SERVICE MANUAL NO. 775461

KODAK MOVIEDECK™ 465 and 475 Projectors

GENERAL INFORMATION

Except where noted, the information in this manual applies to both projectors. The *KODAK MOVIEDECK* 465 and 475 Projectors have the following features:

- Automatic Rewind
- Dust Cover
- Hinged Carrying Handle
- Lamp—30 volts, 80 watt (ELB)
- Lens—22mm - f/1.5
- Power Service Required—110 to 125 volts, 60 Hz
- Self-Threading
- Speed—forward, still, reverse
  - 54, 18, and 6 frames per second (465 Projector)
  - 54, 18, 6, and 3 frames per second (475 Projector)
- Storage Compartment for the attached power cord
- Viewing Screen

PLEASE NOTE

The information in this manual is based on the experience and knowledge relating to the subject matter of this manual gained by Eastman Kodak Company prior to publication.

No patent license is granted by this manual.

Eastman Kodak Company's liability on any claim for loss or damage arising out of or connected with the use of this manual, whether or not induced by Kodak, shall in no case exceed the selling price of this equipment, or part thereof, involved in the claim. In no event shall Kodak be liable for consequential or special damages.

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SEE ILLUSTRATIONS INSIDE THIS PAGE FOR THE LOCATION OF PARTS AND ASSEMBLIES.

PROJECTOR OPERATION

See Figure 1 for identification of the projector controls.

THREADING

1. Turn the MOTOR KNOB to the run/thread position.
2. Turn the SPEED KNOB to the 18 forward position.

NOTE: Do not thread the film with the speed knob at the 3, 6, or 54 forward position, because the film will not feed through the mechanism properly.

3. On the 465 Projector, slide the LAMP SWITCH to the on position. On the 475 Projector, slide the lamp switch to the lo or hi position.

NOTE: The lo-setting gives three times longer lamp life than the hi-setting.

4. Place the reel of film on the supply spindle with the perforated edge of the film up.
5. Grasp the end of the film; slide it along the thread guide and into the film load slot.
6. Turn the FOCUS KNOB until the picture is in sharp focus on the screen.

PROJECTION

Forward Projection:

1. Turn the MOTOR KNOB to the run/thread position.
2. On the 465 Projector, turn the SPEED KNOB to the 54 forward position (fast projection speed), the 18 forward position (normal projection speed), or the 6 forward position (slow projection speed). On the 475 Projector, turn the SPEED KNOB to the 54 forward position (fast projection speed), 18 forward position (normal projection speed), 6 forward position (slow projection speed), or 3 forward position (slow projection speed).

Still Projection:

Turn the SPEED KNOB to the still position. (Screen image will be slightly darker because the heat shield will move between the lamp and the film.)

Reverse Projection:

Turn the SPEED KNOB to one of the reverse projection speeds.

Fast Forward:

Turn the MOTOR KNOB to the fast forward position to advance the film quickly. To stop the fast forward operation, press the STOP BAR.

CAUTION

You must press the bar marked PRESS HERE TO STOP before you can move the motor knob. If the film is keyed to the supply reel for automatic rewind, it will pull off or break if left to run to the end of the reel in the fast forward position.

Manual Rewind:

Turn the MOTOR KNOB to the rewind position to return the film to the supply spindle.

CAUTION

You must press the bar marked PRESS HERE TO STOP before you can move the motor knob.

Automatic Rewind:

When the film reaches the end of the reel, and if the film is securely fastened to the supply reel core, it will create tension and activate the automatic rewind.

CAUTION

You must press the bar marked PRESS HERE TO STOP before you can move the motor knob.

Viewer:

To open the VIEWER, grasp the end of the viewer and slide it from the projector until it locks into position. To close the viewer, push the mirror against the screen, and slide it back into the projector.

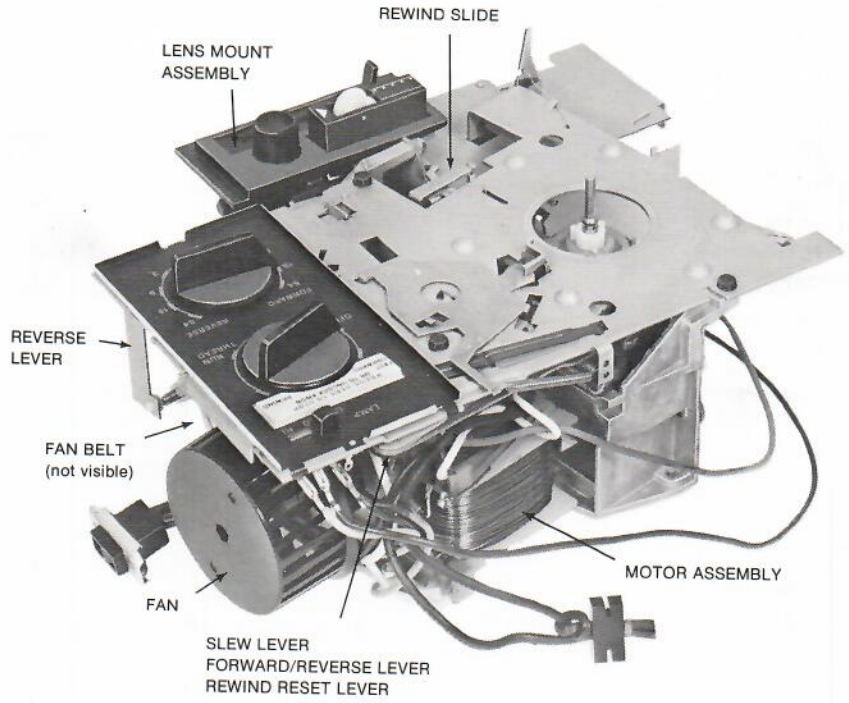


FIGURE 3

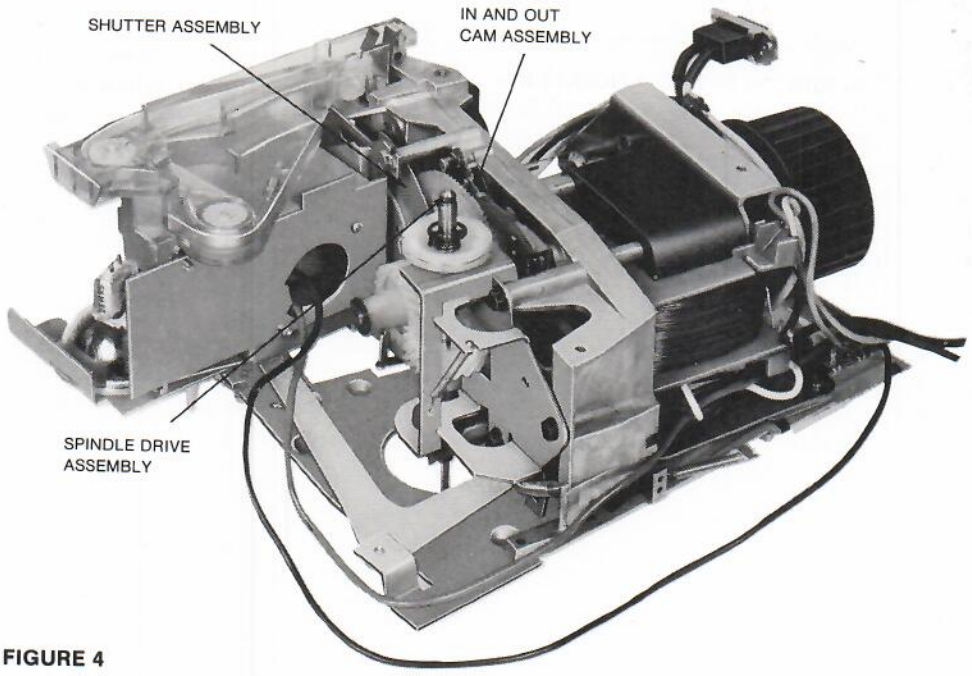


FIGURE 4

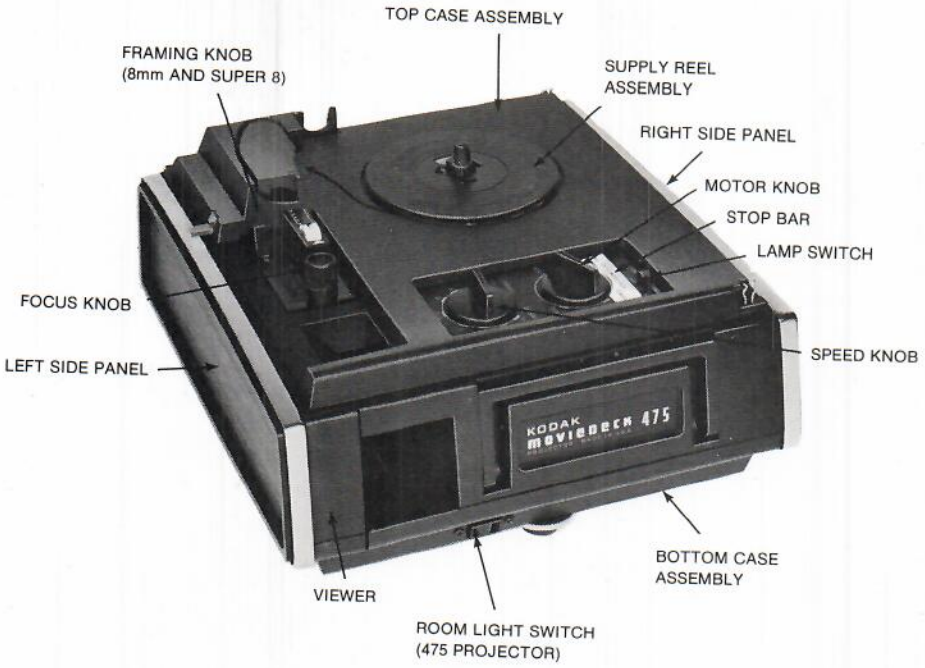


FIGURE 1

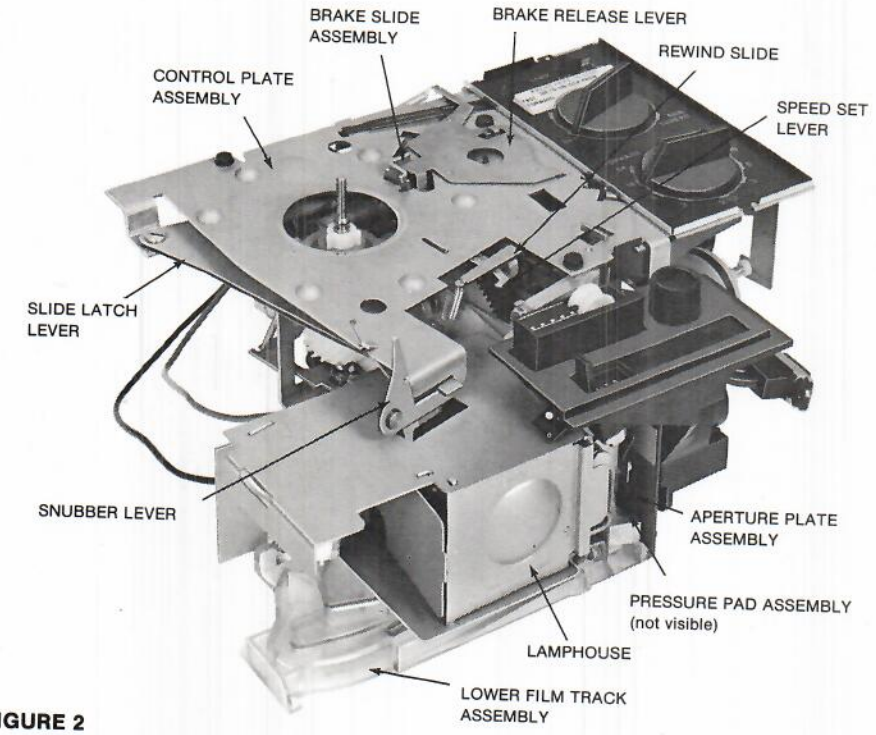


FIGURE 2

DESCRIPTION OF FUNCTIONING PARTS

NOTE: For parts and assembly identification, refer to Figures 1 through 4, Foldout, Page 4.

BRAKE RELEASE LEVER, STOP BAR, AND SWITCH LEVER:

When the MOTOR KNOB is in either the fast forward position, or the rewind position, press the STOP BAR. This actuates the BRAKE RELEASE LEVER. The spring tension pulls the brake release lever, and presses the switch which shuts off the projector. Also, this lever releases the brake which stops the supply reel and the take-up reel.

IN AND OUT CAM:

The MOTOR KNOB operates the claw and controls the film speed.

MOTOR KNOB:

The MOTOR KNOB operates three levers: the SWITCH LEVER, the REWIND RESET LEVER, and the SLEW LEVER.

1. Switch Lever—operates the switch, located under the control plate, which turns the projector on and off.
2. Rewind reset lever—releases the rewind slide when the motor knob moves into the fast forward or the rewind position. Also, it resets the rewind slide lever when the motor knob moves from the fast forward or rewind position into the run/thread or off position.
3. Slew lever—places the spindle drive assembly into the fast forward or rewind position. In the fast forward position the SPINDLE DRIVE ASSEMBLY moves down to positively drive the take-up reel. In the rewind position the spindle drive assembly moves up to positively drive the supply spindle.

REWIND SLIDE:

When the MOTOR KNOB is moved to either the fast forward position or the rewind position, the rewind slide pulls the heat-absorbing glass into the aperture area, pushes the claw away from the follower which clears the gate area, and pushes the pressure pad arm which moves the pressure pad away from the gate area.

SLIDE LATCH LEVER:

The rewind slide is held in position by the slide latch lever. As the MOTOR KNOB is moved to either the fast forward or the rewind position, the slide latch lever releases the rewind slide lever. The motion of the rewind reset lever moves the slide latch lever up, and releases the rewind slide lever.

SNUBBER LEVER:

The snubber lever releases the slide latch lever which provides for automatic rewind. When the pegged film on the supply reel reaches the end of the reel; the snubber lever pivots, releases the slide latch lever which releases the rewind slide, and automatically rewinds the film.

SPEED KNOB:

The SPEED KNOB operates three levers: the speed set lever, the forward/reverse lever, and the reserse lever.

1. Speed set lever—moves the follower to different surfaces on the in and out cam; this provides for different film speeds. Also, it controls the position of the heat-absorbing glass. The heat-absorbing glass should clear the gate area in all speeds, except when in the still position, or when the motor knob is in the rewind or fast forward positions.
2. Forward/reverse lever—moves the spindle assembly down to engage the take-up reel for the forward speeds. Also, it moves the spindle assembly up to engage the supply spindle for the reverse speeds.
3. Reverse lever—when the reverse speeds are selected the reverse lever moves the shutter shaft in. This movement disengages the CAM DOG from the FORWARD SPEED STOP (OUTER). As the shutter shaft continues to turn the cam dog makes contact with the REVERSE SPEED STOP (INNER). Now the in and out cam and the up and down cam are 180 degrees out-of-phase, and the claw enters the film at the start of the up stroke, causing the film to move in the reverse direction, Figure 5, Page 6.

SPINDLE DRIVE ASSEMBLY:

The SPINDLE DRIVE ASSEMBLY drives both the SUPPLY REEL ASSEMBLY, and the TAKE-UP REEL ASSEMBLY. It has four positions: fast forward, forward, reverse, and rewind. The slew lever and the forward/reverse lever determine the position of the spindle assembly.

THREE-FRAME LEVER (475 Projector)

When the speed knob is in the 3 position the three frame lever contacts the three frame cam, the follower is on the six frames per second track on the in and out cam. Every second revolution of the in and out cam causes the three-frame lever to contact the claw which prevents the claw from entering the film. This movement reduces the film speed from six frames per second to three frames per second.

REPLACEMENTS

NOTE: For parts and assembly identification, refer to Figures 1 through 4, Foldout, Page 4. Also, for the spring identification, refer to Page 14.

EXTERNAL PARTS:

1. Remove the RIGHT and LEFT SIDE PANELS.
2. Remove the SUPPLY SPINDLE ASSEMBLY:
   Insert a paper clip into the SLOT, and push the SPRING clockwise, Figure 6. Lift and remove the SUPPLY SPINDLE ASSEMBLY.
3. Remove the TOP CASE ASSEMBLY:
   Remove the four screws from the bottom case assembly. They are located near the outside surfaces on the bottom case assembly.
4. Slide and remove the VIEWER from the bottom case assembly. Refer to the viewer adjustment, Page 18.
5. Remove the BOTTOM CASE ASSEMBLY:
   Turn the locking screw, and remove the TAKE-UP REEL COVER.
   Remove the TAKE-UP REEL.
   Remove the three screws that hold the bottom case assembly to the mechanism unit.
   Remove the two screws that hold the room light switch to the bottom case assembly.
   Remove the RETAINING RING from the FAN SHROUD, Figure 7.
   Lift and remove the fan shroud.

CAUTION

Hold the mechanism unit by the casting to avoid damage to the control plate.

LOWER FILM TRACK ASSEMBLY:

1. Remove all the external parts.
2. Remove the two screws that hold the film track to the casting, and to the lamp bracket assembly.
3. Remove the film track assembly from the mechanism unit.
4. Assemble in the reverse order.

NOTE: The height of the LOWER FILM TRACK ASSEMBLY must be aligned with the take-up reel. Position the film track as shown in Figure 8, Page 7.

LAMP HOUSE ASSEMBLY:

1. Remove all the external parts.
2. Remove the lower film track assembly.
3. Remove the REWIND SPRING for the safety shutter, Figure 9, Page 7.
4. Remove the three screws that hold the lamphouse assembly to the casting.
5. Pull the wire leads from the motor terminals.
6. Assemble in the reverse order.

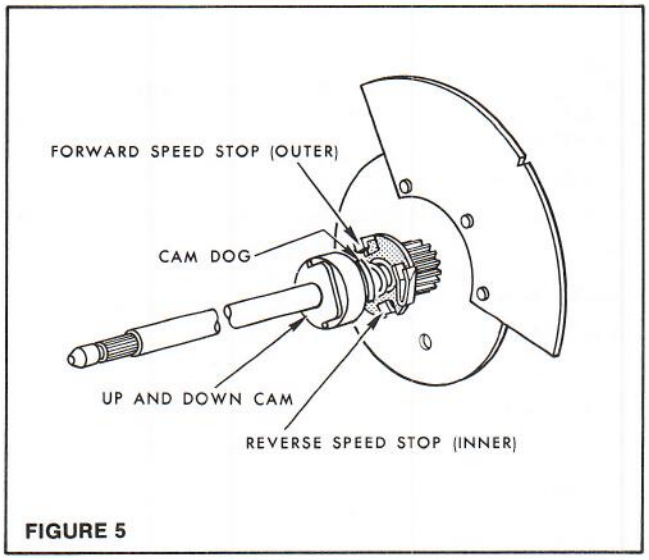


FIGURE 5

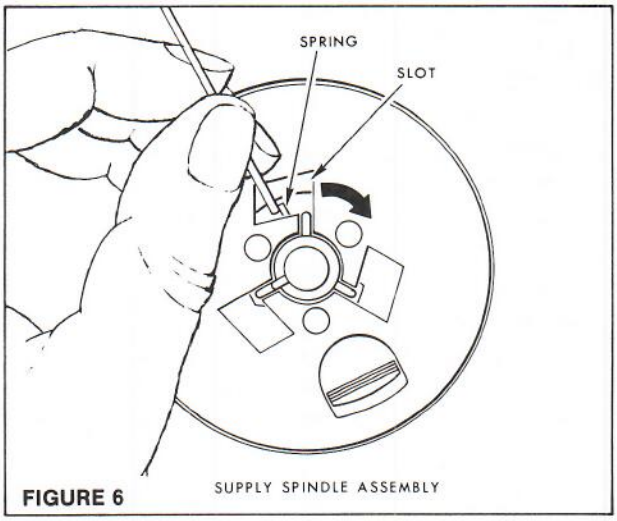


FIGURE 6

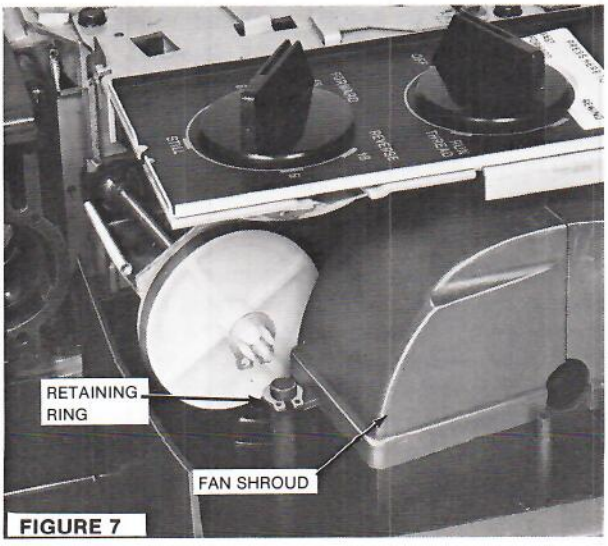


FIGURE 7

LENS MOUNT ASSEMBLY:

1. Remove the right and left side panels, Page 6.
2. Remove the supply spindle assembly, Page 6.
3. Remove the top case assembly, Page 6.
4. Remove the viewer from the bottom case assembly, Page 6.
5. Remove the three screws that hold the lens mount assembly to the casting.
6. Lift and remove the lens mount assembly.
7. Assemble in the reverse order.

CONTROL PLATE ASSEMBLY:

To Disassemble:

1. Remove the right and left side panels, Page 6.
2. Remove the supply spindle assembly, Page 6.
3. Remove the top case assembly, Page 6.
4. Place the motor knob in the off position.
5. On the 465 Projector, place the speed knob in the 6 reverse position. On the 475 Projector, place the speed knob in the 3 reverse position.
6. Remove the BRAKE RELEASE SPRING, the small REWIND SPRING, and the SLIDE LATCH SPRING. Refer to Figures 10, 11 and 12.

   NOTE: To remove the two rewind springs, place the motor knob in the rewind position.

7. Remove the brake release lever from the control plate.
8. Remove the three screws that hold the control plate assembly to the mechanism unit.
9. Slide the CONTROL PLATE ASSEMBLY to release the REWIND RESET LEVER, Figure 13, Page 8.
10. Remove the control plate assembly from the mechanism unit.
11. Remove the wire leads from the lamp switch, the three-frame switch, and the on/off switch.
12. Disassemble the CONTROL PLATE ASSEMBLY, Figures 14, 15, 16 and 17, Pages 8, 9, and 10.

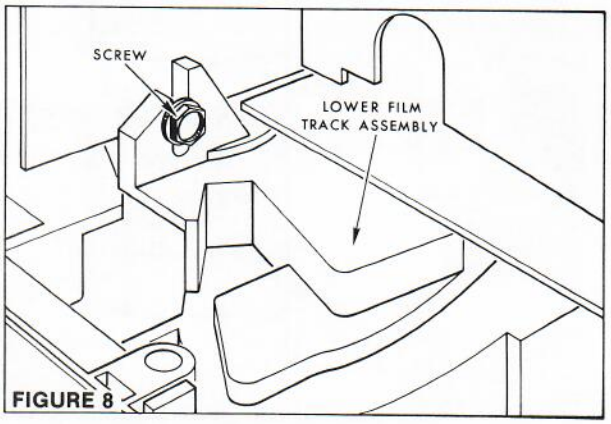


FIGURE 8

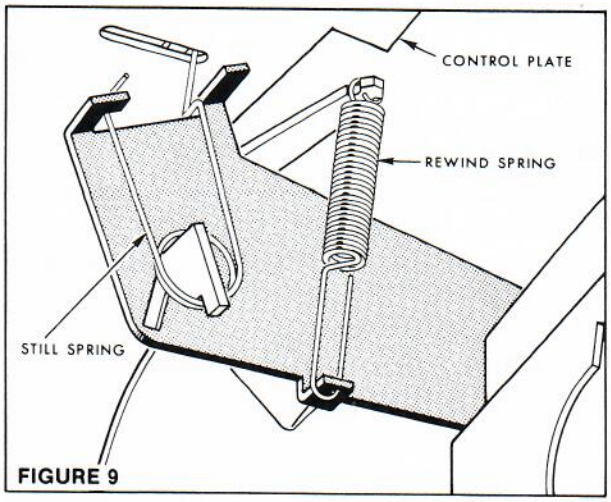


FIGURE 9

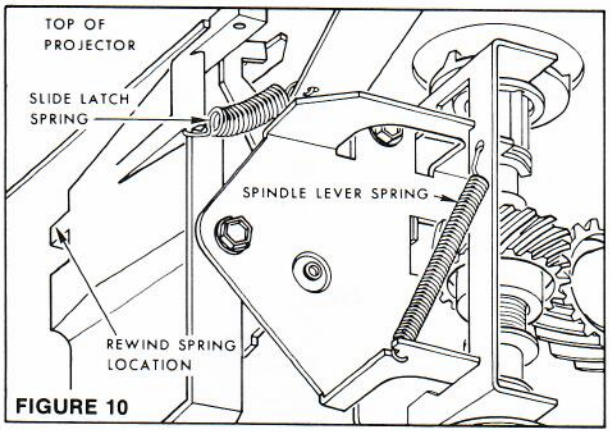


FIGURE 10

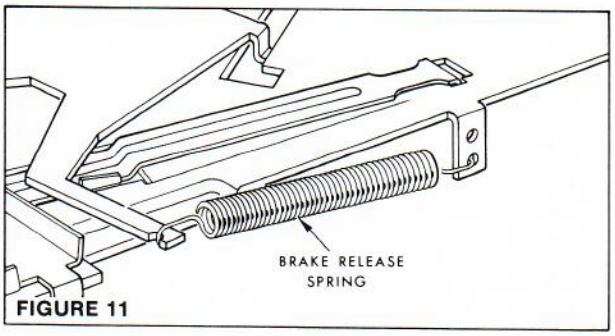


FIGURE 11

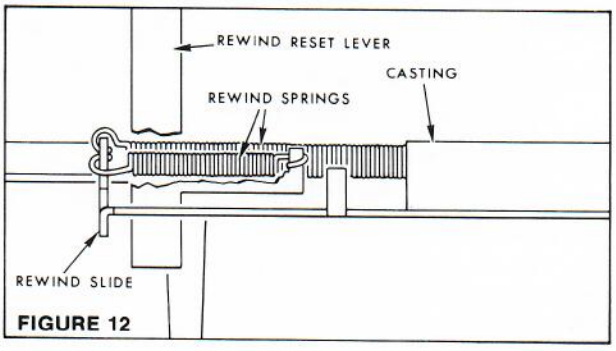


FIGURE 12

To Assemble:

1. Assemble the control plate assembly in the reverse order, Figures 14, 15, 16 and 17, Pages 8 through 10.

2. Slide the REWIND RESET LEVER through the slot in the REWIND SLIDE, Figure 18, Page 10.

3. Place the BRAKE SLIDE through the OPENING in the CONTROL PLATE, Figure 18, Page 10.

4. Place the box on the SPEED SET LEVER over the SPEED DETENT LEVER, Figure 18, Page 10.

5. Place the STILL SPRING through the opening in the CONTROL PLATE, Figure 18, Page 10.

6. Fasten the three screws to the control plate assembly.

7. Assemble the brake release lever, the brake release spring, the two rewind springs, and the slide latch springs.

8. Make the brake release lever adjustment, Page 15.

9. Make the spindle driver height adjustment, Page 17.

10. Make the forward/reverse shift adjustment, Page 16.

11. Assemble the top case assembly, the supply spindle assembly, and the right and left side panels to the projector.

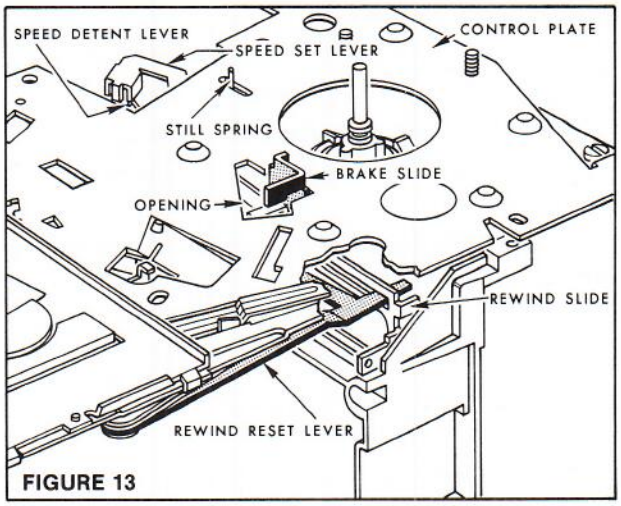


FIGURE 13

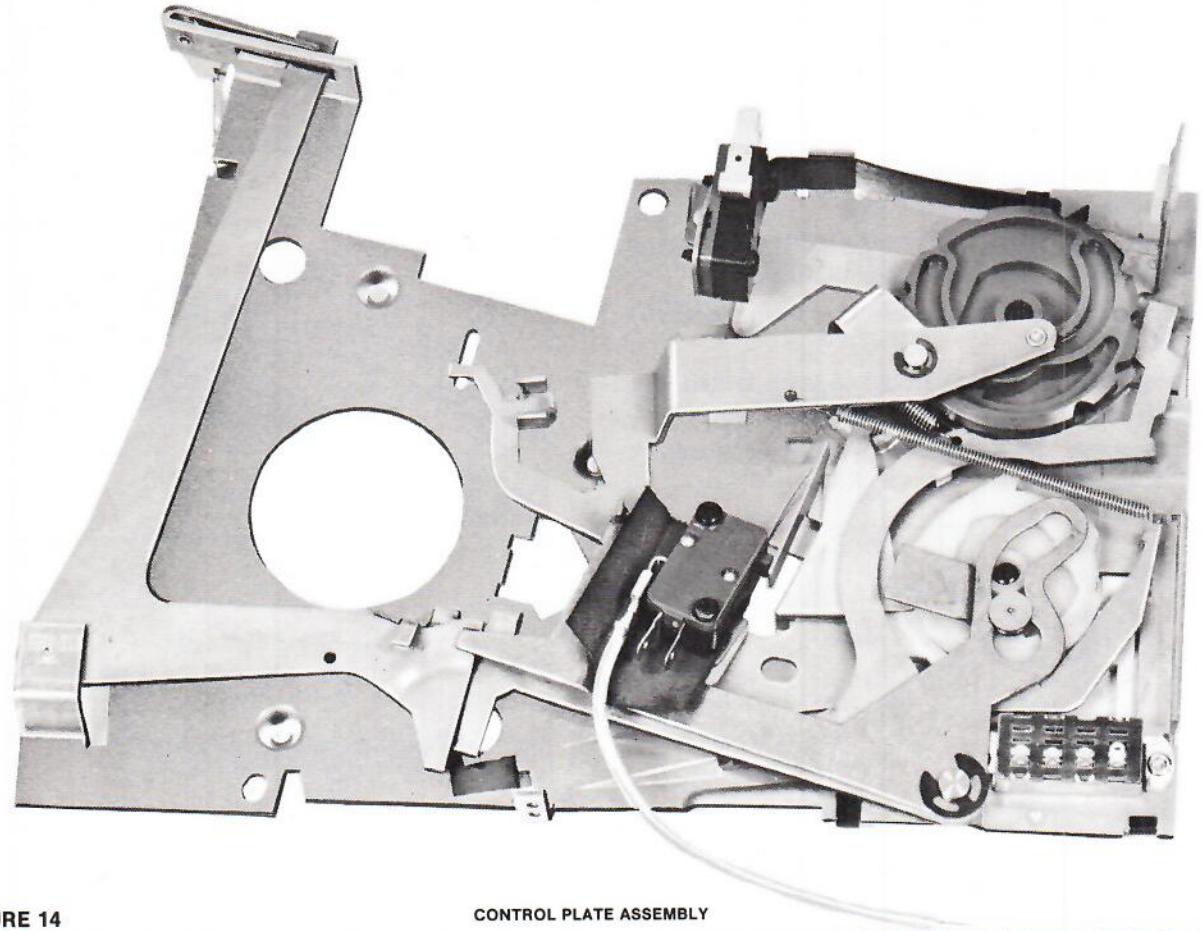


FIGURE 14 CONTROL PLATE ASSEMBLY

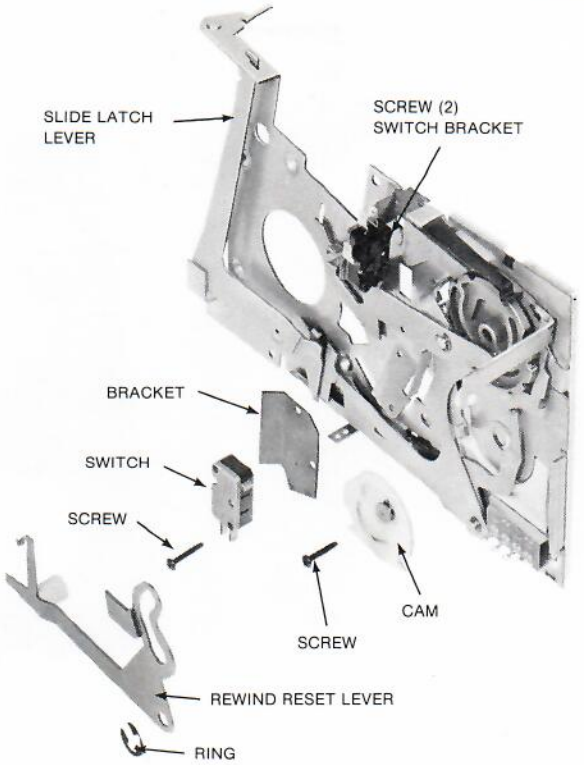


FIGURE 15

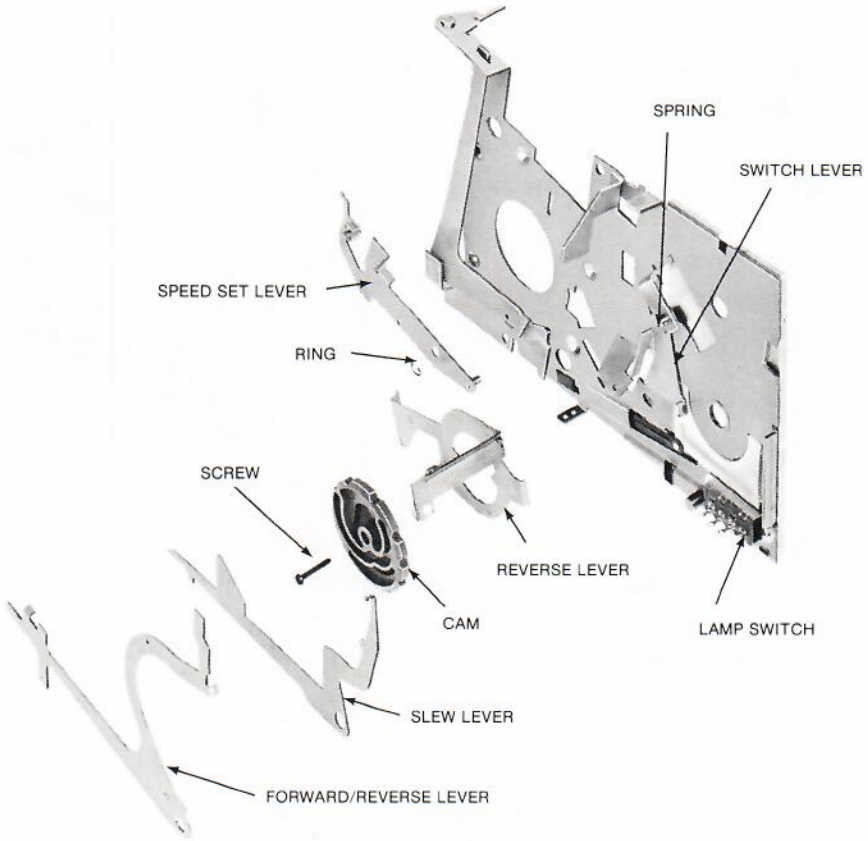


FIGURE 16

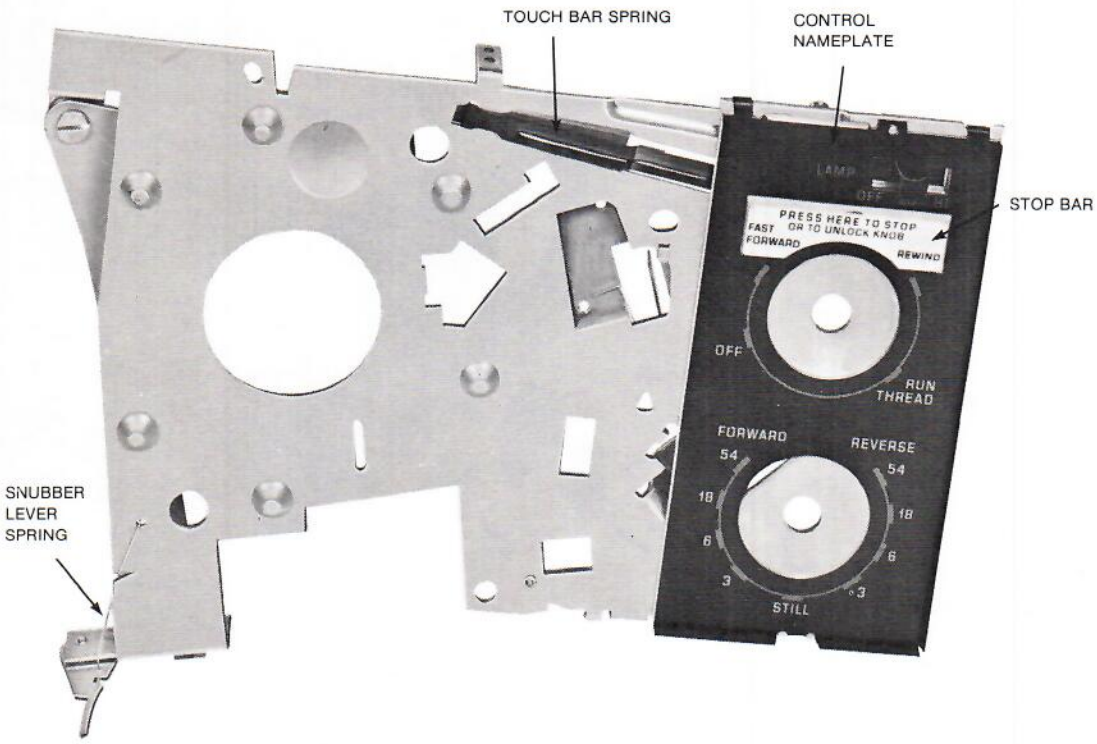


FIGURE 17

FAN BELT:

1. Remove the supply spindle assembly, Page 6.
2. Remove the top case assembly, Page 6.
3. Remove the wire leads from the lamp switch.
4. Remove the RETAINING RING from the FAN SHROUD, Figure 19.
5. Lift and remove the fan shroud.
6. Cut and remove the old fan belt.
7. Slip the new belt over the fan, and onto the motor pulley.
8. Slip the new belt onto the shutter pulley.
9. Assemble in the reverse order.

FAN:

1. Remove the supply spindle assembly, Page 6.
2. Remove the top case assembly, Page 6.
3. Remove the bottom case assembly, Page 6.
4. Remove the wire leads from the lamp switch.
5. Remove the RETAINING RING from the FAN SHROUD, Figure 19, Page 11.
6. Lift and remove the fan shroud.
7. Insert a screwdriver in the RETAINER, separate the retainer, and slip the fan from the motor shaft, Figure 20, Page 11.

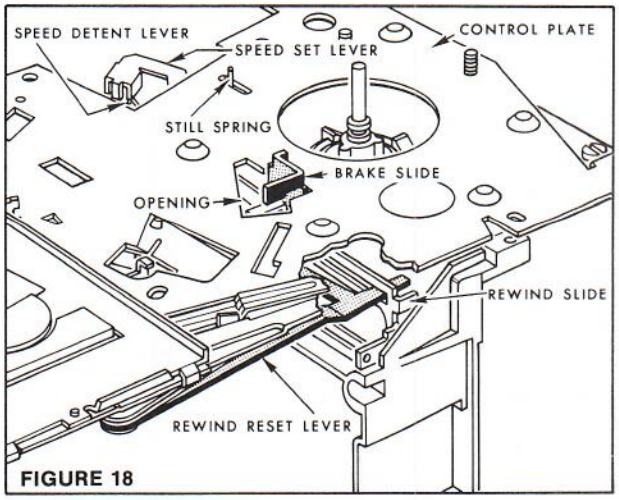


FIGURE 18

8. Assemble in the reverse order.

NOTE: To prevent damage to the lower motor bearing, support the opposite end of the motor shaft when pressing the fan onto the shaft.

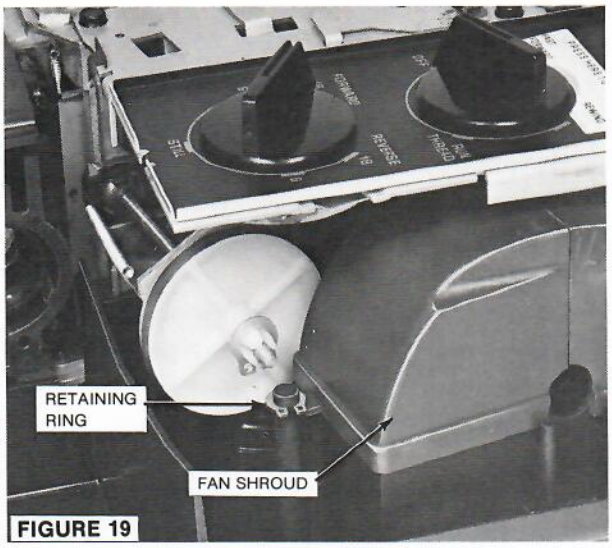


FIGURE 19

MOTOR ASSEMBLY:

1. Remove the supply spindle assembly, Page 6.
2. Remove the top case assembly, Page 6.
3. Remove the bottom case assembly, Page 6.
4. Remove the fan, Page 10.
5. Remove the fan belt from the motor pulley.
6. Remove the wires from the motor terminals by rotating while gently pulling the wires from the terminals.
7. Remove the three screws that hold the motor to the casting.
8. Slide the motor from the motor mounting plate.
9. Assemble in the reverse order.
10. Check the wiring diagrams, Page 24.

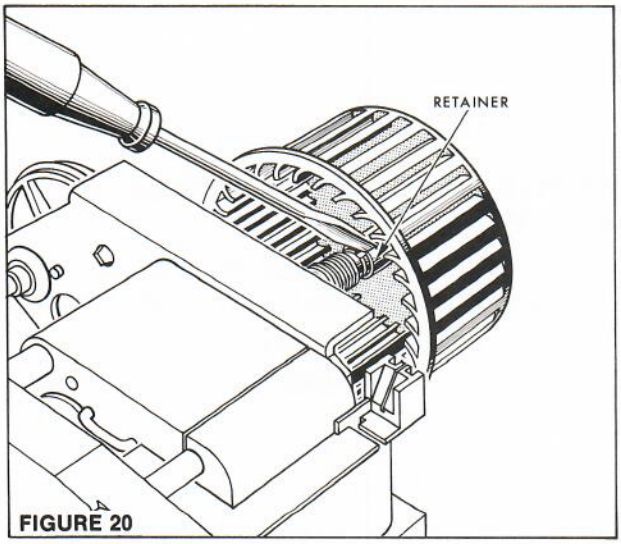


FIGURE 20

SPINDLE ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Place the motor knob in the rewind position.
3. Remove the SLIDE LATCH SPRING from the casting, Figure 21.
4. Remove the three screws that hold the spindle assembly to the casting.
5. Remove the spindle assembly.
6. Assemble the spindle assembly to the casting.

NOTE: Do not tighten the three screws.

7. Make the spindle height adjustment, Page 17.
8. Make the spindle drive height adjustment, Page 17.
9. Assemble the external parts to the projector.

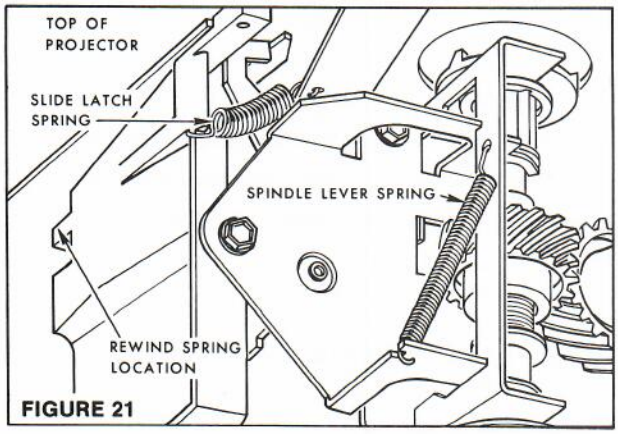


FIGURE 21

PRESSURE PAD ASSEMBLY:

1. Remove the right and left side panels, Page 6.
2. Remove the supply spindle assembly, Page 6.
3. Remove the top case assembly, Page 6.
4. Remove the viewer assembly, Page 6.
5. Remove the lens mount assembly, Page 7.
6. Place the motor knob in the rewind position.
7. Remove the two PRESSURE PAD SPRINGS that hold the pressure pad arm to the motor mounting plate, Figure 22, Page 12.
8. Remove the PRESSURE PAD and ARM ASSEMBLY, Figure 23, Page 12.
9. Assemble in the reverse order.

APERTURE PLATE ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lens mount assembly, Page 7.
3. Remove the pressure pad assembly, Page 11.
4. Remove the lamphouse assembly, Page 6.
5. Place the motor knob in the off position.
6. Remove the screw that holds the aperture plate to the casting.
7. Remove the belt from the shutter pulley.
8. Remove the RING, the SHUTTER PULLEY, and the two WASHERS, from the shaft, Figure 24.
9. Pull the shutter and the shutter shaft from the casting.
10. Remove the aperture plate assembly.
11. Assemble the aperture plate assembly to the mechanism unit.

NOTE: The framing lever must engage the aperture mask. The tail of the claw must fit between the in and out cam follower and the claw return pin.

12. Refer to the timing, Page 17.
13. Make the claw protrusion adjustment, Page 15.
14. Assemble in the reverse order.

SHUTTER, IN AND OUT CAM ASSEMBLY, AND SHAFT ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lower film track assembly, Page 6.
3. Remove the lamphouse assembly, Page 6.
4. Remove the spindle assembly, Page 6.
5. Remove the RING, the SPACER, and the GEAR from the shaft for the in and out cam, Figure 25.
6. Remove the shutter along with the in and out cam.
7. Remove the belt from the shutter pulley.
8. Remove the RING, the SHUTTER PULLEY, and the WASHER(S) from the SHUTTER SHAFT, Figure 26, Page 13.
9. Remove the shutter shaft assembly.
10. Assemble the shutter shaft assembly to the casting.
11. Refer to the shutter timing, Page 17.
12. Assemble the spindle assembly to the casting.
13. Make the spindle height adjustment, Page 17.
14. Make the spindle driver height adjustment, Page 17.
15. Assemble in the reverse order.

THREE-FRAME GEAR AND CAM (475 Projector):

1. Remove all the external parts, Page 6.

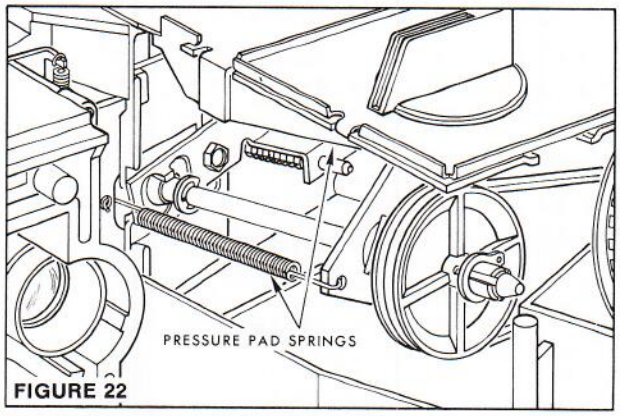


FIGURE 22

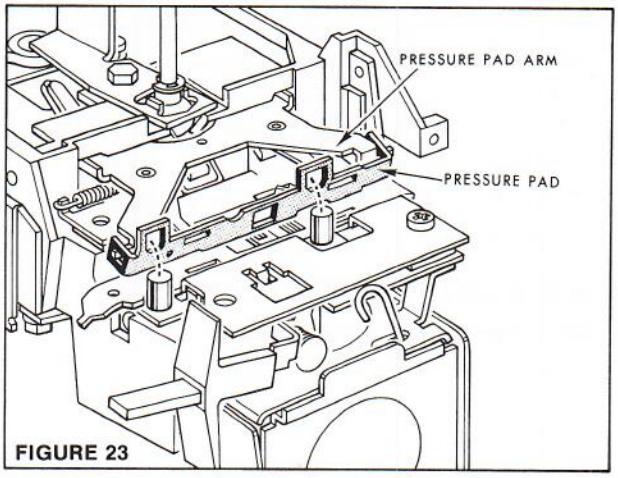


FIGURE 23

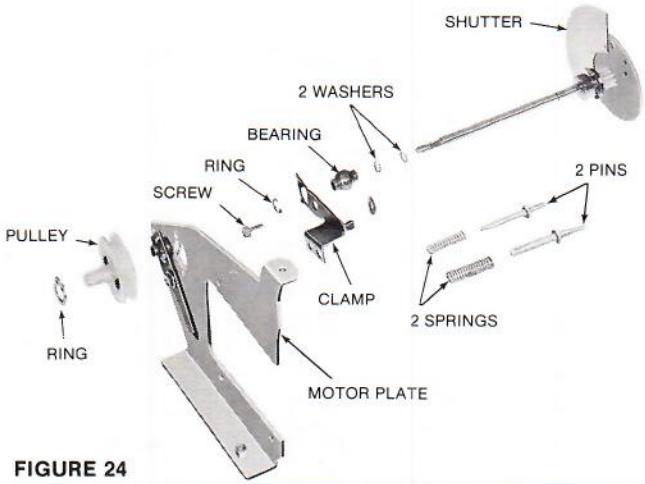


FIGURE 24

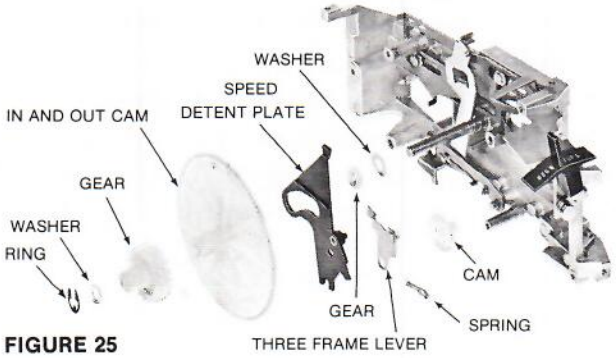


FIGURE 25

2. Remove the lower film track assembly, Page 6.

3. Remove the lamphouse assembly, Page 6.

4. Remove the spindle assembly, Page 6.

5. Remove the shutter, and the in and out cam assembly, Page 12.

6. Remove the SPEED DETENT PLATE, and the THREE FRAME LEVER ASSEMBLY, Figure 27.

7. Remove the THREE-FRAME GEAR AND CAM, Figure 27.

8. Refer to the three-frame gear and cam timing to assemble the three-frame gear and cam, Page 12.

9. Assemble the speed detent plate, and the three-frame lever assembly.

NOTE: The speed detent plate can be temporarily held in position by a grip ring. Remove the grip ring after assembling the shutter and the in and out cam assembly.

10. Refer to the shutter timing to assemble the shutter and the in and out cam assembly to the casting, Page 12.

11. Assemble the spindle assembly to the casting.

12. Make the spindle height adjustment, Page 17.

13. Make the spindle driver height adjustment, Page 17.

14. Assemble in the reverse order.

TAKE-UP BRAKE, BRAKE SLIDE, AND REWIND SLIDE:

1. Remove all the external parts, Page 6.

2. Remove the lower film track assembly, Page 6.

3. Remove the lamphouse assembly, Page 6.

4. Remove the control plate assembly, Page 7.

NOTE: Do not disassemble the control plate.

5. Remove the shutter, the in and out cam assembly, and the shutter shaft assembly, Page 12.

6. On the 475 Projector, remove the three-frame gear and cam, Page 12.

7. Remove the RING, the SCREW, the BRAKE SPRING, and the BRAKE SLIDE SPRING, Figure 28.

8. Remove the take-up brake and the brake slide.

9. Remove the three screws that hold the rewind slide to the casting.

10. Remove the rewind slide.

11. Assemble in the reverse order.

12. Make all the adjustments and check the timings, Page 15 through 18.

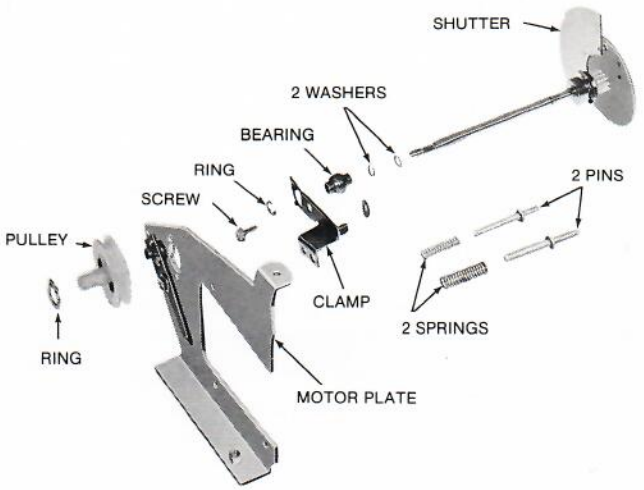


FIGURE 26

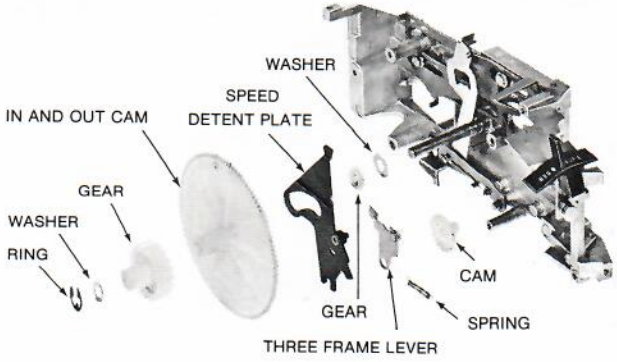


FIGURE 27

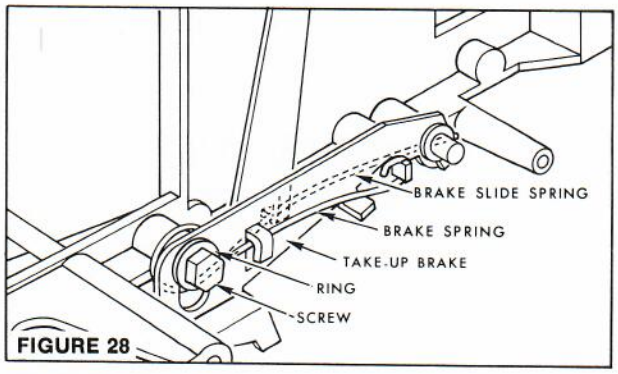
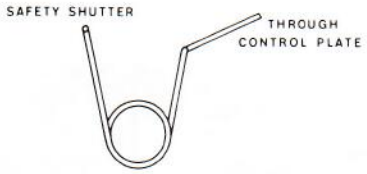


FIGURE 28

SPRING IDENTIFICATION



SAFETY SHUTTER STILL SPRING


PRESSURE PAD ARM SPRING

SPEED LEVER SPRING

BRAKE RELEASE SPRING

SAFETY SHUTTER REWIND SPRING

STILL LEVER SPRING


SLIDE LATCH SPRING

STARTING CLUTCH SPRING

REWIND LEVER RETURN SPRING


CLAW RETURN SPRING

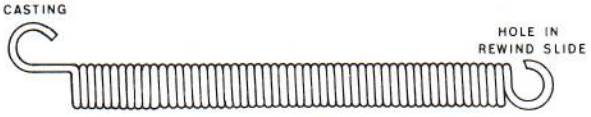

IN AND OUT CAM SPRING

(OUTER) PRESSURE PAD ARM HELPER SPRING


DETENT SPRING

(INNER) PRESSURE PAD ARM HELPER SPRING

SLEW LEVER SPRING



REWIND SLIDE SPRING

ADJUSTMENTS

BRAKE RELEASE LEVER:

To Check

Place the control knob in the run/thread position. There must be clearance (approximately .010 inch) between the TOUCH BAR SPRING and the BRAKE RELEASE LEVER, Figure 29. This clearance prevents the projector from being prematurely shut off when the motor knob moves to the fast forward or rewind position.

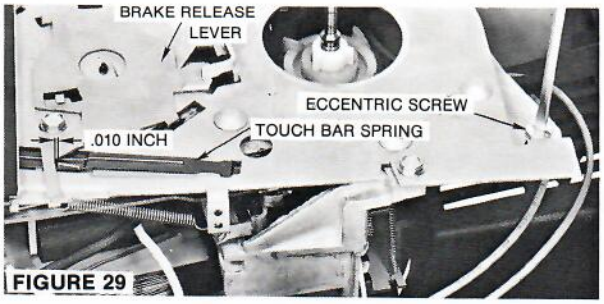


FIGURE 29

To Adjust

Turn the ECCENTRIC SCREW until there is approximately .010-inch clearance, Figure 29.

CLAW PROTRUSION:

To Check

The claw protrusion should be .025 inch to .040 inch in the reverse position and .035 inch to .040 inch in the forward position above the aperture rail. A paper clip, .035-inch diameter, can be used to check the protrusion, Figure 30. Check and adjust the claw protrusion in the 18 frames per second position, and the motor knob in the run/thread position.

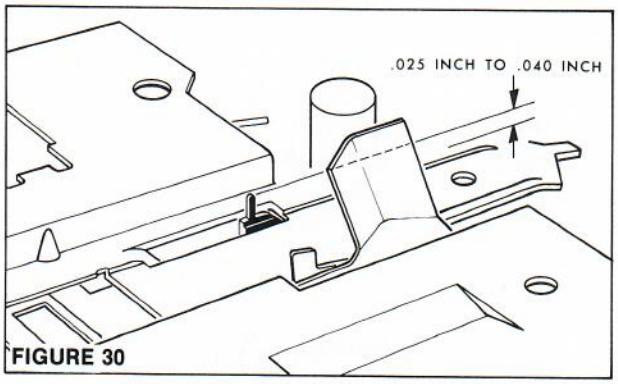


FIGURE 30

To Adjust

1. Remove the top case assembly, Page 6.
2. Lift the pressure pad assembly from the gate assembly.
3. Rotate the mechanism by hand, counterclockwise at the shutter shaft pulley, and observe the claw protrusion in relation to the thickness of the gauge.
4. Check the protrusion on all the forward lobes of the in and out cam assembly.
5. If the protrusion exceeds the above specification, add a spacer to the helical gear assembly.
6. If the protrusion is less than the above specification, remove the spacer from the helical gear assembly.

FOCUS BALANCE:

To Check

8mm Film—The maximum out-of-squareness at best center focus must not exceed three "a's" difference. If the zoom lens is on the projector, the maximum out-of-squareness at best center focus must not exceed six "a's" difference.

Super 8 Film—The maximum out-of-squareness at best center focus must not exceed one "a's" difference. If the zoom lens is on the projector, the maximum out-of-squareness at best center focus must not exceed three "a's" difference.

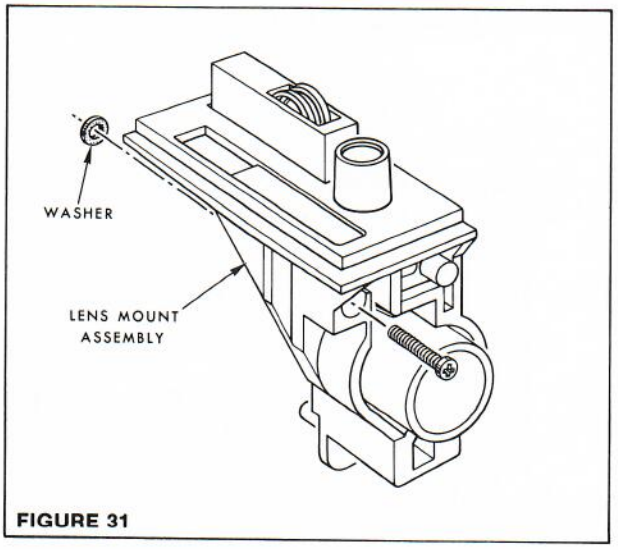


FIGURE 31

To Adjust

1. Remove the LENS MOUNT ASSEMBLY from the mechanism.

2. Add or remove a .010-inch WASHER, as necessary, Figure 31, Page 15.

3. Assemble the lens mount assembly to the mechanism.

FORWARD/REVERSE SHIFT:

To Check

1. Place the speed knob in the still position.

2. The reverse lever button should just touch the end of the shutter shaft.

To Adjust

1. Pull the still lever away from the shutter shaft, and form the lever in. The button should touch the end of the shutter shaft.

2. Check the clearance on the cam dog.

To Check

1. Place the speed knob in the reverse position.

2. While viewing the CAM DOG through the control plate, rotate the shutter shaft counterclockwise until the REVERSE STOP (INNER) is visible. There should be .006-inch clearance as shown in Figure 32.

To Adjust

1. Turn the screw, located in the lamphouse assembly, until the clearance is obtained. An opening in the rear of the lamphouse assembly allows a 3/16-inch nut driver to make this adjustment.

NOTE: Place Glyptal cement on the screw threads to prevent movement.

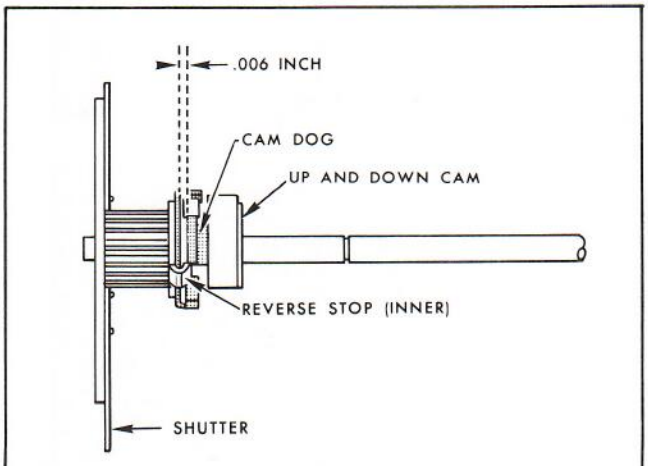


FIGURE 32

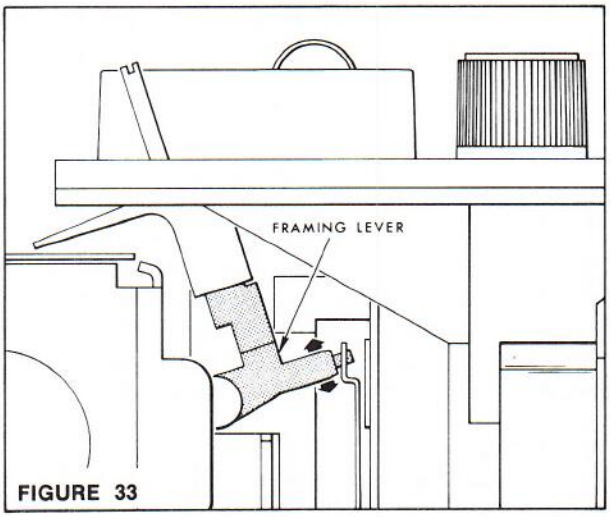


FIGURE 33

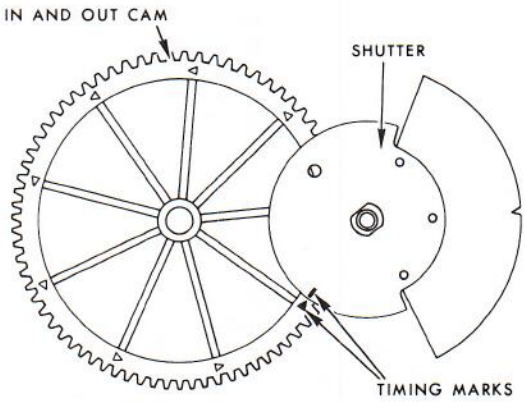


FIGURE 34

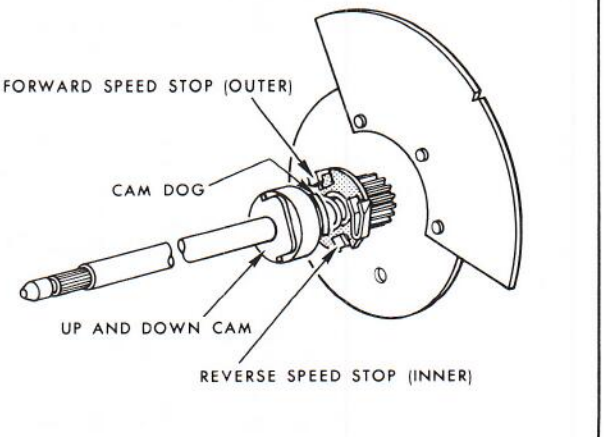


FIGURE 35

FRAMING:

To Check

Turn the projector on and place the speed knob in the forward position. Measure the minimum framing of .025 inch above, and .015 inch below the nominal image.

To Adjust

Form the FRAMING LEVER up or down, Figure 33, Page 16.

SHUTTER TIMING:

Position the SHUTTER and the IN AND OUT CAM with the TIMING MARKS, Figure 34, Page 16. Place the cam over the cam post, and the shutter blade over the shutter shaft. Rotate the shutter shaft until the CAM DOG is opposite the REVERSE SPEED STOP (INNER), Figure 35, Page 16. Push and turn the shutter shaft counter-clockwise until the cam dog is under the FORWARD SPEED STOP (OUTER). The shaft is now locked with the shutter blade. After the lamphouse assembly is installed, unlock the shutter assembly from the cam dog, and check the forward/reverse shift adjustment, Page 16.

SPINDLE DRIVER HEIGHT:

To Check

1. Place the MOTOR KNOB in the run/thread position.
2. Place the SPEED KNOB in the forward position.
3. Place the HEIGHT GAUGE TOOL (Tool No. TL2070) on the SPINDLE DRIVER. The top of the tool must be flush with the top of the CONTROL PLATE, Figure 36.

To Adjust

1. Place the FORMING TOOL (Tool No. TL2071) on the FORWARD/REVERSE LEVER, Figure 37.

   NOTE: The pin on the tool points away from the control plate.

2. Turn the tool either out (A) or in (B); this action raises or lowers the spindle, Figure 38.
3. Remove the tool and recheck the spindle height with the height gauge tool.

SPINDLE HEIGHT:

To Adjust

1. Install the spindle shaft assembly to the casting, but do not tighten the three mounting screws.
2. Place two .025-inch SHIMS over the spindle hole in the CONTROL PLATE, Figure 38.
3. Assemble the SUPPLY REEL ASSEMBLY to the spindle shaft assembly, Figure 39, Page 18.
4. Tighten the three screws that hold the spindle shaft assembly to the casting.
5. Remove the two shims.

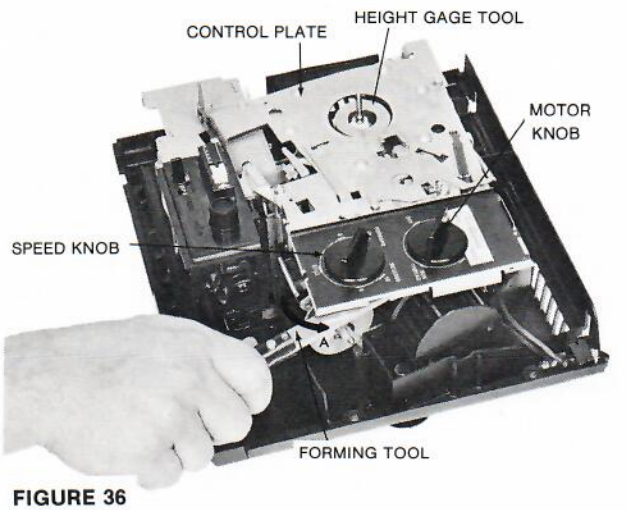


FIGURE 36

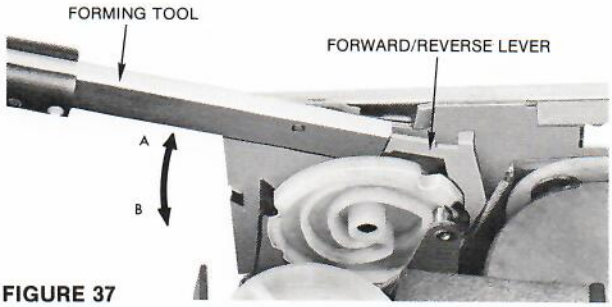


FIGURE 37

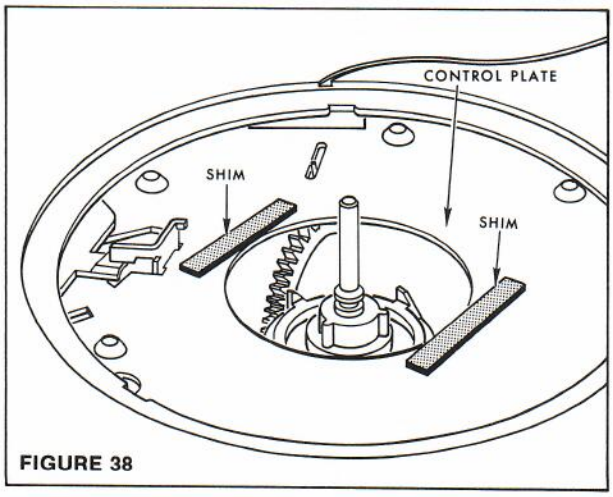


FIGURE 38

THREE-FRAME GEAR AND CAM TIMING:

When assembling the THREE-FRAME GEAR and CAM, position the TIMING MARKS as shown in Figure 40.

VIEWER SCREEN:

To Check

Use super 8 film, and check the image on the viewer screen. With a 22mm *f/1.5* lens, the upper frame line in the forward position must be visible on the inside of the viewer by .005 inch as measured on the film. At this setting the frame line in the reverse position must be visible on the bottom of the viewer by .008 inch. Horizontally the image must fill the viewer screen and the frame line must not be visible.

To Adjust

1. Loosen the SCREW on the LENS, Figure 41.

2. To adjust the image from the top and bottom, move the LENS up and down.

3. To adjust the image in and out, move the lens from side to side.

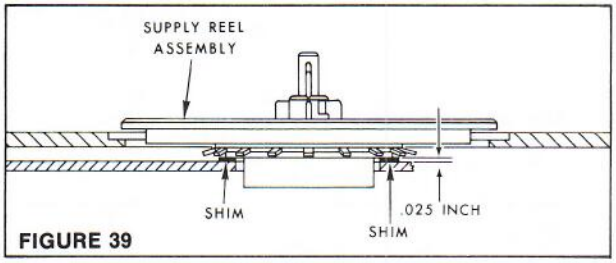


FIGURE 39

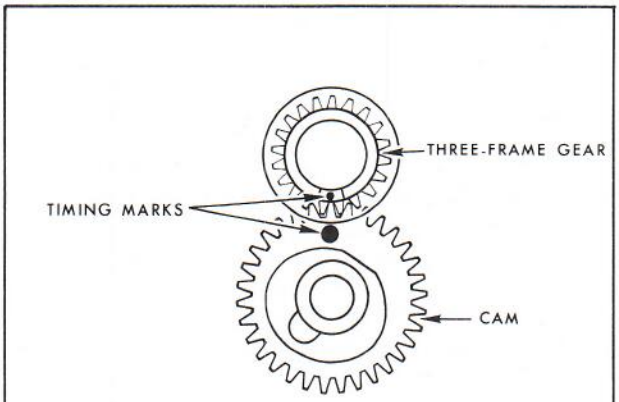


FIGURE 40

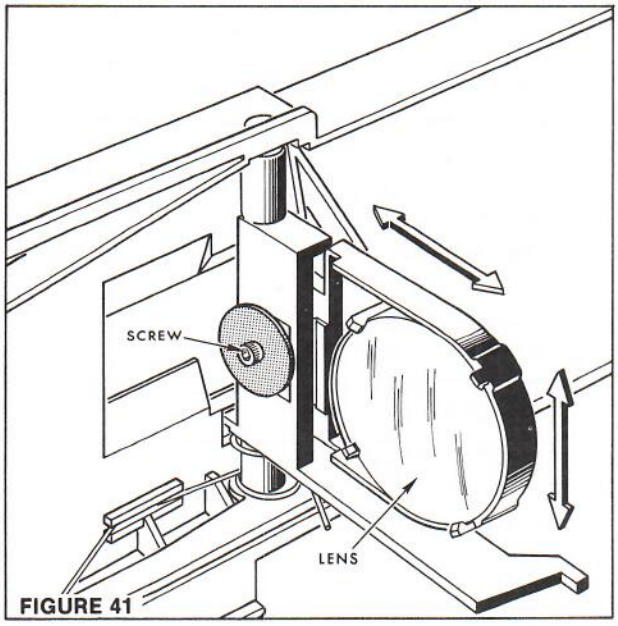


FIGURE 41

LUBRICATION AND TOOLS

LUBRICATION:

1. SAE #20 OIL (Part No. 753001)

GENERAL AREA	LUBRICATION POINT
Control Plate Assembly:	
Rewind Cam	Speed cam track; rewind cam cavity.
Mechanism Mount Assembly:	
Bearing	Apply on the shaft during assembly.
Claw Return Follower And Out Follower	Dip in the oil.
In And Out Cam	Cam surfaces and cam teeth.
Speed Detent Pin	Dip in the oil.
Up-Down Cam Assembly (Sintered)	Apply oil to lubricate the up and down follower on claw.
Spindle Shaft Assembly:	
Spindle shaft	Apply to the bearings.
Take-up Reel Assembly	Apply to the bearing side of the reel brake.

2. PLASTILUBE #1 (Part No. 763002) or * "Door Ease"

GENERAL AREA	LUBRICATION POINT
Lens Mount Assembly:	
Focus Knob	Lubricate the end and sides of the knob before assembling to the mount.
Viewer Assembly	Lubricate the rails.

3. PLASTILUBE #1 with 12% MOLY (Part No. 763003)

GENERAL AREA	LUBRICATION POINT
Control Plate Assembly:	
Brake Release Lever	Contact points on the brake release; corner tabs on the touch bar.
Control Plate	Sliding contact on the speed set lever.
Latch Slide	Lubricate contact areas on the rewind reset, the mechanism mount, and the rewind slide.
Snubber Latch	Apply to the snubber latch and the latch slide contacts.
Speed Cam	Outside surfaces of the cam.
Reverse Lever	Control plate contact points.
Rewind Cam	Outside surfaces of the cam.
Gate and Claw Assembly:	
Claw	Apply to the three balls and the ball race surface. Lubricate the follower surfaces (in and out cam; claw return).

*Available at hardware stores.

GENERAL AREA	LUBRICATION POINT
Mechanism Complete:	
Brake Arm	Contact point between the brake arm and the brake release.
Brake Release	Apply to the four points.
Mechanism Mount Assembly:	
Rewind Slide	Contact area with three screws; claw followers; tab for the pressure pad; spindle slide lever; brake arm.
Speed Detent Plate	Apply to the follower hole and the detent positions.
Up-Down Cam Assembly (Plastic)	Cam surfaces and teeth.
Spindle Shaft Assembly:	
Slide Spindle	Contact point with the lever; four contact points with the frame.

4. 2 to 1 LIGHT MOLY OIL (Part No. 787859)

GENERAL AREA	LUBRICATION POINT
Supply Spindle Assembly:	
Spacer Ring	Apply to the ring at the brake spindle.
Spindle Brake	Apply to the clutch-running surfaces.
Spindle Plate	Apply to the contact surfaces on the spindle brake.

5. GLYPTAL CEMENT G135

GENERAL AREA	LUBRICATION POINT
Lamphouse Assembly:	
Set Screw	Apply to the screw threads after the forward/reverse shift adjustment had been made.

TOOLS:

PART NUMBER	DESCRIPTION
760068	8mm Registration Test Film.
762320	Super 8 Registration Test Film.
TL 2070	Spindle Driver Height Gauge.
TL 2071	Forward/Reverse Lever Forming Tool.
TL 704	Waldes TRUARC Pliers No. 200.

SPECIFICATION AND STANDARDS

GENERAL CONDITION:

Claw Protrusion:

Must be .025 inch to .040 inch above the aperture rails.

Dielectric Strength:

Leakage current must not exceed 4.0 milliamperes with 900 volts, 60 Hz, applied for one minute, between shorted prongs of the power plug and the projector frame, with the projector in still, forward, or reverse position.

Dust Cover:

Must be possible to remove and replace without damage.

Film Contact Surfaces:

All surfaces over which the film passes must be free from imperfections which could damage the film.

Focus Knob:

Must not bind; should move lens through its full range of travel.

Pressure Pad Force:

Must be 14 ounces minimum and 18 ounces maximum on the push-ull scale when one thickness of the film is in the gate.

GENERAL OPERATION:

Aperture Edges:

Must be free from burrs and dirt when the aperture image is focused on the screen and no film is in the projector.

Control Knobs:

Must operate easily to and from positions without binding.

NOTE: Press the fast forward/rewind stop bar before the motor knob can be moved from fast forward to rewind positions.

Elevation Wheel:

Action must be smooth and without binds; wheel must not slip while the projector is operating.

Mechanism:

Must be free running, with no excessive noise or roughness.

Projector Speed:

At 110 to 125 volts, 60 Hz, the shutter shaft speed must be 1080 rpm ± 70 rpm in the forward or reverse positions.

Slide Guide Force:

Must be 3.75 ± .50 ounces against the film when measured on a push-pull scale on each of the two side guide surfaces.

Take-Up Reel Tension:

Must be 1/2 ounce + 1/4-1/8 ounce during forward projection. To measure attach a push-pull scale to a length of film wound around the take-up reel.

OPERATION WITH FILM:

Refer to the 8mm Registration Test Film, Part No. 760068, and the Super 8 Registration Test Film, Part No. 762024, Page 23.

Aperture Centering (8mm Film):

Using 8mm Registration Test Film, the nominal image position must be within + .005 inch of nominal aperture size border on film.

Aperture Centering (Super 8 Film):

Using Super 8 Registration Test Film, the nominal image position must be within ± .0025 inch of nominal aperture size border on film.

Aperture Squaring (Focus Balance - 8mm Film):

Using 8mm Registration Test Film, the maximum out-of-squareness at best center focus must not exceed three "a's" difference. If the zoom lens is on the projector, the maximum out-of-squareness at best center focus must not exceed six "a's" difference.

NOTE: Check must be made with the zoom lens at the wide angle position.

Aperture Squaring (Focus Balance—Super 8 Film):

Using Super 8 Registration Test Film, the maximum out-of-squareness at best center focus must not exceed one "a's" difference. If the zoom lens is on the projector, the maximum out-of-squareness at best center focus must not exceed three "a's" difference.

NOTE: Check must be made with zoom lens at the wide angle position.

Brakes:

1. The brakes have the following torques:

   Take-up reel—12 inch ounce 17 inch ounce
   Supply spindle—15 inch ounce 26 inch ounce
   The torque difference between the supply spindle torque, and the take-up torque must be between 1 to 11 inch ounces.

2. Film spillage is limited to the following:

CONDITION	SPILLAGE
Rewind Position 400 foot Plastic Super 8 Reel 350 feet of film on the Supply Reel 50 feet of film on the Take-Up Reel	6 inches

CONDITION	SPILLAGE
Fast Forward Position 400 foot Metal 8mm Reel 50 feet of film on the Supply Reel 50 feet of film on the Take-Up Reel	2 1/2 inches

NOTE: The spillage is measured by pulling lightly on the film until the film contacts the snubbers (the brakes are still engaged). The height of the film above the roller cap is the spillage measurement.

Fast Forward:

Pressure pad must open and film must move rapidly to the take-up reel in the fast forward position. When the fast forward/rewind stop bar is pressed, the brake must stop the take-up reel without spilling the film. Maximum time for transferring a full 400-foot reel of film, from teel to reel in the fast forward position, is 70 seconds.

Film Scratching:

After 50 passes in the forward and reverse positions, Scratch Test Film, Part No. 762056, must exhibit no damage in the projected area due to the Projector.

Framing:

Using either 8mm or Super 8 Registration Test Film, the minimum framing must be .025 inch above, and .015 inch below nominal image position in forward projection. Slight focus shift during framing is permissible.

Rewind:

Pressure pad must open and film must move rapidly to supply reel in rewind position. When the fast forward/rewind stop bar is pressed, the brake must stop the take-up reel without spilling the film. Maximum time for transferring a full 400-foot reel of film, from reel to reel in the rewind position, is 70 seconds.

Steadiness:

Using either 8mm or Super 8 Registration Test Film, the vertical unsteadiness must not exceed .001 inch in the forward position, and .0015 inch in the reverse position. The horizontal unsteadiness must not exceed .0005 inch during forward projection.

Still Projection:

With a new lamp and line voltage of 125 volts, there must be no objectionable embossing of either the 8mm or Super 8 Registration Test Film, after one minute of still projection. Slight buckling is permissible.

Travel Ghost:

Maximum acceptable travel ghost is 15 percent of the frame width (top or bottom) when film is projected at 18 fps, and viewed at 13 feet in a darkened room. (If a zoom lens is on the projector, set lens at wide angle.)

Viewer Screen (Use Super 8 Registration Test Film):

With a 22mm *f/1.5* lens the upper frame line in the forward position must be visible or inside the viewer by .005 inch measured on the film. At this setting, the frame line in the reverse position must be visible on the bottom on the viewer by .008 inch. Horizontally the image must fill the viewer screen and the frame line must not be visible. The out-of-squareness at best center focus can be more than two "a's" than the specifications for the projector.

NOTE: 8mm film will not fill the screen.

With a 20mm - 32mm *f/1.5* zoom lens in the wide angle position (20mm), the image must be centered vertically so that the upper edge of the image is between the "upper" frame line and the top of the "c" bar in the forward position. Horizontally the image must be within two "a's" than the specifications for the projector.

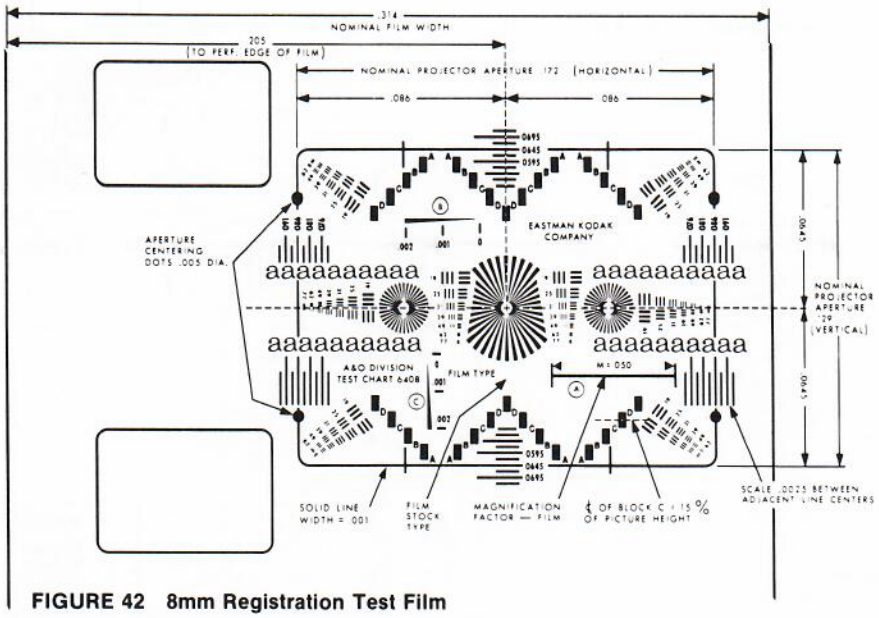


FIGURE 42 8mm Registration Test Film

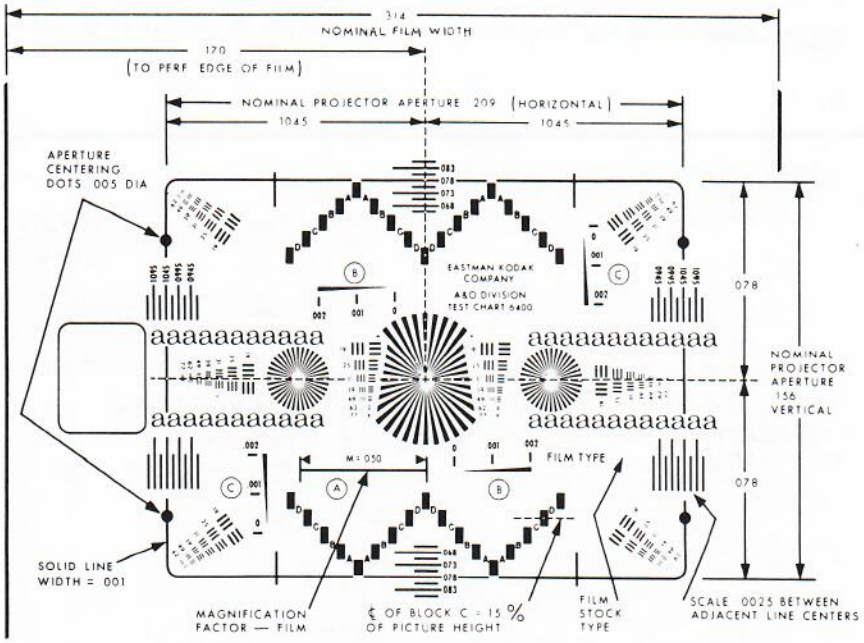


FIGURE 43 Super 8 Registration Test Film

Aperture Centering:

Measure with lines at frame edge; longer lines are .005 inch apart. The outline border is the nominal aperture size.

Aperture Squaring:

Check by counting number of "a's" at each side of frame.

Framing:

Measure with lines and block at frame edges, both top and bottom. Longer lines are .005 inch apart; blocks are .007 inch high.

Steadiness:

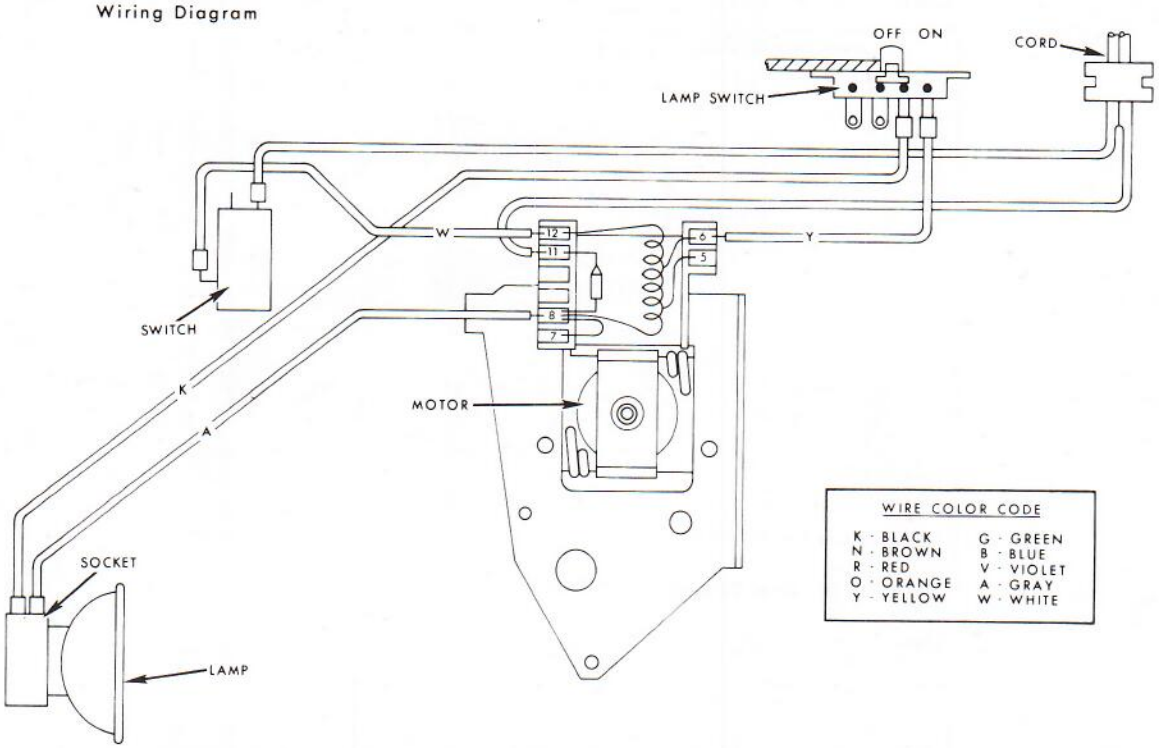
Measure with solid border lines (.001 inch thick) or wedges that taper from .002 inch to 0 inch thick.

Travel Ghost:

Midpoint of block C represents 15 percent of the nominal picture height.

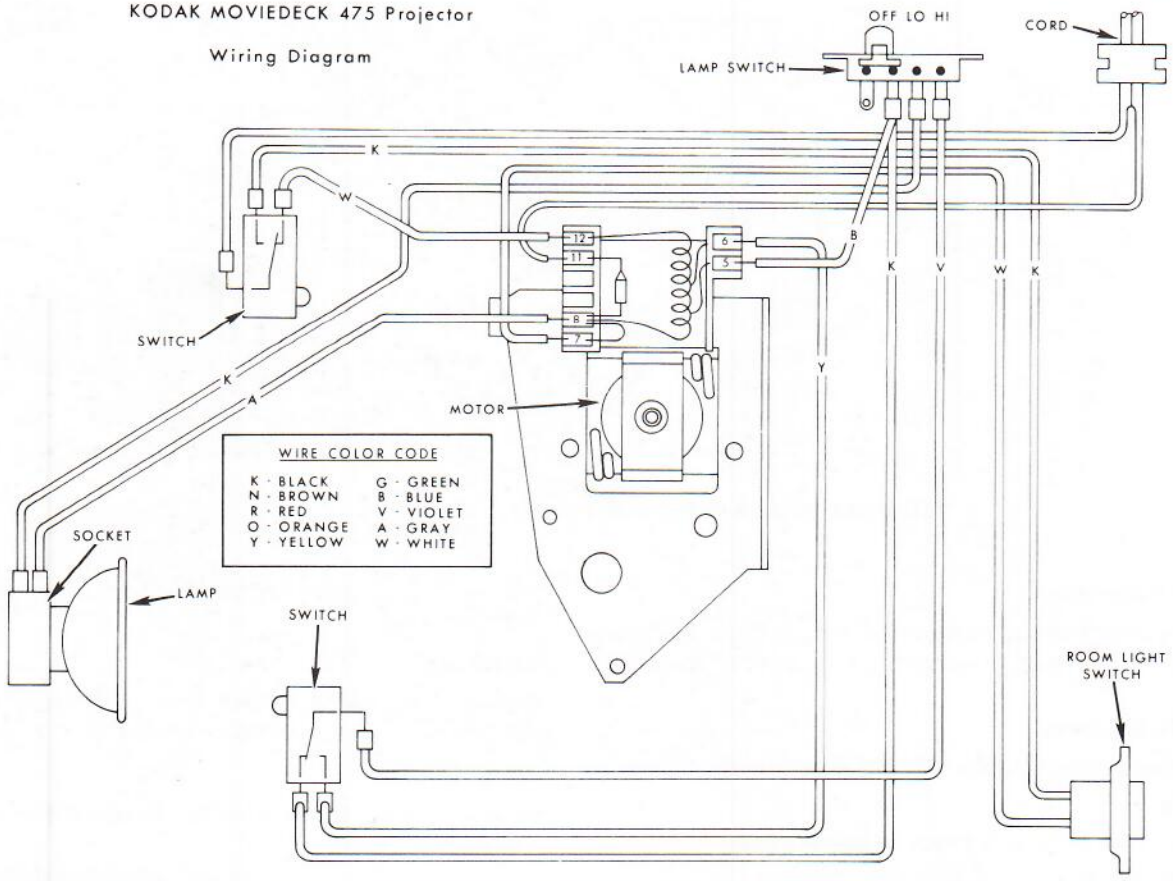
KODAK MOVIEDECK 465 Projector

Wiring Diagram



KODAK MOVIEDECK 475 Projector

Wiring Diagram



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