Film-Tech

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www.film-tech.com

STEREO SOUND 8mm PROJECTOR

ELMO

GS-1200 XENON
GS-1200P XENON

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. Store cord in a manner provided.
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.

Especially following points are important for GS-1200 Xenon /GS-1200P Xenon projector.

- Never give a shock to the lamp.
  The inner air-pressure of xenon lamp is very high. It is greatly increased during switching on a lamp. Be careful for handling the projector so that any shock may not be given to the projector.
- When switching on a xenon lamp, the ignition voltage comes to a few ten thousand volts. To insure the security, this high voltage is switched off when the front cover is taken off. Therefore, never take off or modify the safety switch and the parts of this circuit.
  Elmo is free from the responsibility for the accident caused by the modified projector.
- Don't put a chip of metal or similars into the projector from the opening of the louver or the like. If the entered chip touches the high tension part on lighting a lamp, it is very dangerous.

SAVE THESE INSTRUCTIONS

CONTENTS

INTRODUCTION

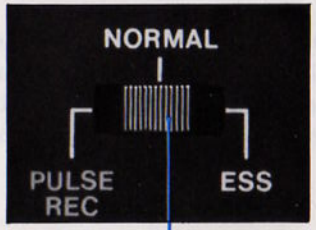
The GS-1200 XENON/GS-1200P XENON are stereo sound 8mm projectors specially designed for projection in a large auditorium.
All of the photos and illustrations in this manual are for the GS-1200 XENON which is capable of optical/magnetic sound reproduction and magnetic recording. And any knob/jack/button for recording (shadowed part in the photo) do not come with the GS-1200P XENON for optical/magnetic sound reproduction use only.

PROJECTION

Checking the position of switches and knobs before projection

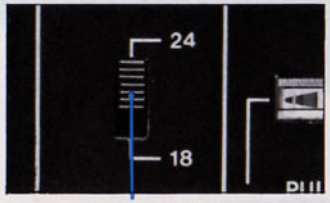
Check the position of switches and knobs before projection (reproduction).

1 Is the ESS switch at NORMAL position?

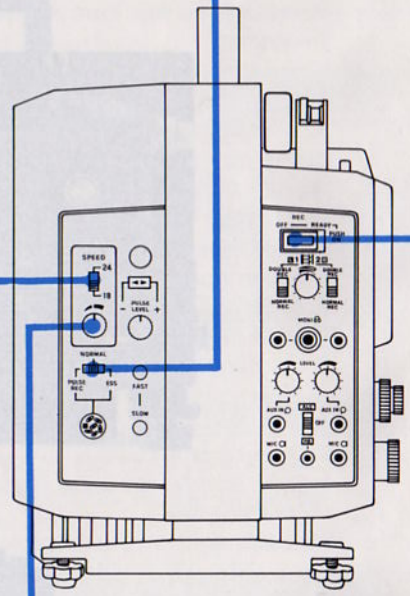


ESS switch

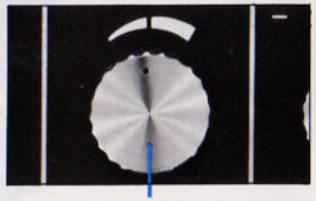
2 Is the speed selector at the proper position?



Speed selector



3 Is the speed knob in the middle? (Refer to page 37.)

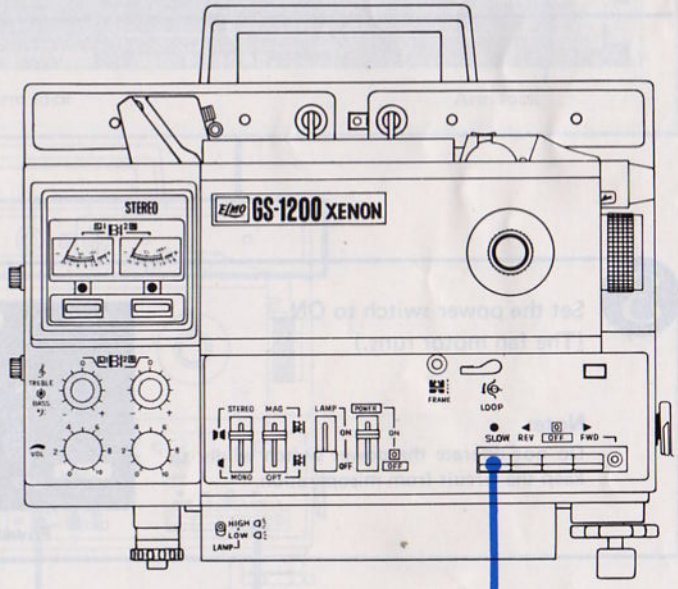


Speed knob

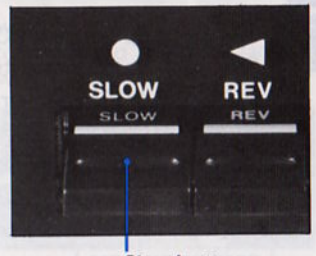
4 Is the spot recording button at OFF position?

(Not applicable for GS-1200P XENON)

Spot recording button



5 Is the slow (SLOW) button free? (Refer to the "Slow transportation" on page 16.)



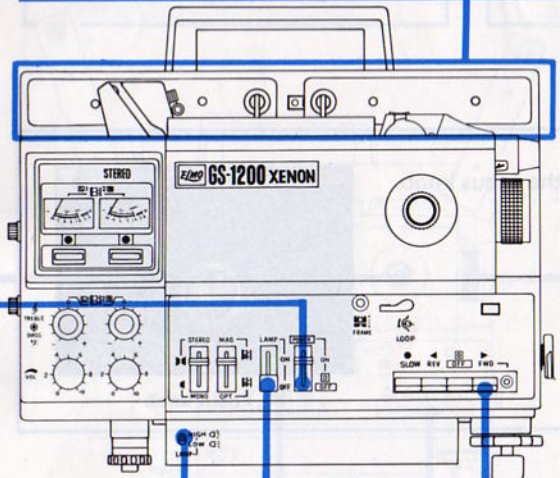
Slow button

Preparation for projection

Adjust the screen image before threading a film.

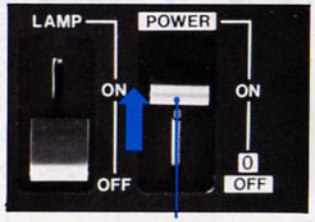
1 Plug in the power cord.

2 Erect both arms into positions until they lock.
(Depress arm locks to fold back.)



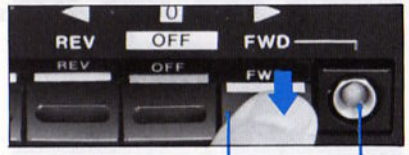
3 Set the power switch to ON.
(The fan motor runs.)

Note:
Do not operate the power switch wildly to keep the circuit from misoperation.



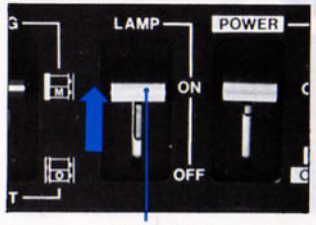
Power switch

4 Push the forward (FWD) button.
(The projector runs and the pilot lamp on the right glows green.)



Forward button Pilot lamp

5 Set the lamp switch to ON.
Set the lamp brightness selection switch to HIGH or LOW position.
(To save power comsumption, the projection at LOW position is recommended for small audience or recording purpose.)



Lamp switch

6 Adjust the height of picture with the elevation control knob.

Elevation control knob

7 Adjust the inclination with the image level knob.

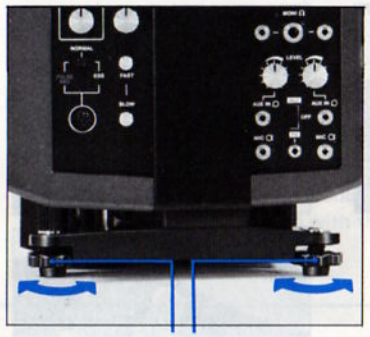
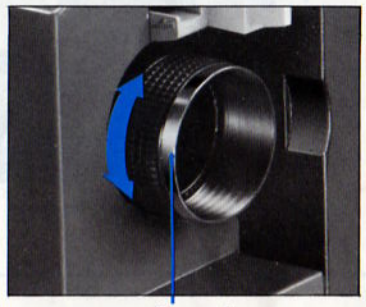


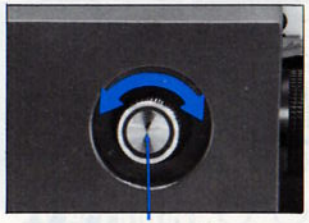
Image level knob

8 Adjust the picture size with the zoom ring.

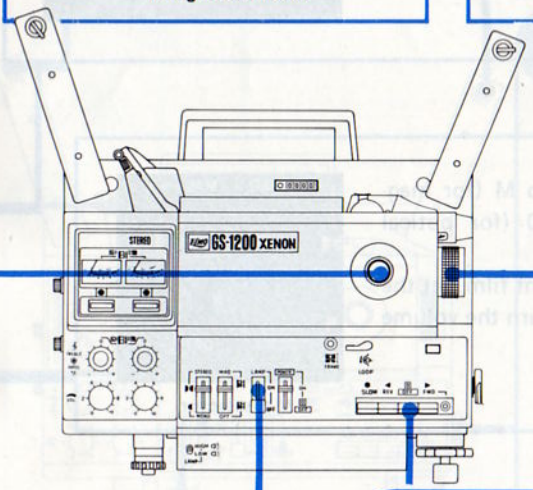


Zoom ring

9 Adjust the focus with the focus knob.

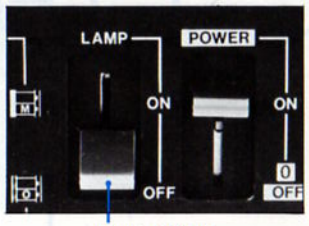


Focus knob



10 Set the lamp switch to OFF.

Be sure to cool the lamp sufficiently before switching off the power switch.



Lamp switch

11 Push the off (OFF) button.

Off button

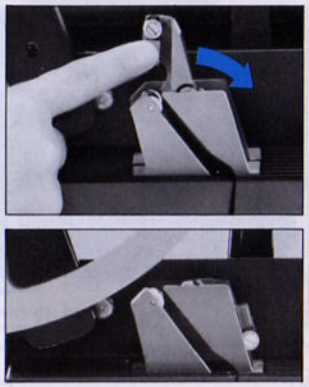
1

Set the film guide in accordance with the capacity of the take-up reel.

When using 800ft reel

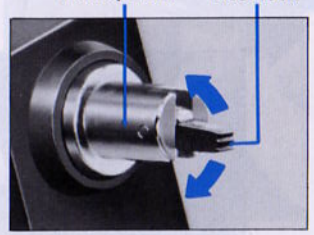
Film guide

When using 1200ft reel



2

Place your reel with film on the front arm and take-up reel on the rear arm

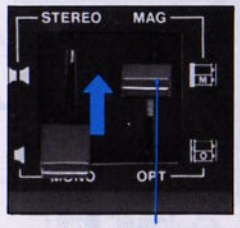


Note:

1. Press the reel locks until the reels are snugged against the spindles.
2. If take-up reel with a capacity less than 240m (800ft) is used, sound playback may be affected. Be sure to use the take-up reel supplied with the projector or 360m (1200ft) reel.

3

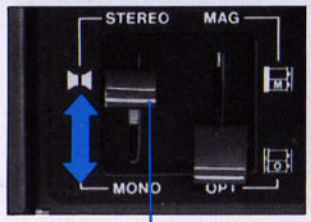
Set the M-0 selector to M (for magnetic sound film) or 0 (for optical sound film).
When projecting the silent film, set the M-0 selector to 0 and turn the volume control knob to 0.



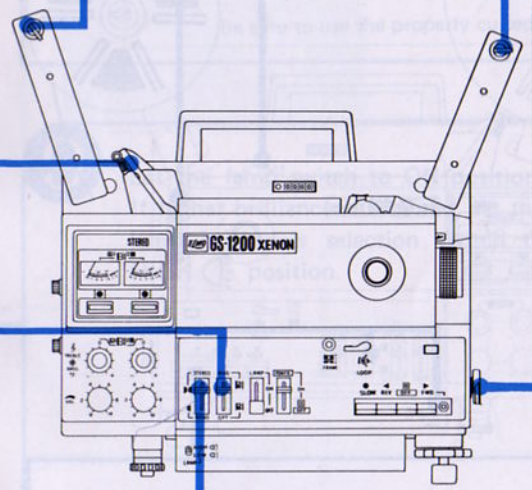
M-0 selector

4

Set the stereo-mono selector to STEREO or MONO in accordance with the sound film.



Stereo-mono selector

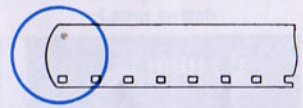


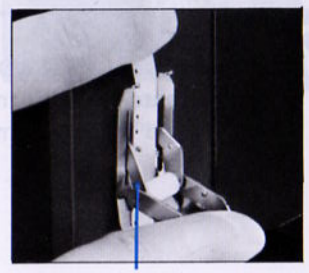
5

Trim the end of the film leader with the film trimmer.

Note:

Locate a film perforation over the fixed pin and trim off the end of the film.

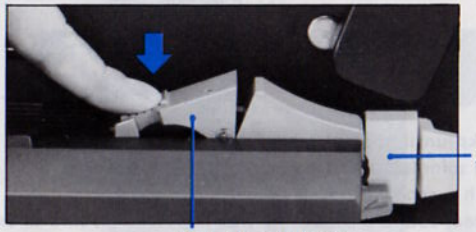


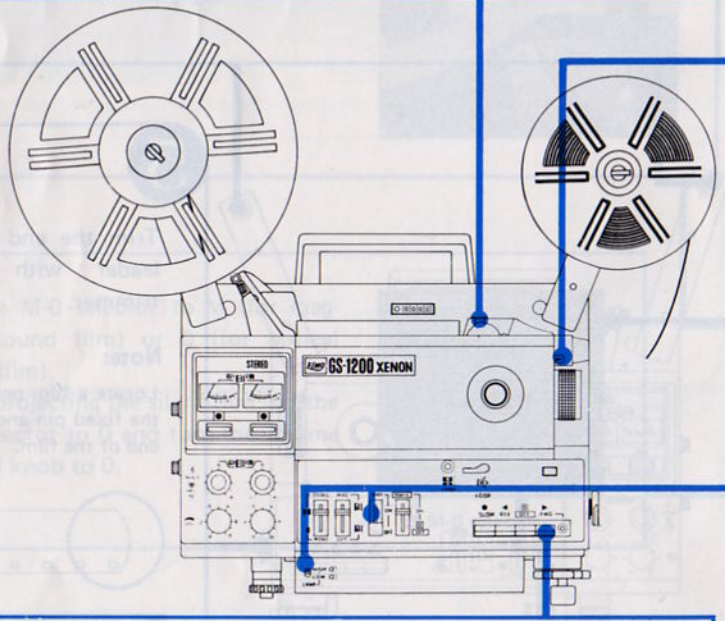


Film trimmer

6

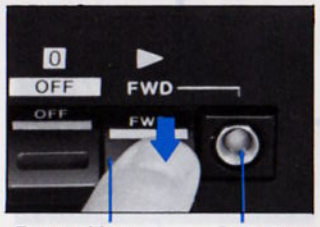
Depress auto thread lever until it locks.





7

Push the forward (FWD) button.
(The auto thread indicating lamp lights and the pilot lamp glows green.)

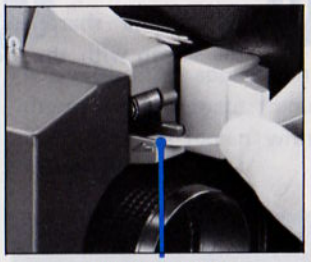


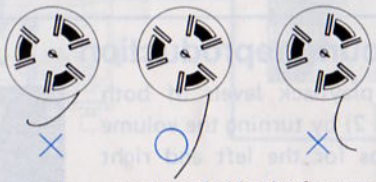
8

Insert the film leader into the auto thread slot as indicated by the red arrow.

Note:

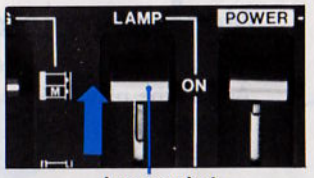
1. The film automatically threads and is attached to the take-up reel through the green film quide a few seconds after inserting. When film reaches the take-up reel, the auto thread lever will release automatically.
2. If the take-up reel fails to catch the film, stop the projector once and wind the leader round the take-up reel and turn the take-up reel clockwise by hand to release the auto thread lever manually.


Film thread slot

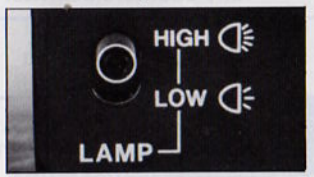

Be sure to use the properly curled leader for sure threading.

9

Set the lamp switch to ON position. If higher brilliance is required, set the lamp brightness selection switch to HIGH position.



Lamp switch



Lamp brightness selection switch

10

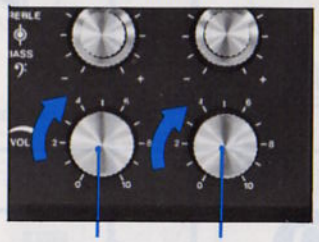
Adjust the sharpness of picture on the screen with the focus knob.

Focus knob

12 Stereo sound reproduction

Adjust the playback levels of both tracks (1 and 2) by turning the volume control knobs for the left and right channel.

Volume control knob



Monaural sound reproduction

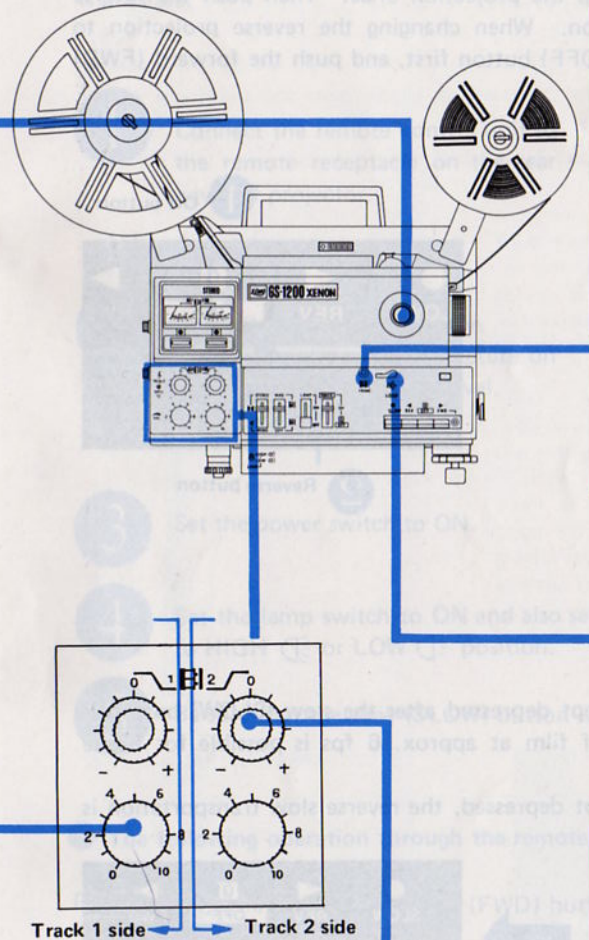
Set the stereo-mono selector to mono-position.
Adjust the playback level of track 1 by turning the volume control knob for left channel.
At the same time, turn the volume control knob for right channel fully counterclockwise.

13

Adjust the tone by turning the treble and bass control knobs.

Bass control knob

Treble control knob

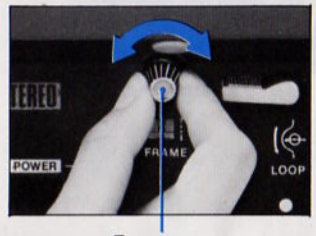


Track 1 side

Track 2 side

11

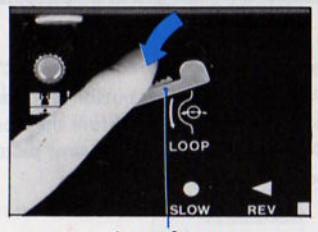
If a frame line appears on the screen, eliminate frame line from the screen with framer.



Framer

14

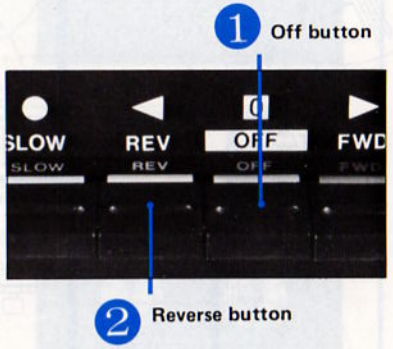
If film loop is lost during projection, press down the loop former.



Loop former

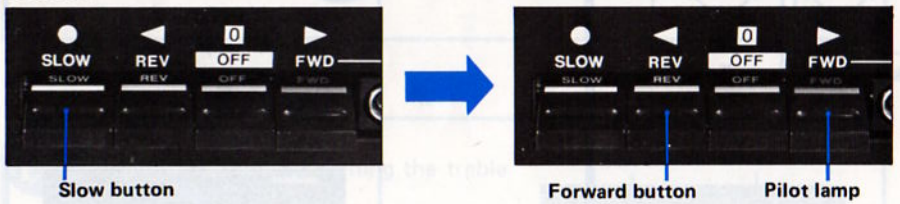
Reverse projection

Push the off (OFF) button to stop the projection once. Then push the reverse (REV) button for reverse projection. When changing the reverse projection to forward projection, push the off (OFF) button first, and push the forward (FWD) button.



Slow transportation

If the forward (FWD) button is kept depressed after the slow (SLOW) button is pushed, the slow transportation of film at approx. 6 fps is possible for frame hunting.
If the reverse (REV) button is kept depressed, the reverse slow transportation is possible.



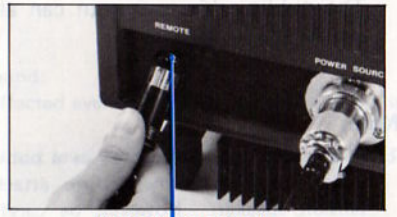
Note:

1. As soon as the slow button is released, the projector will automatically return to the original operation mode just before the slow transportation is started.
2. At slow transportation, any picture is not projected as the safety shutter cuts the light source to protect the film.

Remote control projection

With the optional remote control unit, remote operation of projection and recording is possible.

1. Connect the remote control unit to the remote receptacle on the rear cover of projector.

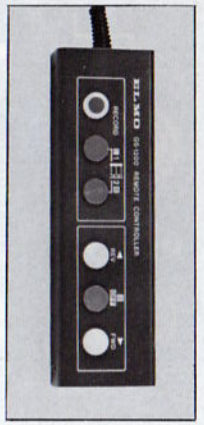


Remote receptacle

2. Load film with the projector. Adjust the sharpness of picture on the screen and the sound level.
3. Set the power switch to ON.
4. Set the lamp switch to ON and also set the lamp brightness selection switch to HIGH or LOW position.
5. Be sure that the slow (SLOW) button is free.

The following operation through the remote control unit is possible.

Forward projection:	Push Forward (FWD) button on remote control unit.
Stop:	Push Off (OFF) button on unit.
Reverse projection:	Push Reverse (REV) button on unit.
<GS-1200 XENON only>	
Recording:	Push Forward (FWD) button, depressing Recording (RECORD) button on unit.
Spot recording:	Push Spot recording button, depressing Recording (RECORD) button on unit.



Note:

Slow transportation through the remote control units is not possible.

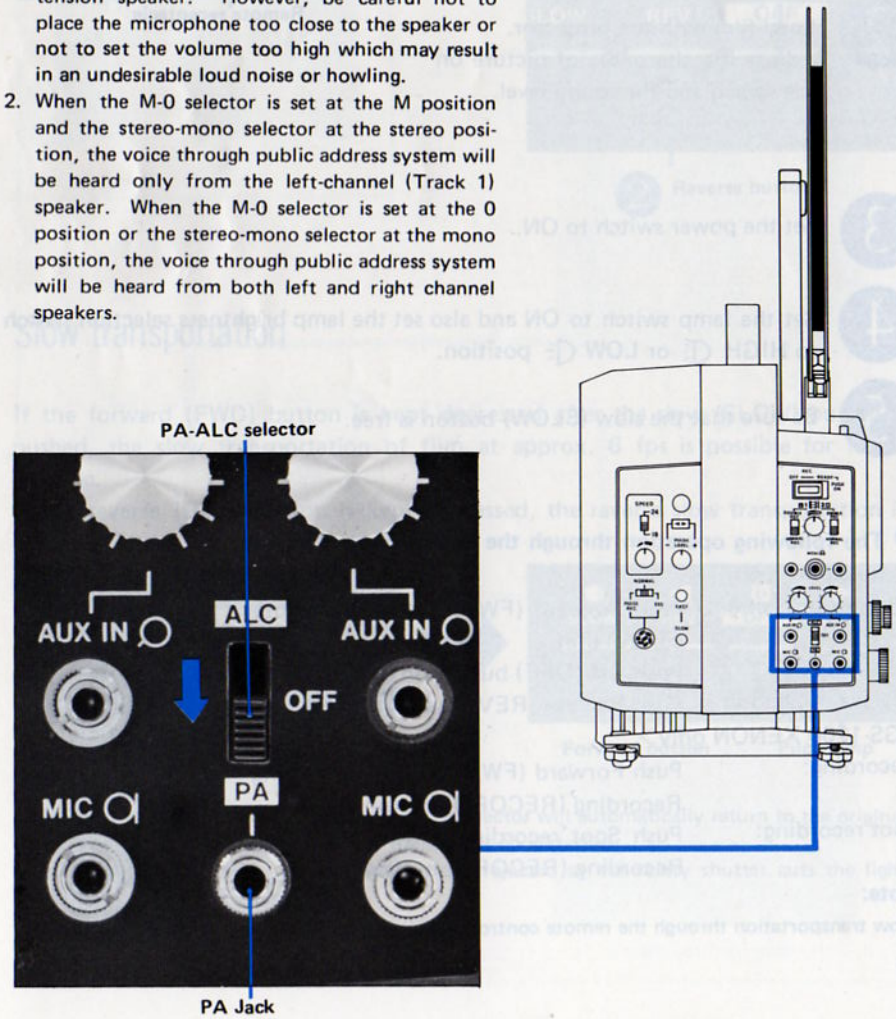
Public address system

You can use the projector as a public address system.

1. Set the PA-ALC selector to the PA position.
2. Plug the microphone into the PA jack.
3. Turn the volume control knob for left channel (Track 1) to get proper volume. The public address system can also be used to speak over the playback sound during the projection.

Note:

1. When using your projector as a public address system, it is recommended to attach the extension speaker. However, be careful not to place the microphone too close to the speaker or not to set the volume too high which may result in an undesirable loud noise or howling.
2. When the M-0 selector is set at the M position and the stereo-mono selector at the stereo position, the voice through public address system will be heard only from the left-channel (Track 1) speaker. When the M-0 selector is set at the 0 position or the stereo-mono selector at the mono position, the voice through public address system will be heard from both left and right channel speakers.



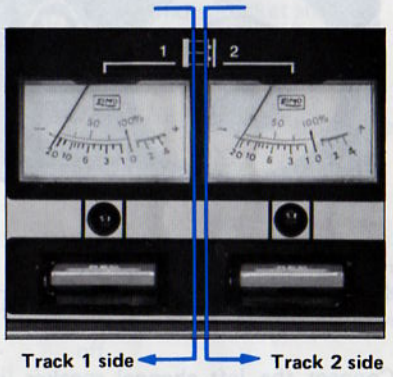
Using the level meter during playback

● GS-1200 XENON

The level meter can also be used to observe the output level at the AUX-OUT terminal.

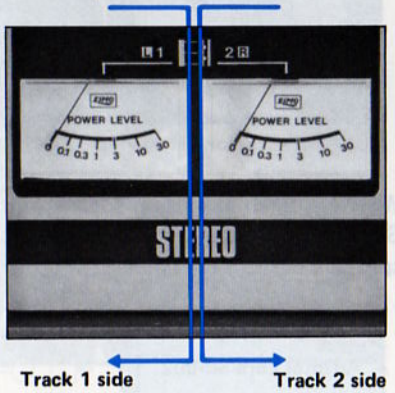
Note:

1. The level meter indicates the recording level of sound. Therefore, the indication of level meter is not affected even if the volume control knob is turned to adjust the loudness of playback sound.
2. When the level meter indicates 0 (100%), the output level at the AUX-OUT terminal is approximately 600Ω −10dBm.



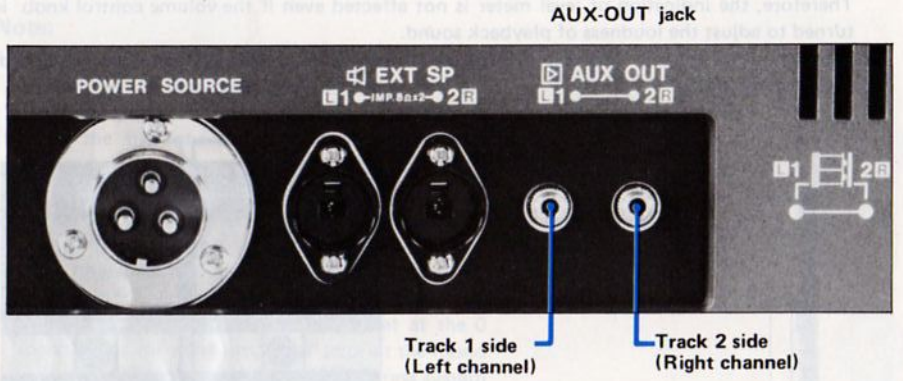
● GS-1200P XENON

The level meter indicates the output level at the EXT SP (8Ω) terminal. When the level meter indicates 3, the output level at the AUX-OUT terminal is approximately − 10dBm.



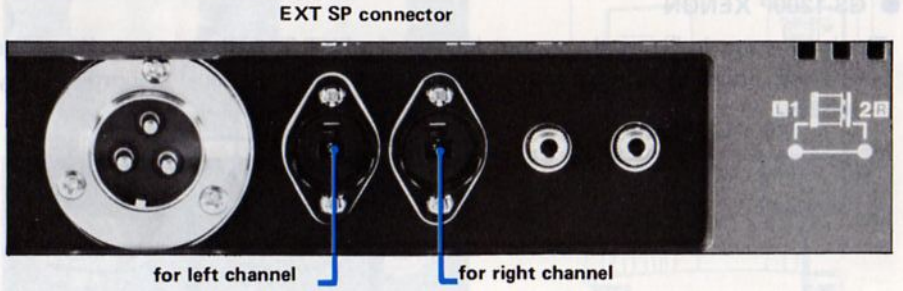
Reproducing sound through a stereo set

Connect the AUX-OUT jack of the projector (on the rear cover) with the AUX-IN or PB (playback) jack on a stereo amp. by the accessory cord MC-006. (Connect the Track 1 AUX-OUT jack with left channel, and the Track 2 AUX-OUT jack with right channel.)

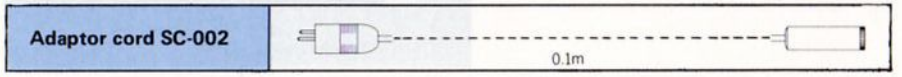


Connecting the extension speakers

Connect the left channel speaker line to the EXT SP 1 connector, and the right channel speaker line to the EXT SP 2 connector.

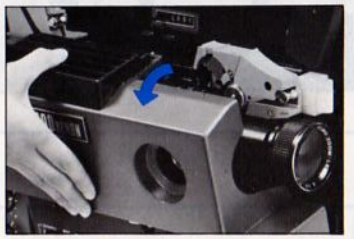


When using an extension speaker with a phone plug, use the accessory adaptor cord SC-002 for connecting its speaker line to the EXT SP connectors. Be sure to use speakers with an impedance rating of 8 ohms.



Removing the film from the film path

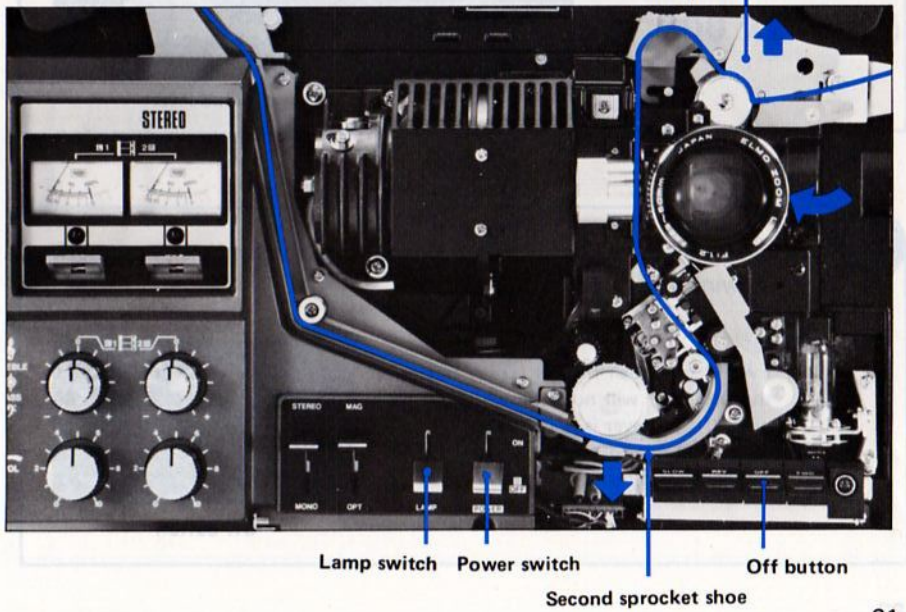
1. Push the off (OFF) button to stop the projector.
2. Set the lamp switch to OFF and slide the power switch to OFF after cooling the lamp sufficiently.
3. Open the front cover by pulling top toward yourself.



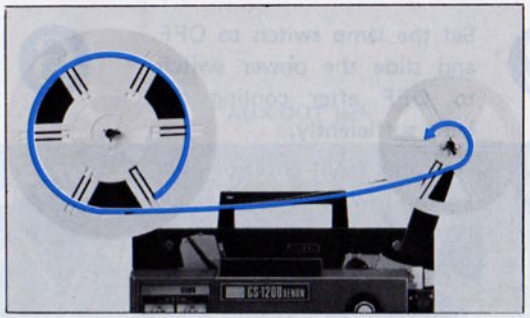
Front cover

4. Turn the take-up reel clockwise by hand to slack off the film.
5. Swing the lens away from the projector, holding the lens barrel.
6. Remove the film, pressing the first sprocket shoe upward.
7. Remove the film, depressing the second sprocket shoe.
8. Remove the film from the film path.

Note:
To insure the security, the high voltage for xenon lamp is switched off when the front cover is taken off.



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



2 Pull out the rewind (REW) lever.

Rewind lever

3 After the film has been completely wound on the feed reel, push back the rewind (REW) lever.

Note:

1. Even if you push the off (OFF) button, the projector will not stop while the rewind (REW) lever is pulled out.
2. Be careful not to touch the rewind lever during projection.

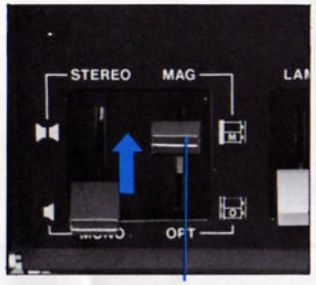
Off button

RECORDING

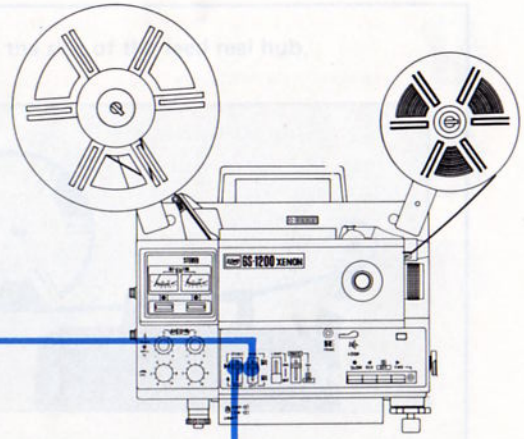
(Only for Model GS-1200 XENON)

Recording procedure

1 Set the M-0 selector to M.



M-0 selector

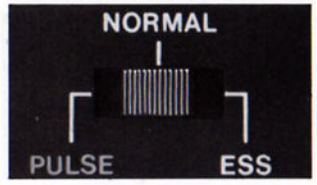


2 Set the stereo-mono selector to STEREO.

Note:
Always set to STEREO even when recording monaural sound.

Stereo-Mono selector

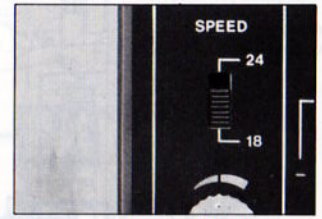
3 Set the ESS switch to NORMAL.



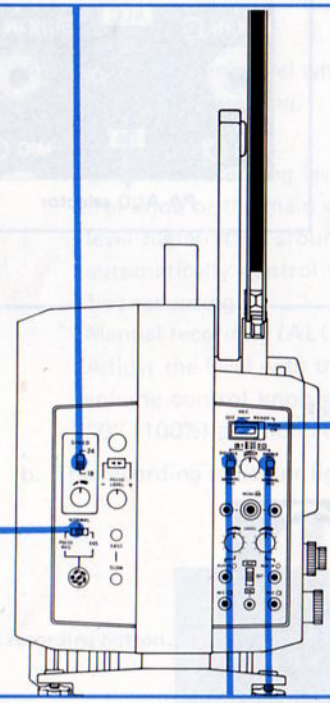
ESS switch

4 Select proper projection speed, either 18 fps or 24 fps.

Note:
Set the speed knob in the middle.



Speed selector



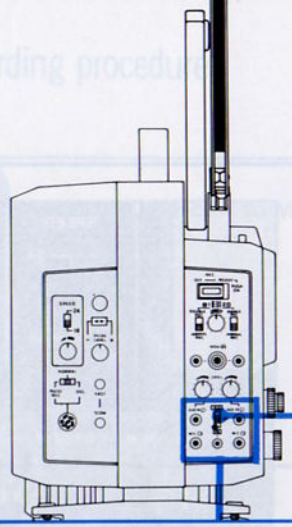
5 Set the spot recording button to READY.

Note:
Sound cannot be recorded if the spot recording button is set at OFF.

Spot recording button

6 Set the double recording selectors of both Track 1 and 2 to NORMAL REC.

Double recording selector



7

Set the PA-ALC selector either to ALC for automatic recording or to OFF for manual recording.

PA-ALC selector

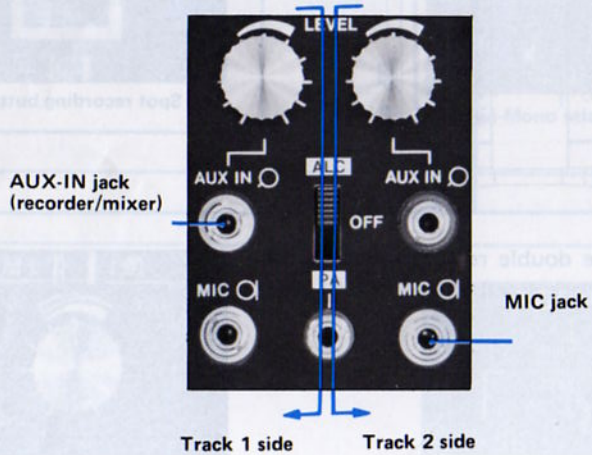
8

Connection of the input line.

A. Connect the tape recorder/mixer to AUX-IN jack.

Note:
Use the MIC jack when output level of mixer is low.

B. Connect the microphone to the MIC jack.



AUX-IN jack (recorder/mixer)

MIC jack

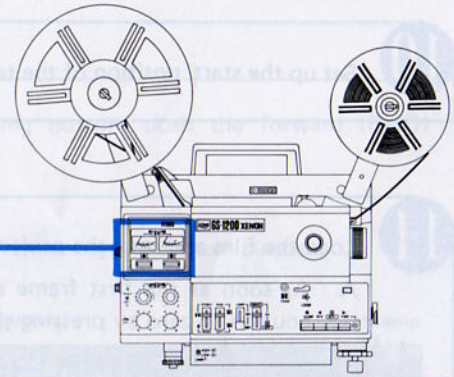
Track 1 side

Track 2 side

9

Recording level adjustment.

Note:
Make certain that the spot recording button is set at READY.



A. Input the sound.

B. Adjust the recording level while depressing the recording button.

a. Recording level setting.

* ALC recording:
Once the recording level is adjusted with the AUX volume control knob or the main volume control knob so that the needle of level meter stays around "0" (100%) position, ALC circuit will automatically control the level to maintain optimum distortion-free recording.

* Manual recording (ALC selector at OFF):
Adjust the level with the AUX volume control knob or the main volume control knob so that the needle of level meter swings to "0" (100%) position at maximum.

b. The recording indicator lights when projector is set for recording.

(ALC recording)

Spot recording button

Recording button

Recording indicator

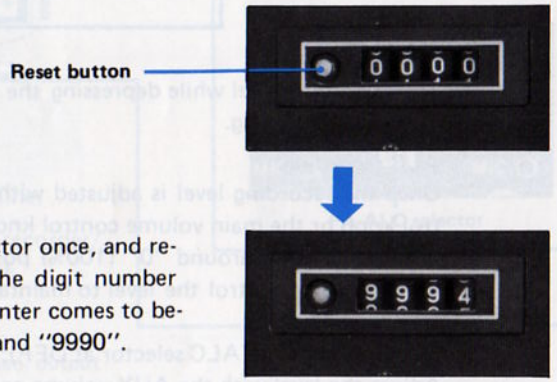
AUX volume control knob

Main volume control knob

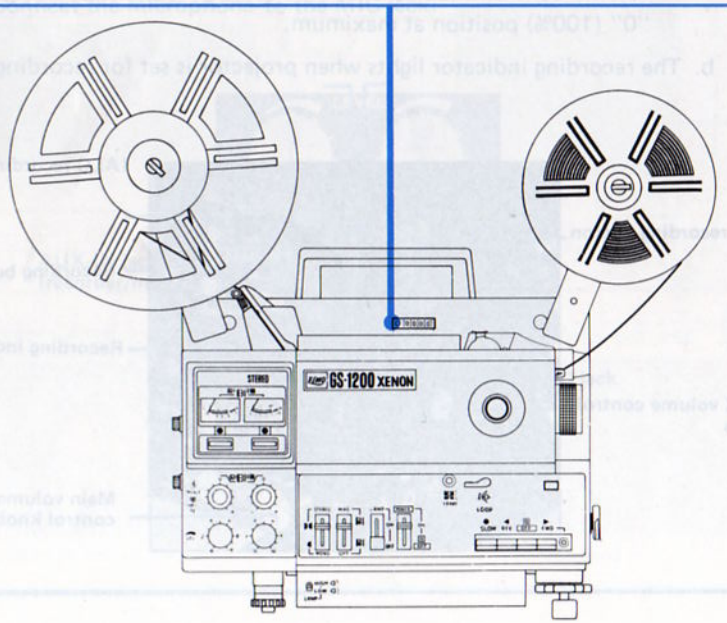
10 Set up the start position of the tape.

11 Load the film and start the projector.

A. As soon as the first frame appears on the screen, reset the film counter to zero by pressing the reset button.

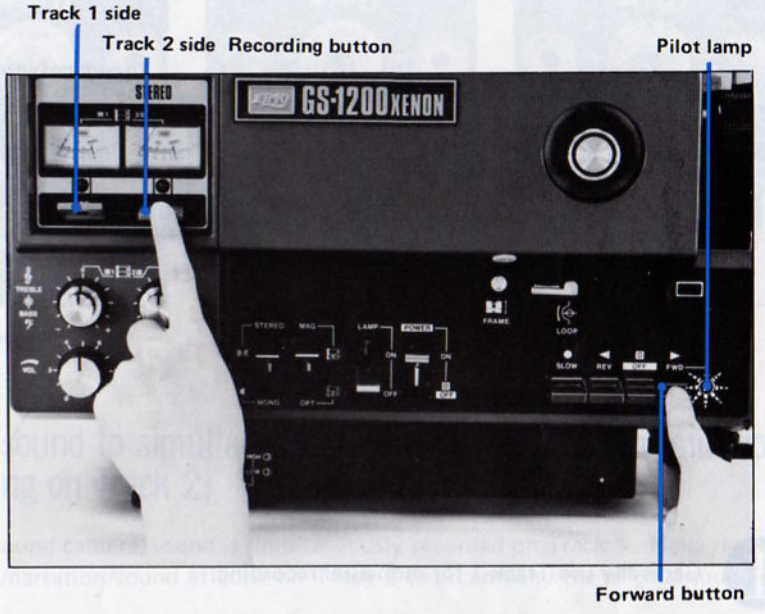


B. Stop the projector once, and reverse it until the digit number of the film counter comes to between "9994" and "9990".



12 While depressing the recording button, push the forward (FWD) button to start the projector.

Note:
After the projector starts running, release fingers from both buttons.



13 Start the tape recorder just when the digit number of the film counter comes to "0000".

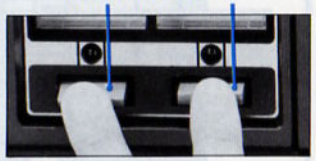
14 Stopping the projector releases the recording facility.
To discontinue the recording during projection, slide the spot recording button to OFF.

Stereo recording

1. Use Track 1 for the left channel and Track 2 for the right channel.

2. Adjust the sound levels of both Tracks 1 and 2.

3. Start the projector while depressing both recording buttons 1 and 2.



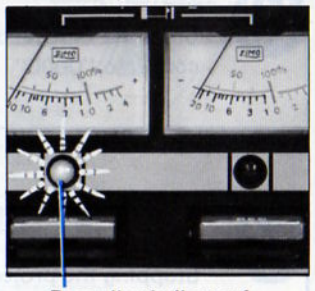
Note:
Make certain that both recording indicators 1 and 2 light.

Monaural recording

1. Generally use Track 1 for monaural recording.

2. See "Recording procedure" on page 24 for recording operation.
Adjust the recording level with the AUX volume control knob or the main volume control knob of Track 1.

Note:
Volume control knobs of Track 2 should be fully turned down.



3. Check that the recording indicator 1 lights during recording.

Monitoring

A stereo headphone or earphones can be used to monitor the sound.

Note:
When using earphones, monitor the sound on Track 1 through the left ear and on Track 2 through the right ear.

Stereo headphone jack

Earphone jack (left)

Earphone jack (right)

Adding sound to simultaneously recorded film (Recording on Track 2)

With the sound camera, sound is simultaneously recorded on Track 1. Make recording (BGM/narration/sound effects) on Track 2 to accompany the original sound on Track 1.

1. As for the connection and controls, use those for Track 2 recording.
(Shadowed part in the illustration).

2. It is advisable to monitor the recorded sound on Track 1 through the headphone or earphone while recording sound on Track 2.

Note:
Loudness of Track 1 sound being monitored through the headphone can be adjusted with the volume control knob 1.

Track to track sound transfer

1 To transfer sound from Track 1 to Track 2, connect the AUX-OUT jack of Track 1 to the AUX-IN jack of Track 2 with the connection cord MC-001.

AUX-OUT jack
Track 1 side

AUX-IN jack
Track 2 side

2 Set the controls of Track 2 to the recording mode, and start the projector. Adjust the recording level with the AUX volume control knob of Track 2, and transfer sound from Track 1 to Track 2.

Note:

1. When the AUX volume control knob 2 is turned too far, undesirable self oscillation may occur. (In this case, level meter swings extremely to the RH end of meter range.) Adjust the AUX volume so that the self oscillation will not occur.
2. The recording level can be checked by monitoring the sound being recorded on Track 2. The sound being transferred, whose loudness is adjustable with the volume control knob 1, can also be monitored.

Volume control knob
Track 1 side

3 To transfer sound from Track 2 to Track 1, connect AUX-OUT jack of Track 2 to AUX-IN jack of Track 1 with the connection cord MC-001. Use the controls for Track 1.

Elmo 4-channel mixer, MX-4 (option) is convenient for mixing sound during track to track sound transfer.

AUX-OUT jack **AUX-IN jack**

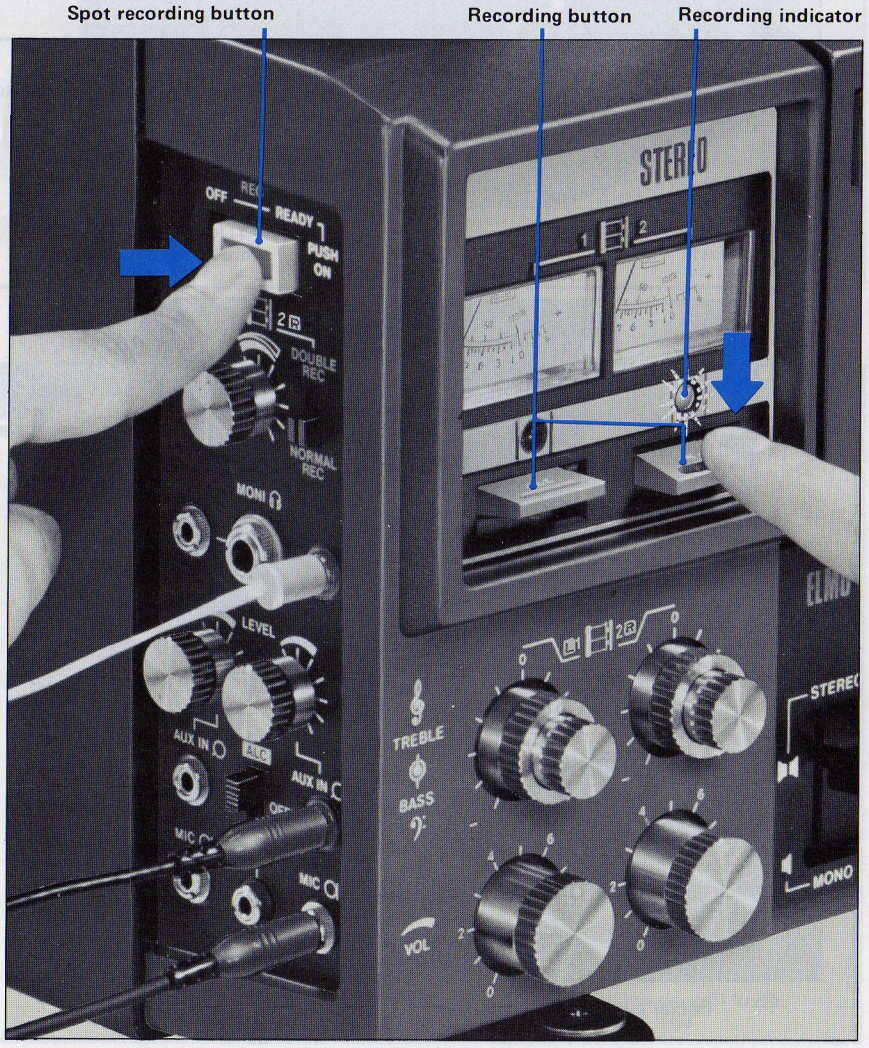
(Mixer connection during transferring sound from Track 2 to Track 1))

Spot recording

To make spot recording without stopping the projector, depress the recording button together with the spot recording button.

Note:

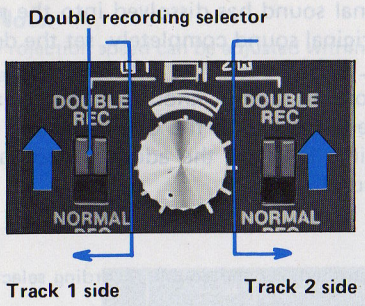
1. The recording indicator lights when the recording circuit is on.
2. Make certain that the spot recording button is set at READY.

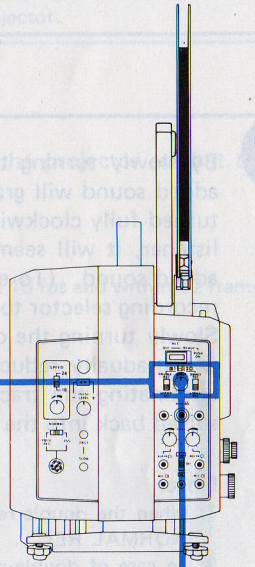


Double (Sound on Sound) recording

Sound can be added over the recorded track without erasing the original sound.

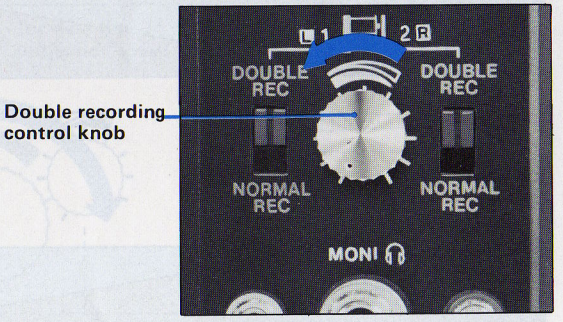
1 Set the double recording selector of the track, to which you want to add new sound, to DOUBLE REC.





2 Turn the double recording control knob fully counterclockwise.

Note:
With the knob set at this position, new sound is not recorded and the original sound is not affected.

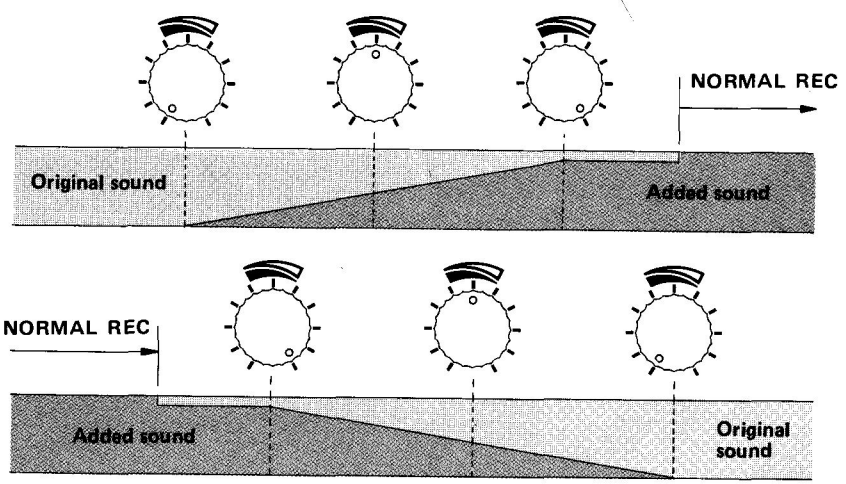


3 Start the projector while depressing the recording button of the track to be recorded over. Make certain that the spot recording button is set at READY.

4 By slowly turning the double recording control knob clockwise, the added sound will gradually dominate the original sound. At the knob turned fully clockwise, the original sound is mostly erased, and, to the listener, it will seem the original sound has dissolved into the newly added sound. (To erase the original sound completely, set the double recording selector to NORMAL REC.)
Slowly turning the double recording control knob from this position will gradually reduce the added sound with the original sound again dominating the track. This time it seems the added sound has dissolved back into the original sound.

Note:

1. When the double recording is finished, set the double recording selector to NORMAL REC.
2. In case of double recording, the clearness of the original sound may be affected.

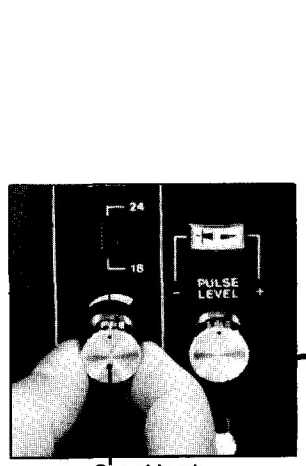


Projection speed adjustment during recording

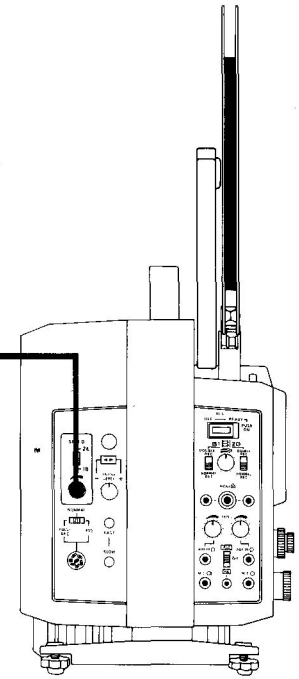
1 When transferring the sound, which was recorded with an independent tape recorder while filming or programed in conformity with every scene of movies, from the tape recorder to sound track of film, the sound to be recorded may sometimes not accord with the scene of movies as programed because of the fluctuation in running speed of tape recorder or projector.

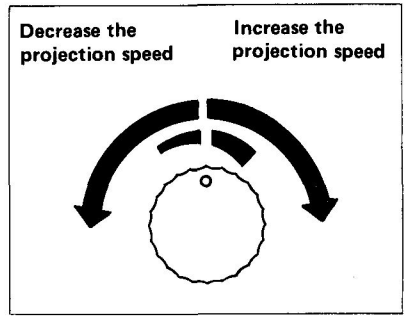
2 In the above case, turn the speed knob of the projector so that the sound meets the scene.

Note:
Projection speed can be adjusted within ±1 frame at 18 fps and within ±2 frames at 24 fps.



Speed knob





PULSE-SYNC PROJECTION

Pulse-sync projection

This refers to the synchronized projection of the film taken with the pulse-sync cameras (Elmo 612R, 1018R and 110R Cameras) and the cassette tape recorded with Elmo DR-1 or SR-1, or to the synchronized projection using Elmo Synchro-Sound SA-1 with an open tape recorder.

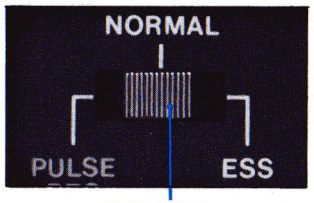
1 Connect a tape recorder to the projector with the Pulse Cord PC-001.

Pulse Cord PC-001

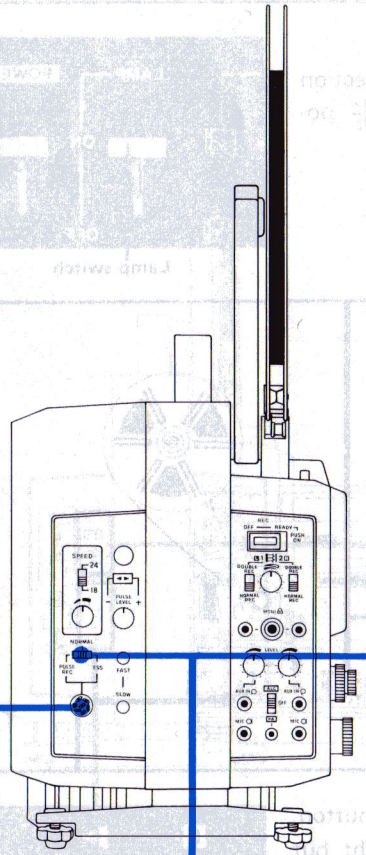
2 Set the tape in the tape recorder.

3 Load the film.

Note:
The ESS switch must be at the position of the ordinary projection (NORMAL).



ESS switch

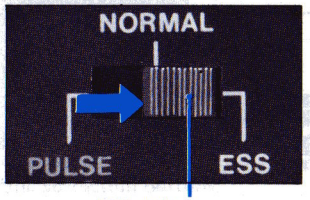


4 Locating the start of the film.

a) The first frame of the intended projection scene should be adjusted to stay over the aperture mask.

b) For easy adjustment, use the built-in film counter and the slow transportation feature.

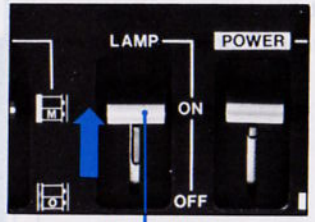
5 Slide the ESS switch to the right for Pulse-Sync projection (ESS projection).



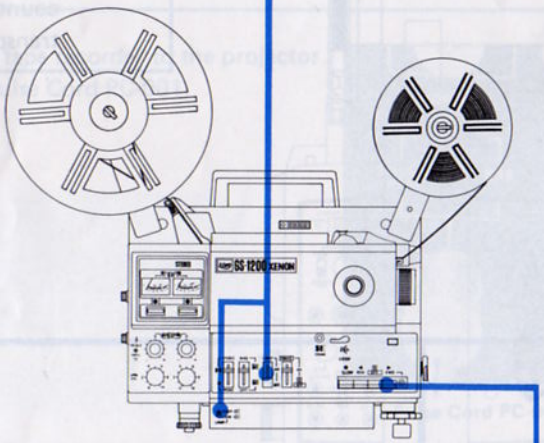
ESS switch

6

Set the lamp switch to ON.
Set the lamp brightness selection switch to LOW or HIGH position.

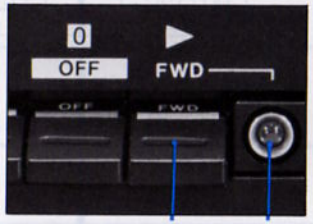


Lamp switch



7

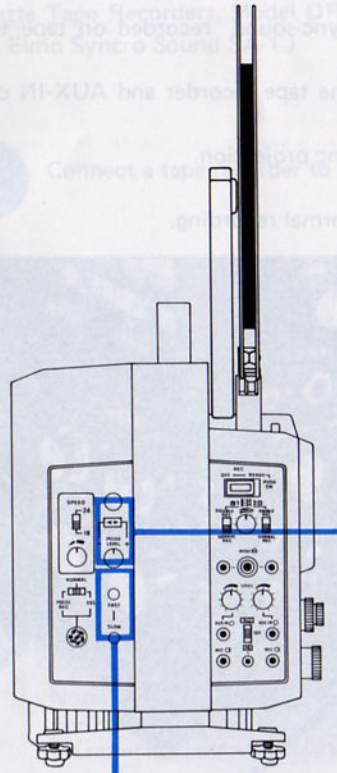
Depress the forward (FWD) button. (The green pilot lamp will light but the projector will not run because the projector is subject to the control of the pulse from the tape.)



Forward button Pilot lamp

8

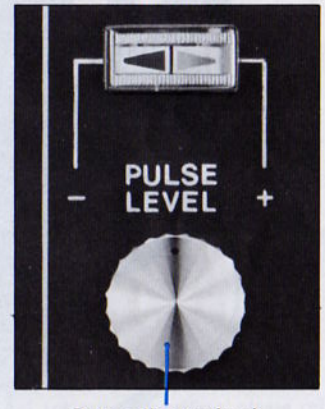
Start the tape recorder. The projector will automatically start running with the pulse recorded on tape.



9

When the projector starts running, turn the pulse adjusting knob so that the indication needle of the pulse meter will stay in the middle.

Pulse meter



Pulse-adjusting knob

10

When the synchronization goes out of phase by any chance, correction can be done with fast/slow buttons.
The projector will run faster while the fast button is being depressed and it runs slower while the slow button is being depressed.

Projection speed faster
Projection speed slower
Sync correction buttons

How to transfer the pulse system sync-sound to the sound stripe

You can directly transfer the pulse system sync-sound recorded on tape to the sound stripe of the film.
Establish connection between AUX-OUT of the tape recorder and AUX-IN of the projector.
Set the projector for recording and do pulse sync projection.

- Of course, the film must have sound stripes.
- Recording procedures are the same as the normal recording.

Pulse recording

This refers to the method to make a pulse system synchronized tape. (Use Elmo Cassette Tape Recorders, Model DR-1 or SR-1, or any types of open tape recorders with Elmo Syncro Sound SA-1.)

1. Connect a tape recorder to the projector with the Pulse Cord PC-001.
2. Set the tape in the tape recorder.
3. Adjust the first frame of the film over the aperture mask.
4. Slide the ESS switch to the left, PULSE REC.
5. Start the tape recorder.

Note:
For operation of the tape recorder or ESS SA-1 for pulse recording, please refer to the respective instruction booklets.

6. Start the projector. When the projection is completed, stop the projector.
7. Stop the tape recorder.
Now the tape has the necessary pulse. All you need now is to run the projector and the tape recorder, following the instructions for pulse-sync projection.
The projector will start running automatically with the pulse from the tape.
Record narration or music, watching scenes.

Microphone

Supplied microphone is high-performance electret condenser type, which requires one AA (or R6) battery for operation. Be sure to install the AA (or R6) battery before operation.

Note:

Unload the battery in case microphone is not used for a long time.

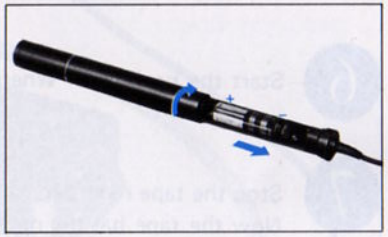
If an exhausted battery is kept in the microphone for a long period, battery fluid may leak out of the battery and damage the microphone.

Microphone proper | Battery | Wind screen | Microphones stand

Installing battery

Turn the metal case of the microphone counterclockwise and pull out the inner body until the battery holder appears.

Load it with an AA (or R6) battery in accordance with the polarity indication.



Note:

The exhaused battery affects output level of the microphone. In such a case, replace it with a new one.

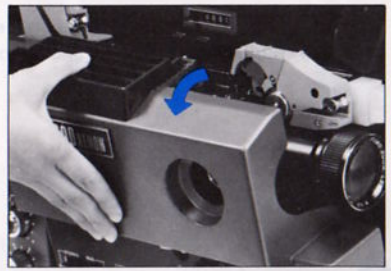
MAINTENANCE AND CHECK

Cleaning

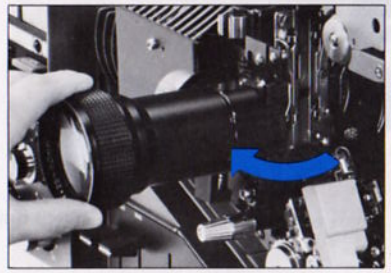
To get optimum performance, regular cleaning is vital. When cleaning, be sure to disconnect the power cord.

1. Pull the top of the front cover towards you to open.

Front cover

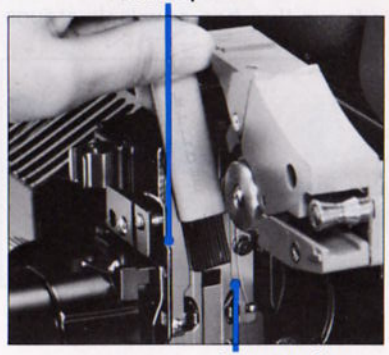


2. Swing the lens away from the projector.



3. Gently clean the aperture and pressure plates with the brushes provided or use a soft lint-free cloth. Dust which adheres to the magnetic head surface may affect recording/playback performance. So clean the head surface gently with a cleaning stick or soft cloth. When cleaning the head, make sure to disconnect the power cord and to set the motor switch at OFF.

Pressure plate



Aperture plate

Be careful not to touch the film claw or 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

When replacing the lamp, contact your dealer or nearest Elmo distributor. Do not replace the lamp by yourself.

250W Xenon-arc Lamp

The adopted Xenon-arc lamp is an electric-discharge lamp designed specially for 8mm projectors. To keep high performance of lamp, observe the following points for important and helpful information.

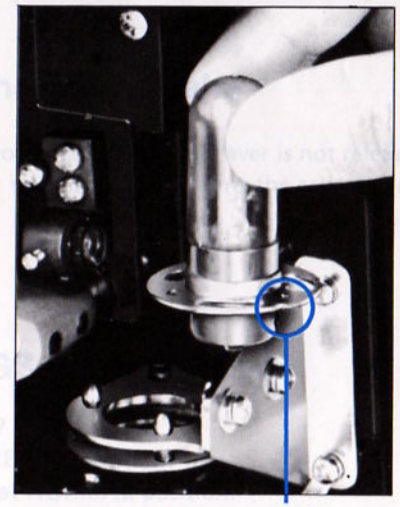
1. It is recommended to switch on the lamp a few minutes before starting projection for stabilized lamp performance.
2. While lighting, never give any shock or vibration to the lamp.
3. As the inner air pressure and temperature of the Xenon-arc lamp are very high, frequent switching of lamp may affect the performance of the lamp.

Replacing exciter lamp

Disconnect the power cord.

Exciter lamp (4V–0.75A), type KE-02 or ANSI Code BRS should be used.

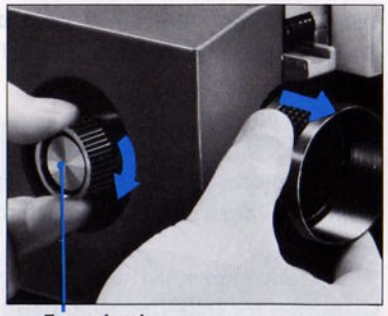
1. To remove, turn the lamp counterclockwise.
2. To install a new lamp, align the holes of the lamp fringe with the three guide pins of the socket. The notch on the fringe should face forward.
   Turn the lamp clockwise until it stops.



Notch

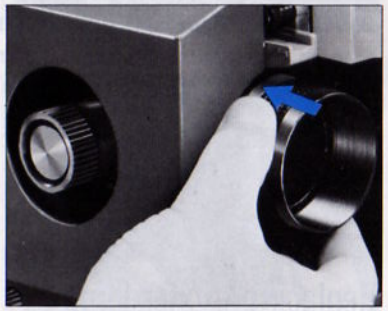
Changing the projection lens

1. Turn the focus knob fully clockwise, and pull out the lens gently.



Focus knob

2. Turn the focus knob fully clockwise. While pulling focus knob towards you, insert the lens barrel into the sleeve until the lens is all the way in.



Trouble-shooting hints

■ Motor does not run

1. Is the power cord properly plugged in?
2. Is the power switch on?
3. Is the ESS switch at NORMAL position?

■ Film does not thread properly

1. Is film leader correctly trimmed?
2. Isn't film extremely curled?
3. Is the auto thread lever set?

■ Projection lamp does not come on

1. Is the lamp switch ON position?
2. Is the front cover in proper position?

■ The auto thread lever is pushed by mistake

Load the film in the projector once. (When the lever is not released even when the film reaches the take-up reel, turn the take-up reel clockwise by hand slightly.)

■ Recording is not possible (GS-1200 XENON)

1. Is M-0 selector at M position?
2. Is spot recording button at READY position?
3. Is double recording selector at NORMAL position?

■Playback is not possible

1. Is M-0 selector at proper position?
2. Isn't volume control knob turned fully counterclockwise?
3. Isn't the exciter lamp for optical reproduction broken?

■Stereo effect in playback is hardly obtained

1. Is the stereo-mono selector at STEREO position?
2. Is volume control knob turned properly?
3. Is the connection of the extension speakers for the R channel and L channel correct?
4. Is the film a stereophonically recorded one?
5. Are the extension speakers connected at the proper polarity?

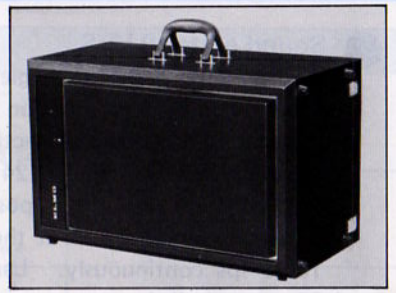
■The front reel (the spindle of front arm) does not stop rotating

Isn't the rewind lever pulled?

Optional accessories

● Twin extension speakers ES-1200

High performance extension speakers with a 12" (30cm) woofer and a horn type tweeter. Especially suitable for projection in a large auditorium. Stores conveniently in one portable case.

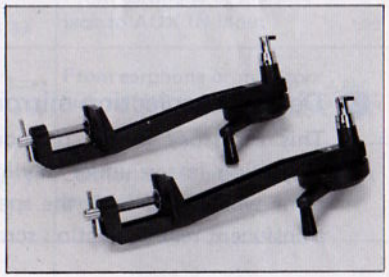


● 4-channel mixer MX-4

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.

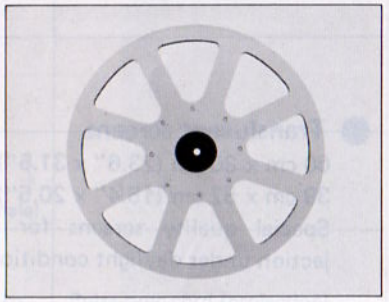
● Elmo rewinders

Large reel capacity-1200ft (360m). Fast winding. One rotation of crank turns reel three times.



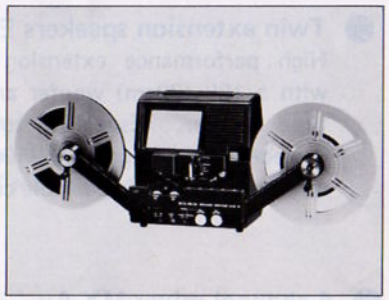
● 1200ft (360m) reel

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



Sound editor 912/S

Incorporates Super 8/Single 8 magnetic sound reproduction facility. Capable of flickerless projection at the constant speed of 18 and 24 fps. For editting convenience, possible to adjust projection speed at the range of 10-30 fps continuously. Large 120 x 90 mm built-in screen assures you bright and clear image projection.

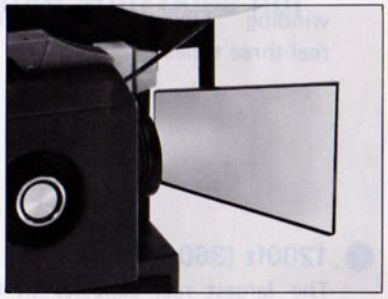


Editor 912

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

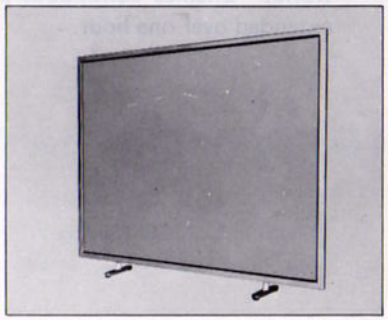
Daylight projection mirror

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 x 80 cm (23.6" x 31.5")
39 cm x 52 cm (15.4" x 20.5")
Special quality screens for rear projection under daylight condition.



Accessory cords

	Code No.	Specifications	Remarks
Connection cord	MC-001	3.5φ 1.5m 3.5φ	1.5 m
	MC-002	6φ 1.5m 6φ	1.5 m
	MC-003	1.5m 3.5φ	1.5 m
	MC-004	clip 1.5m	1.5 m
	MC-006	1.5 m 3.5φ	1.5 m
	MC-009	3.5φ 1.0 m 3.5φ	1.0 mm From earphone or monitor jack to AUX IN input 10Ω
	MC-010	3.5φ 1.0 m GREY 3.5φ	From earphone or monitor jack to MIC input 2.2KΩ 10Ω 10Ω
	MC-017	3.5φ (Female) 3.5φ	Connection of green monitor jack and AUX IN jack
Adaptor	MP-001	3.5φ 6φ (Female)	
	MP-002	6φ 3.5φ (Female)	
Speaker cord	SC-002	10cm 6φ (Female)	10 cm
Pulse (Projection) cord	PC-001	1.2m	Pulse-sync cord (projection)

Projection distance and image size

Focal length	12.5 mm	15 mm
Distance	Image size (cm)	Image size (cm)
1 m	31 × 42	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	25 mm	50 mm
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	123.5	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	97.6	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

Specifications

Power source	Single phase AC, 50/60Hz
Power consumption	450W
Projection speed	18 and 24 fps (Fine speed adjustment is possible.)
Motor	4 motors used. Main electronic governor motor, Take-up motor, Rewind motor and Cooling fan motor.
Film	Super 8/Single 8 sound and silent films
Film loading	Fully automatic loading
Film capacity	Max. 360m (1,200ft)
Reverse projection	Possible
Slow transportation	Possible
Remote control	Forward and reverse projection and switch-over of magnetic recording and reproduction can be remotely controlled with an optional remote control unit.
Film rewinding	High speed rewind
Film counter	Built-in
Angle adjustment	Up to 7° (Inclinaton adjustment is possible.)
Projection lamp	250W Xenon-arc lamp
Projection lens	F1.0 f = 12.5 – 30mm zoom lens or F1.2 f = 25 – 50mm zoom lens
Sound system	GS-1200 XENON . . . . . Magnetic and optical sound reproduction and magnetic recording GS-1200P XENON . . . . . Magnetic and optical sound reproduction
Stereo recording/reproduction	Simultaneous magnetic recording/reproduction of sound on track 1 and on track 2 for true stereo sound is possible.
2-track recording/reproduction	Simultaneous and individual recording/reproduction of sound on track 1 and/or track 2 is possible.
Track-to-track sound transfer	Possible from track 1 to track 2 or vice versa.
Double recording	Possible simultaneously or independently on track 1 and track 2.
Spot recording	Possible simultaneously or independently on track 1 and track 2.
Sound Mixing	Sound from AUX-IN jack and MIC jack can be mixed.
Volume control	Individual volume control of track 1 and track 2 is possible.
Tone control	Bass and treble separate control for both track 1 and track 2.
Amplifier	Stereo amplifiers.
Music power output	30W + 30W (8 ohms)
Recording level control	Automatic and manual control.
Input terminals	AUX-IN (x2): Impedance 50KΩ each, more than – 20 dBs MIC (x2): 500Ω – 10KΩ each, –72 dBs ~ –30 dBs
Output terminals	EXT SP (x2): 8Ω each AUX-OUT (x2): 600Ω each MONITOR (Stereo headphones) : 8 ~ 16Ω MONITOR (Earphone x 2) : 8 ~ 16Ω
Public address	Possible
Recording/playback head	2-track special alloy magnetic head (Alternating bias system)
Photo electric element	Solar battery
Pulse synchronization	Possible. While projecting with pulse synchronization, magnetic recording or reproduction is possible.
Exciter lamp	DC lighting system. 4V – 0.75A lamp (Type KE-02, Code BRS)
Speakers	Two 12.5cm (5 inches) dynamic speakers built-in. Extension speakers can be used.
Dimensions and Weight	385 x 299 x 219 mm (15.2 x 11.8 x 8.6 inches) 16.5 Kgs. (36.4 lbs.)

(The above specifications are subject to change without notice.)

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