

TR 27

BOLEX
SP 80
special

MAGNETIC SOUND PROJECTOR

18 24

TRIC

REC. LEVEL

PLAYBACK

RECORD

BOLEX
SP 8
special

R

TRIC

REC. LEVEL

RECORD

INSTRUCTIONS FOR USE

Contents

This instructions booklet is intended for both the Bolex SP 80 special and Bolex SP 8 special projectors. These two models being practically identical, except for a few details, you will find herein illustrations of the SP 80 special only.

Your projector is supplied with:

- 1 Bolex Hi-Fi zoom lens
- 1 12 V / 100 W halogen lamp with incorporated dichroic mirror
- 1 power cord
- 1 fuse
- 1 film cutter
- 1 microphone
- 1 Bolex 400' reel
- 1 reel with about 16½ ft of striped Super 8 film
- 1 instruction booklet
- 1 guarantee card

Your projector is designed for silent and magnetic sound Super 8 films.

Projection

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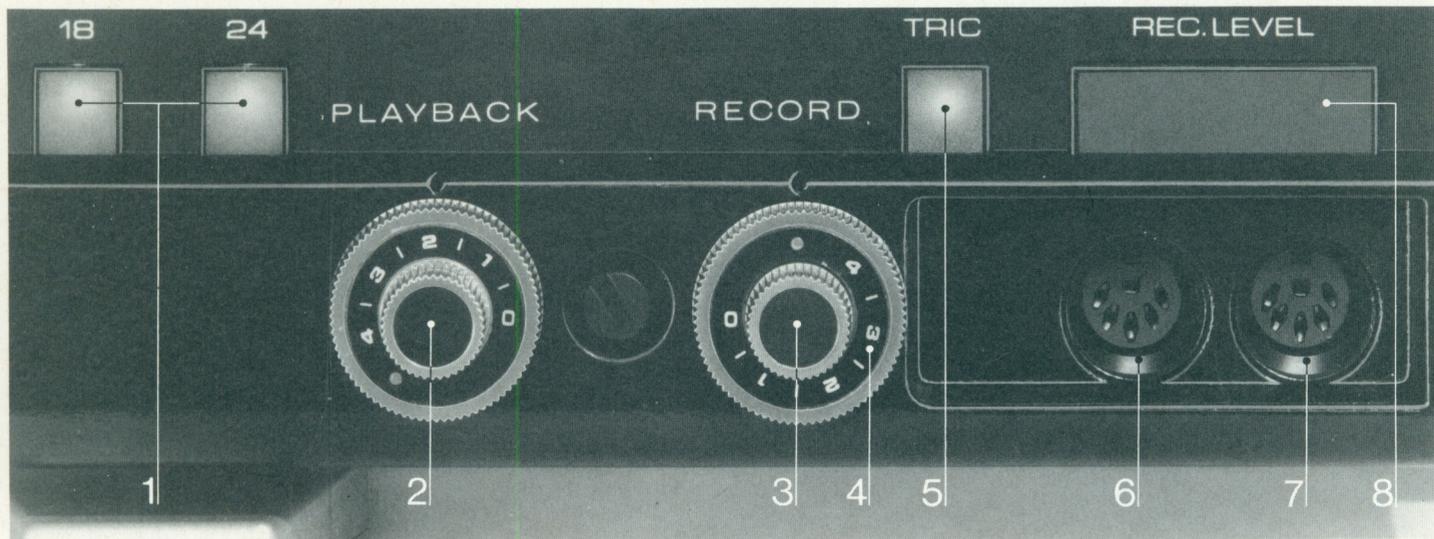
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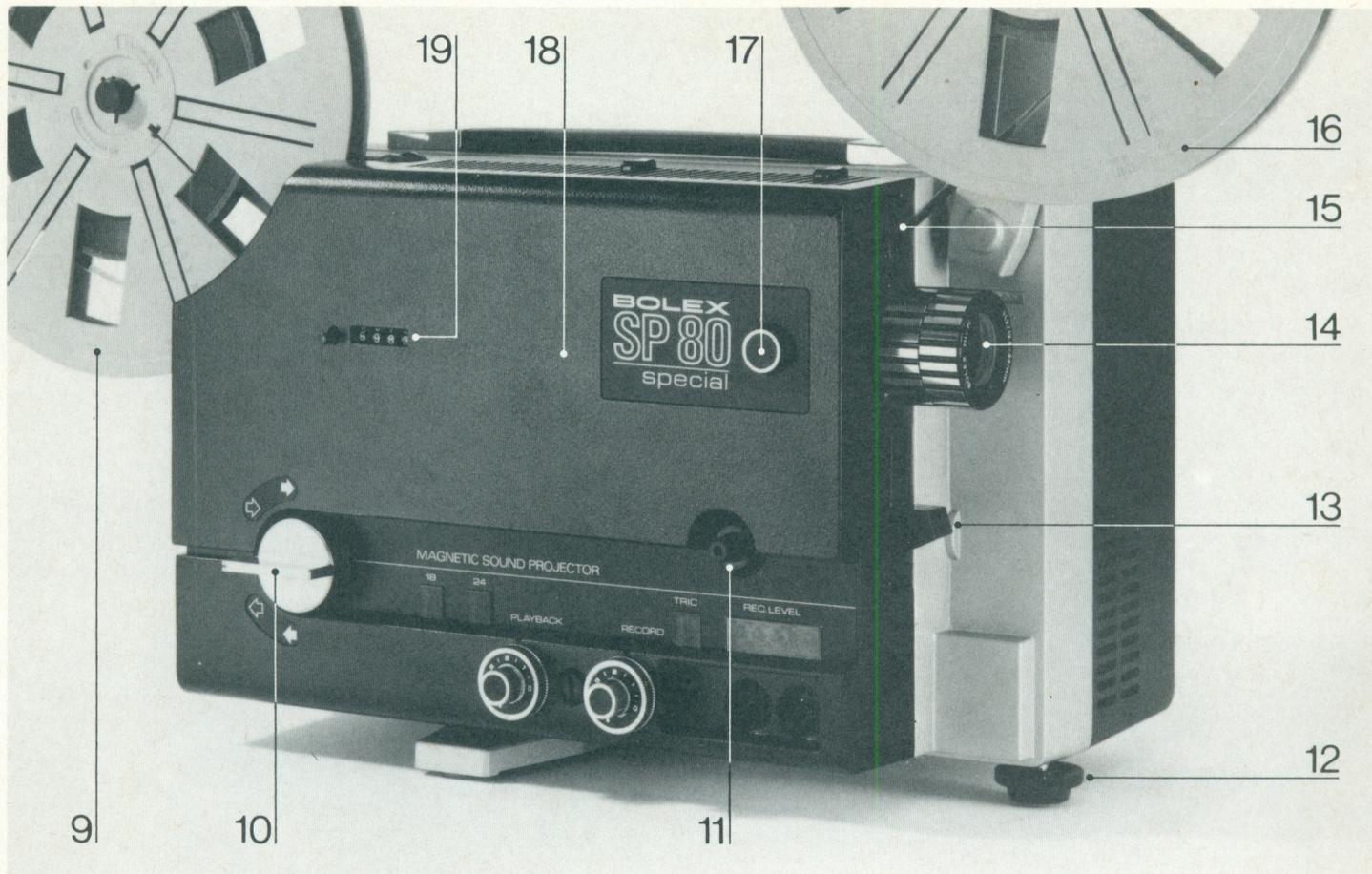
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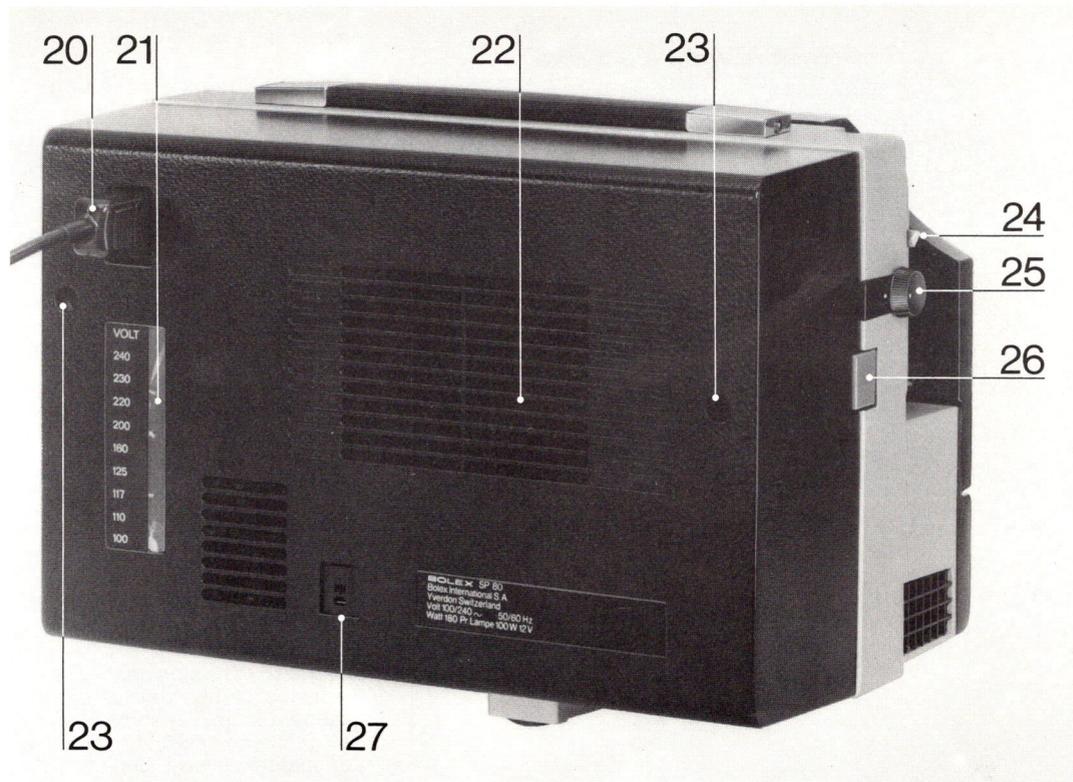
Description of the projector



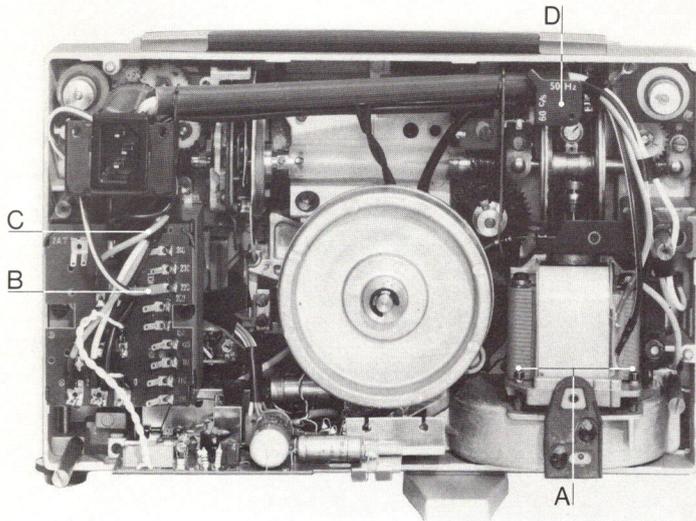
- 1 Luminous projection speed indicator
- 2 Sound volume control knob
- 3 Knob for manual or automatic adjustment of the recording level
- 4 Sound superimposition ring (variable erasure and sound dissolves)
- 5 Luminous superimposition indicator
- 6 Microphone and record-player input
- 7 External amplifier output
- 8 Recording level indicator



- 9 Take-up reel
- 10 Main switch
- 11 Framing control knob
- 12 Front foot for height adjustment
- 13 Threading lever
- 14 Bolex Hi-Fi zoom lens
- 15 Threading slot
- 16 Feed reel
- 17 Focusing knob
- 18 Front cover
- 19 Footage counter
- 20 Power socket
- 21 Voltage selector window
- 22 Loudspeaker
- 23 Back cover fixing screws
- 24 Arm locking lever
- 25 Manual operating knob
- 26 Recording key
- 27 Output for external loudspeaker



Preparing the projector



Before connecting projector to power line, do the following:

Remove the motor locking screws

For shipping, the motor is locked with two screws (A) which must be removed. For this purpose, lift off back cover after removing the two mounting screws.

Match projector to your power supply

The projector must be set to the voltage and frequency of your local power supply. The voltage setting is visible through the opening at the rear of the projector, while the frequencies are shown on the descriptive panel.

To set the voltage

Disconnect the projector and remove rear cover.

Connect the **red plug** (B) to the terminal of your line voltage.

In areas with a high density of industrial plants, for example, the mains voltage may sometimes surge unexpectedly, producing a premature deterioration of the projection lamp (beads of molten metal appear in the damaged lamp). In such areas, to prolong the life of the lamp, set the projector to a voltage higher than that of the mains.

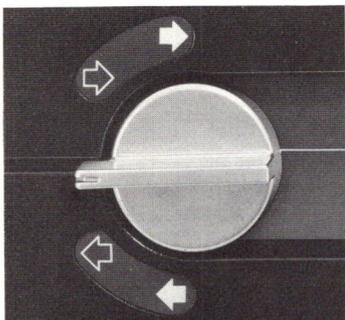
To set the frequency

(necessary only on model marked 50 / 60 cycles)

Disconnect the projector and remove the rear cover.

Connect **blue plug** (C) to the terminal corresponding to the frequency of your power supply.

Turn lever (D) so that the frequency marking can be read horizontally.



Main switch

The main switch can be set to the following positions :

■ = stop, lamp warming up

Important !

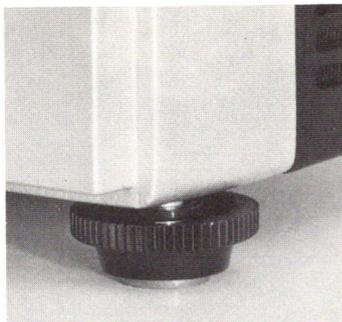
It is not sufficient to set the main switch on position « stop » to put the projector out of circuit.

↗ = forward projection, lamp warming up (threading position)

→ = forward projection, lamp on

↖ = reverse projection, lamp warming up

← = reverse projection, lamp on



Setting up the projector

Before plugging the projector into the mains, make sure that the main switch is set to «stop».

On plugging in, the fan starts working and the lamp warms up.

Move main switch to «forward motion, lamp on».

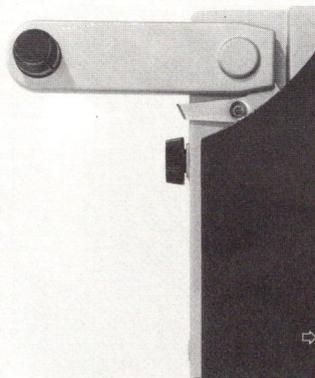
Adjust the projection height by turning the front foot.

Adapt picture size to the screen dimensions by turning the front ring on the lens.

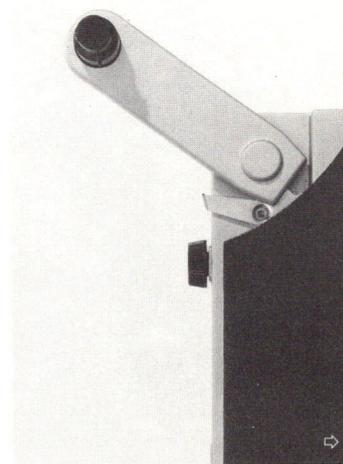
Focus the lens approximately, this time by turning the focusing knob.

Stop the projector.

Raise the front reel arm to its upright position and place the loaded reel on its spindle. If the film is properly wound up, the film perforations should be facing you.

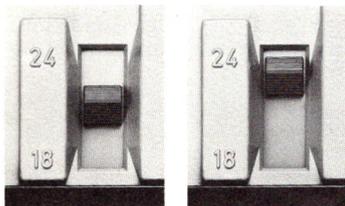
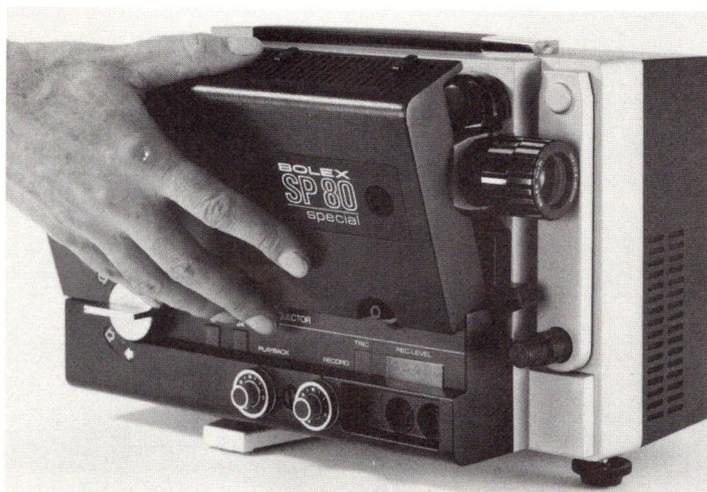


Raise the back reel arm to its upright position and place the take-up reel on its spindle.



When using a 600-ft reel:

Press the locking lever and turn the back arm upwards until it engages.



Projection speeds

The projector runs at 18 or 24 f.p.s. and can therefore be used for the projection of your own as well as commercial Super 8 films.

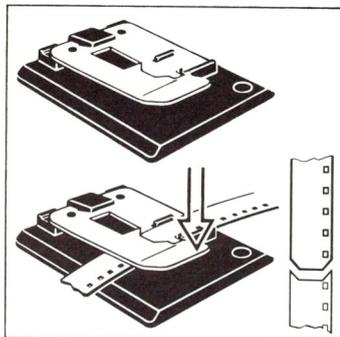
Change of speed must be carried out only when the projector is stopped.

It is done as follows:

Lift off the front cover.

Set the switch to the desired position.

The projection speed set is indicated on the luminous indicator (green).



Automatic threading

For faultless automatic threading and film take-up, the film must have a leader of at least 20 inches, slightly curved in the direction of the film take-up. The beginning of the leader must have a clean cut, preferably made with the film cutter supplied.

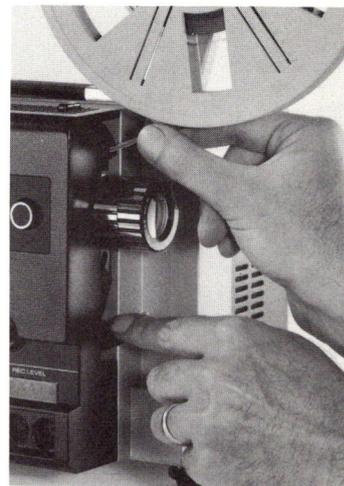
Move the main switch to .

Press the threading lever and insert the film into the threading slot.

Do not release the lever until the film has reached the take-up reel.

Notes

a) Polyester base films may not be taken automatically on the reel. In this case, stop the projector and attach film manually, or add a rigid leader.



b) The film splicer will always be within easy reach if you attach it to the projector by its self-adhesive face (remove the protective sheet); take care to place it where the fragments of cut film do not risk falling into the projector.

Projection



Move main switch to «forward projection, lamp on».

Focus with the focusing knob.

Frame image by turning framing knob until the frame line disappears.

In reverse projection, the framing changes slightly and must be corrected.

N.B.

a) The volume of sound is adjusted by means of the knob indicated by No. 2 in the section «Description of the projector» (see also page 7 «Adjusting the sound volume»).

b) If the picture begins to flicker, or if an unusual noise is heard (due, for instance, to a damaged

perforation), press the threading lever for a moment without stopping the projector. If this has no effect, run the projector for a few seconds in reverse, then forward again.

Public-address

You can use your projector loudspeaker to address your audience directly either before or during the actual projection of the film.

To do so, proceed as follows:

turn the superimposition ring (4*) to «0»;

plug the microphone into socket (6*) and press the recording key (26*);

the sound volume control knob (2*) allows you to increase or decrease the intensity of sound. To avoid any risk of disturbance (whistle), make sure the loudspeaker is not facing in the direction of your microphone.

* These numbers correspond to those used in the section «Description of the projector».

Rewinding after projection

Attach the end of the film to the core of the now empty feed reel and set main switch to .

Important!

When the film is rewound, move main switch back to zero.

The sound system

The figures in brackets contained in the description of the sound system correspond to the figures incorporated in the diagram (control panel) on the folded cover page of this booklet

Super 8 films can be striped, after which your projector permits recording music and narration directly on the film.

The success of the sound recording depends to a great extent on the quality of the magnetic sound stripe, and it is therefore recommended that the striping is done by a competent laboratory.

For taking the best advantage of the excellent sound quality of your projector, it is recommended to use Hi-Fi tape-recorders or record-players.

Your projector permits producing all types of sound tracks from a simple recording of background music to an advanced combination of music, narration and sound effects.

a) Simple recording with microphone

Music and narration can be combined and recorded easily by using only the microphone.

b) Direct recording of background music

By connecting a record player or tape recorder directly to the projector, background music can be recorded with the best possible quality and without interference of background noises.

c) Sound superimposition

Narration can be superimposed over previously recorded background music.

Sound sources

The microphone or other sound source (radio, record player, tape recorder, etc.) is connected to the input (6) (see page 14 «Universal recording cable»; see also page 8 diagrams with connections).

Recording and erasing

When you press the recording key, the 1st indicator lamp lights up, indicating that the projector is ready for recording. Then turn the main switch quickly to the position «forward motion, lamp on» (), without stopping at the position «forward motion, lamp warming up». **The sound is only properly recorded in this position of the main switch.** Turning back to the position «forward motion, lamp warming up» () or the position «stop», automatically switches the projector onto «playback».

Any new recording automatically totally erases any previous recording, provided the superimposition ring (4) is turned fully to the right (notched position, «TRIC» lamp off).

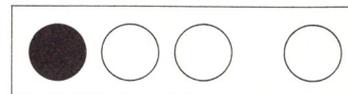
To erase without making a new recording, press on recording key after disconnecting the sound source; as for recording, erasure is only effective when the main switch is in the position «forward motion, lamp on» ().

Adjusting the recording level

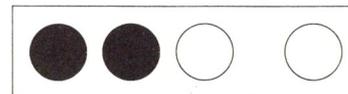
Top quality sound recordings require proper adjustment of the recording level. Your projector permits recording with automatic or manual volume adjustment and is equipped with a level

control system of four light-emitting diodes, making such adjustment extremely easy.

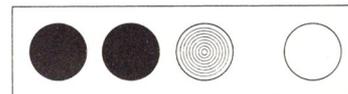
1st indicator lamp on = projector ready for recording



2nd lamp on = level too low



3rd lamp flashing or on = level normal



4th lamp flashing = level too high



N.B.

When working with a microphone, for superimposing a commentary, the 4th indicator lamp may flash without there being any risk of saturation.

Recording with automatic volume adjustment

Turn the knob (3) completely to the right (notched position). In this position, the input volume is automatically controlled; simply connect the sound source to the projector and press the recording key.

If the level indicators do not light up correctly, the sound source is not adapted for use with the projector (see chapter «Matching the projector to the sound source»).

Recording with manual volume adjustment

Manual volume adjustment is possible only when the knob is disengaged from its notched automatic recording position. Turn the knob (3) until the level indicators light up correctly.

Manual adjustment enables you to vary the level of recording depending on the desired effect. Recording with manual adjustment also makes it possible to produce sound fades by gradually increasing or decreasing the recording level. As soon as the second lamp starts to flash, the minimum acceptable recording level has been reached.

N.B.

Except for superimpositions of commentaries, the 4th indicator lamp should never light up, otherwise there is danger of distortion during playback.

Matching the projector to the sound source

If none of the indicator lamps, except the first, lights up, this means that the signal supplied by the sound source used is too weak. In this case a pre-amplifier will have to be used. This may occur, for example, when using a magnetic Hi-Fi pick-up.

Adjusting sound volume

Sound volume in recording (monitoring) and projection is adjusted by means of knob (2).

When recording with the microphone, the volume knob should be set to zero (completely to the left) to avoid feedback.

Superimposition device

The position of the superimposition ring (4) determines how much of the sound volume is recorded on the film and how much of a previously recorded sound track is erased.

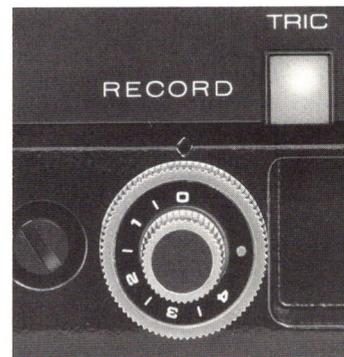
The «TRIC» lamp lights up when you are in the superimposition position.



Midway position: new recording at 50% strength, previously recorded sounds suppressed to 50%.

Position 0 (left): no sound recorded on film, previously recorded sounds remain at 100%.

Notched position: new recording at 100%, previously recorded sounds erased completely.



Footage counter

The footage counter (19) makes it much easier to locate the first images of a sequence and proves useful during recording operations.

One unit on the counter corresponds to 18 frames, making it possible to read the length of a sequence directly when working at a speed of 18 f.p.s.

To set to zero, press the knob on the left of the counter.

External speaker

An auxiliary speaker can be connected to the rear of the projector.

N.B.

Optimum sound reproduction is obtained when the impedance of the loudspeaker is not lower than 4Ω .

When connecting two speakers in parallel, the resulting impedance is always lower than that of the speaker with the smaller impedance. For instance, two speakers of 4Ω , connected in parallel, have a resulting impedance of 2Ω .

Connecting an auxiliary speaker automatically cuts out the speaker in the projector.

Output lead

Socket (7) is provided for connecting an external amplifier to the projector. Connection: terminals 2 and 3 (2 = shielding).

Low impedance input (Microphone)

Microphone; connection: terminals 2 and 3 (2 = shielding).

High impedance input (Record-player)

Record-player; connection: terminals 1 and 2 (2 = shielding).

Technical data

(sound system)

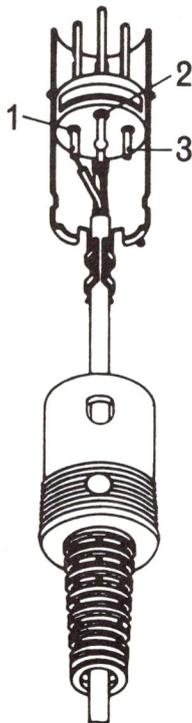
Fully transistorized amplifier comprising:

1 operational amplifier, 18 transistors, 10 diodes, 1 silicon rectifier, 4 light-emitting diodes.

Output power :

Bolex SP 80 special :
10 W sinusoidal, 15 W musical
Bolex SP 8 special :
6 W sinusoidal, 8 W musical

Signal to background noise ratio:
45 dB weighted according to
DIN 45 405.



Response curve: 75 - 10,000 cycles at 18 f.p.s.

Built-in loudspeaker: maximum load 10 W sinusoidal.

Automatic recording level adjustment, compensating for fluctuations in the level up to 50 dB. Response time: 10 milliseconds. The time constant depends on the duration of the peak input: from 0,5 to about 60 seconds.

Microphone input: 0,3 - 150 mV, at $22 \text{ k}\Omega$, on connections 2 and 3.

Record-player input: 50 mV - 3 V, at $1 \text{ M}\Omega$, on connections 1 and 2 (2 = shielding).

Output for auxiliary loudspeaker $4 - 6 \Omega$, 10 W; final stage protected against excess current and short-circuits.

Output for external amplifier $50 \text{ k}\Omega / 0,5 - 1,5 \text{ V}$, on connections 2 and 3.

Sound-picture separation: 18 frames as per Super 8 standard.

Wow: less than $\pm 0,4\%$ weighted according to curve DIN 45 507.

Some practical examples for producing sound tracks

a) Simple recording with microphone

This procedure is pretty straightforward. It does not guarantee the best sound fidelity because the microphone is conceived for voice-recording. The best sound-quality is obtained by direct recording and fading (page 11).

Thread projector.

Connect microphone.

Turn the superimposition ring (4) fully to the right (notched position «TRIC» lamp off).

Set for automatic recording by turning the recording level adjusting knob (3) completely to the right.

Turn the volume knob (2) to the left, to prevent feedback

Press the recording key and turn the main switch to the position «forward motion, lamp on».

Speak the narration into the microphone or hold the microphone in front of the speaker of a record player, radio or tape recorder.

The microphone should always be as far away as possible from the projector to avoid recording projector noise.

For voice recording, hold the microphone about four inches from the mouth. The luminous indicator (8) permits a constant check on the recording level.

Voice and music can be combined by moving the microphone from narrator to speaker or vice versa.

A trial run should always be made in order to determine the correct balance between voice and music volume.

Note:

This type of recording can also be made with manual volume adjustment. All preliminary adjustments can be made with the projector stopped, once you have pressed on the recording key.

b) Direct recording of background music

Connect sound source to socket (6). For connections, see pages 8 and 14.

Press the recording key and check the level by means of the visual indicator (8) (manual or automatic setting).

Start the projector, with main switch set to «forward motion, lamp on».

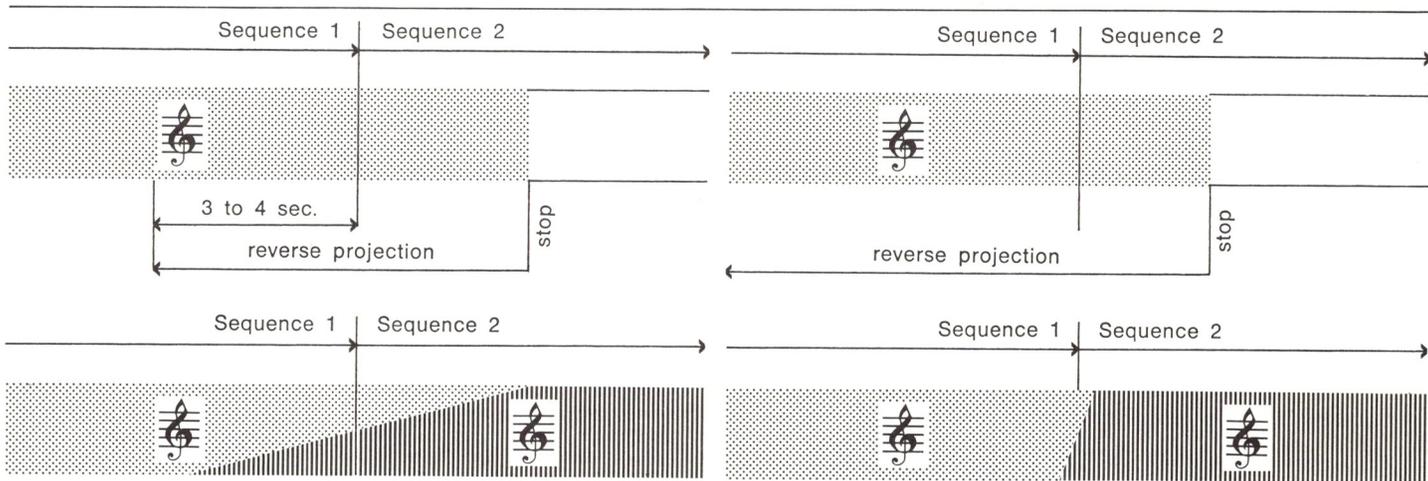
N.B.

It is possible to monitor the sound to be recorded directly when the

recording key is pressed; the monitoring volume is adjusted by means of the knob (2).

Sound transitions

Background music should be selected to fit the images on the screen, and in most films, different musical selections are used for different sequences. The change from one musical selection to the next can be made abruptly, or with a sound dissolve, by fading out the first selection and fading in the next.



Sound dissolves

Sound dissolves are produced as follows:

Record the first selection of music a few seconds beyond the end of the scene where it is to end.

Run the projector in reverse until it is three or four seconds ahead of the end of the scene where the music is to change.

Turn the superimposition ring (4) fully to the left (position «0», «TRIC» lamp on).

Start the tape-recorder or record-player.

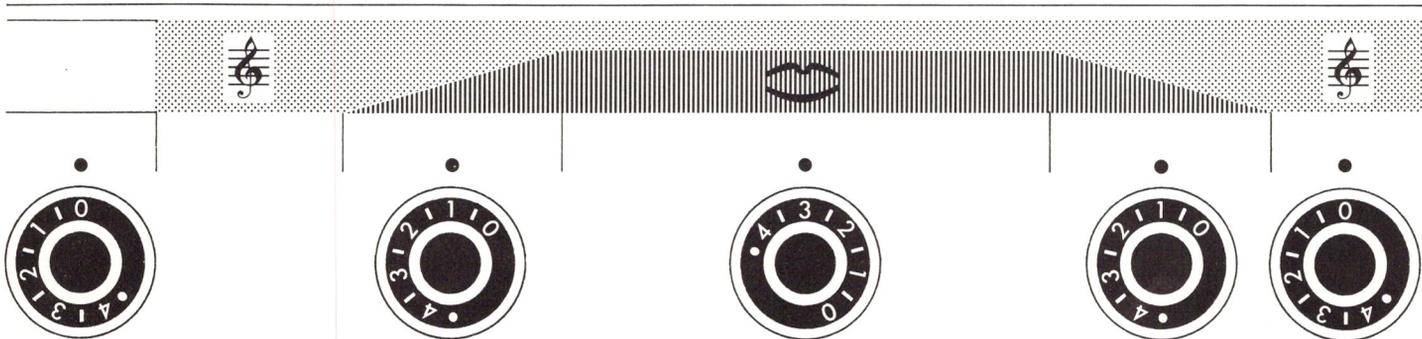
Press the recording key, turn the main switch to the position «forward motion, lamp on», then slowly turn the superimposition ring (4) fully to the right; the beginning of the second theme is then superimposed on the end of the first.

Abrupt transition

Proceed as explained under «Sound dissolves» with the only difference that at the scene transition the superimposition ring (4) should be rotated in a fast and continuous movement to the right.

N.B.:

In order to avoid any lag due to your reaction time, you will find it a good idea to use the footage counter to pin-point the exact position of the change of sequence.



c) Sound superimposition

Sound effects and narration can be recorded over the previously recorded background music with the latter either subdued or completely suppressed.

The recording levels of background music and speech depend on the position of the superimposition ring (4), and the ideal balance can be determined only through trial runs.

To superimpose narration (using a microphone), proceed as follows:

Thread film in projector.

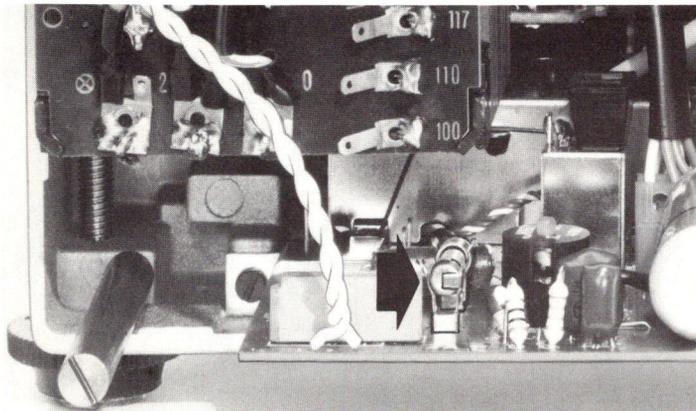
Move the superimposition ring (4) to «0».

Connect microphone, press recording button and adjust the recording level with manual adjustment knob (3) by watching the luminous indicators (8). The speaker volume control knob (2) should be set to zero to prevent feedback.

Set the main switch to the position «forward motion, lamp on».

Whenever narration is to be superimposed, turn the superimposition ring (4) to the previously selected position which suppresses the background music to the desired level, and begin to speak. At the end of the narration, turn superimposition ring (4) to «0».

Maintenance



Replacing the fuse

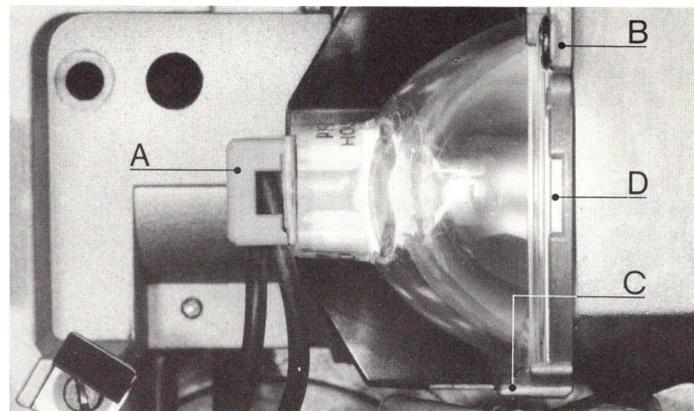
The fuse protects the electronic parts against any excess current, but does not safeguard the projector from any damage that might be caused by the mains voltage not corresponding to that set on the projector.

To replace the fuse, proceed as follows:

Do not forget to disconnect the projector.

Take off the back cover.

Replace the blown fuse with a new one (5 x 20 mm, 2 A / for USA 1/4" x 1 1/4", 2.5 A).



Replacing the projection lamp

Disconnect the projector.

Remove the front cover.

Pull back the lamp socket (A).

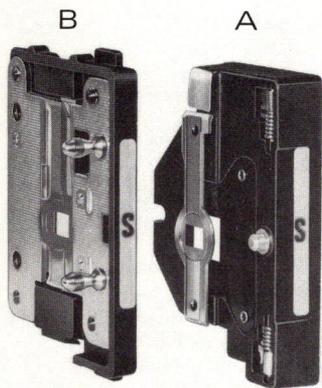
Press the spring (B) first downwards, then to the left, which releases the lamp.

Remove the protective cover from the new lamp without touching the glass or the inside surface of the reflector. (If these surfaces are touched accidentally, clean the lamp with alcohol).

Lift up the spring (B) and push the new lamp into the lower centering device (C) while holding it by its base; the centering pin should position itself in its groove (D).

Push the spring (B) downwards, then to the right. The centering need not be corrected.

Replace the lamp socket (A).



Cleaning the gate and pressure pad

Remove the front cover.

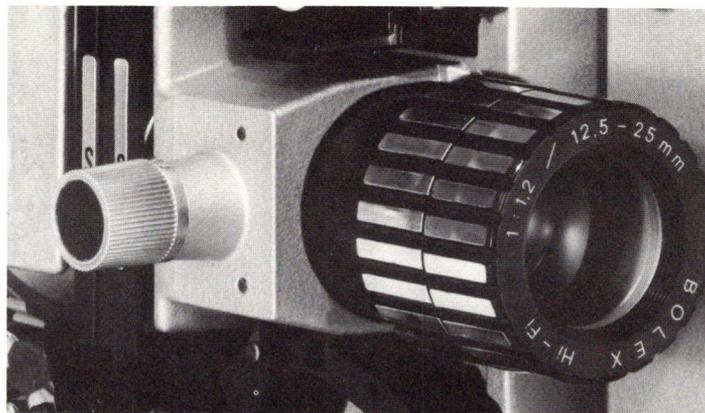
Move the lens forward by turning the focusing knob.

Turn the manual operating knob until the two white dots are opposite each other; the film feeding claws are thus «retracted» and protected against any risk of damage.

Push the pressure pad (A) towards the lens and remove it.

Remove the gate (B) in the same way.

Both parts can be cleaned with a brush or a soft cloth.



Remount the gate (B), then the pressure pad (A).

Cleaning the lens

To clean the lens, take the latter completely out of the lens-mount; to do this, first gently pull the focusing knob towards you (when you are facing the right-hand side of the projector containing the control knobs). To put the lens back, make sure the notch is turned towards you (right-hand side of the projector); push the lens against the lens-mount until you hear the notch click.

Lubrication

All the moving parts of the projector are lubricated for life. Further lubrication is unnecessary and should be avoided.

Film maintenance

After films have been projected a number of times or have been stored over extensive periods, it is recommended to clean and lubricate them again using the special movie film cleaner with lubricant available in camera stores.

Special scratch protective treatment is also available from special laboratories. Such treatment should always be done after the film has been striped, as otherwise the stripe may not adhere properly.

Accessories available separately

Universal recording cable

Various sound sources — record players, cassette and tape recorders — come with different output sockets. A cable, with a set of adapters, permits connecting most sound sources to the SP 80 projector. It is easy to use.

Plug the cable into the projector (socket 6).

Connect the appropriate adapter to the sound source.

Connect the cable to the adapter.

Note:

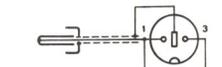
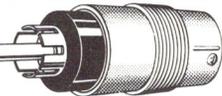
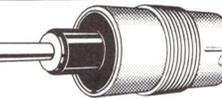
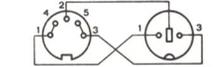
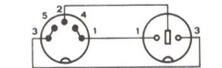
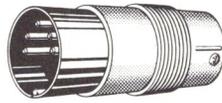
If the sound does not come through, the sound source may have a different connection system. Check by reversing the coupling system — terminal 1 or 3.

Should the recording continue to be too quiet, set the adapter plug between the projector and lead.

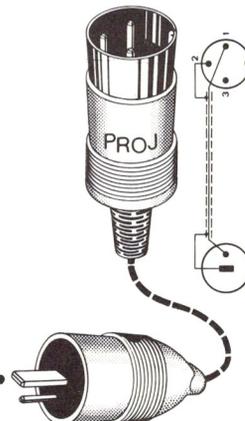
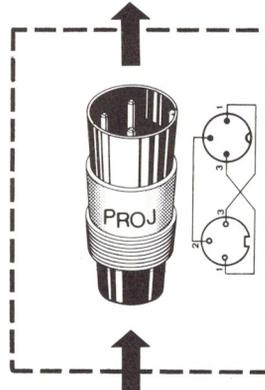
Sound sources



Adapter



Projector

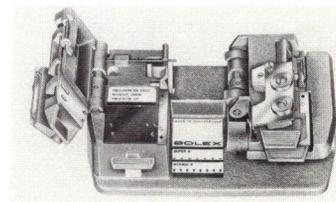


Case with auxiliary speaker

The case of this speaker (10 W / 4 Ω) forms a convenient carrying case. The speaker provides superior sound quality to that of the speaker built into the projector.

Dual splicer

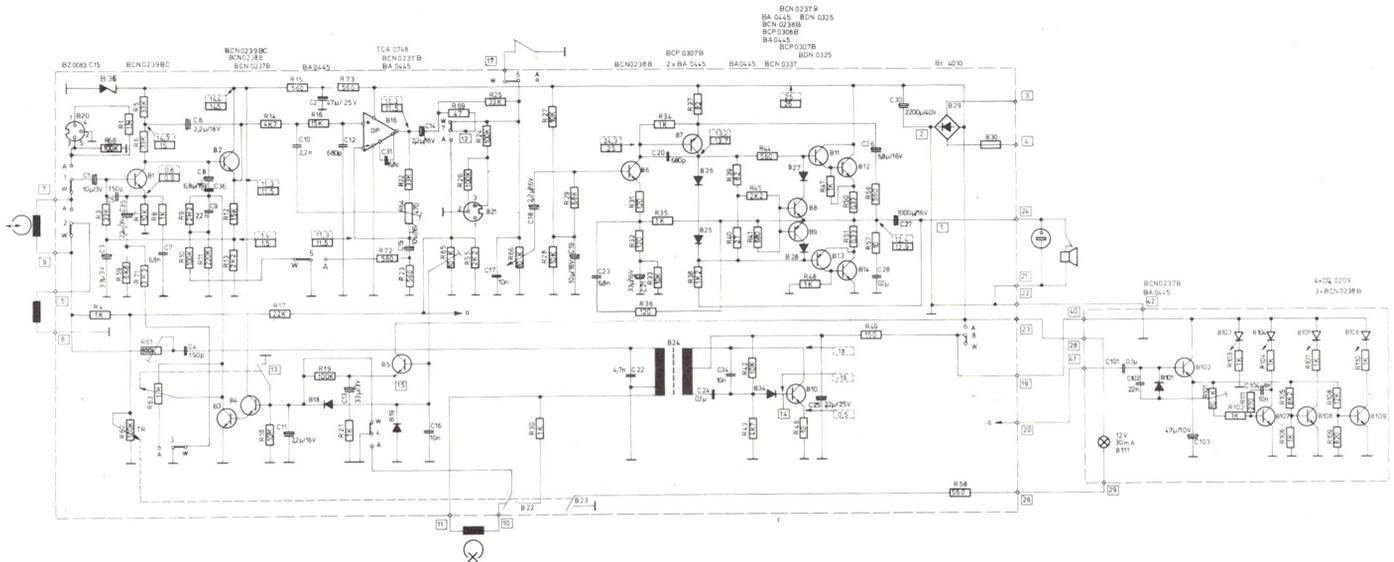
For Super 8 and normal 8. Makes bevelled edge splices which run quietly and smoothly through the projection gate and over the magnetic sound heads.



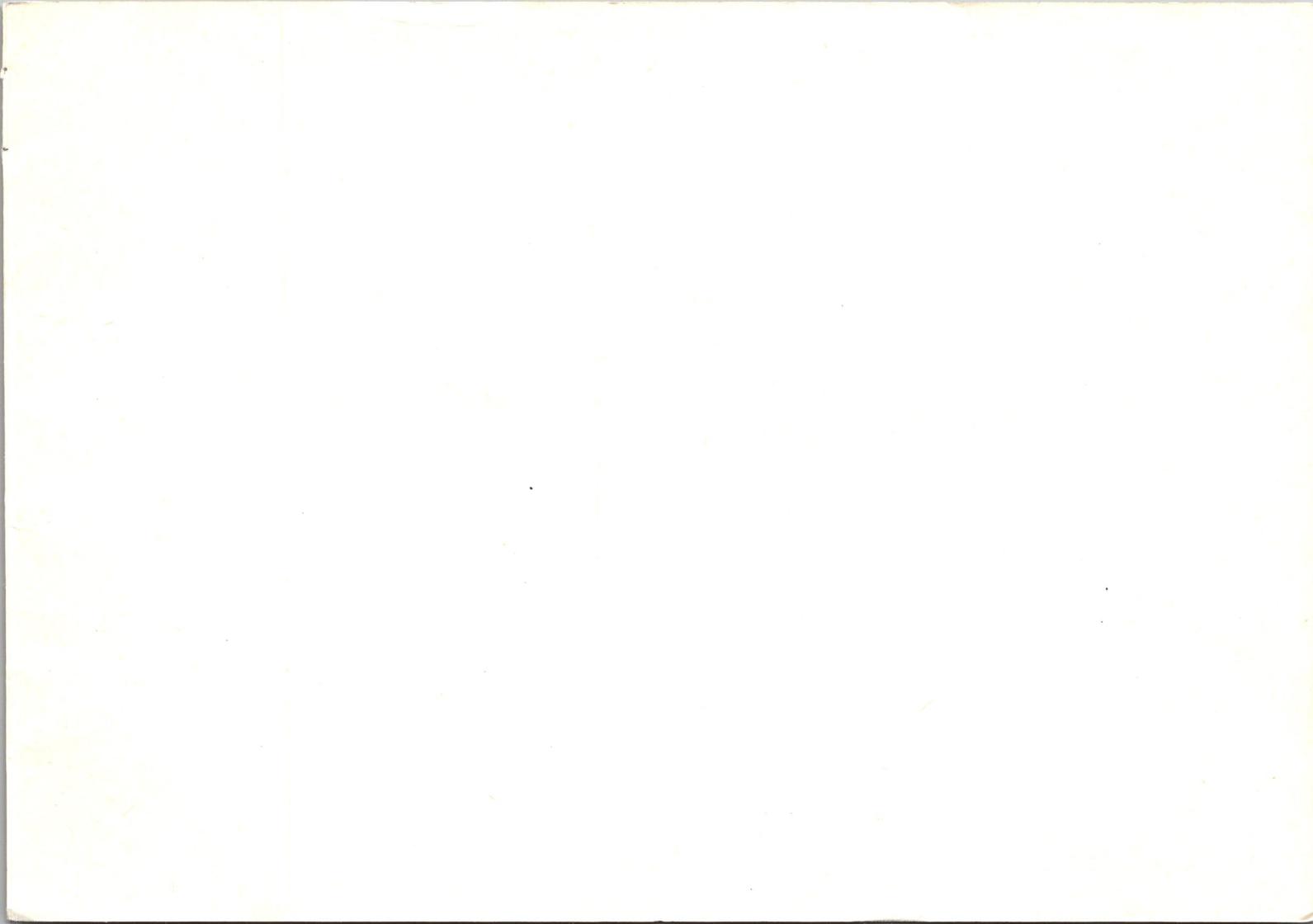
Picture size on screen in inches

Focal lengths	Projection distance							
	6'6"	10'	13'	16'	20'	26'	33'	40'
12,5 mm	31 x 24	47 x 36	64 x 48	80 x 60	96 x 72			
15 mm	28 x 21	42 x 31	56 x 42	69 x 52	83 x 63	111 x 83		
17 mm	24 x 18	37 x 28	49 x 37	61 x 46	74 x 55	99 x 74	123 x 92	
18 mm	23 x 17	35 x 26	46 x 35	58 x 43	70 x 52	92 x 70	118 x 86	
20 mm	20 x 15	31 x 23	42 x 31	52 x 39	63 x 47	84 x 63	105 x 78	
23 mm	18 x 14	27 x 21	37 x 27	46 x 34	55 x 42	74 x 55	92 x 69	111 x 83
25 mm	17 x 12	25 x 18	33 x 25	42 x 31	50 x 37	67 x 50	83 x 63	100 x 76
30 mm		21 x 16	28 x 21	34 x 26	42 x 31	56 x 42	69 x 52	83 x 63

Circuit diagram



R	4	6	1	5	8	9	11	12	14	17	15	16	18	73	72	22	65	66	26	25	24	23	22	21	29	31	34	37	39	45	44	46	48	47	50	55	58	101	102	103	104	105	107	108	110					
C	3	5	35	51	52	53	10	13	11	30	2	12	10	31	15	14	16	17	18	19	23	22	21	20	21	34	25	26	27	30	25	26	27	30	25	26	27	30	101	102	103	104	105	106	107	108	109	110		
B	20	36	1																																															



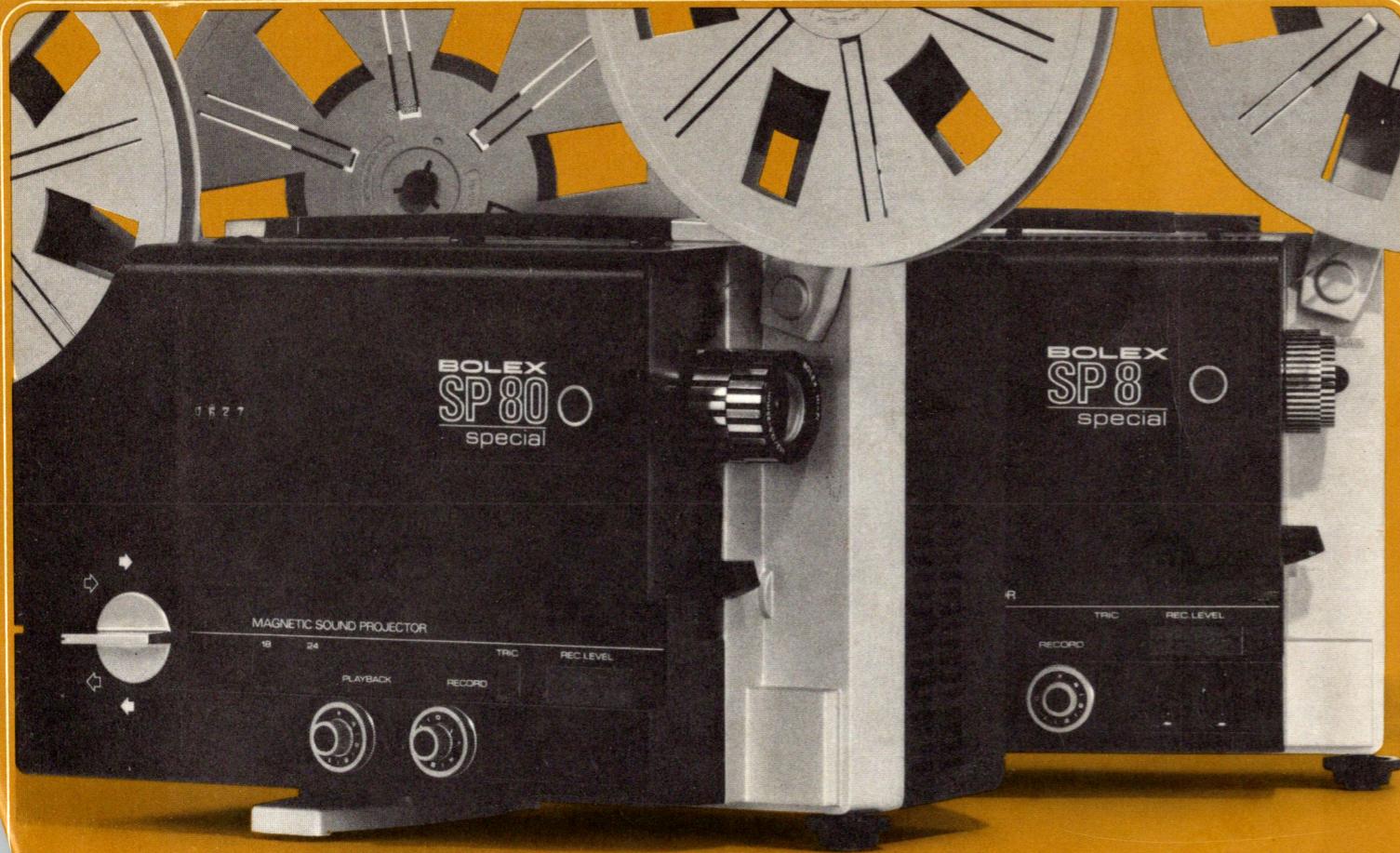
Bolex International S. A., Yverdon / Switzerland

After-sales service

Through our international organization, we can offer efficient after-sales service in practically every part of the world. If service is required, return your projector to a Bolex distributor. He alone is authorized to carry out repairs, adjustments, and maintenance work. In any correspondence with your Bolex dealer or distributor, mention the serial number of your projector.

BOLEX
Hallmark of high quality

Bolex International S.A. reserves the right to modify, without prior notice, the appearance and specifications of the projector described in the present instructions for Use.



INSTRUCTIONS FOR USE

This instructions booklet is intended for both the Bolex SP 80 special and Bolex SP 8 special projectors. These two models being practically identical, except for a few details, you will find herein illustrations of the SP 80 special only.

Your projector is supplied with:

- 1 Bolex Hi-Fi zoom lens
- 1 12 V / 100 W halogen lamp with incorporated dichroic mirror
- 1 power cord
- 1 fuse
- 1 film cutter
- 1 microphone
- 1 Bolex 400' reel
- 1 reel with about 16½ ft of striped Super 8 film
- 1 instruction booklet
- 1 guarantee card

Your projector is designed for silent and magnetic sound Super 8 films.

Contents

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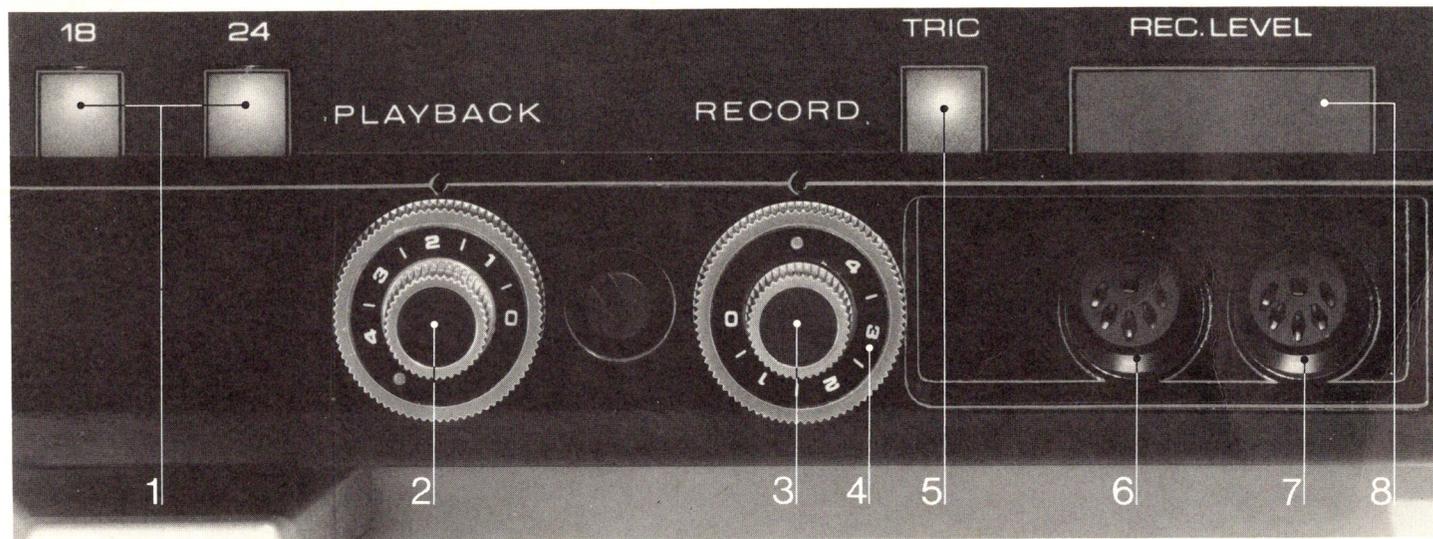
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Description of the projector



- 1 Luminous projection speed indicator
- 2 Sound volume control knob
- 3 Knob for manual or automatic adjustment of the recording level
- 4 Sound superimposition ring (variable erasure and sound dissolves)
- 5 Luminous superimposition indicator
- 6 Microphone and record-player input
- 7 External amplifier output
- 8 Recording level indicator

