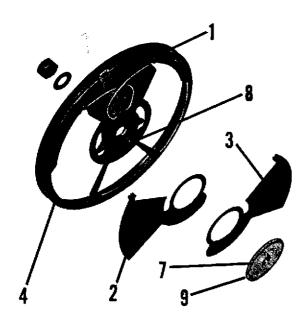
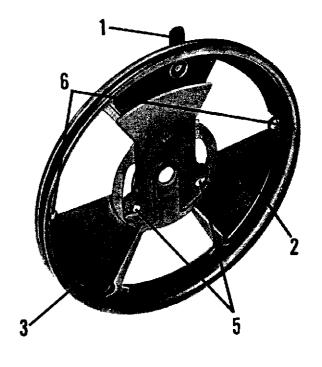
5.19 SUPER-40 SHUTTER

5.19.1 Remove

Super-40 shutter from projector -(Section 5.18.1 a thru c). Shutter can now be disassembled as required.





5.19.2 Install as follows:

- a) Place the locking lever (1) in the lock position and assemble the inner (2) and outer (3) blades to the shutter frame (4). The inner blade can be identified by the small bumps around the center.
- b) Make sure that the actuating studs (5) and stop studs (6) are positioned as shown. Assemble the cam (7) to the shutter, with the timing lug (8) engaging the timing hole (9).

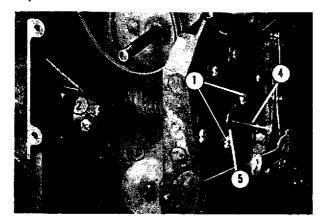


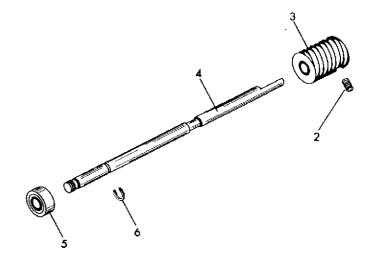
- c) Rotate the cam to position the timing hole at the top. Tilt the mechanism slightly back and holding the assembled shutter as shown, sneak up on the shutter shaft, making sure that the timing lug (1) of the shutter engages the timing holes (2) of the cams. Replace the washer and shutter shaft nut (left hand thread). Do not tighten the nut.
- d) Move the lever to the unlocked position and manually check the shutter blades for freedom of movement. If there is any binding, recheck for proper assembly of the various parts. If shutter action is satisfactory, proceed with final orientation.
- e) Final orientation remove the threading knob. The flat side of the shutter shaft should face away from the lens holder casting when the shutter timing lug is toward the aperture. If it is not, hold the shutter to keep it from moving and turn the shutter shaft until the flat side of the shaft is correctly positioned. Hold the shaft with a suitable wrench and tighten the shutter nut (left hand thread).
- Recheck the shutter blades for freedom of movement.
 Replace the threading knob.
- g) Lubricate weight and blades with small amount of A&O61-3778 Lubricant as required.

5.20 SHUTTER SHAFT AND BALL BEARING

5.20.1 Remove

- a) Planetary gear assembly (Section 5.12.1 a thru e).
- b) Pull-down parts (Section 5.18.1 a thru d).
- c) Shim washers





- d) Ball bearing retaining screws and lockwashers (1). Loosen 2 setscrews (2) 180 degrees apart, in worm (3).
- e) Shutter shaft (4) and ball bearing (5) by pulling shaft from pull-down side. (Exploded view shows worm, shutter, shaft, retaining ring (6), and ball bearing).

5.20.2 Install

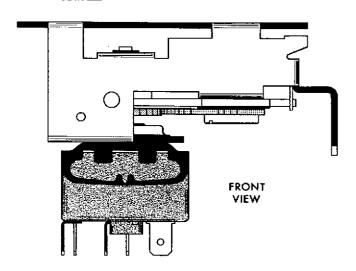
Parts in reverse order of removal, making sure that worm is centered (see also Section 5.18.2 and 5.18.4). Make necessary adjustments to planetary gear assembly (Section 5.12.3), and chain (Section 5.11.3).

5.21 CONTROL SWITCH

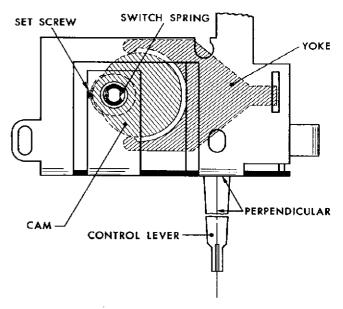
5.21.1 Remove

- a) Exciter lamp cover (Section 5.1.1a).
- b) All wire connections from switch,
- c) Switch by loosening setscrew in cam, sliding cam up (out of mesh), loosening switch retaining nut, and sliding switch down and out.

5.21.2 Install



a) Switch and nut in bracket and tighten nut.



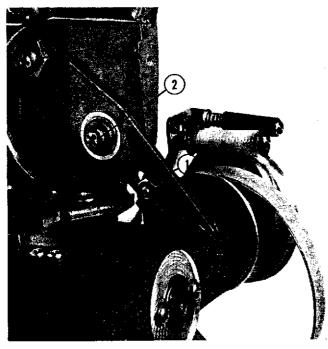
- b) Cam in mesh with control lever so that conditions in drawing are met.
- c) Switch connections (see Master Control Switch page 30), and reassemble projector.
- d) Lubricate following points with A&O61-3655 Grease:
 Teeth and cam of switch cam and pinion.
 Pivot area of projector control lever.
 Pivot area of projector switch cam yoke.
 Shifting arm stud.
 Contact points of interlock lever.

5,22 SPEED AND DIRECTION CONTROL MECHANISM

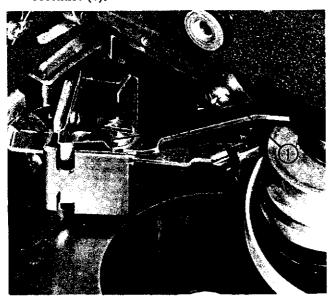
See Section 5.17 for illustrations of the various types of speed shifting lever assemblies.

5.22.1 Remove

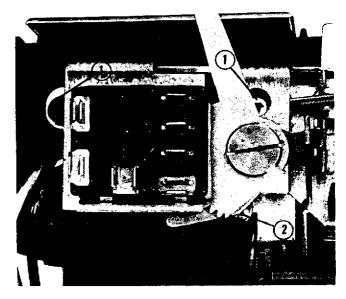
- a) Motor (Section 5.23).
- b) Switch connections.



- c) Stud holding pulley shifting lever to pulley arm by removing nut and lockwasher (1).
- d) Pulley assembly by removing screws (2) and eccentric (3).



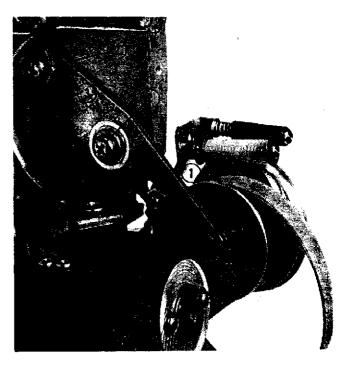
- e) Belt shifting lever eccentric by removing screw and lockwasher (1).
- f) Toggle levers (2).



- g) Two hex socket head cap screws (1) holding shifting assembly to casting.
- h) Shifting assembly by loosening screw (2) and manipulating assembly.
- i) Parts from assembly as required.

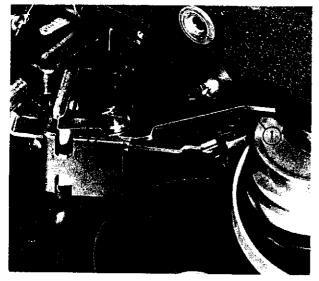
5.22.2 <u>Install</u>

- a) Shifting assembly on projector.
- b) Mounting screws (1) and (2) loosely.

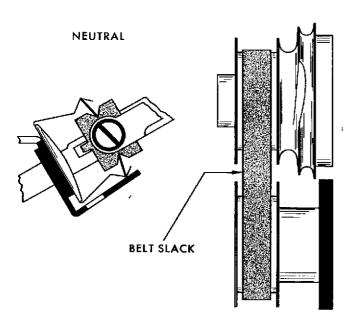


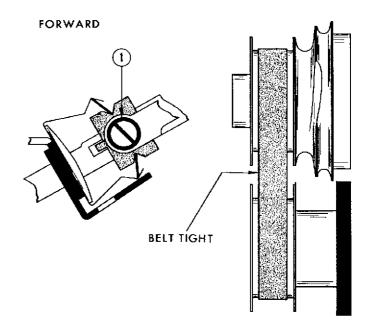
- c) Pulley assembly eccentric and screws (2 & 3).
- d) Stud holding pulley shifting lever to pulley arm, nut, and lockwasher (1). (continued)

5.22.2 Install (continued)

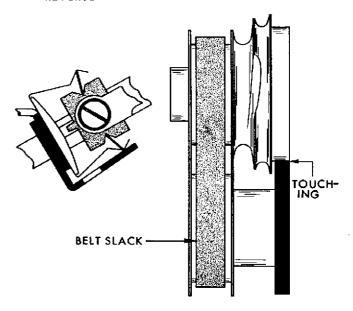


- e) Belt shifting lever eccentric (1) (screw and lockwasher) and toggle levers (2).
- 5.22.3 Adjust speed shifting assembly by positioning the assembly and rotating lever eccentric so that:
- a) Shifting can be accomplished <u>only</u> in the forward position of the control lever.
- b) Drive belt does not touch either shifting roller in sound or silent speed.
- c) Shifting rollers do not touch pulley.
- d) Speed shifting can be accomplished while rotating mechanism by hand.
- 5, 22, 4 Install motor and switch connections.





REVERSE



- 5.22.5 Adjust forward and reverse shifting by moving toggle lever (loosen screw (1)) and rotate drive pulley eccentric so that:
 - a) Belt drives mechanism in forward direction.
 - Rubber drive on motor pulley drives mechanism in reverse direction.
 - c) Drive belt is slack and rubber drive does not contact pulley in "OFF" position.
 - d) Above three conditions are met under any operating situation. Lubricate speed shifting rollers with A&O61-3778 Lubricant.

5.23 MOTOR

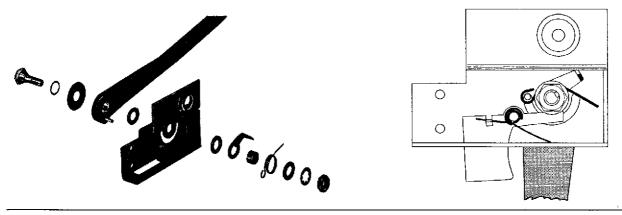
5.23.1 Remove

- a) Mechanism from case (Section 5.1.1).
- b) Motor by loosening setscrews in pulley and fan, and by removing three motor mounting screws. Note grounding spring on one of the screws.
- 5.23.2 <u>Install</u> parts in reverse order of removal be sure setscrews are on flat of motor shaft and the pulleys are centered.

5.24 TAKE-UP ARM

5.24.1 Remove

- a) Mechanism from case (Section 5.1.1).
- b) Arm assembly by removing two screws holding it to the casting.
- c) Parts as required, (see breakdown below).
- 5.24.2 Install parts in reverse order of removal. Lubricate the arm spindle, pivot, and release lever pivot with A&O61-3834 Oil.



5.25 TAKE-UP SPINDLE

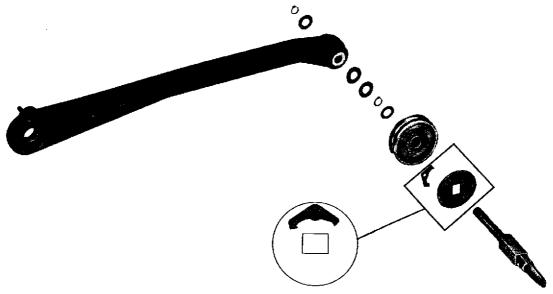
5.25.1 Install (see breakdown below).

Lubricate the following points with A&O61-3834 Oil:

Spindle pawl pivot.

Inside diameter of pulley ratchet.

Spindle.



5.26 SUPPLY SPINDLE AND PULLEY

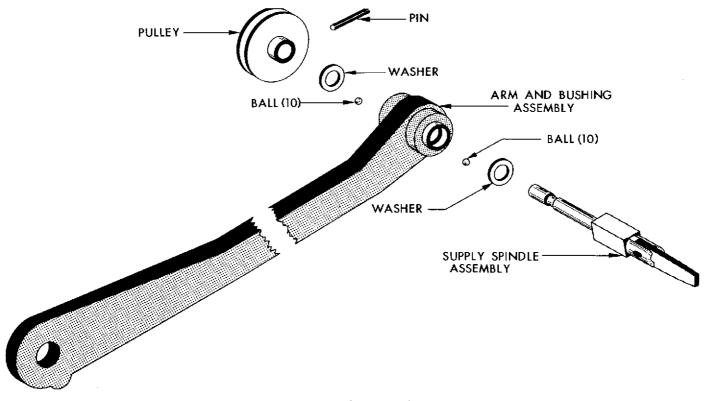
5.26.1 Remove

- a) Belt from pulley.
- b) Pulley from spindle by driving out pin.
- c) Spindle by carefully withdrawing it from the arm.

NOTE: The spindle bearing of later model projectors is a steel bushing with ten loose bearing balls on each side of the bushing instead of a bronze sleeve bearing.

5.26.2 Install spindle and pulley in supply arm assembly with bronze sleeve bearing as follows:

- a) Insert spindle assembly in bearing, then place pulley on shaft, hub toward bearing.
- b) Insert .005-inch thickness gage between hub and bearing.
- c) Clamp the pulley and spindle together and using the hole in one side of the hub as a guide, drill (1/16") through shaft and other side of the pulley hub.
- d) Fasten pulley on shaft with the pin and remove gage.



5.26.3 Install spindle and pulley in supply arm assembly with steel bushing and bearing balls as follows:

- a) Using a small vise or similar means to hold the spindle assembly firmly in a vertical position, place washer on the shaft.
- b) Apply a light coating of Grease A&O61-3655 to the upper surface of the washer and place ten bearing balls around the shaft; the grease will retain the balls in position.
- c) Place the bushed end of the arm assembly over the end of the shaft support the free end of the arm assembly with a block of wood of suitable height and carefully lower the arm so that the bearing balls go into the recess.
- d) Apply a small amount of grease to the upper recess and place ten bearing balls in position.
- e) Add the other washer and place the pulley on the shaft, hub toward the washer.
- f) Insert a .005-inch thickness gage between hub and washer.
- g) Clamp the pulley and spindle together and using the hole in one side of the hub as a guide, drill (1/16") through the shaft and through the other side of the hub.
- h) Fasten pulley on shaft with the pin and remove gage.

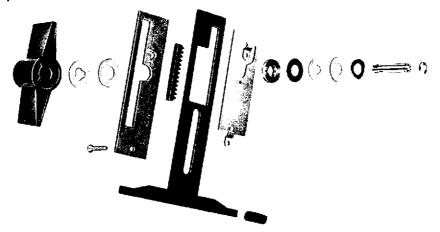
5.27 ELEVATING MECHANISM

5.27.1 Remove

- a) Mechanism from case (Section 5.1.1).
- b) Parts from mechanism as required.

5.27.2 Install

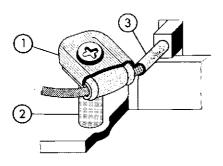
Parts in reverse order of removal so that knob is vertical when elevation is fully retracted. Lubricate the rack teeth, pinion teeth, and both sides of the bracket with A&O61-3619 Lubricant as required.



5.28 SOLAR CELL MOUNT AND CABLE ASSEMBLY

5.28.1 Remove

- a) Sound optics by unhooking the mount spring from the exciter lamp bracket.
- b) Mechanism from case (Section 5.1.1).
- c) Flywheel (Section 5.15.1) and retaining rings from sound drum shaft so sound drum can be slide out far enough to remove the solar cell mount screw.



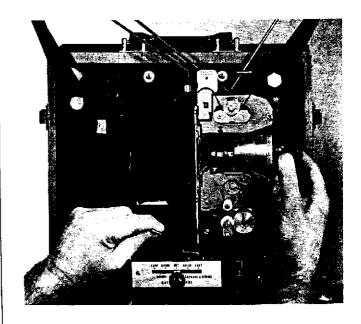
- d) Screw holding the cable clamp (1) and standoff (2) in place and discard these parts, (later models do not use these parts).
- e) Rubber sleeving (3) from cable and discard, then the cable plug by desoldering, and the mount and cable assembly.

5,28,2 Install

Parts in reverse order of removal. Do not use cable clamp (1), standoff (2), or rubber sleeve (3): late style cables are shorter and have a strain relief within the mount.

5.29 LAMP SOCKET

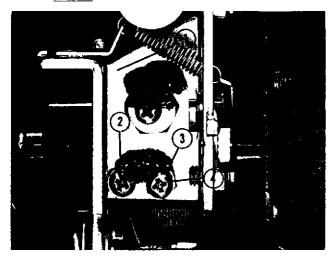
5.29.1 Adjust



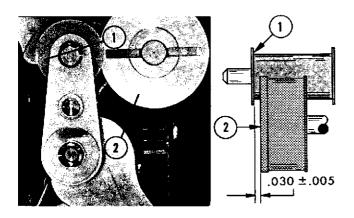
Lamp socket position by turning screw while observing projected filament image using a loupe in front of the lens; filament image should be centered.

5.30 SOUND SYSTEM (Optics and Related Area)

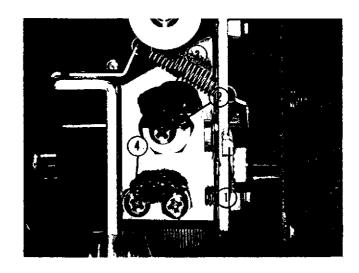
5.30.1 Adjust



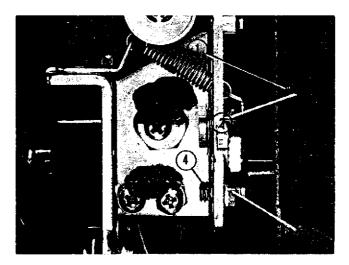
a) Sound optics bracket assembly (1) to center the scanning beam. Observe the beam in reference to the lower edge of sound drum and center of solar cell. The edge of the scanning beam should clear the rim of the sound drum by .012" and the light from the scanning beam should strike the solar cell in the center. Loosen lockscrew (2) and locknut (3), then turn adjusting screw (4) as needed. Tighten locknut (3) and apply a small amount of air-drying cement to screw and locknut.



b) Position of pressure roller for proper overhang of sound track beyond the sound drum. The distance between the inner surface of flange (1) on pressure roller and the flat surface of the sound drum (2) should be .030" ± .005". Roller position must insure that inner raised surface of sound drum contacts the film only in area between picture and sound track. Use Buzz Track Test Film (760383) and turn hexagonal spacer to move pressure roller assembly in or out, as required, so that neither tone is heard or both tones can be heard at the same level.



c) Sound optics bracket assembly to focus the sound optics using 5,000 cycle test film (760382). With the fidelity control lever (1) in the center of its travel, loosen the lock screw (2) and turn the eccentric (3) until the sound output is at maximum. Tighten lock screws (2 and 4) and apply a small amount of air-drying cement to them.



d) Sound optics for azimuth alignment and for minimum microphonics. Loosen lock nut (1) and turn screw (2) to adjust sound optics for maximum response, using 5,000 cycle test film (760382). Loosen lock nut (3), turn the volume up to maximum and, while tapping the sound head casting, turn screw (4) to adjust for minimum microphonics. Tighten lock nut (3) and apply a small amount of air-drying cement to screw and nut. Repeat azimuth adjustment. Tighten lock nut (1) and apply a small amount of air-drying cement to screw and nut.

Lubricate the two recesses of the sound optics with A&O61-3655 Grease.

6. AMPLIFIER SERVICING

A technical write-up giving details of the all-transistor amplifier for the Kodak Pageant Sound Projector, Model AV-126-TR, is available from Eastman Kodak Company, Apparatus Service Department, Rochester 4, New York.

6.1 PRINTED CIRCUITS - GENERAL

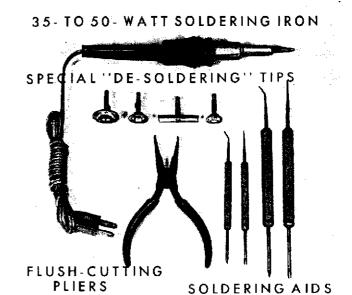
Servicing of printed circuit boards requires somewhat different techniques than those employed in trouble-shooting wired amplifiers. For one thing, more care is necessary in desoldering and soldering. Because excessive heat applied to a component board may cause permanent damage to it, a 30-to-50 watt, pencil-type soldering iron is recommended.

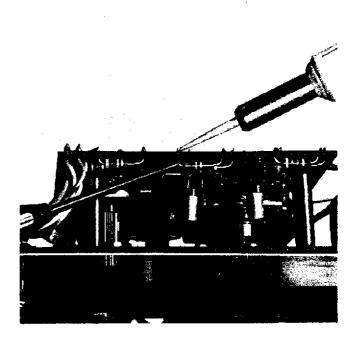
Generally, it will be found that removal of components is easier if flush cutting pliers are used to clip off the ends of the leads and some of the solder at the joint before the iron is applied to heat the joint. Hold the tip of the iron to the soldered joint only, not to the pattern near the joint. Avoid prolonged heating of the joint; remove the component as quickly as possible, using pliers, the forked end of a soldering aid, etc. Very often, the forked end of a soldering aid can be used to reach in on the underside of a printed circuit board and remove a component located in an area that might be difficult to get to with some other tool. The reamer tip can be used to open up the holes in the board for the component leads.

Although a replacement component can usually be installed on the pattern side of the board without affecting amplifier performance, the AV-126-TR amplifier is designed so that most components can be easily installed in the original position. Again, avoid prolonged heating of the "printed" pattern at the joint when installing the component.

If a "printed" conductor is cracked, a simple repair can be made by first scraping the conductor about 1/4" on either side of the break to clean the copper and then applying a small piece of bare hookup wire over the break. The wire should be tinned before placing it in position. Hold the tip of the iron on the wire just long enough to allow the applied solder to flow across the break so that the wire is imbeded.

For detailed information on design and construction and additional hints on servicing printed circuits, refer to Printed Circuit Diagnosis Made Easy (a Howard W. Sams publication), to Rider's Introduction to Printed Circuits, and other books; also, to bulletins available from the various tube manufacturers.





6.2 TRANSISTORIZED CIRCUITS - GENERAL

Basic trouble shooting of a transistorized circuit is similar to tube circuitry except that the operating voltages are generally much lower. Voltmeter checks are done in exactly the same manner but care should be used in making ohmeter checks since component damage can result from the applied current. Although the transistor is probably the most reliable component in the circuit and should be the last component to be suspected, a transistor tester is a good investment and several good inexpensive models are available.

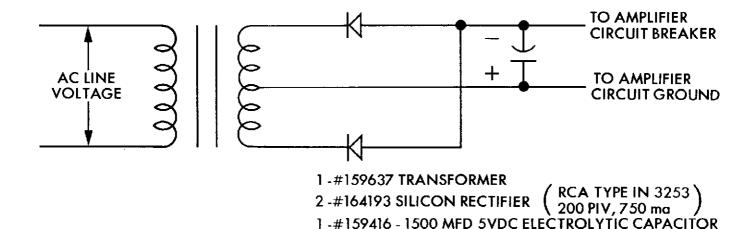
A certain amount of care is needed when handling a transistor; they are sensitive to heat and since the leads are generally quite small, proper orientation in the socket is important. A basic understanding of transistor operation and theory is very important to the serviceman and many sources of this information are available. Articles appear in nearly every issue of the various technical magazines and several manufacturers publish transistor manuals which contain a discussion on theory, construction, servicing, etc. More detailed information can be found in various books such as: "Basic Electronics Volume 6" (A Rider Publication), "Transistors - Theory and Practice" (a Gernsback Publication), and many others.

6.3 SERVICING THE AV-126-TR AMPLIFIER

To remove amplifier from the case see Section 5.2.

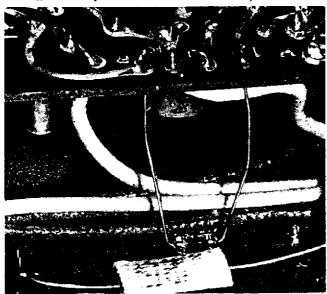
6.3.1 Power Supply

Since it is necessary to disconnect only the solar cell lead when removing the amplifier from the case, the amplifier can still be operated and tested. It may sometimes be necessary to use extension leads to allow easier accessibility to the amplifier. If a separate power supply is required, use a source of DC voltage that will supply a negative 25 to 30 volts measured across the amplifier filter capacitor C-13. Tool #1034 is available for this purpose, or one can be made as shown below, using parts from the amplifier power supply.



6.3.2 SERVICE HINTS

- a) Although many of the components can be removed and replaced without separating the printed circuit board from the amplifier plate, these operations can be more easily performed if the amplifier is "openedup". To do this, proceed as follows:
 - Remove the control knobs (tone control friction fit, volume control - setscrew).



 Unsolder the two leads of the Diode Stabistor (CR-5) that is cemented to the amplifier plate.



 Remove the four circuit board mounting screws (arrows) and swing board over.

- b) The 500K bias control (R-28) is variable so that the exact value of correct bias may be selected for any given set of transistors. If any of the transistors are replaced, it may be necessary to adjust R-28 to obtain the proper undistorted output (Section 6.3.3a).
- c) The 25K potentiometer (R-34) is used to compensate for the slight variations in the sensitivity of different solar cells. It will require adjusting only if the solar cell, exciter lamp, or transistors Q1 or Q2 are changed. Adjust to obtain the proper undistorted output (Section 6.3.3a).
- d) When replacing either Q7 or Q8 (2N307 or T1-370 Transistor) apply a moderate amount of Transistor Z-5 Silicon Compound No. 8101 (General Cement Electronics Company) to both sides of the insulating washers.

6.3.3 Specification (input voltage to amplifier, 117)

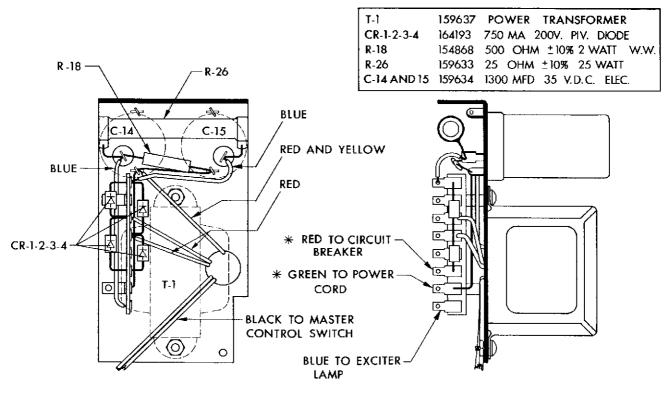
- a) Output: *6.7 volts minimum 400 cycle test film as signal source, no visible distortion on an oscilliscope (a slight amount of "filling-in" will be visible in the lower half of the signal which does not affect the undistorted output).
- b) Sensitivity: (Tone Control full counterclockwise)
 - 1. Film Channel 8 watts (* 6.9 volts) output, 1000 cycle signal of 0.66 millivolts ± 4 db applied directly to the photocell input socket.
 - Microphone Channel 8 watts (*6.9 volts)
 output, 100 cycle signal of 22 millivolts ± 3 db
 applied directly to the microphone input receptacle.
 - Phonograph Channel 8 watts (*6.9 volts)
 output, 1000 cycle signal of 220 millivolts ± 3 db
 applied directly to the phonograph input receptacle.

c) Power supply

- DC voltage to the amplifier: 25 to 30 volts (no load), measured across the filter capacitor C-13 at line voltage.
- DC voltage to the exciter lamp: 4.0 ± 0.2 volts with ripple content not exceeding 150 millivolts, measured across a resistor load of 5 ohms ± 1%, 5 watts (in place of the exciter lamp) at a line voltage of 117.
- Measured across a 6 ohm, 25 watt, dummy speaker load.

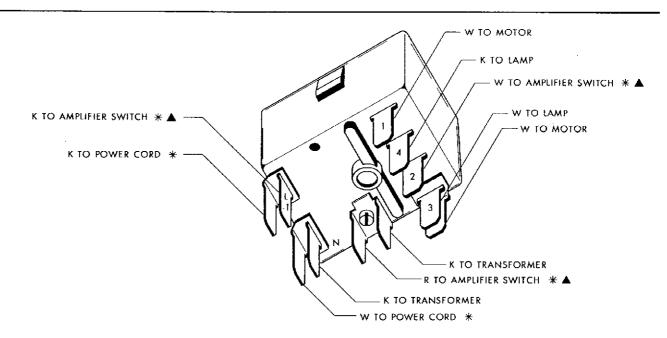
7. SCHEMATIC AND WIRING DIAGRAMS

7.1 POWER SUPPLY AND MASTER CONTROL SWITCH



* DISCONNECT TO REMOVE MECHANISM

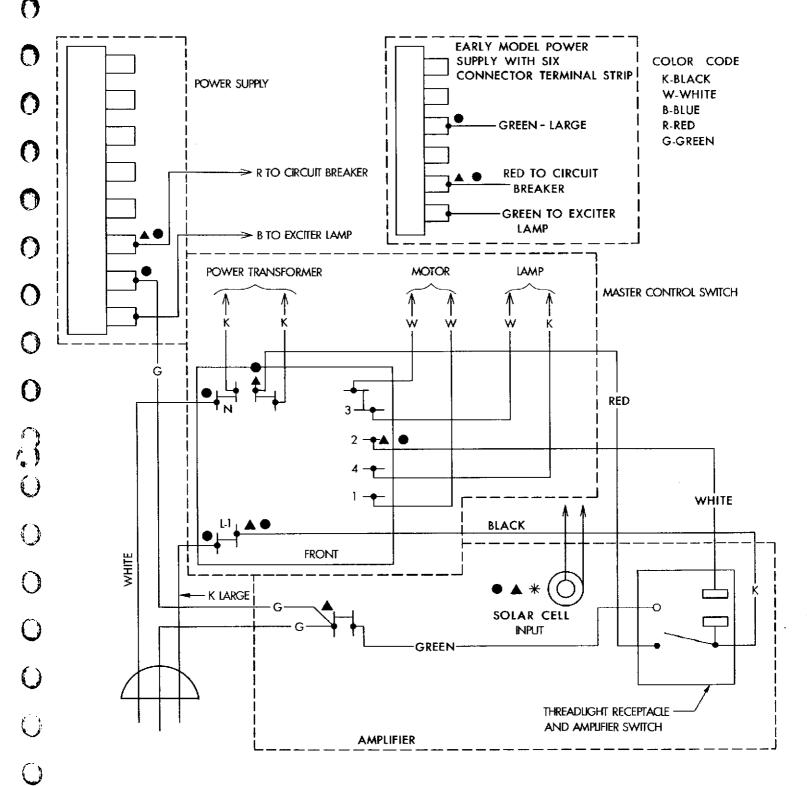
POWER SUPPLY



- * DISCONNECT TO REMOVE MECHANISM
- ▲ DISCONNECT TO REMOVE AMPLIFIER COMPLETE

MASTER CONTROL SWITCH

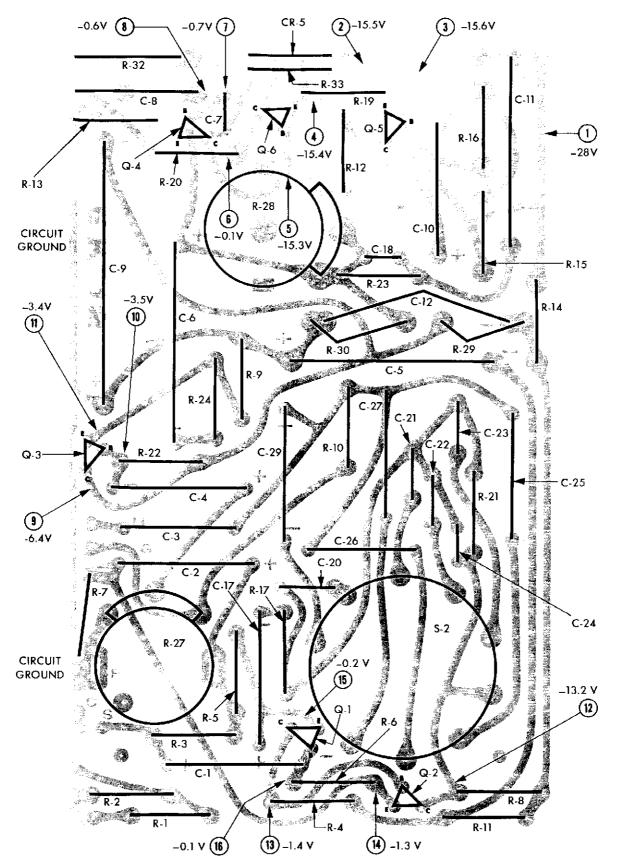
7.2 SWITCH AND TERMINAL CONNECTIONS



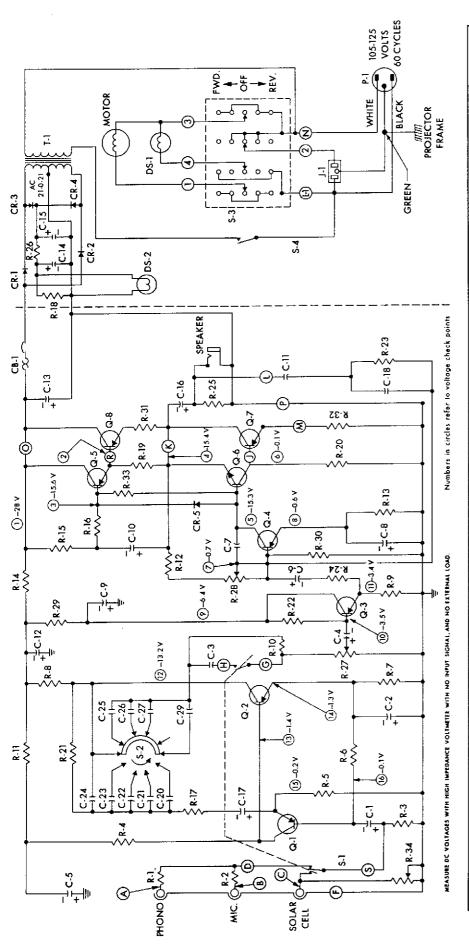
- * DISCONNECT TO REMOVE AMPLIFIER (AMPLIFIER WILL STILL OPERATE)
- ▲ DISCONNECT TO REMOVE AMPLIFIER COMPLETELY
- DISCONNECT TO REMOVE MECHANISM

SWITCH AND TERMINAL CONNECTIONS

AV-126-TR



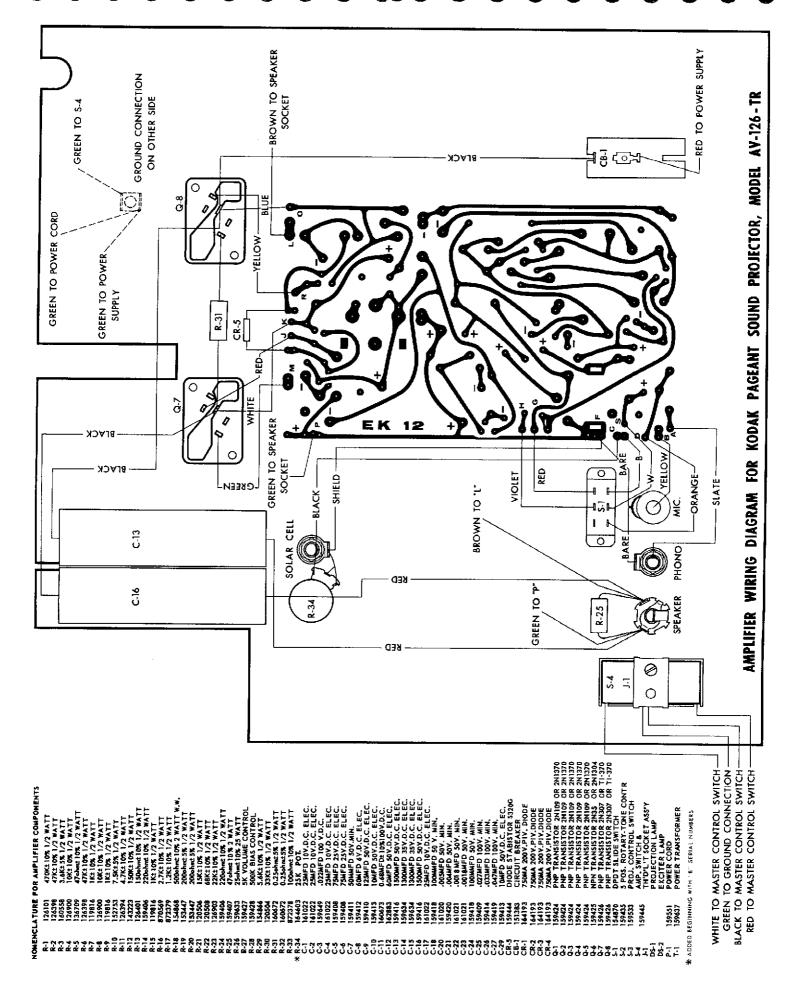
VOLTAGE - CHECK AND COMPONENT LOCATING DIAGRAM



					NOMENCLATURE FOR AMPLIFIER COMPONENTS	AMPLIFIE	R COMPON	ENTS			
R•1	126101	470K±10% 1/2 WATT	R-22	120508	68K±10% 1/2 WATT	C-9	159410	125MFD 50V.D.C. ELEC.	CR-1	164193	750MA 200 V.PIV. DIODE
£.2	126398	47K±10% 1/2 WATT	R-23	126903	22K±10% 1/2 WATT	္	159413	10MFD 50V.D.C. ELEC.	CR-2	164193	750MA 200 V. PIV. DIODE
 	160558	3.6K±5% 1/2 WATT	R-24	159406	220ohm# 10% 1/2 WATT	- -	160673	0.68MFD±10%100V.D.C.	5	164193	750MA 200 V.P IV. DIODE
7	126900	10K±10% 1/2 WATT	R-25	159407	47ohm±10% 2 WATT	C-13	162883	60MFD S6V.D.C. ELEC.	7.80	164193	750MA 200 V. PIV. DIODE
5.	136709	47ohm±10% 1/2 WATT	R-26	159633	25ohmt 10% 25 WATT	-13 -0	159416	1500MFD 50V,D,C, ELEC.	ā	159424	PNP TRANSISTOR 2N109 OR 2N1370
9-	126398	47K±10% 1/2 WATT	R-27	159427	SK VOLUME CONTROL	C-14	159634	1300MFD 35V,D,C, ELEC.	Ö	159424	PNP TRANSISTOR 2N109 OR 2N1370
≎	119816	1K±10% 1/2 WATT	R-28	159428	500K BIAS CONTROL	C-15	159634	1300MFD 35V.D.C. ELEC.	Ġ	159424	PNP TRANSISTOR 2N109 OR 2N1370
æ.	126900	10K±10% 1/2 WATT	R-29	154866	5.6K±10% 1/2 WATT	-1¢	159416	1500MFD 50V.D.C. ELEC.	4	159424	PNP TRANSISTOR 2N109 OR 2N1370
<u>ئ</u>	119816	1K±10% 1/2 WATT	R-30	120504	33K±10% 1/2 WATT	C-17	161022	25MFD 10V.D.C. ELEC.	Ġ	159424	PNP TRANSISTOR 2N109 OR 2N1370
<u>-</u>	152753	7.5K±5% 1/2 WATT	R-31	160672	0.25ohmt 5% 1/2 WATT	C-18	159418	TOOMMED SO V. MIN.	ó	159425	NPN TRANSISTOR 2N35 OR 2N1304
Ξ	126394	4.7K±10% 1/2 WATT	R-32	160672	0.25ohm±5% 1/2 WATT	C-20	161020	COSMFD SOV. MIN.	6	159426	PNP TRANSISTOR 2N307 OR TI-370
-12	143223	150K±10% 1/2 WATT	R-33	872378	100ohm#10% 1/2 WATT	C-5	159420	COLMED SOV. MIN.	ø	159426	PNP TRANSISTOR 2N307 OR TI-370
₹ -	126401	150ohm±10% 1/2 WATT	* R-34	164603	25K POT.	C-22	161021	.0018MFD 50V. MIN.	<u>.</u>	154870	DPDT SLIDE SWITCH
7	159406	220ohmt 10% 1/2 WATT	ົວ	161022	25MFD 10V.D.C. ELEC.	C-23	161021	.DOISMED SOV. MIN.	\$2	159435	5 POS, ROTARY-TONE CONTROL
-15	119816	1K±105 1/2 WATT	C-2	161022	25MFD 10V.D.C. ELEC.	0-24	159418	TOOMMED SOV. MIN.	2	159533	PROJ. CONTROL SWITCH
÷.16	870569	2.7K±10% 1/2 WATT	င်ပ	159649	.022MFD 100 V.D.C.	C-25	159409	.027MFD 100V. MIN.	7	/ 20000	AMP. SWITCH &
-17	872379	1.2K±10% 1/2 WATT	J	161022	25MFD 10V.D.C. ELEC.	C-26	159414	.033MFD 100V. MIN.	<u>\</u>	CHACI	TH'D'L'T SOCKET ASS'Y
8	154868	500ohmt 10% 2 WATT W.W.	5.5	159408	75MFD 25V.D.C. ELEC.	C-27	159419	.047MFD 100V. MIN.	1-50		PROJECTION LAMP
÷13	153447	2000hmt 5% 1/2 WATT	ů	159408	75MFD 25V.D.C. ELEC.	Ç.5	159413	10MFD 50V.D.C. ELEC.	DS-2		EXCITER LAMP
-20	153447	2000 hmt 5% 1/2 WATT	C-7	159411	SOMMED SOV.MIN.	CR-5	159444	DIODE STABISTOR 5320G	-	159551	POWER CORD
2	120506	15K±10% 1/2 WATT	به ن	159412	60MFD 6V.D.C. ELEC.	6	151383	CIRCUIT BREAKER	፫	159637	POWER TRANSFORMER
			* ADDEC	BEGINNE	* ADDED BEGINNING WITH "B" SERIAL NUMBERS	WBERS					

AMPLIFIER SCHEMATIC CIRCUIT FOR KODAK PAGEANT SOUND PROJECTOR, MODEL AV-126-TR

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