



SERVICE MANUAL NO. 775439

KODAK MOVIEDECKTM 425, 435, 445, and 455 Projectors



GENERAL INFORMATION

Except where noted, the information in this manual applies to all four projectors. The *KODAK MOVIEDECK* 425, 435, 445, and 455 Projectors have the following features:

Automatic Rewind (435, 445, and 455 Projectors)

Dust Cover

Fast Forward (445 and 455 Projectors)

Hinged Carrying Handle

Lamp—30 volts, 50 watt (ENZ)

Lens—22mm—*f*/1.8 (425 and 435 Projectors)
22mm—*f*/1.5 (445 and 455 Projectors)

Power Service Required—110 to 125 volts, 60 Hz

Self-Threading

Speed—18 frames per second; forward only (425 Projector)
18 frames per second; forward, still, and reverse (435 Projector)
6 or 18 frames per second; forward, still, and reverse (445 and 455 Projectors)

Storage compartment for the attached power cord

Viewing Screen (455 Projector)

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.

TABLE OF CONTENTS

GENERAL INFORMATION	2
PROJECTOR OPERATION.....	4
DESCRIPTION OF FUNCTIONING PARTS	5
REPLACEMENTS.....	6
External Parts	6
Lower Film Track Assembly	6
Lamphouse Assembly.....	6
Lens Mount Assembly	7
Control Plate Assembly	8
Fan Belt.....	10
Fan	11
Motor Assembly	11
Spindle Assembly	11
Pressure Pad Assembly	12
Aperture Plate and Claw Assembly	12
Shutter Shaft Assembly	13
In and Out Cam Assembly	13
Take-Up Brake, Brake Slide, and Rewind Slide	13
Spring Identification	14
ADJUSTMENTS	15
Brake Release Lever	15
Claw Protrusion	15
Focus Balance	15
Framing.....	16
Spindle Driver Height.....	16
Spindle Height	17
Viewer Assembly (455 Projector)	17
Timing	17
LUBRICATION AND TOOLS	18
SPECIFICATIONS AND STANDARDS	20
General Condition	20
General Operation	20
Operation With Film	20
WIRING DIAGRAM	23

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

PROJECTOR OPERATION

See Figure 1 for identification of projector controls.

THREADING

1. Turn the MOTOR KNOB to the run/thread position.
2. On the 435 Projector, turn the SPEED KNOB to the forward position. On the 445 and 455 Projectors, turn the SPEED KNOB to the 18 forward position.
3. Place the reel of film on the supply spindle with the perforated edge of the film up.
4. Grasp the end of the film; slide it along the thread guide, and into the film load slot.
5. 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 435 Projector, turn the SPEED KNOB to the forward position. On the 445 and 455 Projectors, turn the SPEED KNOB to either the 18 forward position (normal projection speed), or the 6 forward position (slow projection speed).

Still Projection (435, 445, and 455 Projectors):

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 (435, 445, and 455 Projectors):

Turn the speed knob to one of the reverse projection speeds.

Fast Forward (445 and 455 Projectors):

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.

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 (435, 445, and 455 Projectors):

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.

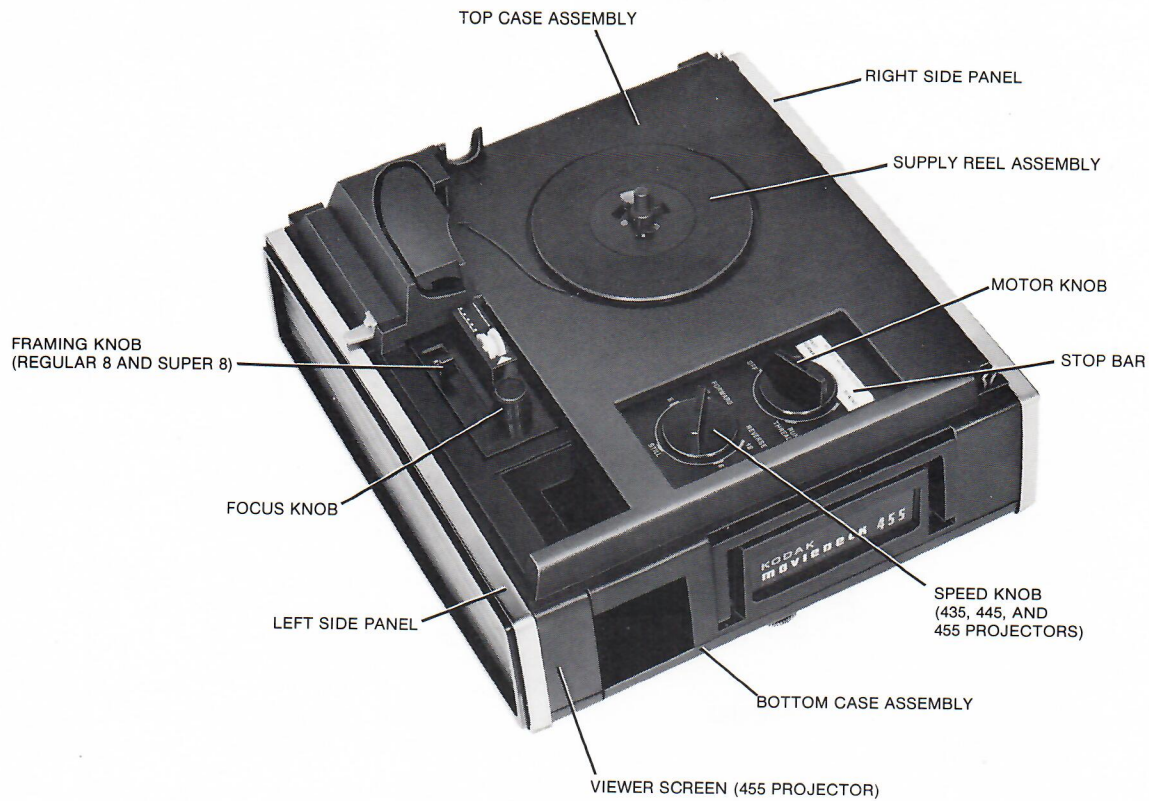


FIGURE 1

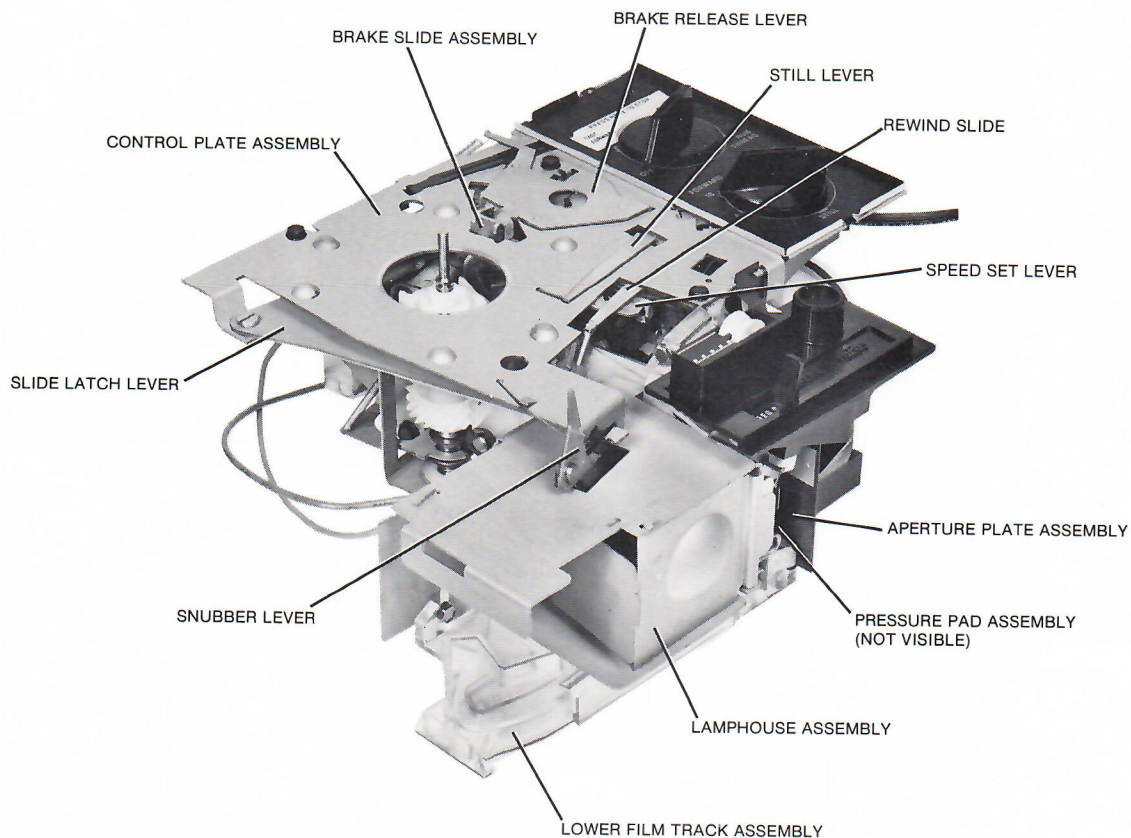


FIGURE 2

Compliments of:
www.KodakParts.com

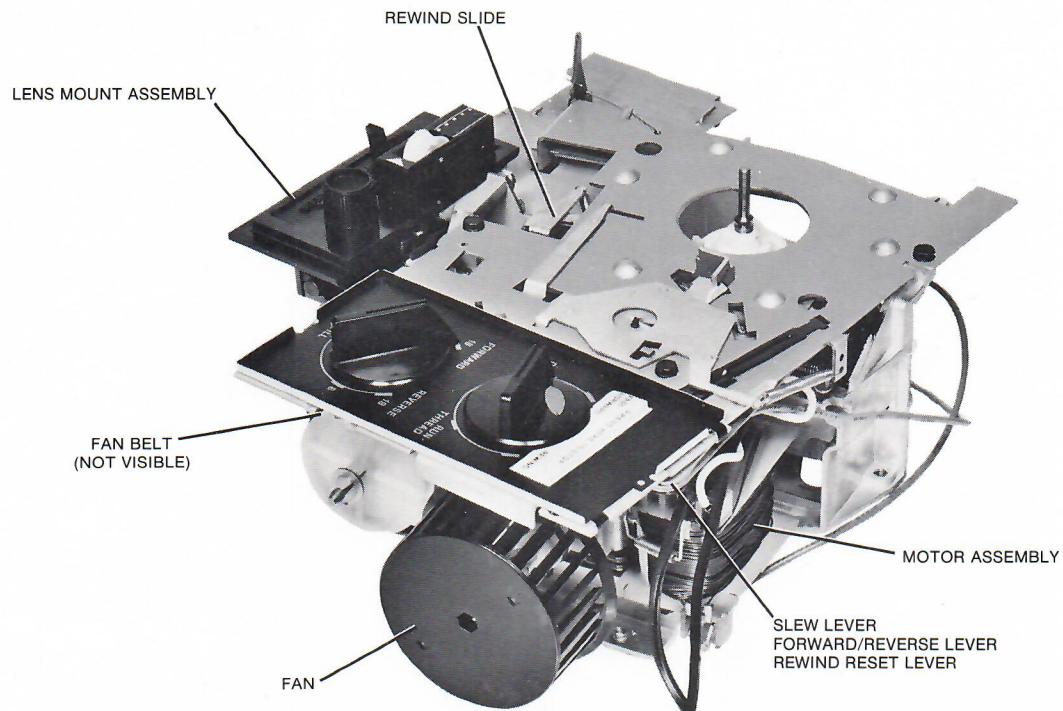


FIGURE 3

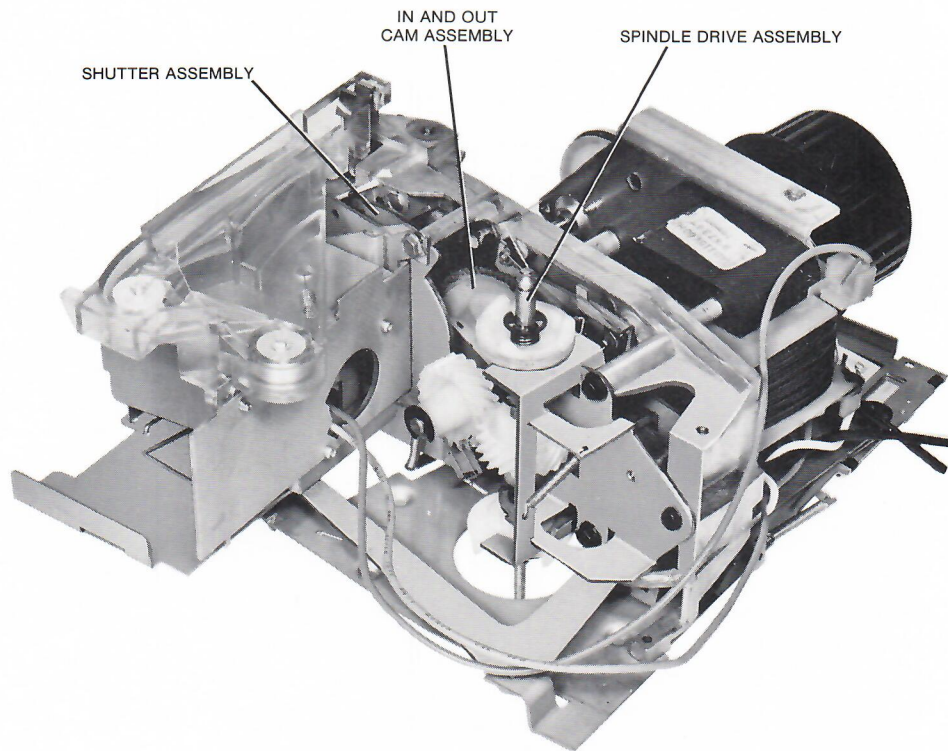


FIGURE 4

Compliments of:
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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 take-up reel.

IN AND OUT CAM:

The IN AND OUT CAM operates the claw and controls the film direction (forward and reverse), and 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 rewind positions. Also, it resets the rewind slide lever when the motor knob moves from the fast forward or rewind positions into the run/thread or off positions.

3. Slew lever—places the spindle driver assembly into the fast forward or rewind positions. 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 the fast forward or rewind positions, 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 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 (435, 445, and 455 Projectors):

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

1. Speed set lever—moves the follower to different surfaces on the in and out cam; this provides for different film speeds and film direction (forward and reverse).

2. Forward/reverse lever—moves the spindle assembly down to engage the supply spindle for the forward speeds. Also, moves the spindle assembly up to engage the supply spindle for the reverse speeds.

3. Still lever—controls the position of the heat-absorbing glass. The heat-absorbing glass should be clear of the gate area in all speeds, except when in the still position, or when the motor knob is in the rewind or fast forward position.

SPINDLE DRIVE ASSEMBLY:

The SPINDLE 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.

REPLACEMENTS

NOTE: For part and assembly identification, refer to Figures 1 through 4, Foldout, Page 4.
Also, for 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 5. 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. On the 455 Projector, slide the VIEWER ASSEMBLY forward, and remove it from the bottom case assembly. Refer to the viewer assembly adjustment, Page 17.
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 RETAINING RING from the FAN SHROUD, Figure 6.
Lift and remove the fan shroud.

CAUTION

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

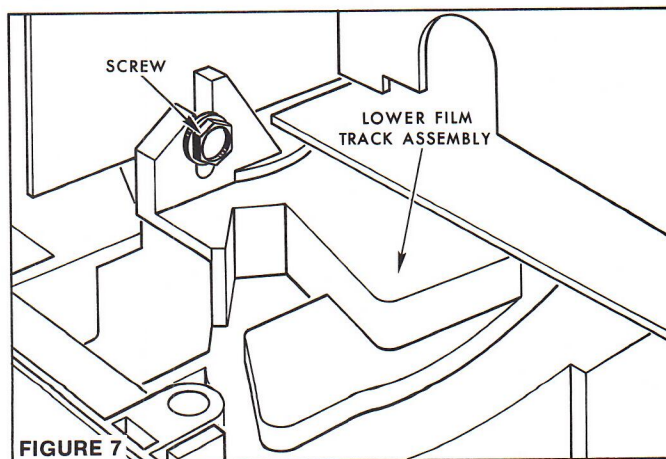
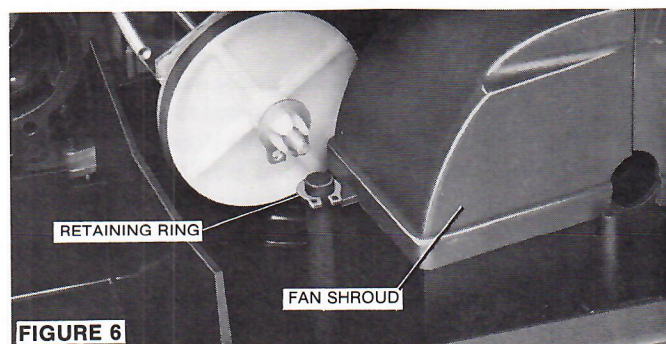
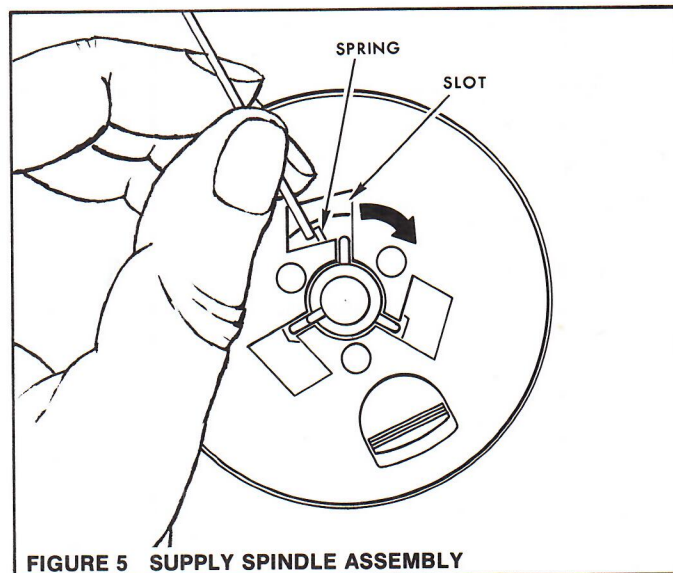
LOWER FILM TRACK ASSEMBLY:

1. Remove all the external parts, Page 6.
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 7.

LAMPHOUSE ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lower track assembly, Page 6.



3. Remove the REWIND SPRING for the safety shutter, Figure 8.

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.

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. On the 455 Projector, remove the viewer 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 435 Projector, place the speed knob in the reverse position.

On the 445 and 455 Projectors, place the speed knob in the 6 reverse position.

6. Remove the BRAKE RELEASE SPRING, the small REWIND SPRING, and the SLIDE LATCH SPRING. Refer to Figures 9, 10, and 11.

NOTE: To remove the small rewind spring, place the motor knob in the rewind position.

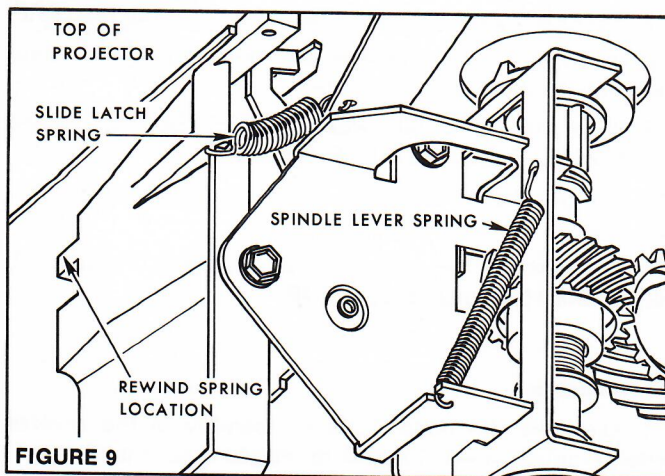


FIGURE 9

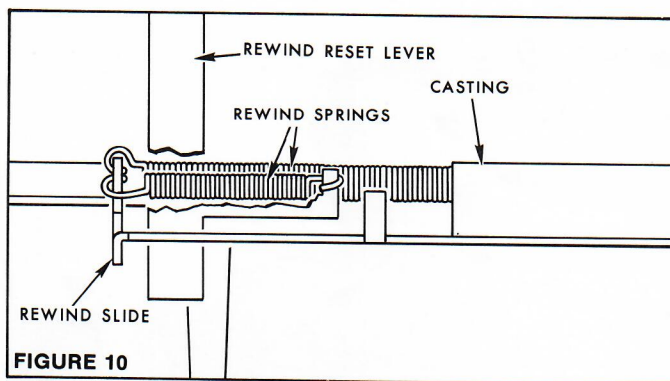


FIGURE 10

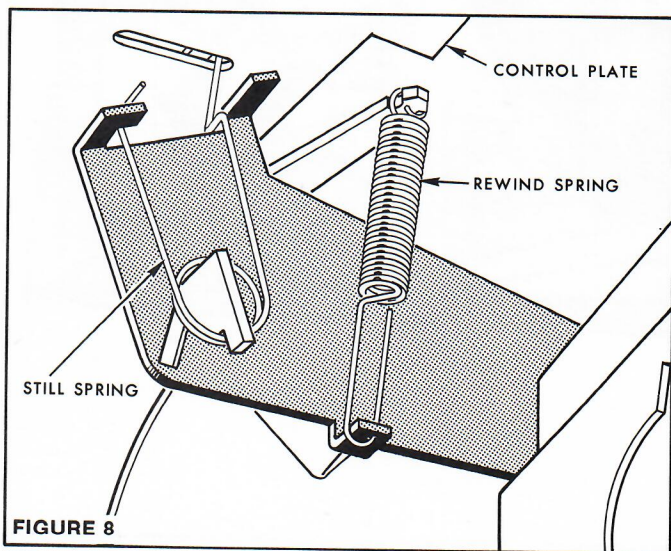


FIGURE 8

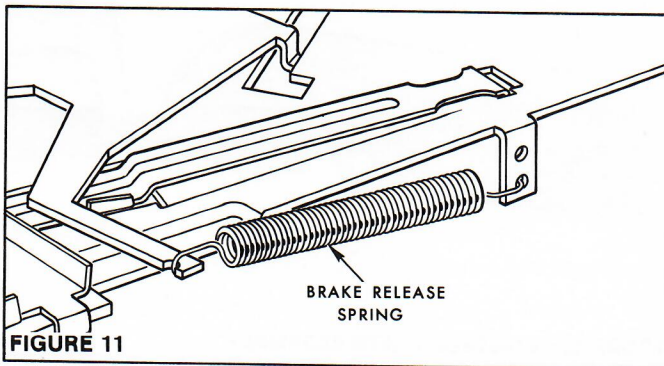


FIGURE 11

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 12.
10. Remove the control plate assembly from the mechanism unit.
11. Disassemble the control plate assembly, Figures 13, 14, 15, and 16, Pages 8, 9, and 10.

To Assemble:

1. Assemble the control plate assembly in the reverse order, Figures 13, 14, 15, and 16, Pages 8, 9, and 10.
2. Slide the REWIND RESET LEVER through the slot in the REWIND SLIDE, Figure 17.
3. Place the BRAKE SLIDE through the OPENING in the CONTROL PLATE, Figure 17.

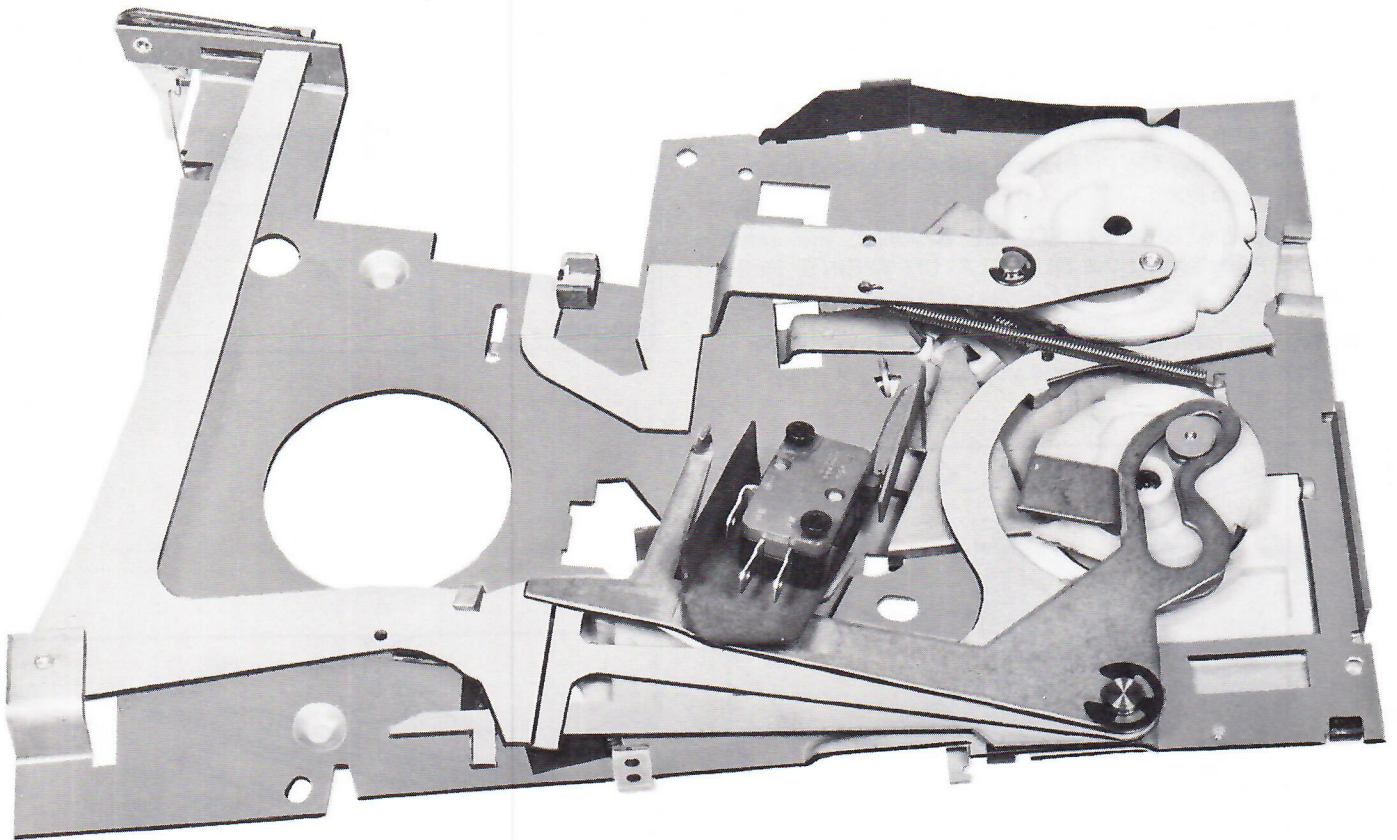
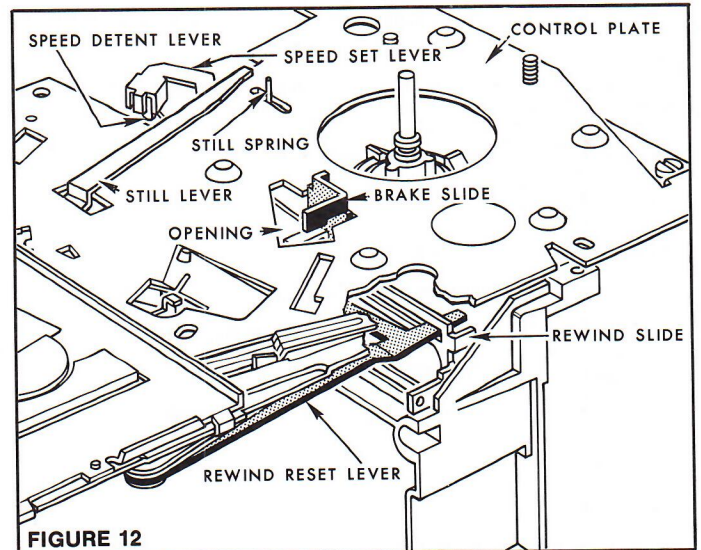


FIGURE 13 CONTROL PLATE ASSEMBLY

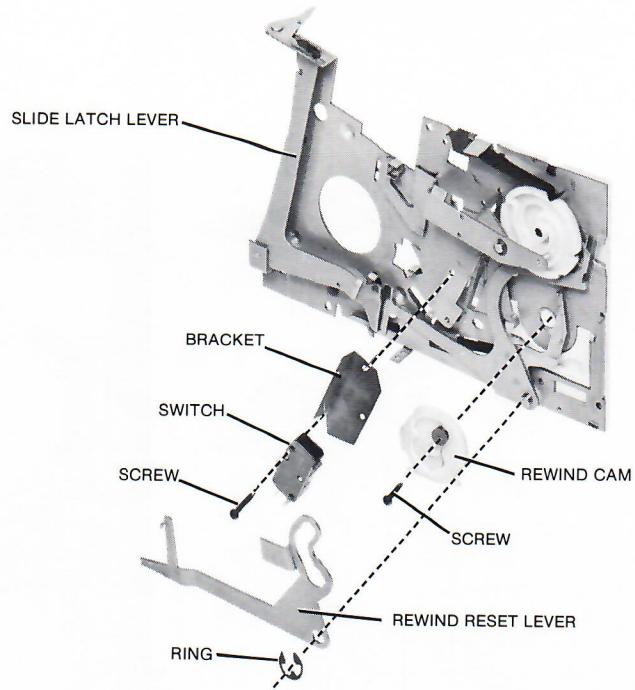


FIGURE 14

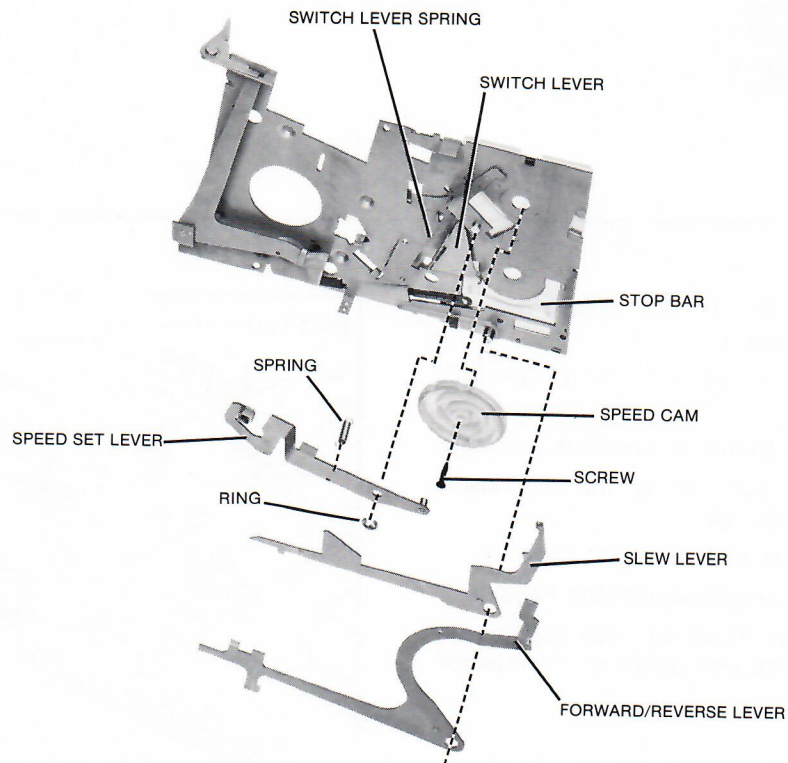


FIGURE 15

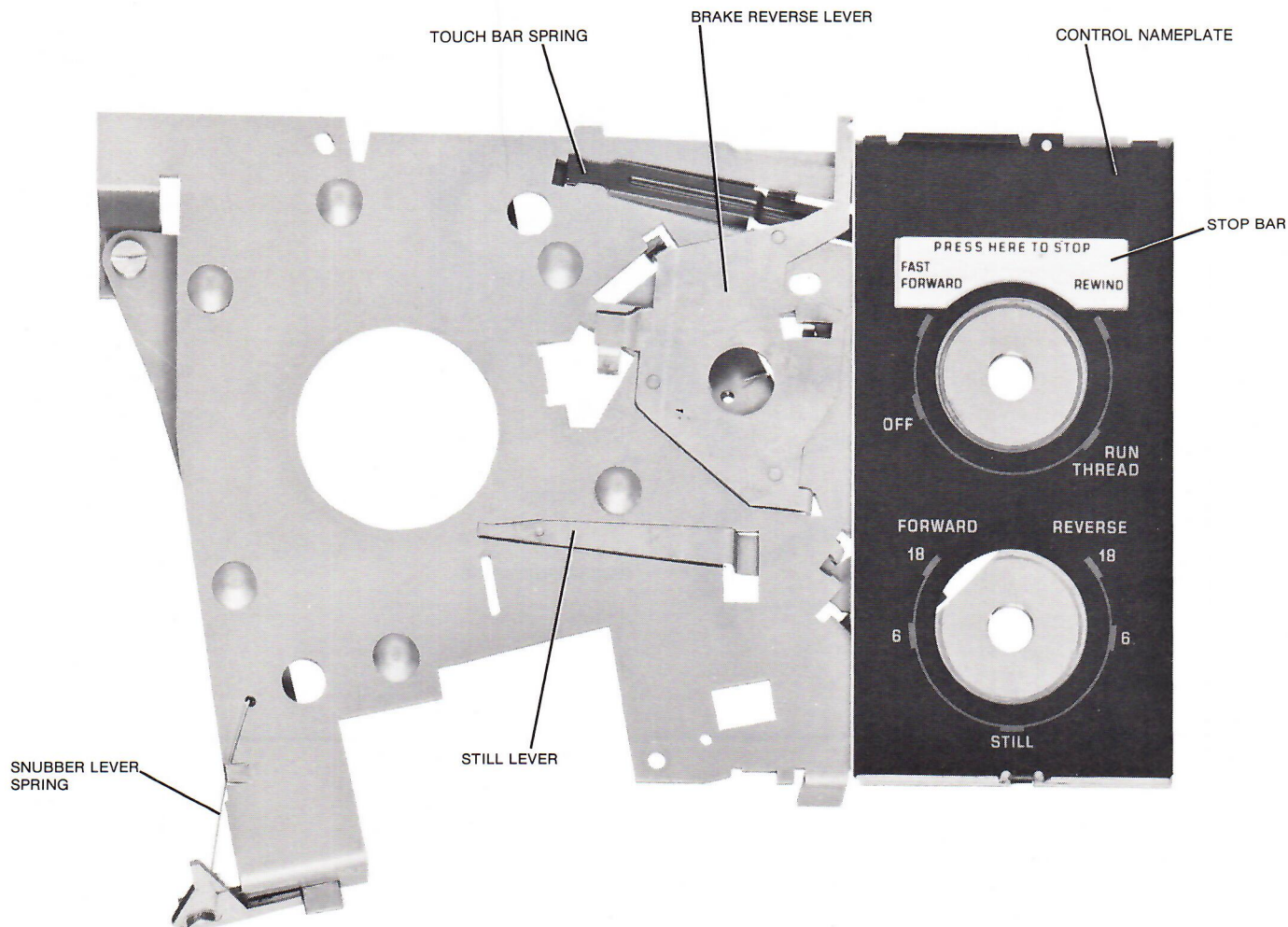


FIGURE 16

4. Place the box on the SPEED SET LEVER over the SPEED DETENT LEVER, Figure 17.

5. Place the STILL LEVER in front of the STILL SPRING, Figure 17.

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

7. Assemble 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 16.

10. Assemble the top case assembly, the supply reel assembly, and the right and left side panels to the projector.

FAN BELT:

1. Remove the supply spindle assembly, Page 6.
2. Remove the top case assembly, Page 6.

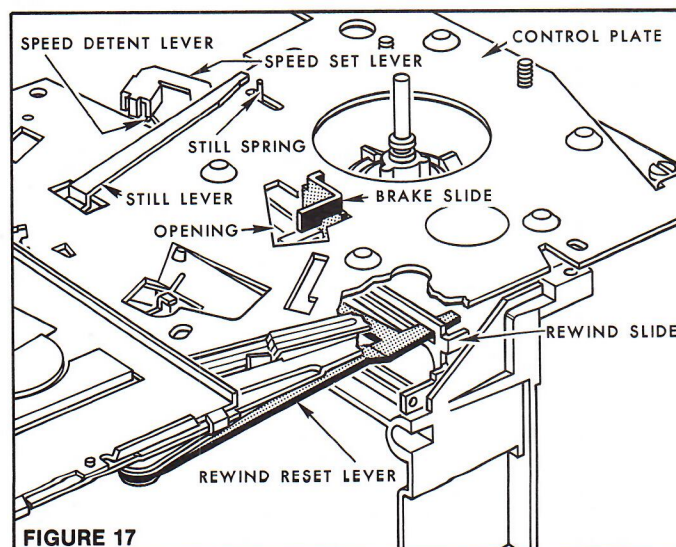


FIGURE 17

3. Remove the RETAINING RING from the FAN SHROUD, Figure 18.

4. Lift and remove the fan shroud.

5. Cut and remove the old fan belt.

6. Slip the new belt over the fan and onto the motor pulley.

7. Slip the new belt onto the shutter pulley.

8. 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 RETAINING RING from the FAN SHROUD, Figure 18.

5. Lift and remove the fan shroud.

6. Insert a screwdriver in the RETAINER, separate the retainer, and slip the fan from the motor shaft, Figure 19.

7. Assemble in the reverse order.

CAUTION

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

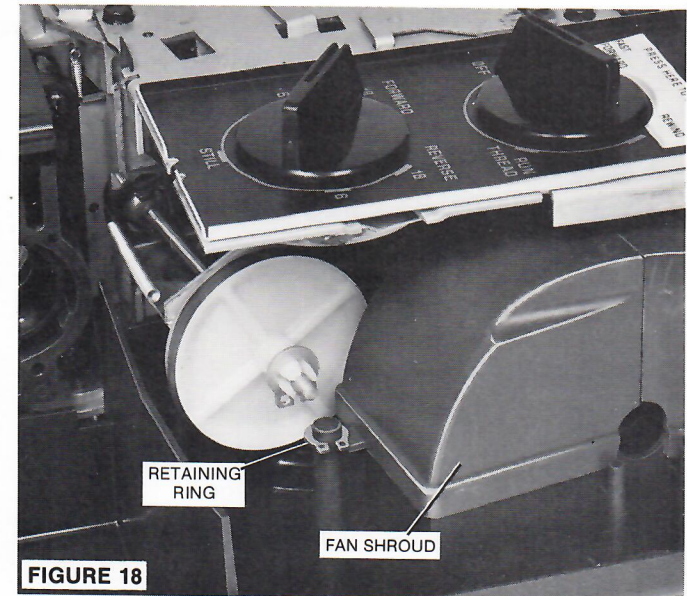


FIGURE 18

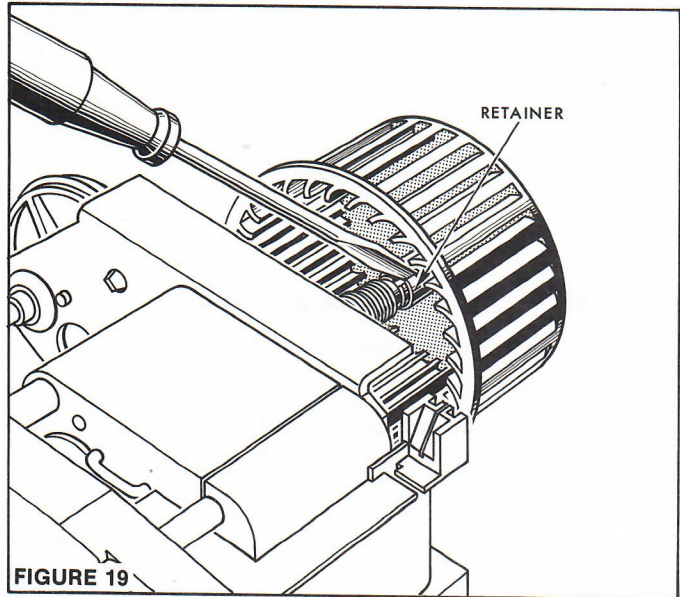


FIGURE 19

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 11.

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 diagram, Page 23.

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 20.

4. Remove the three screws that hold the spindle assembly to the casting.

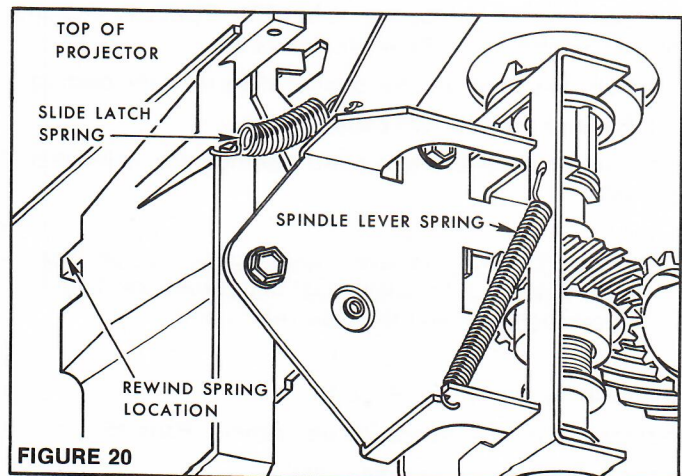


FIGURE 20

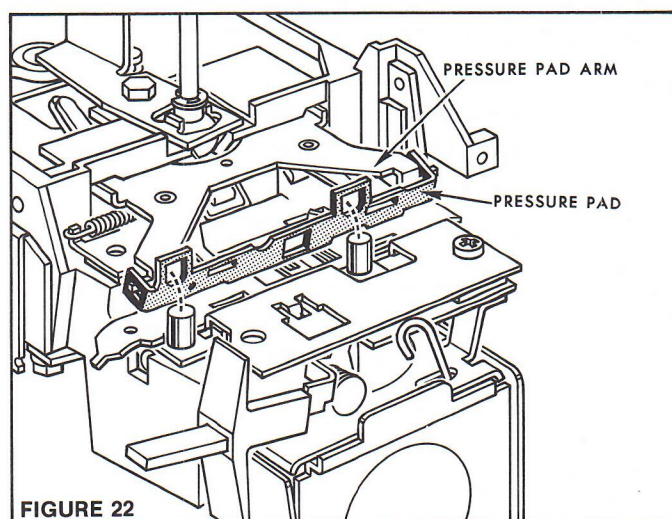
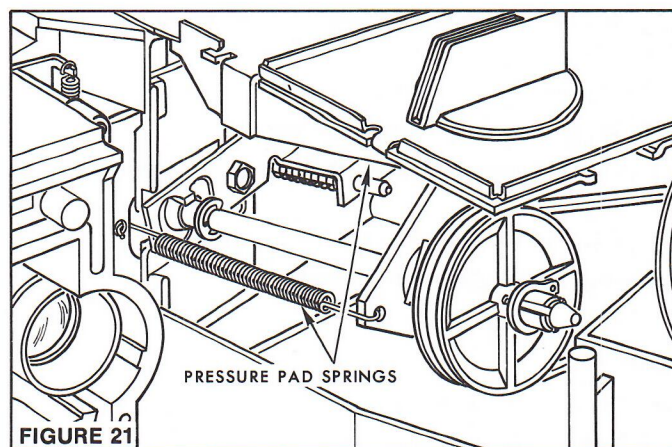
5. Remove the spindle assembly.
6. Assemble the spindle assembly to the casting.

NOTE: Do not tighten the three screws.

7. Make the spindle height adjustment, Page 17.
8. Make the spindle driver height adjustment, Page 16.
9. Assemble the external parts to the projector.

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. On the 455 Projector, 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 21.
8. Remove the PRESSURE PAD and ARM ASSEMBLY, Figure 22.
9. Assemble in the reverse order.

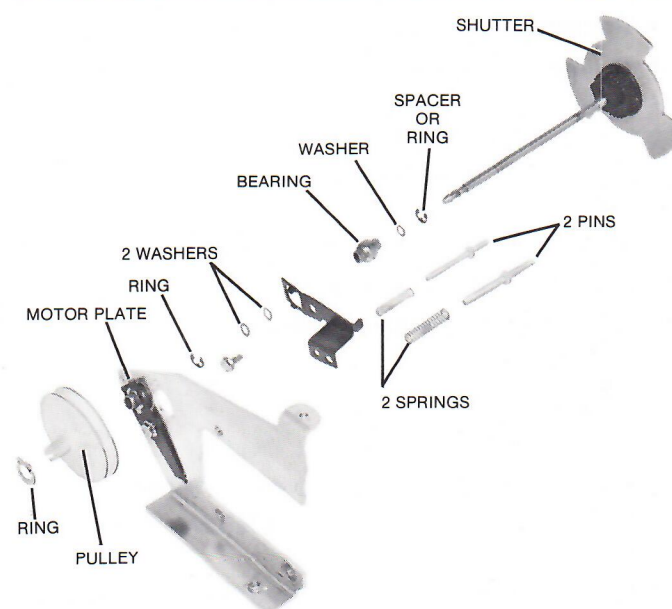


APERTURE PLATE AND CLAW ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lens mount assembly, Page 7.
3. Remove the pressure pad assembly, Page 12.
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 assembly 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 23.
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 SHAFT ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lower track assembly, Page 6.
3. Remove the lamphouse assembly, Page 6.
4. Remove the belt from the shutter pulley.
5. Remove the RING, the SHUTTER PULLEY, and the two WASHERS from the shaft, Figure 24.
6. Pull the shutter and the shutter shaft from the casting.
7. Assemble the shutter and the shutter shaft to the casting.
8. Refer to the timing, Page 17.
9. Assemble in the reverse order.

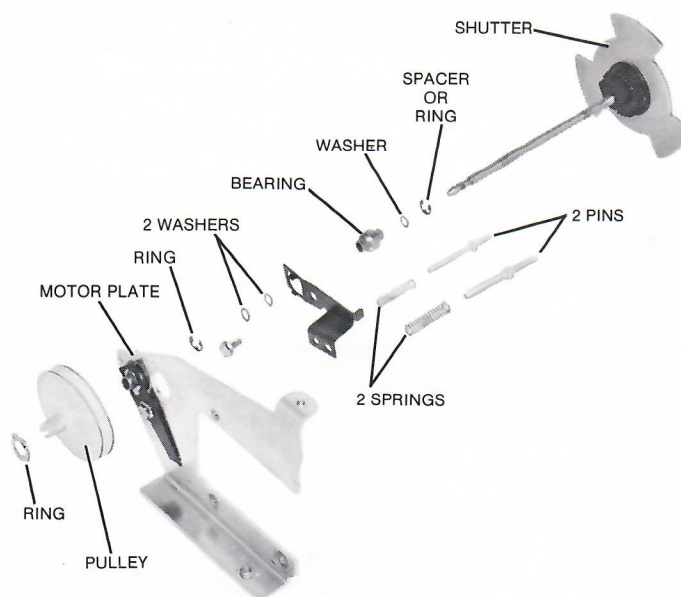


FIGURE 24

IN AND OUT CAM ASSEMBLY:

1. Remove all the external parts, Page 6.
2. Remove the lower track assembly, Page 6.
3. Remove the lamphouse assembly, Page 6.
4. Remove the spindle assembly, Page 11.
5. Remove the shutter shaft assembly, Page 13.
6. Remove the RING and WASHER(S) from the shaft, Figure 24.
7. Remove the gear from the shaft.
8. Remove the in and out cam.
9. Assemble the in and out cam and the shutter assembly to the casting.
10. Refer to the timing, Page 17.
11. Assemble the spindle assembly to the casting.
12. Make the spindle height adjustment, Page 17.
13. Make the spindle driver height adjustment, Page 16.
14. Assemble in the reverse order.

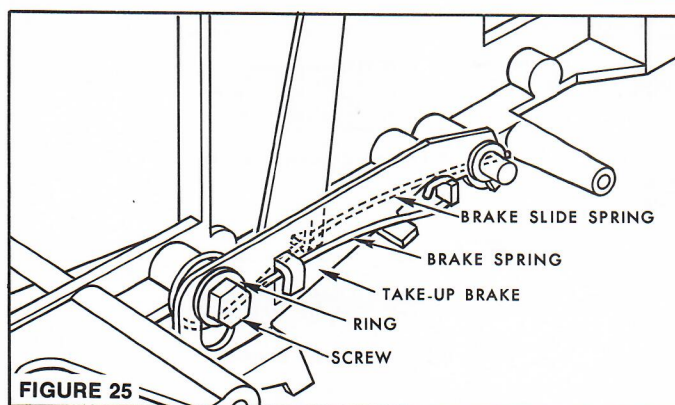


FIGURE 25

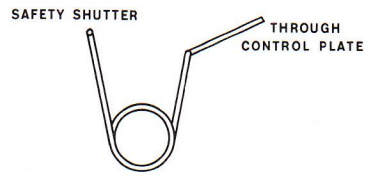
TAKE-UP BRAKE, BRAKE SLIDE, AND REWIND SLIDE:

1. Remove all the external parts, Page 6.
2. Remove the lower track assembly, Page 6.
3. Remove the lamphouse assembly, Page 6.
4. Remove the control plate assembly, Page 8.

NOTE: Do not disassemble the control plate.

5. Remove the shutter shaft assembly, Page 13.
6. Remove the in and out cam, Page 13.
7. Remove the RING, the SCREW, the BRAKE SPRING, and the BRAKE SLIDE SPRING, Figure 25.
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 timing, Pages 15 through 17.

SPRING IDENTIFICATION



SAFETY SHUTTER STILL SPRING



PRESSURE PAD ARM SPRING



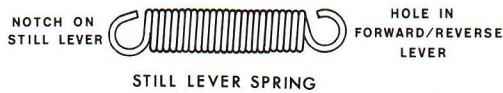
SPEED LEVER SPRING



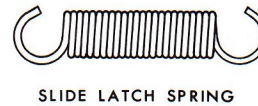
BRAKE RELEASE SPRING



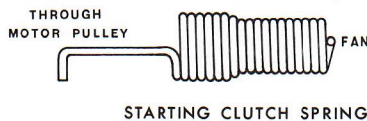
SAFETY SHUTTER REWIND SPRING



STILL LEVER SPRING



SLIDE LATCH SPRING



STARTING CLUTCH SPRING



REWIND LEVER RETURN SPRING



CLAW RETURN SPRING



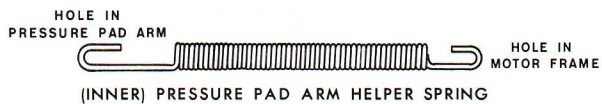
IN AND OUT CAM SPRING



(OUTER) PRESSURE PAD ARM HELPER SPRING



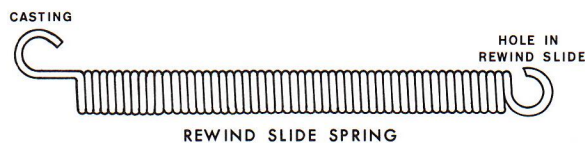
DETENT SPRING



(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 26. This clearance prevents the projector from being prematurely shut off when the motor knob moves to the fast forward or rewind position.

To Adjust

Turn the ECCENTRIC SCREW until there is approximately .010 inch clearance, Figure 26.

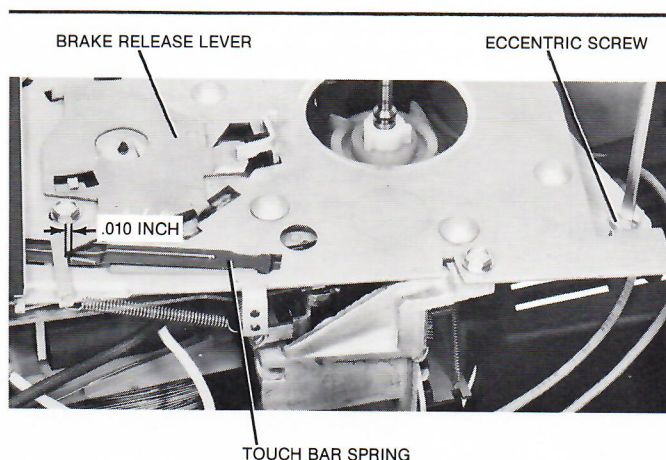


FIGURE 26

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 27. Check and adjust the claw protrusion in the 18 frames per second forward position, and the motor knob in the run/thread position.

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 spacers from the helical gear assembly.

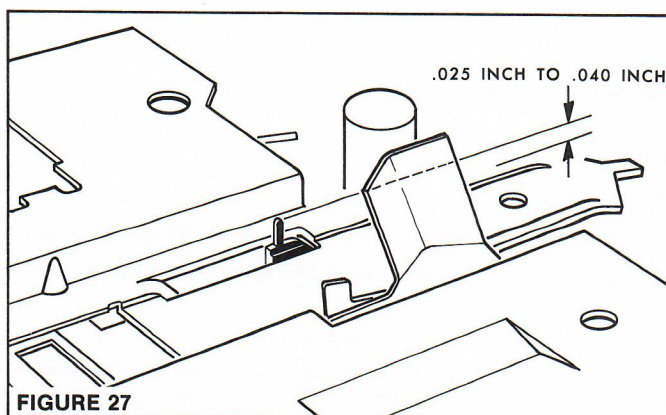


FIGURE 27

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.

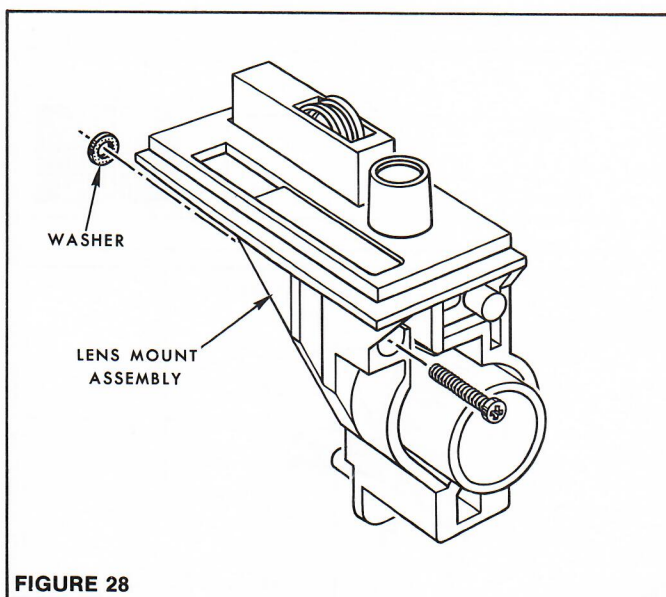


FIGURE 28

To Adjust

1. Remove the LENS MOUNT ASSEMBLY from the mechanism.
2. Add or remove a .010-inch WASHER, as necessary, Figure 28, Page 15.
3. Assemble the lens mount assembly to the mechanism.

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 29.

SPINDLE DRIVER HEIGHT:

To Check

1. Unplug the projector.
2. Place the MOTOR KNOB in the run/thread position.
3. Place the SPEED KNOB in the forward position (435, 445, and 455 Projectors).
4. Place the HEIGHT GAUGE TOOL (Tool No. TL 2070) on the SPINDLE DRIVER. The top of the tool must be flush with the top of the CONTROL PLATE, Figure 30.

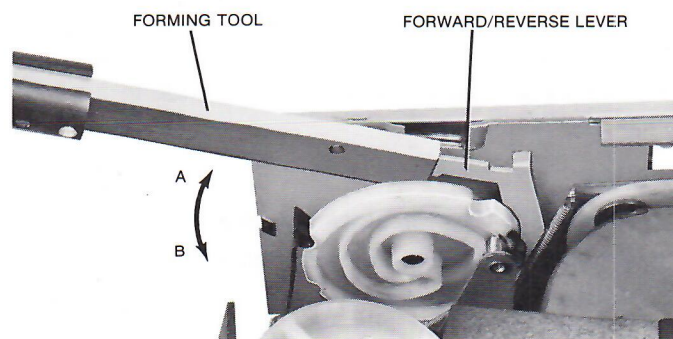
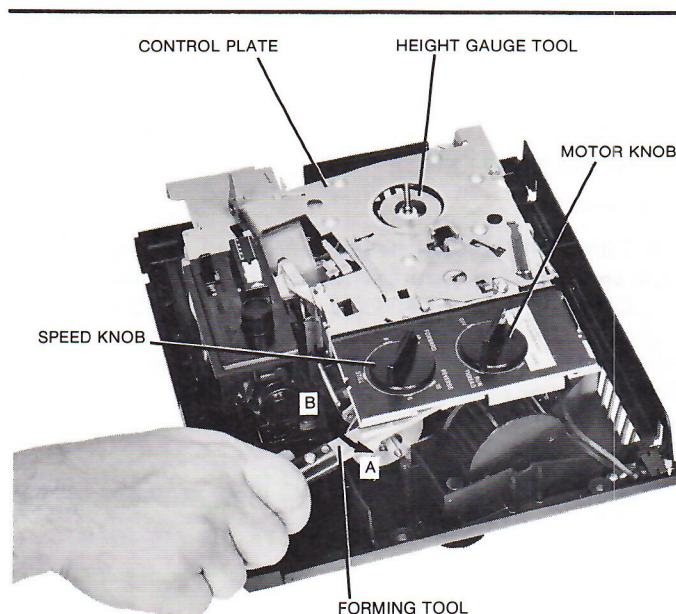
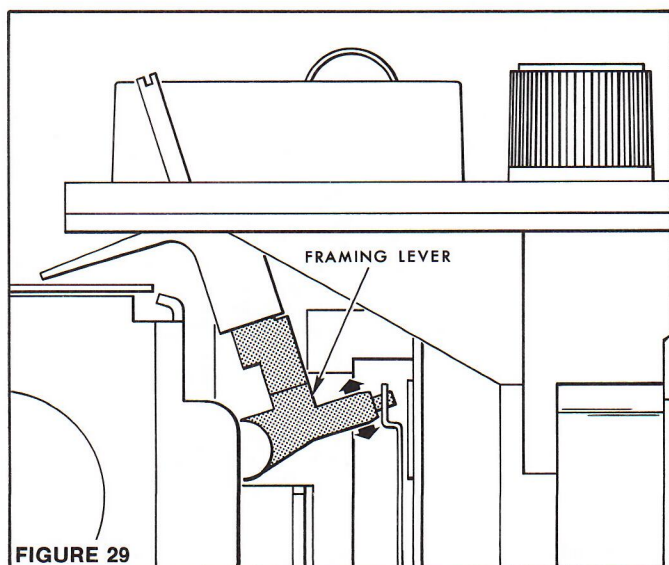
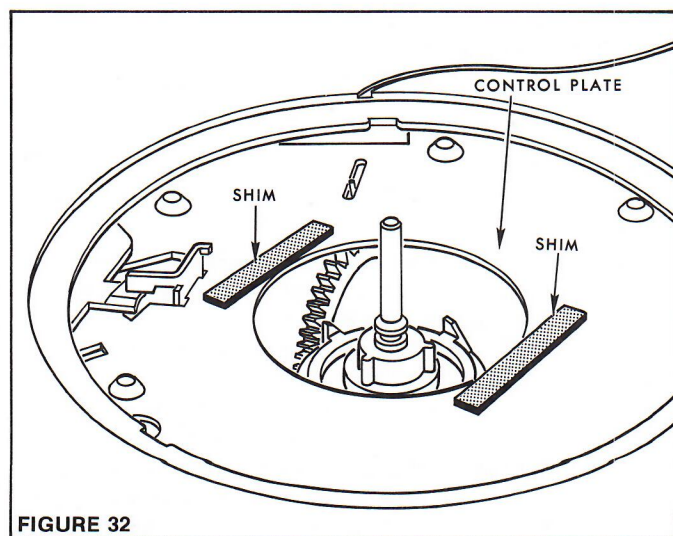


FIGURE 31



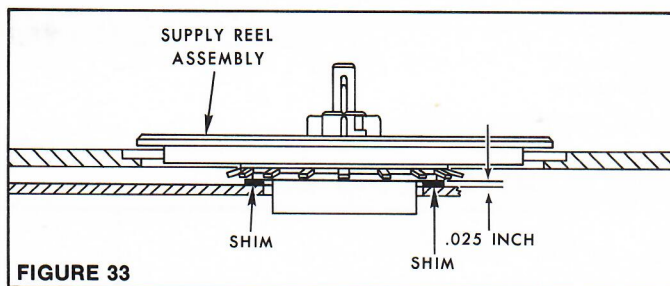
To Adjust

1. Place the FORMING TOOL (Tool No. TL 2071) on the FORWARD/REVERSE LEVER, Figure 31, page 16.

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 31, page 16.

3. Remove the tool and recheck the spindle height with the height gauge tool.



SPINDLE HEIGHT

To Adjust

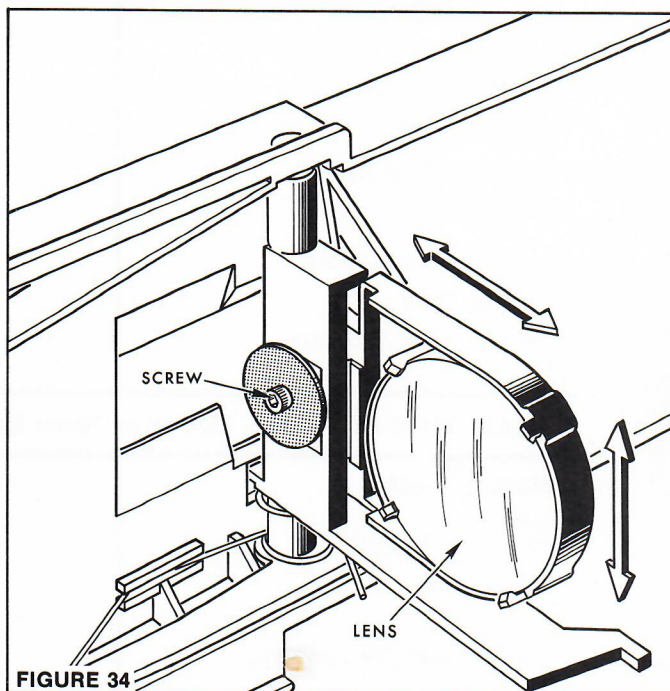
1. Install the spindle shaft assembly to the casting, but do not tighten the three mounting screws.

2. Place two .25-inch SHIMS over the spindle hole in the CONTROL PLATE, Figure 32, page 16.

3. Assemble the SUPPLY REEL ASSEMBLY to the spindle shaft assembly, Figure 33.

4. Tighten the three screws that hold the spindle shaft assembly to the casting.

5. Remove the two shims.



VIEWER ASSEMBLY (455 Projector):

To Check

Use super 8 film, and check the image on the viewer screen. The image must be centered.

NOTE: 8mm Film will not fill the viewer screen.

To Adjust

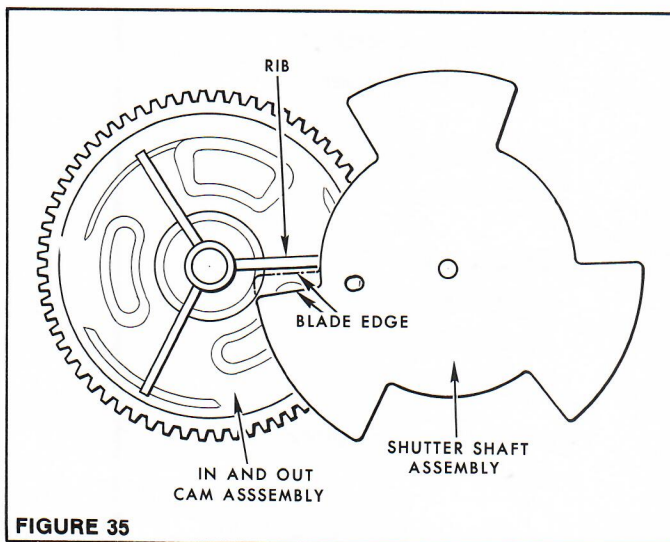
1. Loosen the SCREW on the LENS, Figure 34.

2. To adjust the image from the top and bottom, move the LENS up and down, Figure 34.

3. To adjust the image in and out, move the LENS from side to side, Figure 34.

TIMING:

When installing the shutter shaft assembly, the identified BLADE EDGE (hole in blade) must be parallel with one of the RIBS on the IN AND OUT CAM ASSEMBLY, Figure 35.



LUBRICATION AND TOOLS

LUBRICATION:

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

GENERAL AREA

Control Plate Assembly:

Rewind Cam

Mechanism Mount Assembly:

Bearing

Claw Return Follower
And Out Follower

Speed Detent Pin

Up-Down Cam Assembly
(Sintered)

Spindle Shaft Assembly:

Spindle Shaft

Take-up Reel Assembly

LUBRICATION POINT

Speed cam track; rewind cam cavity.

Apply on the shaft during assembly.

Dip in the oil.

Dip in the oil.

Apply oil to lubricate the up and down follower on claw.

Apply to the bearings.

Apply to the bearing side of reel brake.

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

GENERAL AREA

Lens Mount Assembly:

Focus Knob

Viewer Assembly

LUBRICATION POINT

Lubricate the end and sides of the knob before assembling to the mount.

Lubricate the rails.

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

GENERAL AREA

Control Plate Assembly:

Brake Release Lever

Control Plate

Latch Slide

Snubber Latch

Speed Cam

Reverse Lever

Rewind Cam

Gate and Claw Assembly:

Claw

LUBRICATION POINT

Contact points on the brake release; corner tabs on the touch bar.

Sliding contact on the speed set lever.

Lubricate contact areas on the rewind reset, the mechanism mount, and the rewind slide.

Apply to the snubber latch and the latch slide contacts.

Outside surfaces of the cam.

Control plate contact points.

Outside surfaces of the cam.

Apply to the three balls and the ball race surfaces.

Lubricate the follower surfaces (in and out cam; claw return).

*available at hardware stores.

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

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:	
In and Out Cam	Cam surfaces and cam teeth.
Rewind Slide	Contact area with the three screws; claw follower; tab for the pressure pad; spindle slide lever; brake arm.
Slide 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. 2to 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 surface.
Spindle Plate	Apply to the contact surfaces on the spindle brake.
TOOLS:	
PART NUMBER	DESCRIPTION
760068	8mm Registration Test Film.
762024	Super 8 Registration Test Film.
TL 704	Waldes TRUARC Pliers No. 200
TL 2070	Spindle Driver Height Gauge.
TL 2071	Forward/Reverse Lever Forming Tool.

SPECIFICATIONS 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-pull 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 \pm 70 rpm in the forward or reverse positions.

Slide Guide Force:

Must be 2.0 to 3.5 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 3/4 ounces \pm 1/4 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 22.

Aperture Centering (8mm Film):

Using 8mm Registration Test Film, the nominal image position must be within \pm .003 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 \pm .002 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.

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.

BRAKES:

1. The brakes have the following torques:

Take-up reel (425 and 435 Projectors)—
12 ounce inch to 20 ounce inch.
(445 and 455 Projectors)—
12 ounce inch to 17 ounce inch.

Supply spindle—15 ounce inch to 26 ounce inch.

There is a maximum of 1 to 11 ounce inch torque difference between the supply spindle torque, and the take-up torque, on the 445 and the 455 Projectors. There are no restrictions on the 425 and the 435 projectors.

2. Film spillage is limited to the following:

CONDITION	SPILLAGE
Rewind Position	6 inches
400 foot Plastic Super 8 Reel	
350 feet of film on the Supply Reel	
50 feet of film on the Take-Up Reel	
Fast Forward Position	2 1/2 inches
400 foot Metal 8mm Reel	
50 feet of film on the Supply Reel	
50 feet of film on the Take-Up Reel	

NOTE: The spillage is measured by pulling lightly on the film above the film contacts the snubber (the brakes are still engaged). The height of the film above 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 reel 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 (455 Projector):

When the projector is in the forward or reverse position, the frame line must not be visible in the viewer screen. Super 8 film must fill the viewer screen horizontally, and the 8mm film will not fill the screen. The out-of-squareness at best center focus cannot be more than two "a's" than the specifications for the projector.

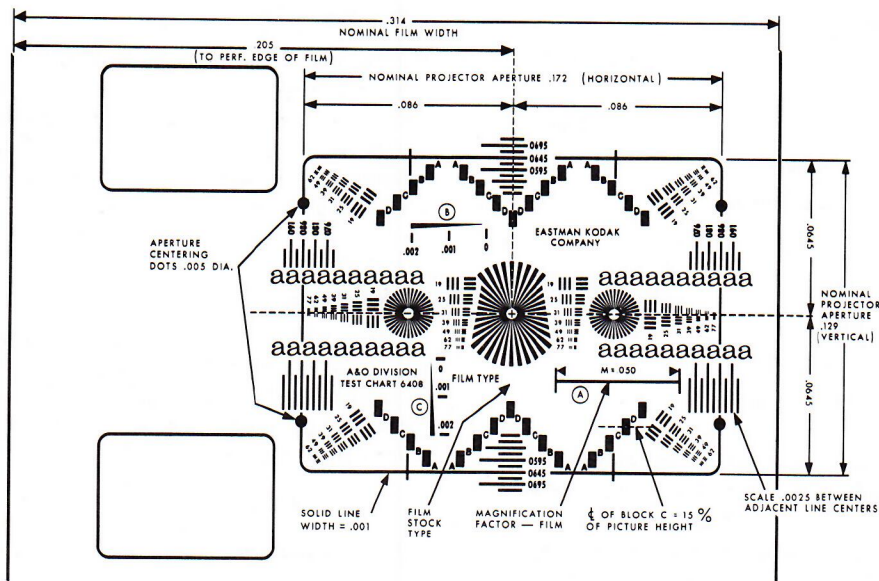


Figure 36 8mm Registration Test Film Part No. 760068

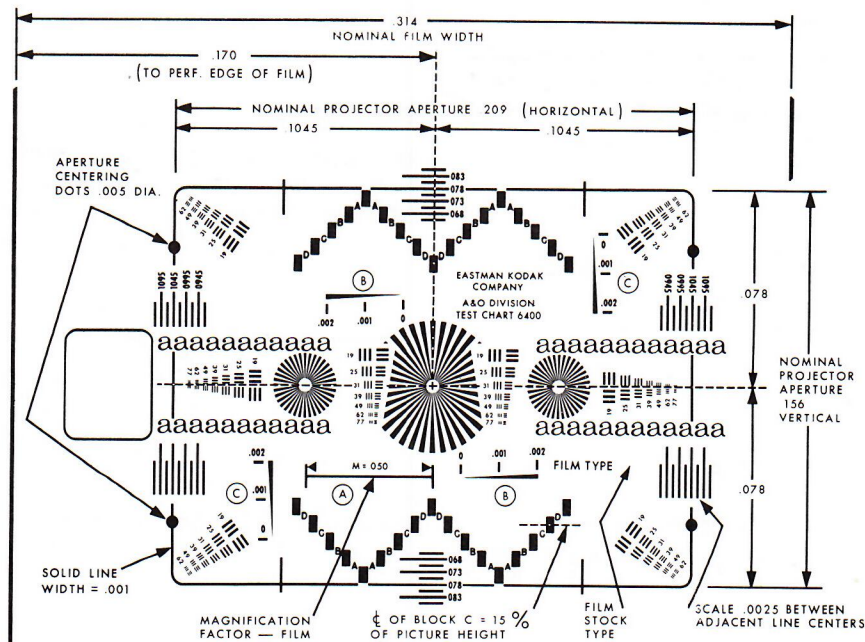


Figure 37 Super 8 Registration Test Film Part No. 762024

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:

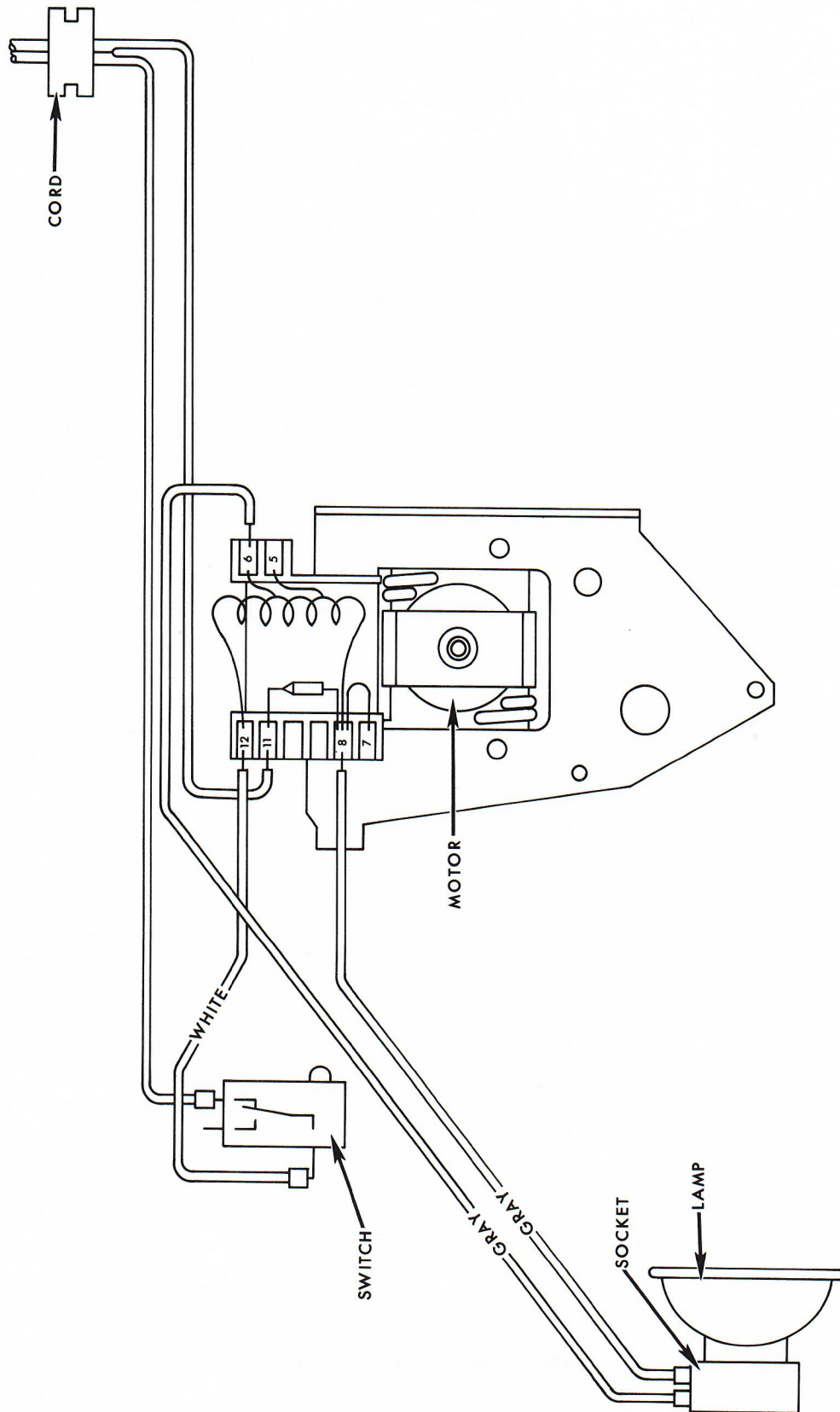
Measure with solid border lines (.001 inch thick) or wedges that taper from .002 inch to 0 inch thick.

Travel Ghost:

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

WIRING DIAGRAM

KODAK MOVIEDECK 425, 435, 445, and 455 Projectors



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