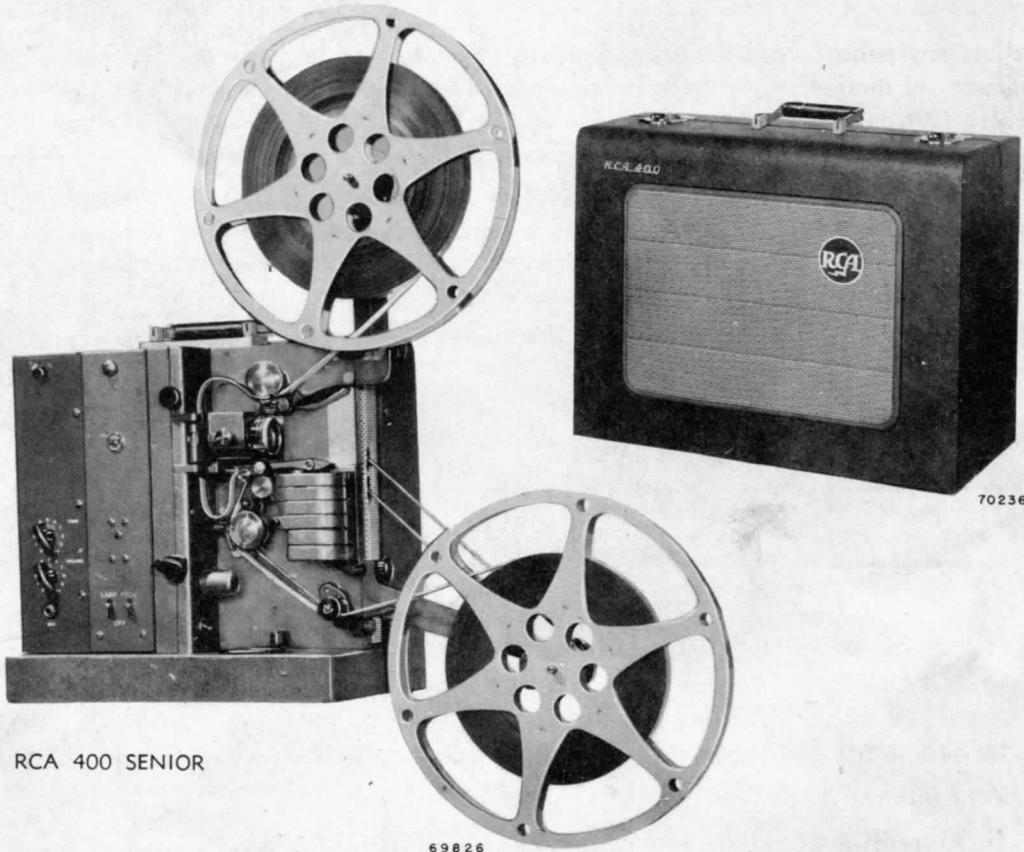




INSTRUCTIONS

RCA 400

16 mm Motion Picture Equipment



RCA 400 SENIOR

69826

70236

IMPORTANT: Read these instructions carefully before installing and operating the equipment. This equipment must be operated from an a-c power source of the frequency and voltage specified on the nameplate. If there is doubt concerning the power available, consult the electric-power company.

CUSTOMERS WARRANTY

Should any parts (except tubes, phototubes and lamps which carry the separate warranty of their supplier) be found defective in material or workmanship within ninety (90) days from the date of sale by the Dealer, the Dealer will promptly make the necessary repairs or replacements.

This warranty applies only to new equipment. It does not apply to any equipment which has been repaired or altered in any way so as to affect its stability or reliability; nor which has been subject to misuse, negligence, or accident; nor which has the serial number altered, effaced, or removed.

If this equipment does not perform satisfactorily, contact the Dealer from whom you purchased it.

IMPORTANT

Be sure to fill in and mail the Registration Card attached to the projector.

This will:

1. Allow RCA to register your projector in the RCA WARRANTY PLAN.
2. Record your equipment in case of loss from theft.
3. Bring you from time to time new and informative literature concerning the utilization of 16mm motion picture equipment.

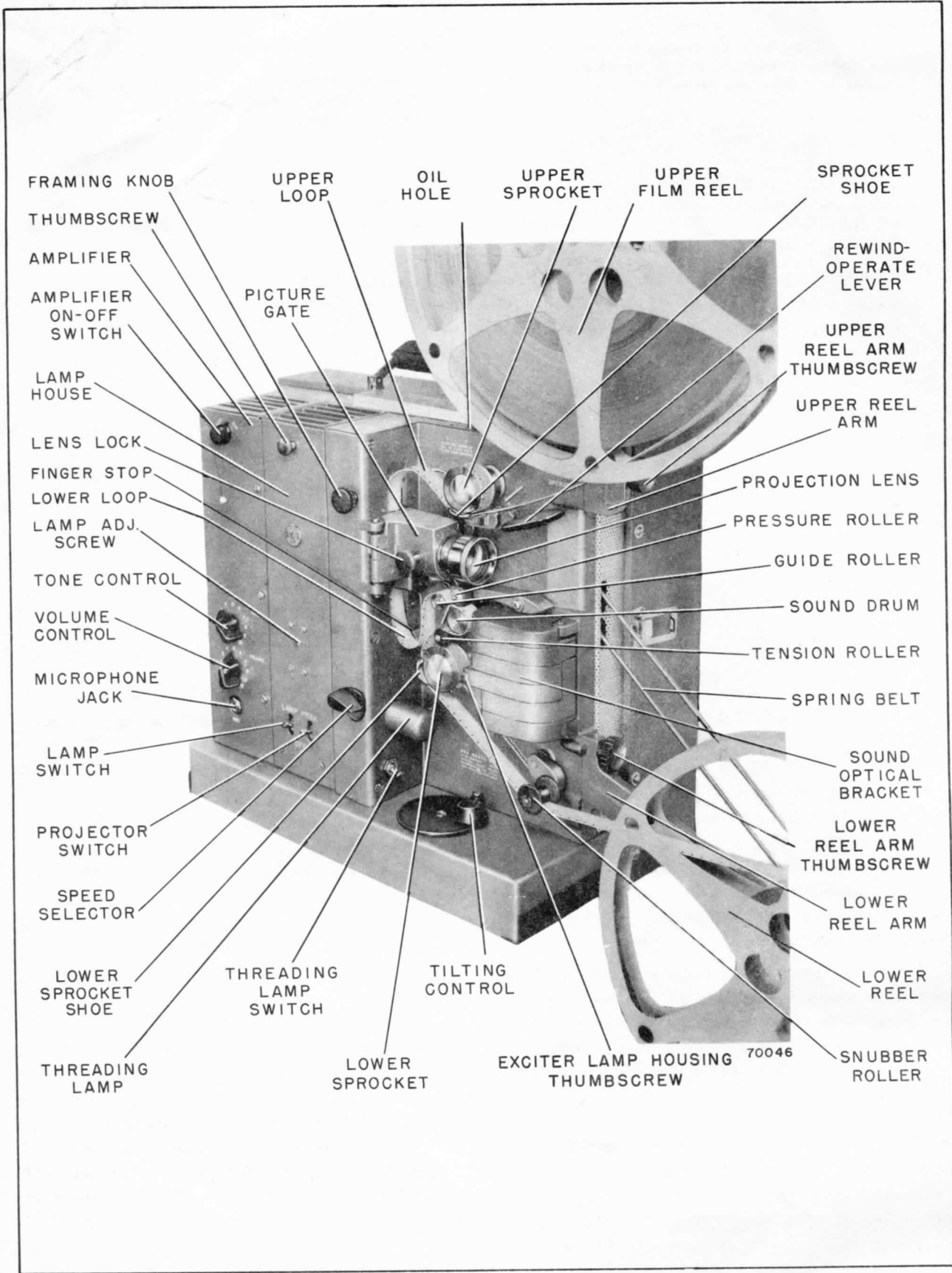


Figure 1 - Operating View of RCA 400 "Senior"

REFER TO FIGURE 1
FOR ALL OTHER
OPERATING CONTROLS

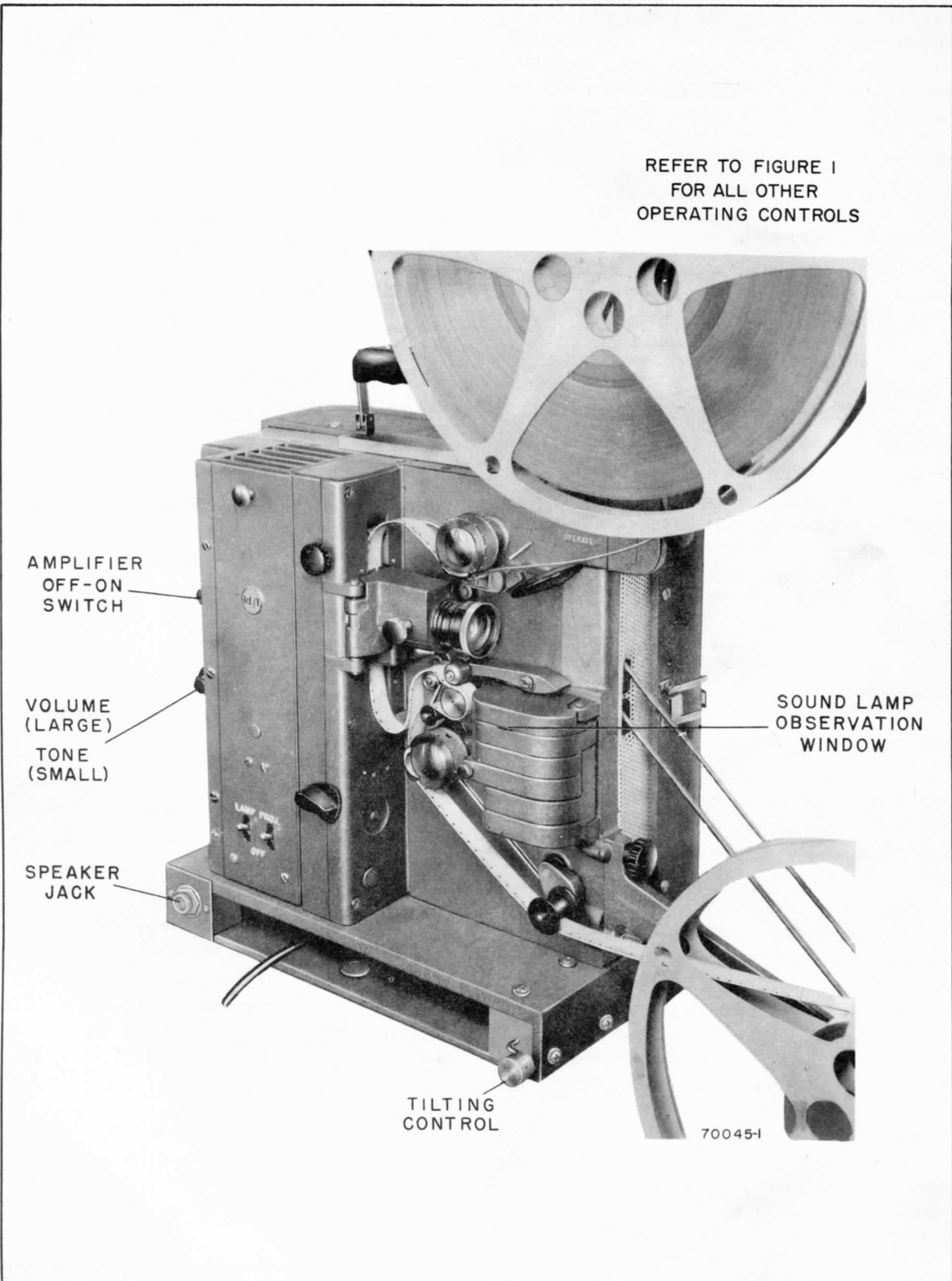


Figure 2 - Operating View of RCA 400 "Junior"

and place them on the projector table or nearby the projector. Then carry the speaker to the projection screen and place it on a chair or other suitable elevated support, preferably at least four feet from the floor.

Mounting Reel Arms

Attach the reel arms to the projector and put the spring belts on their pulleys in the following manner:

1. Fasten the reel arms (see figures 1 and 2) in place with the thumbscrews, and pull out the spring belts and put them over the pulleys on the arms. Make sure the belts are not twisted (see figure 8).

Connections

To connect either of the "Senior" models - MI-1338 or MI-1338-F - to its speaker and to the power service proceed as follows:

Insert the plugs on the power and speaker cables into the receptacles provided for them in the back of the projector; insert the plug on the other end of the speaker cable in the jack on the speaker. Plug the connector on the free end of the power cable into the nearest 105-125 volt 60 cycle, or 50 cycle, AC power receptacle. Consult the name plate on the projector to determine the correct projector power frequency.

To connect either of the "Junior" models - MI-1345 or MI-1345-F - proceed as follows:

Remove the cable loaded reel from the projector cover and mount it on the lower reel arm shaft. Pull the cable off the reel by hand and connect it to the speaker and to the SPEAKER jack on the projector.

Plug the connector on the free end of the power cable into a power receptacle of the correct voltage and frequency as specified on the projector nameplate.

Run the speaker cable in the most convenient manner, preferably around the edge of the room, where it will be out of the way of the audience. See section titled "Projection Practice".

Initial Adjustments

Preliminary focusing and certain other adjustments are best done before the projector has been threaded. Refer to figures 1 and 2 for location of controls.

1. Put the PROJ-OFF switch in the PROJ position, and the LAMP-OFF switch in the LAMP position.

2. Loosen the lens lock. Focus by moving the projection lens back and forth in the picture gate for rough adjustment and by rotating it for fine adjustment until the outline of the lighted area on the screen is well defined. Tighten the lens lock.

3. Adjust the distance between the projector and the screen until the width of the lighted area is slightly greater than the width of the white portion of the screen, and then center the light vertically with the tilting control.

NOTE: When the picture is slightly larger than the white portion of the screen the edges of the picture will be clean cut.

4. Throw the LAMP-OFF switch to the OFF position. Then throw the PROJ-OFF switch to the OFF position.

Threading

Refer to figures 1 and 2 and thread the projector in the following manner:

1. Place an empty reel on the lower reel arm and a reel of film on the upper.

2. Unwind the film until the picture or title frames are reached and examine the film to see whether it is ready for threading. To do this, consider yourself in the position of the projection lamp and look through the film toward a light. With the end of the film downward, the pictures or titles should be upside down and reversed, and the sprocket holes on sound film should be toward your right. If these conditions are met, the film is ready for threading.

3. Make sure the REWIND-OPERATE lever is in the OPERATE position.

4. Hold the film about four feet or more from the end, and press down on the upper sprocket shoe with the right-hand thumb.

5. Slide the film under the upper sprocket. Make sure that the sprocket teeth engage the sprocket holes. Release the sprocket shoe.

6. Open the picture gate by pulling the lens lock and place the film on the aperture plate, between the guide rails and the side shoe. Form the upper loop of film above the aperture plate so that the film follows the white guide line on the projector frame. Close the picture gate with your thumbs.

7. Form the lower loop of film below the picture gate as indicated by the white guide line and finger stop (see illustrations).

8. Run the film over the guide roller, under the rubber pressure roller, clockwise around the sound drum, and over the tension roller.

9. Thread the film to the left of and under the lower sprocket.

10. Next run the film under the snubber roller to the lower reel.

11. Insert the end of the film in the slot in the hub of the lower reel, or attach it to the hub with a piece of adhesive tape.

12. Rotate the reel clockwise by hand to take up film slack. Lift the reel slightly to equalize belt tension. This will prevent the reel from rolling backwards when it is released.

Operating

Sound Pictures

When sound pictures are to be projected proceed as follows:

1. Turn the ON-OFF switch on the amplifier to the ON position.

NOTE: The sound lamp lights within 15-30 seconds after the ON-OFF switch has been turned ON. It can be observed through the observation window (see figure 2) in its housing.

2. Turn the VOLUME control to "0", and the TONE control to "5" on the "Senior" model, or to NORMAL on the "Junior" model.

3. Turn the PROJ-OFF switch to PROJ, then turn the SPEED SELECTOR downward to SOUND.

4. Turn the LAMP-OFF switch to LAMP, in that order.

5. Focus by rotating the projection lens until the picture is clear and distinct. Titles or other printed portions of the picture make excellent subjects on which to focus.

6. Turn the VOLUME control clockwise until the desired volume is obtained.

7. Frame the picture, if necessary, by turning the FRAMING knob until one complete picture shows on the screen.

8. Adjust the TONE control for the most pleasing effect.

9. When the last picture has appeared on the screen, and before all the film has passed through the projector, return the LAMP-OFF switch to the OFF position.

10. Turn the VOLUME control to "0" as soon as the sound ceases.

11. Finally, return the PROJ-OFF switch to the OFF position.

NOTE: Occasionally, damaged film may prevent the intermittent pull-down claw from properly engaging the sprocket holes in the film. This may result in the loss of the lower loop. When this happens, the picture on the screen is blurred. The difficulty can be remedied immediately, without stopping the machine, by placing a finger above the film as it emerges from the lower end of the picture gate and quickly pulling down on the film until the finger strikes the finger stop (see figure 1).

The THREADING LAMP, on the "Senior" model, can be turned on with the THREADING LAMP switch when light is needed during a show, thus eliminating the necessity for turning on the room lights. The cover of this lamp can be rotated to direct the light where required.

Silent Pictures

Proceed as for showing a sound picture, with the following exceptions:

1. Turn the speed selector upward towards SILENT. This decreases the speed of the projector to that appropriate to silent pictures.

2. Leave the ON-OFF switch on the amplifier in the OFF position. Omit any adjustment of volume or tone, unless the public address feature is to be used. If it is, consult the section on "Public Address and Record Playing" in this manual.

Rewinding

Film should be rewound immediately after projection. Rewinding is done quickly with the projector as follows:

1. Bring the end of the film from the lower reel directly to the hub of the upper reel, without twisting the film, and attach it. Give the upper reel a few turns counterclockwise by hand to take up film slack.

2. Turn the REWIND-OPERATE lever to REWIND.

3. Put the PROJ-OFF switch in the PROJ position and let the projector run until the film is rewound.

4. Turn the speed selector downwards toward SOUND.

When two or more reels are to be shown, it may be desirable to postpone rewinding until all the reels have been shown, since this shortens the delay between successive reels. As a result, the

question may arise as to whether or not a reel has been rewound. This may easily be determined by examining the film as explained in step 2 of the section titled "Threading". If the film is not in the position specified there, it requires rewinding.

Packing Up after the Show

When the show is over, in order to pack up a "Senior" model proceed as follows:

1. Remove the reels and the reel arms from the projector and replace them in the projector cover.

2. Crank the tilting control downward as far as it will go.

3. Disconnect the power and speaker cables. Form them into rolls of appropriate size, and replace them along with the empty reel and any reels of film in the speaker case. If the equipment does not include a speaker, pack the power cord in the projector cover.

4. Push the spring belts into the projector case and replace the cover on the projector.

Pack up a "Junior" model in the following manner:

1. Mount the empty reel on the upper reel arm shaft and disconnect the speaker cable from the speaker and projector. Leave the cable lying on the floor fully extended, free of obstructions, straight and untangled, so that it can be wound without difficulty onto the empty reel.

2. Set the REWIND-OPERATE lever, on the projector, in the OPERATE position. Pick up the plug at the end of the cable near the projector and lay it in the reel; bring it out of the side of the reel - between spokes - and around the nearest spoke and back into the reel again finally leaving it lying between the next two pairs of spokes as shown in figure 4a. This is done so that the plug and cable will not fall out of the reel when it is turned. Rotate the reel by hand, in the rewind direction, for three revolutions to wind on that number of turns of cable. Put the REWIND-OPERATE lever in the REWIND position and start the projector to wind the cable onto the reel. Guide the cable by hand while it is winding, and when it is completely wound, weave the loose end about a spoke to prevent it from unwinding (see figure 4b).

3. Remove all reels and reel arms from the projector. Pack the cable loaded reel in the cover by mounting it on the stud provided for the purpose. Put the power cord in the space provided for it beneath the projector.

4. Push the spring belts into the projector case, retract the tilting mechanism all the way, and replace the cover on the projector.

Public Address and Record Playing

When it is desired to use either a microphone or a phonograph pickup, a shielded cable and a shielded standard telephone plug will be required for

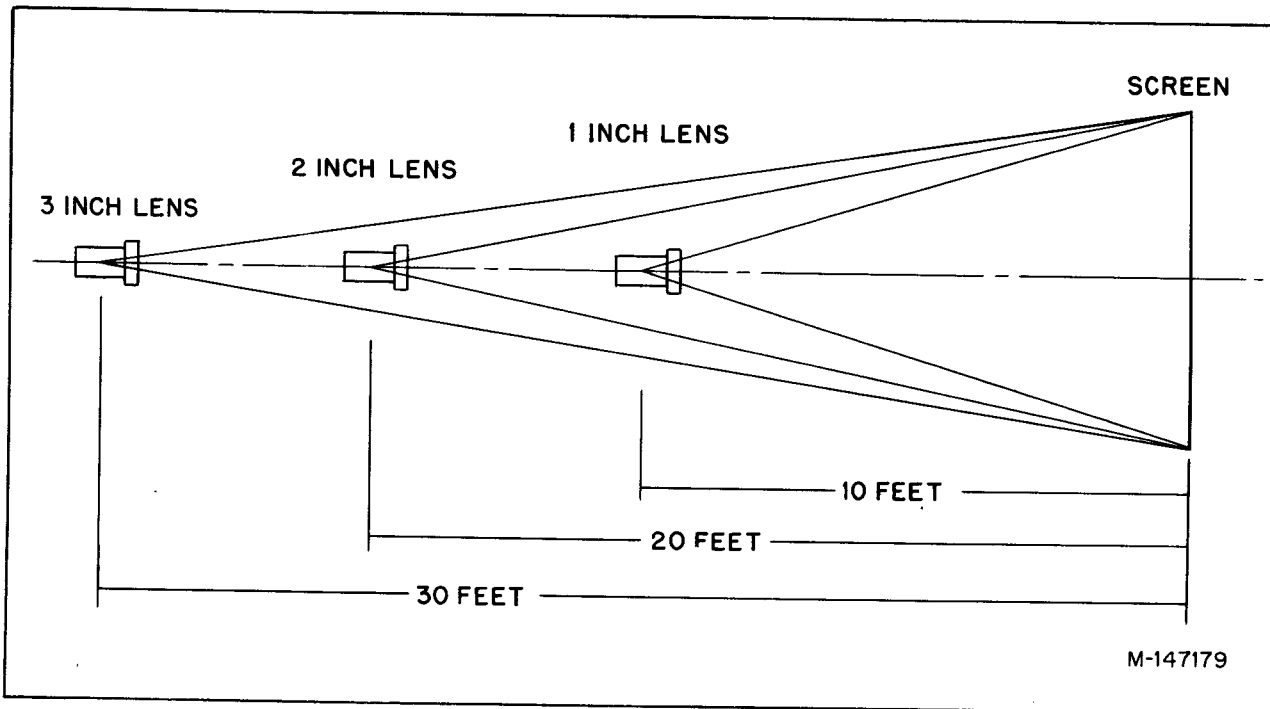


Figure 3 - Relations of Focal Length and Projection Distance

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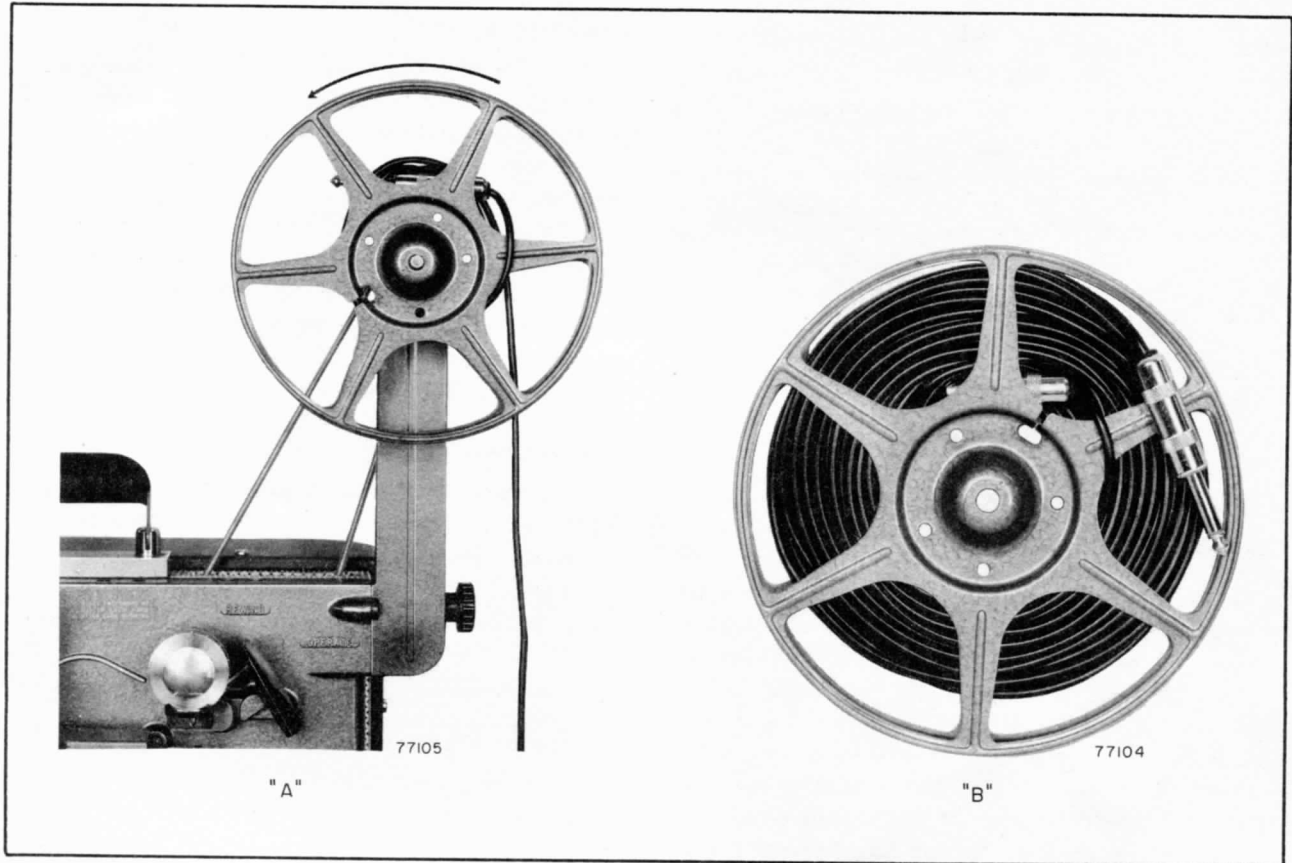


Figure 4 - Winding "Junior" Speaker Cable on Reel

connecting either device. Assemble the cable and plug and connect the cable to the microphone or phonograph pickup. Insert the telephone plug in the jack marked MIC. Set the ON-OFF switch on the amplifier in the ON position. Adjust the TONE and VOLUME controls to obtain the most pleasing tone and suitable volume of sound. Remove the microphone-phonograph plug from the MIC jack when sound films are to be shown.

For suitable microphones, phonograph pick-ups, cables and plugs consult your dealer. The following types of shielded-two-conductor plugs, or any plugs similar to them, may be used: Carter #PG-52, Switchcraft #70 or Mallory #75N.

PROJECTION PRACTICE

Choice of Focal Length of Lens

The focal length of the lens supplied with the RCA Model 400 "Senior" and "Junior" projectors is 2 inches. This is a value which meets average projection conditions. However, in some instances, lenses of different focal lengths may be required. For example, it may be required to project a picture of given size from different distances, as shown in

figure 3. Table I below gives the relationship between picture size and projection distance for lenses of six different focal lengths. Lenses may be obtained from authorized RCA Audio-Visual Equipment dealers and distributors.

TABLE I PROJECTION DATA

| Projection Distance Feet | Picture Width | | | | | |
|-----------------------------|---------------|----------|---------|----------|---------|---------|
| | 1" lens | 1½" lens | 2" lens | 2½" lens | 3" lens | 4" lens |
| 10 | 3'8" | 2'9" | 1'10" | 1'7¼" | 1'4½" | 0'11" |
| 15 | 5'6" | 4'2" | 2'9" | 2'5" | 2'1" | 1'4½" |
| 20 | 7'4" | 5'6" | 3'8" | 3'2½" | 2'9" | 1'10" |
| 25 | 9'2" | 6'11" | 4'7" | 4'0" | 3'5½" | 2'3½" |
| 30 | 11'0" | 8'4" | 5'6" | 4'10" | 4'2" | 2'9" |
| 35 | .... | 9'8" | 6'5" | 5'7½" | 4'10" | 3'2½" |
| 40 | .... | 11'0" | 7'4" | 6'5" | 5'6" | 3'8" |
| 50 | .... | .... | 9'2" | 8'0" | 6'11" | 4'7" |
| 60 | .... | .... | 11'0" | 9'8" | 8'4" | 5'6" |
| 70 | .... | .... | .... | 11'3" | 9'8" | 6'5" |
| 80 | .... | .... | .... | .... | 11'0" | 7'4" |
| 90 | .... | .... | .... | .... | .... | 8'3" |
| 100 | .... | .... | .... | .... | .... | 9'2" |

NOTE: Picture height is ¾ of picture width.

TABLE II
16MM LENSES
RELATIVE LIGHT TRANSMISSION
PERCENTAGES

| <i>Focal Length</i> | <i>Speed</i> | <i>Percent</i> |
|---------------------|--------------|----------------|
| 1/2" | f 2.4 | 44.5% |
| 5/8" | f 2.0 | 64% |
| 1" | f 2.0 | 64% |
| 1-1/2" | f 1.6 | 100% |
| 2" | f 1.6 | 100% Reference |
| 2-1/2" | f 1.8 | 79% |
| 3" | f 2.0 | 64% |
| 3-1/2" | f 2.5 | 41% |
| 4" | f 2.8 | 32.6% |

Placement of Equipment and Spectators

If all the spectators in the room are to have an unobstructed view of the screen, both the screen and the projector should be raised above the heads of the audience. The top of the table upon which the projector stands should be at least 4-1/2 feet high so that the beam of light will pass above the heads of those who sit directly in front of the projector, and the lower edge of the screen should be at least as high as the heads of those persons who sit nearest to the screen.

When a matte screen is used, no one should sit closer to it than two screen widths, nor farther from it than six screen widths, nor outside an angle of 30 degrees from the center line. The most satisfactory view of the picture is obtained in this area. Beyond an angle of 40 degrees the picture becomes noticeably distorted.

When a beaded screen is used, no one should sit closer to the screen than 2-1/2 screen widths, not farther from it than six screen widths, nor outside an angle of 20 degrees either side of the center line. Beyond the 20-degree angle the brightness of the screen falls off rapidly.

Choice of Screens

A matte screen should be used whenever a sufficiently bright picture can be obtained, for it presents a more uniform brightness to the entire audience. A beaded screen appears brighter than a matte screen along the line from the center of the screen to the projector, but its brightness falls off rapidly as the observer moves away from this line.

The screen recommendations given in Table III are based on the use of the RCA 2-inch f/1.6 coated projection lens.

Precautions

In order to avoid interruptions and disturbances of sound and picture during a show, the observance of the following details is worthwhile.

Securing Cables

The power and speaker cables should be secured so that they cannot become disconnected accidentally by persons stumbling over them. They may, for example, be tied to, or wrapped around, a leg of the projection table. Where they lie on the floor, they should be covered or otherwise protected.

Replacements

Interruptions caused by burn-out of the projection lamp or the sound lamp are occasionally unavoidable, but the resulting delay need not be protracted if the operator always keeps within easy reach a tested set of spares for immediate substitution. For details of replacement, refer to "Maintenance".

Previewing Pictures

An experienced operator will preview films he plans to show in order to acquaint himself with their peculiarities and thus be ready to make changes in volume, tone, and focus whenever they are required.

Care of Film

Film should be handled carefully lest it be scratched or broken. Film is easily scratched by winding it too tightly on the reel so that adjacent turns of film grind against each other. Scratches on film are very noticeable on the screen and it is costly and difficult to remove them. Film should be handled by the edges as much as possible, and touching the picture or sound track area should be avoided. Occasionally, film should be inspected for broken sprocket holes and other defects. Necessary repairs should be performed promptly.

When film is dirty it should be cleaned by passing it between folds of lint-free cloth moistened with carbon tetrachloride, or some other cleaner suggested by the dealer. Consult the dealer for a humidor for storing film when it is not in use.

Running Time

The running time of reels of given length of 16mm film depends on whether the film is sound or silent, for sound film runs 24 frames per second and silent film only 16 frames. Exact knowledge of the running time of various films will help the oper-

ator in planning a show. Table IV below gives the running time in minutes of 16mm films of various footages.

TABLE III
PROJECTION LAMP WATTAGE VS SCREEN
TYPE AND SIZE

(Values are for a reasonably darkened room)

| Lamp Watts | Average Lamp Life Hours | Recommended Picture Width in Feet | |
|---------------|----------------------------------|-----------------------------------|---------------|
| | | Matte Screen | Beaded Screen |
| 300 | 25 | 2 - 3 | 3-5 |
| 500 | 25 | 2-1/2 - 3-1/2 | 4-6 |
| 750 | 25 | 3-1/2 - 4-1/2 | 6-8 |
| 1000 | 10 | 4 - 6 | 8-10 |

TABLE IV
RUNNING TIME OF 16MM FILM

| Footage | Time in Minutes | |
|---------|-----------------|--------|
| | Sound | Silent |
| 400 | 11 | 14.8 |
| 600 | 17 | 22.2 |
| 800 | 22 | 29.6 |
| 1000 | 28 | 37. |
| 1200 | 33 | 44.4 |
| 1400 | 39 | 51.8 |
| 1600 | 44 | 59.2 |
| 1800 | 50 | 66.6 |
| 2000 | 56 | 74. |

MAINTENANCE

Lubrication

It is important that the projector be properly lubricated. Refer to the "LUBRICATION CHART".

Lamp Adjustment on "Senior" Model

Refer to figure 5 for location of the LAMP ADJUSTMENT screw on the "Senior" model. Whenever a new lamp is installed the screen illumination should be checked, without film in the picture gate, for uniform distribution of light on the screen. To make the adjustment turn the LAMP ADJUSTMENT screw to the right or left as required, until the screen is lighted uniformly.

Cleaning

If the equipment is to give consistently good performance, it must be kept clean at all times. Dust, oil, particles of emulsion, and all other dirt should be removed. To clean the equipment proceed as follows:

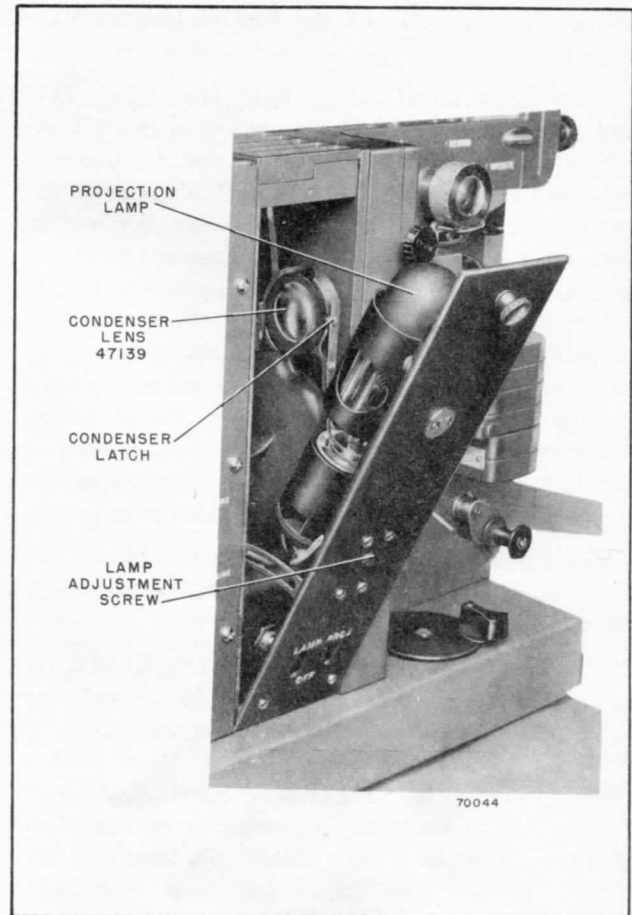


Figure 5 - Lamp House Open for Servicing
"Senior" Model

1. *Cleaning lenses and reflector.* Clean all optical surfaces before use each time the equipment is put into service. This may be done by gently wiping them with lens tissue. If necessary, breathe on the lens before the tissue is applied. When more thorough cleaning is required, consult your dealer for a good lens cleaner. *Do not use carbon tetrachloride or alcohol on the lenses.* After lens cleaner has been used, gently wipe dry with lens tissue. The following points need attention:

a. *The condenser lens (figures 5 and 6).* To remove the condenser lens, pull out on the latch and withdraw the lens assembly from its mounting with the left hand. Clean and replace the lens, taking care not to touch the lens surface with the fingers.

b. *The reflector,* which is opposite the condenser lens in the lamp house, can be cleaned in place.

c. *The projection lens (figure 1).* To remove this lens, loosen the lens lock and pull the lens out of the picture gate. Clean and replace the lens,

taking care not to touch the lens surface with the fingers.

d. *The sound optical unit (lens tube).* This unit is mounted in the clamp portion of the SOUND OPTICAL BRACKET (figures 1 and 7). Unscrew the EXCITER LAMP HOUSING THUMBSCREW and swing the assembly outward. Remove the exciter lamp from its socket. Clean the exposed front and rear glass elements of the sound optical unit with a lint free cloth; do not use any other means for cleaning this lens. Do not loosen the clamp or remove the optical unit from its mounting; proper positioning of the unit for optimum sound quality requires tools and test facilities available only in the factory or in qualified repair shops. Replace the exciter lamp after cleaning the optical unit.

2. *Cleaning lamps.* The projection lamp and the sound lamp should be cleaned occasionally as necessary.

a. *The projection lamp (figure 5).* To remove this lamp, press down on it firmly and turn it counterclockwise about 90 degrees until it releases from its socket. Wipe it clean with a cloth and return it to its original position. Be very careful not to leave any fingerprints on the clear portion of the lamp; such prints will burn into the glass and definitely impair the lamp efficiency. *Be sure the lamp is cool before attempting to remove it, or use a heavy cloth to protect the fingers.*

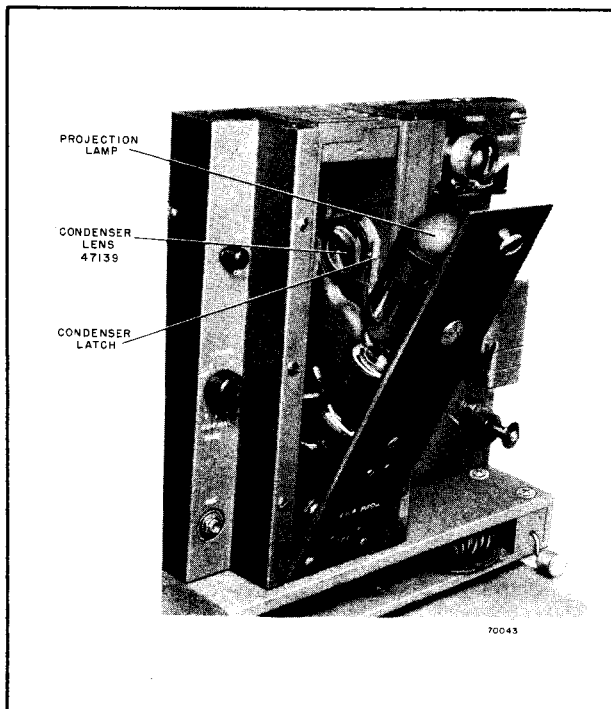


Figure 6 - Lamp House Open for Servicing
"Junior" Model

b. *The sound lamp.* Open the optical bracket as shown in figure 7 and clean the lamp in place.

3. *Cleaning mechanical members.* Film dirt will collect on the aperture plate, the film pressure shoe (which presses the film against the aperture rails), the sprockets, the sound drum pressure roller, and on the sound drum. *Do not use a knife or any other metal instrument, for removing the dirt.* An orangewood stick, or similar tool, may be used to dislodge hardened film emulsion particles.

a. *The aperture plate.* Open the picture gate and wipe the aperture plate with a soft cloth to remove dirt. Use a toothpick, if necessary, to remove dirt from corners. Clean the two side pressure shoes with the bristle brush supplied with the projector. Clean the film pressure shoe in the same manner as the aperture plate. A small amount of thinner or cleaning fluid may be used to soften caked emulsion for removal. After all visible dirt and emulsion have been removed, inspect and feel the film contacting surfaces of both the aperture plate and the film pressure shoe to make sure they are smooth and free from all foreign material, scratches and pits. The presence of scratches or pits may ultimately call for replacement of the part involved, since film emulsion piling up and baking in such depressions cause film scratching.

b. *The sprockets.* Clean the sprockets with bristle brush. Be sure that all dirt is removed from the teeth.

c. *The sound drum pressure roller.* Wipe it clean with a soft cloth moistened with carbon tetrachloride. Rotate the roller to clean it all around.

d. *The sound drum.* Clean the sound drum in the same manner as the pressure roller. Be sure to clean the back edge of the drum where the film sound tracks overhang. Wrap a clean cloth around the left forefinger and insert the finger between the guide roller and the tension roller. Hold the cloth against the back edge of the drum and rotate the drum with the right forefinger. Cleaning the back edge of the sound drum from the left side in this manner minimizes the possibility of disturbing the small mirror behind the drum on the right, which reflects the light beam from the sound optical unit into the phototube.

Replacements

The projection lamp, and the sound lamp are the most likely components to require replacements during a show. Spare lamps should be kept conveniently at hand.

TROUBLE LOCATION AND REMEDY CHART

| Description of Trouble | Possible Cause | Remedy |
|---|---|---|
| a. Loses lower loop | (1) Dirty aperture plate (2) Defective film | Clean Cut out defective part and splice |
| b. Picture motion unsteady | (1) Loss of loops | Restore loops |
| c. Picture indistinct or illumination low | (1) Dirty projection lens (2) Dirty condenser lens (3) Projection lamp black or blistered | Clean both ends Clean Replace |
| d. Film being scratched | (1) Film pressure shoe dirty (2) Sound pressure roller dirty (3) Aperture plate dirty | Clean Clean Clean |
| e. Sound weak; picture normal | (1) Volume control not set properly (2) Microphone plug in jack | Adjust Remove plug |
| f. No sound; picture normal | (1) Amplifier ON-OFF switch in OFF position (2) Microphone plug in jack (3) Loudspeaker not connected (4) VOLUME control not set properly (5) Sound lamp burned out | Snap switch ON Pull out Connect Adjust Replace lamp |
| g. No picture; sound normal | (1) Projection lamp out (2) LAMP switch OFF | Replace lamp Turn ON |
| h. Reproduction noisy | (1) Back edge of sound drum dirty (2) Dirty film | Clean drum Clean film |
| i. Sound on MIC; no sound from film | (1) Sound lamp burned out | Replace lamp |

1. *The projection lamp (figure 5).* If the lamp burns out during a show, turn OFF the projector and the lamp switches. Remove the lamp as described under "Cleaning", paragraph 2a, using a heavy cloth to protect the fingers. To install the new lamp, line up the wide and narrow flanges on its base with the mating socket slots and insert the lamp. Press the lamp down and turn it clockwise until it "clicks" into place. Avoid getting fingerprints on the clear portions of the lamp. Turn the projector switch to PROJ., the lamp switch to LAMP, and resume the show.

CAUTION: Do not open the projection lamp door while the lamp is burning; the glass sides of the lamp will soften and bulge if it is removed from the blower air stream.

2. *The sound lamp (figure 7).* Open the sound optical bracket. Grasp the sound lamp with the left hand as shown, lift it slightly and turn it counter-clockwise to disengage the socket pins. To install the new lamp, line up the notch in its flange with the small hole in the socket plate, and drop the flange over the socket pins. Push it down against

the socket base and turn the lamp clockwise until it snaps into place.

3. *Amplifier Tubes.* Access to amplifier tubes for test or replacement is afforded by removing the metal cover plate section on the operating side of the projector. To do so, first remove the control knobs and then the mounting screws which hold the cover in place. To remove the 6J7 tube from the Senior amplifier, first remove its shield cap and the grid connection wire. Then grasp the body of the tube firmly with the thumb and first or second finger. Moving slightly from side to side, pull the tube straight outward from its socket. Then tilt the top of the tube upward to allow the large diameter of the tube to clear the box-shaped housing for the microphone jack. It may be necessary to rotate the tube while tilting it to completely clear the box.

4. *Fuse.* The "Senior" model amplifier includes a fuse mounted under its chassis to protect its power transformer in the event of tube failure. To replace the fuse, remove the rear portion of the projector case by removing its nine mounting screws. Do not use a larger rated fuse than speci-

LUBRICATION CHART

| <i>Points of Lubrication</i> | <i>Type of Lubrication</i> | <i>Lubrication at Time of General Overhaul</i> | <i>Periodic Lubrication</i> |
|--|---|---|--|
| Intermittent Cam | Sta-put heavy oil. E.F. Houghton Co. Phila 370 (Supplied in oil can with projector) | Saturate felts with oil, not to point of dripping. If contact point between felt and cam is worn, replace felt. | Ten drops in oil hole every 500 hrs. or twice a year whichever comes first. |
| Motor | SAE 30 Motor Oil | Five drops in each hole. | Five drops in each hole every 1000 hrs. or once a year, whichever comes first. |
| Guide Roller | SAE 10 Motor Oil | One drop in shaft hole in roller. | Clean, then apply only if roller sticks or squeaks. |
| Snubber Roller and Tension Roller | Soft lead pencil, micro-fine graphite, or Molykote powder | Apply smudge on shafts (must be free of oil) | Clean, then apply only if roller sticks or squeaks. |
| Shoe, side pressure shoe | Soft lead pencil, micro-fine graphite, or Molykote powder. | Apply smudge on shoe before assembly (must be free of oil) | |
| Pin, film shoe | SAE 10 Motor Oil | Smudge on each pin | |
| Pressure Roller | SAE 10 Motor Oil | One drop in shaft hole in roller. | |
| Oilless bearings such as sprocket shaft, worm shaft, etc. | SAE 30 Medium Motor Oil | A few drops in bearing and on shaft. | |
| Oilless bushings such as intermittent gear, shutter gear, rewind gears, etc. | SAE 30 Medium Motor Oil | A few drops in bushing and on shaft. | |
| All gear teeth, including worm gear | Light grease, RCA Stock #205148, Esso Castrolum #3 or equivalent. | Apply lightly to all teeth. | |

fied. If the fuse burns out repeatedly, check tubes and amplifier for the cause. The fuse will also burn out if the projector should inadvertently be connected to D.C. power circuits, or to circuits supplying over 125 volts.

5. *Belts.* Remove and replace belts according to the instructions in figure 8.

6. *Reel Arm.* Refer to figure 9 for maintenance information on the lower reel arm assembly.

Service and Replacement Parts

If the equipment, due to damage or long use, should require service beyond the scope of the

operations outlined in the "MAINTENANCE" section of these instructions, it should be sent or taken to an Authorized RCA Audio-Visual Equipment Dealer or Distributor. In general these RCA representatives maintain complete servicing facilities and adequate stocks of supplies, accessories and component parts. The following abridged parts list identifies some component items which may be needed by the projector owner in normal use and maintenance. Replacement parts supplied may be slightly different in form or size from the original parts but will be completely interchangeable with them.

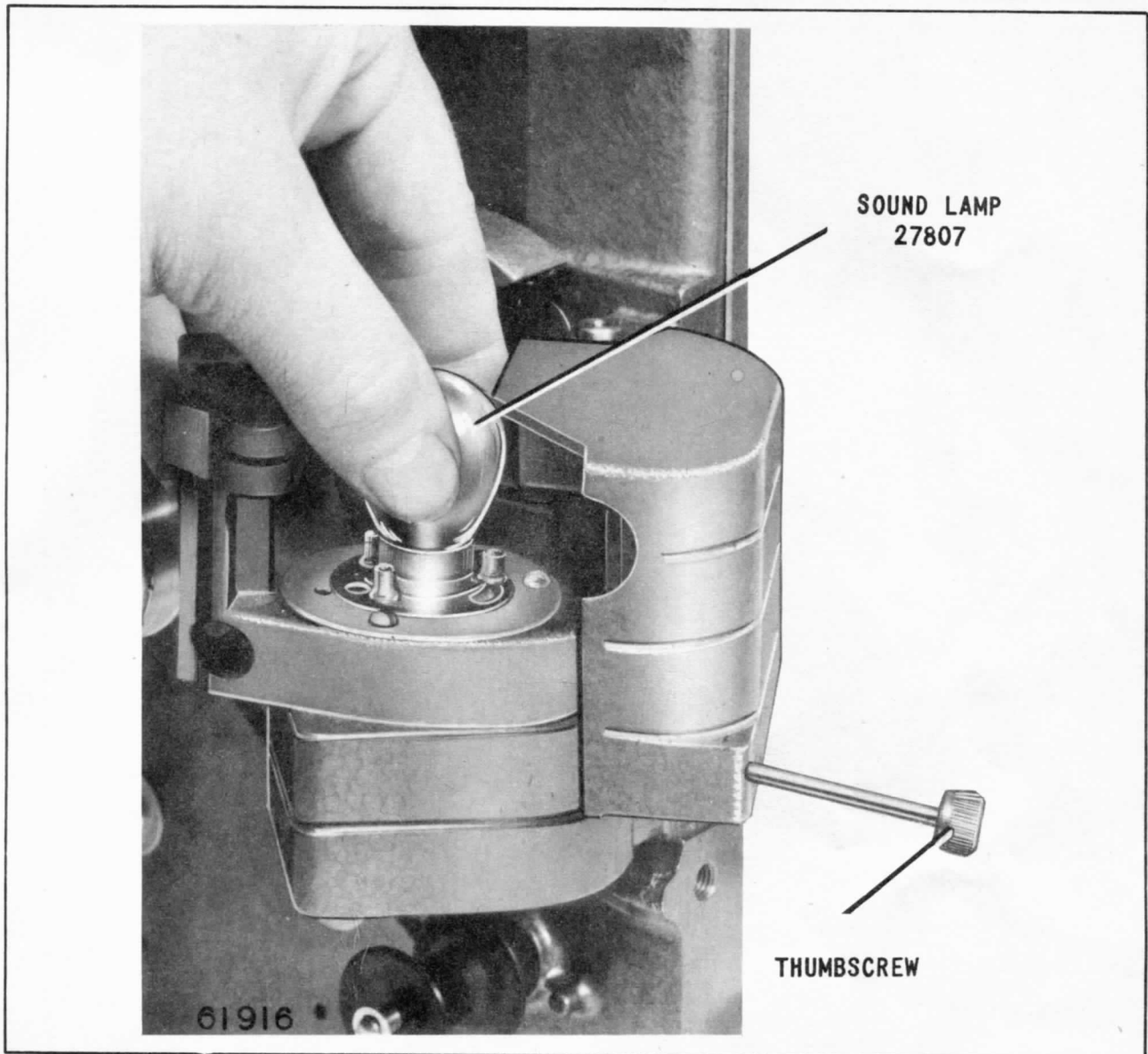


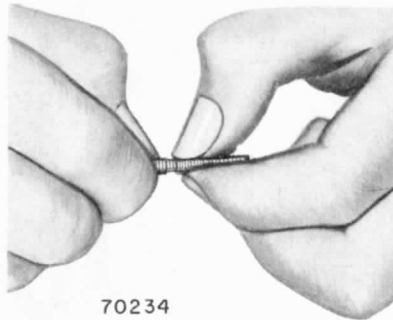
Figure 7 - Replacement of Sound Lamp

REPLACEMENT PARTS

| Description | Stock No. |
|---|-----------|
| Belt, rewind spring belt, upper (see figure 8) | 46937 |
| Belt, take-up spring belt lower (see figure 8) | 46936 |
| Film pressure shoe | 56036 |
| Fuse (for Senior amplifier), Box of 5 | 98682 |
| Handle complete | 57680 |
| Lamp, exciter lamp (see figure 7) | 27807 |
| Lamp, projection (see figures 5 and 6) | 28448 |
| Lens, condenser lens, front (see figures 5 and 6) | 47138 |
| Lens, condenser lens, rear (see figures 5 and 6) | 47139 |
| Reflector, projection lamp | 28306 |
| Ring, felt clutch drive ring (see figure 9) | 98678 |

REMOVING BELTS

PUSH FIRST TURN
WITH THUMB NAIL



70234

OR STRETCH SPLICE
OUT AND UNSCREW

REPLACING BELTS



PHOTO - 70241

INCORRECT

1. COUNT NUMBER OF TURNS ON SMALL END OF BELT.
2. TWIST SMALL END OF BELT BACKWARDS—AS IF REMOVING A SCREW—AN EQUAL NUMBER OF TURNS.
3. SCREW ENDS OF BELT TOGETHER. THIS METHOD PREVENTS BELT FROM COMING APART DURING OPERATION.

TO IDENTIFY UPPER AND
LOWER BELTS REMEMBER
"LOWER IS LONGER"

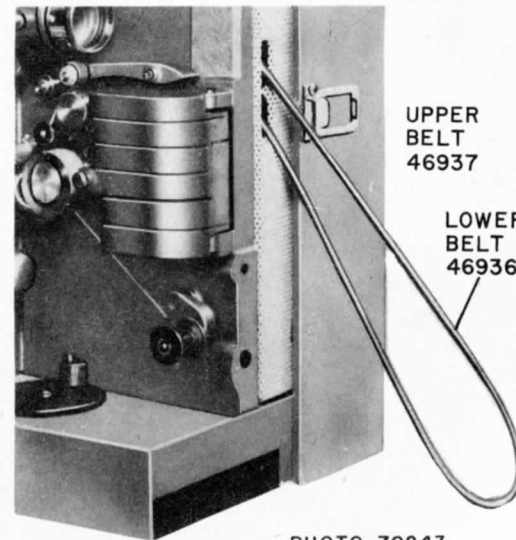
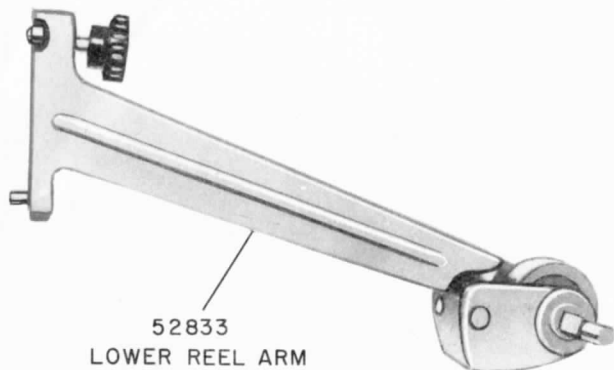


PHOTO-70243

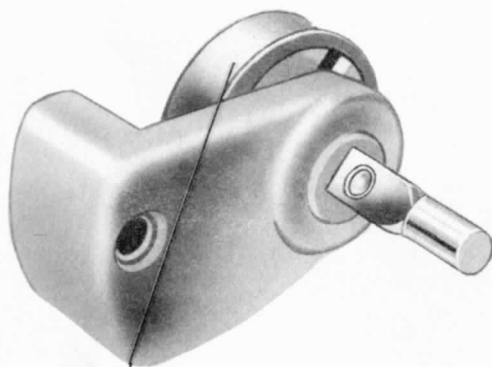
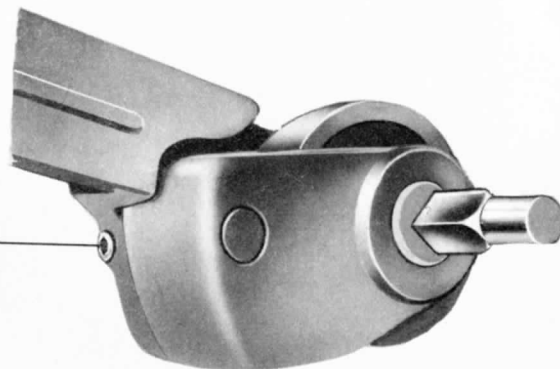
CORRECT

Figure 8 - Removing and Replacing Belts

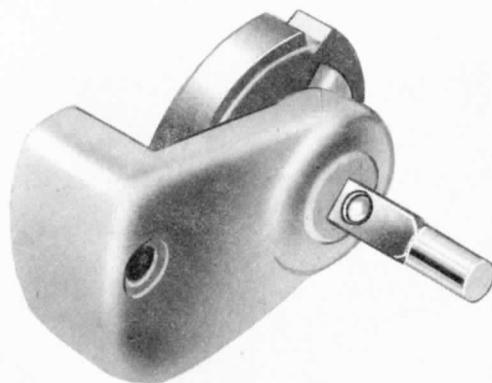
TO SERVICE LOWER REEL ARM ASSEMBLY



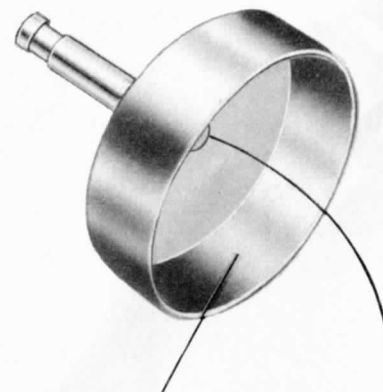
LOOSEN THIS SETSCREW
(NO. 10-32 X 3/16) TO REMOVE
FRICTION CLUTCH
ASSEMBLY. WHEN
REINSTALLING USE TWO
THICKNESSES OF FILM
FOR ENDPLAY ADJUSTMENT



CLUTCH SURFACE SHOULD BE
SMOOTH. REEL SHAFT SHOULD
ROTATE FREELY.



FELT SHOULD BE SLIGHTLY
NARROWER THAN CLUTCH GROOVE
AND ENDS SHOULD BE APPROXIMATE-
LY 1/8" APART WHEN WRAPPED
AROUND CLUTCH.



INNER SURFACE SHOULD BE
SMOOTH AND UNDENTED.
FLANGE MUST NOT WOBBLE
ON SHAFT.

Figure 9 - Lower Reel Arm Assembly



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ADDENDA

to

IB-24693

**(Operating Instructions for
RCA 400 16MM Motion Picture Equipment)**

Use the following stock numbers when ordering replacement parts in lieu of the numbers given on pages 14 and 15 in IB-24693:

Upper Belt (spring, rewind) Stock No. 215670

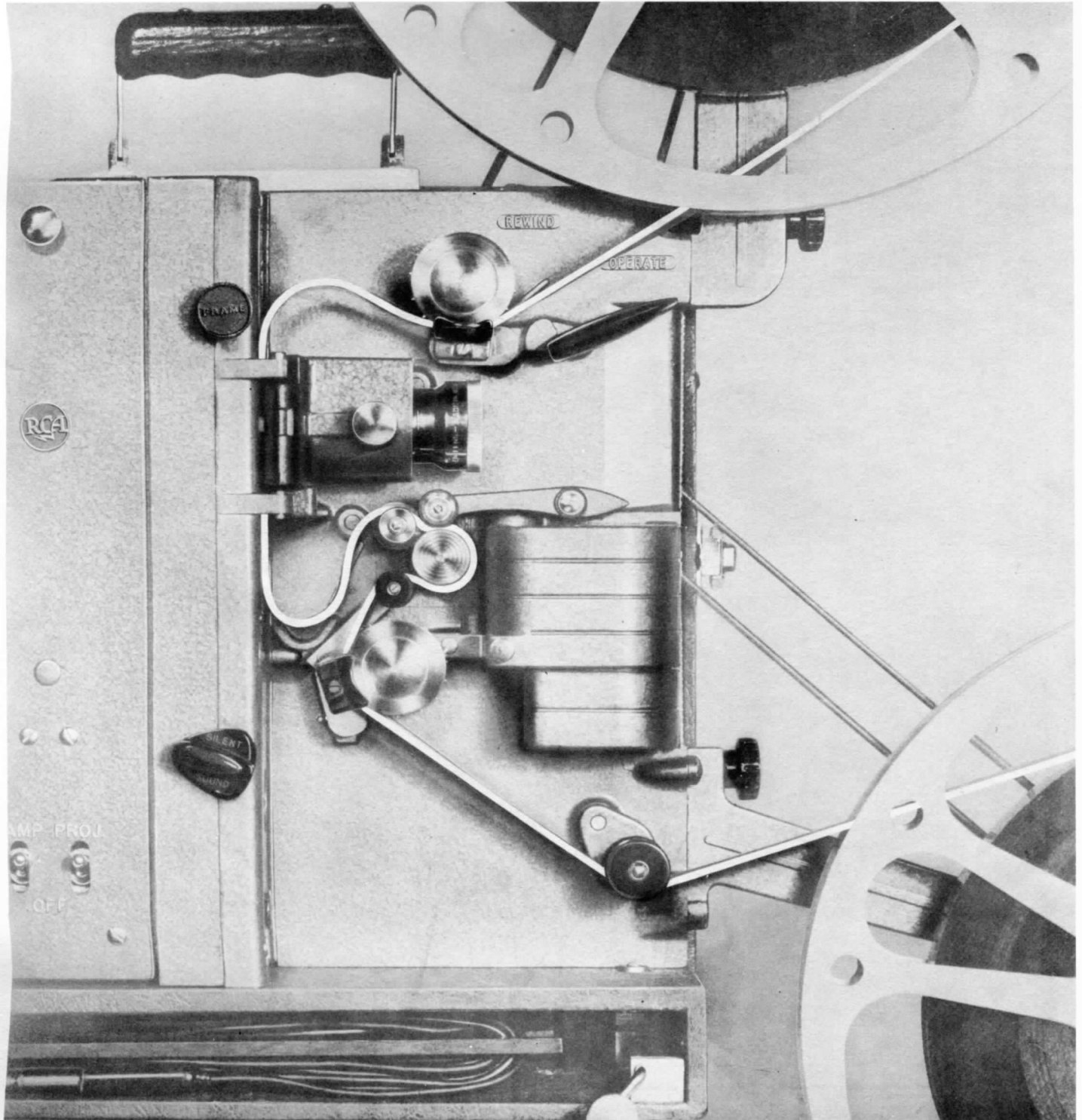
Lower Belt (spring, take-up) Stock No. 215671

Lower Reel Arm (complete assembly) Stock No. 215127

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RCA "400"

Simple to Thread



AUDIO-VISUAL PRODUCTS

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CAMDEN, N.J.

RCA 400

SIMPLEST TO THREAD

