

KODAK 600 SERVICING



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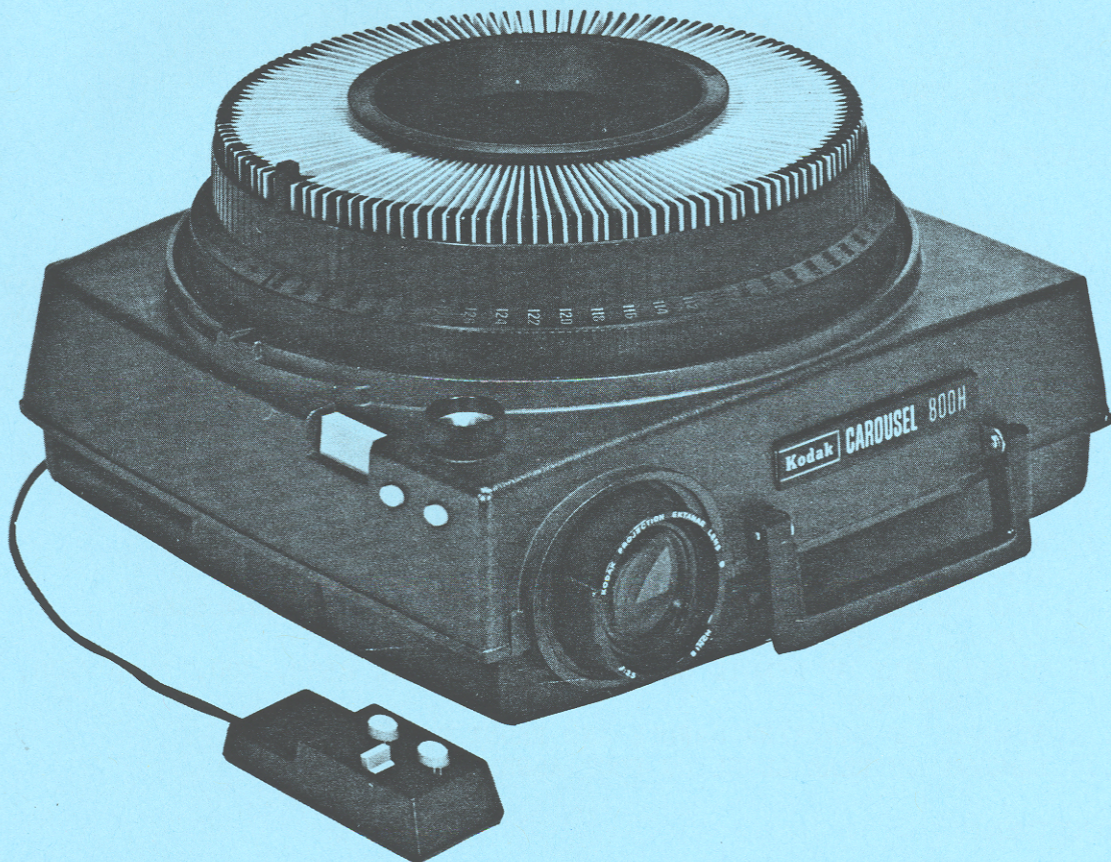
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Servicing the

KODAK CAROUSEL PROJECTOR

Models 600, 600H, 650, 650H, 700, 750, 750H, 800, and 800H



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1. GENERAL INFORMATION

1.1 OPERATING VOLTAGE

110-125 volts, 60 Hz, ac

1.2 PROJECTION LAMPS

For Models 600, 650, 700, 750 and 800 - 500-watt horizontal-burning, ANSI Code DEK lamp, 115-120 volt T-12 clear bulb, C-130 filament.

For Models 600H, 650H, 750H and 800H - 300-watt quartz-halogen, elliptical reflector, ANSI Code ELH, projection lamp.

1.3 DIELECTRIC STRENGTH TEST

A dielectric strength test should be performed on the projector and should meet the following requirements:

Leakage current must not exceed 2.5 milliamperes with 900 volts, 60 Hz, ac applied for one minute between the shorted prongs of the power plug and the frame with the power switch in the lamp or high position.

1.4 DROPPING RESISTOR

Extends lamp life when power switch is in the low position

For Models 700, 750 and 800 - 3 ohms

For Models 750H and 800H - 5 ohms

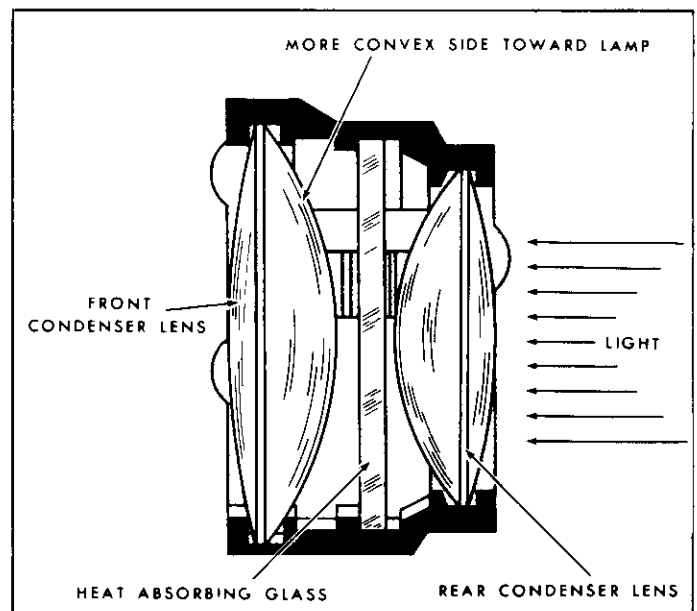
1.5 OPTICAL SYSTEM

1.5.1 PROJECTION LENSES:

The current line of *KODAK* Projection *EKTANAR* and *EKTANON* Lenses may be used.

1.5.2 The condenser system in the 600 through 800 (Non-"H") models contains two (2) lenses and a heat-absorbing glass. Install as indicated in sketch.

1.5.3 The condenser system in the 600H, 650H, 750H and 800H models contains a front condenser lens and heat-absorbing glass only. Install as indicated in sketch for the heat-absorbing glass and front condenser lens only.



1.6 SLIDE TRAY

- 1.6.1 The slide tray is high-quality molding with one (1) index position and eighty or one-hundred and forty slide positions (depending on the tray).
- 1.6.2 There are four models of the tray that may be used: the KODAK CAROUSEL Slide Tray, Model 1 (black), KODAK CAROUSEL Universal Slide Tray (gray), the KODAK CAROUSEL 140 Slide Tray and the KODAK CAROUSEL Slide Tray for the German KODAK CAROUSEL S Projector.
- 1.6.3 Emergency release of the slide tray: Insert a coin in wide slot in center spindle. Turn coin left or right and lift tray from projector.

1.7 SELECT BUTTON

- 1.7.1 Models 600 and 600H - The select button serves two purposes:
 - 1. When depressed LIGHTLY and released, mechanism will advance the tray and show the next slide.
 - 2. When DEPRESSED ALL THE WAY AND HELD, mechanism will advance to half-cycle or select position and tray can be rotated (see 2.2). When the select button is depressed, the tray is free to rotate to any position or to move to the indexed area for tray removal.
- 1.7.2 Models 650, 650H, 700, 750, 800, and 800H - The select button is not designed to advance the tray, but when DEPRESSED ALL THE WAY AND HELD will advance the mechanism to half-cycle or select position (see 2.2). When the select button is depressed, the tray is free to rotate to any position or to move to the indexed area for tray removal.

1.8 AUTOMATIC TIMER

Automatic operation is provided in Models 800 and 800H only. It is accomplished by setting the timer "knob" to 5, 8 or 15 (seconds). The remote control assembly is not required for automatic operation, but may be used for either forward or reverse actuation to override the automatic operation. The built-in forward and reverse switch will also override the automatic operation.

1.9 REMOTE CONTROL UNIT

- 1.9.1 Models 600 and 600H - Not available in these models.
- 1.9.2 Models 650, 650H, 700, 750, 750H, 800, and 800H - Includes "FOR" button for forward operation and "REV" button for reverse operation.
 - a. Forward operation is controlled by momentary pressure all the way down on the "FOR" button, followed by immediate release.
 - b. Reverse operation requires a slightly longer hold all the way down on the "REV" button, followed by immediate release.

NOTE: If the pressure and release on the reverse button is quick or if it is not pushed all the way down, the mechanism may be "tricked" into advancing instead of reversing.

- 1.9.3 Models 750, 750H, 800, and 800H - In addition to the forward and reverse buttons described in 1.9.2, these models have a focus button for remotely adjusting focus.

1.10 THERMAL FUSE

The thermal fuse is a safety device which protects the projector from overheating and possible damage caused by overheating within the projector housing.

There is no visible change in the appearance of the fuse when it burns out. The most obvious symptoms: Projector will stop running or cannot be turned on.

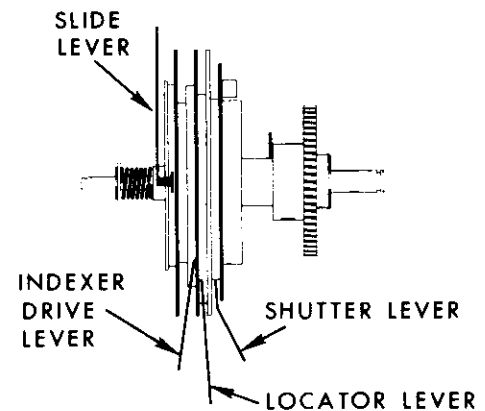
1.11 CAPACITOR

The capacitor suppresses electrical noise which otherwise might be picked up by other electrical equipment (e.g., associated tape recorder).

2. SEQUENCE OF OPERATION

2.1 FULL CYCLE, FORWARD (See foldout from Page 9.)

- 2.1.1 When the projector is turned on, main drive motor runs continuously. Power is transferred to the fan by a belt and to the worm pulley by a second belt.
- 2.1.2 The worm-pulley (10) rotates worm gear and clutch sleeve driver (11) continuously. The clutch spring (9) is held in relaxed position by clutch contact lever (4) which allows cam stack and shaft (8) to remain stationary.
- 2.1.3 A forward cycle (except for Models 600 and 600*) is started when solenoid (5) momentarily pulls the cycle lever (17) away from clutch spring (9). This action simultaneously breaks electrical contact to solenoid and allows clutch spring (9) to tighten on revolving clutch sleeve, starting cam shaft rotation. The cams move mechanism levers and one revolution accomplishes one cycle.
- 2.1.4 As shutter (13) closes, drive lever (6) and index lever (1) begin to move and slide lever (7) begins to eject slide from gate (16).
- 2.1.5 As slide lever ejects slide from gate, shutter lever (12) continues moving and, in turn, opens pressure pads (15).
- 2.1.6 When slide lever lifts slide completely into tray, locator (14) disengages tray lugs and index lever (1) continues its movement to rotate slide tray forward.
- 2.1.7 Index lever completes moving tray forward, then withdraws and locator moves to engage tray lugs which accurately align tray over gate.
- 2.1.8 As slide lever (7) descends, slide drops by gravity into open gate. When slide lever hits bottom, pressure pads close, index lever returns to starting position and shutter (13) opens.
- 2.1.9 The clutch spring (9) contacts clutch contact (4), clutch begins to slip, and cam shaft (8) ceases to rotate.



*A forward cycle is started in Models 600 or 600H when the clutch contact lever (9) is mechanically pulled away from the clutch spring by the select lever (18).

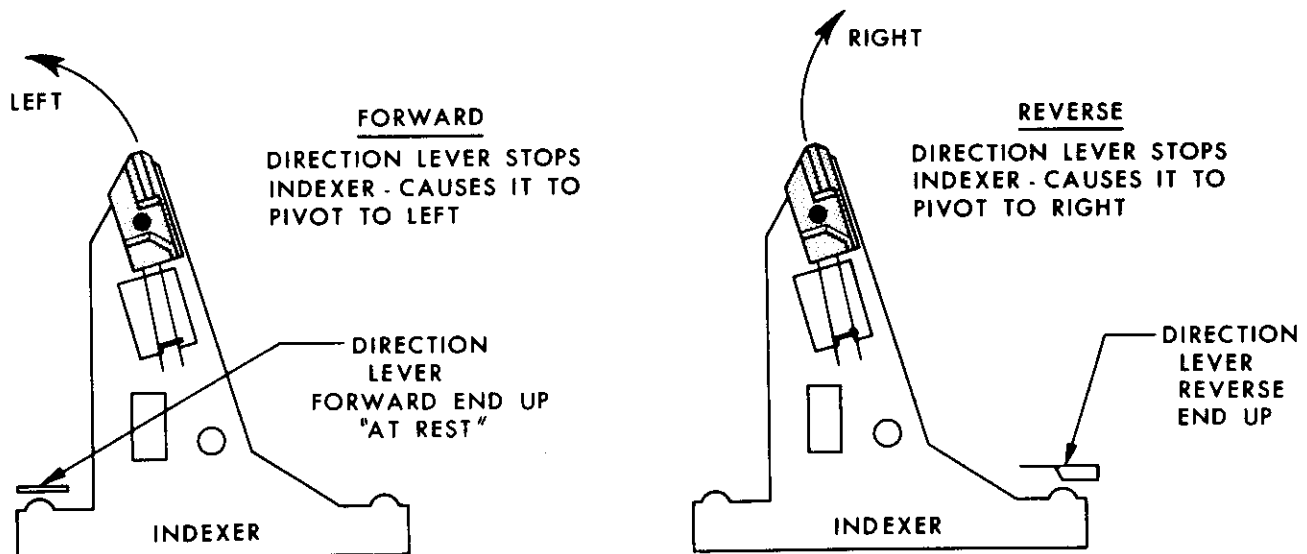
2.2 HALF-CYCLE

- 2.2.1 The purpose of half-cycle or use of SELECT button is to:
 - a. Return slide from gate to tray for editing.

- b. Allow tray to be rotated manually to any numbered slide position, or to "0" position for removal of tray from projector.
 - c. Allow slide opposite gate index to drop and be shown when button is released.
- 2.2.2 When SELECT button is pressed ALL THE WAY DOWN AND HELD, the select lever (18) moves cycle lever (17) to disengage clutch spring (9). The clutch spring tightens on rotating clutch sleeve (11) and cam shaft (8) starts to rotate.
- 2.2.3 The drive lever (6) is pushed off its cam by select lever (18) blocking its movement.
- 2.2.4 All other levers operate as in first half of a full cycle forward. Shutter closes, slide lever pushes slide into tray and locator pulls out of contact with lugs of tray.
- 2.2.5 With SELECT button still depressed ALL THE WAY DOWN, the clutch spring is stopped by half-cycle arm (3) of cycle lever, approximately 180° from its starting position. The cam shaft stops rotating and all lever action stops at this point.
- 2.2.6 When SELECT button is released, the half-cycle arm of cycle lever releases clutch spring and remaining half-cycle is performed as in full cycle; locator positions tray, slide lever descends, pressure pads close and shutter opens.

2.3 REVERSING

- 2.3.1 Models 600 and 600H have no reverse operation. They may be reversed manually by pressing select button ALL THE WAY DOWN AND HOLDING allowing the slide tray to be moved by hand.
- 2.3.2 Forward and reverse in Models 650, 650H, 700, 750, 750H, 800, and 800H is determined by the position of the direction lever (2). Normal or AT REST position is for forward operation.



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3. DISASSEMBLY

3.1 REMOVAL OF BASE COVER

- 3.1.1 Turn projector upside down; remove one (1) Phillips head screw visible next to leveling foot. Note that this is a machine screw thread and must be replaced in the same location.
- 3.1.2 Remove remaining three (3) Phillips head tapping screws. One is visible, No. 2 is hidden by lamphouse door and No. 3 is hidden by cord compartment door.
- 3.1.3 Remove screw from center of rubber foot and washer on fully retracted elevation leg. Then, with the lamphouse door partially open, guide base cover over elevating knob.
- 3.1.4 In reassembling base cover, make sure all electrical wires are dressed in their proper locations so they will not be pinched by cover.
- 3.1.5 Guide base cover over elevating knob.
- 3.1.6 Replace screws and rubber elevation foot and washer; run elevation up before tightening foot screw.

3.2 REMOVAL AND REPLACEMENT OF THERMAL FUSE ASSEMBLY

- 3.2.1 For Models 600H, 650H, 750H, and 800H.
- 3.2.2 Remove base cover (3.1).
- 3.2.3 Disengage spring clamp for condenser lenses and remove lenses.
- 3.2.4 Remove three (3) 1/4-inch hex head screws. One is directly in front of the lamp opening, the second is in the same piece of metal toward the front of the projector holding the black mask, and the third to toward the outer edge of the projector holding the lens clamp assembly.

NOTE: The two (2) hex head screws closest to the lamp are nickel-plated while the one (1) farthest away is not plated.
- 3.2.5 Guide the lamp and mirror mount assembly out of the projector, over the two (2) locating lugs in the housing.
- 3.2.6 Remove screen holding thermal fuse assembly to blower cover.
- 3.2.7 Guide fuse assembly out of slot in blower cover and from under edge of casting.
- 3.2.8 Unsolder lead (short) to switch.
- 3.2.9 Cut other lead (long) at fuse; remove fuse.
- 3.2.10 Solder lead (long) of new fuse to cut lead and pull through sleeving.
- 3.2.11 Unsolder lead (long) and *WIRE-NUT*.

- 3.2.12 Solder short lead to switch.
- 3.2.13 Reassemble in reverse order.
- 3.2.14 For Models 600, 650, 700, 750, and 800.
- 3.2.15 Remove base cover (3.1).
- 3.2.16 Remove the screw holding the burned out fuse.
- 3.2.17 Lift out fuse and cut leads at sleeving. Remove sleeving and strip wire for 1/2-inch. Join old leads to new leads with wire connectors, part No. 145161.
- 3.2.18 Install new thermal fuse; secure phenolic mounting board with hex head screw.

NOTE: Dress wires and connectors into space between lamphouse door hinge post and rear nameplate. Be sure everything is clear. Try lamp-house door and other moving parts for clearance.

- 3.2.19 Replace base cover.

3.3 REMOVAL OF LAMP AND MIRROR MOUNT BRACKET (MODELS 600H, 650H, 750H, AND 800H)

- 3.3.1 Remove base cover (3.1).
- 3.3.2 Remove condenser lens and heat-absorbing glass by disengaging the wire clamp from under the hook and swing it out of the way. Lift the two (2) pieces of glass out of the projector.
- 3.3.3 Remove the lamp by similarly disengaging the wire clamp. As the wire clamp is swung out of the way, the lamp is disengaged from the socket and is lifted free.

CAUTION: Lamp must be cool before removal.

- 3.3.4 Remove the thermal fuse assembly from the blower cover (3.2).
- 3.3.5 Remove three (3) 1/4-inch hex head screws. One is directly in front of the lamp opening, the second is in the same piece of metal toward the front of the projector holding the black mask, and the third is toward the outer edge of the projector holding the lens clamp assembly.

NOTE: The two (2) hex head screws closest to the lamp are nickel-plated while the one (1) farthest away is not plated.

- 3.3.6 Guide the lamp and mirror mount assembly out of the projector, over the two (2) locating lugs in the housing.
- 3.3.7 Reassemble in reverse order. Mirror adjustment is covered under Section 4, Adjustments.

3.4 REMOVAL OF LAMPHOUSE DOOR ASSEMBLY (MODELS 600, 650, 700, 750, AND 800)

- 3.4.1 Remove base cover (3.1).
- 3.4.2 Open lamphouse door and remove three (3) glass lenses. Loosen 1/4-inch hex head screw at pivot point of door between switch-nameplate (rear) and lamphouse door assembly. Loosen 1/4-inch hex head screw at pivot point near front condenser lens position.
- 3.4.3 Guide door assembly out as far as wires will allow; unsolder wires and remove door.
- 3.4.4 Replace in reverse order. Lenses will fit only in their proper locations (see illustration 1.5.3).

3.5 MAIN DRIVE MOTOR

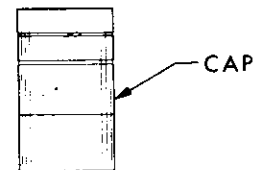
- 3.5.1 Remove base cover (3.1).
- 3.5.2 Remove three (3) 1/4-inch hex head mounting screws.
- 3.5.3 Disengage fan belt and worm-pulley belt as motor is lifted out of projector housing.
- 3.5.4 Electrically disconnect motor by removing all *WIRE-NUTS* securing motor wires.
- 3.5.5 To reassemble, worm-pulley belt should be positioned first, then fan belt.

NOTE: Take care not to nick or cut belt as this will cause belt to tear.

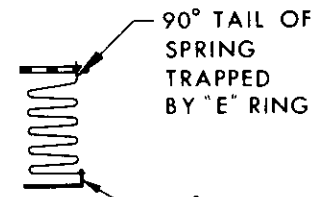
3.6 FAN REPLACEMENT AND/OR FAN BELT REPLACEMENT

- 3.6.1 Remove base cover (3.1).
- 3.6.2 Remove timer lever (Models 800 and 800H only).
 - a. Remove wire tie from wires secured to frame of mechanism assembly near cam shaft.
 - b. Remove "E" ring from brass pivot.
 - c. Lift timer lever off pivot, disengage from lug on end of timer contact arm, and finally disengage from timer link.
- 3.6.3 Remove thermal fuse (Models 600H, 650H, 750H, and 800H Only) (3.2).
- 3.6.4 Remove four (4) 1/4-inch hex head screws from blower housing cover; then remove paper baffle and fan cover. If anchor foot from plastic grille interferes, snap it back out of the way.

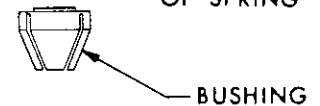
- 3.6.5 Remove plastic fan cap, "E" ring, spring, washer, fan bushing; next, disengage fan belt and remove fan. This leaves a plain washer and a cork washer on fan shaft.



- 3.6.6 Loosen three (3) hex head mounting screws holding main drive motor, lift motor, and remove belt.



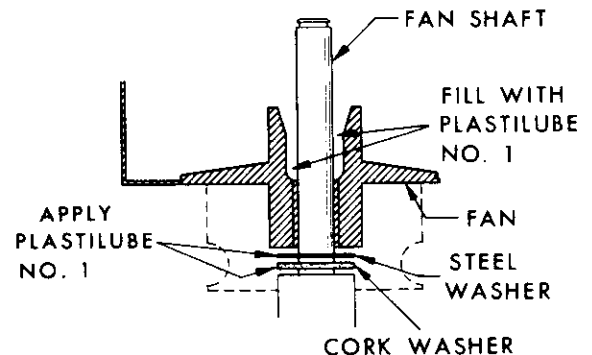
- 3.6.7 To reassemble, place belt over fan shaft; then lubricate shaft with Plastilube #1.



- 3.6.8 Place fan over shaft; then fill its cavity with Plastilube #1.

- 3.6.9 Reassemble remaining fan mounting parts.

- 3.6.10 Position belt on fan pulley, lift motor, stretch belt and position around motor pulley, reposition motor, and tighten motor mounting screws.



NOTE: Fan belt must be placed on fan pulley first, then motor pulley. Otherwise, belt may be nicked or cut when stretched past upper blower baffle cover.

- 3.6.11 Replace blower housing cover, paper baffle, timer lever; redress wires with a wire tie; and finally, replace base cover.

3.7 REMOVAL OF GRILLE ASSEMBLY

- 3.7.1 Remove base cover (3.1), thermal fuse ("H" Models Only) (3.2), and blower housing cover (3.6.4).
- 3.7.2 Remove 1/4-inch hex head screw from timer knob and timing lever link. Remove flat beryllium spring from under timing lever link.
- 3.7.3 In "Non-H" Models having fuse, remove 1/4-inch hex head screw from fuse board.
- 3.7.4 Unsolder leads from lamp socket (excluding "H" Models) and dropping resistor; remove *WIRE-NUTS* which connect grille leads to leads of other components.
- 3.7.5 The grille is held in position by six (6) bosses that snap into openings in projector housing. The grille may be removed by applying pressure to the bosses with a flat-blade screwdriver. Pull out on grille until two (2) Phillips head screws retaining plug receptacle are exposed. Remove screws and finish pulling grille from housing.

3.7.6 When replacing grille assembly, dress the sleeve so as to give as much room as possible toward junction with *WIRE-NUTS*; resolder lamp and dropping resistor wires and make sure all wire is secured.

3.7.7 Replace fuse, timer assembly, blower housing cover, and base cover.

3.8 REMOVAL OF MECHANISM ASSEMBLY AND LENS MOUNT ASSEMBLY

3.8.1 Remove focus knob by pulling straight off.

3.8.2 Turn projector upside down and remove base cover and blower housing (3.1 and 3.6); remove thermal fuse (For "H" Models Only) (3.2); lamphouse door assembly need not be removed on "Non-H" Models.

3.8.3 Remove main drive motor (3.5) without disconnecting its 120-volt leads.

NOTE: When reassembling motor, belt from mechanism is driven by pulley closest to motor, and belt from fan is driven by other pulley.

3.8.4 Disconnect the low-voltage system leading to mechanism assembly and focus motor (does not apply to Models 600 and 600H).

3.8.5 Remove storage compartment wall and elevation assembly [four (4) 1/4-inch hex head screws] and lift out.

3.8.6 Remove six (6) 1/4-inch hex head screws holding lens mount and mechanism assemblies.

3.8.7 Grasp lens mount and mechanism assemblies with both hands and carefully lift out of housing. After removal from housing, very carefully separate assemblies.

NOTE: It is possible to operate mechanism assembly by hand, duplicating all the functions of the projector related to cycling.

3.8.8 In reassembling, nest lens mount and mechanism assemblies together; then locate both in housing.

3.8.9 Reassemble balance of components in reverse order.

NOTE: Do not forget "Select" button and "Forward and Reverse" button. Position both before locating lens mount and mechanism assemblies.

3.9 DISASSEMBLY OF LENS MOUNT ASSEMBLY

3.9.1 Remove lens mount assembly (3.8).

3.9.2 Remove focus motor.

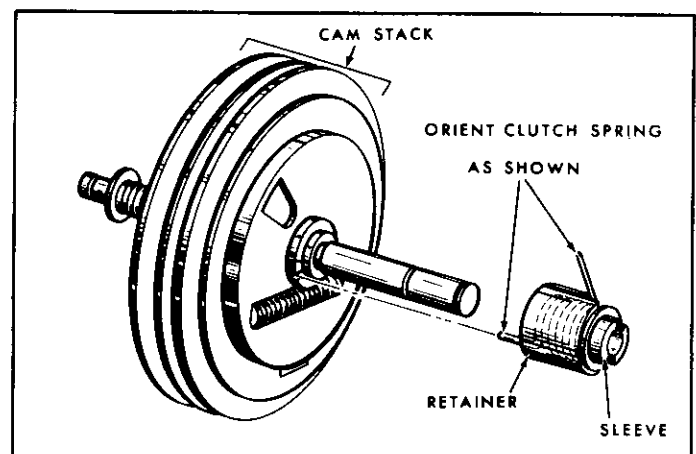
- a. Remove two (2) Phillips head screws which secure motor to motor bracket.
- b. When reassembling motor, position ear on end bell in bracket recess and replace screws.

3.9.3 Remove lower lens barrel rails by grasping tines of rail with thumb and forefinger, squeeze together and push out.

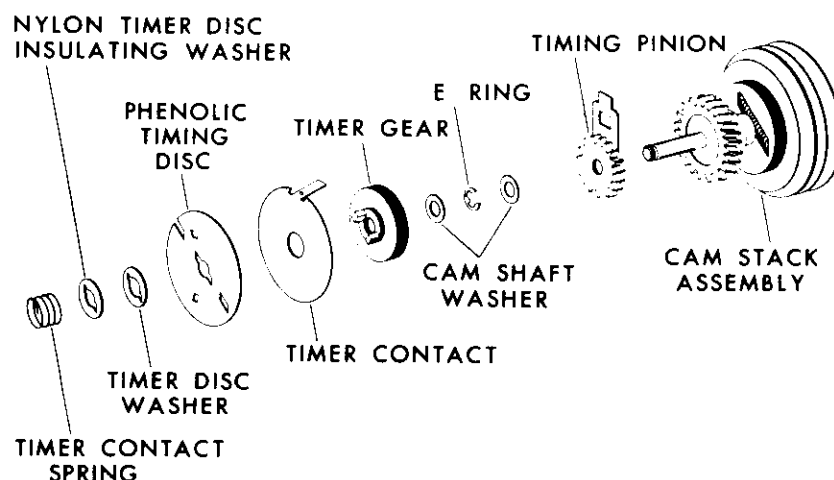
- 3.9.4 Remove upper lens barrel rails by first removing two (2) lens rail springs; then remove rails as in 3.9.3.
- 3.9.5 Built-in forward and reverse switch may be removed by removing 1/4-inch hex head screw and disengaging tabs from slots (except Models 600 and 600H).
- 3.9.6 Remove focus shaft by disengaging focus shaft spring, and then tip and pull shaft from square bearing hole.
- 3.9.7 Remove focus motor bracket [three (3) 1/4-inch hex head screws through rubber grommets] and then the focus worm shaft assembly.
- 3.9.8 Reassemble components of lens mount assembly in reverse order.
- 3.10 DISASSEMBLY OF MECHANISM ASSEMBLY
- 3.10.1 Remove mechanism assembly (3.8).
- 3.10.2 Remove six (6) 1/4-inch hex head screws and disconnect direction lever spring, then carefully lift off top plate assembly.
- 3.10.3 Remove one (1) 1/4-inch hex head screw and slide solenoid mount assembly out of mechanism assembly.
- 3.10.4 Cam shaft assembly. Remove two (2) bronze bearings from ends of cam shaft [one (1) "E" ring and one (1) "C" ring]. Remove spring between index lever and mechanism frame, disconnect spring between slide lever and mechanism frame, then remove timer contact spacer (800 and 800H Models only).
- 3.10.5 Remove slide mount lever and spring assembly [two (2) 1/4-inch hex head screws]; then spread sides of mechanism assembly frame and lift out cam shaft.
- 3.10.6 Reassemble in the reverse order.
- 3.11 DISASSEMBLY OF CAM SHAFT

- 3.11.1 Remove cam shaft (see section 3.10).
- 3.11.2 Remove components: "E" ring, washer, worm gear, clutch spring retainer, clutch spring and sleeve. Replace any defective parts and lubricate clutch spring shaft and sleeve. Reassemble in reverse order.

NOTE Clutch spring must be assembled as shown for correct timing.



3.12 AUTOMATIC TIMER (MODELS 800 AND 800H ONLY)



The parts comprising the timer are mounted on the cam shaft as shown, but are not part of the cam shaft assembly. The phenolic timer disk may become torn or the timer contact disk tab broken; otherwise, no replacements are likely.

3.13 WORM-PULLEY REPLACEMENT AND/OR MECHANISM BELT REPLACEMENT

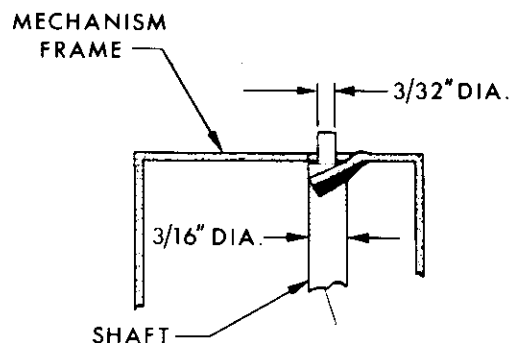
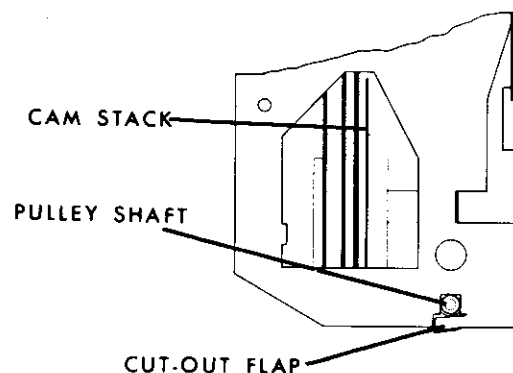
3.13.1 Remove base cover (3.1) and main drive motor (3.5). Lift motor out and set aside without disconnecting wires.

3.13.2 Bend flap of mechanism frame down to release shaft.

3.13.3 Lift out entire shaft and worm-pulley. Replace with worm-pulley, lubricate shaft with light coat of Plastilube #1; replace belt and reassemble.

CAUTION: Bend flap of mechanism frame slowly and easily so it will not break off.

3.13.4 In repositioning the shaft, flap presses against the 3/16-inch diameter with enough force to keep shaft from rotating. Worm-pulley rotates on shaft.



3.14 REMOVAL OF SLIDE LEVER RAMP

- 3.14.1 Remove the retaining rivet by any suitable means (hand file, punch or small electric grinder).

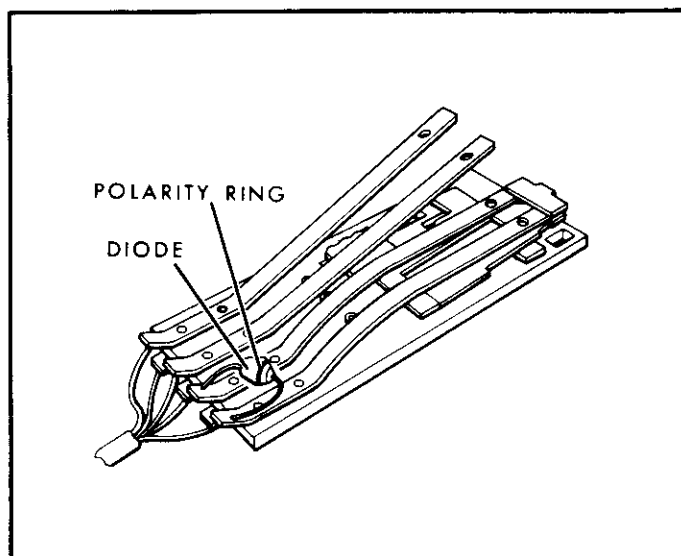
NOTE: In all instances, be sure not to bend the slide lever and keep the filings and grindings out of the mechanism.

- 3.14.2 When replacing the new ramp, insert the screw through the ramp and drive the screw into the metal. Be sure the screw is fully seated.

3.15 DISASSEMBLY OF REMOTE CONTROL (MODELS 650, 650H, 700, 750, 750H, 800, AND 800H)

- 3.15.1 Remove three (3) screws and lift half of switch housing.
- 3.15.2 Remove cycle and focus buttons.
- 3.15.3 Disengage remote cord from switch housing and lift out cord with contact assembly attached.
- 3.14.4 Diode may be removed by unsoldering leads (Models 750, 750H, 800, and 800H).

NOTE: Observe polarity of diode when removing and replace in same direction (see illustration).



3.16 REMOVAL OF CARRYING HANDLE OR FRONT NAMEPLATE

- 3.16.1 Remove base cover (3.1).
- 3.16.2 Remove compartment wall with elevating knob assembly, by removing four (4) 1/4-inch hex head screws.
- 3.16.3 Remove handle, handle bracket and nameplate by knocking out two (2) knurled pins in handle with a 1/16-inch punch.
- 3.16.4 Replace nameplate or handle as necessary. If the bracket does not hold nameplate in tightly, bend fingers of bracket as required.

3.17 REMOVAL OF REAR LEVELING FOOT ASSEMBLY

- 3.17.1 Remove base cover (3.1).
- 3.17.2 Grasp leveling foot and unscrew past the bind until removed. If the plastic knob is broken, use pliers to grasp leveling foot.
- 3.17.3 Install new leveling foot.

3.17.4 Crimp the top three (3) or four (4) threads of the leveling foot assembly perpendicular to the threads using a pair of diagonal cutters.

3.17.5 Replace base cover.

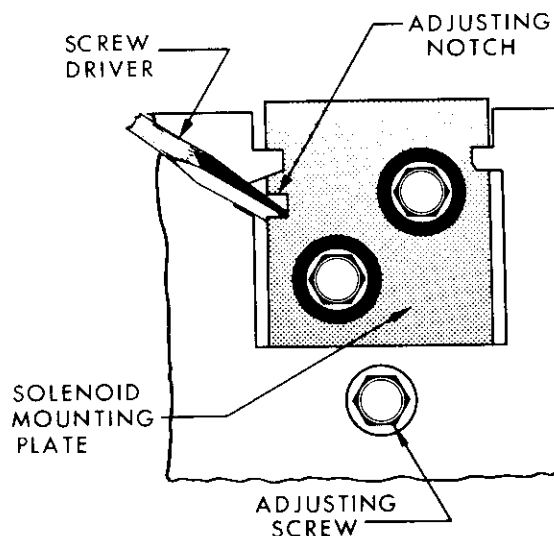
4. ADJUSTMENTS

4.1 CYCLE SOLENOID (MODELS 650, 650H, 700, 750, 750H, 800, AND 850H)

4.1.1 Solenoid should operate without chattering.

4.1.2 To adjust for minimum noise, loosen adjusting screw slightly and insert screwdriver into notch. Raise or lower solenoid mount as necessary. Tighten screw. If solenoid stroke is too short, reverse cycle will not work.

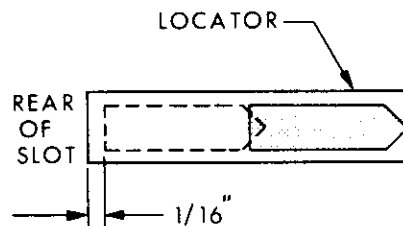
NOTE: This adjustment may be done with only the base cover removed.



4.2 LOCATOR LEVER

4.2.1 Locator should withdraw from lugs of slide tray and stop within 1/16-inch of, but not touching rear of slot in the mechanism frame.

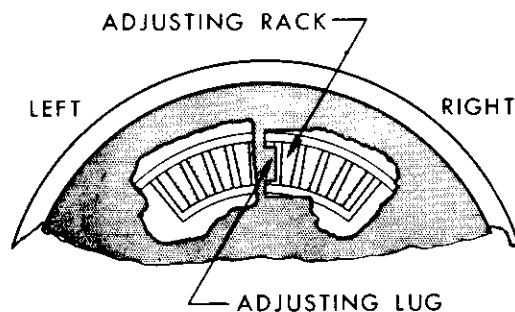
When locator moves again, any movement to the rear indicates that the cam is "out of time".



4.2.2 Erratic or jerky movement of the slide tray is an indication that the cam shaft is "out of time".

4.2.3 Disengage clutch spring from contact. Rotate cam shaft, with thumb, so top moves toward main motor until the cam has rotated approximately 180°.

4.2.4 Insert a screwdriver in cam shaft and spread as indicated in Mechanism Assembly drawing.



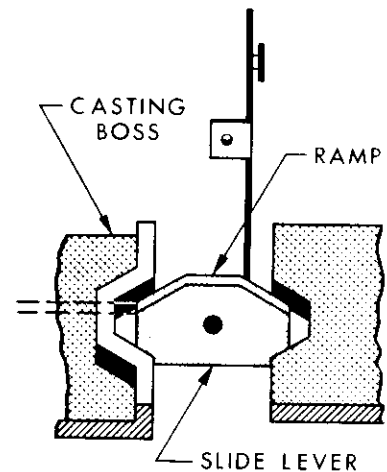
4.2.5 Adjusting lug will probably be found in or near center of adjusting rack.

4.2.6 Moving lug to the left (toward motor) will cause locator to move closer to rear of slot.

NOTE: This adjustment may be done with only the base cover removed.

4.3 SLIDE LEVER

- 4.3.1 Slide lever must raise slide fully into tray so tray may rotate to next slide. It must not raise slide so high that the tray is raised by the slide going into its compartment.
- 4.3.2 Loosen the inner screw on slide lever bracket, and with a small adjustable wrench, grasp bracket and move it to change pivot location of slide lever. Tighten screw.

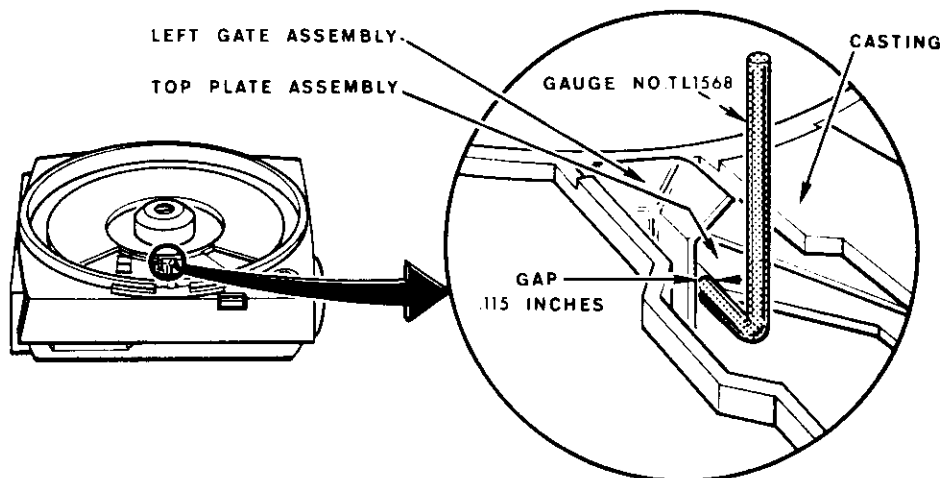


- 4.3.3 This adjustment may be made with mechanism in projector housing and only base cover removed. Turn projector over and observe ramp of slide lever; at half-cycle position, its lower shoulder should be roughly level with surrounding casting boss of projector.

4.4 GATE ALIGNMENT

- 4.4.1 Remove the slide tray and any slide left in the projector gate.
- 4.4.2 Check the gap between the LEFT GATE ASSEMBLY and the edge of the TOP PLATE ASSEMBLY of the mechanism, with gauge (#TL1568). The diameter of this tool is .115-inch. The tool should just pass through the gap. Clearance should not be excessive.

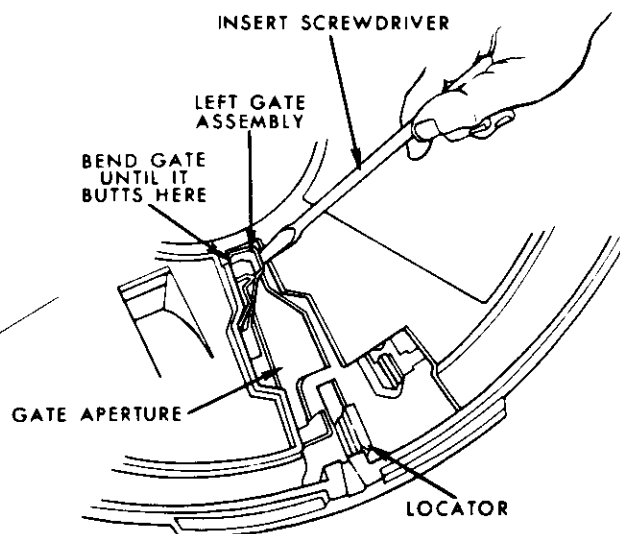
NOTE: Make sure the measurement is checked between the shiny, plated portion of the GATE ASSEMBLY and the gray sheet-metal TOP PLATE of the internal projector mechanism. Avoid measuring to the main cast housing of the projector.



If the gap is less than .115-inch, follow steps 4.4.3 through 4.4.8.

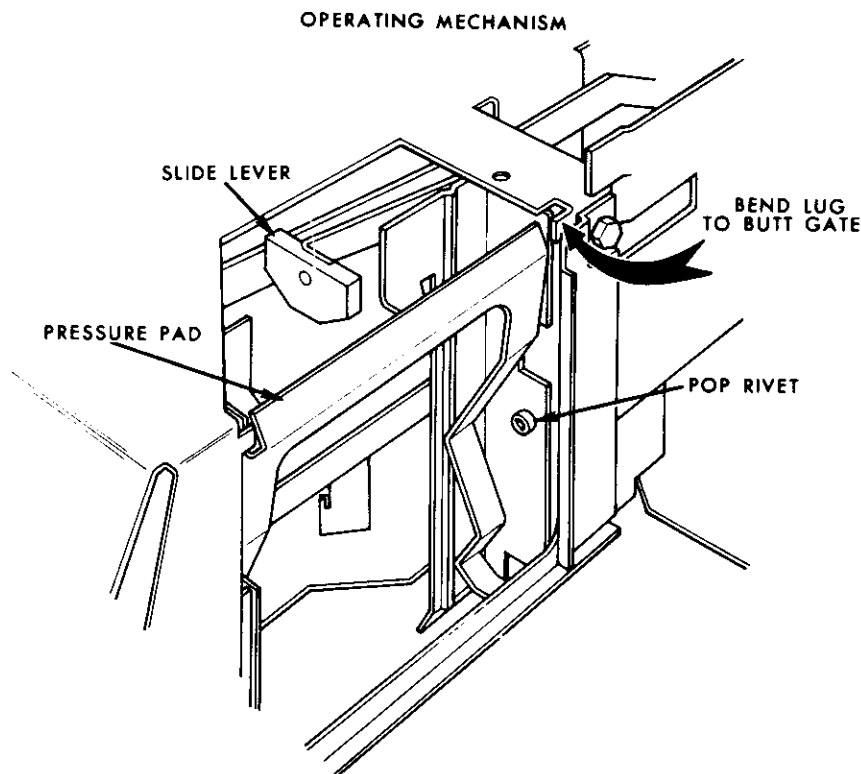
4.4.3 Disconnect the power cord.

4.4.4 Insert a flat-blade screwdriver between the front edge of the LEFT GATE ASSEMBLY and the top of the main projector housing, as shown. Move the screwdriver handle toward the front of the projector. Pry the assembly until it touches the housing casting at the point indicated in the diagram. The prying action will cause the GATE ASSEMBLY to pivot on the RIVET. When the screwdriver is withdrawn, the GATE ASSEMBLY will spring back slightly.



4.4.5 Check to see that the gap between the LEFT GATE ASSEMBLY and the TOP PLATE ASSEMBLY is at least .115-inch. If it is not, repeat 4.4.4 and check again.

4.4.6 Turn the projector upside down, open the lamphouse door, and remove the front condenser lens and the heat-absorbing glass. Locate the LUG (indicated by the heavy arrow immediately to the right of the cover assembly lip as you look toward the front of the projector). Bend the LUG in the direction shown by the arrow, until it just touches the GATE ASSEMBLY. This can be accomplished by placing the end of a screwdriver against the LUG and tapping the handle lightly with a small hammer. It will prevent the GATE ASSEMBLY from slipping out of alignment again.



4.4.7 Replace heat-absorbing glass and the front condenser lens in the lamphouse compartment.

4.4.8 Close and lock lamphouse cover.

4.5 MIRROR ALIGNMENT (MODELS 600H, 650H, 750H, AND 800H)

4.5.1 Remove projection lens and replace with mirror alignment tool (#TL1759).

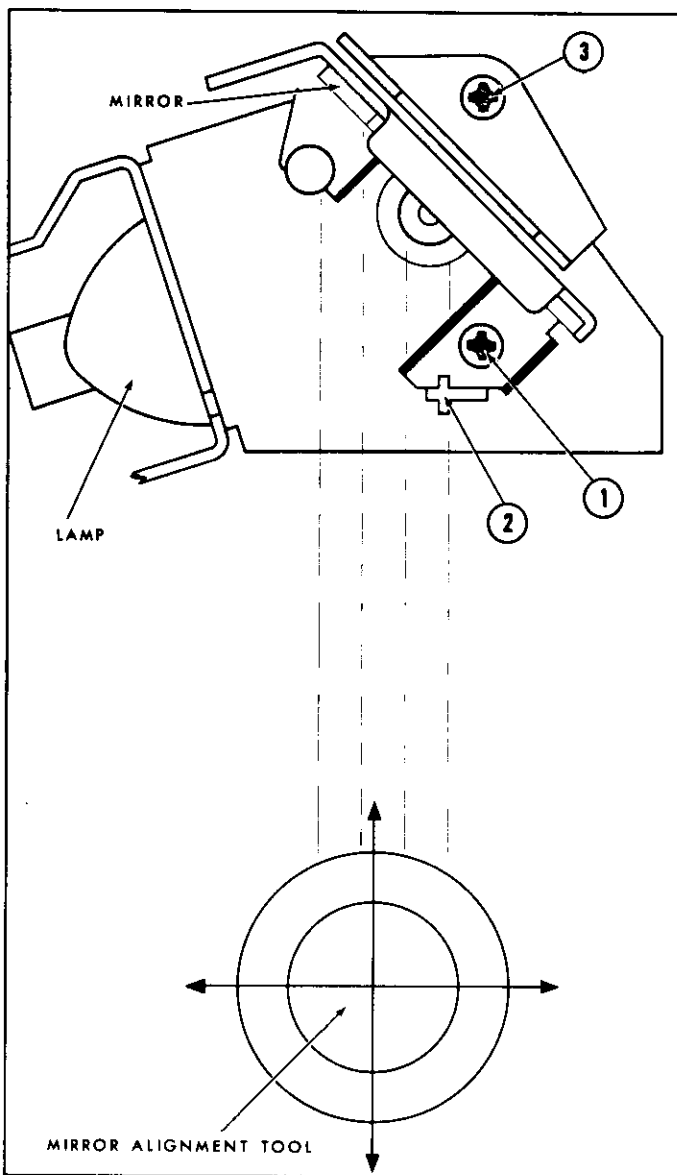
4.5.2 Plug the projector into a variable voltage source (Variac) set at 40 volts, ac. If you do not have a variable voltage supply, you may use either a neutral density slide or a cardboard slide with a 1/2-inch hole at center, to reduce light intensity.

NOTE: 40 volts ac or a special slide is used so that the lamp filament image on the mirror alignment tool can be looked at without doing harm to your eyes.

4.5.3 Place the power switch in the "Low" position. Alignment is proper when the circle of light is centered on the alignment tool. [If the circle is left or right of center, loosen screw (1), place a flat-blade screwdriver in the adjustment slot (2) and twist to align]. Tighten screw.

4.5.4 If the circle is up or down from center, adjust by turning screw (3) clockwise to move up and counterclockwise to move down.

4.5.5 After adjustment is complete, cement screw heads.



5. TROUBLESHOOTING

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
5.1 Projector will not cycle (forward).	1. Cycle solenoid failure. (Does not apply to Models 600 or 600H). 2. Clutch spring may be bent. 3. Check for bind in cycle lever. 4. Check for clearance between clutch contact arm of cycle lever and TIP of clutch spring.	1. Check 24-volt supply. If $24V \pm 4Vac$ is not present, replace main motor. If present, replace solenoid (3.10.3). 2. Replace cam shaft assembly or clutch spring (3.10 or 3.11). 3. Remove bind. 4. Form cycle lever.
5.2 Continuous cycling.	1. Clutch spring bent or broken. 2. Short in remote cord. (Does not apply to Models 600 or 600H). 3. Bind in select, cycle, or direction lever. 4. Clutch spring not being stopped by contact arm of cycle lever.	1. Replace clutch spring or cam shaft (3.10 or 3.11). 2. Check cord (3.15); replace if necessary. 3. Re-form levers for bind and lubricate. 4. Replace spring, replace cam shaft or re-form contact arm of cycle lever (3.10 or 3.11).
5.3 Projector will not index (forward or reverse).	1. Select lever interferes with movement of index drive lever, as in half-cycle operation. 2. Index drive lever not shifting to low side of cam.	1. Check for binds in select lever. 2. Check for burr on drive lever.
5.4 Projector will not reverse. (Does not apply to Models 600 or 600H).	1. Cycle solenoid out of adjustment.	1. Readjust (4.1).

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
	2. Bind in cycle lever and/or direction lever. 3. Direction lever hairspring missing. 4. Clutch spring bent. 5. Reverse button of remote control unit not held long enough. 6. Cycle solenoid does not operate.	2. Check and remove bind; lubricate if necessary. 3. Remove mechanism (3.8) and install index lever. 4. Replace cam shaft (3.11). 5. Customer error. 6. Check 24-volt supply. If $24V \pm 4Vac$ is not present, replace main motor. If present, replace solenoid (3.10.3).
5.5 Projector always reverses. (Does not apply to Models 600 or 600H).	1. Bind between direction lever and mechanism frame. 2. Defective remote cord.	1. Remove bind and lubricate if necessary. 2. Check for bind between reverse and forward contacts (3.15).
5.6 Noisy operation.	1. Broken or malformed ribs on fan causing "fluttering" noise. 2. Lack of lubrication on shaft. 3. Fan cap not fully seated. 4. Worm-pulley with a high spot will cause a "fluttering" noise. 5. Gear noise from focus motor. (Does not apply to Models 650 or 650H).	1. Replace fan (3.6). 2. Lubricate shaft (3.6). 3. Seat with thumb. 4. Replace worm-pulley (3.13). 5. Increase backlash between gears or install new motor (3.9.2).
5.7 Tray cannot be rotated when select button is held down.	1. Projector not on.	1. Projector must be turned "On".

<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
	2. Locator does not withdraw from tray lugs. 3. Slide lever not raising slide fully into tray.	2. Check locator adjustment (4.2). 3. Check slide lever adjustment (4.3).
5.8 Shutter "hang-up".	1. Shutter spring unhooked or missing. 2. Shutter may be striking cycle lever.	1. Remove mechanism (3.8) and replace spring. 2. Remove mechanism (3.8), file cycle lever at point of contact with shutter. Do Not file shutter, or light leak on projection screen may result.
5.9 Focus motor dead. (Models 700, 750, 750H, 800, and 800H).	1. Possible loose <i>WIRE-NUTS</i> on focus motor. 2. Dead spots in focus motor.	1. Tighten <i>WIRE-NUTS</i> . 2. Replace focus motor (3.9.2).
5.10 Remote focus fails. (Models 700, 750, 750H, 800, and 800H).	1. Diode in remote control defective. 2. Main motor 24-volt winding burned out. 3. Focus motor dead.	1. Replace diode (3.15). (NOTE Polarity). 2. Replace motor (3.5). 3. Replace focus motor (3.9.2).
5.11 Slides jam.	1. Gate not properly aligned.	1. Align gate (4.4).
5.12 Projector stops running or will not start.	1. No power to projector. 2. Thermal fuse open.	1. Check power supply and power cord. 2. Check fuse for continuity using a volt ohmmeter. If fuse is open, replace fuse (3.2).
5.13 Illumination uneven.	1. Mirror alignment incorrect.	1. Adjust mirror alignment (4.5).

6. TOOLS, CEMENTS AND LUBRICANTS

6.1 SPECIAL SERVICE TOOLS

Tool #TL 862	Glass-mounted test slide
Tool #TL 972	KODAK READY-MOUNT Test Slide
Tool #TL1031	1/4-inch hex socket wrench with 6 inch shank and plastic handle
Tool #TL1115	Mechanism operating fixture (optional)
Tool #TL1568	Gate alignment tool
Tool #TL1759	Mirror alignment tool

6.2 LUBRICANTS AND APPLICATION

<u>*Part No.</u>	<u>Description</u>
763001	(A&O 61-3686) SAE #20 CITGO PACEMAKER, T 30 Oil
763002	(A&O 61-3655) Plastilube #1
763003	(A&O 10-592) Plastilube #1 Grease plus 12% Moly

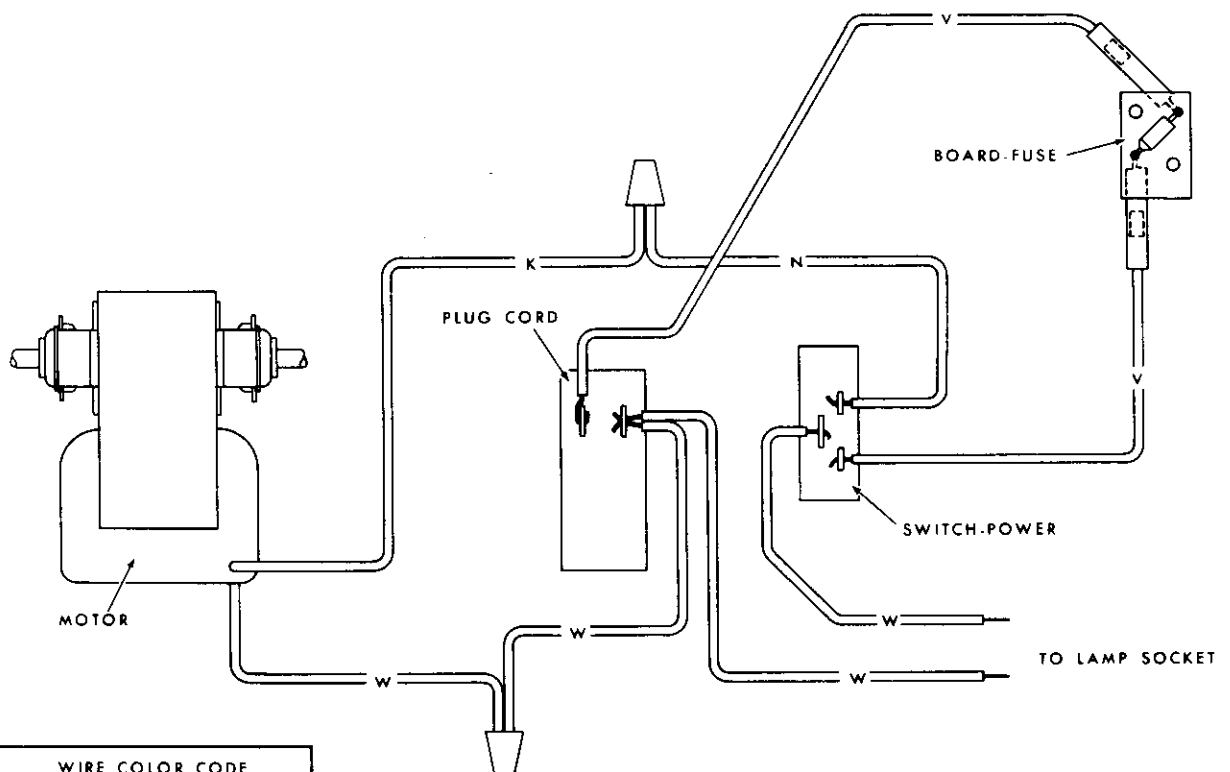
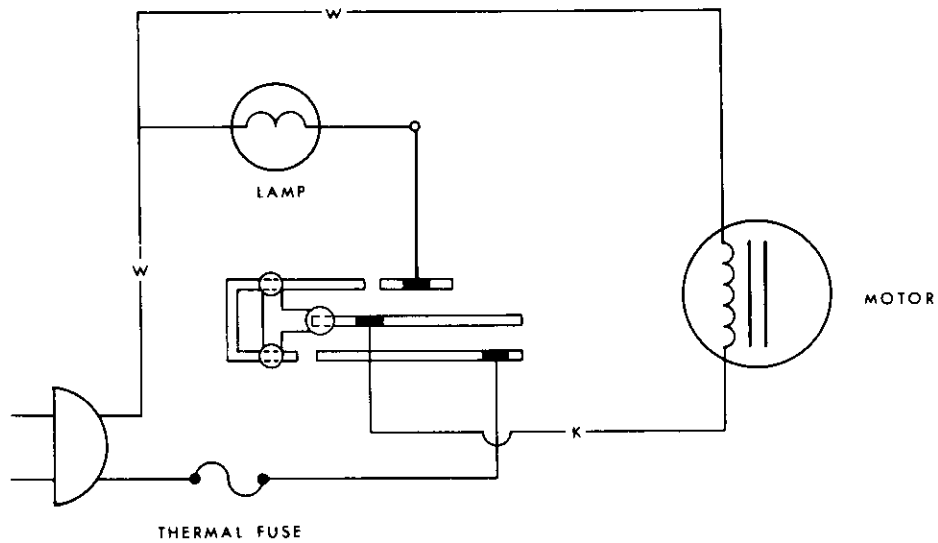
*Lubricants with part numbers are supplied only in convenient one-ounce plastic tubes. Order by part number.

LUBRICATION	AMOUNT	LUBRICANT
Bearings of main drive motor when motor has been removed for other repairs	2 drops	763001
Bearing of clutch shaft	2 drops	"
All worms and gears	Light coat	763002
Nylon cam surfaces	Light coat	"
Fan and fan shaft (see 3.6)	Pack cavity	"
Steel and cork fan washer (see 3.6)	Heavy coat	"
Pivot point of levers and cam levers	Generous	763003
Nylon bushing on drive lever	Medium	"
Dimples on index lever (underside)	Medium	"
Slot at end of shutter lever	Medium	"
Clutch assembly	Generous	"

Lubricate all points with a light coat. A little lubrication applied frequently is better than overlubrication. The serviceman should use his judgment and lubricate points as needed.

ELECTRICAL DIAGRAMS

KODAK CAROUSEL MODELS 600 and 600H PROJECTORS



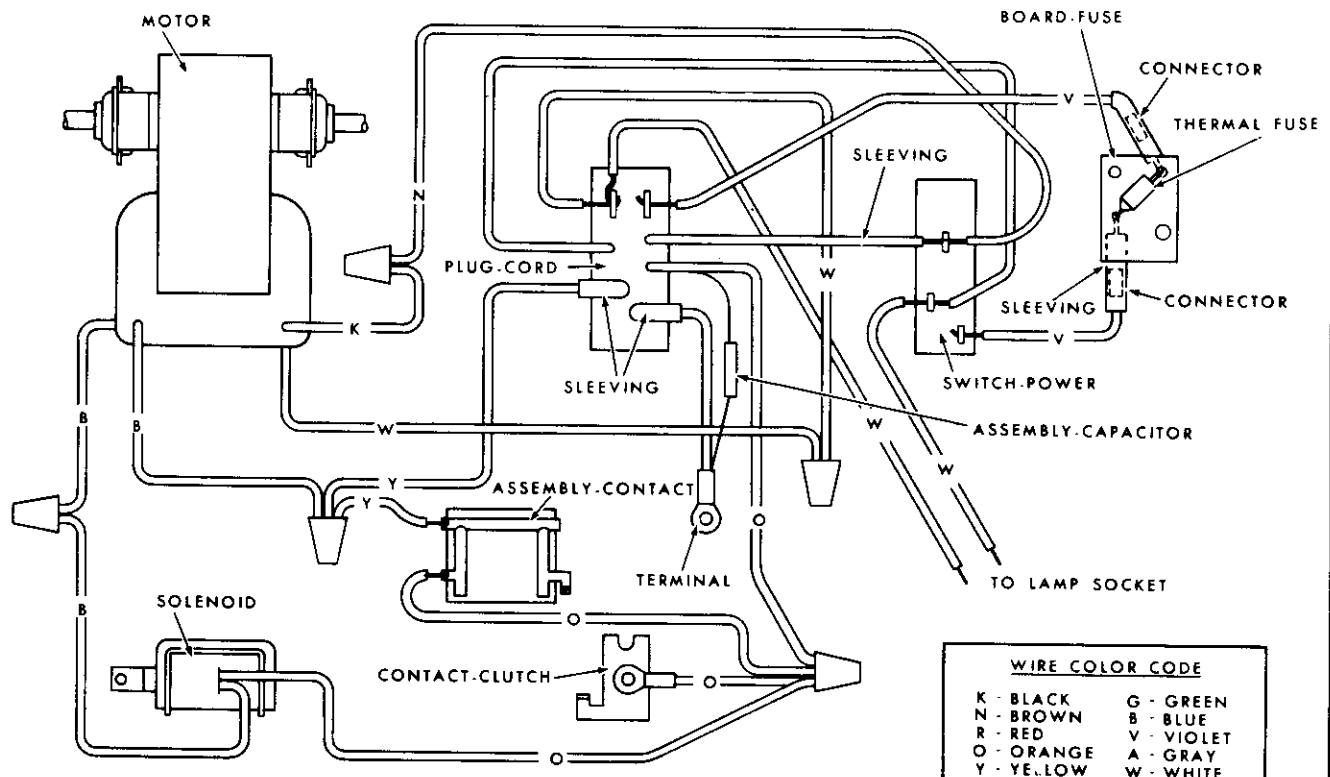
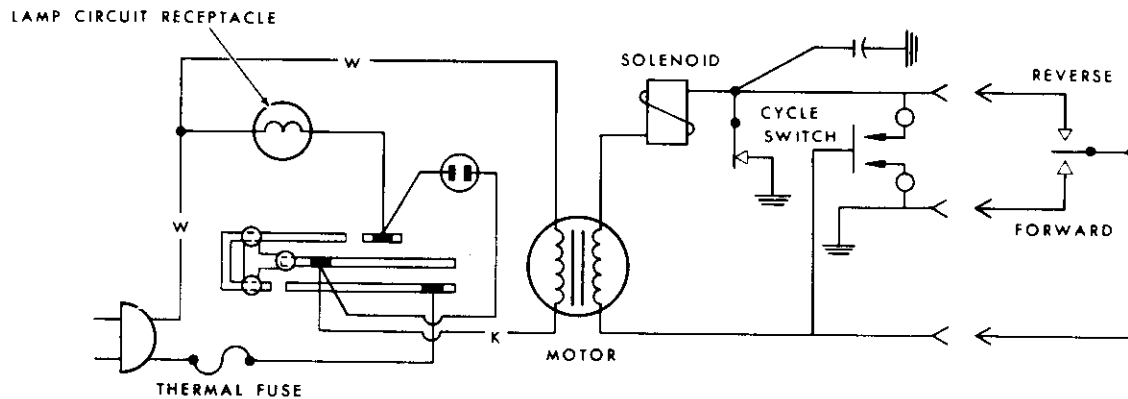
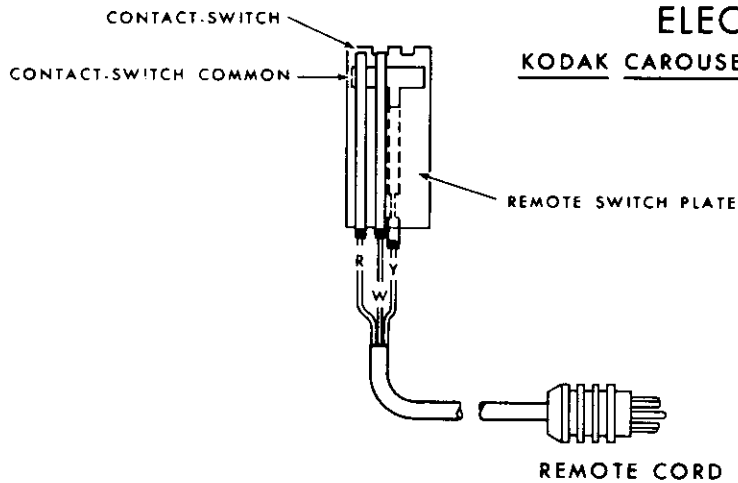
WIRE COLOR CODE

K - BLACK	G - GREEN
N - BROWN	B - BLUE
R - RED	V - VIOLET
O - ORANGE	A - GRAY
Y - YELLOW	W - WHITE

EARLY MODEL PROJECTORS MAY VARY FROM DIAGRAMS SHOWN

ELECTRICAL DIAGRAMS

KODAK CAROUSEL MODELS 650 and 650H PROJECTORS



WIRE COLOR CODE

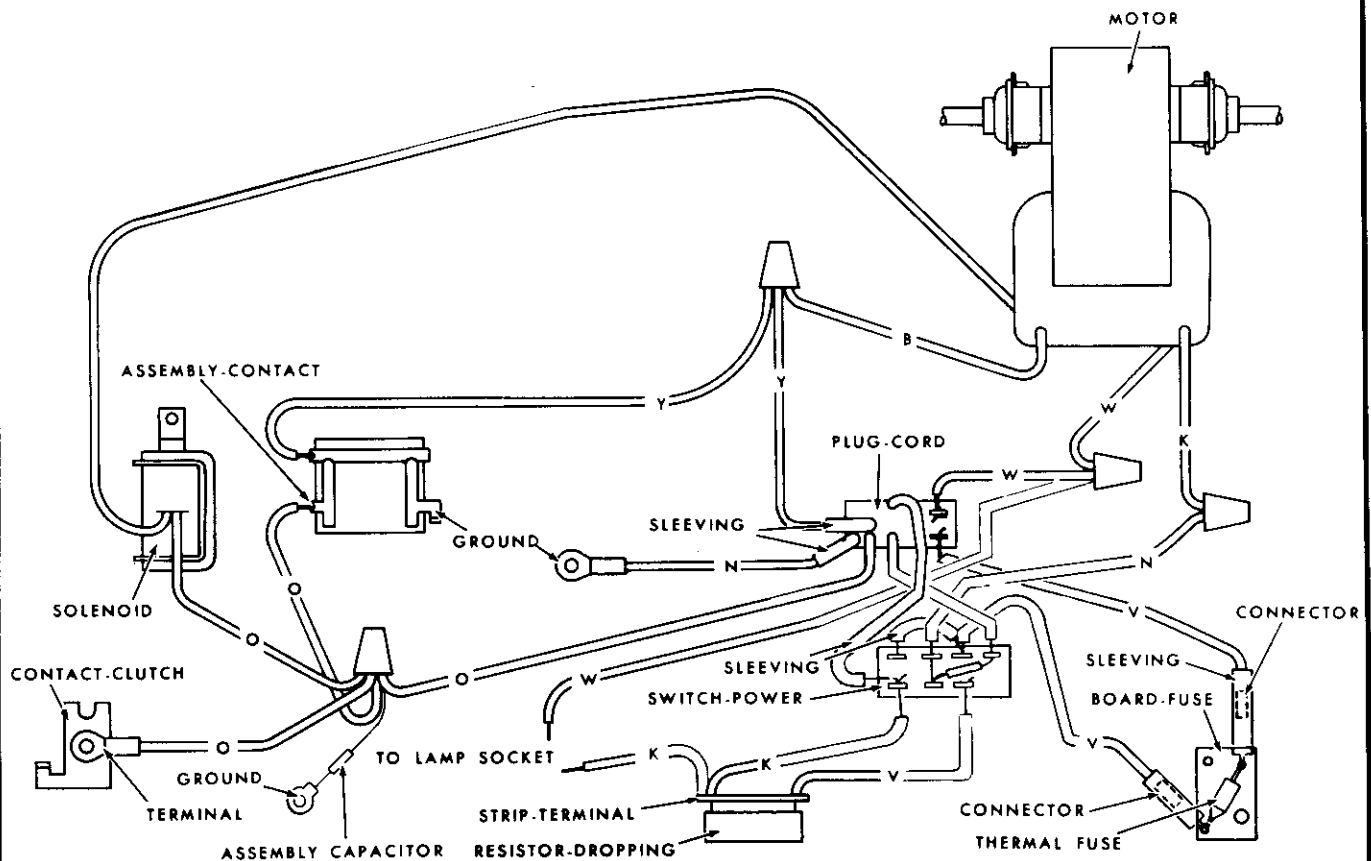
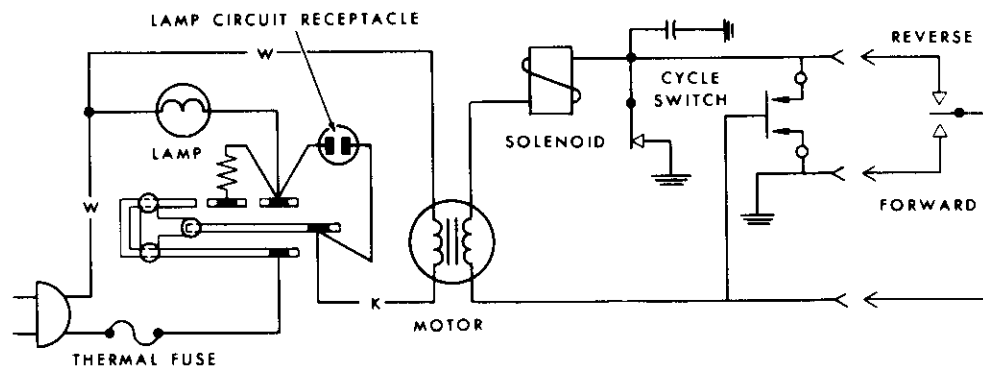
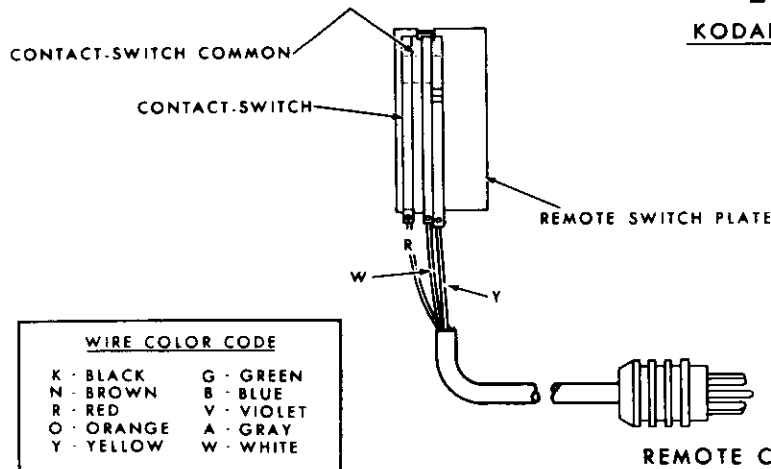
K - BLACK	G - GREEN
N - BROWN	B - BLUE
R - RED	V - VIOLET
O - ORANGE	A - GRAY
Y - YELLOW	W - WHITE

EARLY MODEL PROJECTORS MAY VARY FROM DIAGRAMS SHOWN

ELECTRICAL DIAGRAMS

KODAK CAROUSEL MODEL 700 PROJECTOR

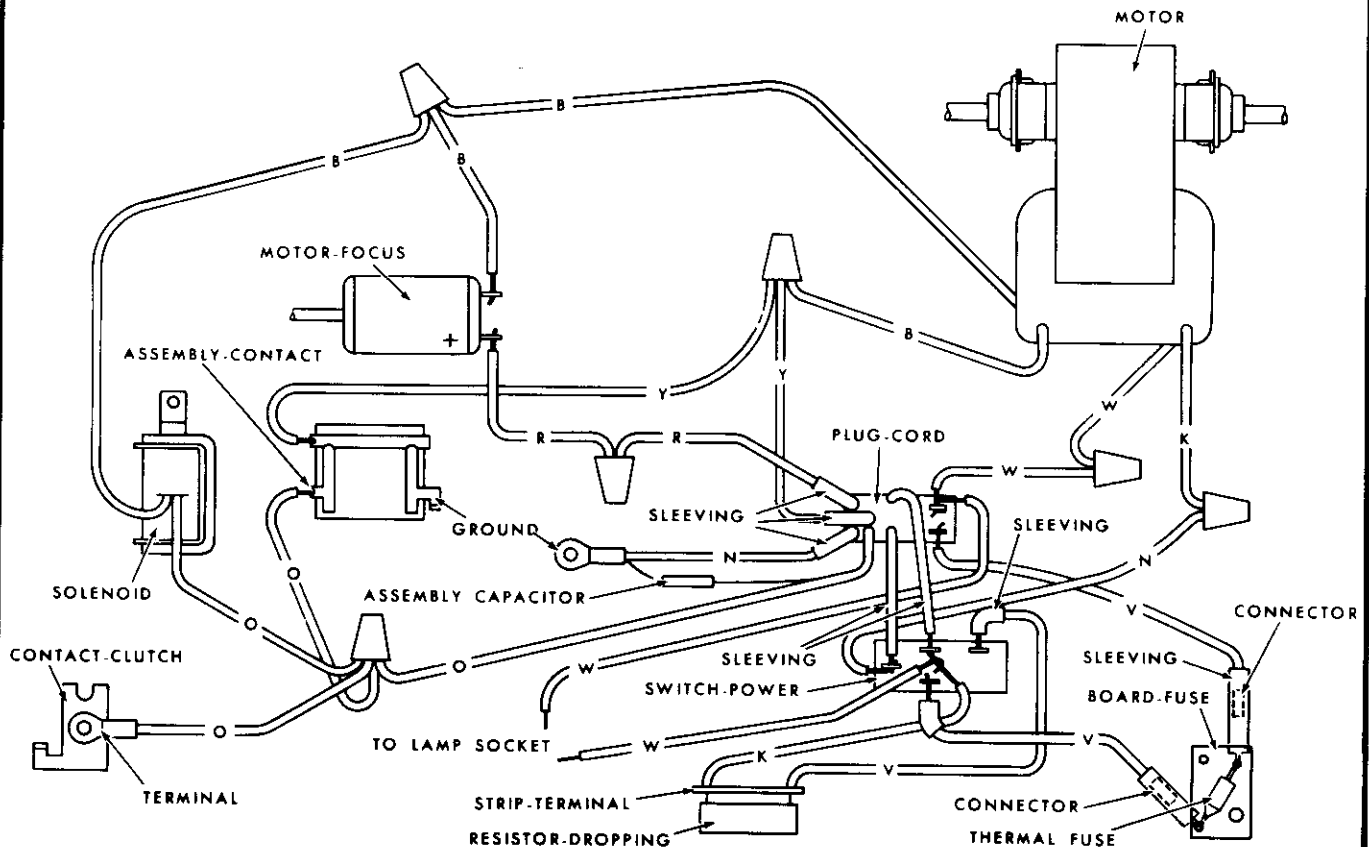
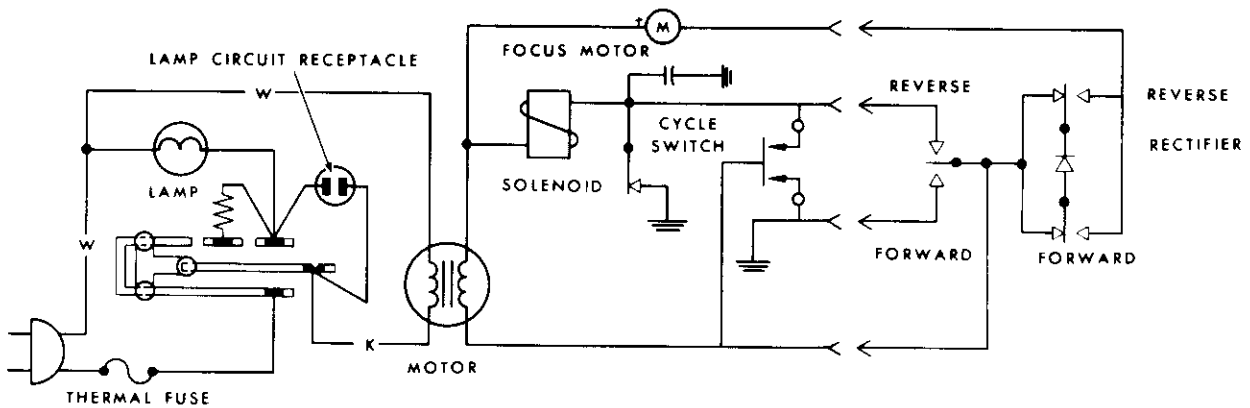
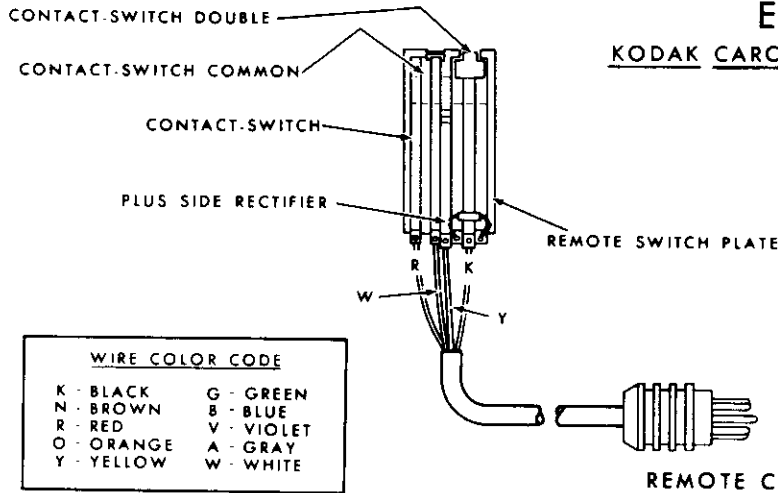
EARLY MODEL PROJECTORS MAY
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ELECTRICAL DIAGRAMS

KODAK CAROUSEL MODELS 750 and 750H PROJECTORS

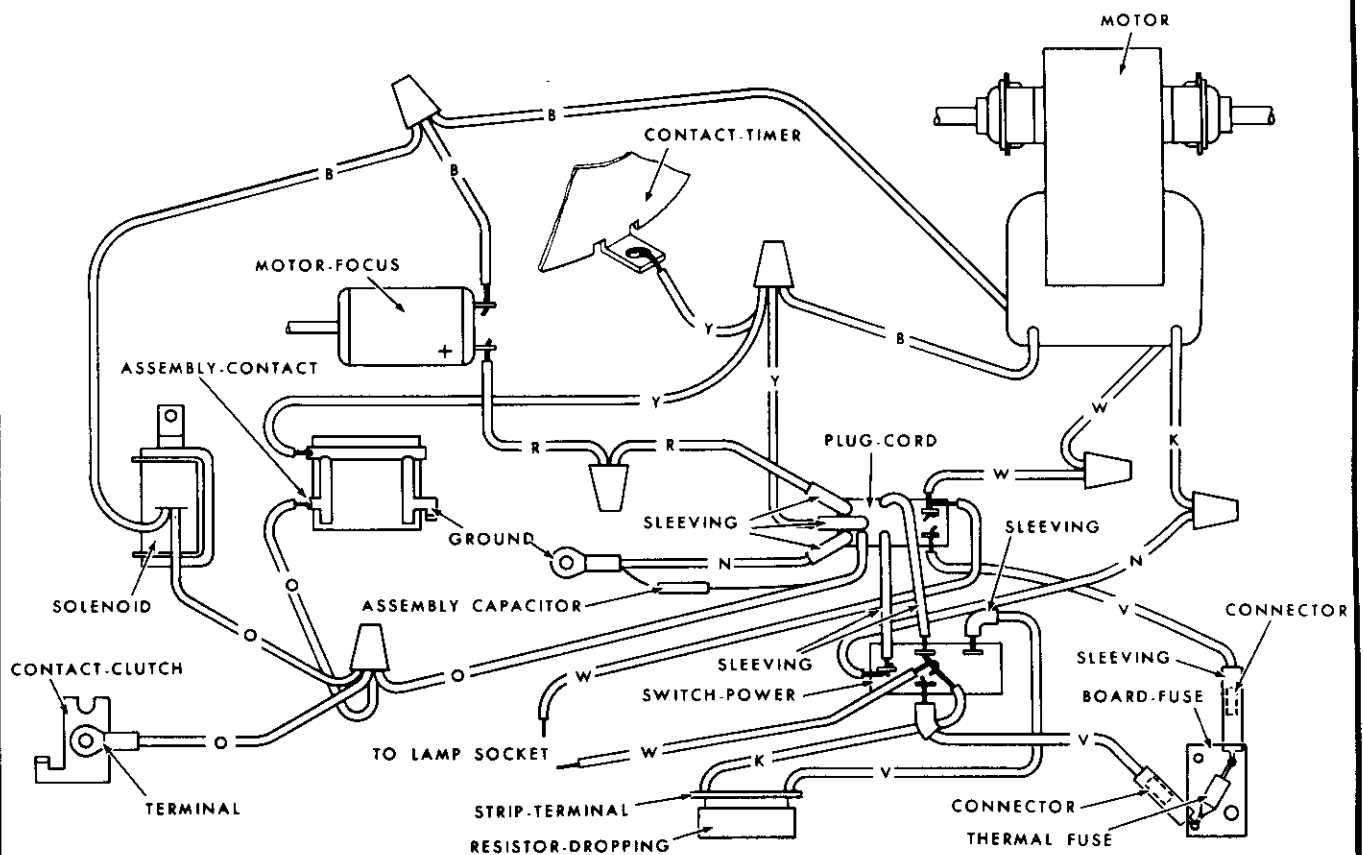
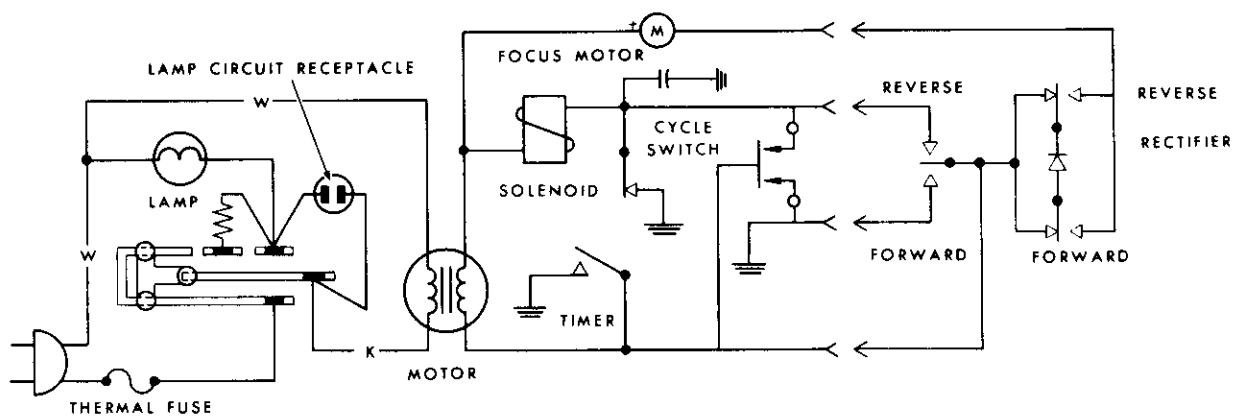
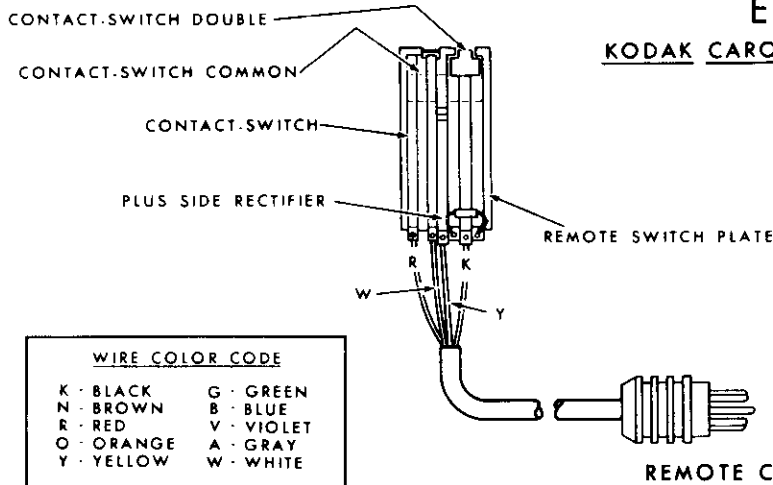
EARLY MODEL PROJECTORS MAY VARY FROM DIAGRAMS SHOWN



ELECTRICAL DIAGRAMS

KODAK CAROUSEL MODELS 800 and 800H PROJECTORS

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