

8mm SOUND PROJECTOR

**ELMO
ST-600 D**

2-TRACK

INSTRUCTION MANUAL

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 appliance is used by or near children. Do not leave appliance unattended while in use.
3. Care must be taken as burns can occur from touching hot parts.
4. Do not operate appliance with a damaged cord or if the appliance has been dropped or damaged-until it has been examined by a qualified serviceman.
5. Do not let cord hang over edge of table or counter or touch hot surfaces.
6. If an extension cord is necessary, a cord with a suitable current rating should be used. Cords rated for less amperage than the appliance may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
7. Always unplug appliance from electrical outlet when not in use. Never yank cord to pull plug from outlet. Grasp plug and pull to disconnect.
8. Let appliance cool completely before putting away. Loop cord loosely around appliance when storing.
9. To protect against electrical shock hazards, do not immerse this appliance in water or other liquids.
10. To avoid electric shock hazard, do not disassemble this appliance, but take it to a qualified serviceman when some service or repair work is required. Incorrect reassembly can cause electric shock hazard when the appliance is used subsequently.

SAVE THESE INSTRUCTIONS

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Thank you for selecting the Elmo ST-600D Sound Projector.

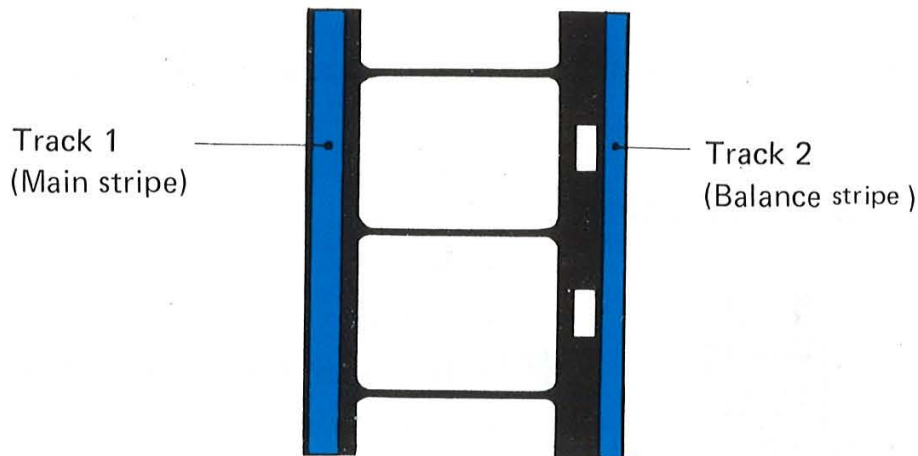
The Elmo ST-600D is a high performance sound projector capable of magnetic recording and playback on two sound tracks as well as playing back ready-made optical sound film (Model M-O).

What's more, this new sound projector features unlimited sound recording potentials including, dubbing capabilities which enable the buildup of the most sophisticated sound tracks in the most effortless manner.

Be sure to carefully read through this instruction manual to make the most of these fascinating features and to ensure against improper handling that may result in damage.

INTRODUCTION

Two Track System



As shown in the above illustration, 8mm sound film comes striped with magnetic coatings on both edges, also known as "magnetic stripe." The wide or "main" stripe is used to carry the sound track when used in conventional projectors. This sound stripe will be called Track 1 hereafter in this manual.

The narrow or "balance" stripe, that runs just outside the film perforations, is used for balance to ensure smooth film travel through the projector.

Though Track 2 is narrow in width, it is coated with the same quality magnetic oxide as that on Track 1. So, the Elmo ST-600D utilizes both the main stripe and the balance stripe for recording and playback. We have designated this new sound system a Two Track System.

After receiving your sync-sound film from the processing laboratory, there will most likely be sound on Track 1.

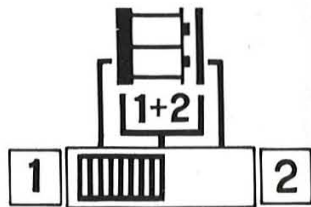
Music and narration can be added to the balance track (Track 2) to accompany your original sound on Track 1. You may record on Track 2 as often as desired or until you are totally satisfied with the mixed recording. This is done without affecting the original sound on Track 1.

[If the film does not come striped with a magnetic coating, it is necessary to ask your nearest photo dealer to have your film striped when sending it in for processing.]

Two Track Recording and Playback Operation

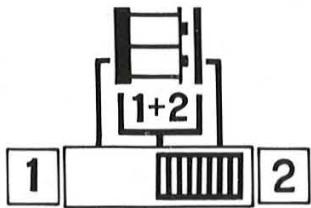
Set the track selector in the correct position to perform the following.

■ Track Selection



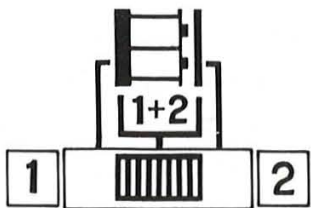
Position 1

- Select position 1 to record or playback Track 1.



Position 2

- Select position 2 to record or playback Track 2.

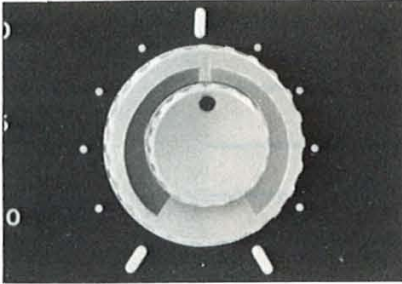


Position 1 + 2

- Select position 1 + 2 to play both tracks simultaneously.

Note: Both tracks can't be recorded simultaneously. Particularly when recording, be sure to select the correct position conforming to the track to be used. Erroneous track selection may result in undesirable erasure.

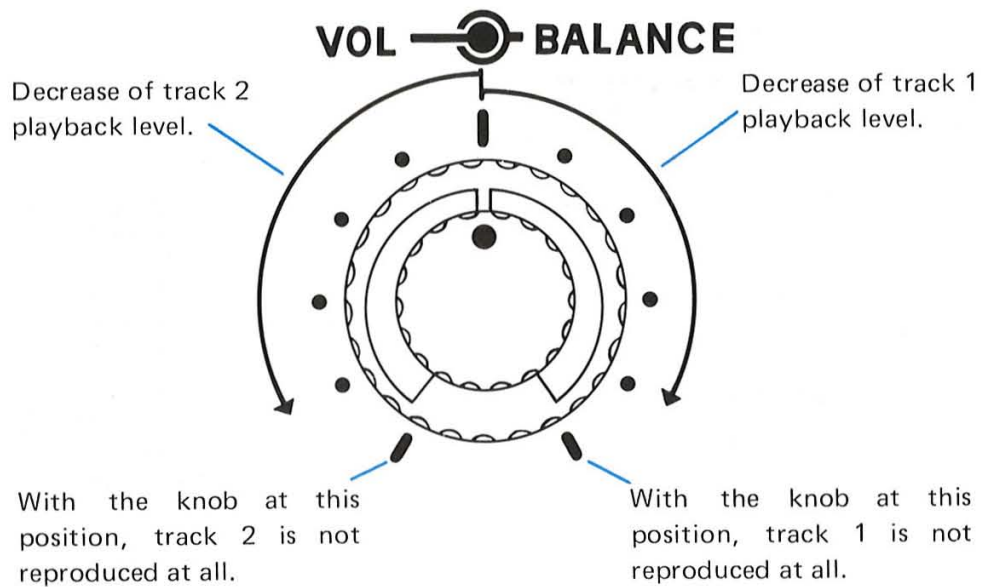
■ Balance control



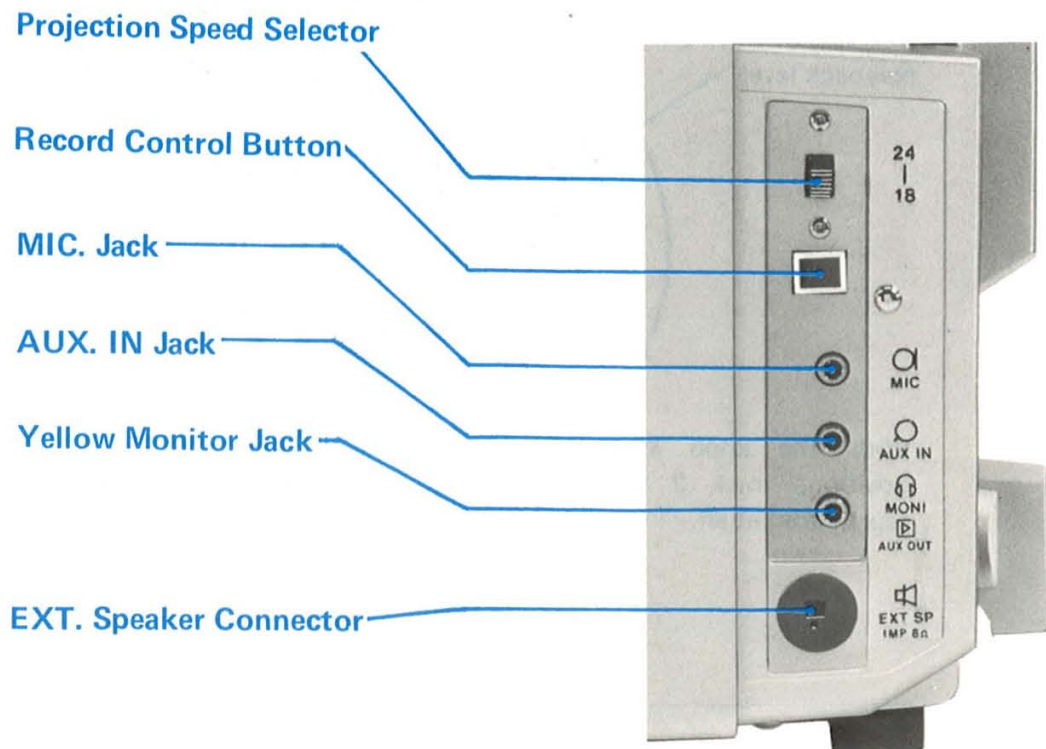
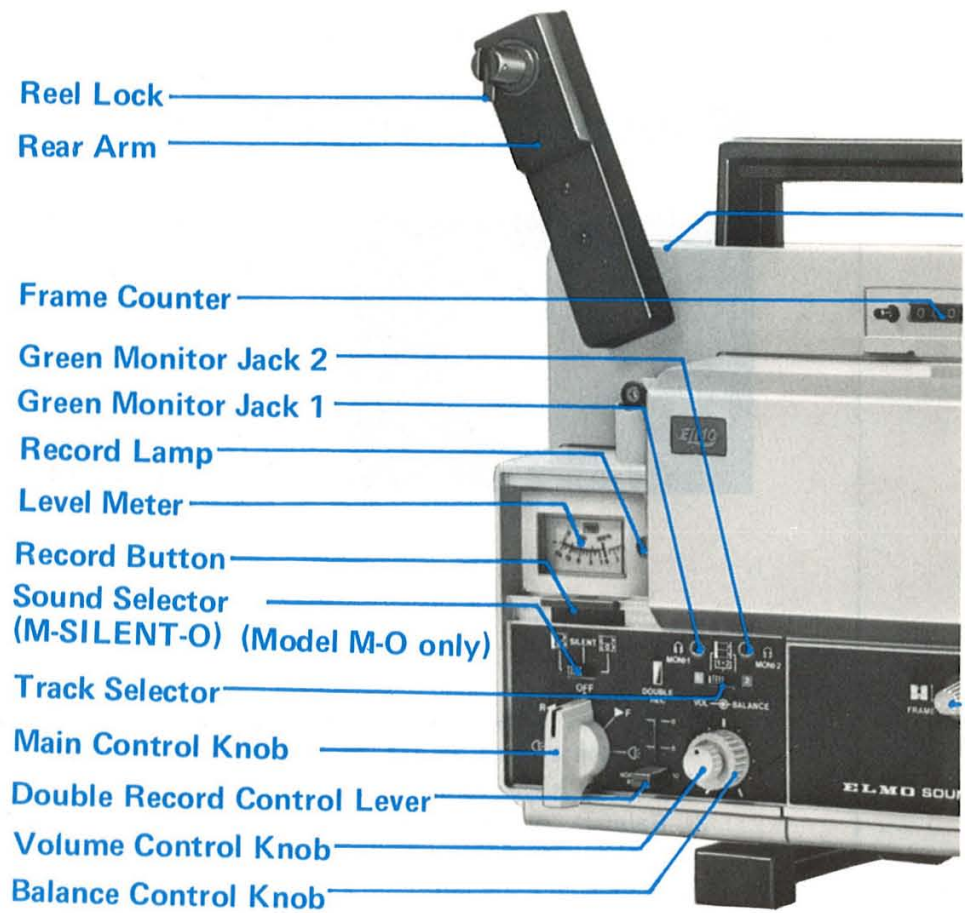
The balance control knob is used to balance the playback levels of both tracks (1 and 2) by adjusting as follows: The balance control is normally set in the middle position. If track 1 is higher than track 2, turn the knob clockwise until both tracks are balanced.

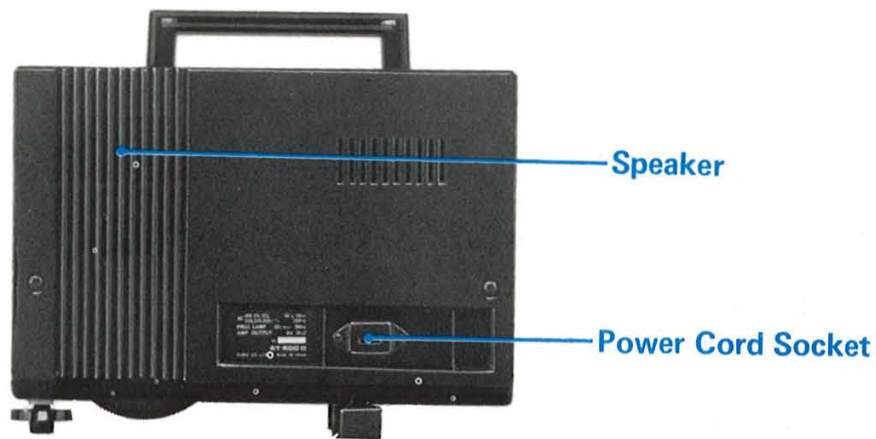
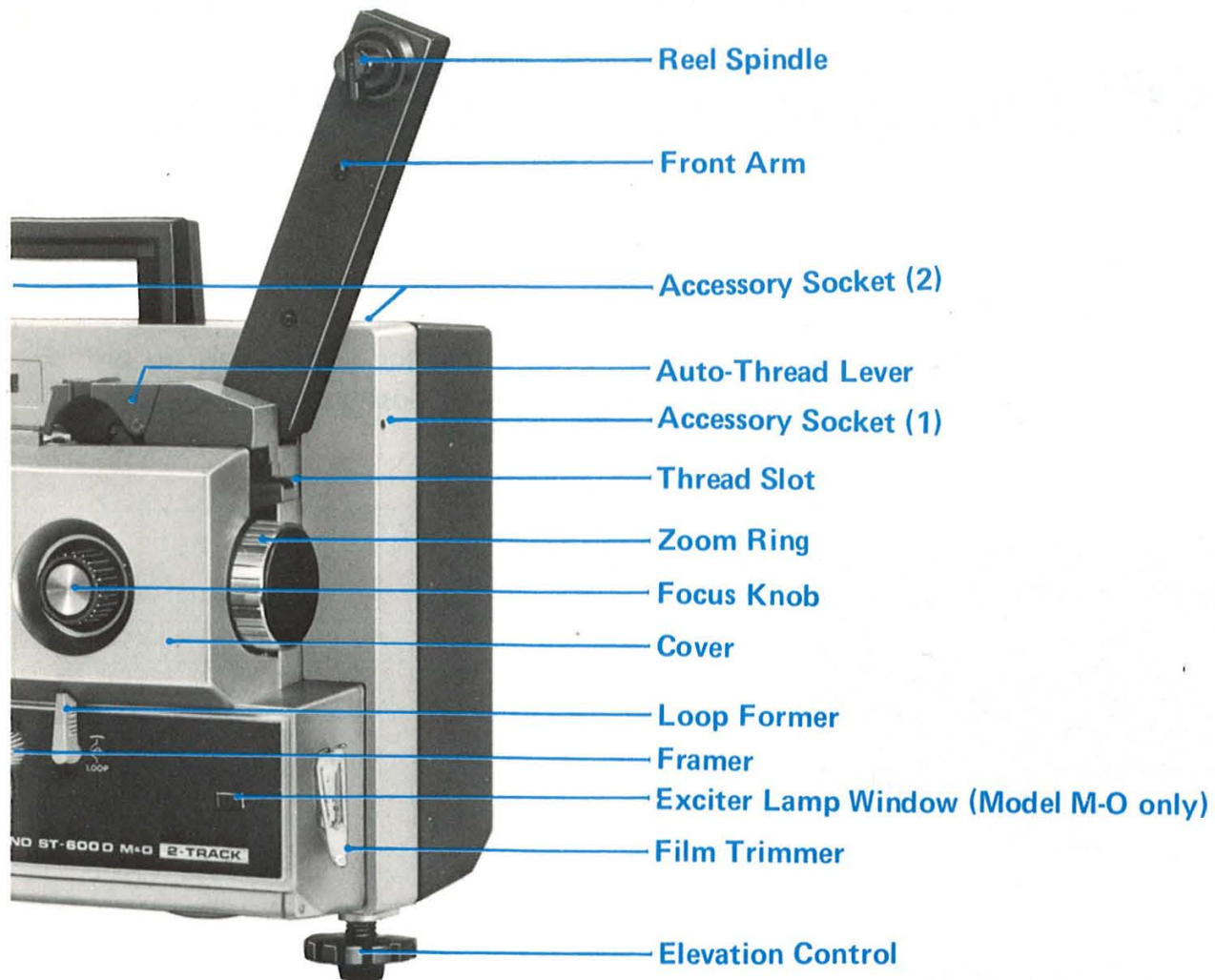
Note:

1. Whether playing both tracks or either track 1 or 2, begin with the balance control in the middle. (Only one track will play if the balance control is turned all the way in one direction.)
2. Balance control cannot be used to set recording level.



NOMENCLATURE



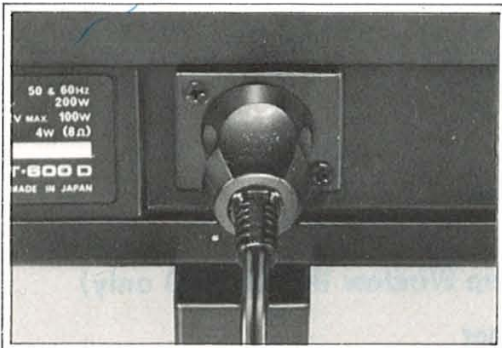


PROJECTION

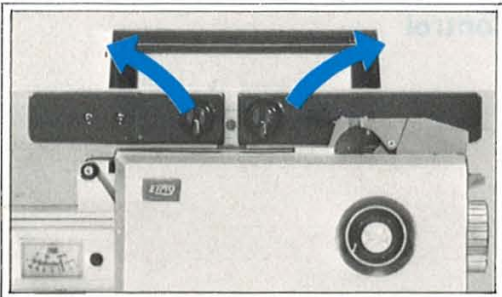
Preparing For Projection

- 1 Place the projector on a stable stand or table and face the projection lens to the screen.

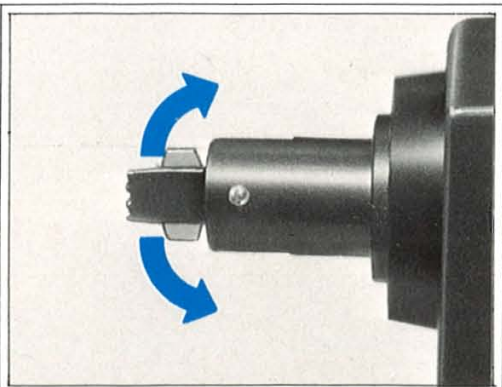
Note: Be sure to use a firm stand. If the projector is mounted on an unsteady surface such as a thin-board box, a possible resonance may develop causing poor projection performance.



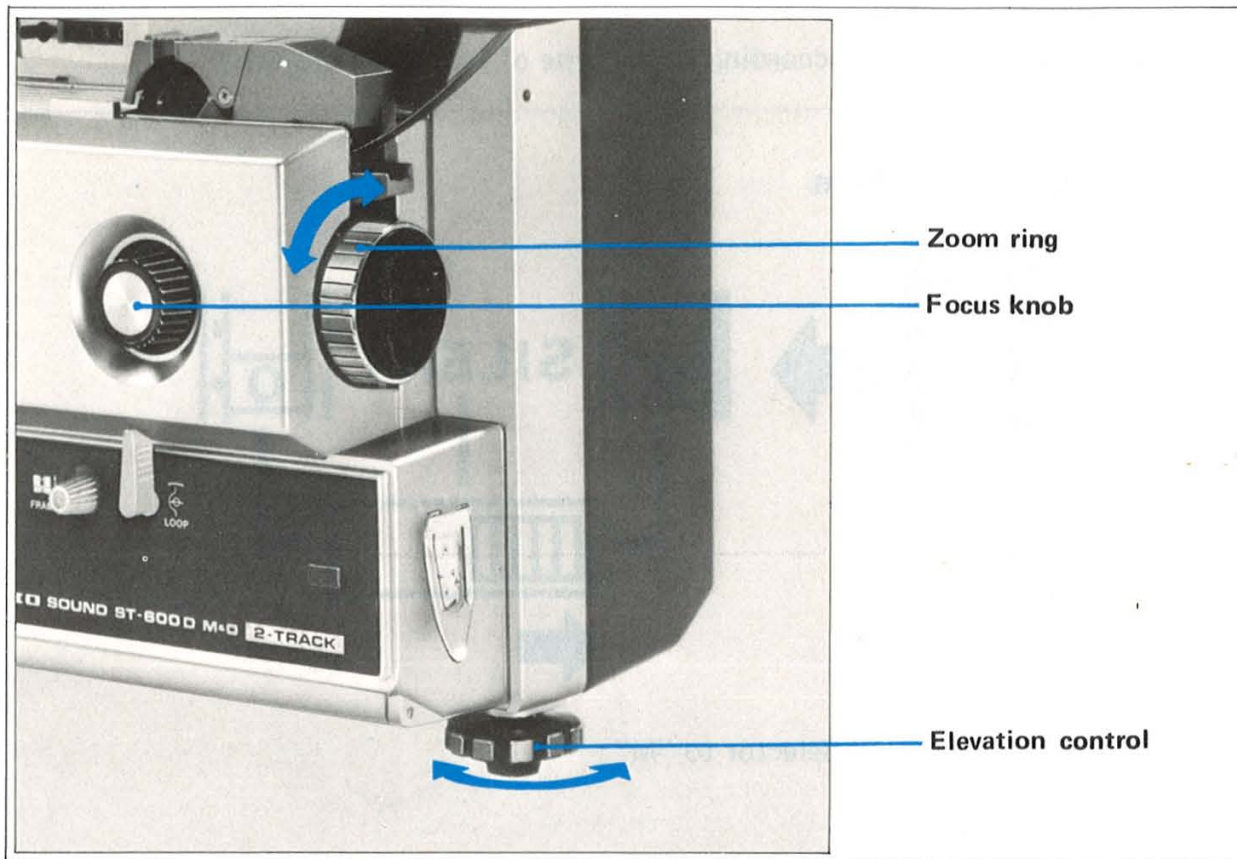
- 2 Plug the power cord.




- 3 Pull both reel arms up into position.



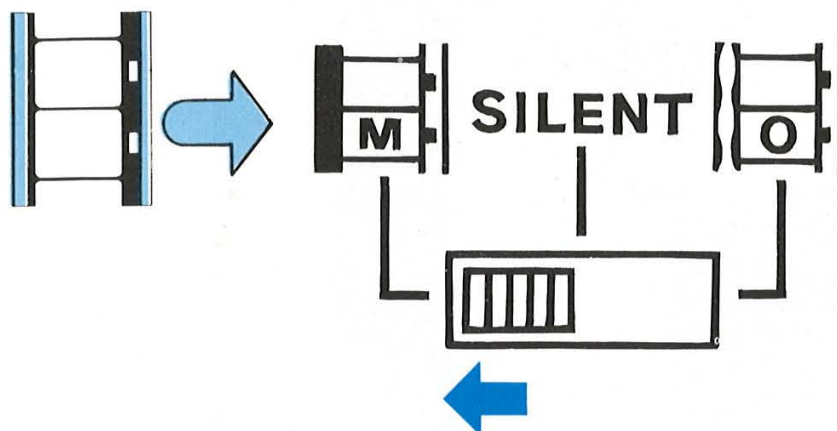
- 4 Place your film on the front arm and the take-up reel on the rear arm. Press the reel locks until the reels are snug against the spindles.



- 5 Before threading the film, advance the main control knob to  position and project the light on the screen for adjusting the picture position with use of the elevation control.
- 6 Set the appropriate screen size by turning the zoom ring.

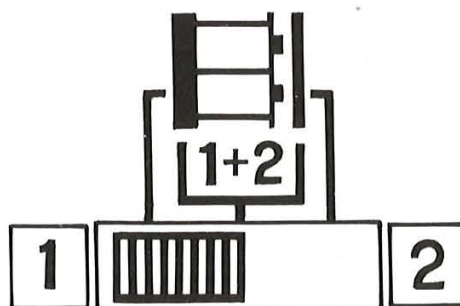
- 7 Select the sound mode according to the type of film to be projected.

Magnetic Sound Film



Set the Sound Selector to "M"

- ◇ Select the Track Selector.

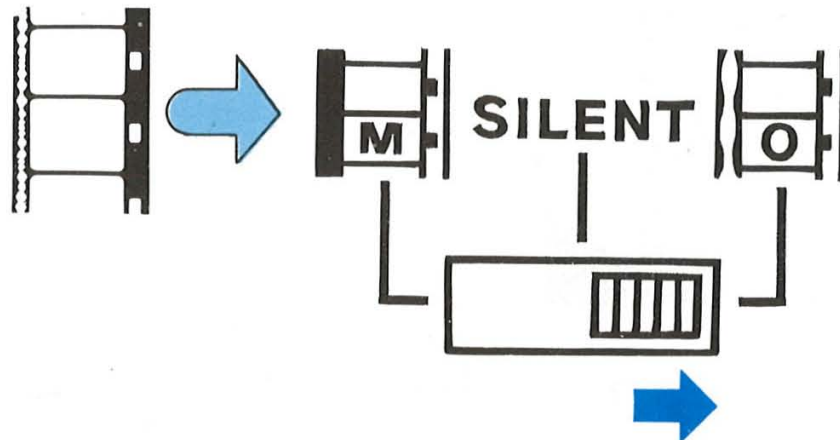


Select position 1 to playback Track 1.

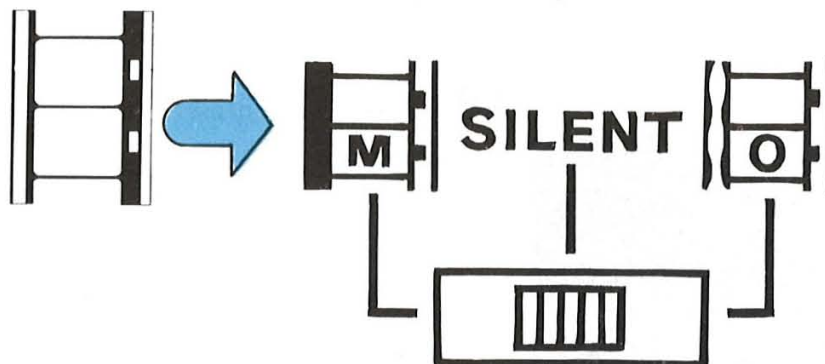
Select position 2 to playback Track 2.

Select position 1 + 2 to playback both tracks simultaneously.

Optical Sound Film (Model M-O only)

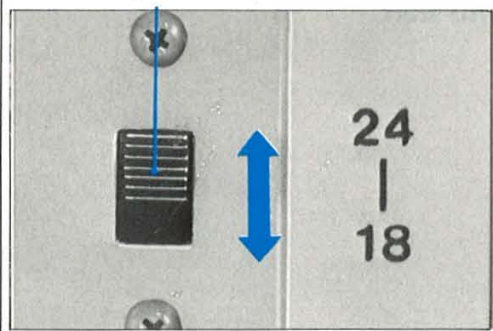


Set the Sound Selector to "O".



Set the Sound Selector to "SILENT".

Projection speed selector

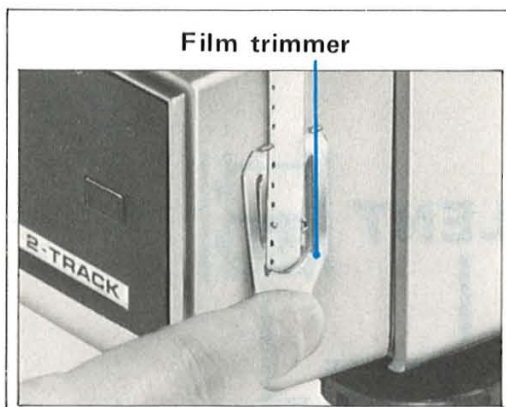


- 8 Select the proper projection speed, either 24 fps (UP) or 18 fps (DOWN).

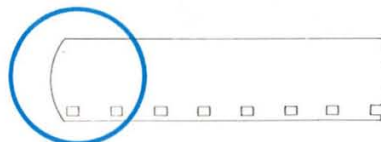
Important:

Be sure the motor is OFF when changing projection speed.

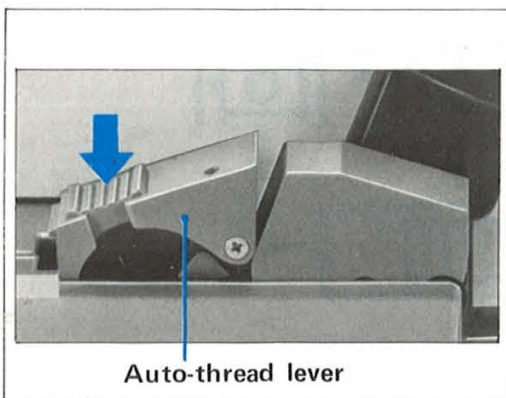
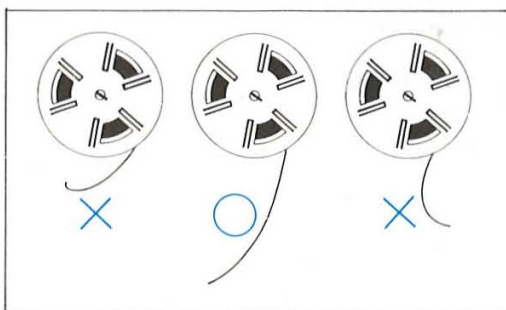
Sound Projection



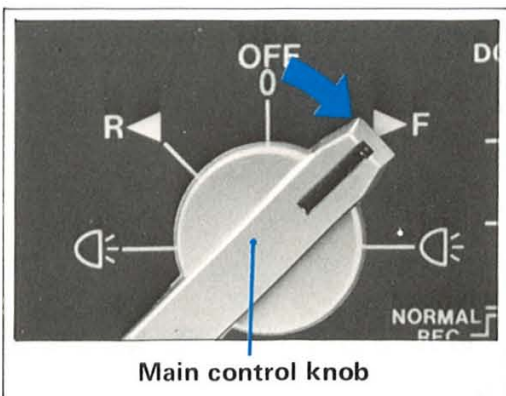
- 1 To insure smooth automatic thread, trim the end of the film leader with the film trimmer. Locate a film perforation over the fixed pin and trim off the end of the film.



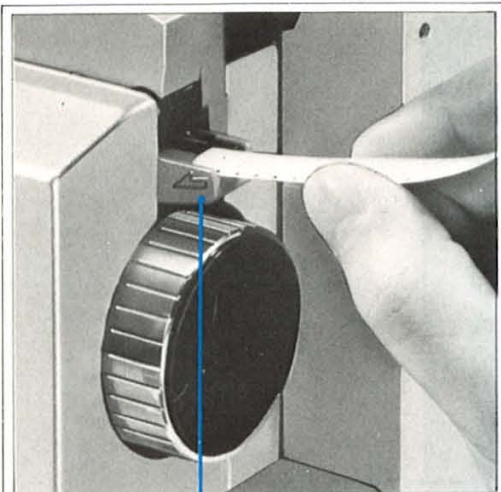
- Note:** When the tip of the leader is bent or snapped, trim off as illustrated. Be sure to prepare a straight leader without any bend or snap as illustrated.



- 2 Depress the green auto thread lever until it locks.



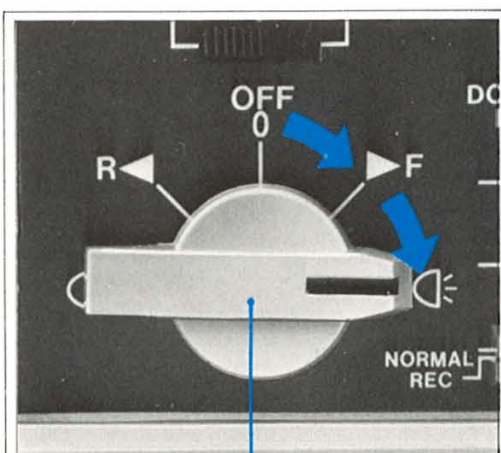
- 3 Advance the motor switch to position **F**. The motor will start.



Film thread slot

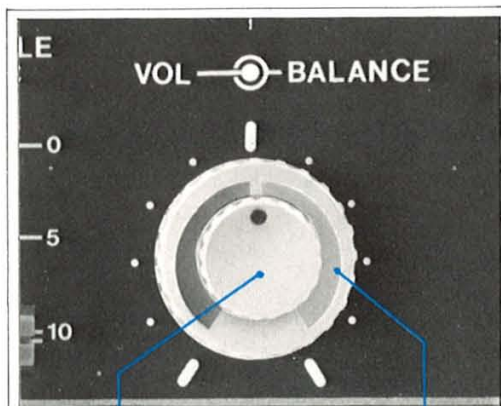
- 4 Insert the film leader into the thread slot as indicated by the red arrow. The film will automatically thread to the take-up reel through the film guide.

CAUTION: If the film fails to attach itself to the take-up reel, reverse the main control knob to the OFF position and then attach the leader to the take-up reel manually.



Main control knob

- 5 Set the main control knob to the OFF position to turn the lamp ON. With this operation, the auto-thread lever will release automatically.



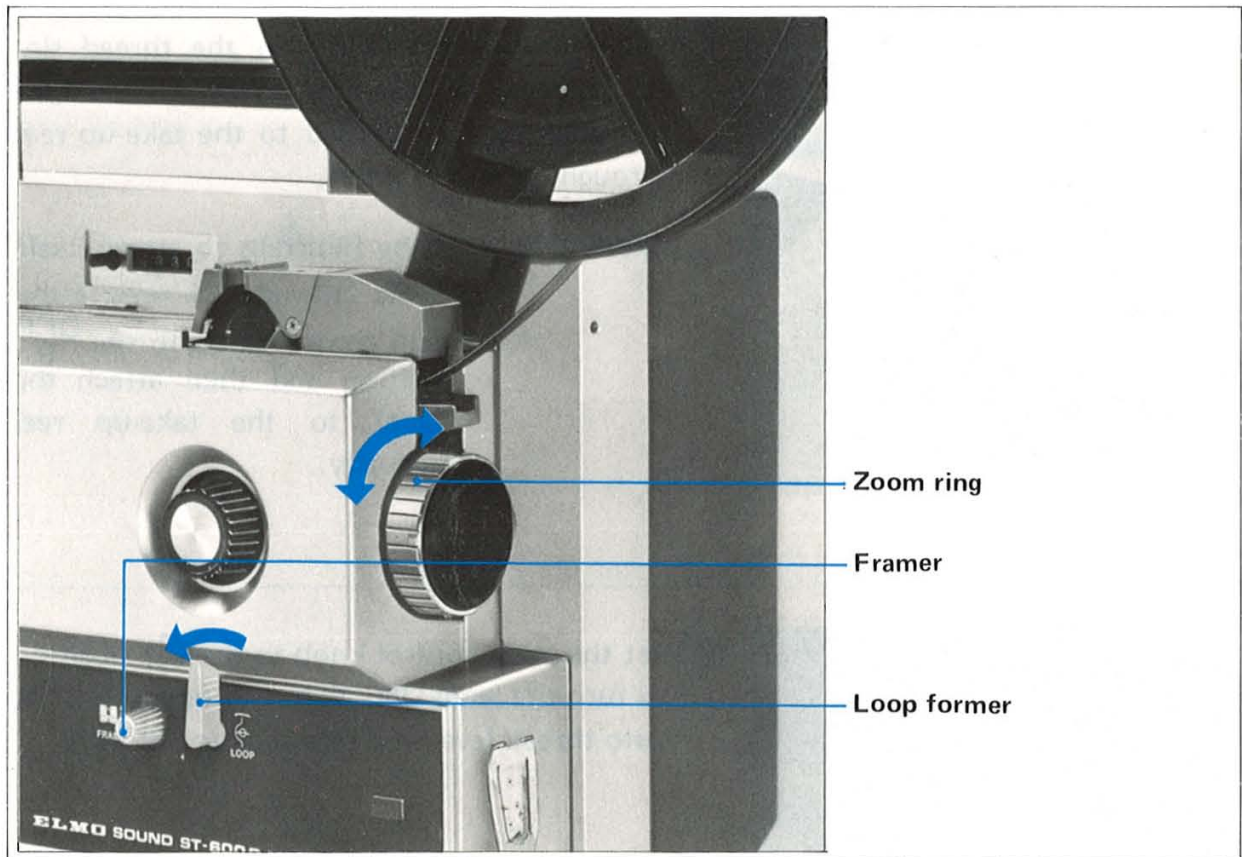
Volume control

Balance control

- 6 Adjust the volume by turning the volume control knob. [Outside knob is balance control. (Refer to page 5.)]

Note: The replayed sound is inaudible if the motor switch is set at other than the OFF position.

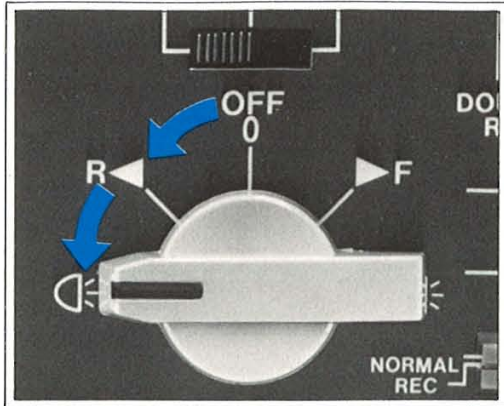
Image Adjustment




- A** Adjust the picture size to the screen by turning the zoom ring.
- B** Adjust the framer to eliminate frame line.
- C** Press the loop former to restore the film loop if lost during projection.

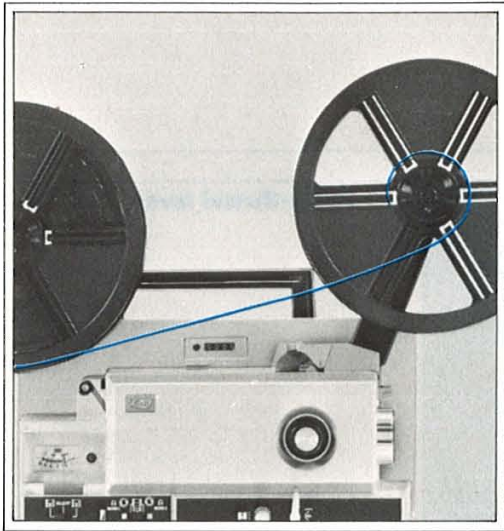
Note: When the film loop is lost during projection, check the film's perforations and splices after projection is over.

Reverse Projection

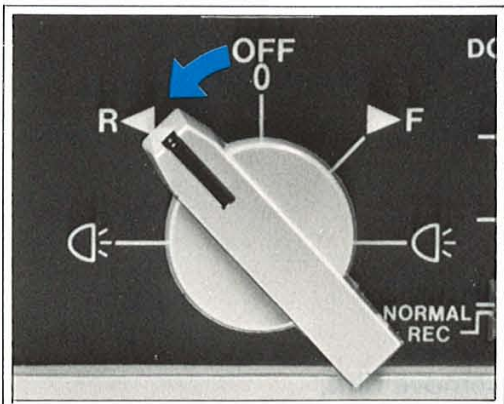



- 1 Advance the main control knob counterclockwise to the  position.

Rewinding the Film

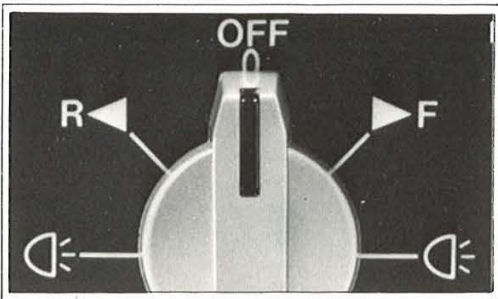


- 1 After projection is finished, wind the film back on the feed reel.

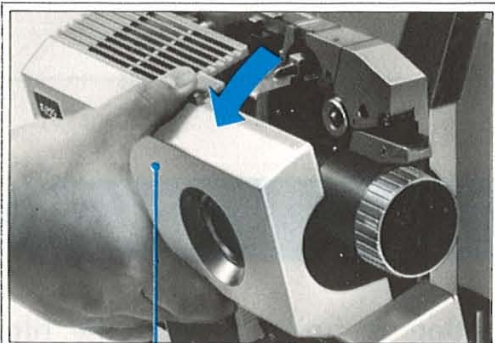


- 2 Advance the main control knob to the R  position and the film is rewound automatically.

Removing the Film During Midway Projection

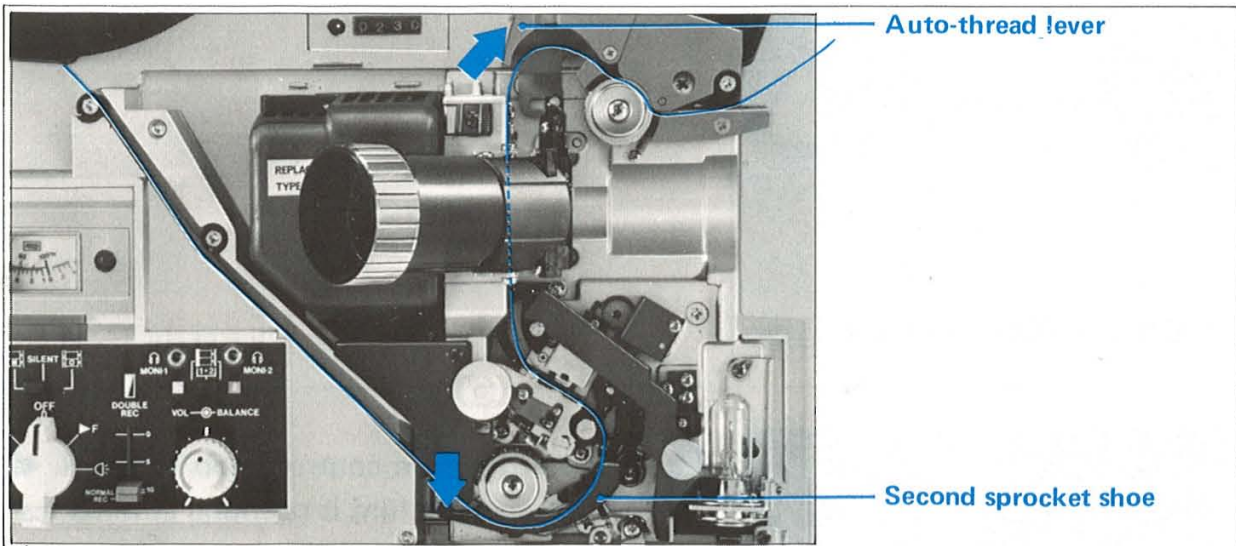


- 1 Turn the main control knob to the OFF
0 position.



Cover

- 2 Open the cover by pulling the top toward yourself.



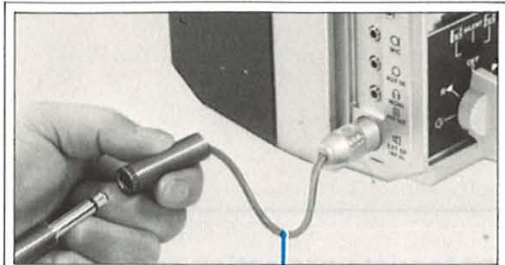
- 3 Swing the lens barrel to the arrow direction.
- 4 Open the auto thread lever upward and remove film.
- 5 Press the second sprocket shoe downward and remove film.

Sound Options

■ Extension Speakers



- When using Elmo extension speakers, (Twin two-way or ES-650), connect the speaker line to EXT. SP. connector.

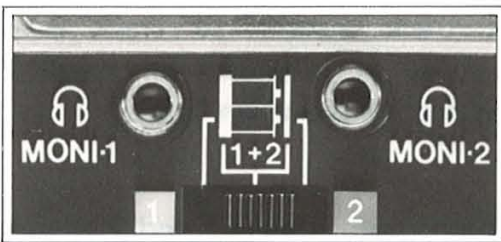


Adaptor (SC-002) Cord

- When adapting your own extension speaker, the optional SC-002 adaptor cord with 6φ jack can be used for connecting a speaker line with EXT. SP. connector.

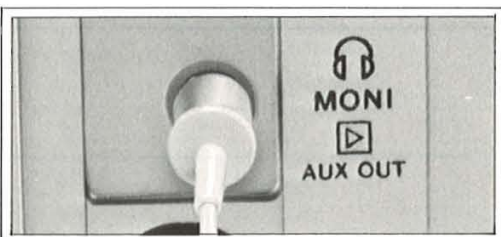
- Note:**
1. Be sure to use speakers with an impedance rating of 8 ohms.
 2. Be careful not to short the speaker circuit. If shorted by accident, a circuit protective device cuts off the power to the amplifier automatically. In such a case, unplug the power cord and leave it as it is for 20 to 30 seconds. By doing so, the amplifier can be restored.

■ Reproducing Sound Through a Stereo Amplifier



- Connect the green monitor jacks with input jacks on a stereo set by the accessory cord MC-006. (Connect the green monitor jack 1 with left channel, and the green monitor jack 2 with right channel.)

■ Using an Earphone or Headset

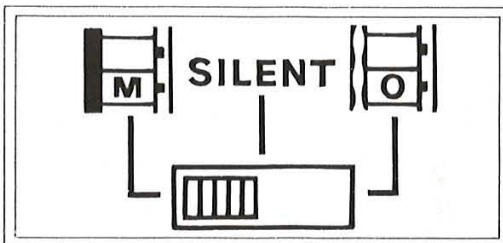


- Connect the earphone or headset to the monitor jack. In this case, sound will not playback through the built-in or extension speakers.

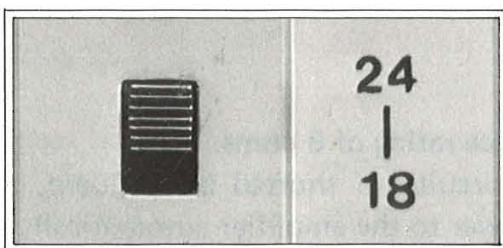
RECORDING

How to Record on Two Tracks

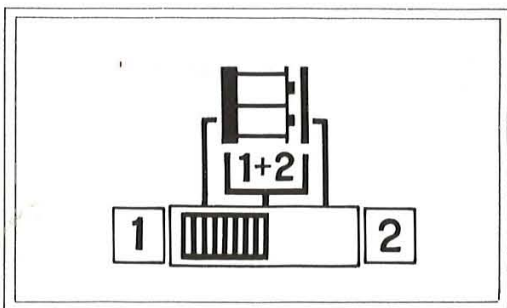
- 1 Be sure both edges of your film are magnetically coated. If just one edge is coated, only half of the projector's capabilities can be utilized.



- 2 Set the sound selector to "M".
(Model M-O only)



- 3 Select the appropriate projection speed, either 24 fps (UP) or 18 fps (DOWN), in conformity with the speed at which the picture has been taken.



- 4 Set the track selector either to Track 1 or Track 2.
The sync-film carries sync-sound on Track 1. So, set the track selector to Track 2 to build new music or narration on Track 2 without affecting the sound on Track 1.

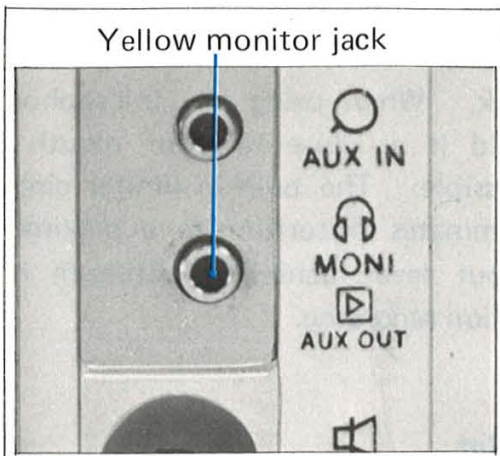
- Note:**
1. With the track selector at 1 + 2 position, both Tracks 1 and 2 cannot be recorded simultaneously.
 2. If a new sound is overlapped on a previously recorded track, the previous sound is erased.

- 5 Load the projector with film.

- 6 Connect record input lines.

■ Monitor Jacks

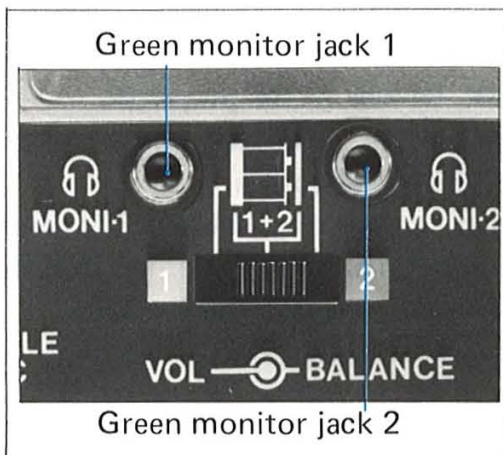
- ◆ Yellow and Green jacks are provided on the rear panel for monitoring sound through an earphone or headset.



● Yellow Monitor Jack

Sounds being recorded or played back can be monitored by connecting an earphone or a headset to this jack. (Impedance: 16 ohms).

Sound will not play back through built-in or extension speaker.



● Green Monitor Jacks

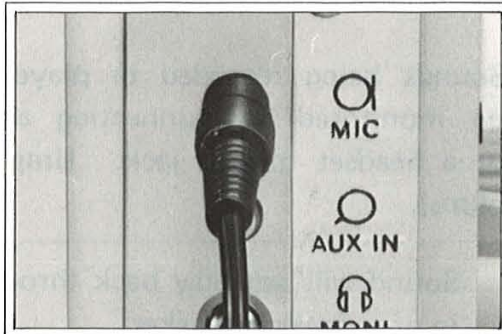
Track 1 is monitored from jack 1.
Track 2 is monitored from jack 2.
These jacks can also be used to transfer sound from one track to the other. (see page 28.)

1. Monitoring playback only is possible. Monitoring during recording is not possible with green jacks.
2. Monitoring level is preset for the optimum monitoring through the earphone or headset of impedance 600 ohms, but the earphone or headset of 16 ohms can be used.
3. Monitoring from the green jacks will not cut out built-in or extension speaker.

■ Input Jacks

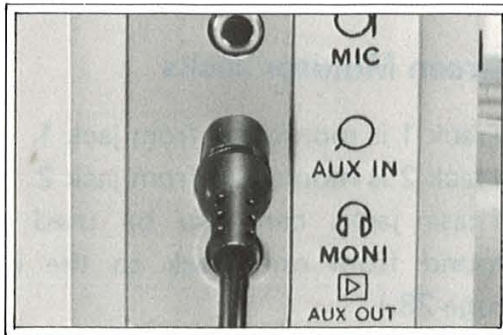
- ◆ This projector is provided with two input jacks: MIC and AUX IN.

● Microphone Jack (MIC)



Connect the microphone plug to MIC jack. When using the microphone, hold it as close to your mouth as possible. The built-in limiter circuit eliminates distortion to a maximum input level, achieving optimum narration recording.

● Tape Recorder, Tuner, & Stereo Set

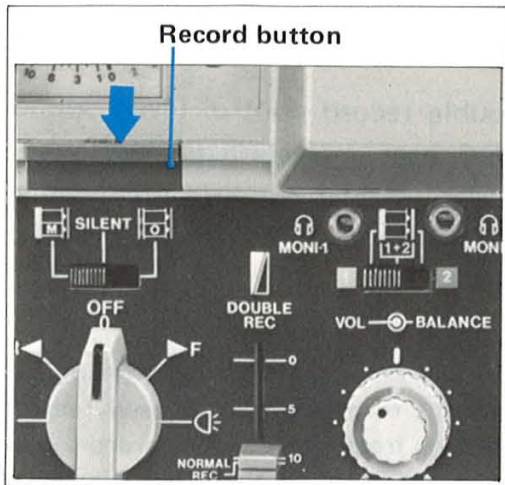


Connect AUX. OUT jack of the tape recorder, tuner, or, stereo set, to the AUX. IN jack of the projector.

With AUX. IN jack, only manual recording is effective.

When connecting with a 2-channel stereophonic unit, use an MC-003 stereo-to-monaural adaptor cord.

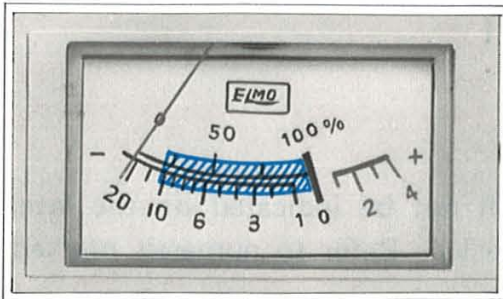
- When recording from a recorder or player without an AUX. OUT or LINE OUT jack, connect AUX. IN jack of the projector to either EARPHONE or EXT. SP. receptacle of the unit with an accessory cord MC-009. Refer to Page 40 for accessory cords.



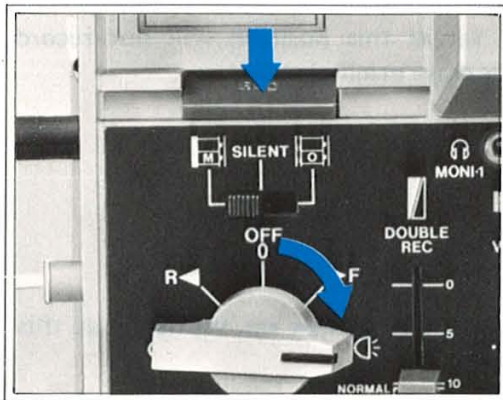
7 Depress the record button and the record lamp comes on.

Adjust the sound input level by turning the volume control clockwise while checking the recording level on the level meter.

Adjust the level in such a way that the needle of the level meter stays within the shaded zone (from -10 to 0) in the figure at left.

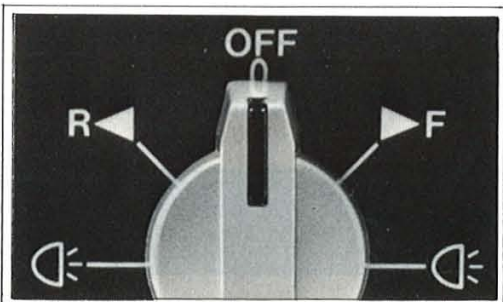


When recording on Track 2 of a film with sound on Track 1, it is recommended to make test recording to adjust the recording level to the one on Track 1.



8 Start Recording

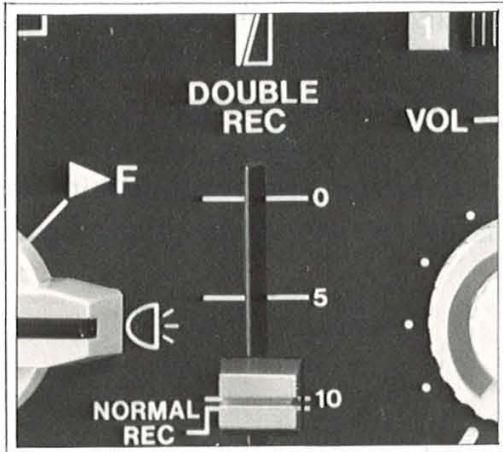
Advance the main control knob clockwise to the **F** position while depressing the record button.



9 Stop Recording

Turn the main control knob to the **OFF** position.

Double recording



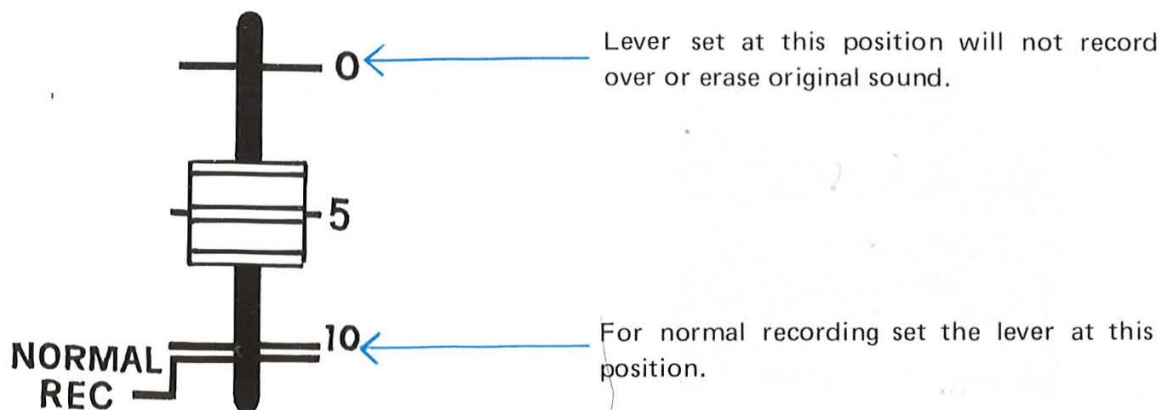
With the double record control lever, sound can be added over a recorded track without erasing the original sound. For normal recording, set the lever at the NORMAL REC position.

Note:

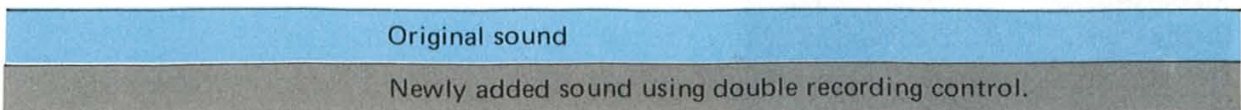
In case of double recording, after-recording sound is erased by the recording bias of newly added sound. The high frequency of prerecorded sound is apt to be erased more than low frequency sound by the bias.

Operating double record control

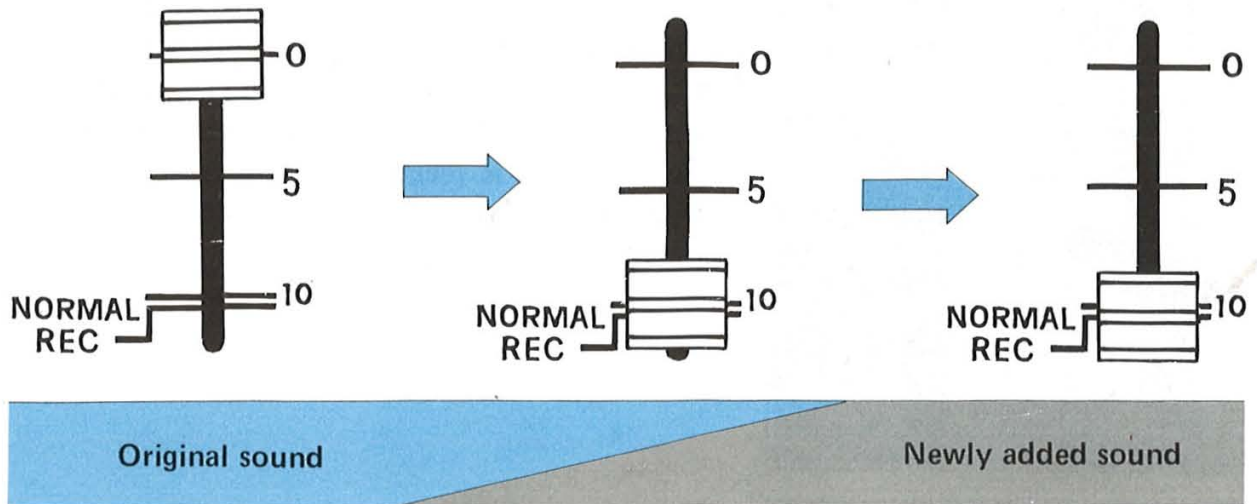
During double recording, the recording level will not be indicated on the level meter nor can it be checked through monitor jacks. Refer to numerals marked by the lever groove to set the proper recording level.



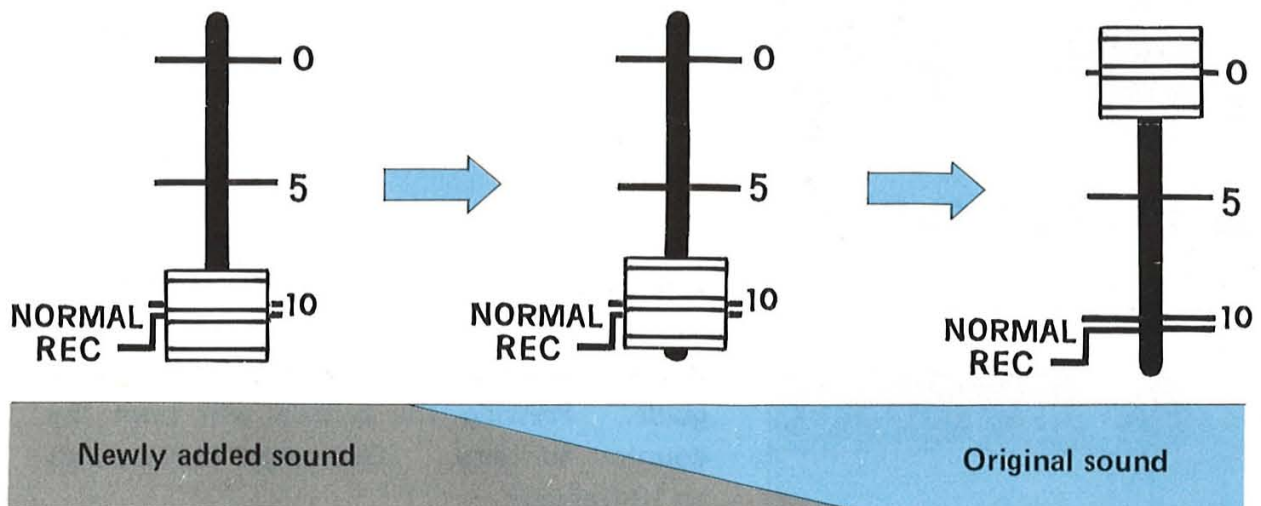
- 1 With the lever at numeral 5 recording level is nearly equal to original sound.



- 2 By sliding the double record control lever slowly to NORMAL REC the added sound will gradually dominate the original sound. To the listener, it will seem like the original sound has dissolved into the newly added sound. This effect is known as "lap dissolve" or "overlap."

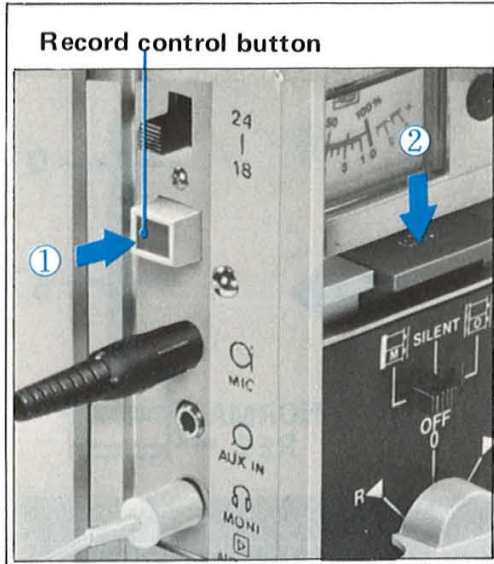


- 3 Sliding the lever from NORMAL REC back to 0 reduces the added sound to zero with the original sound again dominating the track. This time it seems like the added sound has dissolved back into the original sound.



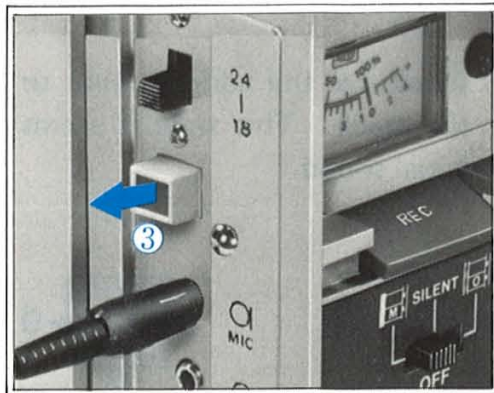
The illustration shows how the newly added sound is recorded over the original sound and is again dominated by the original sound.

Record Control



Record Control Button

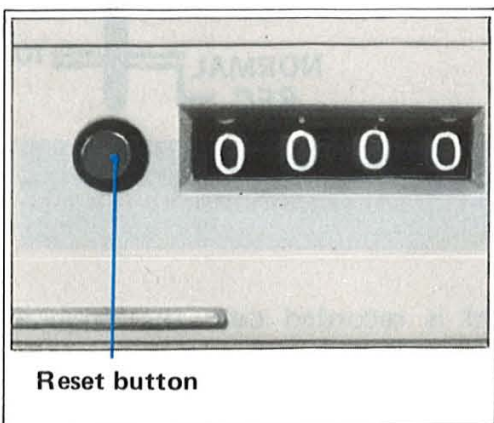
This button allows you to make spot recordings without stopping the projector. Depress the record control button (1) together with the record button (2) when the desired film position is reached. Release your finger from the record control button (1), and the record button (2) is locked.



How to Release Record Control Button

Just depress the record control button, and the recording setup is released. This procedure permits you to resume playback from the recording position without stopping the projector.



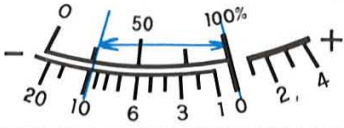
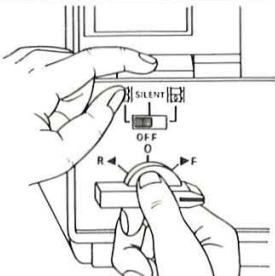
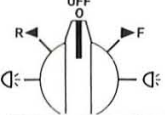
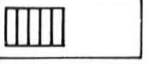
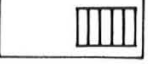
Frame Counter



Any spot on the sound track of the film can be located simply by using the four digits displayed on the frame counter as a guide. Pressing the button will reset the counter to zero. (One digit corresponds to 18 frames.)

Normal Recording

When recording on either track, all controls must be set as shown in the following table.

		Track 1 recording/playback	Track 2 recording/playback
Recording	Track selector	 position 1	 position 2
	Input jack	Connect the microphone to the MIC jack and the tape recorder, or other external sound source, to the AUX IN jack.	
	Volume control	Adjust the recording level with the volume control knob.	
	Double record	Set the lever at NORMAL REC position.	
	Record button	Depress to record.	
Monitoring	Connect the earphone or headset to the yellow monitor jack.		
Releasing recording operation		Setting the main control knob to OFF automatically releases record operation.	
Playback	Track selector	 position 1	 position 2

Note:

When you finish recording without monitoring the sound source thru a headset or earphone, turn the volume control fully off, before turning the motor switch off. This will prevent excess volume when you play back the recording.

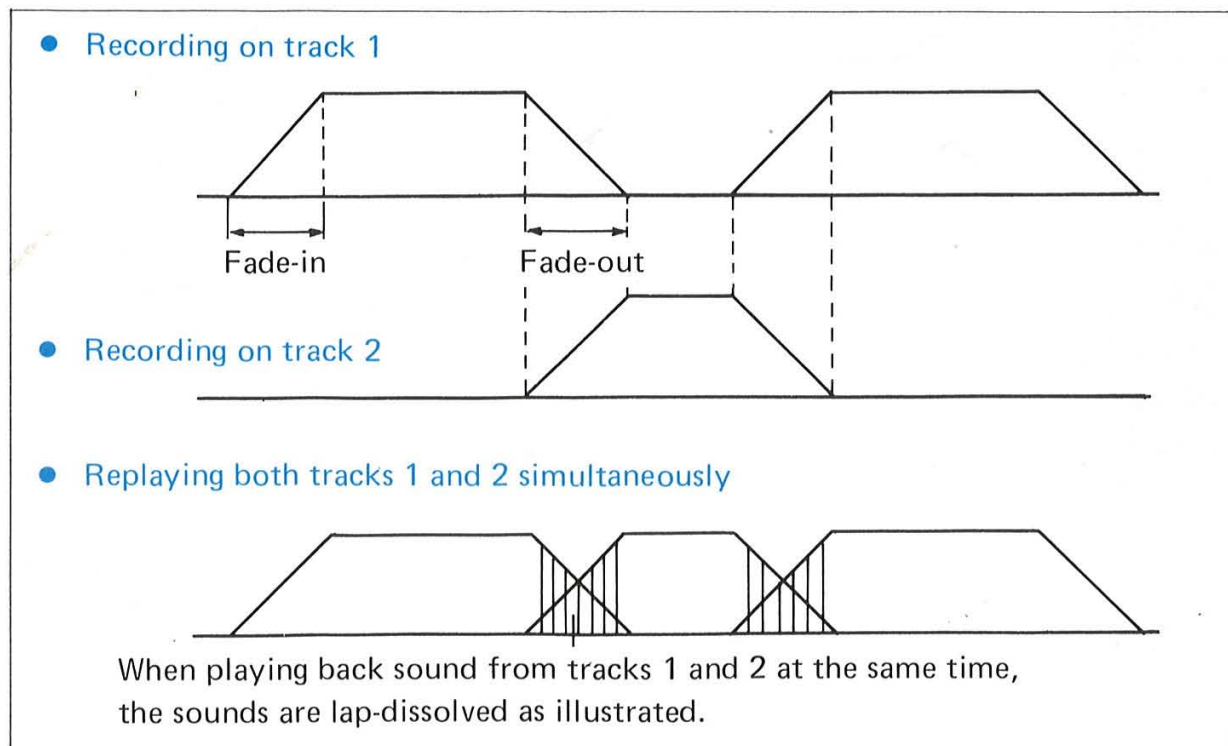
Recording and Playback Advantages of the Two Track System

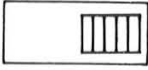
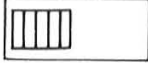
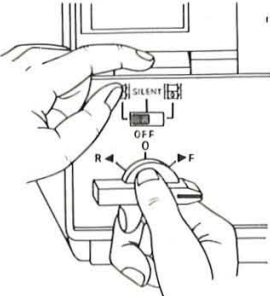
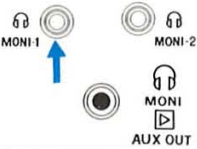
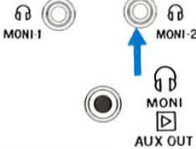
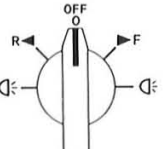
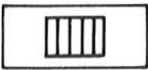
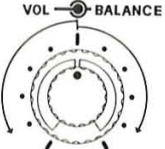
Because sound can be recorded separately on each track and then played back together in sync, planning, editing and building sound tracks is made easier.

- After sound has been recorded on track 1, complementary sound effects, music or narration can be easily added on track 2. By monitoring track 1 through the green monitor jack, track 2 can be easily built up and synchronized with track 1. Track 2 playback can be monitored through the yellow monitor jack.

Prior to the recording, be sure that the track selector is properly set.

By using fade in/out on both tracks 1 and 2, sound recording (as illustrated) is possible. (When making fade ins and fade outs, adjust the recording level with the volume control knob.)



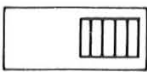
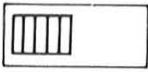
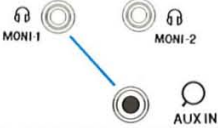
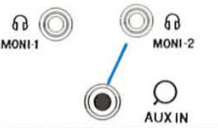
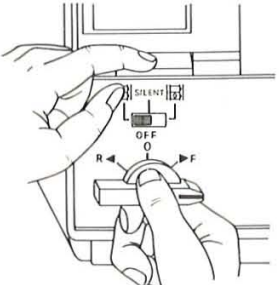
		Recording track 2 while monitoring track 1	Recording track 1 while monitoring track 2	
Recording	Track selector	 <p>position 2</p>	 <p>position 1</p>	
	Input jack	Connect the microphone to the MIC jack and a tape recorder or other sound source to the AUX IN jack.		
	Volume control	Adjust the recording level with the volume control knob.		
	Double record control	Be sure the double record control lever is set at the NORMAL REC position.		
	Record button	Set the record button to recording position.		
Monitoring	 <p>Connect the earphone to the green monitor jack 1 to monitor track 1. Monitor track 2 through the yellow monitor jack.</p>	 <p>Monitor track 2 through the green monitor jack 2. Monitor track 1 through the yellow monitor jack.</p>		
Releasing recording operation		Setting the motor switch to OFF automatically releases recording operation.		
Playback	Track selector		Set track selector to 1 – 2.	
	Balance control		This knob is normally set in the middle. Adjust, to balance playback levels of both tracks.	

Track Transfer

This method is used to transfer sound from one track to the other. In addition it is possible to add and mix sound to the original track during transfer.

Note:

During transfer, original track is not erased.

		Sound transfer from track 1 to track 2	Sound transfer from track 2 to track 1
Recording	Track selector	 position 2	 position 1
	Input jack	 <p>Connect the green monitor jack 1 to AUX IN with connection cord (MC-018)</p>	 <p>Connect the green monitor jack 2 to AUX IN with connection cord (MC-018)</p>
	Double record control	Be sure the double record control lever is set at NORMAL REC position	
	Volume control	Adjust the Recording level after starting the projector.	
	Record button		

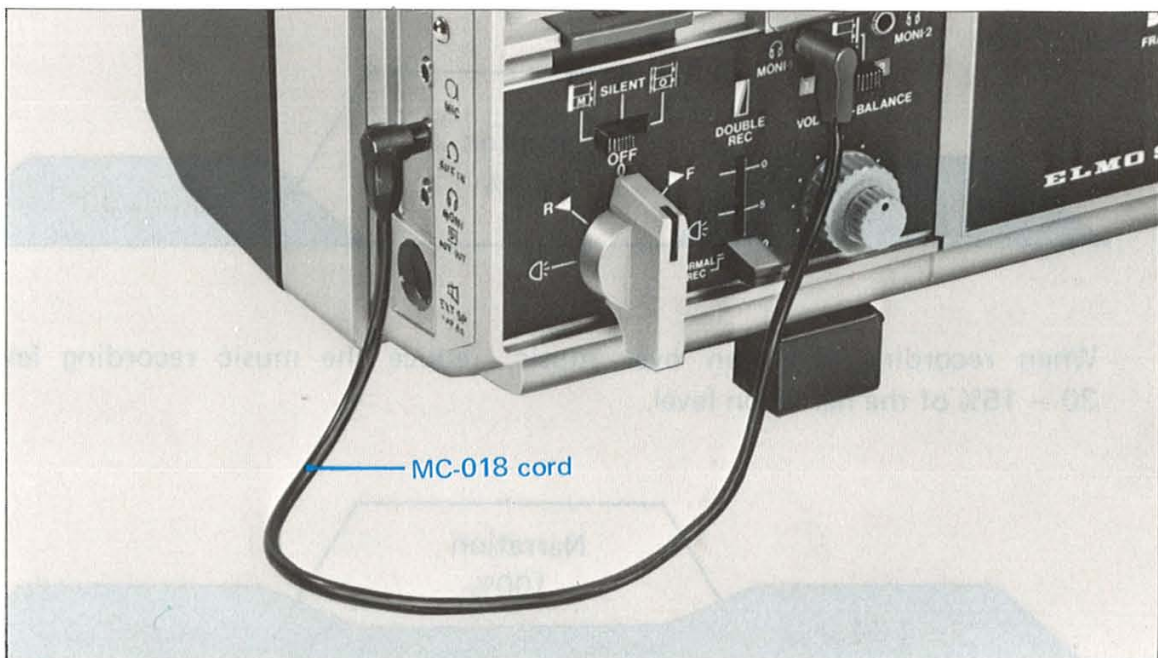
■ Connecting Cord

- To transfer sound from track 1 to track 2, connect the green monitor jack 1, to AUX IN jack with the MC-018 cord. (To transfer from track 2 to track 1, use green monitor jack 2.)

- Mixing can also be accomplished when a microphone or other sound sources are connected to the MX-4 four channel mixer. The mixer is connected to the MIC jack on the projector.

Note:

MIC jack can be used as an input jack for low level sound sources. When connecting the output of tape recorder directly to this MIC jack, use the accessory cord MC-010.



■ Adjusting the Input Level

Turn the main control knob to F while depressing the record button.
Adjust the input level with the volume control knob while observing the level meter.

Note:

When transferring sound from one track to the other, a loud feed back may occur when the volume control is turned too far. (In this case, level meter swings extremely to the RH end of meter range.) Adjust the volume control to eliminate the feed back.

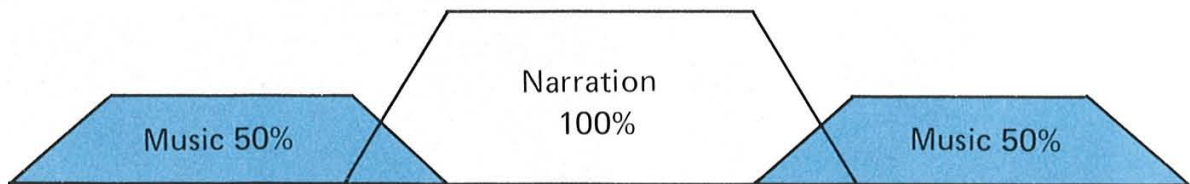
Mixing

Mixing is a method used to combine and blend sounds from two or more sources onto one sound track. (For cord connections, see page 20.)

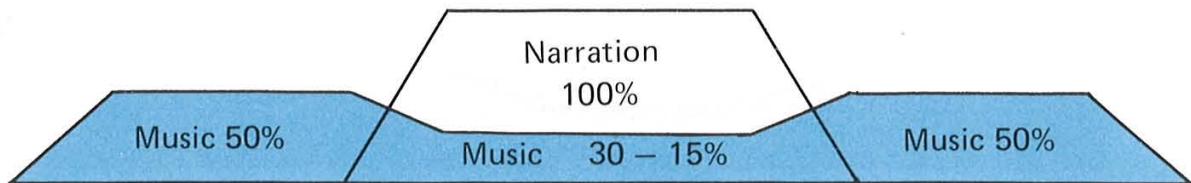
Mixing can be done in combination with double recording on either track or can also be done during transfer from one track to the other. This technique will enable you to build a sophisticated sound track with very interesting sound effects. Become familiar with the fundamentals of mixing to make full use of its applications.

● Music/Narration Level Adjustment

Due to the characteristics of the human ear, music is heard at a louder level than narration. Therefore, be sure to adjust music to 50% of the narration recording level.



When recording narration over music, reduce the music recording level to 30 – 15% of the narration level.



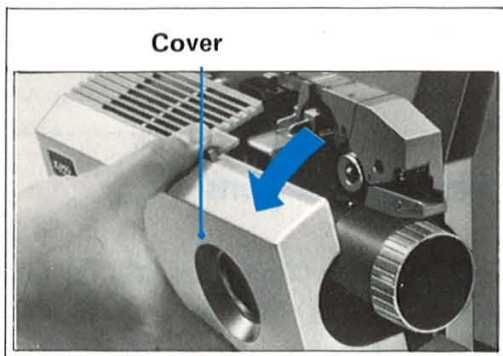
● Setting AUX IN and MIC Recording Levels

Set the recording level with the volume control knob when recording sound through MIC jack. When recording sound through AUX IN jack, adjust the recording level with the volume knob of sound source (tape recorder, record player set, etc.).

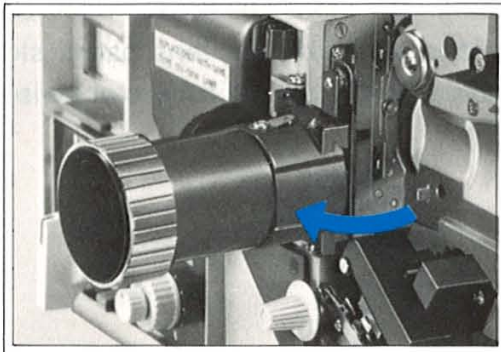
MAINTENANCE HINTS

Cleaning

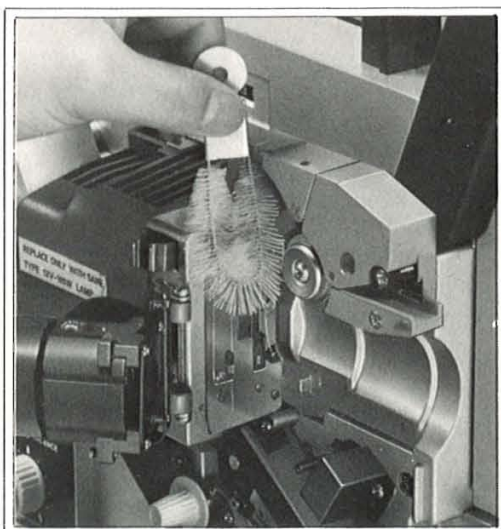
- Periodical cleaning of the projector is important for keeping it (and your films) in top condition.



- 1 Pull the cover down to open.

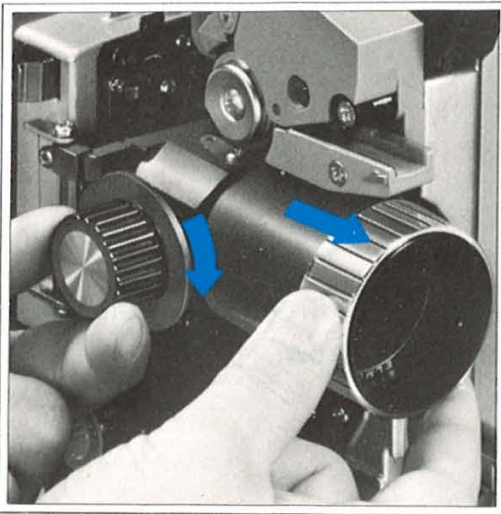


- 2 Swing the lens away from the projector in the direction of the arrow.



- 3 Gently clean the aperture and pressure plates with the supplied brushes or a soft lint-free cloth.

-
- 4 Dirt or dust deposits on the sound heads will degrade the sound playback quality. Clean the sound heads with a cotton swab or soft cloth. In this case, be sure to disconnect the power cord and set the main control knob at the OFF position.
- 0



■ How To Remove the Lens

Turn the focus knob clockwise as far as possible and pull the lens forward. Wipe the lens surface gently with a clean soft cloth or lens cleaning tissue. When putting the lens back in position, match the lens pin with the lens barrel slot with the focus knob turned fully clockwise.

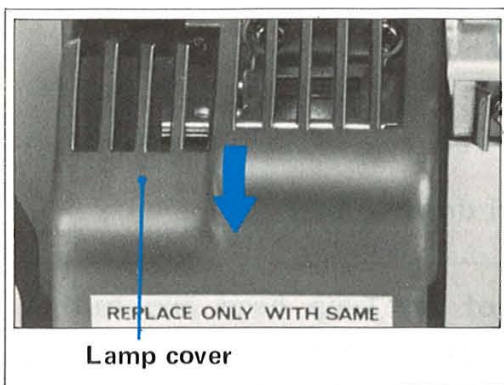
Replacing Lamp

- ◆ When replacing the lamp, be sure to unplug the power cord.

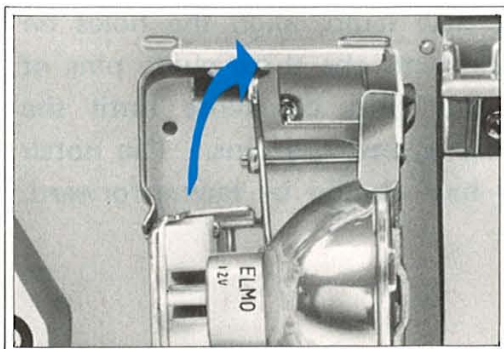
■ Projection Lamp

- Use a 12V-100W halogen lamp with cold mirror. (Code EFP)
- It's recommended to keep a spare lamp on hand in case of unexpected breakage.

- 1 Pull the cover down to open.

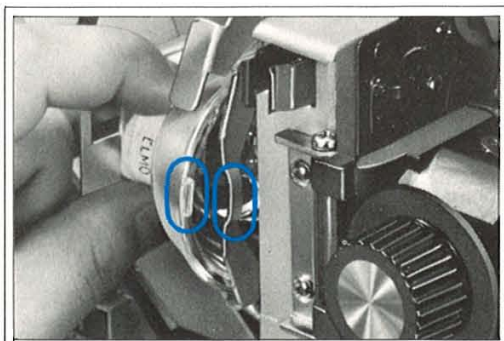


- 2 Take hold of the upper part of the lamp cover and turn toward yourself to remove.

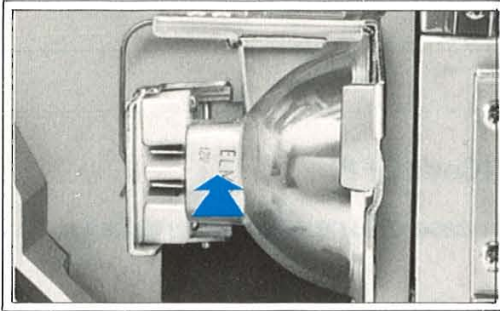


- 3 Push up the lamp ejector and the lamp will detach from the lamp socket.

Note: Be sure the lamp has cooled sufficiently before handling.



- 4 Place the protrusion of the lamp reflector edge facing towards you.



- 5 Insert the lamp all the way into the socket and swing down the lamp ejector.

Important:

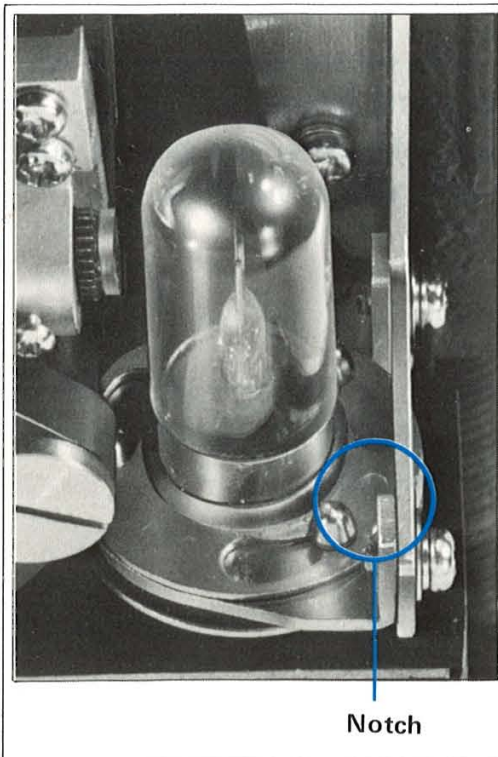
Avoid touching glass bulb area with your bare fingers. Oil from your fingers will affect the heat conductivity of the glass and will shorten the life of the bulb. Touch only the base or use cotton gloves or cloth when installing a new lamp.

■ Exciter Lamp (Model M-O only)

- Use exciter lamp ANSI code BRS or equivalent.

- 1 Pull the cover down to open.

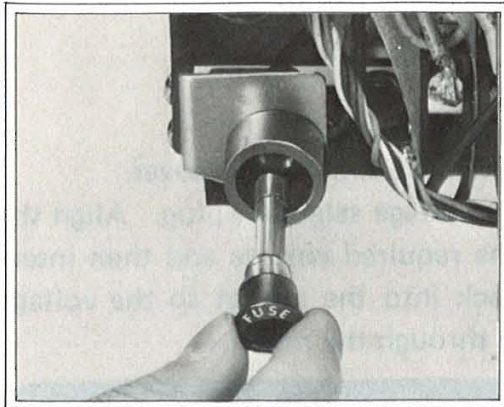
- 2 Take hold of the lamp head and turn it counterclockwise to remove.



- 3 To install a new lamp, align the holes on the lamp base with the three guide pins of the socket and turn clockwise until the holes are snug against the pins. The notch in the lamp base should be facing forward.

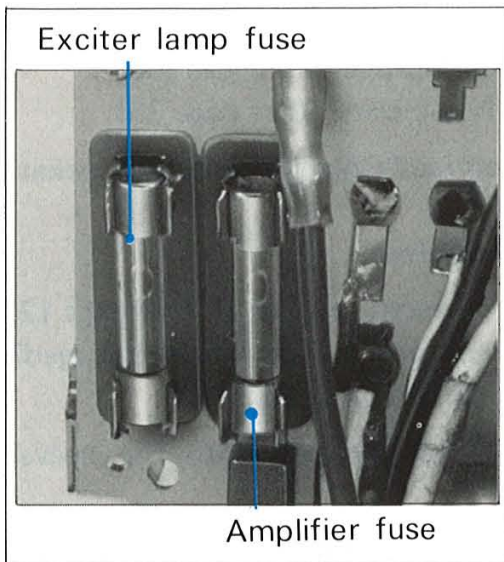
Replacing Fuses

When replacing the fuse, be sure to unplug the power cord.



■ Main Power Fuse

Turn the slotted head screw counterclockwise on the fuse box at the rear of the projector and pull it out.



■ Amplifier Fuse & Exciter Lamp Fuse

There are two fuses beside the transformer. The left one is for the exciter lamp and the right one for the amplifier.

- Don't use fuses other than those rated at specified value.
- Be sure to disconnect the power cord before replacing fuses.
- Remove both screws to take off the rear cover as shown.

Voltage Selection

Voltage can be adjusted to comply with electrical requirements of each country.

To American customers:

The projectors sold in the U.S. are designed for voltage alteration in the event that they are used in a foreign country. However, the projectors shipped from the factory are set for 115V AC operation and no alteration is needed when used in the U.S. If voltage alteration is necessary, please have it done by a qualified service personnel in order to prevent possible risk of electric shock.



To service man:

- 1) Disconnect power cord.
- 2) Loosen screws and remove rear cover.
- 3) Pull out the voltage selection plug. Align the notch to the required voltage and then insert the plug back into the socket so the voltage can be read through the notch.

Trouble-shooting Hints

Motor fails to start.

- Is the power cord properly plugged in?
- Is the power fuse blown? (See page 35)

Projection lamp fails to come on.

- Is the lamp correctly plugged into the socket? (See page 33)
- Is the lamp defective?

Film does not thread automatically to the take-up reel.

- Is film leader correctly trimmed? (See page 12)
- Are the perforations on the leader damaged?
- Is the film leader spliced correctly?

Screen image out of focus.

- Is the lens fitted correctly into the sleeve? (See page 32)

Either sound track fails to record or playback.

- Is the volume control turned up enough? (clockwise)
- Is the track selector at the correct position? (See page 4)
- Is the sound selector set correctly either at M or O? (See page 10)
- Is a fuse either in the amplifier or in the exciter lamp blown?

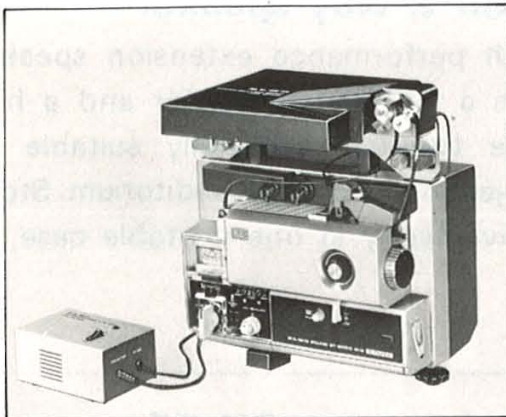
After checking the above items, if your trouble still persists, consult your nearest photo dealer or an authorized Elmo Service Centre.

Optional Accessories



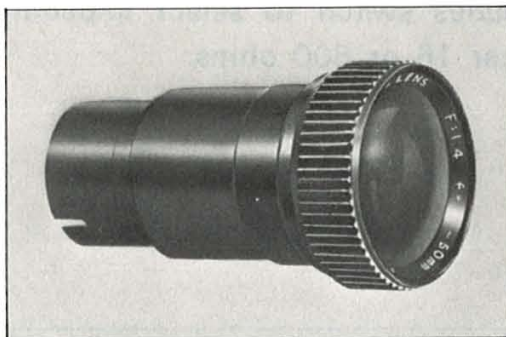
Viewer type 100

With the viewer type 100, you can show your films under daylight conditions. Use the ST-600D adapter to attach viewer to your projector.



Continuous loop projection device EF-400

No rewinding necessary. When attached to your ST-600D projector, EF-400 provides fully automatic and continuous projection. Equipped with loop-sensor and auto-stopper to automatically stop projection if the film breaks. Accepts up to 120m (400ft) of film.



Long-focus zoom lens

Sharp F1.4, 25-50mm long-focus zoom lens for projection in a large auditorium.



Fast zoom lens

Exceptionally bright wide-angle F1.1, 12.5-25mm zoom lens.



● **Extension speaker ES-650**

High-fidelity speakers mounted in wooden cabinet.

Rated input : 10W (max. 20W)



● **Twin 2-way speaker**

High performance extension speakers with a 10''(25cm) woofer and a horn type tweeter. Especially suitable for projection in a large auditorium. Stores conveniently in one portable case.



● **Headset type EH-75**

Includes switch to select impedance, either 16 or 600 ohms.

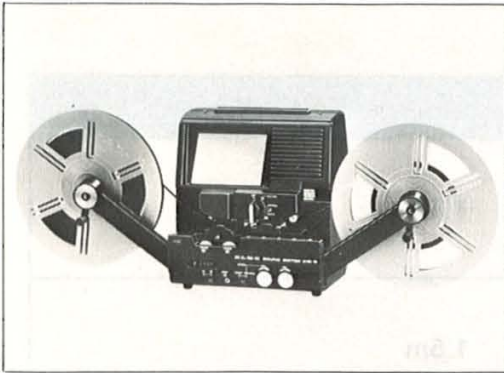


● **4-channel mixer type MX-4**

For mixing sound from four separate sources onto one track.

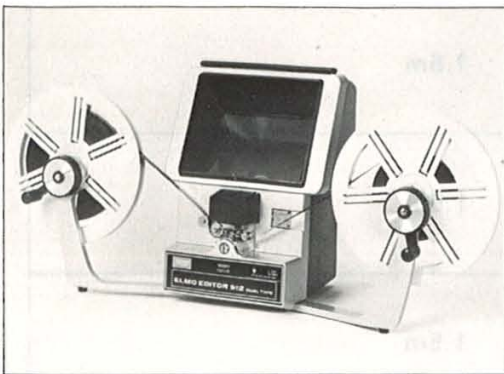
With this mixer you can perform professional fade-in, fade-out and overlapping.

Easily connects to tape recorder, record player and microphone.



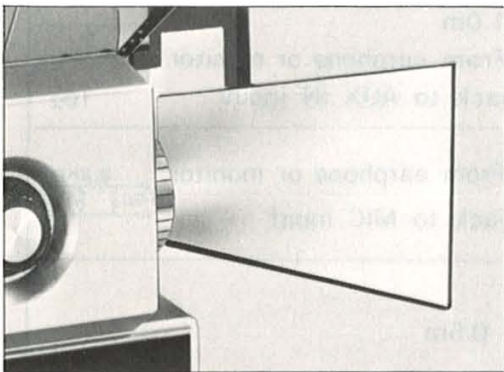
● Sound Editor 912/S

Incorporates magnetic sound reproduction facility for editing of Super 8/Single 8 sound film. Besides regular 18/24 fps projection, motor-driven speed can be freely set from 10 to 30 fps. Large film capacity of 240m (800ft).



● Editor 912

Accepts both Super 8 and Regular 8 film. Sound monitor, film counter and film cleaner are optional. An easy-to-handle, quality editor with a large, bright screen for producing fine sound or silent film.



● Daylight projection mirror

This accessory mirror provides a clear projection image under daylight conditions when used with the special Elmo translucent rear projection screens.



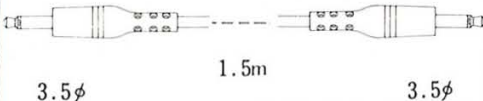

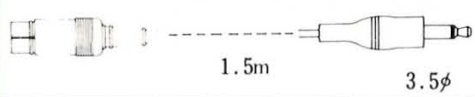
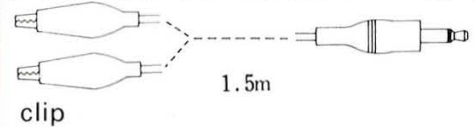
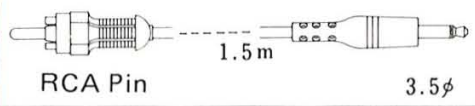
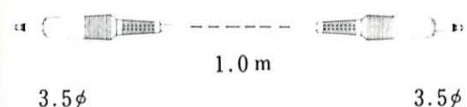
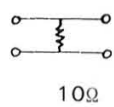

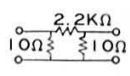
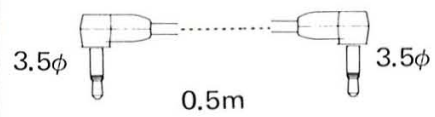

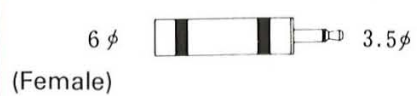
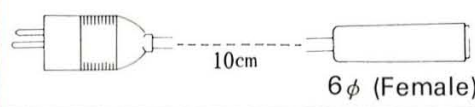
● Translucent screens

60 cm × 80 cm (23.6" × 31.5")

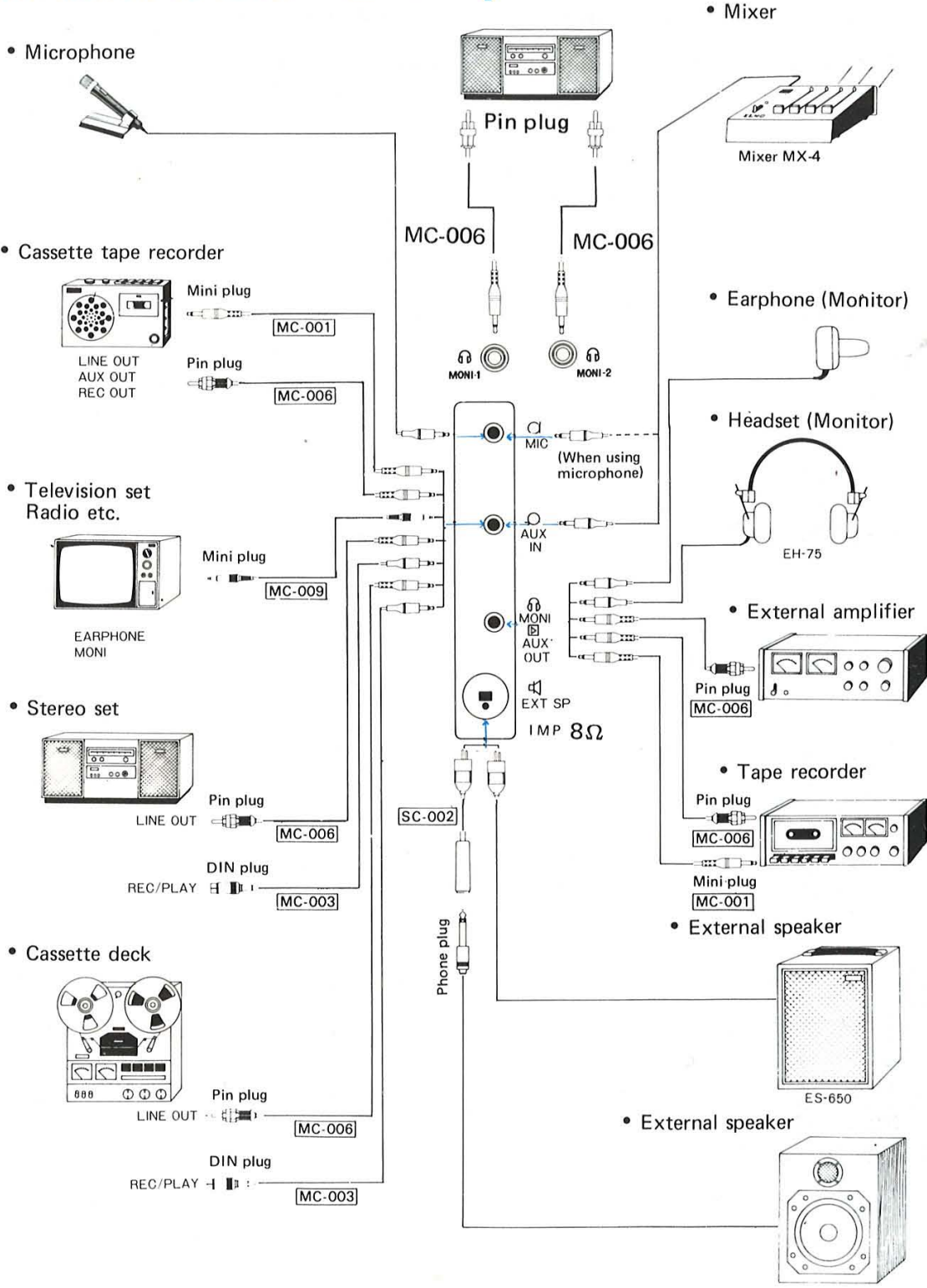
39 cm × 52 cm (15.4" × 20.5")

Special quality screens for rear projection under daylight condition.

● Accessory Cords

	Code No.	Specifications	Remarks	
Connection cord	MC-001	 1.5m 3.5φ 3.5φ	1.5m	
	MC-002	 1.5m 6φ 6φ	1.5m	
	MC-003	 1.5m 3.5φ	1.5m	
	MC-004	 1.5m clip	1.5m	
	MC-006	 1.5m RCA Pin 3.5φ	1.5m	
	MC-009	 1.0m 3.5φ 3.5φ	1.0m From earphone or monitor jack to AUX IN input	 10Ω
	MC-010	 3.5φ GREY 3.5φ	From earphone or monitor jack to MIC input	 2.2KΩ 10Ω 10Ω
MC-018	 0.5m 3.5φ 3.5φ	0.5m		
Adaptor	MP-001	 3.5φ (Female) 6φ		
	MP-002	 6φ (Female) 3.5φ		
	SC-002	 10cm 6φ (Female)	10cm	

● Connection Example



Projection Distance and Image Size

Focal length Distance	Wide 15mm Image size (cm)	Tele 25mm Image size (cm)	50mm (Optional accessories) Image size (cm)
1 m	26 x 35	15 x 20	7 x 10
1.5 m	39 x 52	23 x 31	11 x 15
2 m	52 x 70	31 x 42	15 x 20
2.5 m	66 x 88	39 x 52	19 x 26
3 m	79 x 106	47 x 63	23 x 31
5 m	133 x 178	79 x 106	39 x 53
10 m	266 x 356	160 x 213	79 x 106
15 m		240 x 320	119 x 160
20 m		320 x 428	160 x 213
30 m			240 x 320
40 m			320 x 428

Projection Time and Film Length

For Super 8/Single 8

Time (min.)	24 fps		18 fps		Time (min.)	24 fps		18 fps	
	m	ft	m	ft		m	ft	m	ft
1	6.1	20	4.6	15	19	115.8	380	86.9	285
2	12.2	40	9.1	30	20	121.9	400	91.4	300
3	18.3	60	13.7	45	21	128.0	420	96.0	315
4	24.4	80	18.3	60	22	134.1	440	100.6	330
5	30.5	100	22.9	75	23	140.2	460	105.2	345
6	36.6	120	27.4	90	24	146.3	480	109.7	360
7	42.7	140	32.0	105	25	152.4	500	114.3	375
8	48.8	160	36.6	120	26	158.5	520	118.9	390
9	54.9	180	41.1	135	27	164.4	540	123.5	405
10	61.0	200	45.7	150	28	170.7	560	128.0	420
11	67.1	220	50.3	165	29	176.8	580	132.6	435
12	73.2	240	54.9	180	30	182.9	600	137.2	450
13	79.2	260	59.4	195	31			141.8	465
14	85.4	280	64.0	210	32			146.3	480
15	91.4	300	68.6	225	33			150.9	495
16	97.6	320	73.2	240	34			155.5	510
17	103.6	340	77.7	255	35			160.0	525
18	109.7	360	82.3	270	40			182.9	600

Specifications

[PROJECTOR]

Power Source	:	Single phase AC 50/60Hz
Power Consumption	:	200W
Projection Speed	:	24 fps & 18 fps (Selector switch)
Motor	:	DC Magnet Motor
Film	:	Super 8/Single 8 Sound Film and Silent Film
Film Loading	:	Automatic
Reverse Projection	:	Possible
Reel Capacity	:	180 m (600 feet)
Manual Unloading	:	Possible
Frame Counter	:	One digit per 18 frames

[LIGHT SOURCE]

Projection Lamp	:	12V-100W Halogen lamp with cold mirror (Code EFP)
Projection Lens	:	F1.3, f = 15 – 25 mm zoom lens

[SOUND RECORDING & PLAYBACK]

Sound System	:	Model M-0: Magnetic/optical playback and magnetic recording. Model M: Magnetic playback and recording.
Two-Track Recording	:	Magnetic recording on both Tracks 1 and 2
Two-Track Playback	:	Both tracks can be played back simultaneously or independently.
Balance control	:	Both track levels can be balanced by balance control knob.
Automatic Recording (Limiter system)	:	Possible through use of MIC jack.
Spot Recording	:	Possible using the Record Control button.
Double recording	:	Possible at any portion on film during projection.
Track Transfer	:	Possible to transfer sound from Track 1 to 2 or vice versa.
Amplifier	:	IC = 3 pcs, Transistor = 2 pcs, Diode = 8 pcs
Amplifier Protective Circuit	:	Built in
Output	:	Music power output; 6W (8 Ohms) Continuous power output; (5%) 4W (8 Ohms)

Input Terminals	: MIC (Microphone) (Input impedance : 500 Ohms — 10 K Ohms) AUX. IN (Auxiliary) (Input impedance : 10 K Ohms) Mixing is possible using AUX IN and MIC jacks.
Output Terminals	: EXT. SP (Extension Speaker) (Impedance : 8 Ohms) MONI (Yellow monitor) (Earphone impedance : 8-16 Ohms) MONI 1 (Green monitor 1) MONI 2 (Green monitor 2) (Earphone impedance 600 Ohms. 16 Ohms is accepted.) Monitor outputs serve as AUX outputs. Separate monitoring of Track 1 and 2 possible and reproduction through a stereo set possible
Recording/Playback Head	: Special alloy magnetic head (Alternating bias system)
Erasing Head	: Ferrite Magnetic Head (Alternating erase-system)
Photoelectric Element	: Solar Battery (Model M-O)
Exciter Lamp	: 4V-0.75A Direct-current lighting (Model M-O)
Speaker	: Built-in 5" (12.5 cm) dynamic speaker
Microphone	: Dynamic type (Impedance : 500 Ohms)
Level Meter	: Built-in
Recording Indicator Lamp	: Light-Emitting-Diode
[ATTACHMENT]	: Auto reel 180 m (600 feet) Power cord Microphone set Earphone Connection cord MC-018 (Connection of green monitor and AUX IN jack) (Dust cover Aperture cleaning brushes) OPTIONAL

* Specifications are subject to change without prior notice.

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