Film-Tech

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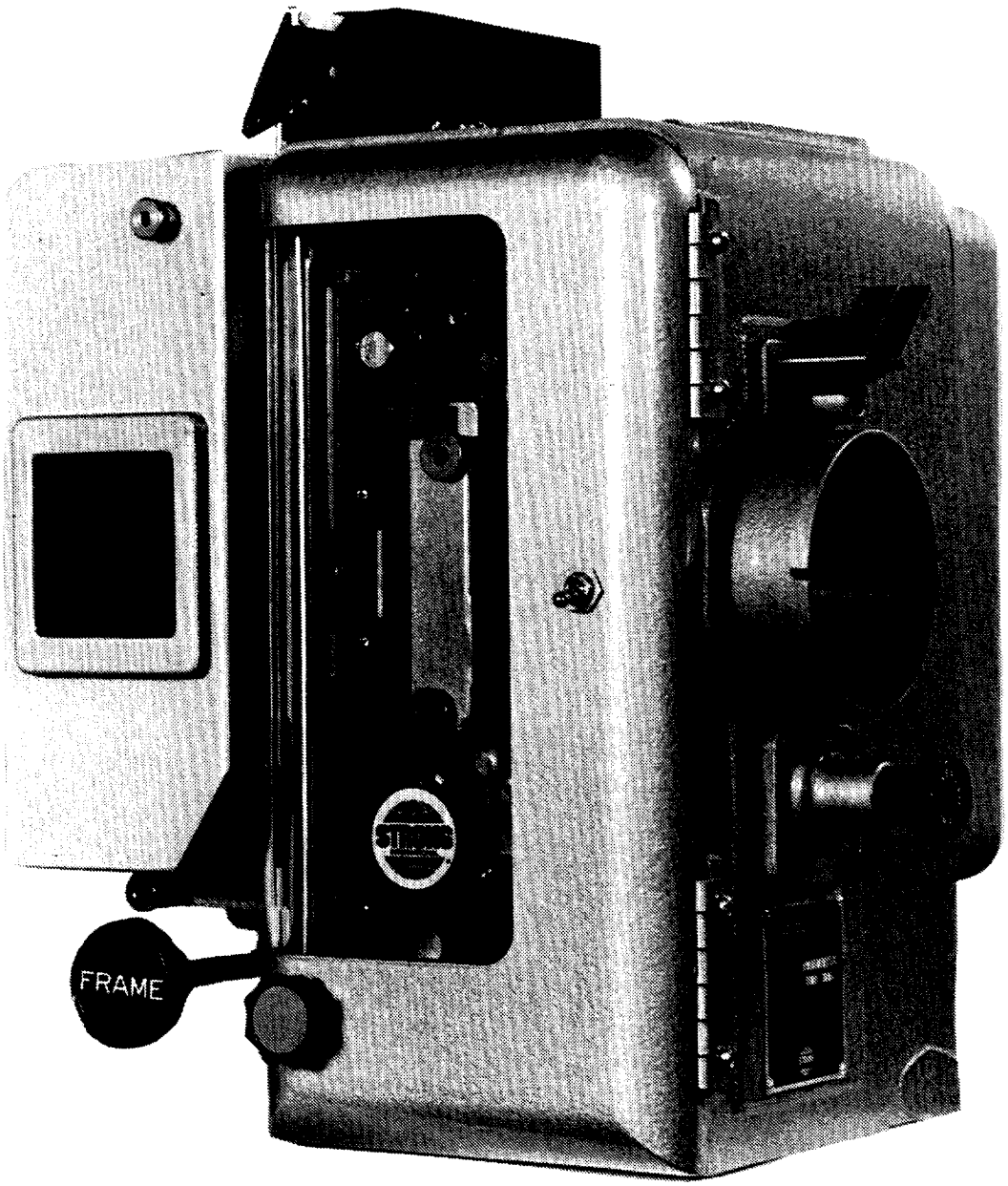
www.film-tech.com

Simplex® 35

PROJECTOR MECHANISM

INSTRUCTION BOOK



STRONG INTERNATIONAL
4350 McKinley St.
Omaha, Nebraska 68112
402/453-4444

Model PR1014 (Cinema)
Model PR1020 (Studio)
Model PR1030 (For/Rev)

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ADJUSTMENTS & REPLACEMENTS

PREFACE

THE SIMPLEX 35 PROJECTOR, Model 1014, combining rugged construction with ease of operation, provides theatre owners with a superior mechanism, engineered to the high standards set for all Strong International products. The following design features illustrate why the Simplex 35 Projector is able to provide continuously excellent performance throughout its long operating life:

UNIT DESIGN

Unit method of design simplifies part replacement and maintenance. All units may be quickly removed and replaced. Components within a particular unit are just as easily handled.

SOUNDHEAD

Although the Simplex 35 Projector was designed for use with the Simplex 5-Star Soundhead, other soundheads may be used without loss of quality.

MAIN DRIVE AND IDLER GEAR ASSEMBLIES

The main drive gear and idler assemblies are easily installed, insure proper driving from the soundhead, and are adjustable.

OPTICS

A conical shutter, positioned close to the picture aperture, provides very high light efficiency. Optical design is compatible to modern xenon lamphouse systems.

LENS BARREL

The lens barrel will accommodate projection lenses up to four inches in diameter. Lens reducers are supplied to mount currently available 2-25/32" lenses. An easily accessible adjusting knob permits concise focusing.

FILM COMPARTMENT

The roomy film compartment permits ease of threading and cleaning. The film compartment door swings open for easy access, and includes a threading light.

GEAR COMPARTMENT

The gear compartment has a removable cover, rounded corners, and an enameled finish which facilitates cleaning.

MAIN FRAME

The main frame forms a single unit with the base, top, and front that is noteworthy for its simplicity and strength.

FILM SPROCKETS

The upper feed, and lower holdback sprockets, having twenty-four teeth each, reduce shaft speeds to prolong operating life, permit smoother wrap-around, and lessen the danger of splice breakage. Exclusive use of VKF® sprockets insures minimum film wear. The pad rollers are made of durable, lightweight nylon.

FILM TRAP

The film trap conforms to the curved film gate, and accommodates the dual aperture plate used with the TU2000. The trap is easily removed and replaced for routine cleaning and maintenance.

FILM GATE

The curved gate, together with the film trap, controls the movement of the film past the aperture by five different tension settings. Gate curvature provides compensation for heat-induced warping of the film at the aperture, thus insuring a sharper image on the screen. The gate is easily removed, cleaned, and replaced.

INTERMITTENT MOVEMENT

The intermittent movement features a webbed starwheel for high strength, long life, and positive registration. The VKF® intermittent sprocket is adjustable, making absolute alignment possible.

LUBRICATION

A Spray-O-Matic Lubrication System, with a gear-driven oil pump, completely lubricates all moving components. The moving parts inside the gear compartment are visible through the glass panel in the full-vision oil-sealed cover. The intermittent movement lubricates itself by pump action, and the Spray-O-Matic system. An oil level sight glass in the film compartment permits a visual check of the oil level.

COOLING

The Simplex 35 Projector includes a standard air cooled trap. Water cooled traps may be ordered as an option, factory installed or field retrofit.

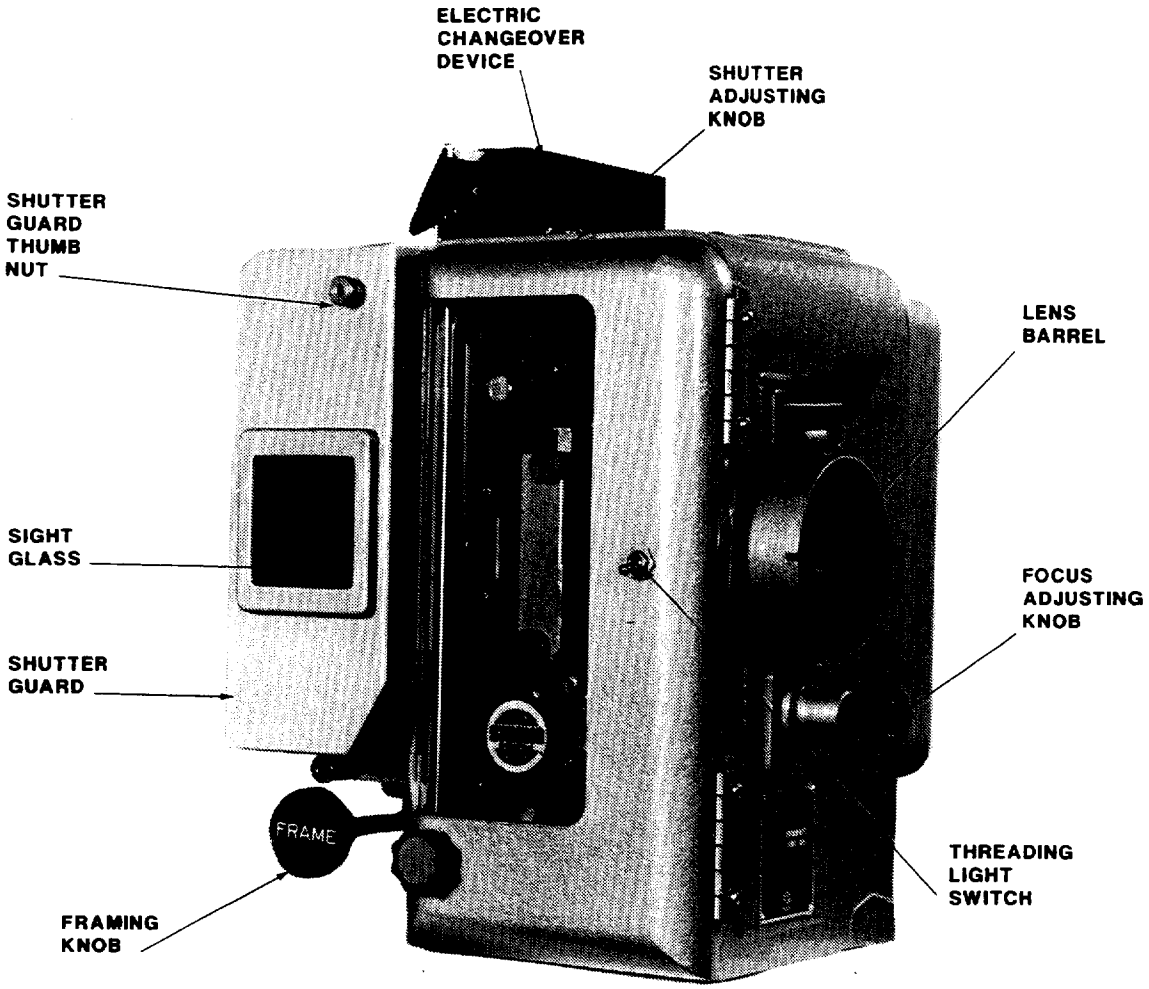
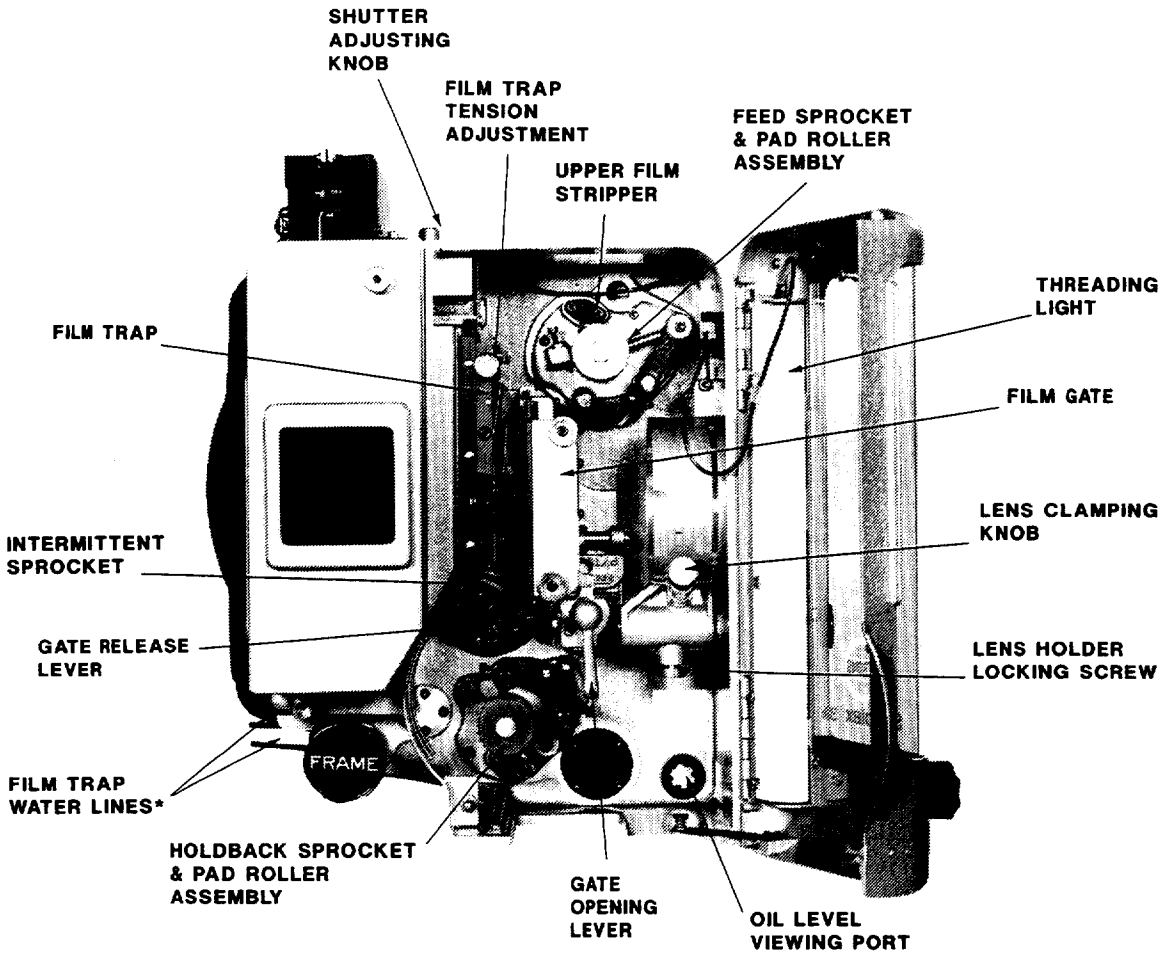

ELECTRIC CHANGEOVER DEVICE
SHUTTER ADJUSTING KNOB
SHUTTER GUARD THUMB NUT
LENS BARREL
SIGHT GLASS
FOCUS ADJUSTING KNOB
SHUTTER GUARD
FRAME
THREADING LIGHT SWITCH
FRAMING KNOB

FIGURE 1



*Water Cooled Film Trap OPTIONAL

FIGURE 2

INSTALLATION

EACH SIMPLEX 35 PROJECTOR is carefully inspected and film tested before leaving the factory. Carefully inspect the unit on receipt for any shipping damage, and file any damage claims with the carrier **immediately.** It is the responsibility of the consignee, not Strong International, to file such claims.

THE FOLLOWING RECOMMENDATIONS should be studied carefully prior to installation. Your Strong International Dealer may wish to assist in installing those items supplied by him.

UNPACKING

The Simplex 35 Projector is shipped in a sturdy wooden crate. TOP and OPEN THIS SIDE are marked on the carton. The projector is mounted to the base of the crate with (2) 3/8-16 hex head screws. If shipped as an "All-In-One" system (including 5-Star soundhead), the soundhead is mounted to the base with (2) 5/16-18 hex head screws.

An accessory kit is shipped with each Simplex 35 Projector. The kit includes the following:

(1)	Can Simplex Projector Oil	(1)	Framing Lamp Transformer
(1)	Oiler	(2)	Lens Reducers
(1)	Set Allen Wrenches	(1)	Aperture Plate, "Flat"

The tools and accessories are required for adjustments and maintenance after installation. Keep them in a secure location in the projection booth.

MOUNTING

When not shipped as an "All-In-One" system, the projector must be mounted to the soundhead, after the soundhead has been installed to the projection pedestal or console. See Soundhead Manual.

The projector mounting bar is shipped with the 5-Star Soundhead. Mount the bar to the base of the projector using the (2) 3/8-16 socket head screws provided. Mount the projector to the top of the soundhead with the mounting bar in the channel on the top of the soundhead casting. Attach the mounting bar to the soundhead casting using the (2) 5/16-18 hex head screws and washers supplied. A slight degree of tolerance between the mounting bar and the soundhead casting permit positioning the projector for smooth film feed between the projector and soundhead. When correctly positioned, securely tighten all mounting fasteners. Run the drive belt to the projector and tension the belt with soundhead idler assembly.

LAMPHOUSE OPTICAL ALIGNMENT

Carefully follow the lamphouse manufacturer's instructions regarding correct optical alignment between the lamphouse and projector. The lamphouse is generally aligned to the projector aperture, but some consoles require positioning the projector and soundhead to the optical center of the lamphouse. DO NOT alter the film path between the projector and soundhead in the course of these adjustments. DO NOT operate the lamphouse with the douser open unless the projector is running.

FRAMING/THREADING LAMP TRANSFORMER

Connect the (2) yellow leads of the transformer to the framing lamp leads running from the 90 degree connector at the top of the projector on the shutter housing. Shield leads in flexible conduit as required. Supply 120 V.AC to the (2) black transformer leads. The framing light switches ON and OFF by means of the pushbutton switch above the film trap inside the film compartment. The threading lamp switch is on the outside of the film compartment door.

PICTURE CHANGEOVER

The Simplex 35 is normally supplied with either a G-2090 (Essannay) or G-2095 (Kelmar) 120 V.AC picture changeover device. Connect the changeover leads as follows:

G-2090	G-2095
Blk - OPEN	Blk - OPEN
Brn - CLOSE	Red - CLOSE
Wht - COMMON	Wht - COMMON
	Grn - GROUND

NOTE: These changeover devices require a 120 V.AC **pulse** to operate. Connecting the changeover to a **sustained** 120 V.AC supply will destroy the electrical coil. Check carefully the instructions supplied with the automation controller or the (installer supplied) switching circuit.

PROJECTION LENSES

Open the film compartment door and loosen the lens locking knob below the lens barrel. Rotate the focus knob to position it in mid-travel.

Locate the (2) lens reducers. The light shields are attached reversed (inside the lens reducer) for shipping. Remove the light shields. Install the lens reducer into the lens barrel engaging the pin in the lens reducer into the keyway in the lens barrel. Insert the "flat" lens into the reducer. In the course of INITIAL OPERATION (following), move the lens inside the reducer to project the sharpest picture. Tighten the rear reducer set screw through the cut out at the rear of the lens barrel. Remove the lens and reducer, and tighten the front reducer set

PROJECTION LENSES (con't.)

screw. Install the light shield to the rear of the lens reducer. Replace the lens and adapter into the lens barrel, and confirm the sharp projected picture. Repeat this procedure with the CinemaScope lens. When installing the CinemaScope lens and anamorphic adapter, check also the correct picture azimuth on the horizontal plane. When replacing lenses, **make certain that the pin is engaged in the keyway.**

Additional lens reducers, if required for special applications, are available from your Strong International Dealer; order Part No. G-2156.

File the aperture plates to fit screen parameters. NOTE: The "flat" aperture plate is included in the Accessory Kit.

LAMPHOUSE LIGHT SHIELD

Light shields, or nose cones, supplied by the lamphouse manufacturer, may be installed between the projector shutter guard and the lamphouse snood. Make certain that the nose cone does not obstruct the rotation of the shutter. Trim or otherwise modify as required.

START-UP PROCEDURES

ALL SIMPLEX PROJECTORS are carefully "run-in" at the factory prior to shipping. No "run-in" period at the installation site is required. Some gear whine may be noticed initially, but should disappear after a few hours of operation.

INITIAL OILING

One quart of Simplex Projector Oil is included in the accessory kit supplied with new equipment. USE ONLY GENUINE SIMPLEX PROJECTOR OIL IN THE MECHANISM. Use of other lubricants may inhibit pump operation and damage moving parts. Additional oil is available through authorized Strong International Dealers; order Part No. R-0059 for (1) quart quantities.

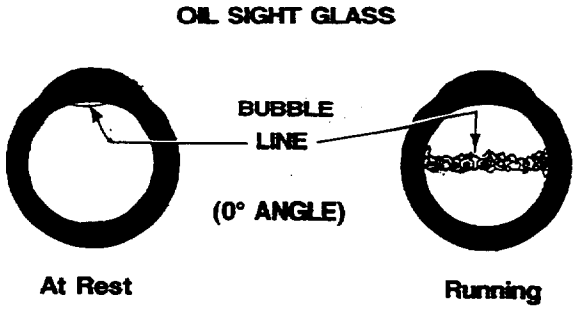
DO NOT, at any time, operate the projector without oil.

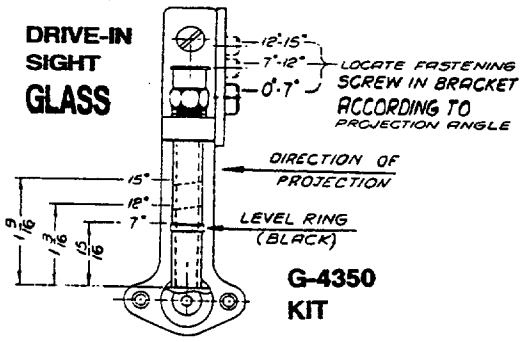
Add oil through the filler located at the top of the gear compartment cover. The oil level is visible through the sight glass inside the film compartment at the base of the main frame. When the projector is level (0 degree projection angle), the correct oil level should be nearly to the top of the sight glass, with a small air bubble visible at the top.

As the machine is tilted to a downward projection angle, the air bubble will disappear. When the machine is started, the visible oil level will drop, indicating that the pump is drawing the oil from the reservoir and circulating it throughout the gear compartment.

If the machine is to be used in an extreme upward projection angle, the oil level will drop, and may disappear when the machine is running. In this event, it is recommended to install a G-4350 Drive-In Oil Gauge Mounting Kit (see Parts Catalogue, Page 1-18). The main frame is drilled to accept use of this kit.

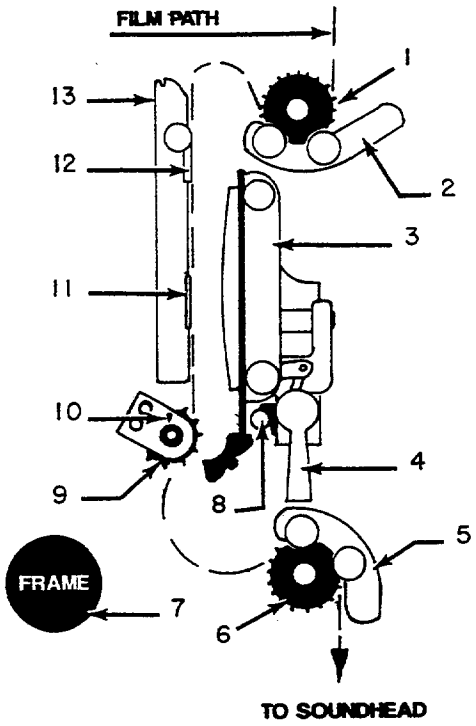
Rotate the soundhead flywheel by hand to turn the projector mechanism. It should turn freely and smoothly. Start the projector motor and run for at least one minute. Check for an oil splash against the gear compartment cover glass.





THREADING

Threading the projector correctly is one of the operator's most important duties. Careful attention during this operation pays off in improved performances and long print life.



Rotate the framing knob (Item 7) to its center position (FRAME reading level, as shown). Using the soundhead flywheel, turn the mechanism by hand to place the intermittent sprocket (Item 9) in its "rest" position. In the "rest" position, the index mark (Item 10) will align with one of the painted white index marks on the intermittent shaft collar when stopping after sprocket rotation.

Open the pad roller assemblies (Items 2, 5). Open the film gate (Item 3) by moving the gate opening lever (Item 4) forward. The gate will lock in the open position (as shown).

At this time, it is advisable to dismount the film gate by removing the (2) chrome knurled nuts. Use a clean, dry cloth to wipe down all film bearing surfaces of the gate and trap (Item 13). Replace the film gate and nuts. This should be performed at each threading operation.

Thread the film as illustrated. Engage first the intermittent sprocket (Item 9), and check for correct framing at the framing aperture (Item 12). When correct, close the gate by tripping the gate release (Item 8). Form loops above and below the gate as illustrated, and close the pad roller assemblies (Items 2, 5).

Turn the mechanism by hand to advance a few frames of film. Run fingers over each sprocket (Items 1, 6, 9) to insure that the sprocket teeth are centered in the film perforations, and the film is centered in the sprockets. Check again the position of the film in the framing aperture (Item 12). A correct frame image in the framing aperture insures correct frame positioning in the picture aperture (Item 11). Use the framing knob (Item 7) to correct misframes.

Thread the soundhead as instructed in the soundhead manual. A slight degree of film tension is required above the feed sprocket (Item 1) and below the soundhead. This prevents the film from snapping on motor start.

CLEAN ALL FILM BEARING SURFACES BEFORE EACH THREADING OPERATION. Check all sprocket teeth for hooks or burrs; replace if required. Keep all pad rollers clean and operating freely.

INITIAL OPERATION

The Film Trap Tension Knob is located at the top of the film trap, and is numbered 1 - 5. Rotate this knob counterclockwise to its stop. This setting ("1") indicates minimum trap tension. Thread film into the projector, ignite the lamp, and project a picture to the screen. Use of RP-40 test film is highly desirable for this stage of machine set-up. This test film may be purchased directly from the Society of Motion Picture and Television Engineers:

SMPTE Test Film Department
595 West Hartsdale Avenue
White Plains, New York 10607

Order: 35 PA-50 (50 ft.)
or 35 PA-200 (200 ft.)

Install the lenses and set focus as detailed in the preceding INSTALLATION section. File the apertures to fit screen parameters.

If the projected picture is unsteady, rotate the film trap tension knob clockwise **one step at a time,** while the film is running. Always adjust for the **minimum** tension required to project a steady picture. Excessive tension not only increases wear on parts, but in extreme cases may cause torn perforations and film breakage.

Check the projected picture for travel ghost. "Travel Ghost" is the term commonly applied to vertical streaking of lighter areas against a darker area, and is particularly noticeable during opening or closing titles and credits. If ghosting is apparent, rotate the shutter adjustment knob on the top of the projector until the ghosting disappears. If the ghost cannot be eliminated, see "Shutter Timing" in the ADJUSTMENTS AND REPLACEMENTS section of this manual.

MAINTENANCE

THE ENTIRE PROJECTOR MECHANISM should periodically undergo a careful and thorough inspection. A regular schedule of adjustments and replacement of wearing parts will insure long life and minimize downtime.

LUBRICATION

Drain and discard the projector oil at least annually. Clean the intake filter and the oil reservoir. Replace with genuine Simplex Projector Oil.

SPROCKETS

Examine each sprocket carefully for wear, undercutting ("hooks"), and/or looseness. Replace as required. Assuming the projector is used for forward-running only, hooked sprockets can be re-used by reversing the sprocket on its shaft. Check the alignment of the intermittent sprocket.

PAD ROLLERS

Check pad rollers for grooves, flat spots, and/or looseness. Clean rollers thoroughly to relieve binding; replace as required. Check alignment of pad rollers to sprockets; centered, flanges not rubbing, (2) film thicknesses above sprocket face.

FASTENING HARDWARE

Check all fasteners for tightness. Normal operating vibration may cause fasteners to loosen. Tighten as required.

FILM GATE

Remove all foreign matter (dirt, wax) by cleaning thoroughly. Examine film runners and intermittent shoes for wear; replace if required. Check alignment of intermittent shoes to intermittent sprocket faces. Check gate opening and closing levers for smooth operation; clean guide rods to relieve binding.

FILM TRAP

Examine lateral guide rollers for grooves and binding. Clean carefully, adjust, or replace. Remove all foreign material from tension straps. Inspect for wear; replace if required.

OVERALL APPEARANCE

Clean all enameled surfaces of the projector regularly. Oily surfaces will attract and hold dust and film particles.

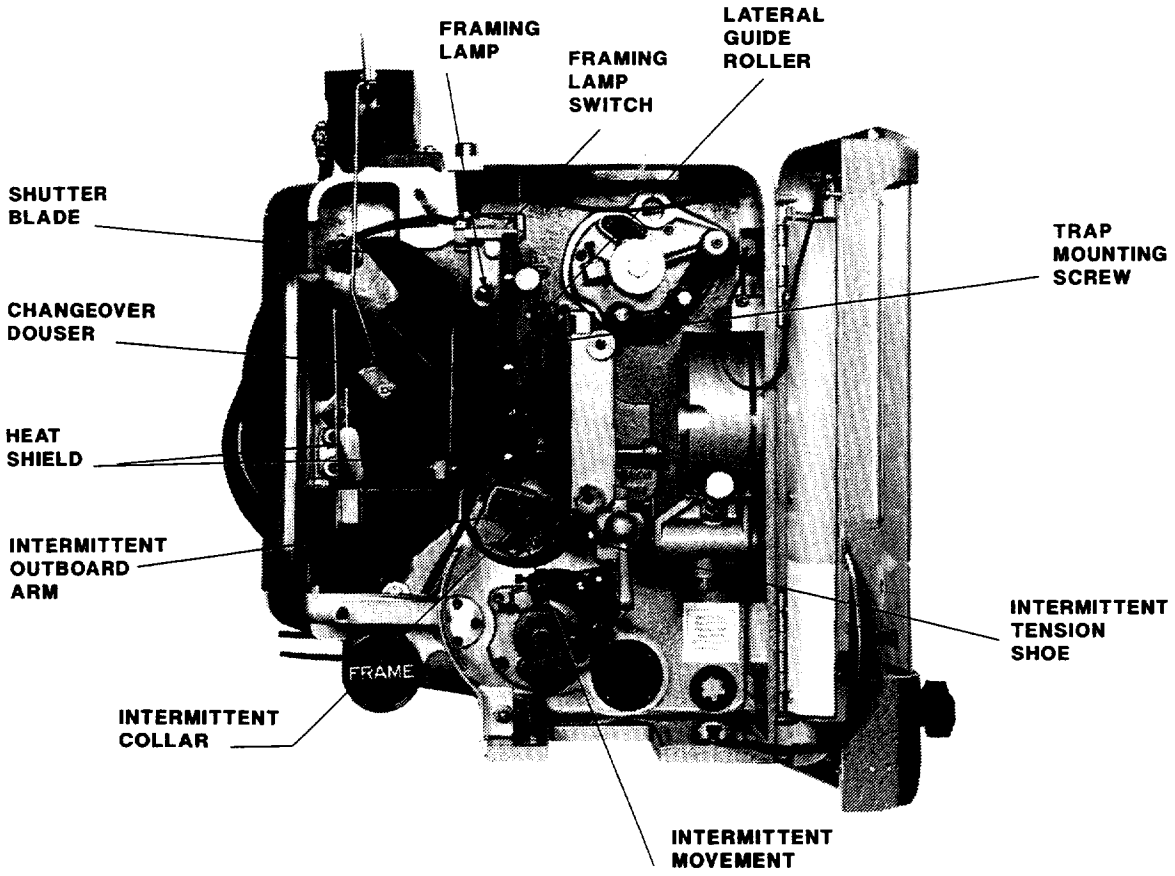
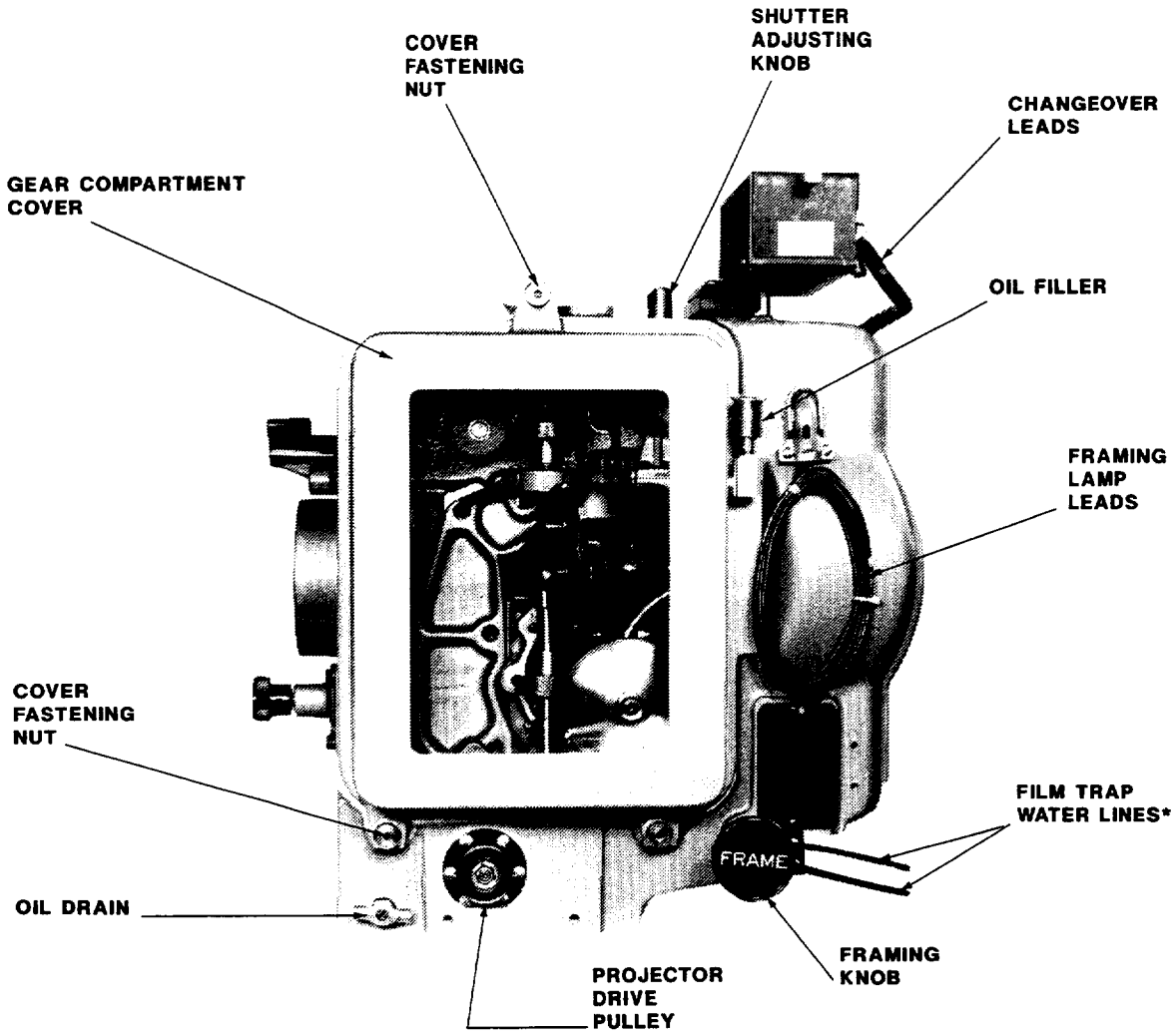

FRAMING LAMP
FRAMING LAMP SWITCH
LATERAL GUIDE ROLLER
SHUTTER BLADE
TRAP MOUNTING SCREW
CHANGEOVER DOUSER
HEAT SHIELD
INTERMITTENT OUTBOARD ARM
INTERMITTENT TENSION SHOE
FRAME
INTERMITTENT COLLAR
INTERMITTENT MOVEMENT

FIGURE 3



*Water Cooled Film Trap OPTIONAL

FIGURE 4

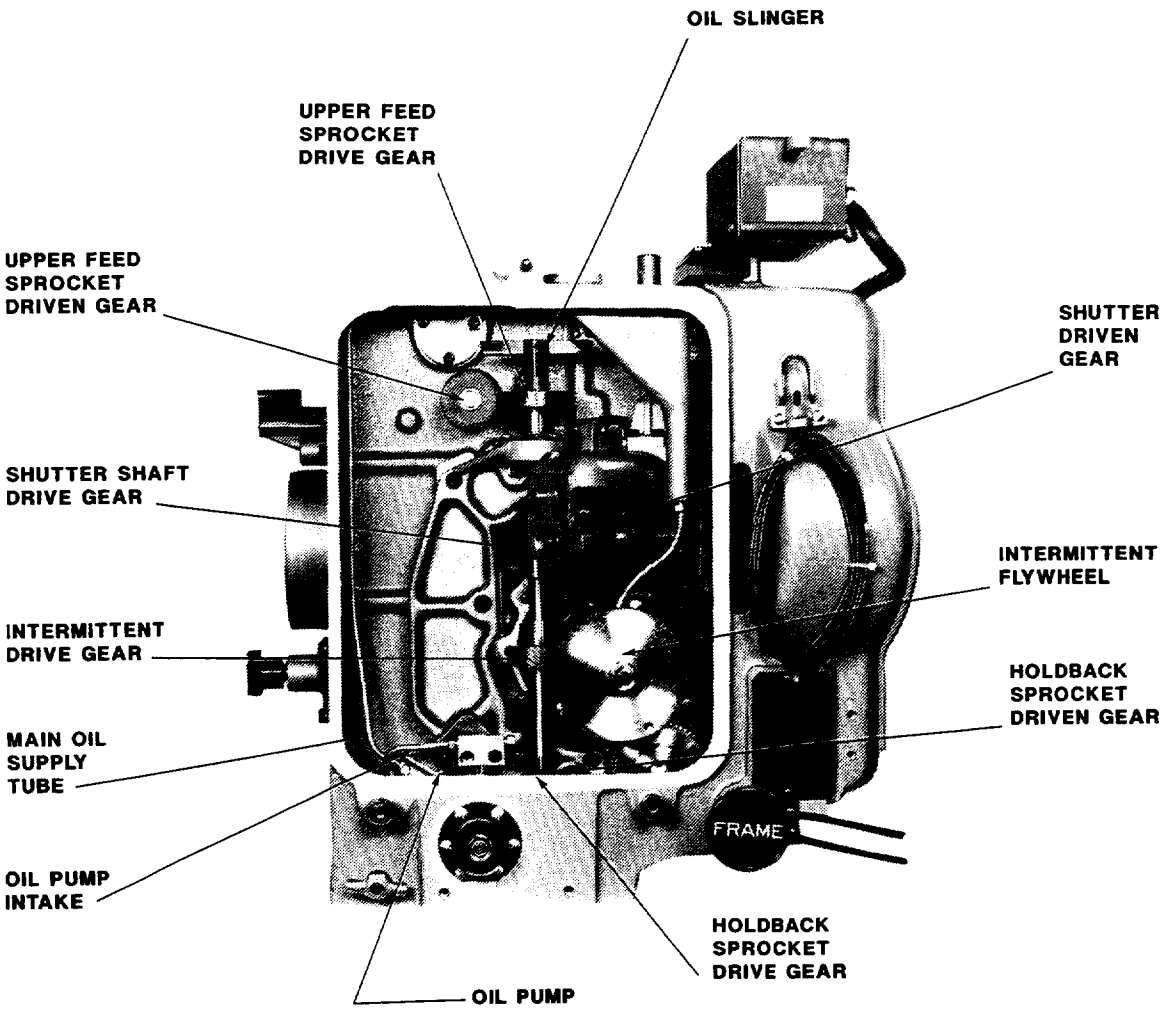

OIL SLINGER
UPPER FEED SPROCKET DRIVE GEAR
UPPER FEED SPROCKET DRIVEN GEAR
SHUTTER DRIVEN GEAR
SHUTTER SHAFT DRIVE GEAR
INTERMITTENT FLYWHEEL
INTERMITTENT DRIVE GEAR
HOLDBACK SPROCKET DRIVEN GEAR
MAIN OIL SUPPLY TUBE
FRAME
OIL PUMP INTAKE
HOLDBACK SPROCKET DRIVE GEAR
OIL PUMP

FIGURE 5

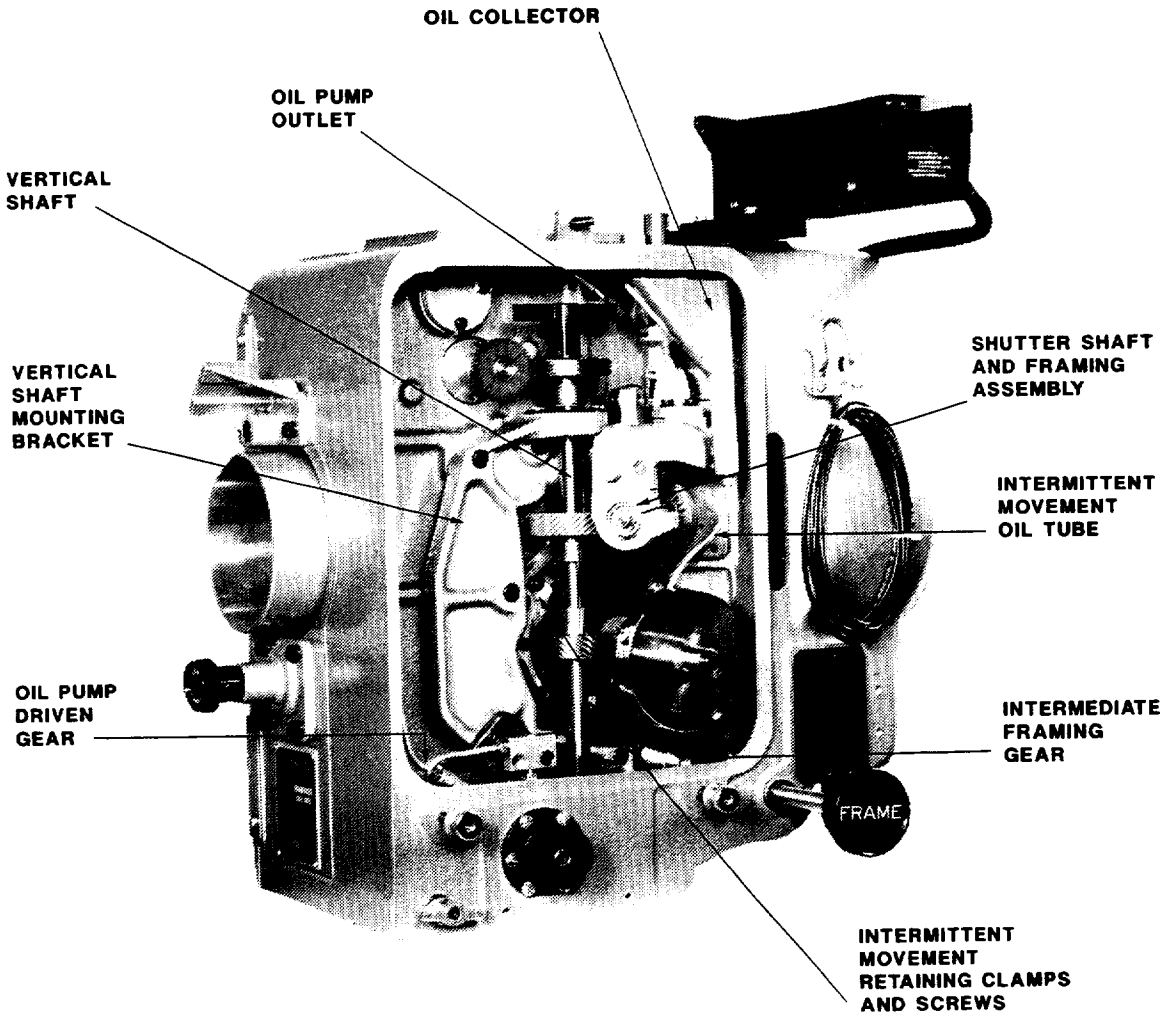

OIL COLLECTOR
OIL PUMP OUTLET
VERTICAL SHAFT
VERTICAL SHAFT MOUNTING BRACKET
SHUTTER SHAFT AND FRAMING ASSEMBLY
INTERMITTENT MOVEMENT OIL TUBE
OIL PUMP DRIVEN GEAR
INTERMEDIATE FRAMING GEAR
FRAME
INTERMITTENT MOVEMENT RETAINING CLAMPS AND SCREWS

FIGURE 6

ADJUSTMENTS AND REPLACEMENTS

REFER TO THIS SECTION in conjunction with following the instructions in the MAINTENANCE section. Conscientious maintenance and service of the Simplex 35 will insure many years of excellent performance.

ADJUSTMENTS are quickly accomplished, and replacements performed, as all units and components are readily removed. Adjustments and replacements described below may be performed by qualified projection booth personnel. Any elements of maintenance and service not detailed below should be referred to an authorized Strong International Dealer.

INTERMITTENT SHOE REPLACEMENT

Remove film gate. Dismount the shoe assembly by removing the mounting screw and leaf spring. Replace worn components as required; check leaf spring for adequate tension. Reassemble and remount.

INTERMITTENT SHOE ALIGNMENT

Place a straight edge across the outboard face of the intermittent sprocket and the outer face of the the tension shoe. Loosen the intermittent shoe assembly mounting screw, and slide the shoe assembly, as required, for exact alignment. Tighten mounting screw securely.

FILM GATE CLOSURE ADJUSTMENT

Remove the projection lens and dismount the film gate. Insert a pin or allen wrench in one of the holes in the tension collar on the operating lever shaft. Loosen the locking screw in the bottom of the operating lever assembly bracket, located through the casting below the tension collar. Rotate the collar counterclockwise using the pin or allen wrench until the next hole is aligned to the locking screw. Tighten the locking screw. Repeat this adjustment procedure until proper closing tension is obtained.

FILM TRAP ASSEMBLY

Dismount the film gate and the shutter guard. Loosen the single captive film trap mounting screw located between the trap tension knob and the aperture plate. Pull the trap assembly straight out from the projector main frame. To replace, make certain that the contacting surfaces on both the main frame and the trap casting are clean. Slide the film trap in so that it registers with the (2) dowel pins on the main frame. Securely tighten the captive screw. Check the alignment of the intermittent sprocket to the film trap (see INTERMITTENT MOVEMENT section following).

FILM TRAP LATERAL GUIDE ROLLERS

Dismount film trap and associated components (see above). Loosen the (2) lateral roller pivot set screws. Slide the lateral roller pivots out of the casting and remove the lateral rollers and spring. Replace worn parts and reassemble. NOTE: For ease of threading, the spring-loaded lateral roller should be installed inboard. Position the fixed (outboard) lateral roller to the outboard edge of the film path. The horizontal positioning of the lateral rollers is determined by sliding the rollers and pivots in the trap casting. Center the rollers in this manner to the film path. Leave enough end play in the pivots to permit free rotation of the lateral rollers, and tighten the (2) pivot set screws.

PRESSURE STRAP REPLACEMENT

Dismount the film trap and associated components. Rotate the trap tension knob fully counterclockwise to position "1". Remove the (2) screws from each strap, and remove the straps. Replace with new straps and reassemble. NOTE: Reset trap tension with film projected (see START-UP PROCEDURES).

STUDIO GUIDE REPLACEMENT

Remove the film gate and the projection lens. Remove the (2) flat socket head screws and dismount the studio guide. Position and install the replacement studio guide; replace the film gate and projection lens.

GEAR COMPARTMENT COVER REMOVAL

Only when absolutely necessary, remove the gear compartment cover and only after the machine has been at rest for at least (10) minutes to allow all oil to settle into the reservoir. Remove the (3) cover fastening thumb nuts. Make certain no foreign material deposits in the gear compartment while the cover is removed. Before replacing the cover, wipe **all** oil from the cover gasket and the mating surface on the projector main frame. Any oil remaining on these surfaces will provide an oil seepage path after the cover is replaced. Tighten all (3) thumb nuts equally and fingertight, just enough to form an oil-tight seal.

INTERMITTENT MOVEMENT REPLACEMENT

1. Open the film gate. Rotate the framing knob (on the gear side) fully counterclockwise.
2. Set the shutter adjusting knob in mid-position. To locate mid-position, rotate the knob to its stop, and reverse 1-1/2 turns.
3. Remove the gear compartment cover (see above).
4. Rotate the vertical shaft until the intermittent drive gear mounting screw is visible. Remove the mounting screw and slide the gear downward.
5. Loosen the (2) intermittent retaining clamp screws on the framing cam and position the clamps to clear the intermittent case.

INTERMITTENT MOVEMENT REPLACEMENT (con't.)

6. Withdraw the intermittent assembly from the gear compartment side, taking care not to strike the intermittent oil feed tube positioned above the intermittent assembly.
7. Slide the replacement intermittent movement into position. The keyway in the intermittent case is aligned with the key in the framing cam.
8. Rotate the intermittent retaining clamps to retain the intermittent assembly and tighten the fastening screws securely.
9. Rotate the shutter counterclockwise (from rear of projector) until its leading edge is exactly in line with the upper edge of the picture aperture (aperture just completely blocked).
10. Rotate intermittent flywheel until the intermittent sprocket turns clockwise (1) of the (4) index lines on the outboard collar is aligned with the index line on the outboard bearing support arm.
11. Continue to rotate the flywheel in the same direction until the intermittent sprocket just begins to move.
12. Reverse rotation of the flywheel until the sprocket stops. Then, rotate the flywheel counterclockwise until the start of sprocket rotation is felt.
13. Continue to rotate the flywheel until the precise point at which the sprocket is about to move is reached. Retain that setting.
14. Raise the intermittent drive gear and rotate it tooth by tooth until it meshes with the intermittent driven gear. At this time, the mounting hole in the drive gear should align with the hole in the vertical shaft. Do not rotate the vertical shaft or driven gear. Replace the gear mounting screw.
15. Align the intermittent sprocket with the film trap (see below).

INTERMITTENT SPROCKET ALIGNMENT

Loosen the intermittent sprocket fastening screw and slide the sprocket, as required, until the outside face of the sprocket is flush with a straight edge placed on the outside face of the lower holdback sprocket. Securely tighten the intermittent sprocket fastening screw.

INTERMITTENT SPROCKET REPLACEMENT

1. Remove film gate. Dismount shutter guard and film trap.
2. Rotate the framing knob to its extreme clockwise position to expose the intermittent sprocket film stripper mounting screw. Remove the screw and stripper.
3. Turn the projector mechanism by hand so that one of the collar index lines aligns with the index mark on the outboard arm, and the sprocket mounting screw is exposed.
4. Remove the intermittent sprocket mounting screw and nut.
5. Loosen the (2) intermittent outboard collar set screws and remove the collar.
6. Remove the (2) outboard arm socket head mounting screws and dismount the outboard arm.
7. Remove the intermittent sprocket. Slide replacement sprocket onto shaft.

INTERMITTENT SPROCKET REPLACEMENT (con't.)

8. Position the intermittent outboard bearing arm on intermittent sprocket and start the (2) socket head mounting screws finger tight. Adjust the bearing arm, as required, so that the bearing is precisely centered with respect to the intermittent shaft. Tighten the (2) mounting screws.
9. Fasten the replacement intermittent sprocket to the intermittent shaft using the screw and nut supplied.
10. Slide the intermittent outboard collar on the intermittent shaft and align one of its index lines to the index mark on the outboard bearing arm. Pull the intermittent sprocket OUT while pressing the outboard collar IN, so that shaft end play is just perceptible.
11. Securely tighten the (2) collar set screws. Check that the shaft end play is just perceptible.
12. Replace intermittent sprocket film stripper.
13. Align the intermittent sprocket (see above).
14. Replace film trap and shutter guard. Install the film gate and align the intermittent shoe assembly as required.

SHUTTER TIMING

Place the shutter adjusting knob in its mid-position (see INTERMITTENT MOVEMENT REPLACEMENT, Step 2). Remove the shutter guard. Turn the projector mechanism by hand so that the index mark on the intermittent outboard bearing arm is centered between two of the collar index lines. Loosen the (2) socket head shutter hub clamping screws. Rotate the shutter to the fully closed position (one blade completely covering the film aperture). Tighten the (2) clamping screws. Replace the shutter guard. Check projected picture; fine adjustment of the shutter adjustment knob may be required to eliminate travel ghost (see START-UP PROCEDURES).

FRAMING LAMP BULB REPLACEMENT

Remove shutter guard. Remove framing lamp bulb. Insert replacement bulb into socket; twist to seat. Replace shutter guard.

FRAMING LAMP SWITCH REPLACEMENT

Remove shutter guard. Desolder switch leads from switch terminals. Replace switch and resolder leads to replacement switch. Replace shutter guard.

OIL PUMP FEED REVERSAL (Drive-In Theatre Operation)

See PARTS CATALOGUE, Page 1-20. Remove gear compartment cover. Remove compression nut, compression bushing, and oil line and filter from the left-hand side of the oil tube connector. Reconnect parts in sequence on the right-hand side, and tighten. Install the Drive-In Oil Gauge Assembly (G-4350) if desired (see PARTS CATALOGUE, Page 1-18).

FEED AND HOLDBACK SPROCKET ASSEMBLIES REMOVAL

From the film compartment side, remove the (4) socket head mounting screws retaining the sprocket assembly to the projector main frame. Withdraw the assembly from the film compartment. Make certain that the gasket is in the groove in the sprocket assembly casting. When replacing, start the mounting screws finger tight. Position the assembly so that there is slight backlash between the meshing gears. The (4) mounting holes in the casting are sufficiently oversize to permit this adjustment. Tighten the mounting screws and check gear backlash. Adjust as required.

FILM SPROCKET REPLACEMENT

1. Remove (1) of the (2) film stripper mounting screws. Loosen the other mounting screw and rotate the stripper to clear the sprocket.
2. Open the pad rollers.
3. Remove the hex head sprocket fastening screw from the outboard end of the sprocket shaft and slide the sprocket from the shaft. Leave the spring washer and flat washer on the shaft.
4. Slide the replacement sprocket (G-6611) onto the sprocket shaft, aligning the key in the sprocket with the keyway in the shaft. Secure with the sprocket fastening screw.
5. Replace the film stripper.

FILM SPROCKET DRIVEN GEAR REPLACEMENT

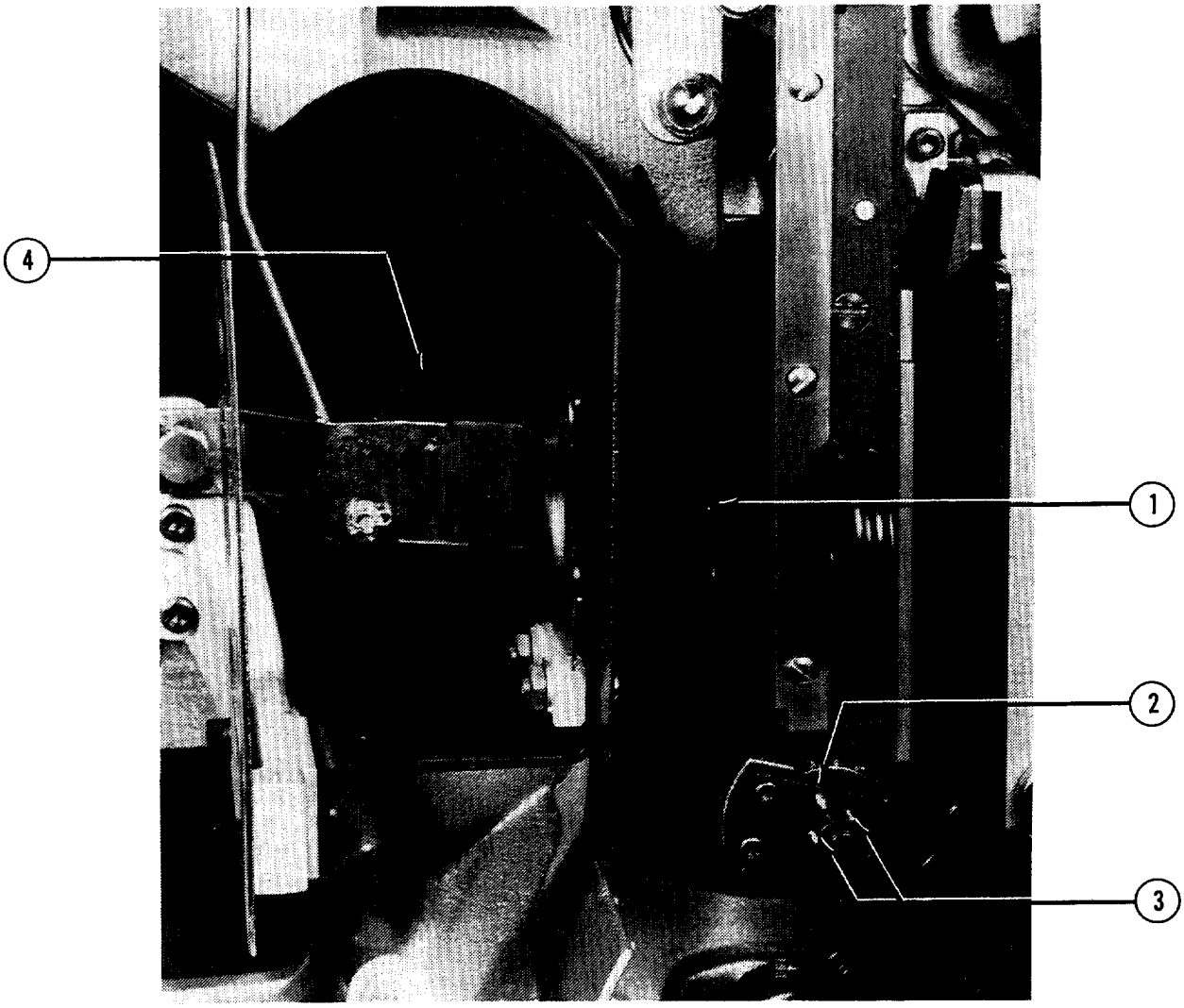
1. Remove film sprocket assembly as a unit (see above).
2. Remove gear fastening screw and slide gear from shaft.
3. Slide replacement gear onto shaft. Insert the fastening screw, position the gear to allow slight end play, and securely tighten fastening screw.
4. Replace sprocket assembly and adjust for backlash (see above).

PAD ROLLER ASSEMBLY REPLACEMENT

1. Remove film sprocket assembly as a unit (see above).
2. Open pad rollers, compress actuating spring on the sprocket assembly so that the small hole in one arm of the forked spring guide is accessible. Pass a pin or paper clip through this hole to relieve the spring tension.
3. Remove pad roller assembly mounting screw and dismount pad roller arm.
4. Replace worn components as required, reassemble, and remove the pin from the spring guide. Spacer washers, if used, are retained in their original positions. Make certain that the pad rollers are centered directly over the film sprocket.
5. Position pad roller arm adjusting screw on the sprocket assembly casting so that, with (2) thicknesses of film between the sprocket and pad rollers, both pad rollers just rotate. Ensure that the adjusting screw locknut is then securely tightened.
6. Reinstall sprocket assembly and adjust for backlash (see above).

SHUTTER REPLACEMENT

Remove the shutter guard. Disconnect the linkage to the changeover douser. Remove the (4) socket head mounting screws from the rear cover, and dismount the cover. Loosen the (2) shutter hub clamping screws and dismount shutter. Install replacement shutter and set shutter time as detailed above. Replace the rear cover, douser linkage, and shutter guard.

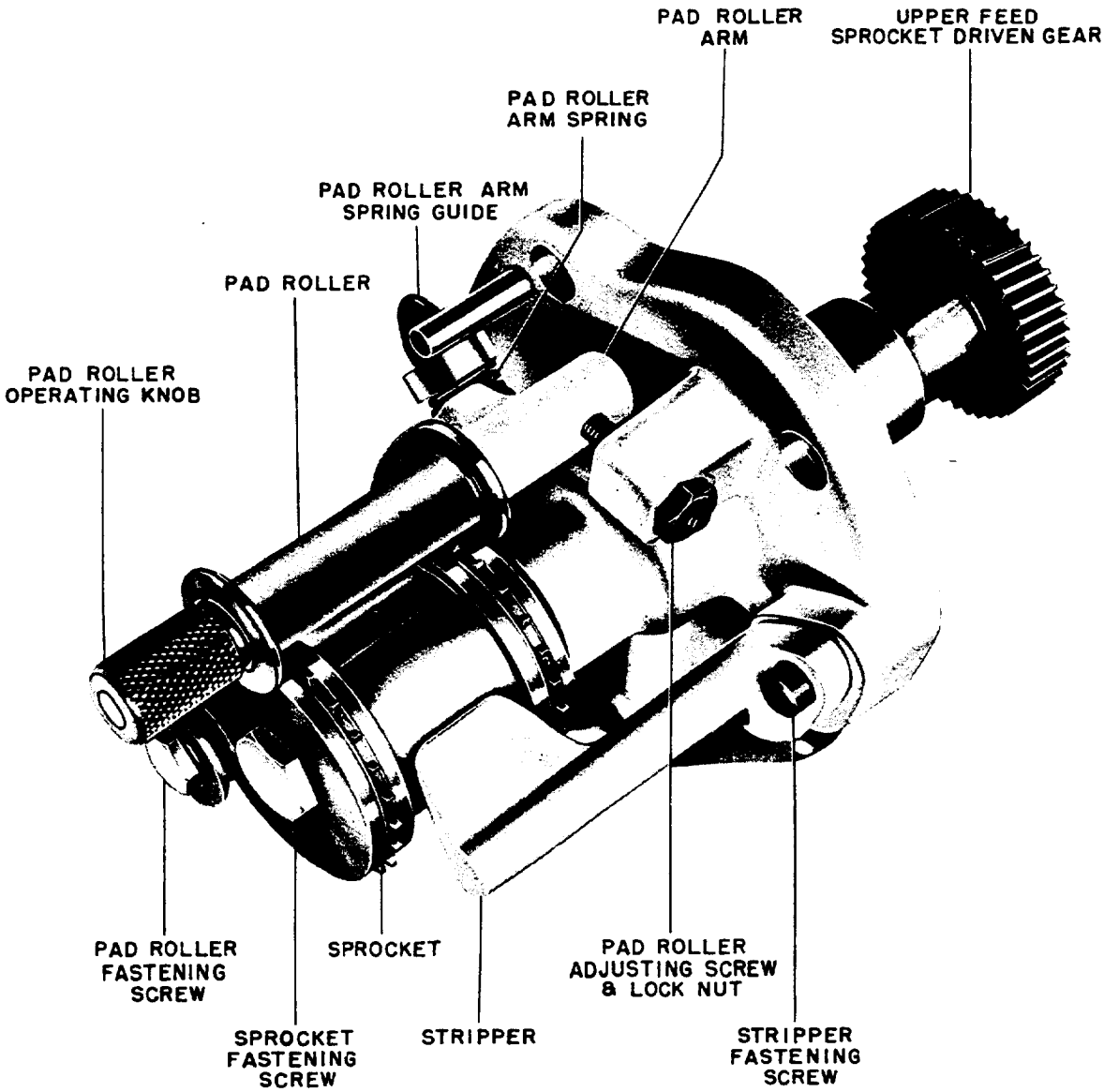


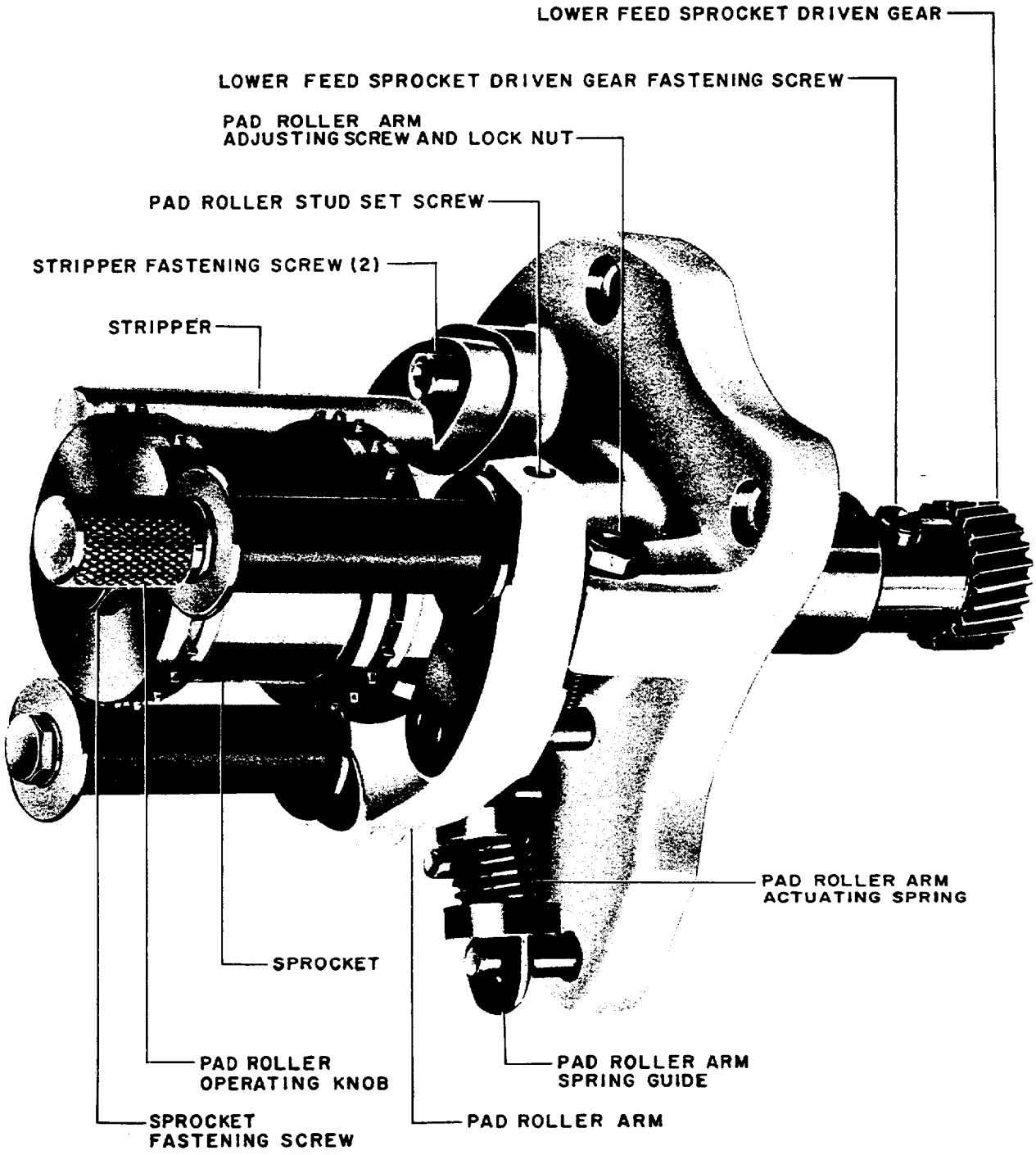
SHUTTER TIMING

THE SHUTTER is correctly timed if the center of the shutter blade (Item 1) is aligned to the center of the film aperture as shown when the index mark on the intermittent bearing arm (Item 2) appears directly between two of the index marks on the intermittent shaft collar (Item 3).

TO CENTER THE SHUTTER BLADE, loosen the (2) shutter hub clamping screws (Item 4) to permit the shutter blade to rotate freely on the shaft. Turn the projector by hand to position the index marks (Items 2 and 3) as shown. Position the shutter blade so the center of the blade aligns to the center of the film aperture. Tighten the (2) clamping screws (Item 4).

PROJECT A PICTURE, and make fine adjustment to eliminate "Travel Ghost" using the shutter adjusting knob on the top of the projector.


PAD ROLLER ARM
UPPER FEED SPROCKET DRIVEN GEAR
PAD ROLLER ARM SPRING
PAD ROLLER ARM SPRING GUIDE
PAD ROLLER
PAD ROLLER OPERATING KNOB
PAD ROLLER FASTENING SCREW
SPROCKET
PAD ROLLER ADJUSTING SCREW & LOCK NUT
SPROCKET FASTENING SCREW
STRIPPER
STRIPPER FASTENING SCREW


LOWER FEED SPROCKET DRIVEN GEAR
LOWER FEED SPROCKET DRIVEN GEAR FASTENING SCREW
PAD ROLLER ARM ADJUSTING SCREW AND LOCK NUT
PAD ROLLER STUD SET SCREW
STRIPPER FASTENING SCREW (2)
STRIPPER
PAD ROLLER ARM ACTUATING SPRING
SPROCKET
PAD ROLLER OPERATING KNOB
PAD ROLLER ARM SPRING GUIDE
SPROCKET FASTENING SCREW
PAD ROLLER ARM

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