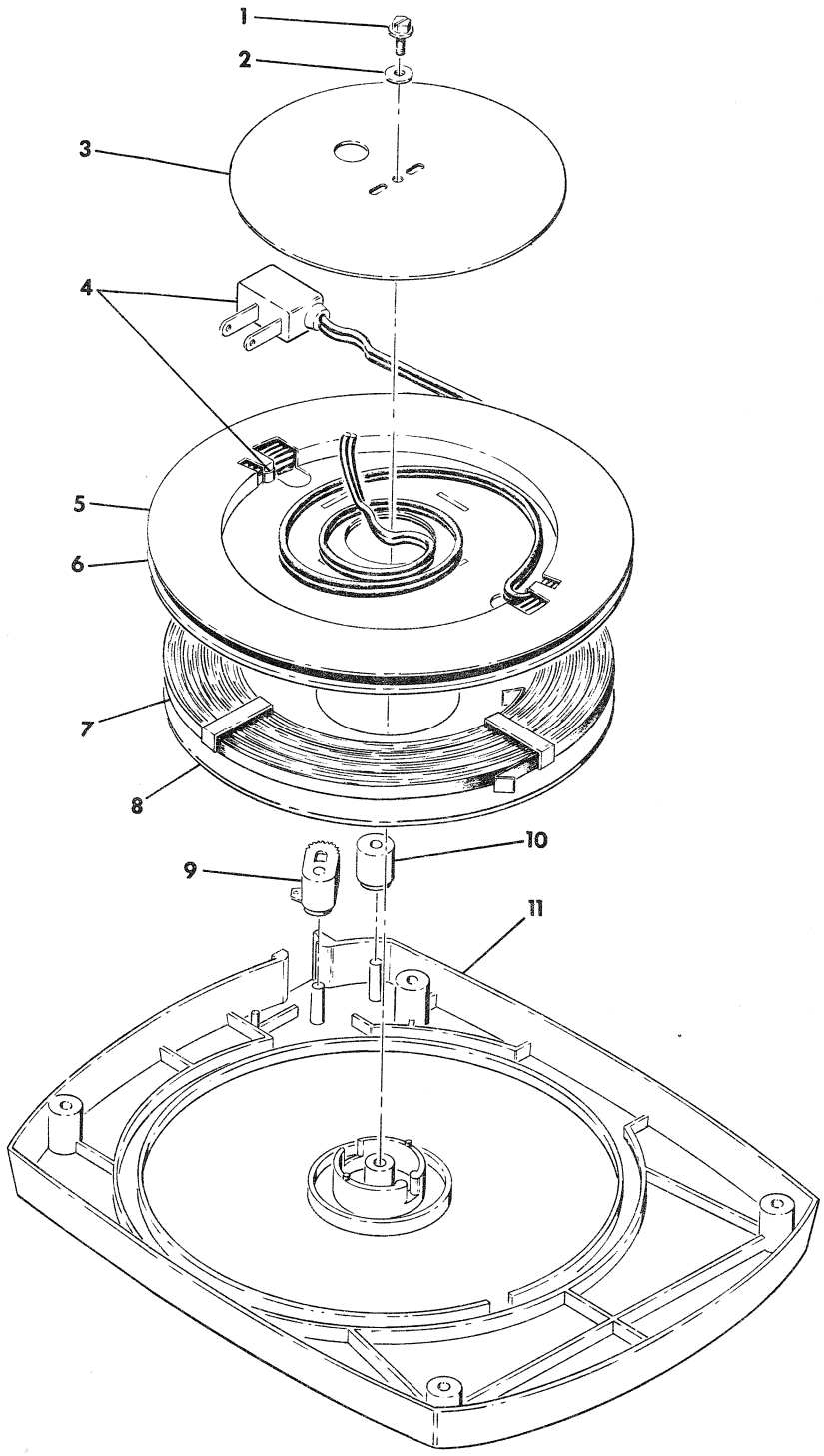


Figure 6-22.
Retractable Cord Assembly, Exploded View

Reference		Honeywell Part No.	Description	Qty/Unit				
Index	Schem			600	610	620	630	640
		H73000942001	Circuit Card Assembly (Timer and Auto-Focus Circuit)			1		
		H73000942002	Circuit Card Assembly (Timer and Auto-Focus Circuit)				1	1
1	C5	H73000513113	Capacitor, .022uf, 100WV, ±20%				1	1
2	CR5	H73000204001	Diode, Zener, 7.3V				1	1
3	C4	H73001132001	Capacitor, 1600uf, 10V				1	1
4	CR3, CR4, CR6	H167568002	Diode, Silicon, 50V			2	3	3
5	R8	H16758183835	Resistor, Carbon, 1.8k, ½W, 10%				1	1
6	R5, R6	H16758183832	Resistor, Carbon, 1.0k, ½W, 10%			2	2	2
7	C3, C7	H73000513116	Capacitor, .047uf, 100WV, ±20%			2	2	2
8	R12	H73000948001	Resistor, 1 ohm, 2W, 10%			1	1	1
9	SCR1, SCR2, SCR3	H16767151035	SCR C106			2	3	3
10		H73000518002	Sleeving ⟨1⟩			2	2	2
11		Not Supplied	Circuit Board			1	1	1
12	R1	H16758183808	Resistor, Carbon, 10 ohm, ½W, 10%			1	1	1
13	R3	H73000201001	Photo-Cell, Dual			1	1	1
14	R10	H16758183580	Resistor, Carbon, 18k, ½W, 5%			1	1	1
15	Q1	H73000869001	Transistor, 2N4248			1	1	1
16	C8	H73000513125	Capacitor, .47uf, 100WV, ±20%				1	1
17	R9	H16758183869	Resistor, Carbon, 1 Meg, ½W, 10%				1	1

⟨1⟩ Sleeve any 2 leads of item 15.

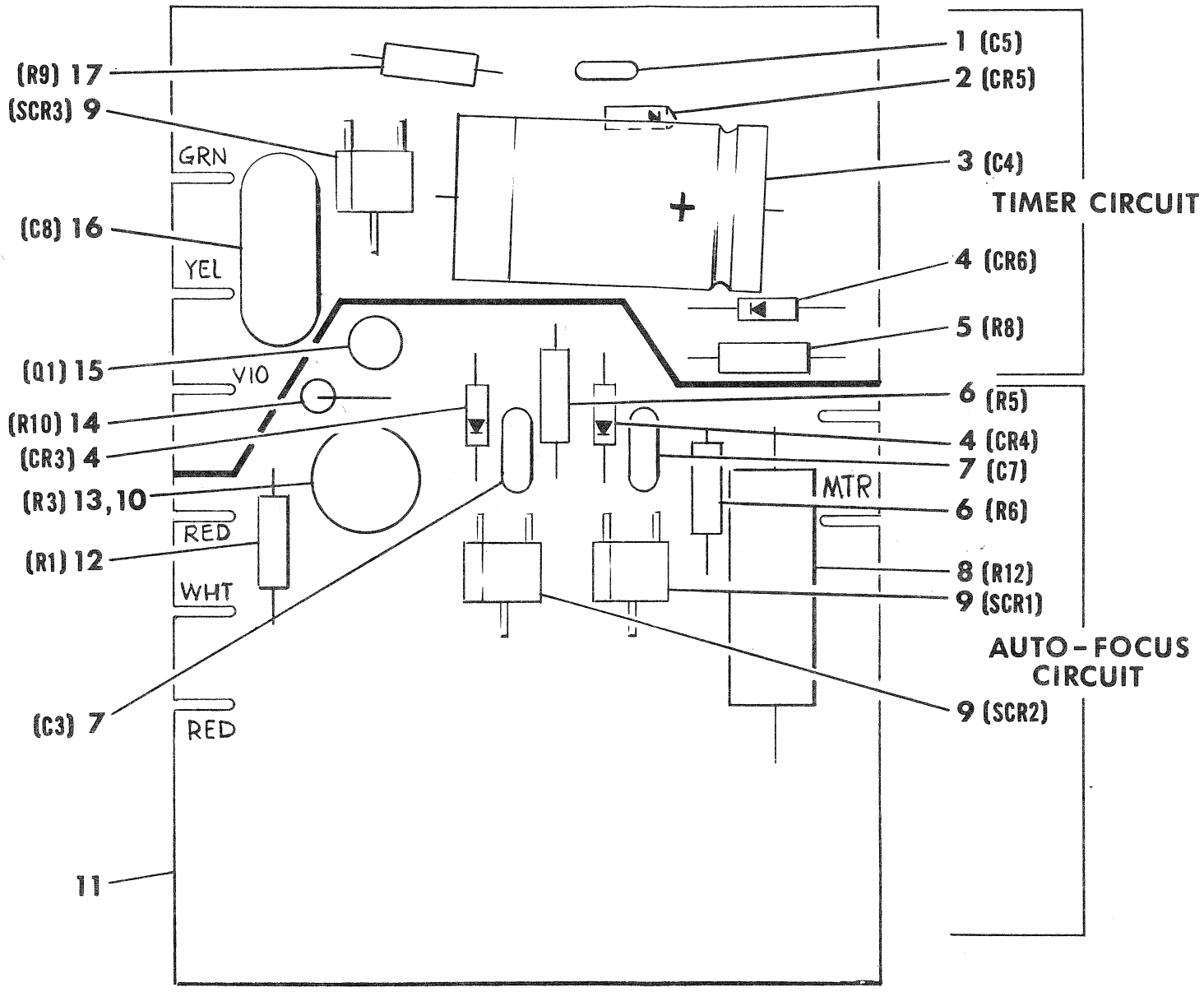


Figure 6-23.
Circuit Card Assembly

○ Denotes remote receptacle connections.

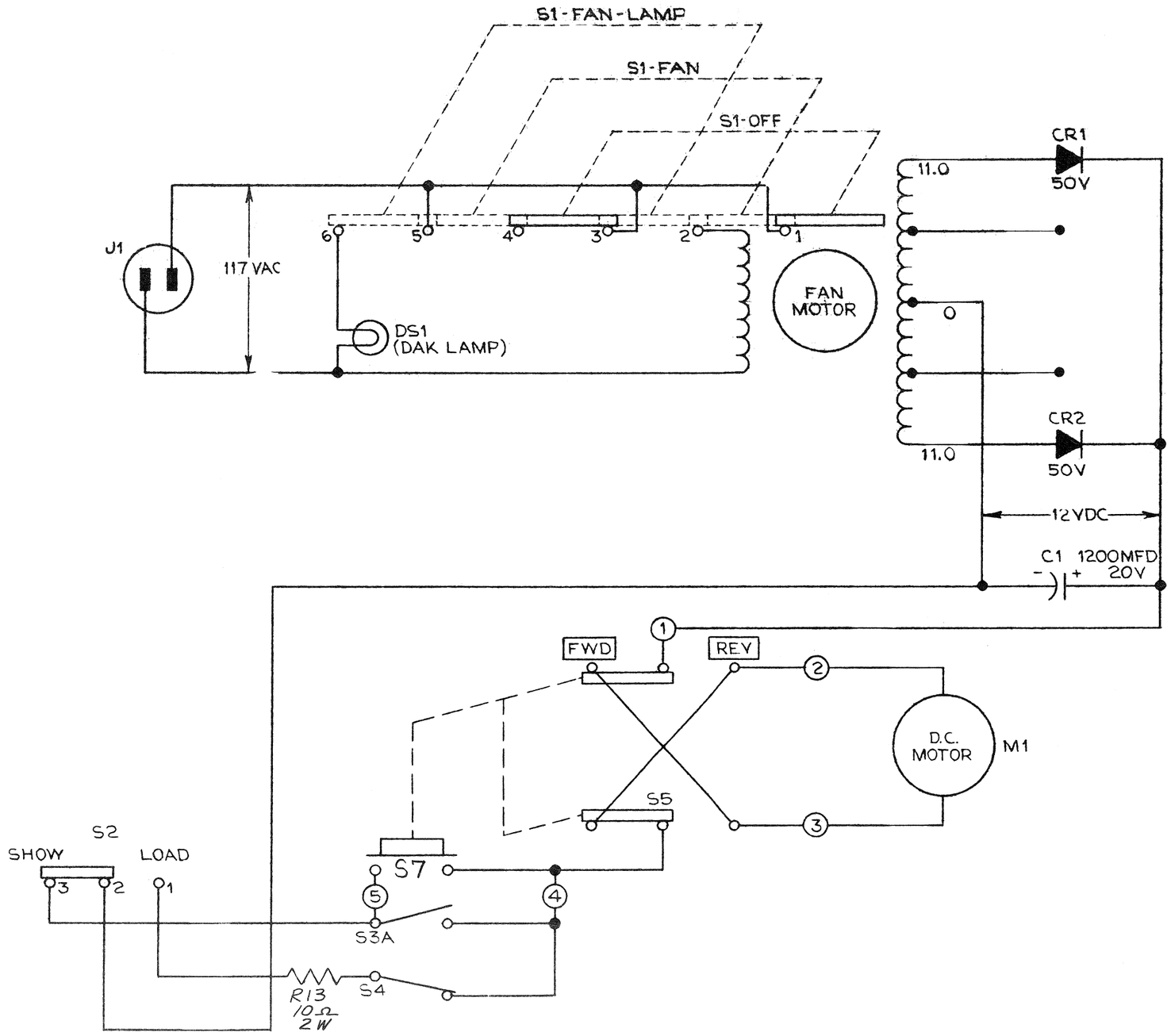
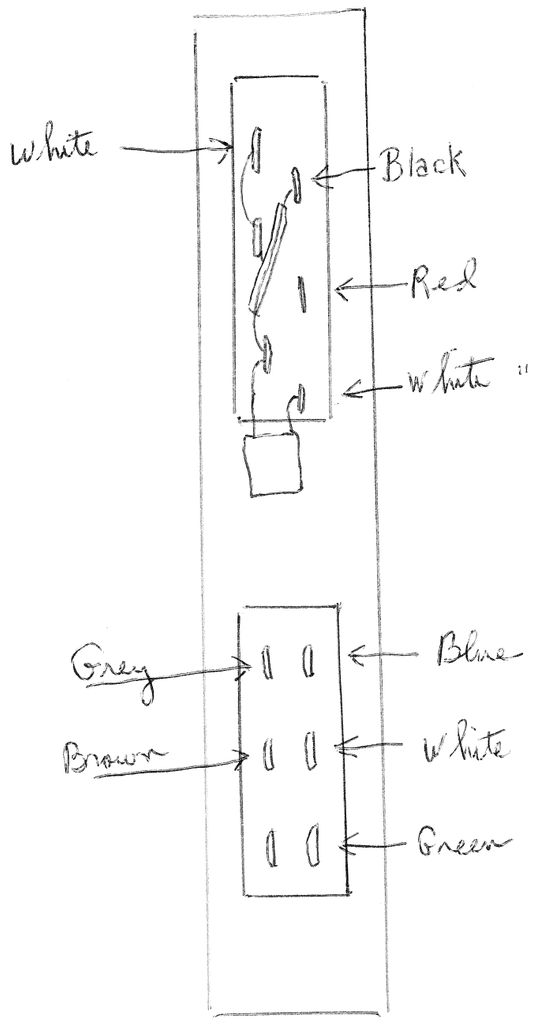


Figure 6-24.
Schematic Diagram, Model 610 Projector
(Old Version)

640 molded New version

Front of Projector



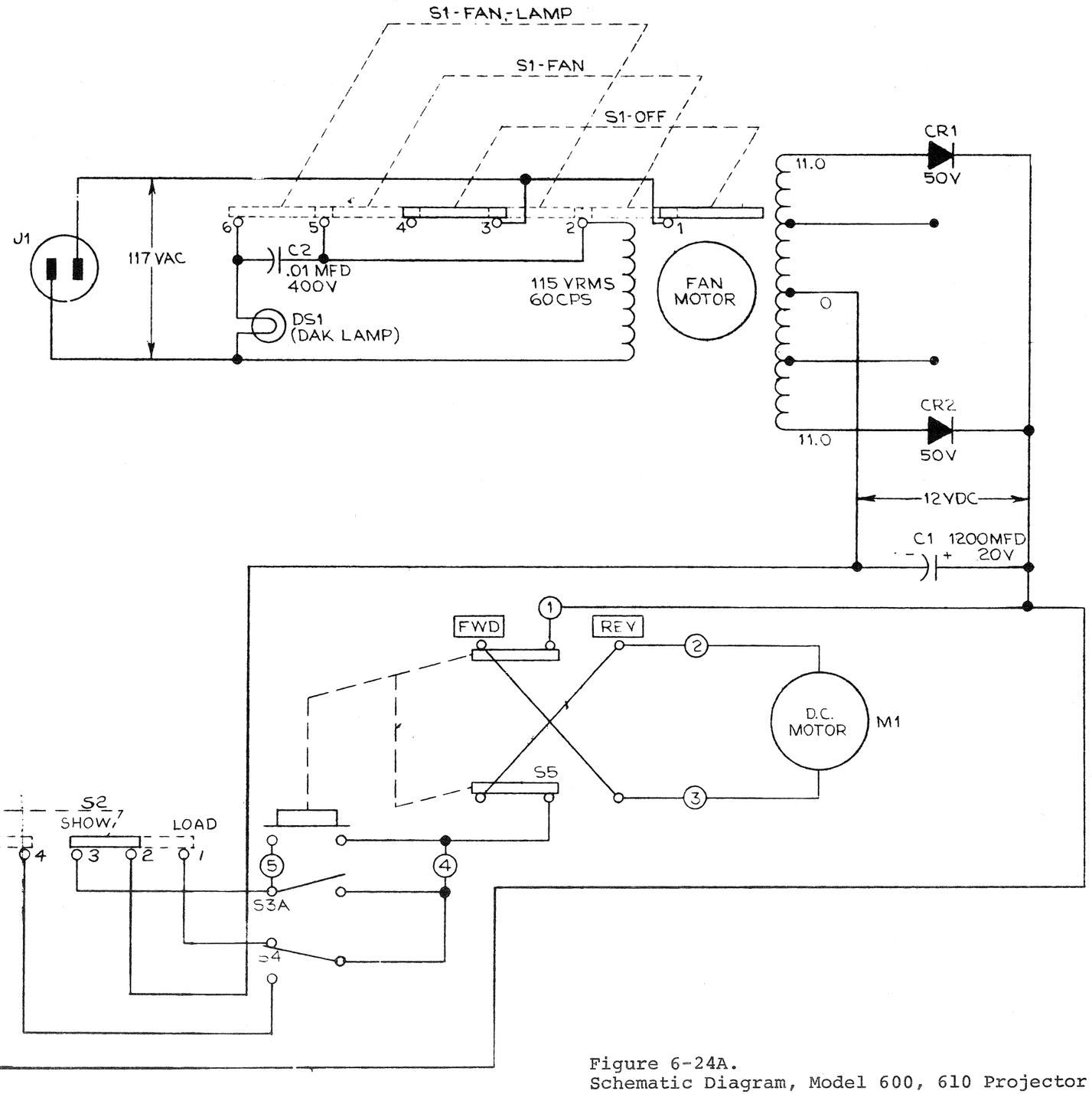
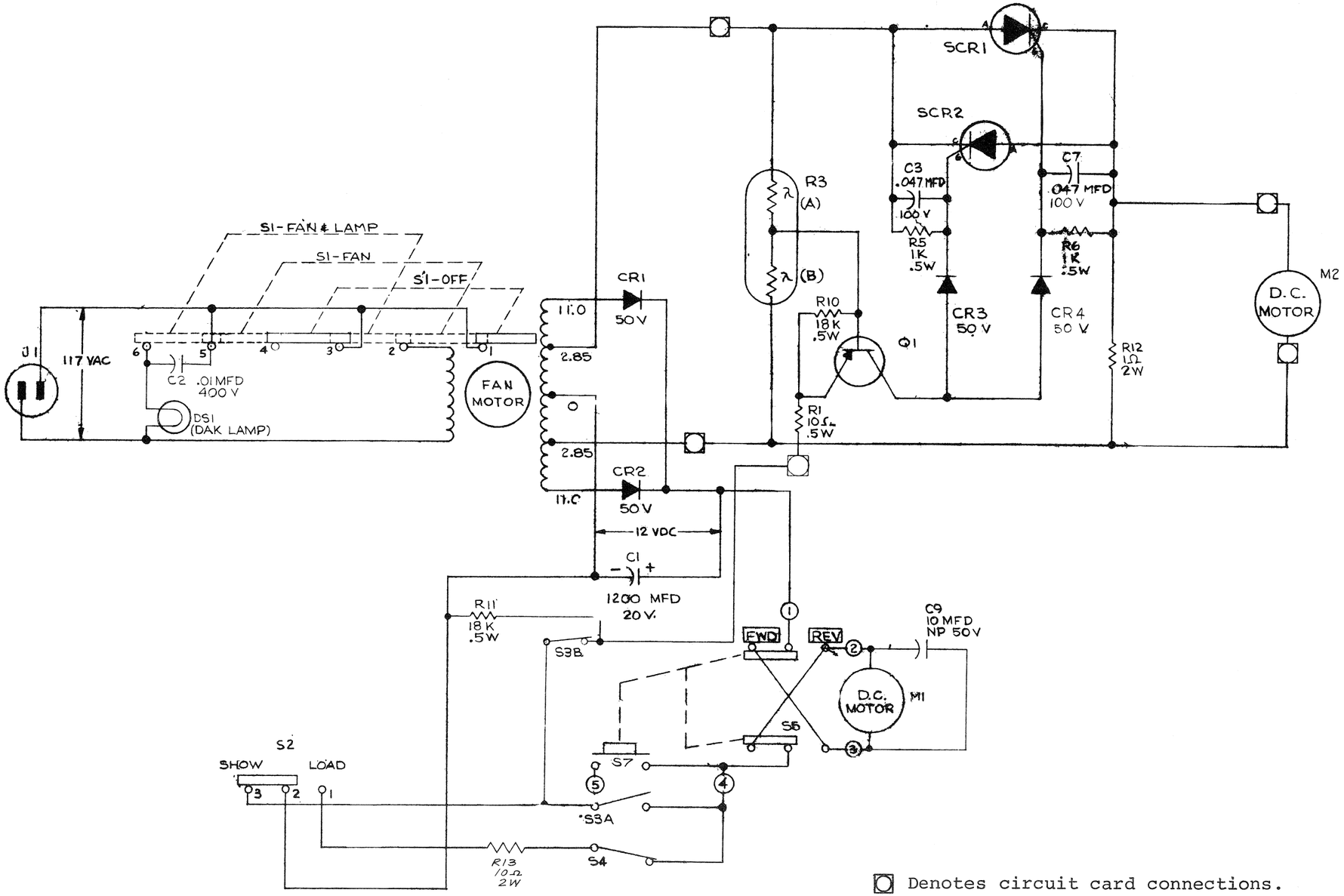


Figure 6-24A.
Schematic Diagram, Model 600, 610 Projector
(New Version)

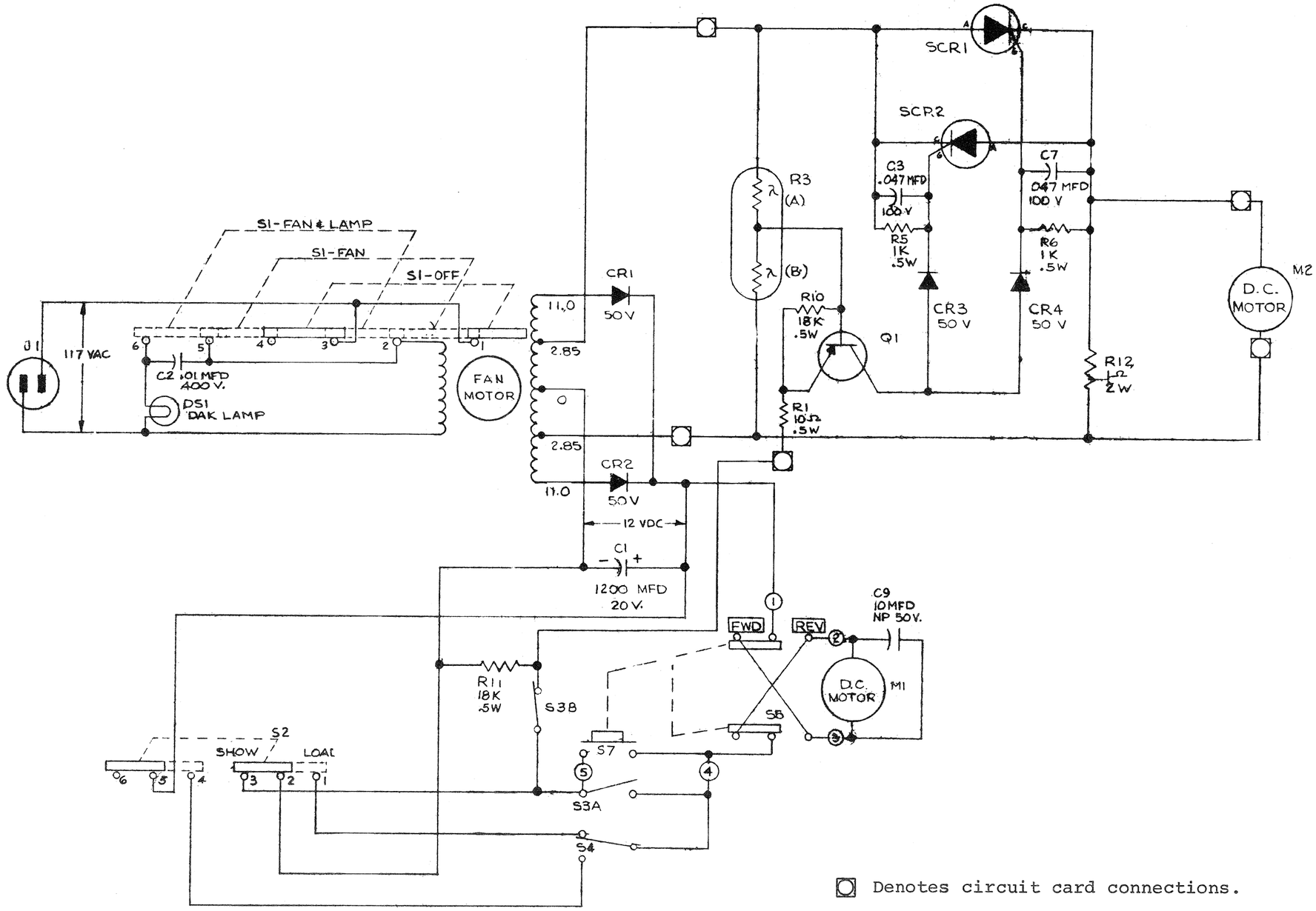
6-59/6-60



Denotes circuit card connections.

Denotes remote receptacle connections.

Figure 6-25.
Schematic Diagram, Model 620 Projector
(Old Version)

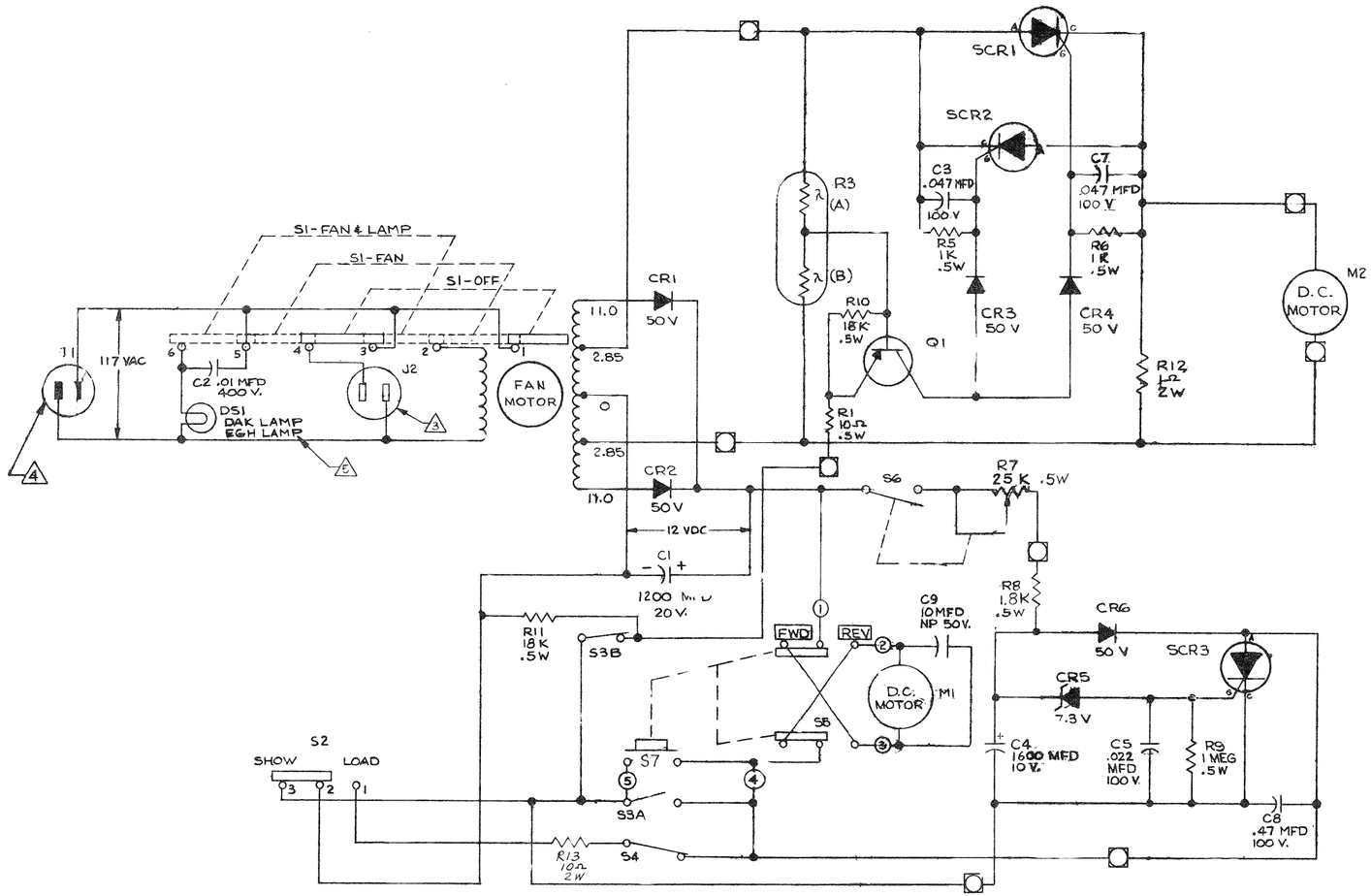


□ Denotes circuit card connections.

○ Denotes remote receptacle connections.

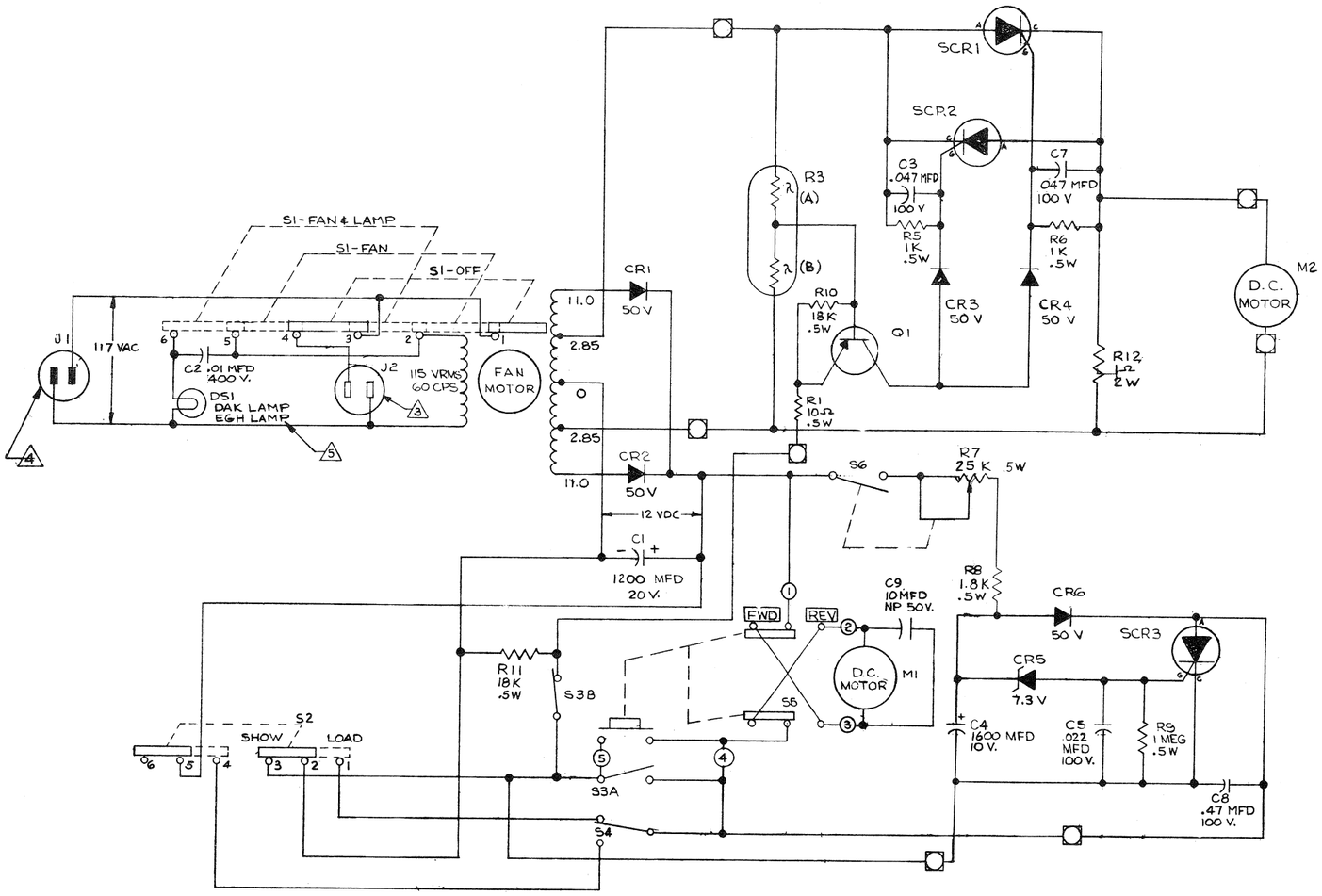
Figure 6-25A.
Schematic Diagram, Model 620 Projector
(New Version)

6-63/6-64



- ◯ Denotes circuit card connections.
- ○ Denotes remote receptacle connections.
- △3 Room lamp outlet, Model 640 only.
- △4 Model 630 only.
- △5 Model 640 only.

Figure 6-26.
Schematic Diagram, Models 630 and 640 Projectors (Old Version)



▣ Denotes circuit card connections.

○ Denotes remote receptacle connections.

△3 Room lamp outlet, Model 640 only.

△4 Model 630 only.

△5 Model 640 only.

Figure 6-26A.
Schematic Diagram, Models 630 and 640 Projectors
(New Version)

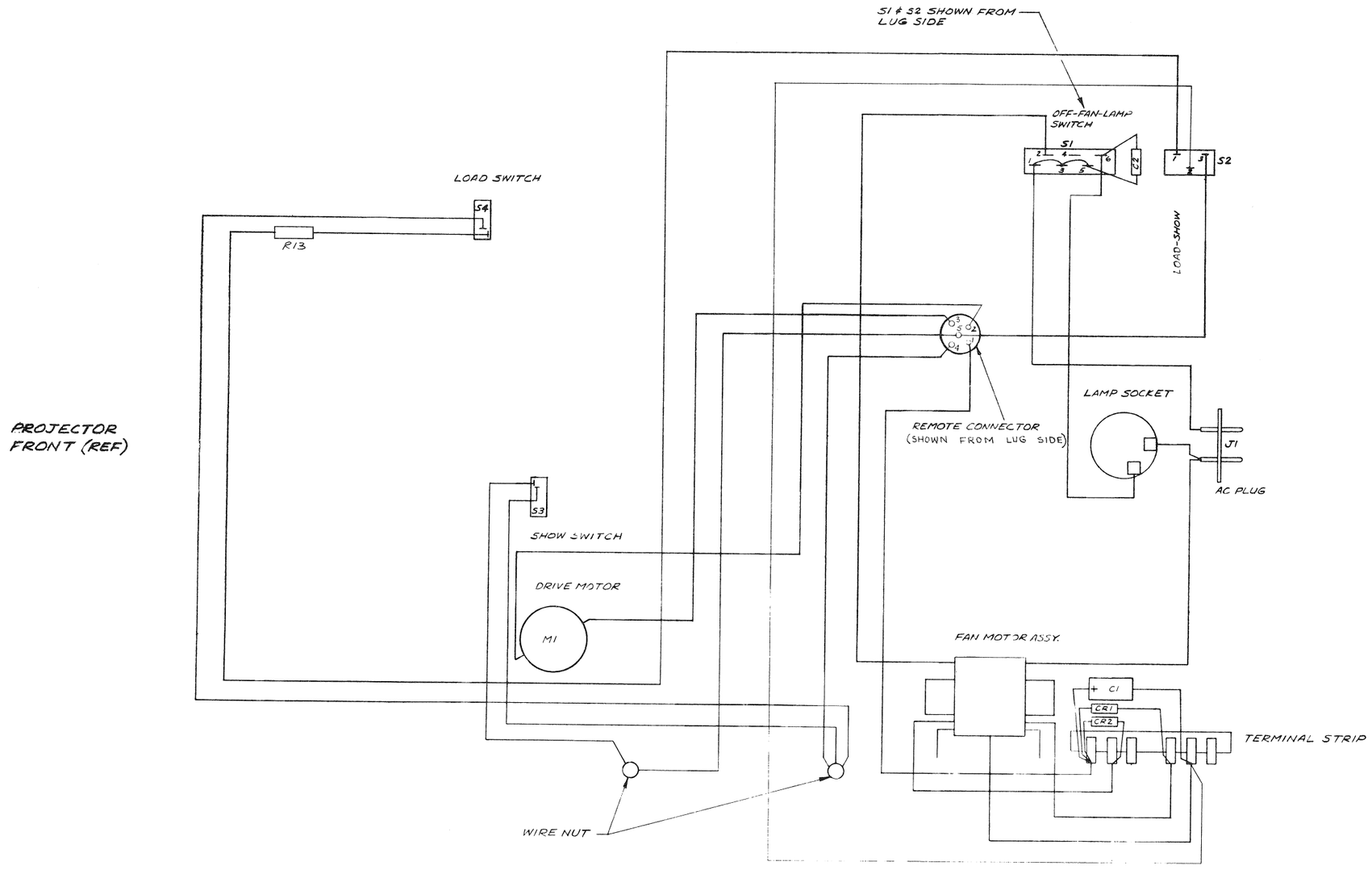


Figure 6-27.
Wiring Diagram, Model 610 Projector (Old Version)

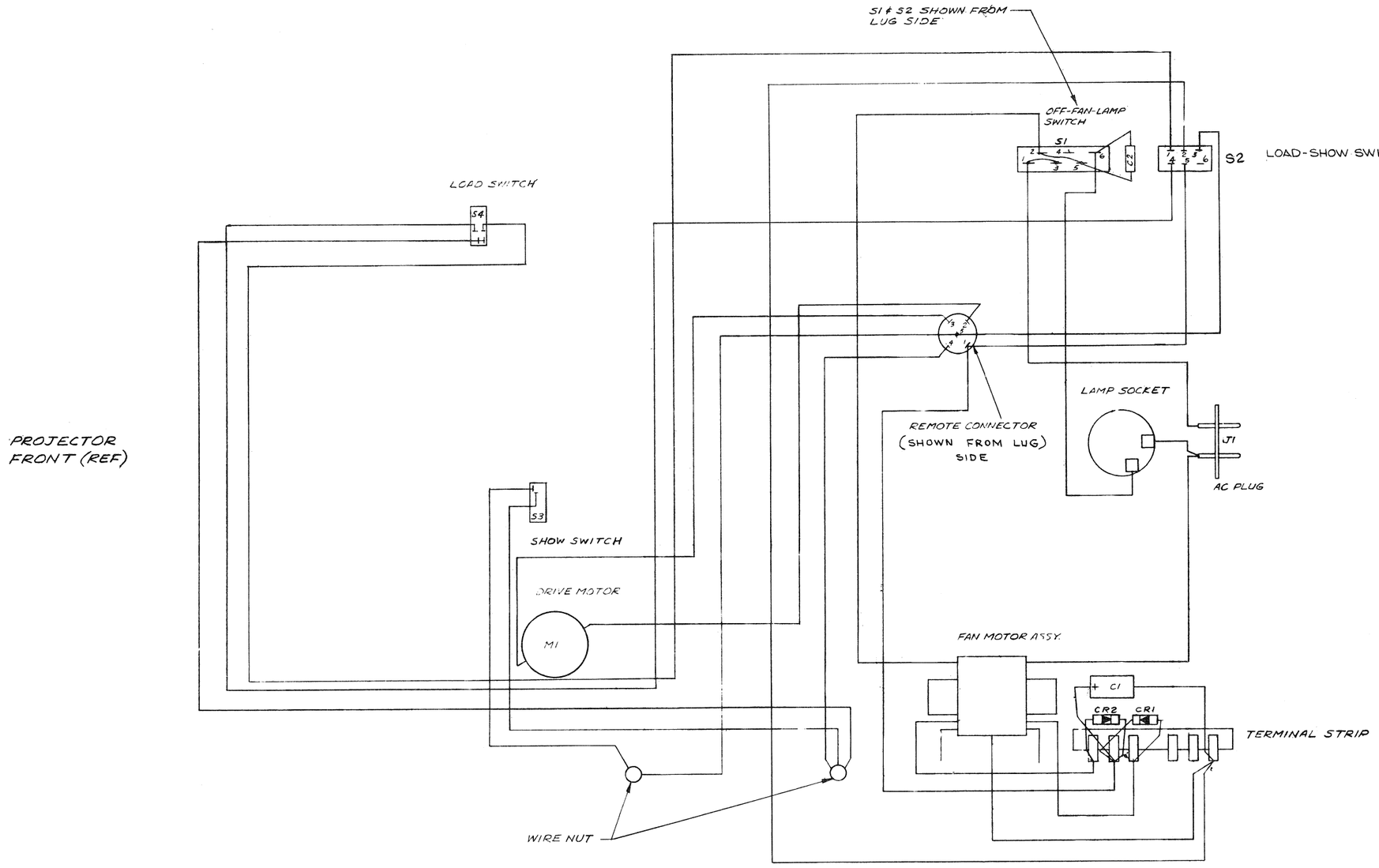


Figure 6-27A.
Wiring Diagram, Model 600, 610 Projector
(New Version)

6-71/6-72

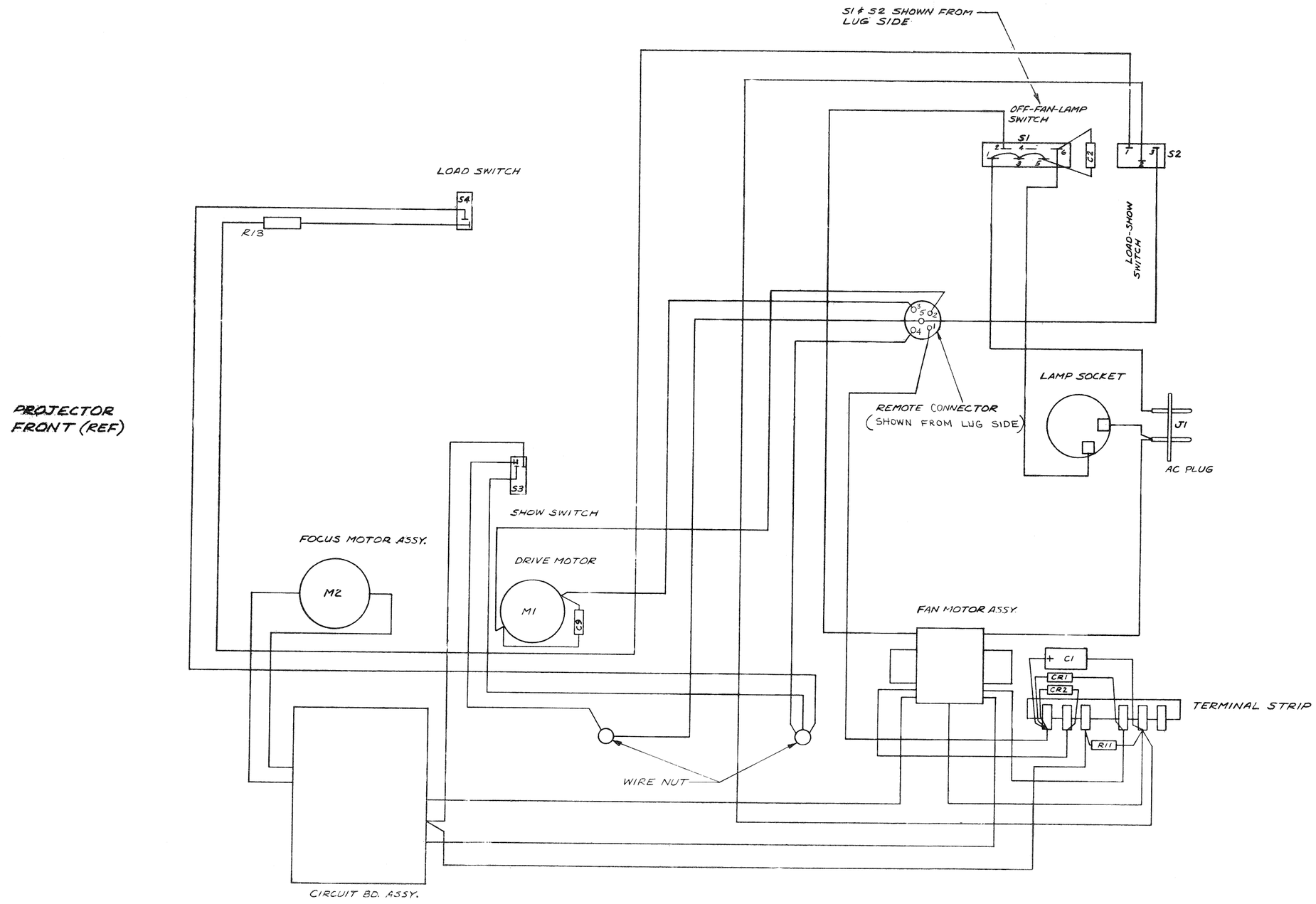


Figure 6-28.
Wiring Diagram, Model 620 Projector
(Old Version)

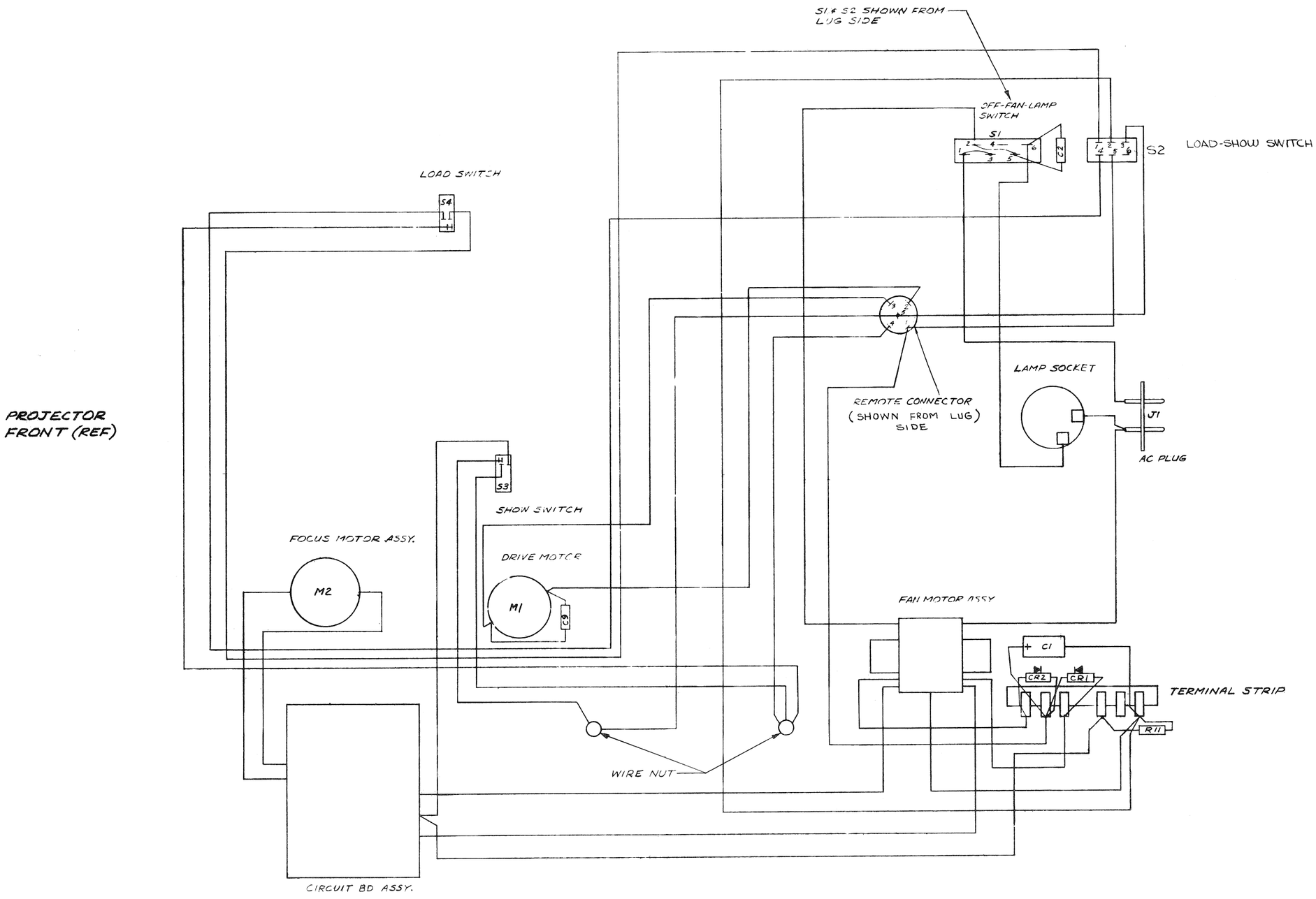


Figure 6-28A.
Wiring Diagram, Model 620 Projector
(New Version)

6-75/6-76

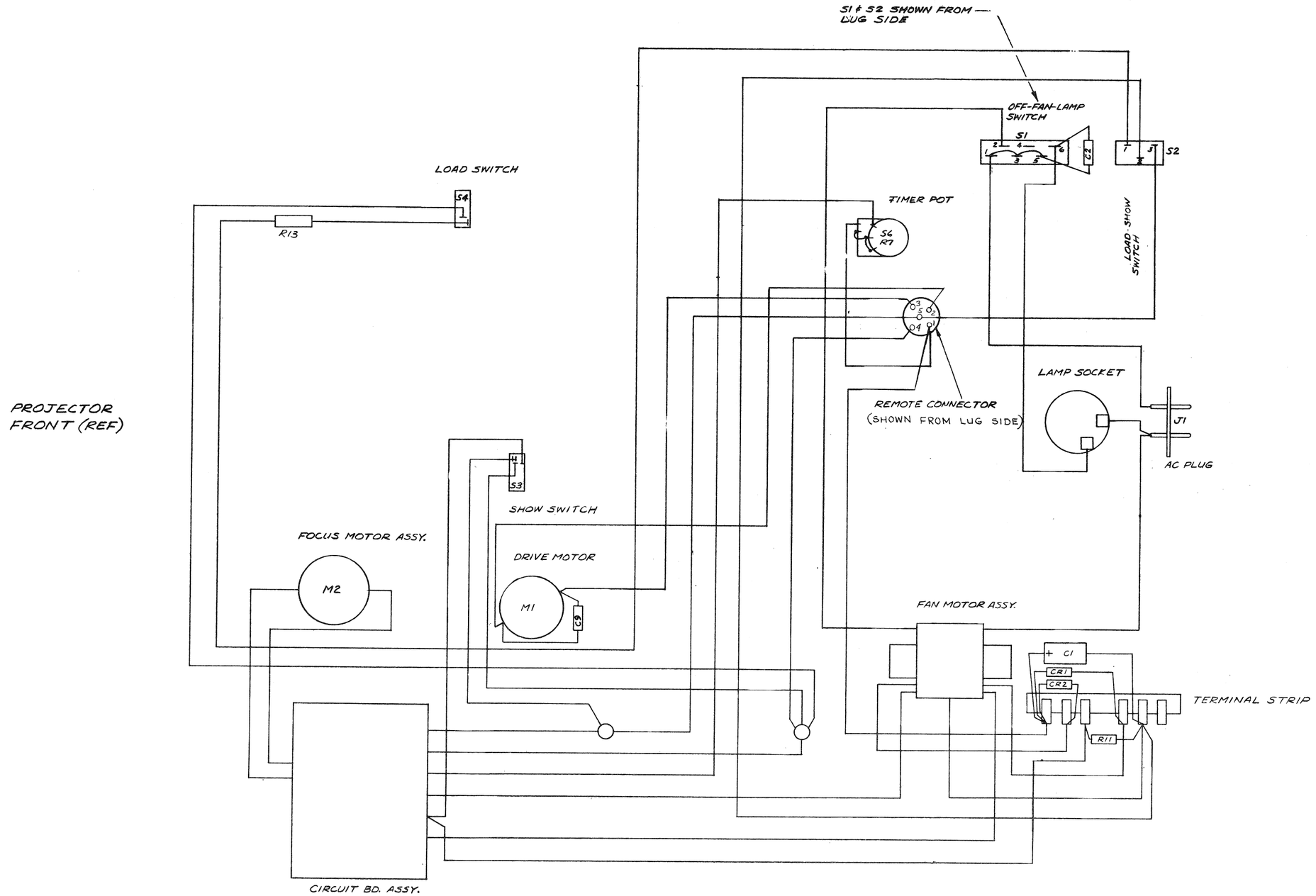


Figure 6-29.
Wiring Diagram, Model 630 Projector
(Old Version)

6-77/6-78

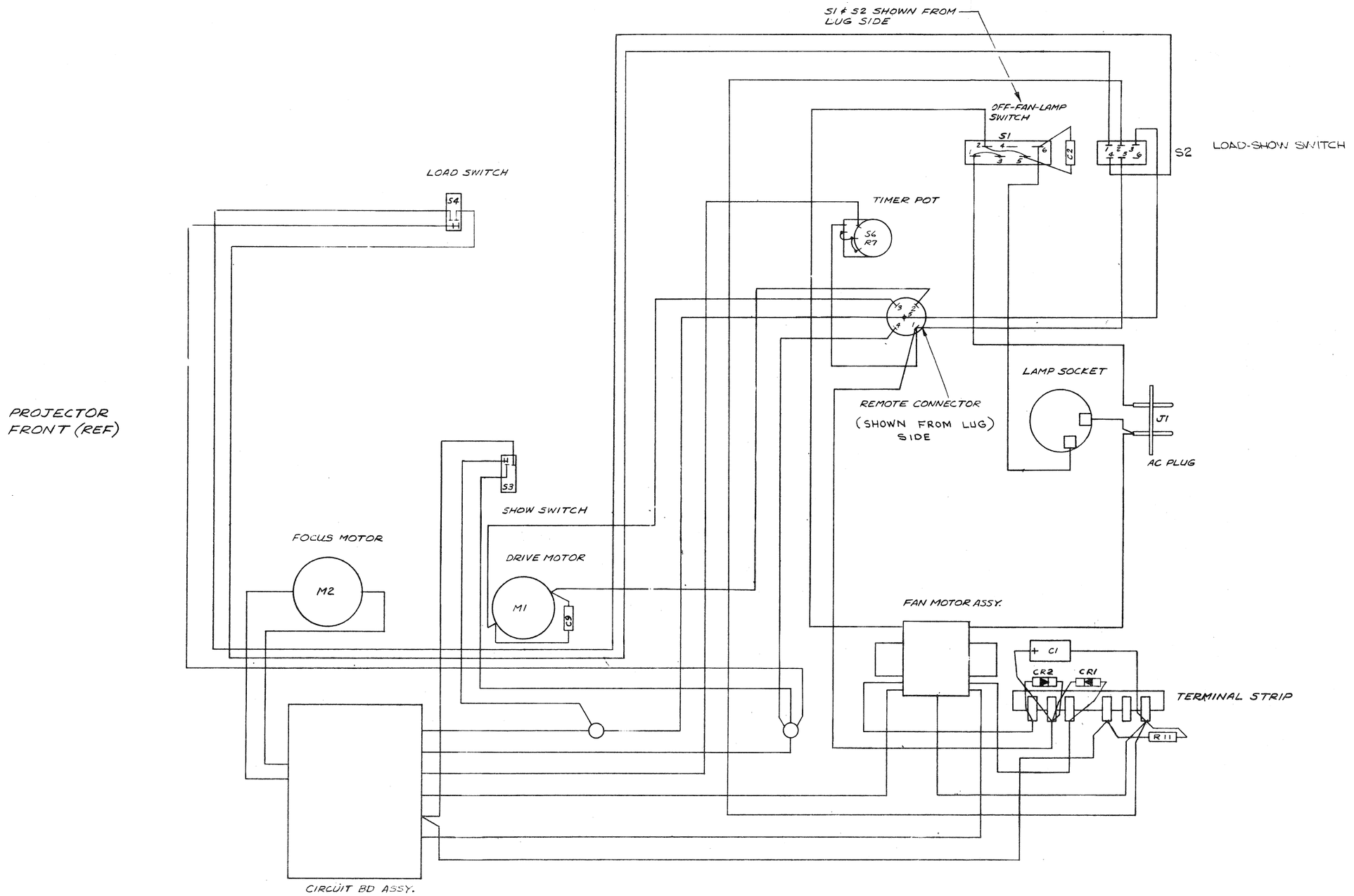


Figure 6-29A.
Wiring Diagram, Model 630 Projector
(New Version)

6-79/6-80

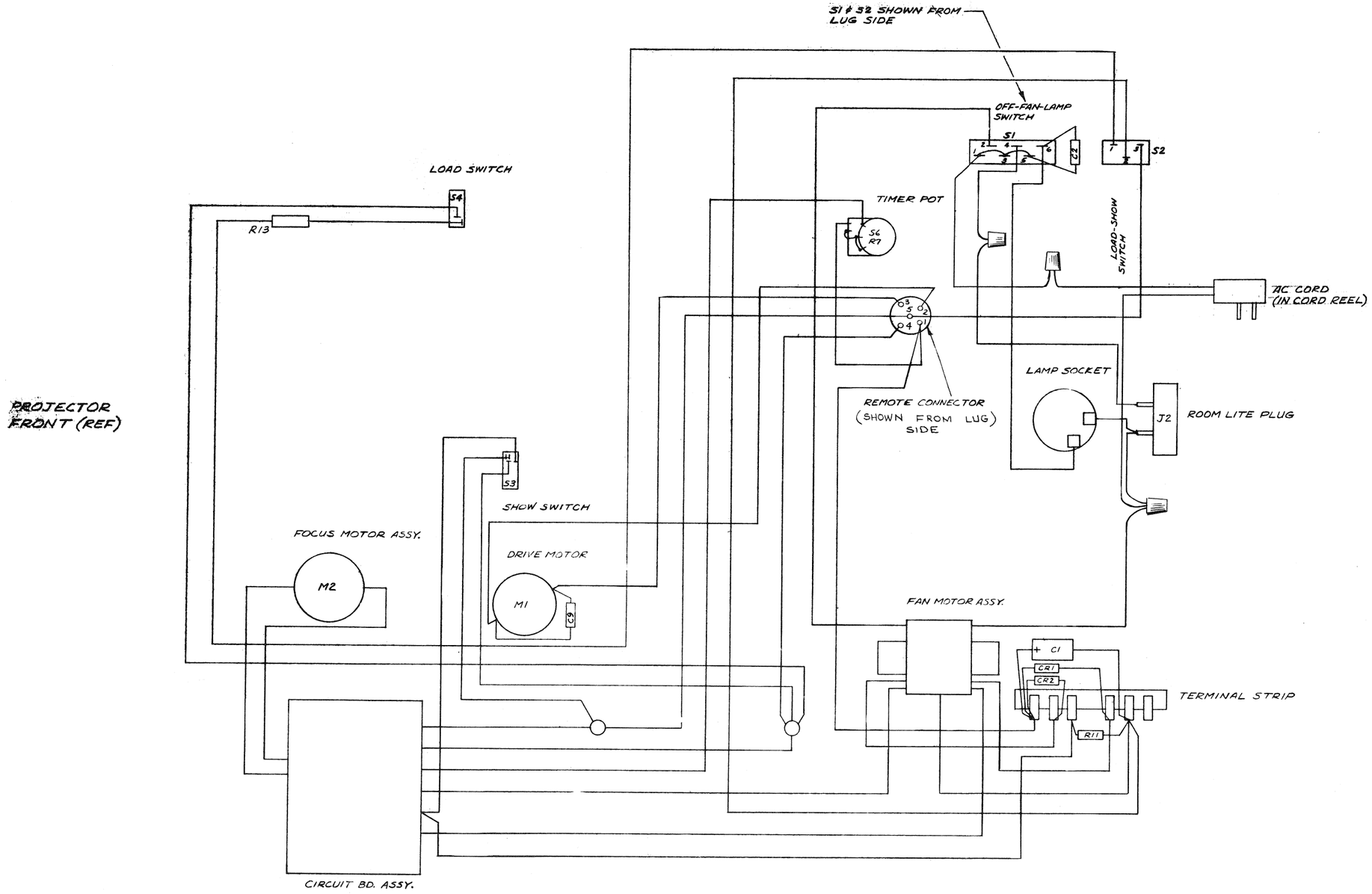


Figure 6-30.
Wiring Diagram, Model 640 Projector
(Old Version)

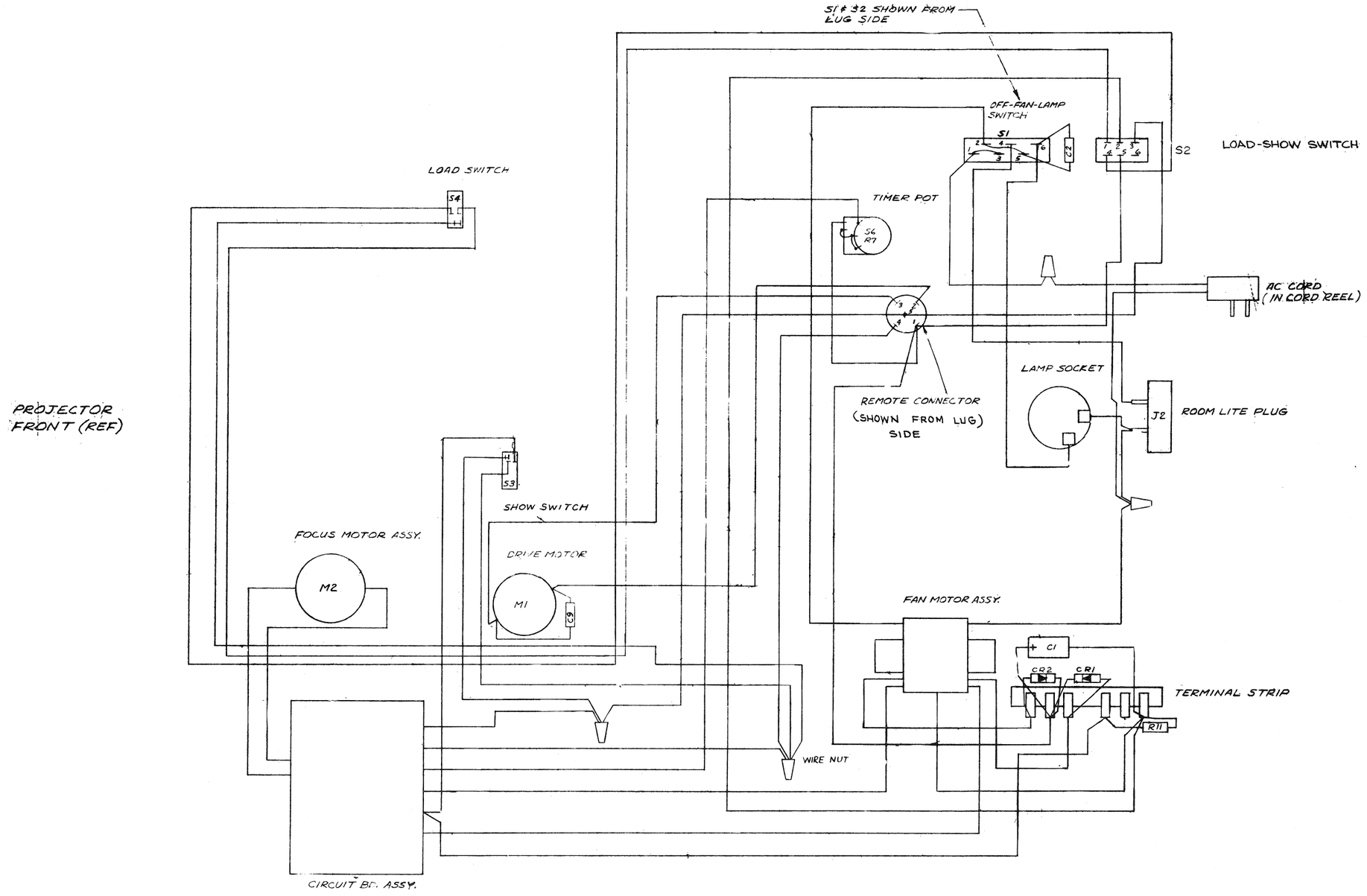


Figure 6-30A.
Wiring Diagram, Model 640 Projector
(New Version)

6-83/6-84

ACCESSORIES*

HONEYWELL PRODUCT CODE	DESCRIPTION
6658	3-inch f/3.5 lens
6659	4-inch f/3.5 lens
6647	5-inch f/3.5 lens
6648	4 to 6-inch zoom lens
6652	120 slide non-spill round tray
6653	Box of four 40-slide non-spill straight trays
6654	Vinyl dust cover
6657	Rigid control panel cover
6651	Tape sync cord
6650	25-foot remote cord
6656	10-foot remote cord
6665	Stack loader
6674	Cord bag
6673	4-inch f/2.8 lens
6669	3 to 5-inch zoom lens

* Order accessories from Finished Goods.