

**8mm SOUND PROJECTOR**

**ELMO**  
**ST-1200D**

**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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# Specifications

## <Projector>

Power source:	Single phase AC, 50/60 Hz
Projection speed:	18 & 24 fps. (Lever changing)
Motor:	Induction motor
Usable film:	Super 8/Single 8 sound and silent film
Film loading:	Automatic
Reel capacity:	Max. 1200ft (360m)
Still picture projection:	Possible
Reverse projection:	Possible
Film rewinding:	High speed rewinding

## <Light source>

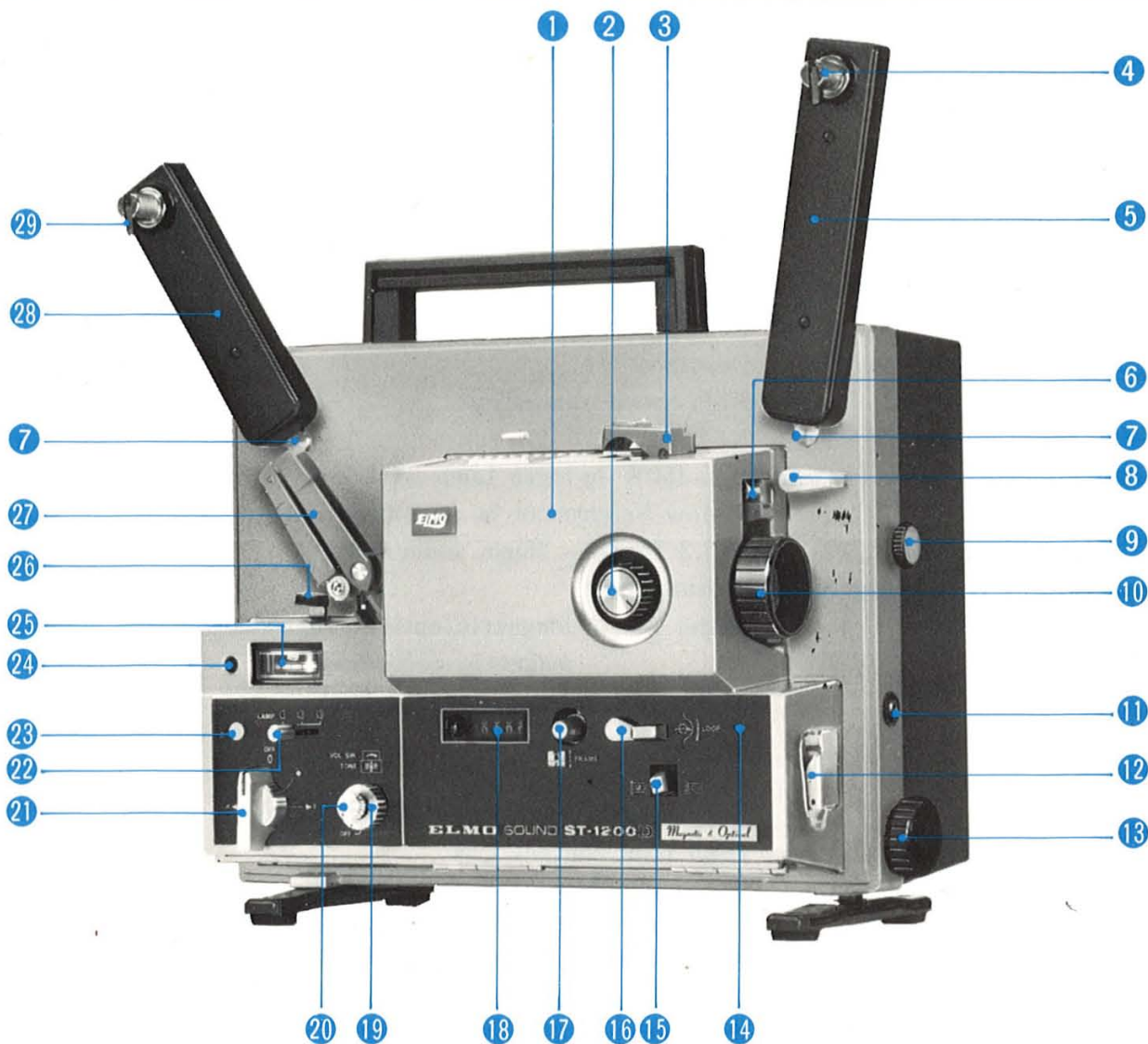
Projection lamp:	15V-150W halogen lamp with cold mirror Choice of hi-low brightness is possible.
Projection lens:	F 1.3 f=15 - 25mm zoom lens

## <Sound recording & reproduction>

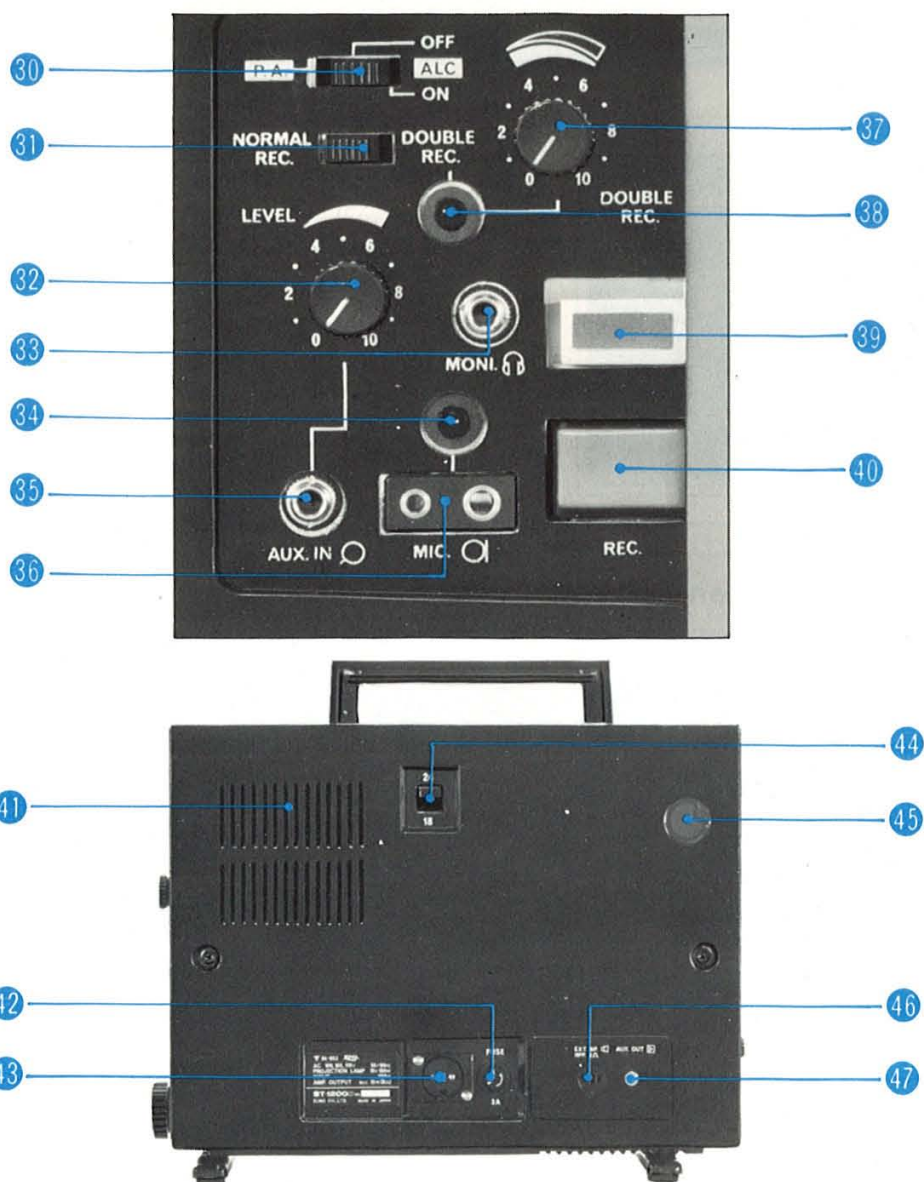
Sound system:	Model M-O ; Magnetic/optical reproduction and magnetic recording Model M ; Magnetic reproduction and recording
Amplifier:	IC circuit is built in. Music power output ; 15W Continuous power output ; (5%) 12W
Tone control:	High tone control type
Level control:	Automatic/Manual level control
Double recording:	Possible anywhere in the film during projection
Input terminal:	Mixing is possible on both AUX and MIC terminals.
Output terminal:	EXT. SP. (Impedance 8 $\Omega$ ) AUX OUT (Impedance 600 $\Omega$ ) Moni (Low impedance type)
Recording head:	Special alloy magnetic head (Alternate bias system)
Erasing head:	Alternate erasing system
Photo electric element:	Solar battery
Exciter lamp:	4V-0.75A Direct-current lighting system (Model M-O)
Speaker:	Built-in 5" (12.5cm) dynamic speaker
Microphone:	Electret condenser type (Impedance 600 $\Omega$ )
Level meter:	Built-in
Indication lamp:	Recording lamp, Pilot lamp
Attachments:	800ft (240m) Auto reel, Power cord, Carrying case, Microphone Monitor receiver, Aperture cleaning brushes and Projection lamp

※ Specifications are subject to change without prior notice.

# Nomenclature

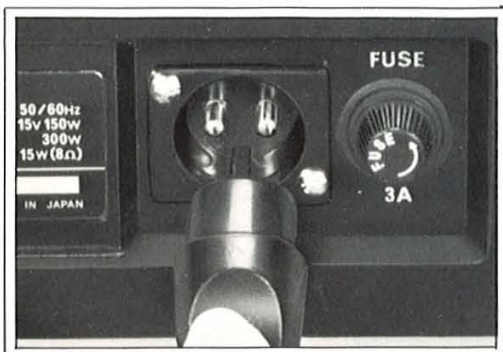


- |                          |                                           |
|--------------------------|-------------------------------------------|
| ① Front housing cover    | ⑬ Elevation control knob                  |
| ② Focusing knob          | ⑭ Exciter lamp window<br>(Model M-O only) |
| ③ Auto-threading lever   | ⑮ M-O changing lever (Model M-O only)     |
| ④ Reel spindle           | ⑯ Loop restorer                           |
| ⑤ Feed reel arm          | ⑰ Framing knob                            |
| ⑥ Film threading slot    | ⑱ Film counter                            |
| ⑦ Reel arm lock          | ⑲ Tone control knob                       |
| ⑧ Rewinding lever        | ⑳ Volume control knob<br>with amp. switch |
| ⑨ Single frame feed knob | ㉑ Motor switch                            |
| ⑩ Zoom lens              | ㉒ Lamp switch                             |
| ⑪ Synchronizer R-1 jack  | ㉓ Pilot lamp                              |
| ⑫ Film trimmer           | ㉔ Recording indicator lamp                |

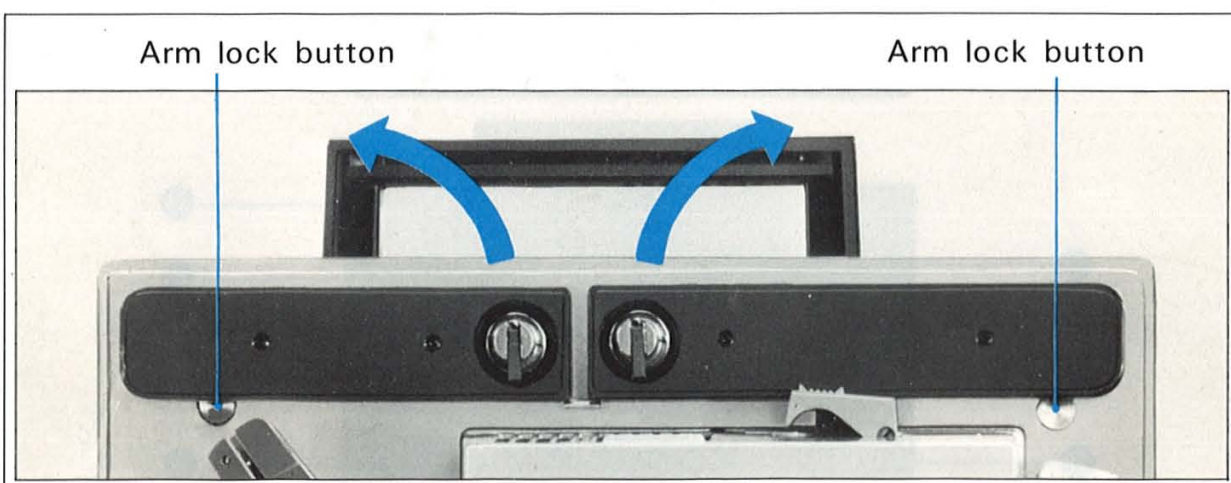


- |                                           |                                    |
|-------------------------------------------|------------------------------------|
| 25 Level meter                            | 37 Double recording control knob   |
| 26 Auto threading release lever           | 38 Double recording indicator lamp |
| 27 Rear film guide                        | 39 Record control button           |
| 28 Take-up reel arm                       | 40 Recording button                |
| 29 Reel lock                              | 41 Speaker                         |
| 30 P.A.-ALC selection switch              | 42 Power fuse holder               |
| 31 Normal Rec-Double Rec selection switch | 43 Power cord socket               |
| 32 Auxiliary volume control knob          | 44 Projection speed changing lever |
| 33 Monitor jack                           | 45 Voltage indication window       |
| 34 Microphone indicator lamp              | 46 Extension speaker connector     |
| 35 AUX IN jack                            | 47 AUX OUT jack                    |
| 36 Microphone jack                        |                                    |

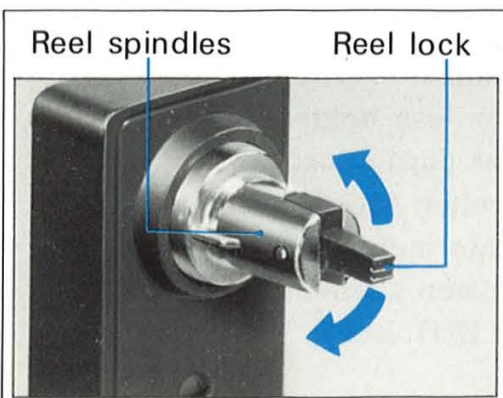
## Preparation for projection



- 1 Plug in the power cord and the pilot lamp will light.

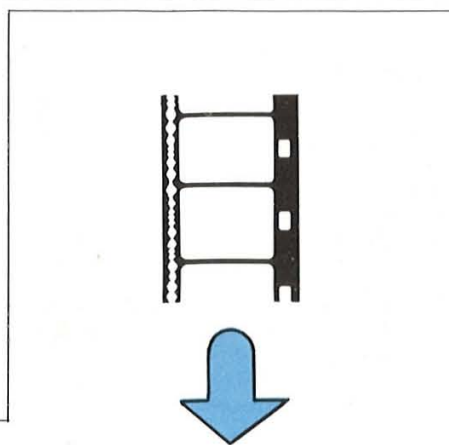
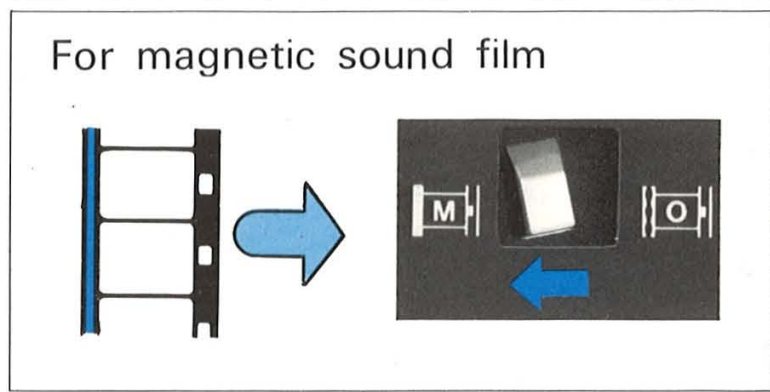


- 2 Pull up the feed reel arm and take-up reel arm. After projection, fold the reel arms with the reel arm locks depressed.

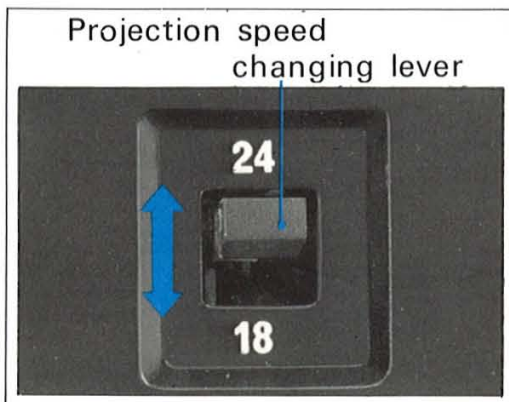


- 3 Put the feed reel (full reel) and the take-up reel on their reel spindles, and fasten the reels with the reel locks. Turn down the reel lock to the right direction in accordance with the thickness of reel.





- 4 Set the M-O changing lever in accordance with the film to be projected. (Applicable for model M-O only)



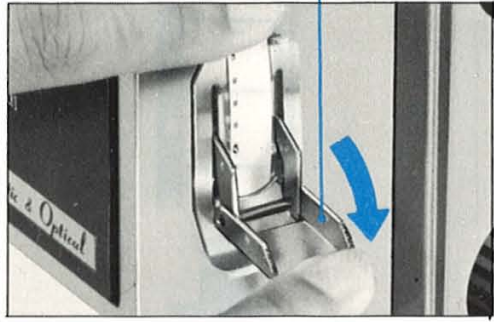
- 5 Make sure that the projection speed changing lever is set at correct position. For 24 fps, set the lever to upper side, and for 18, to lower.

**Important**

Be sure to turn off the motor when changing the projection speed.

# Sound projection

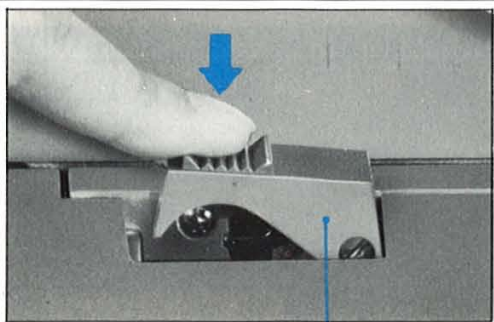
Film trimmer



- 1 To insure smooth automatic threading, 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.

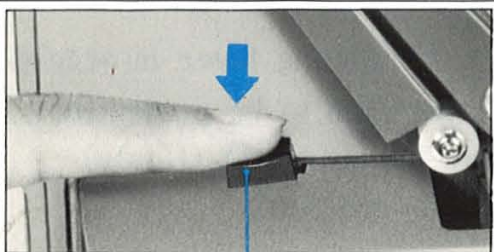
**Caution :**

When the tip of leader is bent or snapped, trim off accordingly.

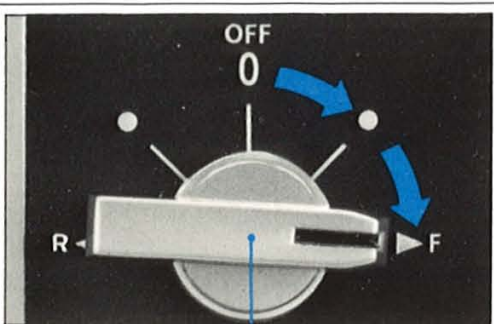


Auto-threading lever

- 2 Depress the green auto-threading lever until it is locked. The threaded film will release the lever automatically. To manually release the automatic threading system, depress the auto-threading release lever.

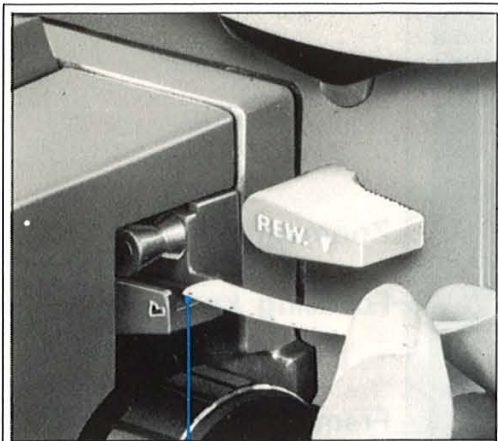


Auto threading release lever



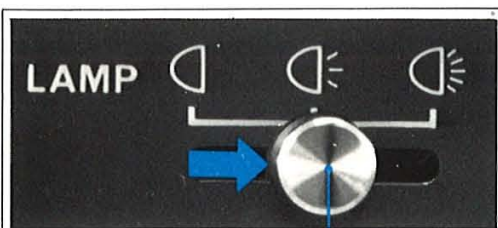
Motor switch

- 3 Turn the motor switch to "●" position, then turn it to "F" position after motor starts.

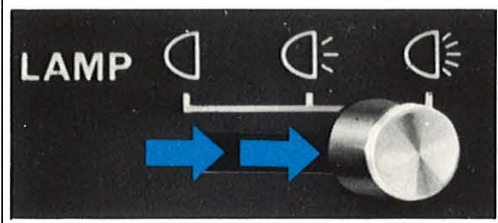


Film threading slot

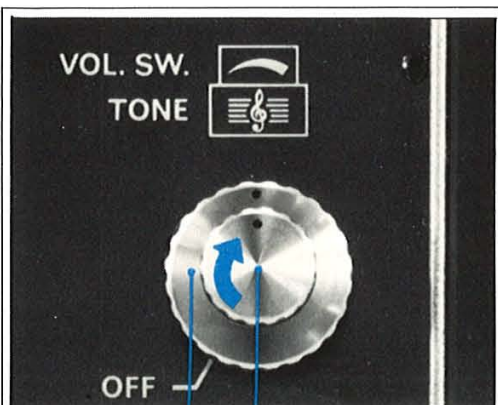
- 4 Insert the film leader into the threading slot as indicated by the red arrow on the slot. The automatic threading system path up to the take-up reel will be completed in a few seconds, at which time the auto-threading lever will be released automatically.



Lamp switch



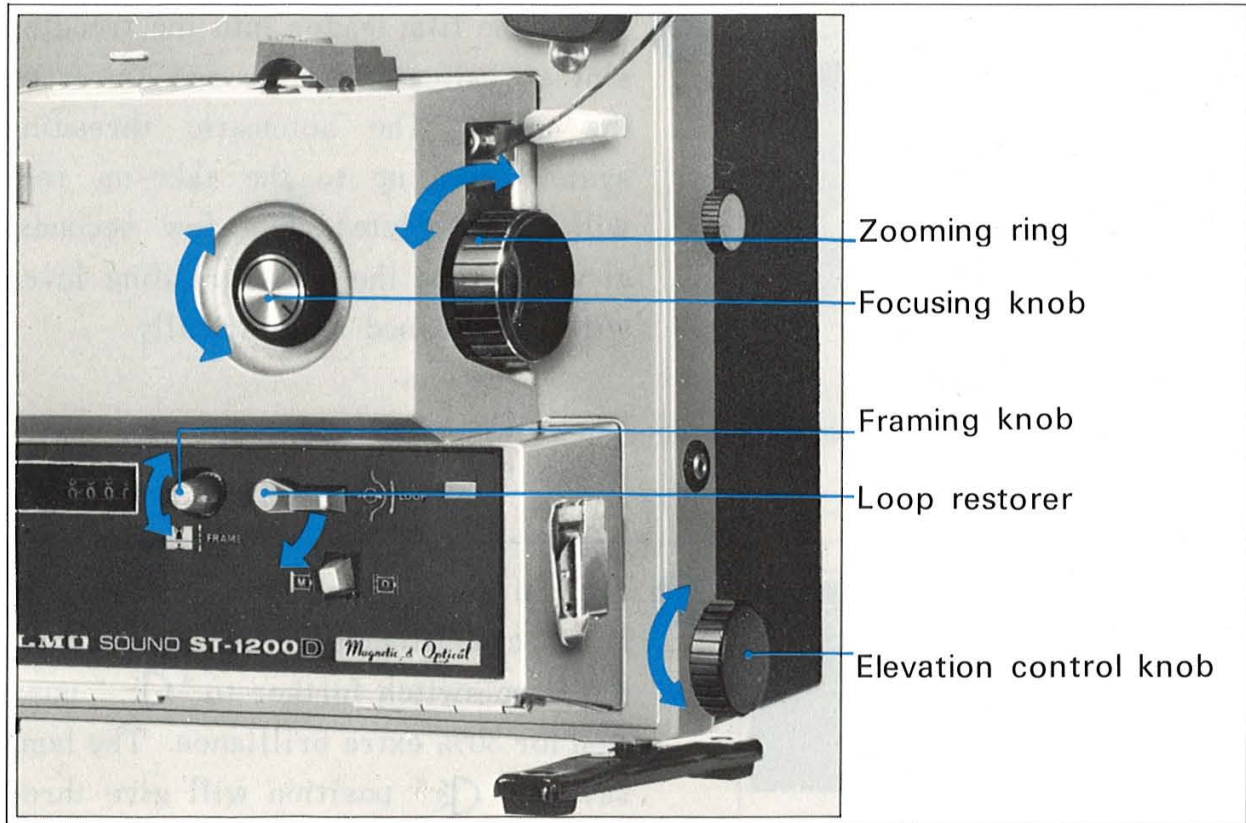
- 5 Set the lamp switch to "☾" position. If more brilliance is required, shift the lamp switch further to "☽" position for 30% extra brilliance. The lamp saving "☾" position will give three times normal lamp life.



Volume control knob  
Tone control knob

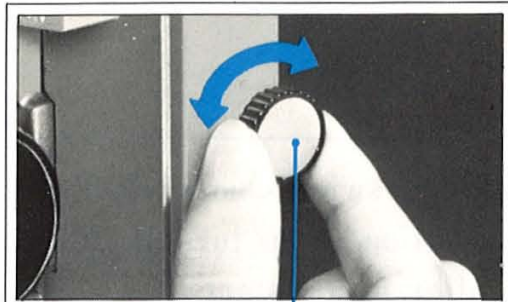
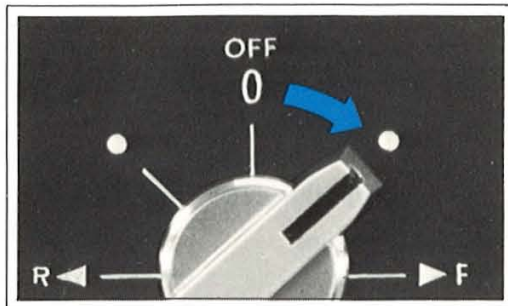
- 6 Adjust volume and tone by turning the volume control knob and tone control knob.

## Image adjustment



- A** Is the picture size on screen desired one?  
Adjust the size of picture to fit the screen size by turning zooming ring.
- B** Is the focus sharp?  
Adjust the focus by turning focusing knob.
- C** Doesn't appear a frame line on the screen?  
When the frame line appears, turn the framing knob to eliminate the line.
- D** When the film loop, set by the automatic threading system, is lost during projection due to an improper splice or any other reason, it can be instantly restored by pushing the loop restorer diagonally downward.
- E** Is the height of picture right?  
Adjust the height of picture by turning elevation control knob.

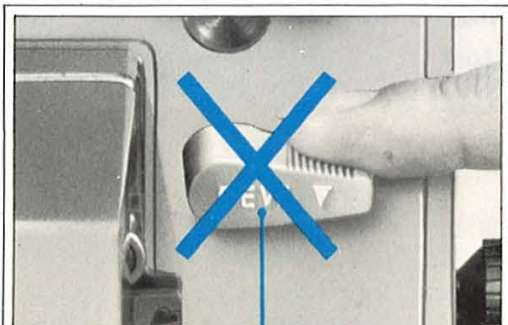
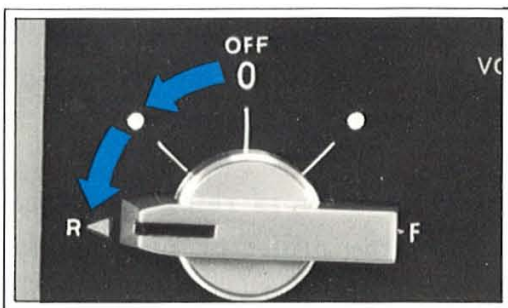
## Single frame projection



Single frame feed knob

- During projection, you may wish to stop the movie to show a single frame. This can be done by turning the motor switch to "●" (Still) position. Sometimes the film will stop in the middle of a frame, or even when the aperture is closed. When this happens, pull out the single frame feed knob and turn it until the full frame is projected.

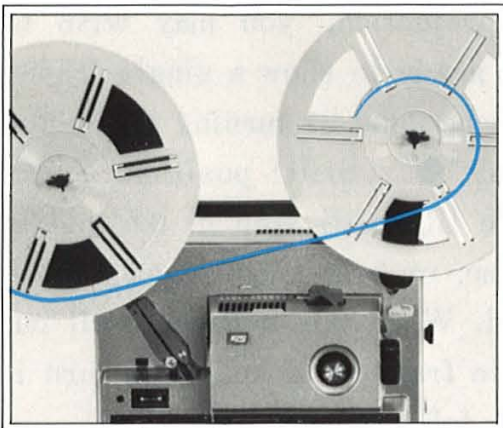
## Reverse projection



Rewinding lever

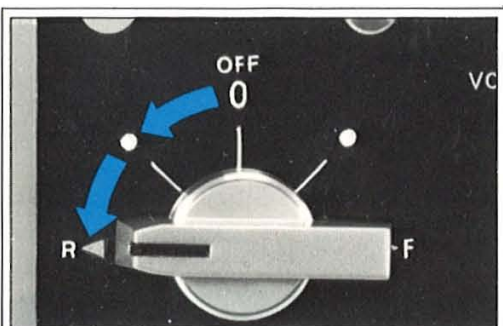
- Turn the motor switch to "●" position. Then turn it to "R" (Reverse) position after motor starts.
  - Be careful not to touch the rewinding lever during reverse projection.

## Rewinding the film



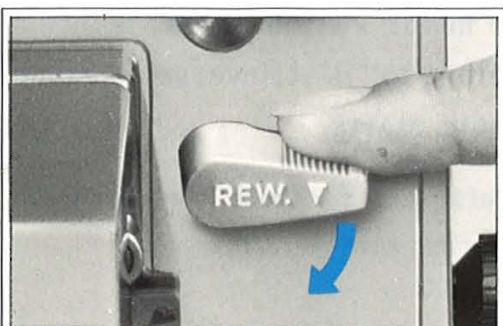
- 1 After the film has been wound completely on the take-up reel, turn off the lamp and motor.

- Insert the end of the film into the slot of the feed reel hub.



Motor switch

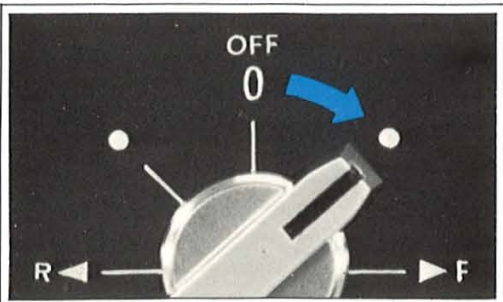
- 2 Turn the motor switch counterclockwise to "●" position, then turn it to "R" position after motor starts.



Rewinding lever

- 3 Lock the rewinding lever by pushing down to the direction of the arrow as illustrated in the picture.

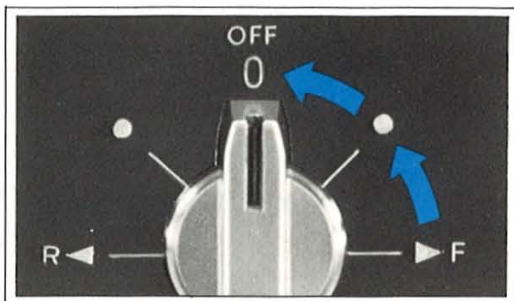
- The rewinding lever is released automatically when the projector operates for forward projection. So you may leave the rewinding lever locked until the next projection.



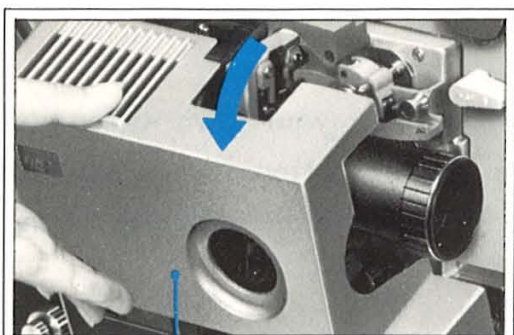
### Caution :

When rewinding film after removing the film during midway projection, turn take-up reel clockwise over one round by hand and then turn the operation switch to "R◀".

## Removing the film in the midway projection

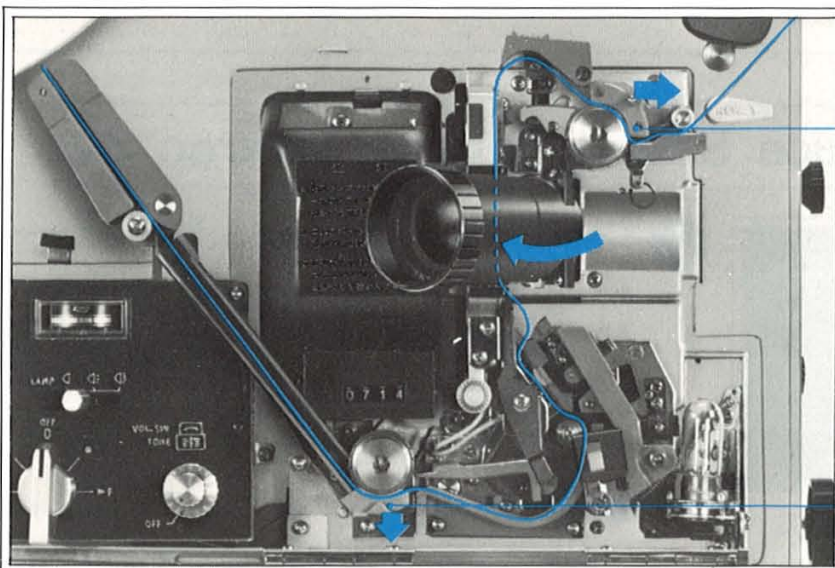


- 1 Return the motor switch to "OFF".



Front housing cover

- 2 Open the front housing cover by pulling towards you.



The first sprocket shoe

The second sprocket shoe

- 3
  - Push the first sprocket shoe sideways.
  - Open the lens holder to the direction of arrow.
  - Depress down the film guide.
  - Take out the film.

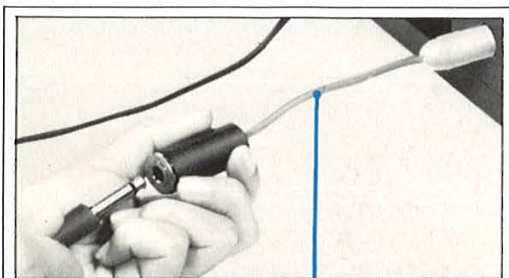
# Various sound projection

## How To Use Extension Speakers



EXT. speaker connector

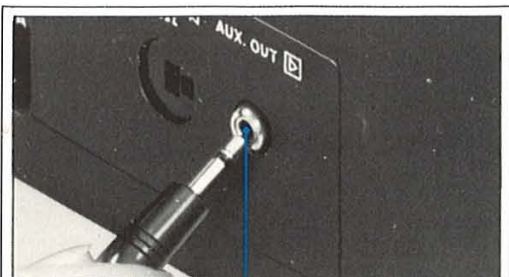
- 1 In case you use Elmo extra speaker (Option), connect the speaker's plug to EXT. SP. connector of the projector.



Adapter cord (SC-002)

- 2 In case you use your own extension speakers, use an optional cord adapter SC-002 for connection with the phone plug  $6\phi$ .

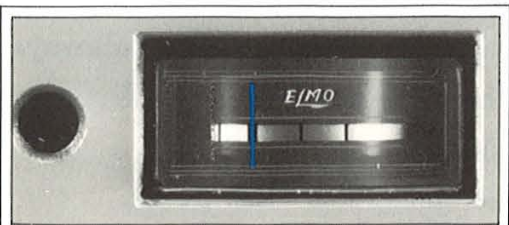
## How To Reproduce Sound Through Stereo Set



AUX. OUT Jack

- 1 Connect AUX. OUT jack of the projector to AUX. IN or LINE IN receptacle of the stereo set with an accessory cord. In this case, sound is not reproduced by built-in or extension speakers.

- When using extra amplifier, adjust the volume control to make the needle of level meter stay in the red area. This is standard level. ( $600\Omega$  about  $-10\text{db}$ ).



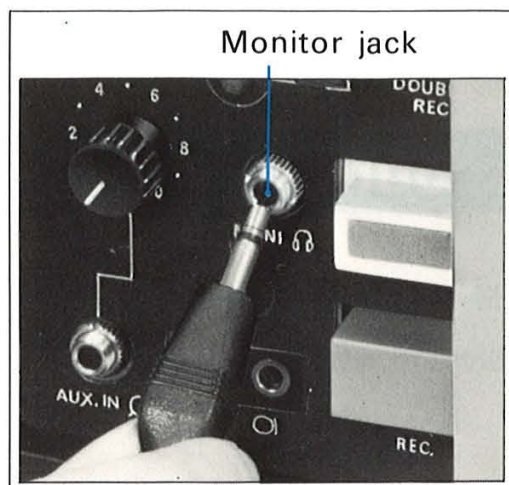
Level meter



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## How To Use Earphone Or Headphone

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- Connect the earphone or headphone plug to MONI jack of the projector. In this case, no sound is reproduced by built-in or extension speakers.

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## How To Use Public Address System (P.A.)

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- Set the P.A.-ALC selection switch to "P.A.". Plug the attached microphone into microphone jack. Then switch on the amplifier and the microphone lamp will light. Now projector is ready for public address.

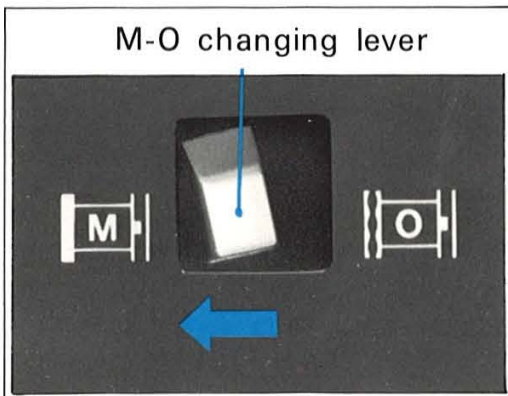
### Caution:

It is recommended to use public address system in combination with extension speaker. Don't approach the microphone to speaker, or increase the input level too much lest the uncomfortable vibrated sound (howling) should come out.

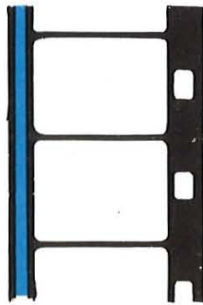
# Recording

Use film with a magnetically coated sound track because this sound recording device employs the magnetic recording system. Not only normal recording but also various ways of recording can be enjoyed such as double recording, fade-in/fade-out, overlap, record control and its releasing.

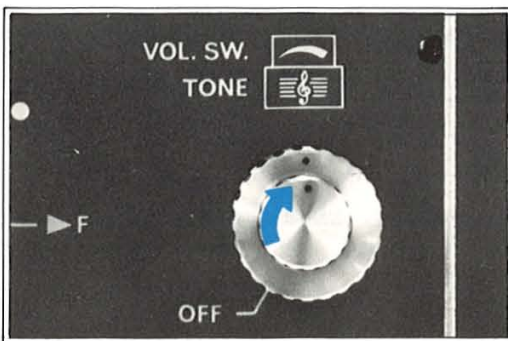
## Recording procedure



- 1 Set the M-O changing lever to "M".  
(Applicable for model M-O only)



- 2 Load the projector with magnetically coated film.



- 3 Switch on the amplifier by turning volume control knob clockwise.

- 4 Connection of the recording source.

## To connect the recording source to AUX.IN jack.



- 1 Connect LINE OUT or AUX. OUT connector of tape recorder or record player etc. to AUX.IN jack of the projector.

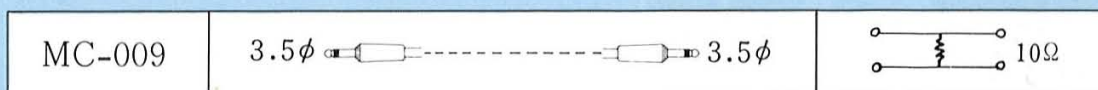
### Note: 1.

If the output of sound sources is relatively high (e.g. record player, tape recorder, radio tuner, tape deck etc., which incorporate an amplifier), connect them to the AUX.IN jack.

### Note: 2.

AUX. IN jack is separately circuited with the volume control so as to mix sounds. Therefore the input level from AUX. IN jack is not automatically recorded.

- ◇ Stereo-to-monaural adapter cord (Refer to "MC-003" on page 37) available for sound reproduction in combination with 2-channel stereophonic unit.
- ◇ When recording from a unit having neither LINE OUT nor AUX. OUT jack connect AUX.IN jack of the projector to either earphone or EXT.SP. connector of the unit with an accessory input cord. (Input cords with resistor MC-009 is available.)



- 2 Adjust the auxiliary volume control knob until the level meter indicates the optimum level.

### Note: 1

The adjustment of level meter should be done, after turning motor switch to "●" towards F, by depressing red recording button slightly.



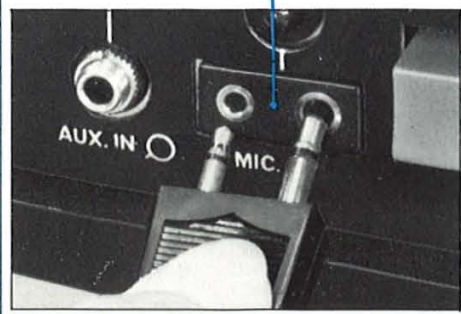
Level meter

**Note: 2**

Maximum recording level can be achieved when the indicator swings in the LH-side red zone.

## Connection to microphone jack.

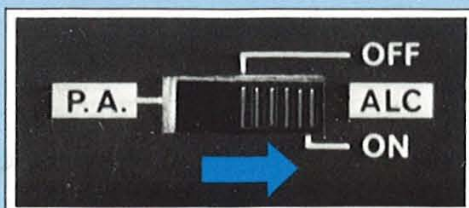
Microphone jack



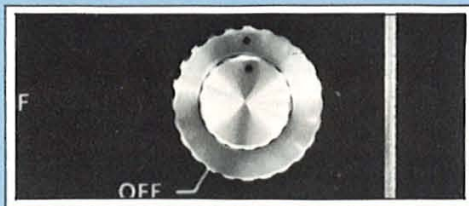
- 1 Connect the microphone plug to MIC jack.

**Note:**

If the output of sound sources is relatively low (e.g. record player which does not incorporate an amplifier), connect them to the larger (3.5mm) microphone jack instead of AUX.IN jack.



- 2 Set the P.A.-ALC selection switch to either ON (Automatic recording) or OFF (Manual recording) on your recording. When the switch is in the position of ALC-ON, set the black point of volume control knob to the top position. When it is ALC-OFF, adjust the volume control knob until the level meter indicates the optimum level.

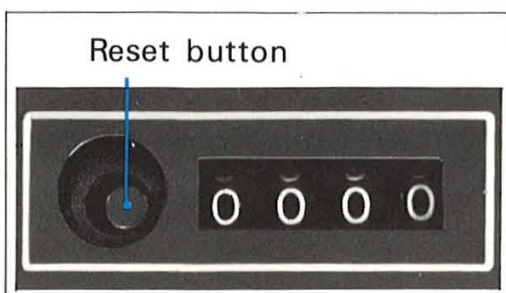


**Note:**

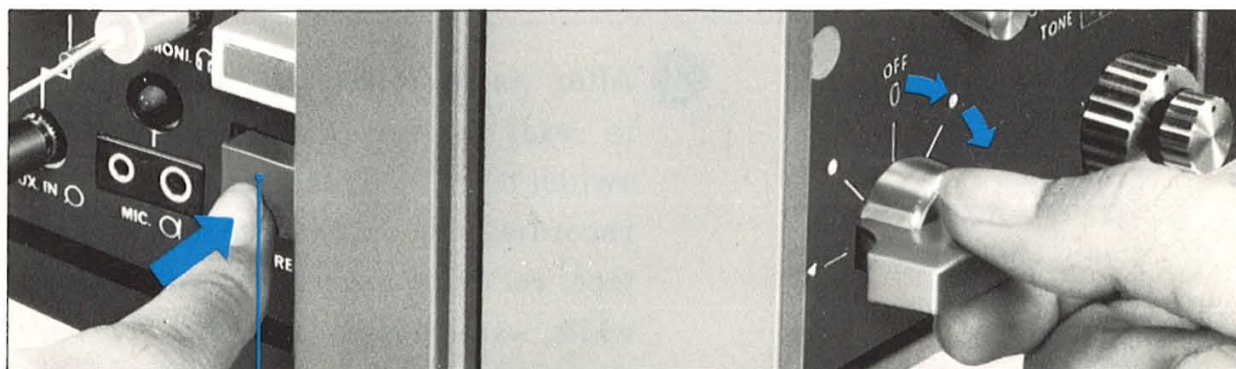
For the protection of picking up noise, approach the microphone to sound source as near as possible and record the sound at low level.



- 5 Monitor receiver or headphone is connected to MONI. jack. (Impedance is 16Ω.)



- 6 Set the number of film counter by pushing reset button. (The film counter can be used as the reference of recording, as it advances by one number per every 18 frames.)



Recording button

- 7 While depressing red button slightly, turn the motor switch to "●" towards "F".

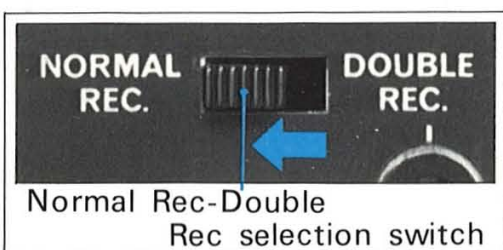
- Note:**
1. Ascertain that red recording indicator lamp is lighted. Now the recording button is locked and the projector is ready for recording.
  2. When the motor switch is returned to "OFF", the lock of recording button is automatically released.
  3. When the M-O changing lever is set to "O", the recording lamp will not light.

# Recording Technic

## Normal Recording

- ◆ Recording to the non-recorded film or re-recording after erasing.

### Recording 1

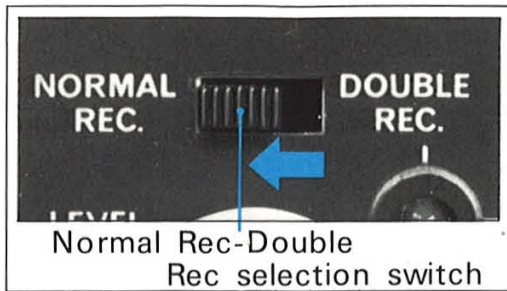
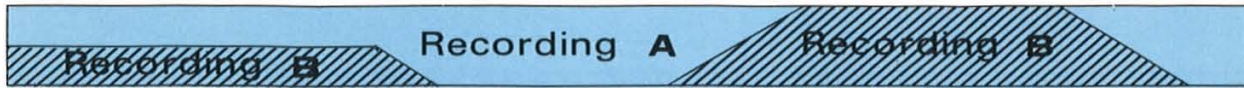


- 1 Set the double recording control knob to "Normal Rec".

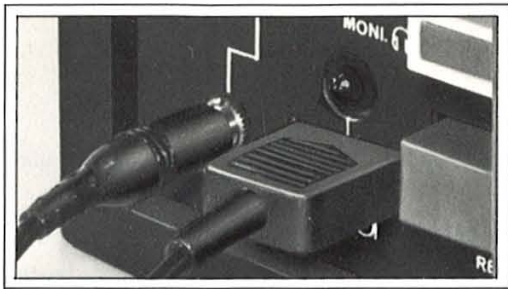
- 2 After ascertaining that the projector is ready for recording, turn the motor switch to "F". At the same time, start recording by operating microphone, tape recorder or record player etc., while watching the screen.

- Note:**
1. Monitor the recording level through monitor jack.
  2. If the recording is done without monitoring, turn the motor switch to "OFF" after turning auxiliary volume control knob and volume control knob counterclockwise. Otherwise the amplified sound of sound source such as tape recorder will come out from speaker.

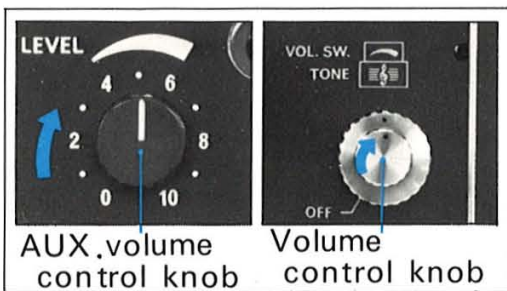
# Mixing



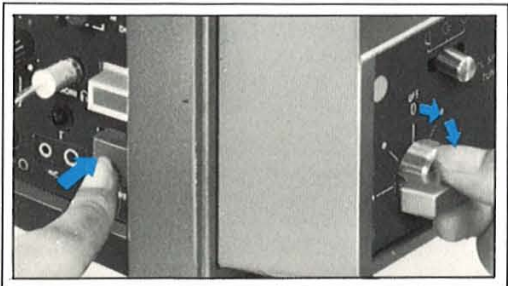
- 1 Set Normal Rec-Double Rec selection switch to "Normal Rec".



- 2 Connect microphone to microphone jack and sound source such as tape recorder to AUX.IN jack.



- 3 Adjust respective input level by turning volume control knob and auxiliary control knob.



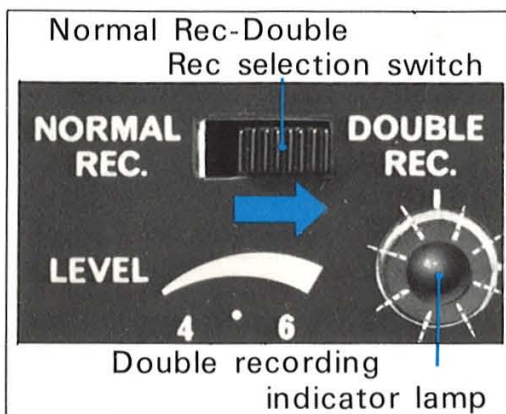
- 4 Turn motor switch to "F", while pushing recording button.

## Double Recording (Double Rec)

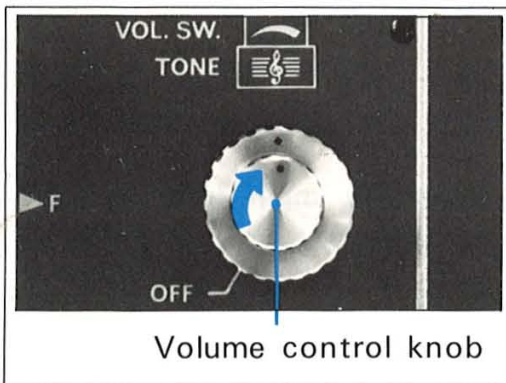
◆ Recording to the recorded film without erasing the original sound.

Recording 1

Recording 2



- 1 Set Normal Rec-Double Rec selection switch to "Double Rec". Then red double recording indicator lamp will light.



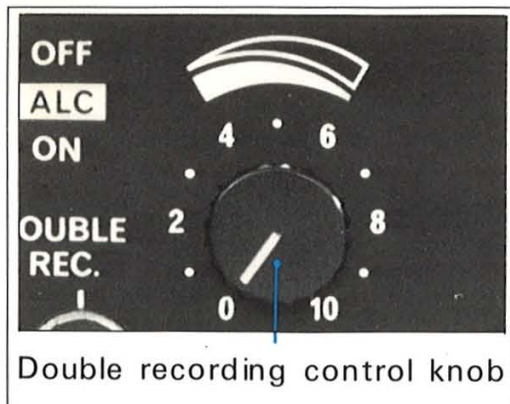
- 2 When starting double recording without microphone, set up the input level by adjusting volume control knob.

**Note:** Both automatic and manual recording is possible. (For further details refer to P 16.)



When using AUX.IN jack for double recording set up the input level by adjusting Auxiliary volume control.



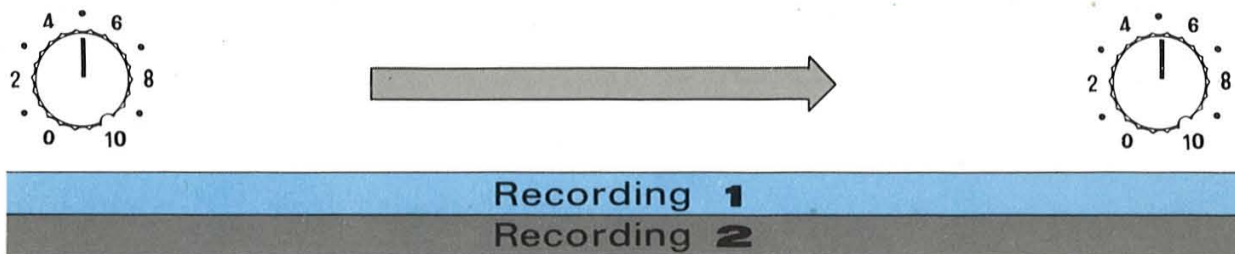


- 3 The ratio of double recording is controlled by double recording control knob.

**Note:** Variation controlled by double recording control knob can not be checked through level meter or monitor receiver. Adjust the level of double recording with the graduation around the knob.

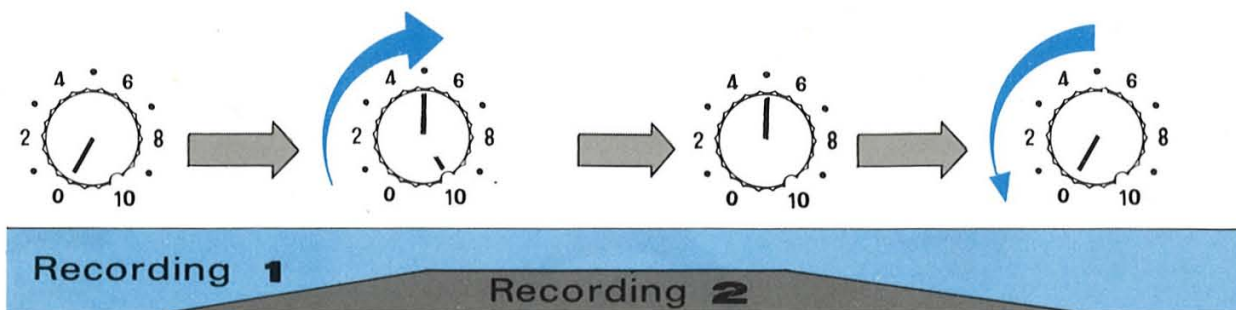
**A** Double recording (In case previous and new sounds are recorded in even ratio, or 1 : 1)

- ◆ Start recording, after setting the double recording control knob to "5" in the graduations.



**B** Double recording with fading effect.

- ◆ Double recording with fade-in/fade-out recording operation.

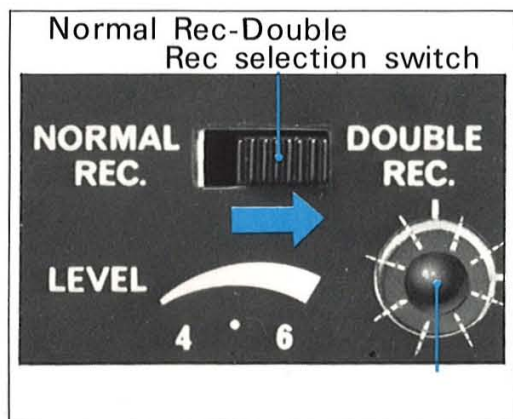


- Note:**
1. Double recording can not be performed at "0" in the graduations. Previous recording remains unchanged.
  2. Previous recording hardly remains at "10" in the graduations.

## Overlap Recording

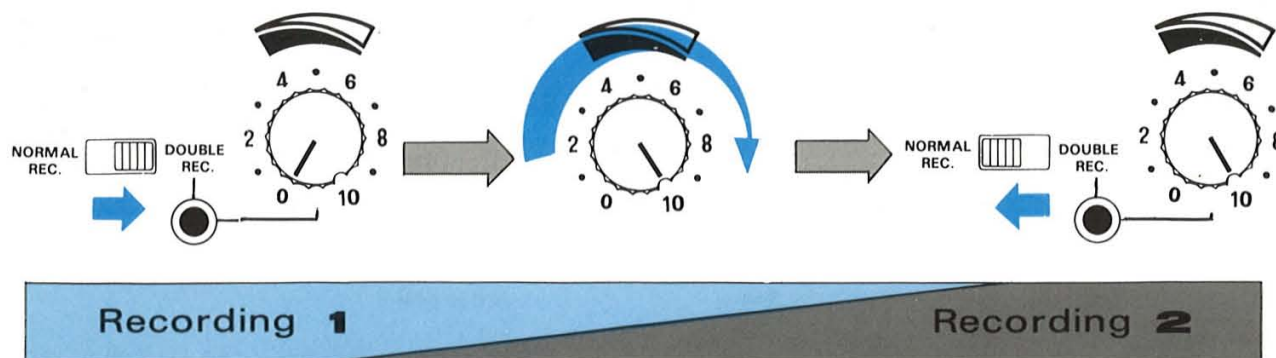
### A Overlap recording with fade-in effect

◆ Original sound is gradually overcome by new sound.



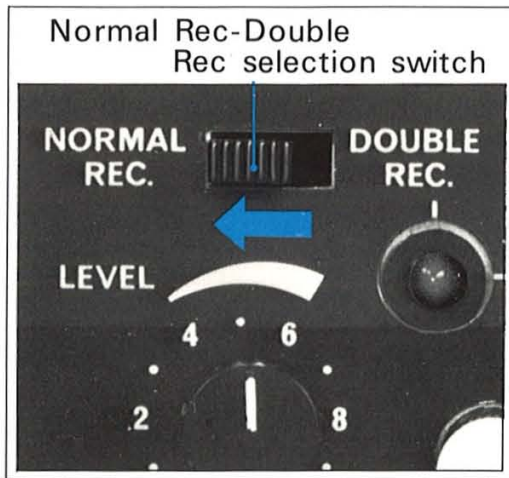
1 Set the Normal Rec-Double Rec selection switch to Double Rec and double recording indication lamp will light in red.

2 Turn the Double recording control knob slowly clockwise from "0" position in the graduations fully to "10" position. When the double recording control knob comes to "10" position, set the Normal Rec-Double Rec selection switch to Normal Rec immediately.



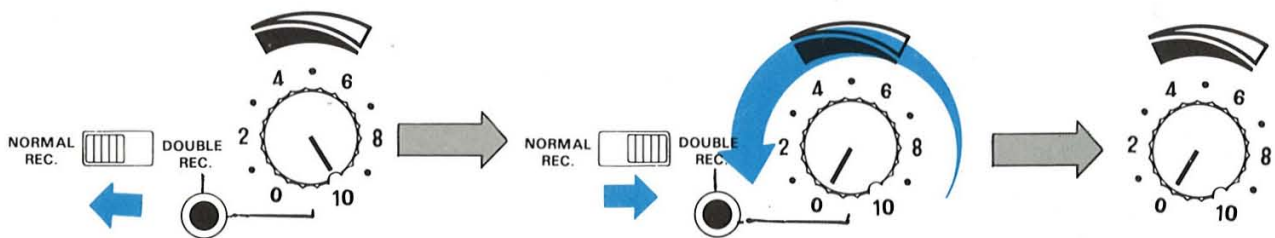
## B Overlap recording with fade-out effect

◆ New sound is gradually overcome by original sound.



1 Set the Normal Rec-Double Rec selection switch to Double Rec.

2 After setting Normal Rec-Double Rec selection switch to Double Rec, turn the Double recording control knob slowly counterclockwise from "10" position fully to "0" position.



Recording 2

Recording 1

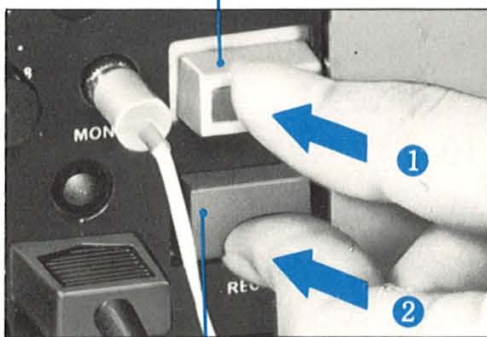
## Record control and its Release (For re-recording or dubbing)

Recording 1

Recording 2

Recording 1

Record control button

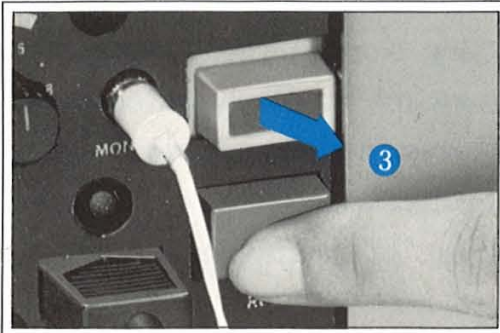


Recording button

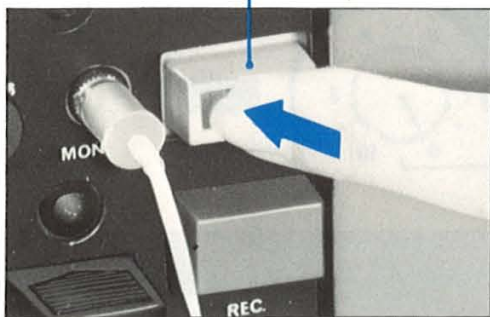
### 1 Record control

Recording during projection without stopping projector.

Push the recording button with the record control being depressed, and then release the record control button.



Record control button

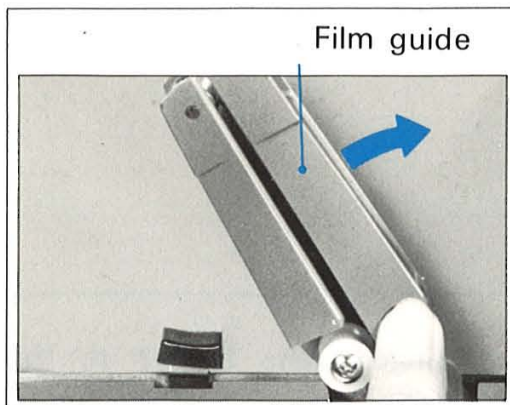


### 2 Releasing record control

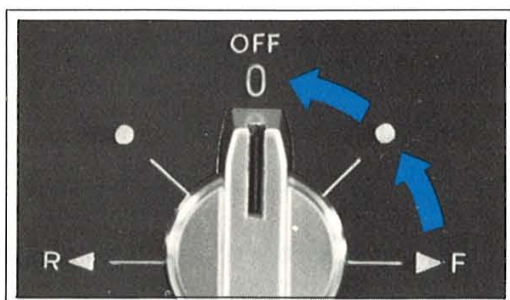
(Releasing record control without stopping projection.)

Depress the record control button until the recording button returns.

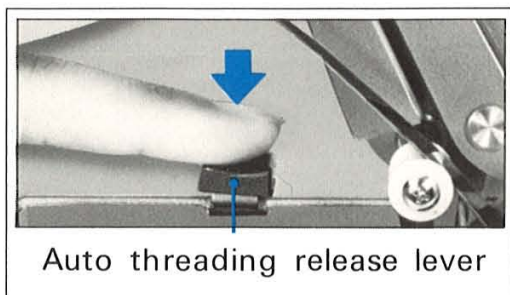
## When using 1200 ft (360m) reel (Optional accessory)



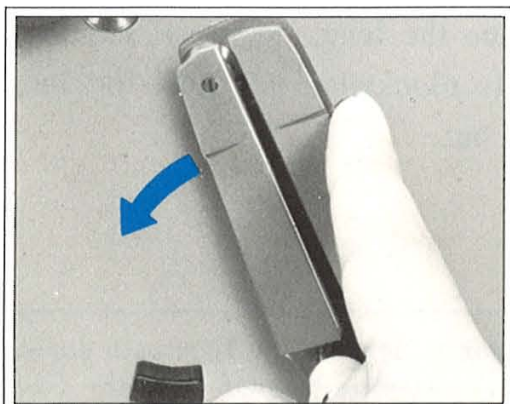
- 1 Push the silver mark on the rear film guide as far as it will go and, while pushing, turn the film guide clockwise as illustrated. Place the 1200ft(360m) reel on the take-up reel spindle and lock the reel.



- 2 Load the film. When about 12" (30cm) of the film leader comes out of the rear film guide, return the motor switch to "OFF".



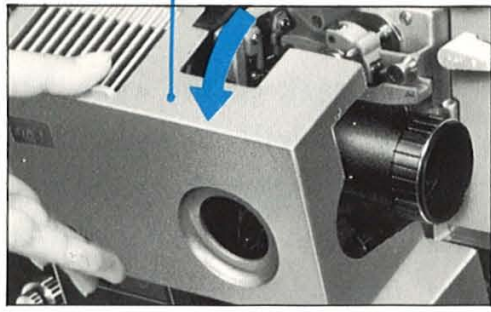
- 3 After inserting the end of the film leader into the reel hub, release the auto-threading lever by depressing the auto-threading release lever.



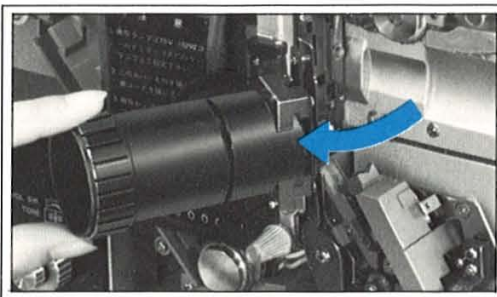
- 4 When use of the 1200ft reel is completed, return the rear film guide to its original position, turning counter-clockwise as illustrated.

# Cleaning

Front housing cover

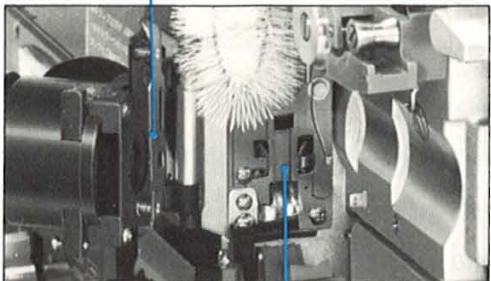


- 1 Grasp the top of the front housing cover and pull it toward you to open.



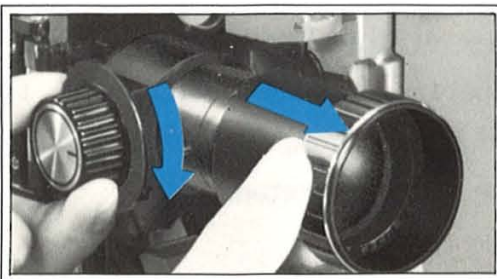
- 2 Open the hinged lens holder to the direction of the arrow as illustrated.

Pressure plate



Aperture

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

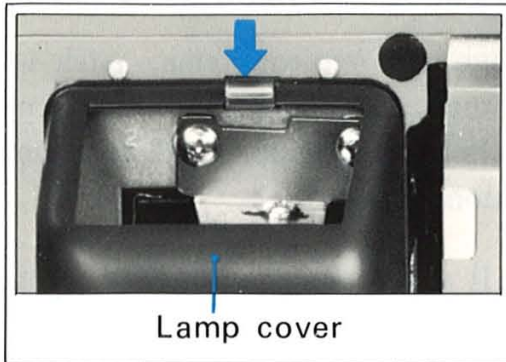


- To remove the lens, turn the focusing knob fully clockwise and pull the lens straight out.

- Be careful neither to touch the film sending claw nor to scratch the film path during cleaning. The film gate and path, which are in continuous contact with the film, are precisely machined to prevent damage to the film.

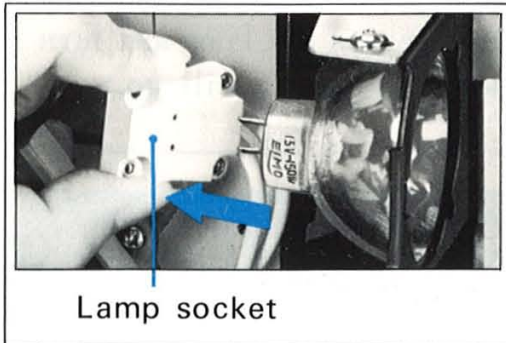
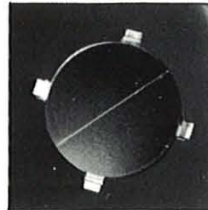
# Replacing projection lamp

- The type of projection lamp is 15V–150W halogen lamp with cold mirror. (ANSI code EFR or equivalent)
- Disconnect the power cord and ensure that the lamp has cooled sufficiently to handle.

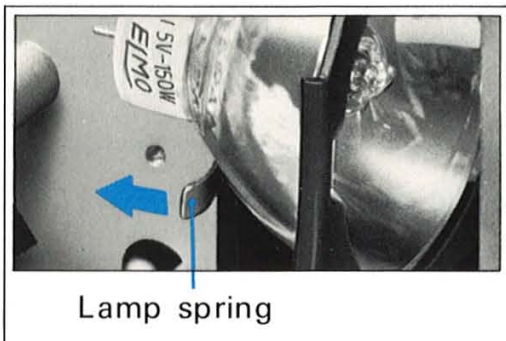


- 1 Swing open the lamp housing from its top with the spring lock depressed as shown.

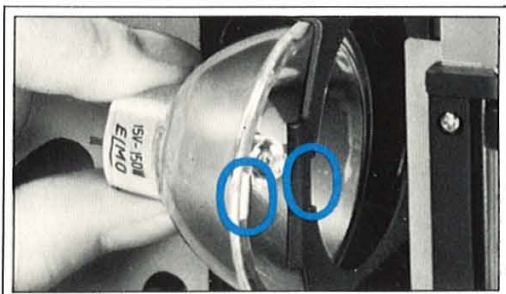
**Note:** Heat proof glass is not broken but originally split into two pieces to allow expansion and contraction.



- 2 Detach the lamp socket from the lamp by pulling to the left.



- 3 Pull the lamp to the left by holding the base of the lamp and then pull out the lamp toward you.

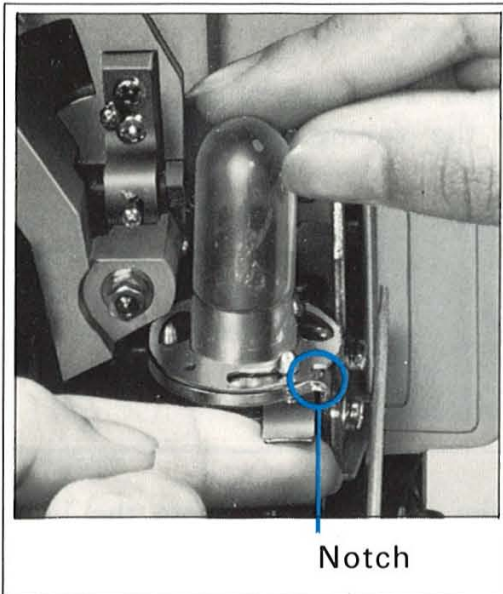


- 4 To install a replacement lamp, push the base of the lamp into the hollow of the spring holder with the protrusion on the reflector edge facing toward you. Then push the reflector into the metal rim. Line up the pins on the lamp with the holes in the socket and push the socket into position.

## Replacing exciter lamp

(This instruction is applicable for model M-O only.)

- The type of exciter lamp is BRS in ANSI code or equivalent.



- 1 Disconnect the power cord.
- 2 To remove the exciter lamp, push up the ejector at the base of the lamp and, while holding it up, turn the lamp counterclockwise.
- 3 To install a replacement exciter lamp, align the three guide pins with the holes of the lamp base flange, with the notch of the lamp base flange facing to the left. Then depress the lamp and turn it clockwise as far as it will go.

## Replacing amplifier and exciter lamp fuse

When the amplifier or exciter lamp fuse breaks, the amplifier does not work, even if volume control knob is turned on and the exciter lamp does not light up, even if M-O changing lever is set to "O".

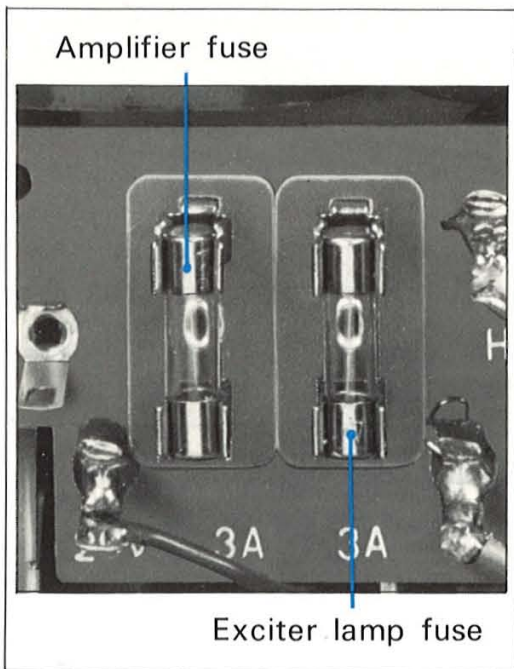
- When the above troubles happen.

- 1 Pull out the power cord.



- 2 Take off the rear cover by taking out screws of the cover.





**3** There stand two fuse below the transformer. The left one is for amplifier and right one for exciter lamp. The value of both fuses is 3A (3.15A).

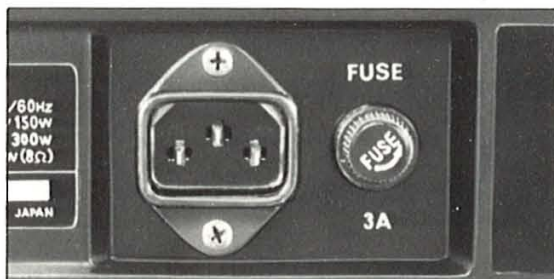
## Replacing power fuse

When pilot lamp does not light and motor does not start although power source cord has no abnormal condition, check power source fuse.

When replacing power fuse, power source cord should be pulled out without fail.

Power Source	Capacity of Fuse
100–260V AC	3A (3.15A)

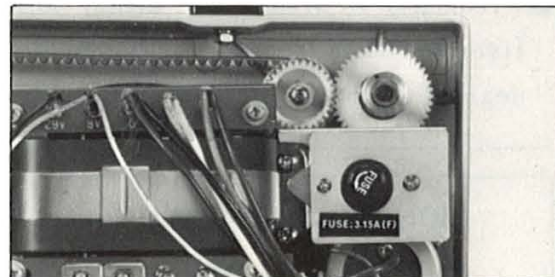
**Never use any fuse other than the specified value.**



100~240V Type    230~260V Type



For U.S.A. and Canada



For Scandinavia countries

When replacing power fuse for this model,

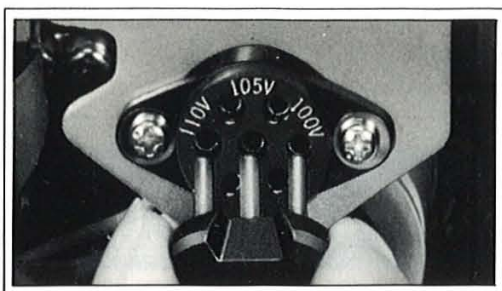
1. Disconnect the power cord.
2. Take off rear cover by loosening screws of the cover and replace power fuse which is located on the right side of transformer.

## Voltage selection

- There is a single voltage model in compliance with electric regulations or conditions of each country.

1 When selecting voltage, power cord should be pulled out without fail.

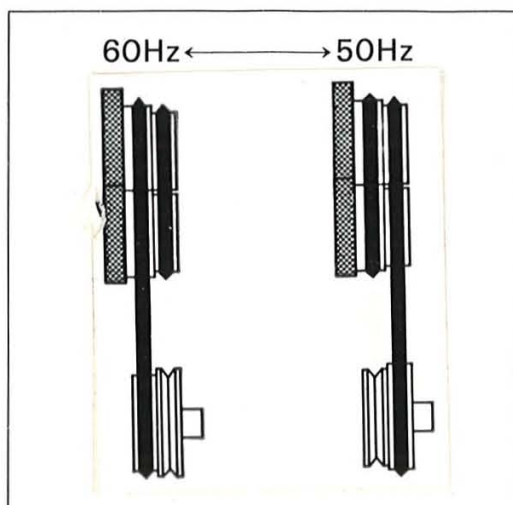
2 Take off the rear cover by taking out two set screws on the upper side.



3 Pull the voltage selection socket, adjust the voltage to the power source to be seen the voltage value for setting from the notch and put it again.

## Frequency selection

- Frequency is already set either 50Hz or 60Hz to correspond with the country to be delivered. When frequency selection is required, it is recommendable to consult with the nearest Elmo dealer. When it is done by yourself, however, do it as follows.



1 Pull out the power source cord.

2 Take off the rear cover by turning two set screws counterclockwise.

3 As shown in the picture, change the belt in accordance with the required frequency.

**Note:** There is a single frequency model in accordance with the electric conditions of each country.

## Trouble shooting hints

When the motor will not start :

- If the power cord is correctly plugged in.
- If the power fuse breaks.

When the projection lamp does not light :

- If the lamp is correctly inserted into lamp socket.

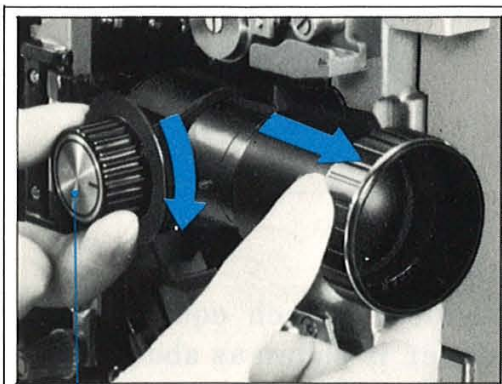
When the film does not thread to the take up reel :

- If the film leader is correctly trimmed with the film trimmer.
- If the perforation at the beginning of the film is not damaged.
- If the film leader is correctly spliced.

When the image on the screen is out of focus :

- If the projection lens is fitted into the barrel.

## How to change projection lens

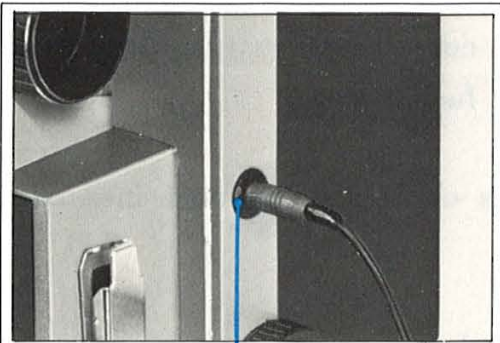


Focusing knob

After turning the focusing knob fully clockwise, pull out the lens.

While pulling the focusing knob towards you put the new lens into barrel.

# Jack for synchronizer R-1



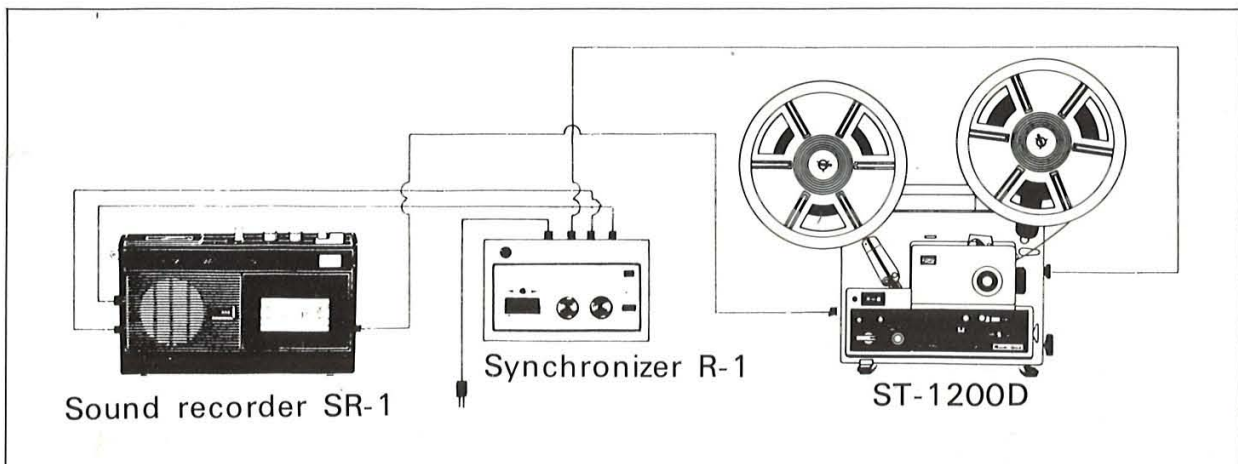
Synchronizer R-1 jack

This jack is used when the transfer of sound recorded by cassette tape recorder is made onto the magnetic sound track of film. Normally this is a device to transfer the sound on the cassette tape recorded by Elmo sound recorder SR-1 together with Elmo synchro sound movie camera Super 110R (Pulse system) onto the sound track of film for Elmo ST-1200 D projector.



## Synchronizer R-1 (Option)

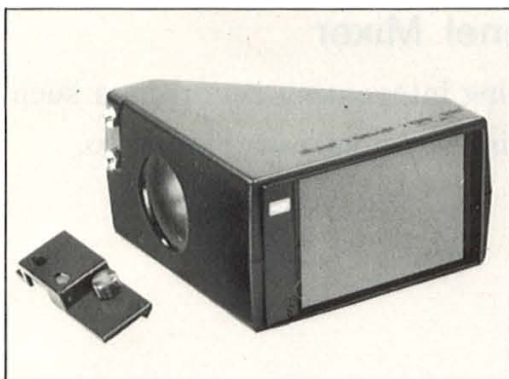
Elmo synchronizer R-1 is required when the sound on cassette tape is transferred onto the magnetic sound track for ST-1200 D projector. The synchronizer R-1 regulates the running speeds of both the ST-1200 D and SR-1 at a constant rate, receiving the synchro pulse signals from the ST-1200 D and SR-1.



## Sound transfer

The connection of each equipment for sound transfer is shown as above. (For further details refer to the instruction manual for synchronizer R-1.)

## Optional accessories



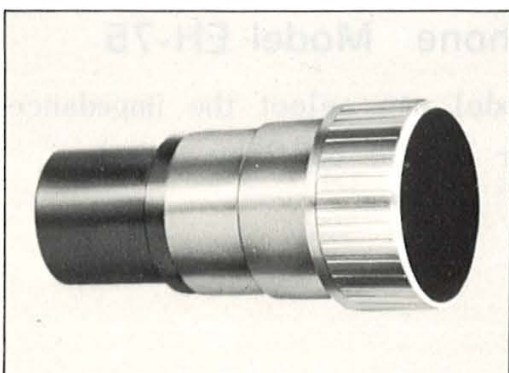
### ● Elmo viewer type 100

Attachment of the Elmo viewer type 100 on the ST-1200 D projector will allow you to enjoy a projection in a bright room or in place of large size screen in a dark room setup. As the adapter is necessary to attach this viewer to the projector, prepare the adaptor for ST-1200 D projector.



### ● Long-focus Zoom Lens

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



### ● Hi-Fi Zoom lens

Outstandingly bright wide-angle F1.1, 12.5–25mm short-focus zoom lens.



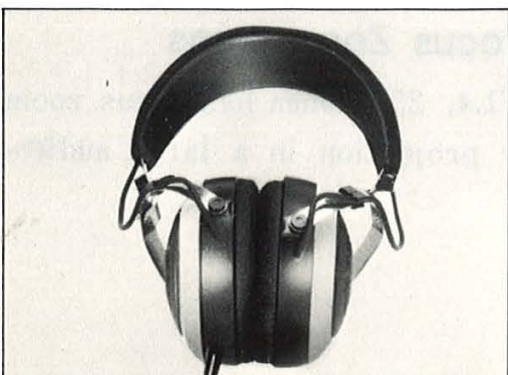
### ● 4-channel Mixer

For making interesting recordings such as fade-in, fade-out, overlap, etc.



### ● Twin 2-way Hi-Fi Speaker

High performance extension speaker with a 10" (25cm) woofer and a horn type tweeter. Especially useful for projection in a large auditorium. Stores in one portable case.



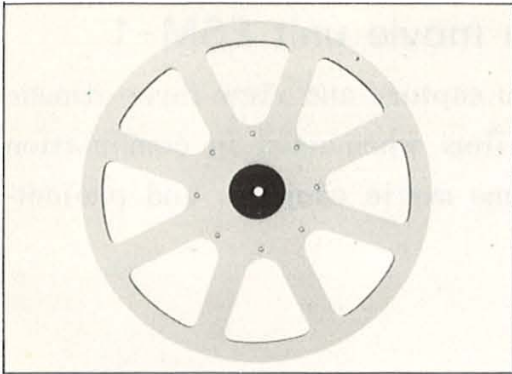
### ● Headphone Model EH-72

High quality headphone for monitoring in recording or reproduction.



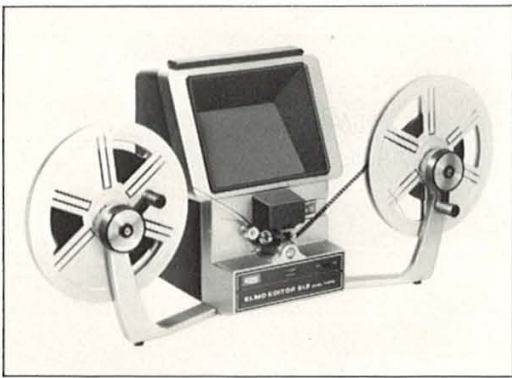
### ● Headphone Model EH-75

This model can select the impedance of either 16Ω or 600Ω by switch.



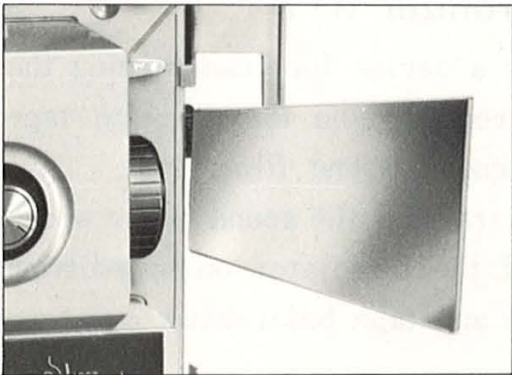
### ● 1200ft (360m) Reel

The largest reel capacity in the 8 mm world. Enables continuous projection extended over one hour.



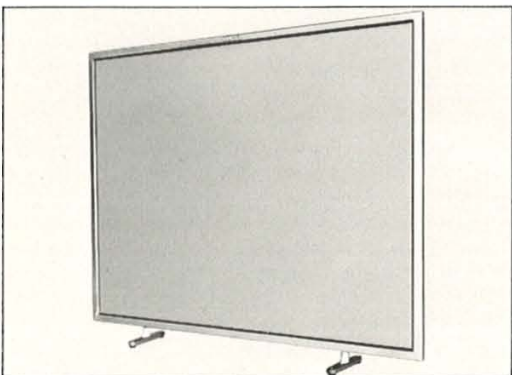
### ● Editor 912

Easy-to-handle quality editor with a bright and large screen which accepts both Super 8 and Regular 8 films.



### ● Daylight projection mirror

This accessory mirror provides a clear projection image in a bright place when used with a special translucent screen.

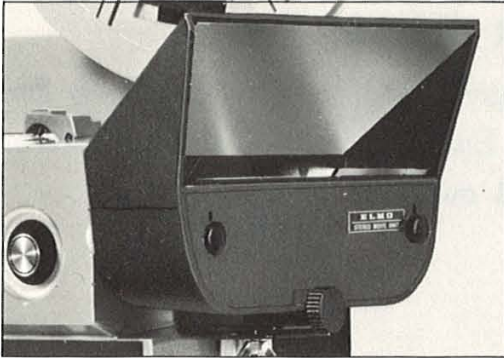


### ● Translucent screens

60cm × 80cm (23.6" × 31.5")

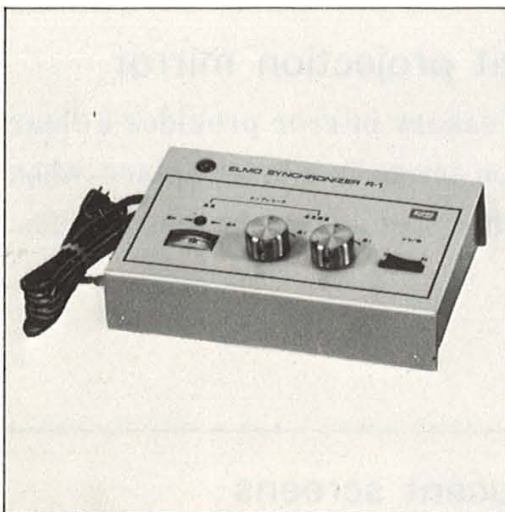
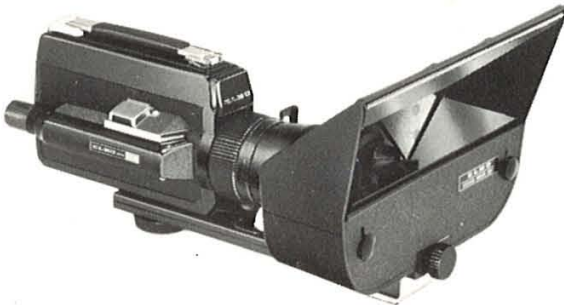
39cm × 52cm (15.4" × 20.5")

Special quality screens for daylight rear projection.



### ● Stereo movie unit ESM-1

Lets you capture and view three-dimensional films when used in combination with Elmo movie cameras and projectors.



### ● Synchronizer R-1



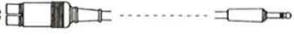




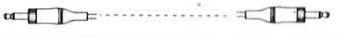

Used as a device for transferring the sounds recorded on the cassette tape onto magnetic sound film.

You can transfer the sound to the sound track of the film later on by editing the film and tape beforehand.

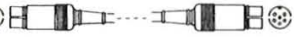

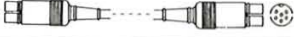








## ● Cord and plug


### For ST-1200 D projector and mixer MX-4

MC-001	3.5φ		1.5m
MC-002	6φ		1.5m
MC-003	5P DIN (Male)		1.5m (From stereo to mono)
MC-004	Clip		1.5m
MC-005	5P DIN (Female)		For DIN Connector
MC-006	Pin plug		1.5m
MC-007	3.5φ		Spiral cord
MC-008	3.5φ		10m
MC-009	3.5φ		10Ω



### For SR-1

PC-001	DIN 6P (Male)		Pulse-synchro projector ↔ SR-1, PG-1, SA-1, Pulse cord unit etc.
PC-002			Super 110R ↔ SR-1
PC-003	DIN 6P (Male)		Pulse recording cord (Pulse-synchro projector ↔ SR-1)
PC-005	DIN 6P (Male)		Philips tape recorder 2209AV ↔ P-10
PC-006	DIN 6P		Pulse-synchro projector ↔ P-10
PC-007	DIN 5P		Stereo tape recorder ↔ P-10
PC-008	3.5φ		Grip-R ↔ SR-1
PC-009	3.5φ		Grip-R ↔ Tape recorder
PC-010	3.5φ		Tape recorder ↔ Microphone

### For extension speaker

SC-002	DIN 2P (Male)		6φ (Female)
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### Plug adapter

MP-001	6φ		3.5φ
MP-002	3.5φ		6φ

# Projection distance and image size

Focal length	12.5mm (Optional accessories)	Wide 15mm
Distance	Image size (cm)	Image size (cm)
1 m	31 × 48	26 × 35
1.5 m	47 × 63	39 × 52
2 m	63 × 85	52 × 70
2.5 m	79 × 106	66 × 88
3 m	95 × 128	79 × 106
5 m	160 × 213	133 × 178
10 m	320 × 428	266 × 356

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

# Projection time and film length

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	21	128.0	420	96.0	315
2	12.2	40	9.1	30	22	134.1	440	100.6	330
3	18.3	60	13.7	45	23	140.2	460	105.2	345
4	24.4	80	18.3	60	24	146.3	480	109.7	360
5	30.5	100	22.9	75	25	152.4	500	114.3	375
6	36.6	120	27.4	90	26	158.5	520	118.9	390
7	42.7	140	32.0	105	27	164.6	540	123.4	405
8	48.8	160	36.6	120	28	170.7	560	128.0	420
9	54.9	180	41.1	135	29	176.8	580	132.6	435
10	61.0	200	45.7	150	30	182.9	600	137.2	450
11	67.1	220	50.3	165	31	189.0	620	141.7	465
12	73.2	240	54.9	180	32	195.1	640	146.3	480
13	79.2	260	59.4	195	33	201.2	660	150.9	495
14	85.4	280	64.0	210	34	207.3	680	155.4	510
15	91.4	300	68.6	225	35	213.4	700	160.0	525
16	97.5	320	73.2	240	40	243.9	800	182.9	600
17	103.6	340	77.7	255	50	304.8	1000	228.6	750
18	109.7	360	82.3	270	60	365.8	1200	274.4	900
19	115.8	380	86.9	285	70	426.8	1400	320.0	1050
20	121.9	400	91.4	300	80	487.8	1600	365.8	1200



**ELMO CO., LTD.**  
Nagoya, Japan

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