

1000 SERIES

*Sixteen*

Guidebook

**SINGER**  
EDUCATION DIVISION

16MM Feature Films  
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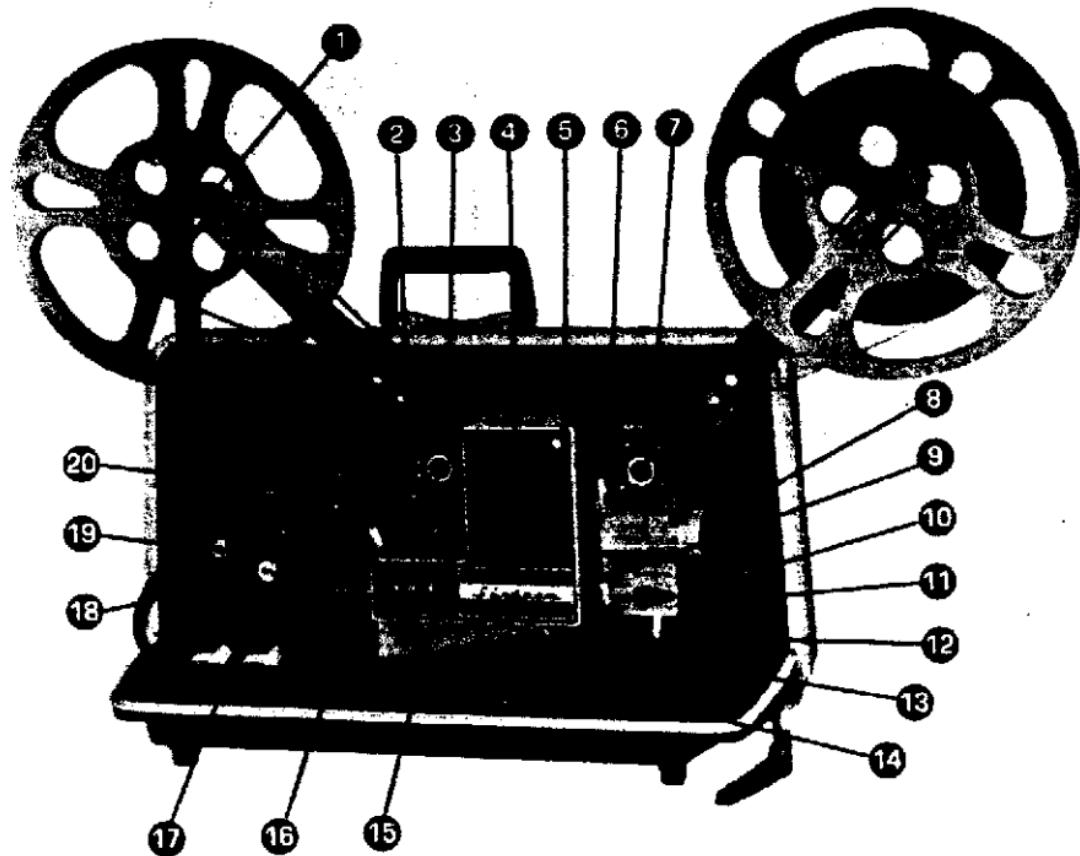
## **This is your new Projector . . .**

The Singer Sixteen, a fine precision built instrument with the most advanced features in the field. It will make movie showing a pleasure and will give you, with proper care and maintenance, many years of trouble-free performance.

## **Before You Start . . .**

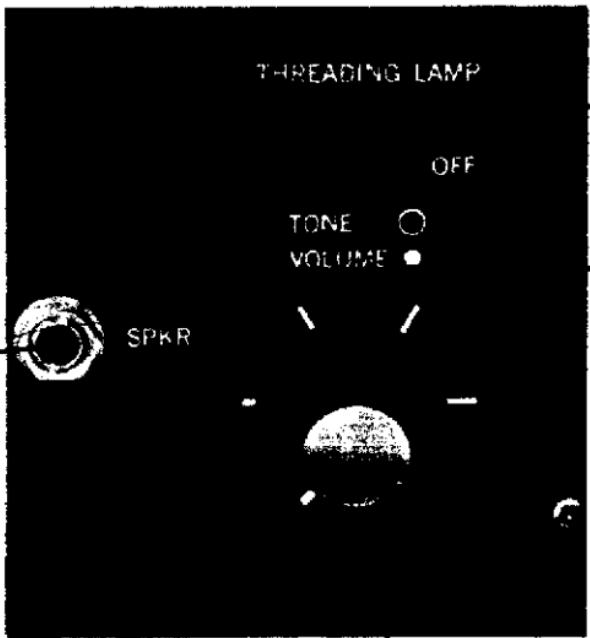
Know the features of your projector.

The chart on page 23 of this booklet will show you which features apply to your model. Take the time to read this guidebook carefully and follow the step-by-step operating instructions.



## Reference Guide

1. Reel Spindle Lock Lever
2. Reel Arm Lock
3. Take-up Sprocket
4. Lamphouse Cover
5. Framing Knob
6. Rewind Control
7. Feed Sprocket
8. Manual Advance Knob
9. Film Pressure Shoe
10. Elevation Lock Lever
11. Film Pressure Adjustment Lever
12. Film Gate Lever
13. Sound Loop Synchronizer
14. Soundhead (loading) slot
15. Lamphouse Cover Release
16. Master Control Lever
17. Control Switch
18. Volume & Tone Control
19. Speaker Jack
20. Take-up Sprocket Shoe Lever



1. Volume Control
2. Tone Control
3. External Speaker Jack
4. Threading Lamp Switch

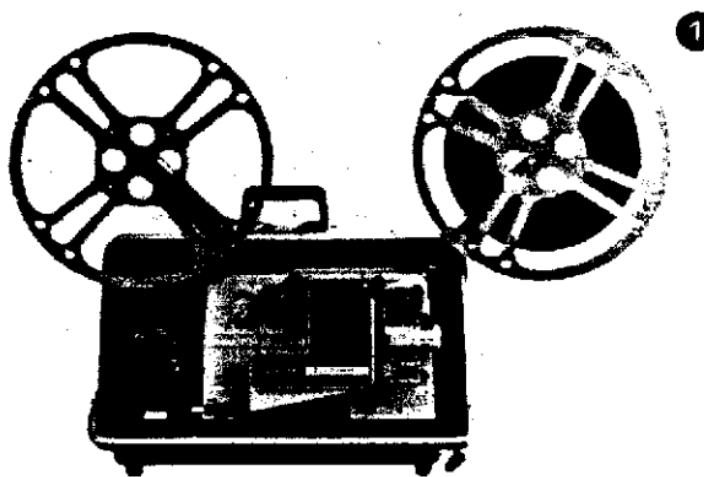
## Setting Up

1. Position the projector about 5 screen widths from the screen. Place it high enough to allow the image to be centered without having to tilt the projector more than 12 degrees. Pictures projected at greater angles will produce a distorted image.
2. Check projector data plate for power requirements, then plug cord into grounded outlet.

3. Swing the Supply and Take-up reel arms up until locked in place.

4. Place full reel of film on Supply Arm Spindle so that leader can be pulled downward from the front of the reel. Place an empty reel of suitable capacity on Take-up Spindle (Fig. 1).

5. Turn both Reel Lock Levers back to secure reels.

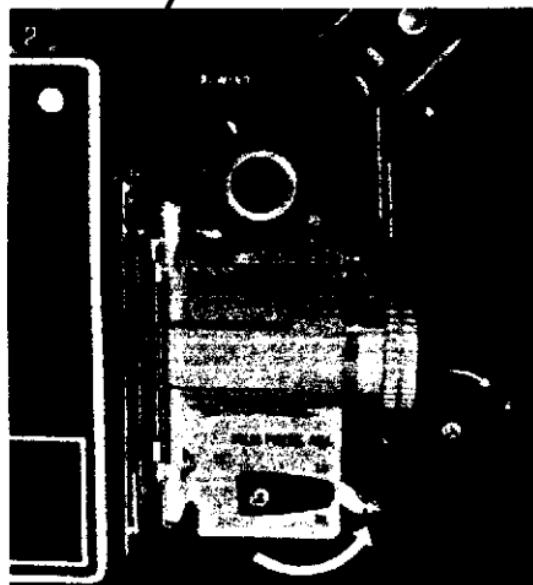


## Threading Film

1. Swing the Film Gate Lever to the right to open Feed Sprocket and film channel (Fig. 2).

2. Set Master Control Lever at "Thread", push Rewind Lever in and open Take-up (rear) Sprocket Shoe (Fig. 3).
3. Unwind approximately five feet of film.

REWIND LEVER



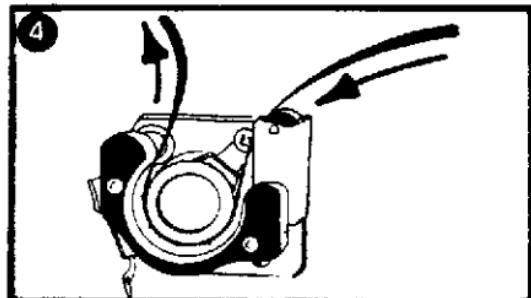
FILM GATE LEVER

TAKE-UP (REAR) SPROCKET SHOE



MASTER CONTROL

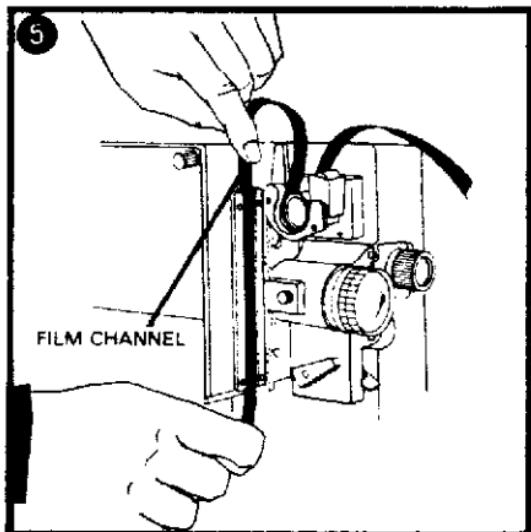
4. Insert film under Feed Sprocket, engaging film perforations with sprocket teeth (Fig. 4).



5. The following is the recommended method for inserting film into film channel:

a. Hold film between thumb and index finger of each hand, either hand at top or bottom (Fig. 5).

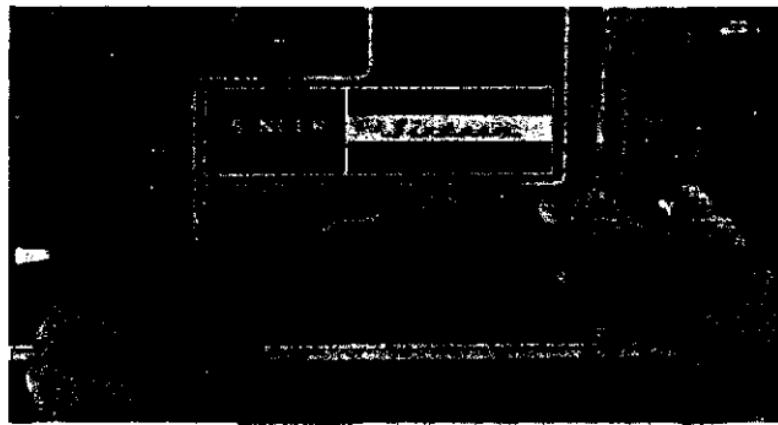
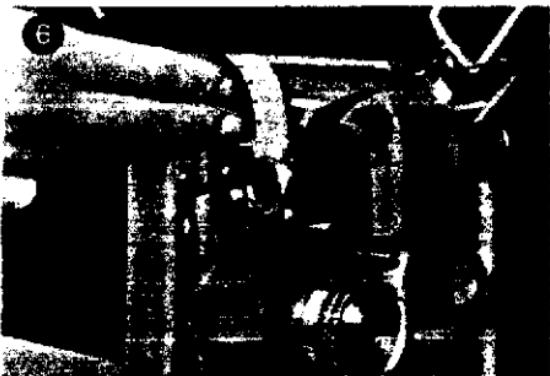
b. Position film to fit flat in film channel.



c. Allow enough film to form an upper loop, approximately  $1\frac{1}{2}$ " high, over two fingers (Fig. 6).

d. Close Film Gate Lever.

6. Insert film into Sound Head Loading Slot and bring under Idler Roller (Fig. 7).



7. Pass film between Take-up Sprocket Shoe and Sprocket, engaging film perforations with sprocket teeth, then guide film around roller. Close rear Sprocket Shoe (Fig. 8).

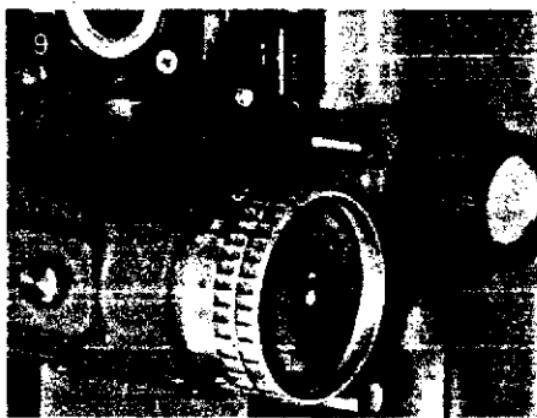
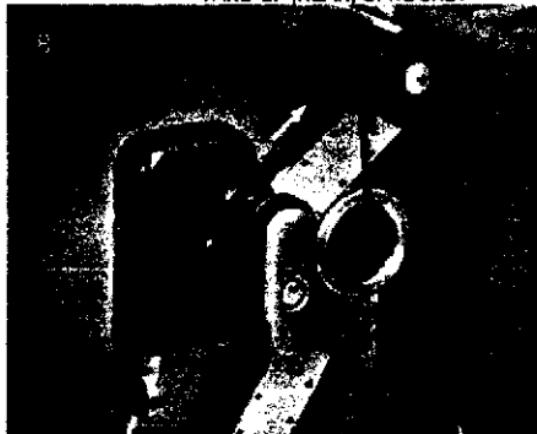
8. Insert end of film in slot of Take-up Reel and turn reel clockwise to take up slack.

9. Test threading by rotating the Manual Advance Knob located next to lens (Fig. 9).

**NOTE:**

As a safety feature to prevent film damage, the drive mechanism is off on all models when the Master Control Lever is at "THREAD". On models with standard three-blade shutters the lamp is also off at this position.

TAKE-UP (REAR) SPROCKET

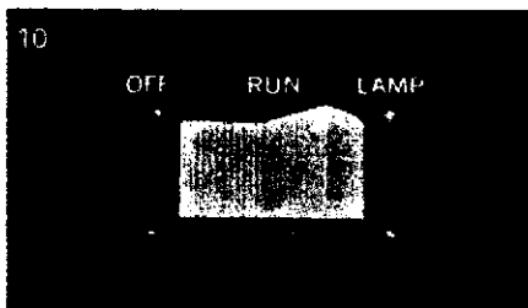


## Projecting Sound Film

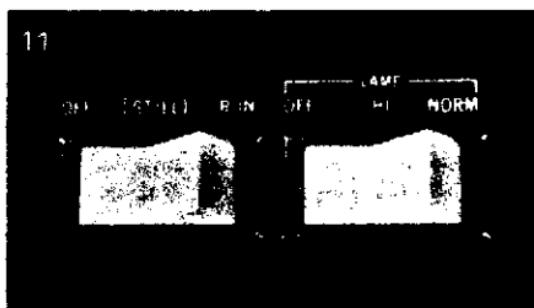
1. Set the Master Control at "Forward".
2. SINGLE SWITCH MODEL: Press the three-position Control Switch to "LAMP" pausing briefly at the "RUN" (center) position to allow fan to operate before lamp turns on (Fig. 10).

ALL OTHER MODELS: For longest lamp life set the three-position Lamp Control Switch at "NORM" when lighting conditions are normal. If greater screen brightness is desired switch to the "HIGH" position. Set other switch at "RUN" (Fig. 11).

SINGLE SWITCH



DOUBLE SWITCH

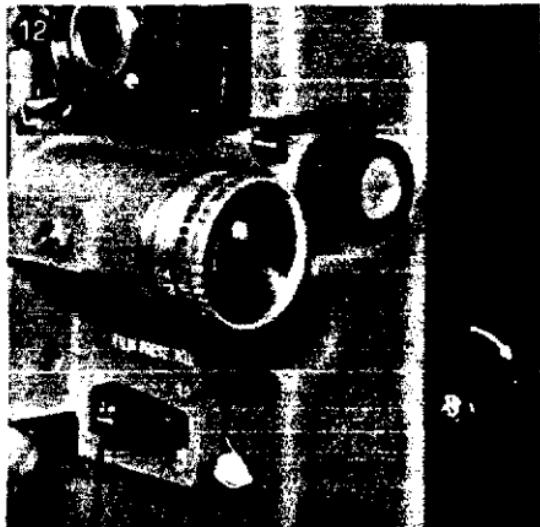


3. To raise or lower picture on screen, turn the elevation lock lever counter clockwise to unlock. (Fig. 12). Raise or lower front of projector as required. When picture is "centered," lock projector in position by turning Lock Lever in direction of arrow.

4. Adjust Film Pressure Lever to eliminate any distracting sounds made by film as it moves through projector. (Fig. 12).

5. Turn lens in or out until image on screen is sharp and clear. If a black strip (frame line) appears at the top or bottom of the picture on screen, turn the framing knob on lamphouse cover, until picture is properly framed. (Fig. 13).

Picture size To adjust size of picture, vary distance between projector and screen, or use lens of a different focal length.



6. When picture has been properly aimed, framed and focused, set Master Control Lever at "Reverse" and run film back to beginning. Press Control Switch to "OFF" as soon as blank film ahead of opening title appears.

7. Set Master Control Lever at "Forward" Film is now ready for showing.

8. Press Control Switch to "RUN". Set Speed Control at "SOUND" (all models except SINGLE SWITCH MODEL) and begin film projection. Adjust volume and tone for best quality.

NOTE:

If lower loop is lost during projection, swing the Sound Loop Synchronizer down slowly and release. (Fig. 14)

9. When "The End" appears on screen . . .  
SINGLE SWITCH MODEL: Turn lamp off by pressing the Control Switch to the "RUN" position.

ALL OTHER MODELS: turn lamp off by pressing the Lamp Control Switch to the "OFF" position.

Turn down volume control to avoid distracting noise at tail end of film. Move Control Switch to "OFF" when film has completely passed through projector.

LOOP RE-SET LEVER



## Rewinding

1. Attach loose end of film to the empty reel. Do not change position of the reels. This is another convenience.
2. Set the Master Control Lever at the "Reverse/Rewind" position. Pull the Rewind Control out. (Fig. 15). Press Control Switch to "Run". Keep hands away from revolving reels.
3. When film is rewound, press switch to "OFF" and push the Rewind Control in. Put the Master Control Lever into the "Thread" Position ready for the next reel of film.

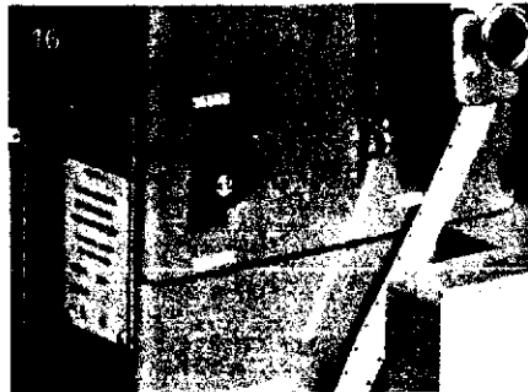


## Threading Lamp

The Threading Lamp will allow you to thread film without turning on the room lights. The ON-OFF switch is located above the Sound Control Knob.

## Projecting Silent Film

To project silent film, follow the same instructions given for sound film projection except set Speed Control (Fig. 16) at "SILENT". Move this lever only when projector is operating in "FORWARD".



## Projecting Still Pictures

(Applies to models with "still" control)

While film is being shown, switch to "still" to stop the film and project a single frame as a still picture.

If only part of a picture appears on the screen, rotate the Manual Advance Knob until a full picture appears.

Picture brightness will be reduced, because the safety shutter holds back some light. It may be necessary to focus on the still picture to regain maximum sharpness.

To continue the film, push control button to "Run" and refocus.

## Automatic Shutter

All models equipped with Still Control have a 2-3 blade shutter that changes automatically with the film speed unless it is locked (Fig. 17). This assures maximum brilliance and minimum flicker.



### LOCKED

With white lock tab IN.  
Shutter is locked in 3-blade position at both  
silent and sound speeds.

1. To stop the projector, press the control switch to "Off"; remove the Lamp House Cover. (See page 18.)

2. Turn Manual Advance Knob to locate shutter blade with white lock tab. Hold knob to prevent shutter from rotating, and with the tip of the finger, slide the white tab in fully toward the hub of the shutter. Replace the Lamp House Cover.

### NOTE:

To restore shutter to automatic 2-3 blade operation, merely unlock shutter by pulling white lock tab out fully toward end of shutter blade.

At sound speed, the shutter will operate as a 2-blade shutter to get the fullest output of the projection lamp. If, however, the intensity of the light projected is considered too great (on "Norm" or "High"), it can be easily reduced. Simply lock the shutter in the 3-blade position as follows:

## After the Show

Release Elevation Lock Lever and lower front of the projector. Depress Reel Arm Locks and fold arms down. Wind power cord up and store in compartment. Replace the cover.

# CTURE SIZE CHART

UPPER DIMENSION IS HEIGHT OF PICTURE  
LOWER DIMENSION IS WIDTH OF PICTURE

proj. ens ocal ngth	PROJECTOR-TO-SCREEN DISTANCE (IN FEET)															
	2'	3'	4'	6'	8'	10'	15'	20'	25'	30'	35'	40'	50'	75'	100'	125'
3/4"	0' 9"	1' 2"	1' 6"	2' 3"	3' 0"	3' 9"	5' 7"	7' 6"	9' 4"							
	1' 0"	1' 6"	2' 0"	3' 0"	4' 0"	5' 0"	7' 6"	10' 0"	12' 6"							
"	0' 7"	0' 10"	1' 1"	1' 8"	2' 3"	2' 10"	4' 3"	5' 7"	7' 0"	8' 6"	9' 9"					
	0' 9"	1' 2"	1' 6"	2' 3"	3' 0"	3' 9"	5' 8"	7' 6"	9' 4"	11' 4"	13' 1"					
1/2"	0' 7"	0' 9"	1' 1"	1' 6"	1' 10"	2' 10"	3' 9"	4' 8"	5' 7"	6' 7"	7' 6"	9' 4"				
	0' 9"	1' 0"	1' 6"	2' 0"	2' 6"	3' 9"	5' 0"	6' 3"	7' 6"	8' 9"	10' 0"	12' 6"				
"						1' 4"	2' 1"	2' 10"	3' 6"	4' 1"	4' 10"	5' 6"	7' 0"	10' 5"	14' 0"	
						1' 10"	2' 10"	3' 9"	4' 8"	5' 5"	6' 6"	7' 5"	9' 4"	14' 0"	18' 9"	
1 1/2"						1' 2"	1' 7"	2' 3"	2' 10"	3' 4"	3' 11"	4' 6"	5' 7"	8' 5"	11' 2"	
						1' 6"	2' 1"	3' 0"	3' 9"	4' 6"	5' 3"	6' 0"	7' 6"	11' 3"	15' 0"	
"									2' 4"	2' 10"	3' 3"	3' 9"	4' 8"	7' 0"	9' 4"	11' 7"
									3' 1"	3' 9"	4' 4"	5' 0"	6' 3"	9' 4"	12' 6"	15' 7"
1 1/2"									2' 0"	2' 4"	2' 10"	3' 2"	4' 0"	6' 0"	7' 11"	9' 11"
									2' 8"	3' 2"	2' 9"	4' 3"	5' 4"	8' 0"	10' 8"	13' 4"
"									1' 9"	2' 1"	2' 2"	2' 10"	3' 6"	5' 3"	7' 0"	8' 8"
									2' 4"	2' 10"	3' 3"	3' 9"	4' 8"	7' 0"	9' 4"	11' 8"

## PROJECTION TIME TABLE

SOUND SPEED: 24 frames per second (36' per minute)

SILENT SPEED: 18 frames per second (27' per minute)

LENGTH OF FILM	AT SOUND SPEED		AT SILENT SPEED		LENGTH OF FILM	AT SOUND SPEED		AT SILENT SPEED	
	Minutes	Seconds	Minutes	Seconds		Minutes	Seconds	Minutes	Seconds
50'	1	24	1	51	600'	16	40	22	13
100'	2	47	3	42	700'	19	26	25	55
200'	5	34	7	24	800'	22	14	29	37
300'	8	20	11	6	900'	25	0	33	20
400'	11	7	14	40	1000'	27	46	37	2
500'	13	54	18	31	1600'	44	44	59	15
					2000'	55	34	74	4

The above chart at 10 ft. will help you plan more effective use of time by determining in advance how long a film will require for showing. For example, a 400'

sound film takes 11 minutes, 7 seconds to run, while a silent film of the same length requires 14 minutes and 40 seconds.

## Lamp and Belt Replacement

### Removing Lamp House Cover

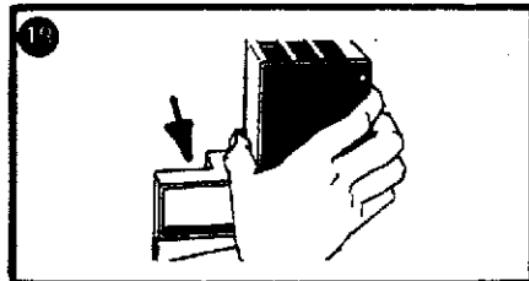
1. Disconnect power cord.
2. Press Lamp house Release Button with thumb of right hand while grasping cover between thumb and fingers, and pull straight away from projector (Fig. 18).
3. To replace, push cover straight in until release catch engages. (NOTE: It may be necessary to rotate the Framing Knob to align knob groove with the shaft.)

### Replacing Projection Lamp

#### Remove Lamp House Cover

Remove chimney by lifting straight up.  
Remove lamp in same manner.

To replace lamp, align ridge on center pin of lamp with groove in socket. Push down firmly until it seats with a click. Wipe lamp free of fingerprints and dust (Fig. 19).



PROJECTION LAMP



Replace lamp chimney by aligning the notch on chimney with guide pin, and press firmly. Replace Lamp House Cover. (Use replacement lamp designated by ASA ordering code DLR or DKM only.) DKM should be used for maximum life at normal line voltages or maximum light output at high line voltages. DLR should be used for maximum light output at normal line voltages.

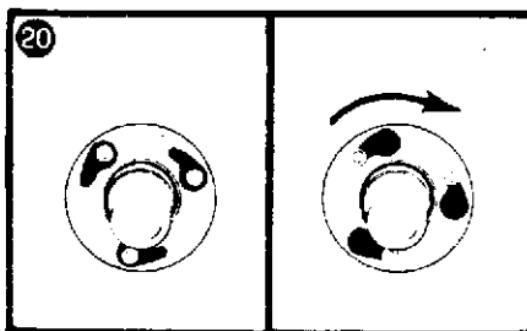
## Replacing Exciter Lamp

Remove lamp house cover (Fig. 18).

To remove exciter lamp, turn lamp counterclockwise. It will turn more easily if the lamp is rocked or wiggled rapidly from side to side. Use replacement lamp BSW. Align the three slots in new lamp with pins in the socket and turn clockwise when replacing lamp. (Figs. 19, 20). Replace lamp-house cover.

## Replacing Threading Lamp

Remove two retaining screws and lift off sound head cover located below lamphouse cover (Fig. 21). Unscrew lamp and replace with No. 6S6 threading lamp. Replace cover.



## Reel Belt Replacement

Open one end loop of old belt, disconnect hooked ends, and remove belt. Note that take-up and rewind belts are of different length, the latter being the longer. Push new belt through lower opening (Fig. 22). Interlock both end loops. Open one end if necessary, but close both loops tightly after connection.



## Projector Care

Before each showing, swing the Film Gate Lever forward to open the film channel. Turn the lens forward. Insert the Aperture Brush into the top of the channel and move it vigorously up and down. Use care to keep the shaft of the brush away from the pressure shoe or the film track. If necessary, dampen the brush with solvent to loosen and remove any hardened substance.

## Film Care

Never pull film tight on a reel; the emulsion may become scratched with "cinch marks." Your Singer Sixteen rewinds film with just the right amount of snugness. For storage, secure loose end of film with a length of masking tape. Fold it under and stick masking tape against itself about  $\frac{1}{2}$ " from end. This forms a tab for easier removal. Protect film from dust by replacing in storage can promptly after showing. Store cans away from heat.

## Lubrication

Your Singer Sixteen is permanently lubricated and should not be oiled except as noted here. To insure optimum performance apply 16 drops of Instrument Oil (p/n 39479P8) to the felt oiler pad after each 500 hours of operation or once every 12 months. (Fig. 23). It is available in convenient applicator tubes from your Singer AV Dealer or Service Station.

## Cleaning the Lens

Remove lens. Remove dust from front and rear exposed lens surfaces by brushing gently with a soft brush. Then wipe lens gently with a clean lens tissue (slightly moistened with lens cleaner if necessary).

CAUTION: Never pour lens cleaner or other solvents on the lens elements.

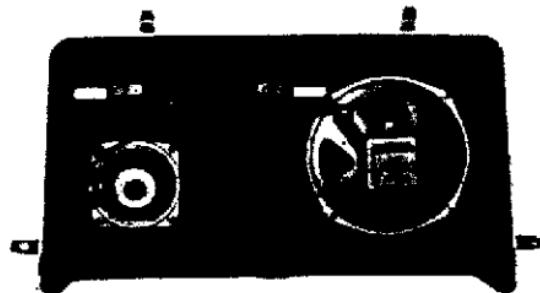


## ACCESSORIES

### External Speaker

An External lift-off speaker cover is available which is matched to the amplifier of your projector. If an external speaker is used, place it near the screen. Plug cable into SPKR. jack. Speaker output is 9 ohm impedance and will operate with 6 ohm to 16 ohm speaker systems. The built-in twin 5 in. oval speakers are automatically by-passed when an external speaker is used.

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### Projection Lenses

Finest quality lenses with a wide range of focal lengths to adapt the Singer Sixteen to every projection distance and screen size. (See "Picture Size Chart," page 16.)

Focal Length	f No.	Catalog No.
5/8"	f/2.0	3610
1"	f/1.9	3602
1 1/2"	f/1.6	3603
2"	f/1.6	3609*
2"	f/1.6	3604
2 1/2"	f/1.8	3605
3"	f/2.0	3606
3 1/2"	f/2.5	3607
4"	f/2.8	3608

\*Field Flattener Lens

## Feature Chart

FEATURE	MODEL NUMBER						
	1000	1015	1016	1020	1021	1022	1050
Single Switch							●
Double Switch	●	●	●	●	●	●	
Speed Control	●	●	●	●	●	●	
Still Control				●	●	●	
Automatic Shutter				●	●	●	
Standard Shutter	●	●	●				●
Threading Lamp	●	●	●	●	●	●	
117 Volt, 60 Hertz	●	●		●			●
117 Volt, 50 Hertz						●	
230 Volt, 50 Hertz			●		●		

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