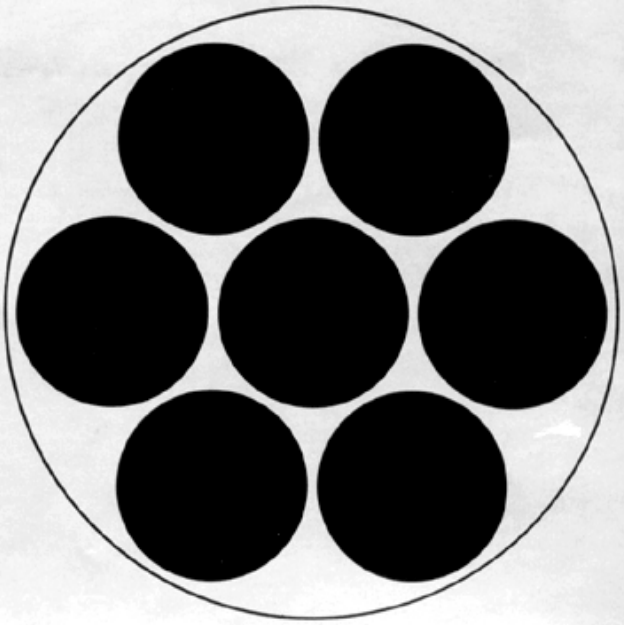
BELL & HOWELL

Model 1575A 16mm Projector Operating Instructions



IMPORTANT: Read these instructions carefully before operating your projector.

IMPORTANT SAFEGUARDS

WHEN USING YOUR PHOTOGRAPHIC EQUIPMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:

1. READ AND UNDERSTAND ALL INSTRUCTIONS.
2. CLOSE SUPERVISION IS NECESSARY WHEN ANY EQUIPMENT IS USED BY OR NEAR CHILDREN. DO NOT LEAVE EQUIPMENT UNATTENDED WHILE IN USE.
3. CARE MUST BE TAKEN AS BURNS CAN OCCUR FROM TOUCHING HOT PARTS.
4. DO NOT OPERATE EQUIPMENT WITH A DAMAGED CORD OR IF THE EQUIPMENT HAS BEEN DROPPED OR DAMAGED—UNTIL IT HAS BEEN EXAMINED BY A QUALIFIED SERVICEMAN.
5. POSITION THE EQUIPMENT IN SUCH A WAY SO AS NOT TO BLOCK ANY AIR INTAKE OR EXHAUST OPENINGS.
6. IF AN EXTENSION CORD IS NECESSARY, A CORD WITH A SUITABLE CURRENT RATING SHOULD BE USED. CORDS RATED FOR LESS AMPERAGE THAN THE EQUIPMENT MAY OVERHEAT. CARE SHOULD BE TAKEN TO ARRANGE THE CORD SO THAT IT WILL NOT BE TRIPPED OVER OR PULLED.
7. ALWAYS UNPLUG EQUIPMENT FROM ELECTRICAL OUTLET WHEN NOT IN USE. NEVER YANK CORD TO PULL PLUG FROM OUTLET. GRASP PLUG AND PULL TO DISCONNECT.
8. LET EQUIPMENT COOL COMPLETELY BEFORE PUTTING AWAY. STORE THE POWER CORD PROPERLY IN THE STORAGE AREA PROVIDED.
9. TO PROTECT AGAINST ELECTRICAL SHOCK HAZARDS, DO NOT EXPOSE THIS EQUIPMENT TO RAIN, MOISTURE, OR OTHER LIQUIDS.
10. TO AVOID ELECTRIC SHOCK HAZARD, DO NOT DISASSEMBLE THIS EQUIPMENT, BUT TAKE IT TO A QUALIFIED SERVICEMAN WHEN SOME SERVICE OR REPAIR WORK IS REQUIRED. INCORRECT REASSEMBLY CAN CAUSE ELECTRIC SHOCK HAZARD WHEN THE EQUIPMENT IS USED SUBSEQUENTLY.

SAVE THESE INSTRUCTIONS

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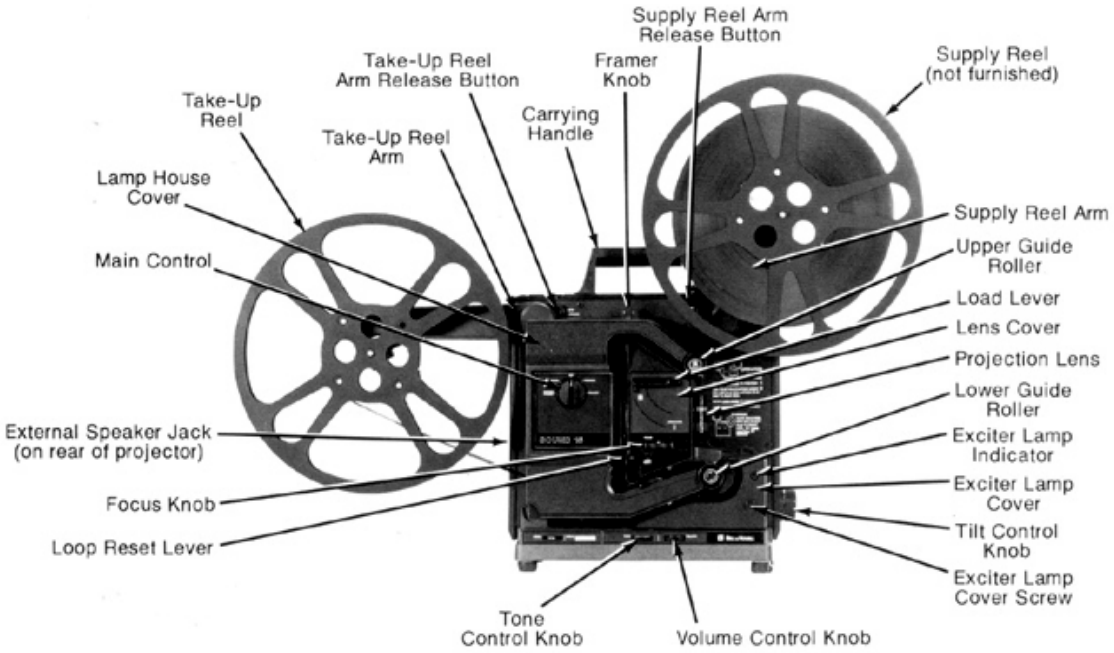
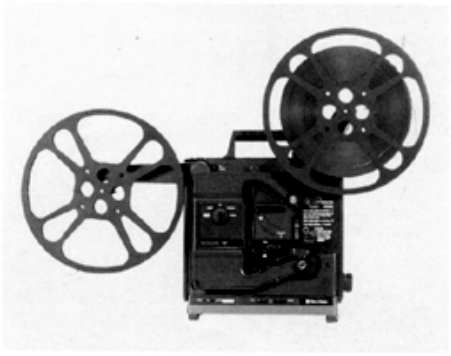
FOLD THIS PAGE OUT FOR REFERENCE AS YOU READ THE INSTRUCTIONS.

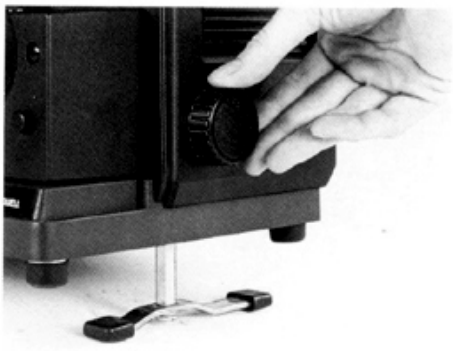
Model 1575

Minor changes in the appearance of this projector may not be shown in these illustrations.



Setting up the projector





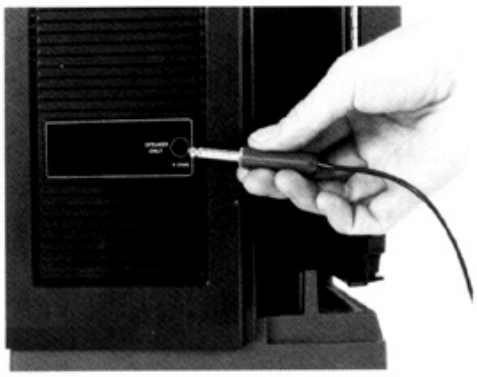
Place the projector on a sturdy table or stand at the position from which you will be projecting. Be sure the projector is high enough to clear the audience. A projection distance table will be found on page 24. When the projector is set up:

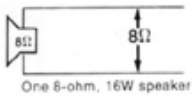
1. Unlatch the cover and remove it from the unit.
2. Unwind the power cord from its storage recess and plug it into a 120-volt 60Hz **Grounded** outlet.

   Important: If an adapter is used, be sure the green wire on the adapter is attached to the screw on the wall outlet plate for proper grounding. Have a trained electrician install the adapter and check the outlet wiring to be sure there is no shock hazard. Faulty wiring may cause damage to the unit and personal injury to the operator.
3. Swing the **Take-Up Reel Arm** and **Supply Reel Arm** up to the positions shown. They will automatically lock into place. **DO NOT** attempt to project with the **Take Up Reel Arm** raised to the REWIND position.
4. Place the reel of film to be shown on the **Supply Reel Arm** spindle and an empty reel of the same size or larger on the **Take-Up Reel Arm** spindle.
5. Check to be sure that the **Lens Cover** and **Lamp House Cover** are properly seated and secure.
6. Turn the **Main Control** past FORWARD to the PROJECT NORMAL position. Adjust the **Tilt Control Knob** and **Framer Knob** to center the light area on the screen. Then turn the Main Control to the OFF position.

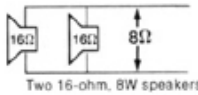
Note: The projection lamp will only light when the Load Lever is in position "**3**".

Setting up the projector (continued)

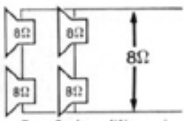




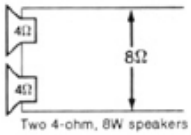
One 8-ohm, 16W speaker



Two 16-ohm, 8W speakers



Four 8-ohm, 4W speakers



Two 4-ohm, 8W speakers

Always observe speaker polarity. Maintain series connections and parallel connections exactly as shown.

Read First Before Attempting to Operate the Projector:

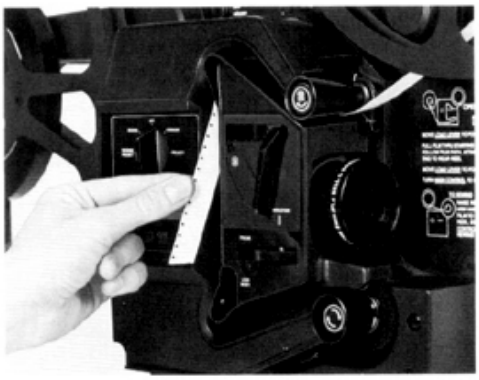
External Speaker Jack—To prevent damage to the projector's amplifier, read and understand these instructions on the use of external speakers. Consult your Bell & Howell dealer or a qualified serviceman if you have any further questions.

The **External Speaker Jack** on the rear of the projector is used to plug in an auxiliary speaker or speaker system having a standard ¼" phone plug. Optimum performance and sound quality is obtained when using a speaker, or combination of speakers, with a total effective impedance of 8-OHMS, and a minimum total power rating of 20 watts. (See the diagram at left.) Reliable operation may also be obtained when using a total load impedance other than 8-OHMS, provided it is not less than 4-OHMS.

The sound amplifier will automatically turn off in the event of a circuit overload, thereby protecting your projector from damage. If this should happen, turn off the projector, disconnect the external speaker(s), wait for ten (10) seconds, then restart the unit. If the projector's built-in speaker remains functional, this proves that the problem is in the external speaker system. Either the speaker(s) has a total load impedance less than 4-OHMS (making it incompatible with the projector), or the wiring is faulty. Inspect the external speaker(s) and the wiring. Rectify any problems.

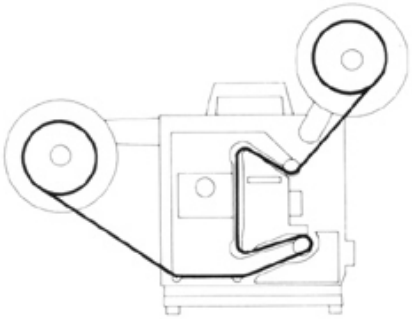
Use With a Public Address System—Before connecting this projector to a public address system, consult your dealer or qualified serviceman. Proper electronic matching must be provided to prevent system or projector damage. A special instruction sheet for this type of installation may be obtained by writing to the General Service Department, Bell & Howell Company, 7100 McCormick Road, Chicago, IL 60645. If possible, include a schematic of the system amplifier and specify your projector model number.

Easy steps to threading the Filmosound system

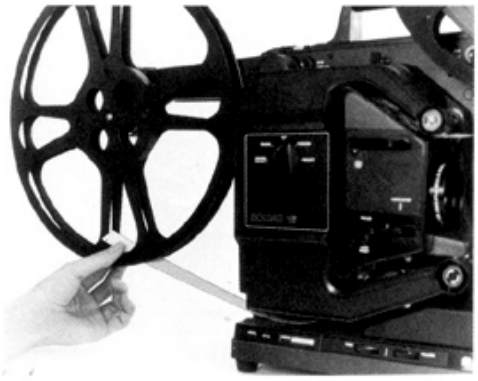


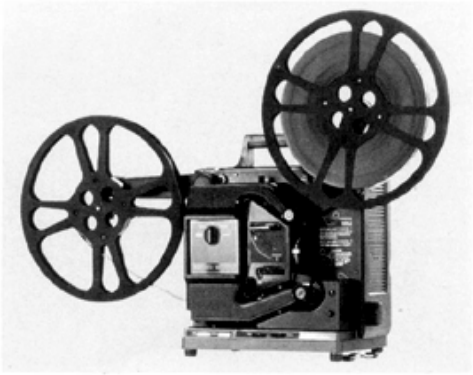
Once the projector is set up for use with the reel arms in the proper positions and the lens and lamphouse covers properly seated, follow these steps for film threading:

1. Check to see that the **Load Lever** is in position **1.**
2. Grasp the end of the film between your thumb and index finger. While maintaining film tension, begin threading the film under the large roller marked **2**, over the rounded upper corner of the lens cover, down through the lens and aperture area, under the rounded lower corner of the lens cover, around the **Lower Guide Roller** (↻) and along the lower guide path beneath the lamphouse cover to the **Take-Up Reel.** (See Threading Diagram).



Easy steps to threading the Filmosound system (continued)



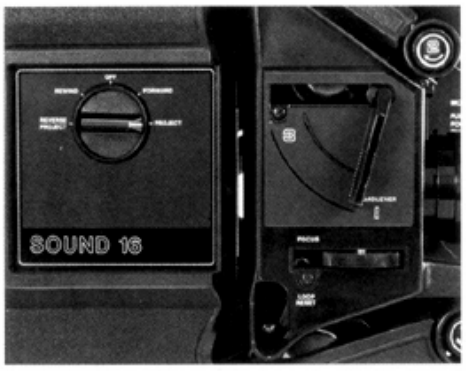


3. Attach the film to the **Take-Up Reel** and rotate the reel clockwise two turns to remove slack film from the system, and to be sure that the film moves freely through the film path.
4. Check to see that the film has entered the film path, then move the **Load Lever** to position **3**.
   The system is now ready for operation.

Note: The projector has been designed to self-seat film in the film channel when threaded correctly. If, however, upon threading, film is sufficiently out of line, closing the system (**Load Lever** to position **3**) will eject film from the lower portion of the system. If this occurs, merely move the **Load Lever** to position **1** and rotate the **Take-Up Reel** so that film is taut and realigned. Move the **Load Lever** to position **3** again and continue. Drastic misalignment in the aperture area may necessitate re-threading.

It should also be noted that an electrical interlock has been provided to shut off all projector power when the **Load Lever** is moved to intermediate positions between **1** and **3**. In position **1**, all systems except the lamp have power. This is to prevent damage when film is not being transported. In position **3** all systems have power for projection.

Operating the projector—controls

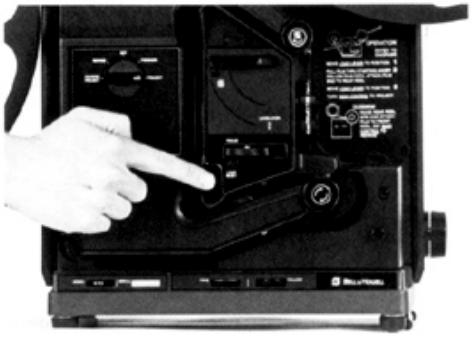


Load Lever—This lever is used to open and close the system for threading or unthreading the projector. Always move the **Load Lever** to position **1** when the projector is not in use.

Focus Knob—This knob may be moved in either direction to sharpen the image on the screen. It may be necessary to readjust the focus if several types of film are being shown on the same reel.

Framer Knob—If either the top or bottom of the picture is cut off or if a frame separation line appears on the screen, adjust the **Framer Knob** in either direction until the image is centered properly. It may also be necessary to adjust this knob when you switch to reverse projection.

Operating the projector—controls (continued)



Loop Reset—Torn perforations or bad splices may sometimes cause a loss of the lower film loop below the film gate. If this occurs, depressing the **Loop Reset Lever** momentarily will reset the proper lower loop.

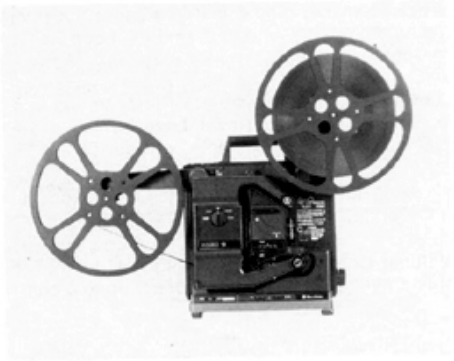
Caution: Use the **Loop Reset Lever** only when the projector is operating in a FORWARD PROJECT mode. Depressing the **Loop Reset Lever** while in the REVERSE PROJECT mode may damage your film (see note on page 10).

Tilt Control Knob—Allows elevation to center the projected image on the screen. Clockwise rotation raises the projector.

Volume Control—Keep the **Volume Control** at a low setting until the movie title appears on the screen and sound begins. Then turn the control up to a comfortable listening level.

Tone Control—Adjust this control for the most pleasing tone suitable to the room acoustics. The **0** setting is the normal balance between bass and treble.

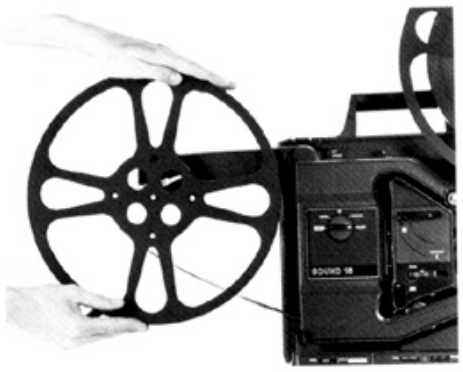
Operating the projector—projection



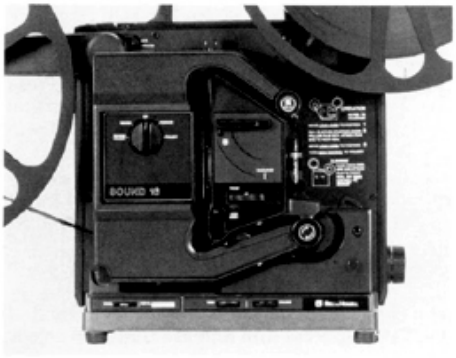
With film threaded:

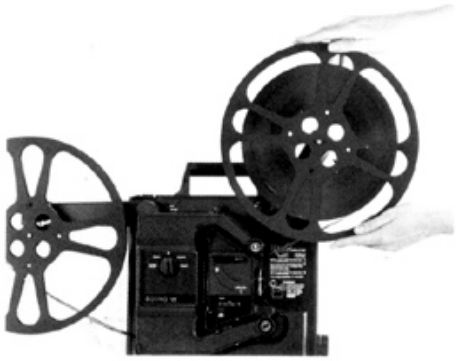
1. Rotate **Main Control Knob** to desired projection mode (NORMAL/BRIGHT).
2. Adjust tilt, volume, tone, focus and framer controls to achieve a clear, centered image and comfortable sound level.
3. If, during projection, damaged film enters the system, loss of the lower loop may occur. This will be evidenced by chattering and vertically unstable image projection.

   Momentarily depressing the **Loop Reset Lever** should correct this condition. If film damage extends over many perforations, repeated operations of this lever may be required to restore lower loop. If the lower loop cannot be restored with the **Loop Reset Lever,** turn the **Main Control** to the OFF position. Open the system by placing the **Load Lever** in position **1**. Manually pull an amount of film through the aperture area by rotating the **Take-Up Reel** sufficiently to move damaged film through the machine. Move the **Load**



Operating the projector—projection (continued)





Lever to position **3**, turn the **Main Control** to the desired project position and continue showing.

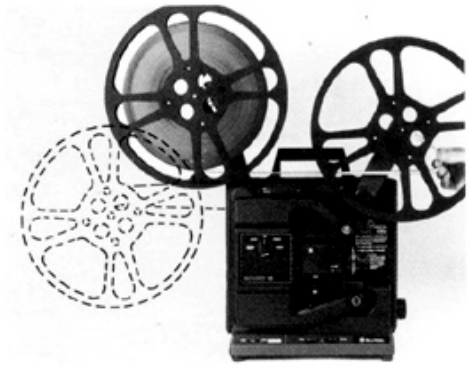
4. If several rolls of film or film exerpts are spliced together, refocusing may be necessary during projection to allow for film changes.

Reverse Projection—To show the film in reverse or to back the film up to a previous scene, turn the **Main Control** counter-clockwise to the OFF position, then continue turning past the REWIND position to REV-PROJECT. Reframe if necessary.

Note: If the **Main Control** is rotated too rapidly when changing from FORWARD to REV-PROJECT positions, the motor direction will not change. Film will continue to be transported in forward direction. To correct, simply turn the **Main Control** to OFF position and then back to REV-PROJECT.

If loss of the lower film loop should occur in REV-PROJECT, turn the **Main Control** to OFF and move **Load Lever** to Position **1**. Rotate the **Take-Up Reel** counter-clockwise to provide slack film and rotate the **Supply Reel** counter-clockwise to move damaged film out of system. Move **Load Lever** to position **3** and turn the **Main Control** to REV-PROJECT.

Rewinding the film



After the film showing is completed and all the film is on the **Take-Up Reel,** turn the **Main Control** to OFF.
Follow these simple steps and the film is ready to show again:

1. Support the film **Take-Up Reel** with your left hand and lift it up slightly. Press the **Take-Up Reel Arm Release Button** and swing the arm up to the vertical REWIND position. (It will lock into place and automatically engage the high speed rewind mechanism).
2. Take the end of the film from the **Take-Up Reel** and attach it to the **Supply Reel** from the underside as shown. The attachment is accomplished by inserting the film end in the slot in the reel hub. Rotate the **Supply Reel** counter-clockwise about two turns to secure the film on the hub.
3. Turn the **Main Control** to the REWIND position and the film will begin to rewind.
4. As soon as all the film is back onto the **Supply Reel,** turn the **Main Control** to the OFF position, press the **Take-Up Reel Arm Release Button** to unlock the arm and move it to the horizontal take-up position.

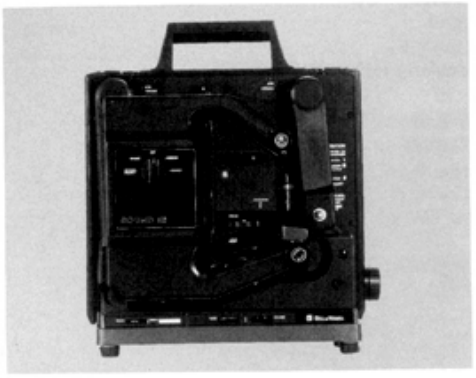
Caution: Do not attempt to rethread the projector with the **Take-Up Arm** in the REWIND position. Since the rewind mechanism is engaged with the **Take-Up Reel** in this position, the **Supply Reel** will not turn readily. To assure proper threading, move **Take-Up Reel Arm** to the take-up position.

Mid-path film removal

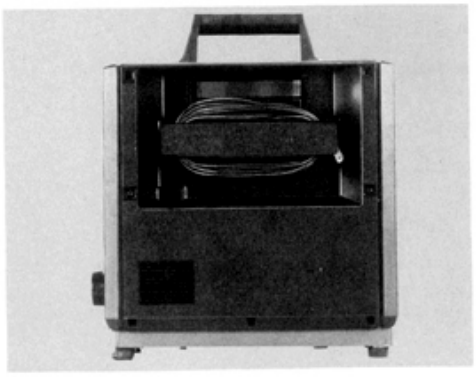
To remove film in the middle of a reel:

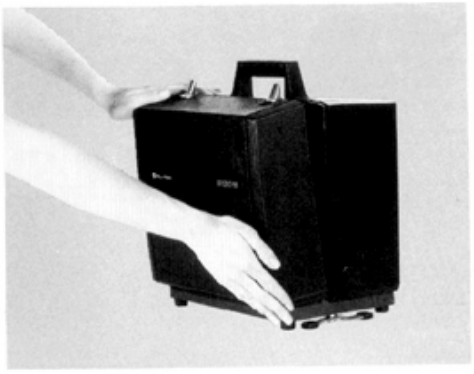
1. Turn the **Main Control** to the OFF position, rotate the **Rear Reel** counter-clockwise to release film tension and move the **Load Lever** to position **1** to open system.
2. Grasp the film at the **Rear Exit Roller.** Keeping it in as flat a position as possible, move the film sideways and out of the lower film track.
3. Moving to the **Lower Guide Roller,** again move the film sideways from beneath the lens carrier. Continue through the entire film track. To insure ease of removal, keep the film as close to normal running position as possible.
4. Raise the **Take-Up Arm** to REWIND position and rotate reel to take up slack. Turn **Main Control** to REWIND.

Storing the projector after use

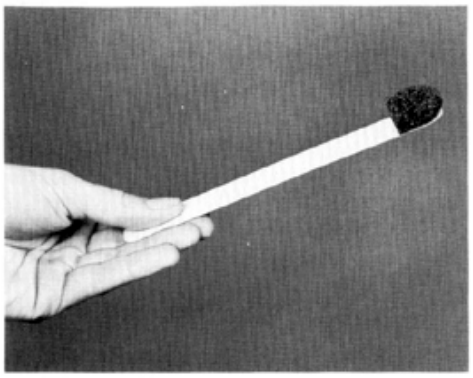


1. Make certain the **Main Control** is in the OFF position and the **Load Lever** is in position **1**.
2. Turn the **Volume Control** to zero.
3. Remove the reels from the **Supply Reel Arm** and **Take-Up Reel Arm.**
4. Unlock both reel arms by depressing their release buttons and swing them down to their storage positions.
5. Lower the projector completely with the **Tilt Control Knob.** (Counter-clockwise rotation).
6. Unplug the power cord from the wall socket and wind it around the cord retainer on the back of the projector.
7. Place the **Front Cover** on the projector by first fitting the cover's tabs into the recesses in the projector base. Swing the top of the cover into place and fasten it securely with the two latches.
8. For protection during storing and carrying, an accessory cover is available. This vinyl cover also has a pocket for storing a rear take-up reel. See the accessory information on Page 22.



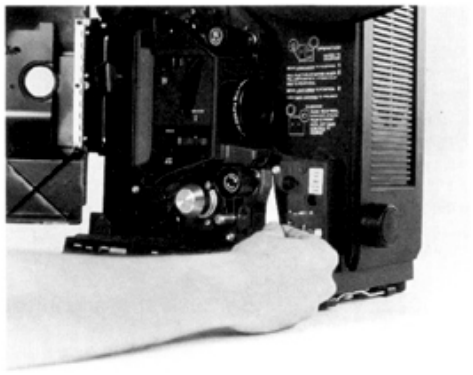


Care and maintenance



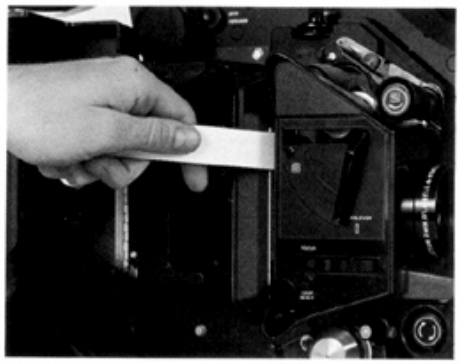
This Bell & Howell Filmosound projector has been especially designed to give maximum trouble-free service. It is factory lubricated and requires no further oiling by the user. In addition, all critical bearings have a permanent type lubricant to provide extended service and long life. Many of the wear parts are service-station adjustable which helps to eliminate the need for eventual replacement.

Instructions on simple cleaning and lamp replacement are given on the following pages. In addition, many owners follow our suggestion that their projectors be cleaned and adjusted periodically even though the unit seems to be in first-class condition. The cost of this service by a Bell & Howell Factory Service Center or approved service station is nominal and is worth a great deal in terms of worry-free and dependable operation.



Cleaning the Film Path—To prevent damage to the film, all surfaces that contact the film should be cleaned frequently. A special cleaning tool has been provided with the projector to make cleaning quick and easy.

Care and maintenance (continued)



To Clean the Aperture and Pressure Plates—Move the **Load Lever** to position **1** to open the system. Swing the hinged **Lamphouse Cover** open for access to the film path. Wipe the aperture and pressure plate (behind the lens) with the special cleaning tool to remove any dirt or emulsion that may have accumulated.

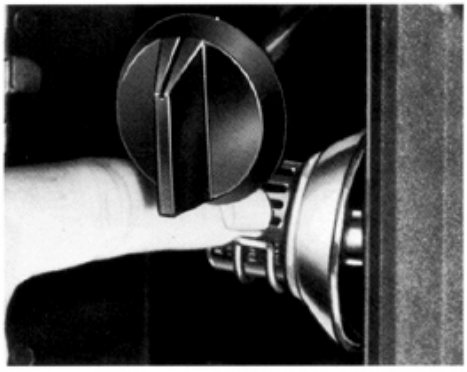
To Clean the Rollers and Film Guides—With the **Load Lever** in position **1** and the **Lamphouse Cover** still open, remove the **Exciter Lamp Cover.** Use the special cleaning tool to wipe off all surfaces that contact the film. Rollers, film guides, and the sound drum should be free of dust, emulsion build-up or small bits of film. A soft, lint-free cloth may be used for cleaning these areas if so desired.

To Clean the Projection Lens—Turn the **Focus Knob** to the left until the lens is moved out as far as it will go, then grasp the lens barrel and remove it from the housing. Using a lens tissue or soft cloth moistened with lens cleaner, wipe the dust and fingerprints from the front and rear glass surfaces. When the lens is clean, insert it into the **Lens Housing,** turning the **Focus Knob** to the right to engage the lens.

After Cleaning—Replace the **Exciter Lamp Cover** and close the **Lamphouse Cover.** If the projector is to be stored after cleaning, leave the **Load Lever** in position **1.**

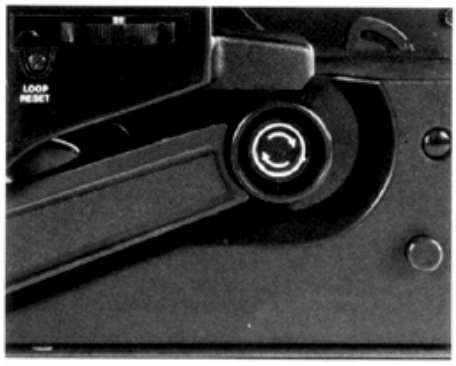
Note: It is recommended that the projector be cleaned with the special cleaning tool and/or a cleaning cloth that is dry. If you feel that a cleaning agent must be used, use only naphtha based agents such as lighter fluid. *DO NOT* use acetone or other solvents which will attack plastic.

To replace the projection lamp



1. Turn the **Main Control** to OFF and **disconnect the power cord.** Allow the lamp to cool completely.
2. Swing the **Lamphouse Cover** open.
3. Swing the lamp holder clamp downward. Grasp the lamp by the black rear portion and pull it straight out. **CAUTION:** If the lamp is still warm or hot, use a glove or heavy cloth to hold the lamp base.
4. Insert the new lamp, reflector forward, by aligning the pins with the socket and pushing straight in. Push the lamp clamp back up until it snaps into position and close **Lamphouse Cover.**
   Use ASA code BHB lamp.

To replace the exciter lamp



1. Turn the **Main Control** to OFF and disconnect the power cord.
2. Loosen the screw holding the **Exciter Lamp Cover** in place and pull the cover straight out.
3. Move the **Lamp Lock Lever** to the right to release the lamp. Then rotate the lamp counter-clockwise and lift it off of the guide pins.
4. Using a cloth or tissue to avoid fingerprints, place the new lamp (ASA Code **BAK**) over the guide pins and press down lightly and rotate it clockwise. Move the **Lamp Lock Lever** to the left to lock the lamp base firmly in place. Note that the small notch on the edge of the lamp base flange should be facing forward when installing the new lamp.
5. Replace the **Exciter Lamp Cover** and tighten the screw until the cover is firmly seated against the projector.

Internal Projector Servicing—It is recommended that the user does not remove the back cover of the projector as there are no user-serviceable parts inside. All parts within the projector should be serviced by Bell & Howell Service Center or approved service station.

Projectionist's trouble shooting list

Problem	Check List
1. Projector will not operate.	• Is the **Load Lever** properly located in position **3**? • Is the power cord properly connected to the electrical outlet? • Test the electrical outlet with an ordinary lamp or other electrical device (known to be in working order) to be sure current is reaching the outlet. • If a 3 to 2 wire adapter plug is used, be certain the adapter ground wire is securely attached to the screw on wall plate.
2. Film will not thread.	• Is the **Main Control** in the OFF position? • Is the **Load Lever** properly located in position **1**? • Is the **Take-Up Reel Arm** in horizontal threading position? • Is the **Lamphouse Cover** closed properly? • Is the **Lens Cover** properly seated?
3. The exciter lamp lights but no sound comes from the speaker.	• Is the film threaded properly between the roller flanges at the sound drum? • Did you turn up the **Volume Control**? • Does the film have an adequate soundtrack? To check this, proceed as follows: 1. Remove the film from the projector completely and return the **Load Lever** to position **3.** 2. Remove the **Exciter Lamp Cover** and set the **Volume Control** to **4.** 3. Turn the **Main Control** to FORWARD and pass a card swiftly back and forth between the **Exciter Lamp** and the small lens behind it. If a thumping noise is heard from the speaker, the projector's sound system is working properly—the sound is missing from the film itself.

Projectionist's trouble shooting list (continued)

Problem	Check List
4. The exciter lamp does not light and no sound is heard from the speaker.	• Is the exciter lamp burned out? If so, remove the power cord from the outlet and replace the lamp. Check that the **Main Control** is in the FORWARD or PROJECT position. **NOTE:** The amplifier and exciter lamp turn on (no warm-up time needed) when the Main Control is turned to FORWARD.
5. Sound volume is not adequate.	• Is the **Volume Control** advanced to the maximum position? • Is the line voltage between 110-129 volts 60Hz AC? • Is the film clean? Dirty or imperfect film will not produce full sound volume. • Is the **Exciter Lamp** filament damaged? If so, disconnect the power cord and replace the lamp.
6. Sound quality is unsatisfactory or garbled.	• Is the film tight around the **Sound Drum**? • Is the **Tone Control** set improperly for the projection room or type of sound on the film? • Have you tried the suggestions previously listed for inadequate sound volume? • Is the lower film loop too small? If so, depress **Loop Reset Lever** to restore.

Projectionist's trouble shooting list (continued)

Problem	Check List
7. No picture appears on the screen.	• Is the **Main Control** turned to a PROJECT position (NORMAL/BRIGHT)? • Is the projection lamp burned out? If so, replace the lamp following the instructions on page 16. • Is there a lens in the projector?
8. The picture brilliance seems inadequate or picture seems fuzzy.	• Is the line voltage correct? • Can the room be darkened further or the picture size reduced? Projection distances should be minimized if the room cannot be darkened properly. • Is the projection lens clean? Check both the front and back of the lens. See the lens and aperture cleaning instructions on page 16. • Is the Projection Lamp seated properly in the socket? • Is the lamp at the end of its effective life (even though it lights)? If so, replace the lamp.

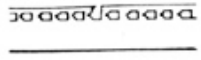
Film condition and your Filmosound projector

Your projector has been designed to accept 16mm film in virtually every conceivable condition. There are, however certain film irregularities which should be corrected in order to maintain film life.

Dry film becomes brittle and has a tendency to crack and break. The film end should be replaced with new leader and in many cases all of the film on the reel should be cleaned and re-lubricated.

Marked leader, such as leader with tape, staples, grease pencil, or identifying marks on it should be corrected or replaced.

Torn perforations, whether at the leader end of the film or within the reel, should be cut out. Replace with new leader at the start of the film.



Buckled or warped film should be replaced with new leader. Check that the warp is no more than the example shown.

Film curl should be checked. If the curl is tighter than the conditions shown (note the examples are for curl in each direction), replace the leader.

SPLICES—If a splice should break in the middle of a showing, stop the projector, trim the end of the film from the supply reel, rethread the projector, and continue the show using another take-up reel. When rewinding the film, stop where the break occurred and re-splice it.

Buckled or warped splices should be corrected whenever they are found to prevent future problems.

Misaligned splices may cause projection problems, especially if they are in the leader portion of the film. Resplice correctly.

Stapled splices may be convenient for continuing a show but they should be taken out before the film is rewound or reshown. A stapled splice is a certain jam if it runs through the mechanism.

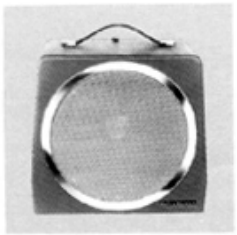
Tape splices should be done carefully and checked for perfect alignment with the sprocket holes in the film.

Accessories for added convenience

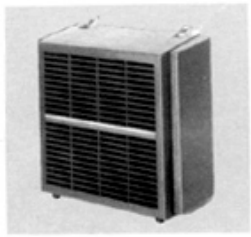
PROTECTIVE COVER (Catalog No. 44468)—Slips over the projector for protection against dust and damage while carrying or storing. Has a pocket for a large take-up reel.

FILM REELS (400′ Cat. No. 08537; 1600′ Cat. No. 01873; 2000′ Cat. No. 03727)—All-metal construction, for extended showings.

ORCHESTRICON II SPEAKER (Catalog No. 012568)—Accessory 12″ speaker provides the ultimate in extension sound. Complete with 50′ of cord and an automatic cord reel.



SPEAKER COVER (Catalog No. 016507)—A convenient extension speaker that doubles as the machine cover for maximum portability and storage convenience. Complete with 35′ self-storing cord.



FILMOVARA® ATTACHMENT (Catalog No. 204665)—Designed to screw into the front of the Bell & Howell 1.5″, 2″, 2.5″ or 3″ lenses, provides variable image sizes to fit the projection situation. See page 23 for the picture sizes possible.

ANAMORPHIC LENS (Catalog No. 204440)—This accessory lens needs no adapter and fits Bell & Howell 1.5″, 2″, 2.5″ and 3.0″ lenses. Doubles the width of the projected image (not the height) and is used for showing 16mm wide-screen films.

OTHER ACCESSORY LENSES—The following sizes are available for added projection versatility:

4″ f/1.6 Lens (Catalog No. 201004)

3″ f/1.6 Lens (Catalog No. 204443)

2.5″ f/1.5 Lens (Catalog No. 204442)

1.5″ f/1.5 Lens (Catalog No. 204441)

1″ f/1.9 Lens (Catalog No. 201082)

Projection table

LENS FOCAL LENGTH*	DISTANCE IN FEET FROM SCREEN TO PROJECTOR													
	8′	10′	12′	15′	20′	25′	30′	35′	40′	45′	50′	60′	75′	100′
	Upper Dimension is Width of Picture / Lower Dimension is Height of Picture													
1″	2′11″ 2′2″	3′8″ 2′9″	4′5″ 3′4″	5′7″ 4′2″	7′5″ 5′7″	9′4″ 6′11″	11′3″ 8′4″	13′1″ 9′9″						
1.3″	2′4″ 1′9″	2′11″ 2′2″	3′6″ 2′8″	4′5″ 3′4″	5′11″ 4′5″	7′5″ 5′6″	8′10″ 6′8″	10′5″ 7′10″						
1.5″	1′11″ 1′5″	2′5″ 1′10″	2′11″ 2′2″	3′8″ 2′9″	4′11″ 3′8″	6′2″ 4′7″	7′6″ 5′7″	8′9″ 6′6″	10′0″ 7′5″	11′3″ 8′4″	12′5″ 9′4″			
1.75″	1′5″ 1′1″	2′2″ 1′7″	2′6″ 1′11″	3′2″ 2′5″	4′3″ 3′2″	5′5″ 4′0″	6′6″ 5′0″	7′7″ 5′8″	8′8″ 6′6″	9′10″ 7′3″	10′9″ 8′1″	12′5″ 9′2″	15′5″ 11′5″	
1.75″	1′5″ 1′1″	2′2″ 1′7″	2′6″ 1′11″	3′2″ 2′5″	4′3″ 3′2″	5′5″ 4′0″	6′6″ 5′0″	7′7″ 5′8″	8′8″ 6′6″	9′10″ 7′3″	10′9″ 8′1″	12′5″ 9′2″	15′5″ 11′5″	
2.0″		1′10″ 1′4″	2′2″ 1′8″	2′9″ 2′1″	3′8″ 2′9″	4′8″ 3′5″	5′7″ 4′2″	6′6″ 4′10″	7′5″ 5′7″	8′5″ 6′3″	9′4″ 6′11″	11′3″ 8′4″	14′0″ 10′5″	18′9″ 13′11″
2.25″		1′7″ 1′2″	1′11″ 1′5″	2′6″ 1′10″	3′4″ 2′6″	4′0″ 3′1″	5′0″ 3′9″	5′10″ 4′4″	6′8″ 5′0″	7′7″ 5′8″	8′4″ 6′3″	10′1″ 7′7″	13′7″ 10′2″	16′11″ 12′8″
2.6″		1′4″ 1′1″	1′8″ 1′3″	2′1″ 1′7″	2′9″ 2′1″	3′7″ 2′8″	4′3″ 3′3″	5′0″ 3′9″	5′9″ 4′3″	6′5″ 4′8″	7′2″ 5′5″	8′9″ 6′6″	10′8″ 8′1″	14′6″ 10′9″
3.0″						3′1″ 2′3″	3′8″ 2′9″	4′4″ 3′3″	4′11″ 3′8″	5′7″ 4′2″	6′2″ 4′7″	7′5″ 5′7″	9′4″ 6′11″	12′6″ 9′3″
3.4″						2′6″ 1′10″	3′1″ 2′3″	3′6″ 2′8″	4′1″ 3′1″	4′7″ 3′6″	5′2″ 3′9″	6′3″ 4′7″	7′7″ 5′9″	10′4″ 7′8″
4.0″						2′3″ 1′8″	2′9″ 2′1″	3′3″ 2′5″	3′8″ 2′9″	4′2″ 3′1″	4′8″ 3′5″	5′7″ 4′2″	7′0″ 5′2″	9′4″ 6′11″

1.5″ LENS WITH FILMOVARA ATTACHMENT

2.0″ LENS WITH FILMOVARA ATTACHMENT

3.0″ LENS WITH FILMOVARA ATTACHMENT

*1.5″ lens with Filmovara = 1.3″ to 1.75″ focal length range.
2.0″ lens with Filmovara = 1.75″ to 2.25″ focal length range.
3.0″ lens with Filmovara = 2.6″ to 3.4″ focal length range.

Color band = standard focal length lenses.
Brackets indicate focal length range with Filmovara attachment.

Note: Use of the Anamorphic Lens doubles the width of the picture.

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