Film-Tech

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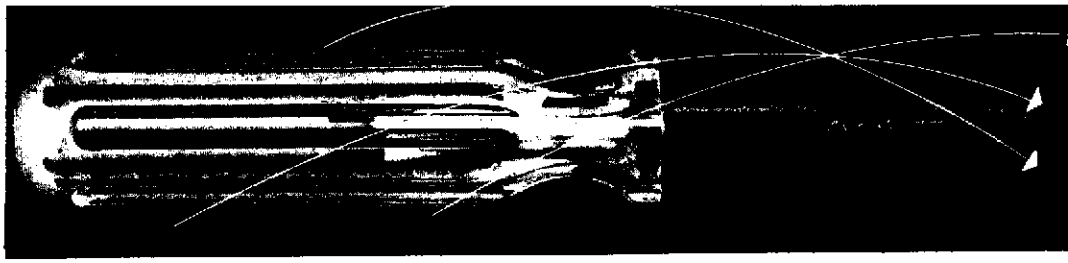


GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-58-28

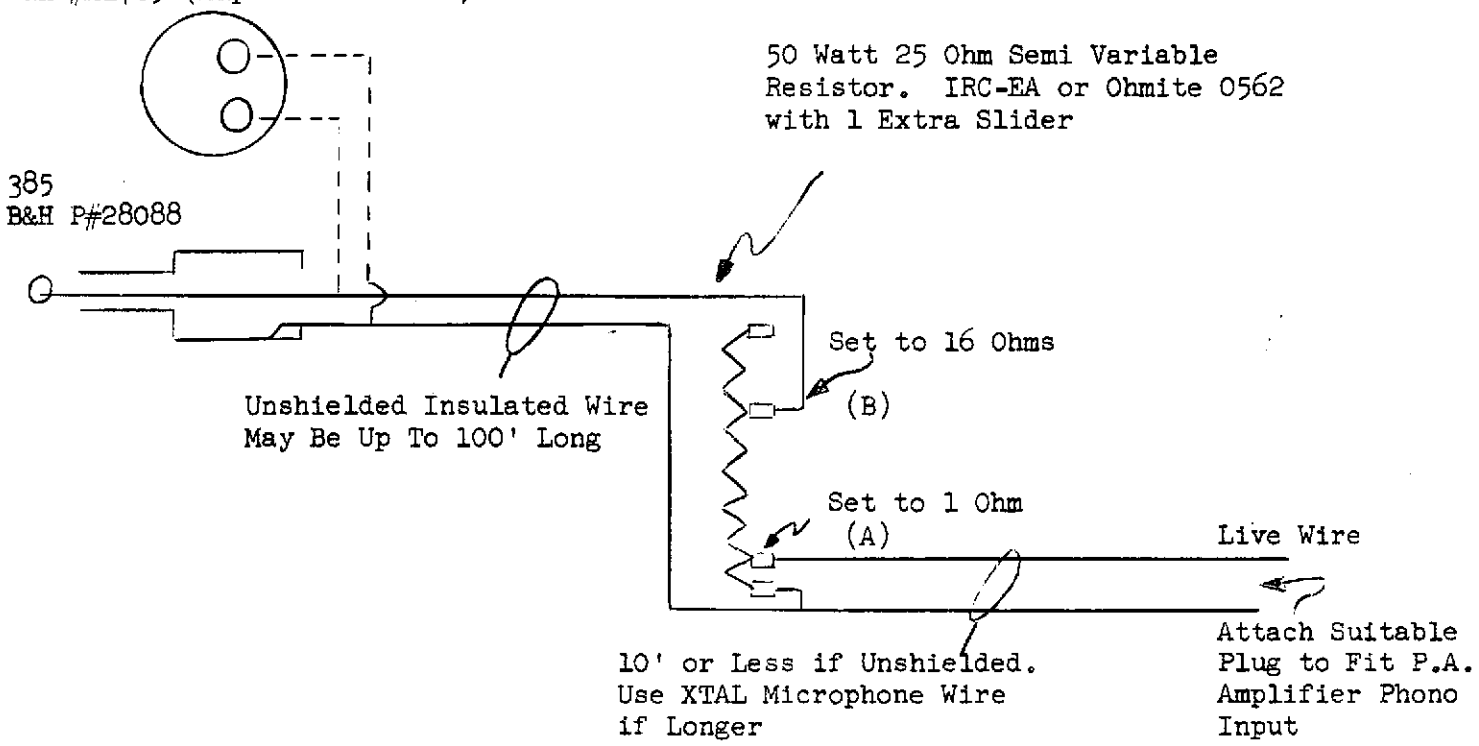
SUBJECT

ADAPTER FOR CONNECTING FOS TO PUBLIC ADDRESS AMPLIFIER

DATE

12-31-58

179, 185, 285
B&H #A1705 (Amphenol 80 MC2M)



DIRECTIONS

Disconnect FOS speaker.
Connect patch cord to FOS. 16 ohm (single) receptacle.
Connect patch cord opposite end to Public Address amplifier
Turn on both amplifiers.
Set FOS volume control to 11 o'clock position.
Set FOS tone control to 12 o'clock position.
Set P.A. phono volume control approximately half on.
Try combination with film in projector for maximum desired room volume from P.A. system.
Turn down P.A. volume control only if volume is too high.
Turn both volume controls up slightly if volume is low.
If desired volume cannot be obtained, return control to original settings and then move resistor slider (A) slightly towards slider (B). Little movement will be required.
Use FOS volume control thereafter to control film volume.

GENERAL SERVICE DEPARTMENT

GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-29

SUBJECT 200, 250-WATT PROJECTOR CONVERSION TO 400-WATT DATE 1-15-59

The 50-volt series of projector lamps will not be available again and therefore, whenever there is a call for these lamps, the projectors should be converted so that the standard 400-watt line voltage lamp, such as is used in the 8mm projectors, can be used.

This conversion is decidedly to the customer's benefit and the customer should be sold on this even if his 50-volt lamp is still in operating condition.

The parts needed are as follows:

Description	Part No.
Lamphouse cap	2662
Attaching screws (4)	1520
Jumper	Use any #18 wire
Safety shutter	03927

The procedure is as follows:

1. Remove cover from terminal box and detach wires leading to lamp resistance. Remove resistance unit and volt meter, if one is attached.

2. Install jumper across terminals where two wires were removed.

3. Install new cap.

4. If projector is equipped with a solid type safety shutter, the motor should be removed from the blower housing and a new perforated shutter installed.

   CAUTION:

   On Model 57 projectors which were originally equipped with the 50-V lamp, the safety shutter could be raised for still projection by depressing the air escape valve on top of the blower housing. Be sure to point out to your customer that with the 400-watt line voltage lamp, this valve cannot be used on still projection. In the future the operator will merely disengage the clutch, and if necessary, turn the handsetting knob so that the shutter is in the open position when projecting a still.

A-59-29

The reflectors are frequently in poor condition on these old projectors and therefore, be sure to check and install a new one, part 8065, if necessary. Another item to check is the condenser lens assembly. If it is not stamped and is not painted red on the rear outer side of the casting, it is a 75-75 type which in order to increase illumination to the screen should have new elements installed, part 6926 and 5306. If it is stamped 75-50, the heat resisting element only, part 6926, should be changed. Should the customer have both condensers, then he should be informed that the unpainted one should not at any time be used in the future. When installing new elements, be sure that they are not tightened down tight as some room for expansion of the glass must be allowed. The elements should be loose enough so that they will rattle when shaken.

The charge for this conversion is $26.00 including the projector lamp; reflector, and condenser element changing, should any of this be necessary. An additional charge is to be made for such materials supplied.

GENERAL SERVICE DEPARTMENT

GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

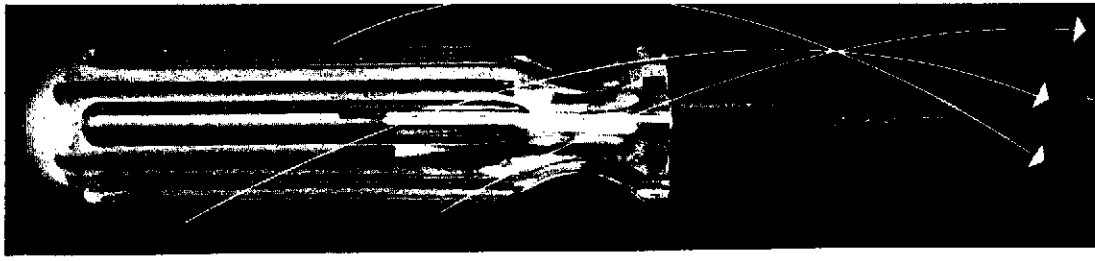
A-59-30

SUBJECT PILOT LIGHTS 385-302 FILMOSOUND

DATE 1-15-59

Since pilot lamps are not fully interchangeable between all 385 and 302 models, please be certain to specify whether the screw in pilot light, part #23292, or part #430076, is wanted when ordering.

GENERAL SERVICE DEPARTMENT



GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-31

SUBJECT AMPLIFIER REPLACEMENT DATE 1-15-59

It is possible to adapt all models of the 179, 185 and 285 Filmosound projector to accommodate the new 15-watt amplifier, B&H #08855, used in the Model 385 projector.

The reason for this replacement would be in the case of the older model amplifiers that are damaged or beyond repair or if the customer wishes to obtain the advantages of the new amplifier.

Parts Required for the Conversion:

1 -	#08855	15-watt 385 amplifier
1 -	#08882	Silent-sound switch assembly
1 -	#29097	Adapter
1 -	#06842	Line cord assembly
1 -	#29437	Fiber switch guard
1 -		7.5 ohm 10-watt resistor (required on single case projectors that use a 6" speaker). (Purchase locally - radio supply house.)

INSTALLATION INSTRUCTIONS

1. Place projector on its side to enable the removal of the amplifier.
2. Remove the 4 B&H #17331 or #12823, knurled head screws.
3. Carefully remove the amplifier assembly from the projector and disconnect the exciter lamp lead plug #17300.
4. Loosen the forward-reverse switch #17365 nut. Slip the fiber switch guard #29437 in place between the switch and the casting. Tighten the switch nut.
5. Remove the projector terminal cover B&H #05560 or #04151.
6. Trace the AC input leads from the receptacle #21221 to the terminal strip #17314. Connect the line cord assembly #06842 leads to the same point on the terminal strip.

7. Trace the silent-sound switch leads connected to the terminal strip #17314. Disconnect the old leads and connect the proper leads of switch assembly #08882 to the same point. See Figure #1.

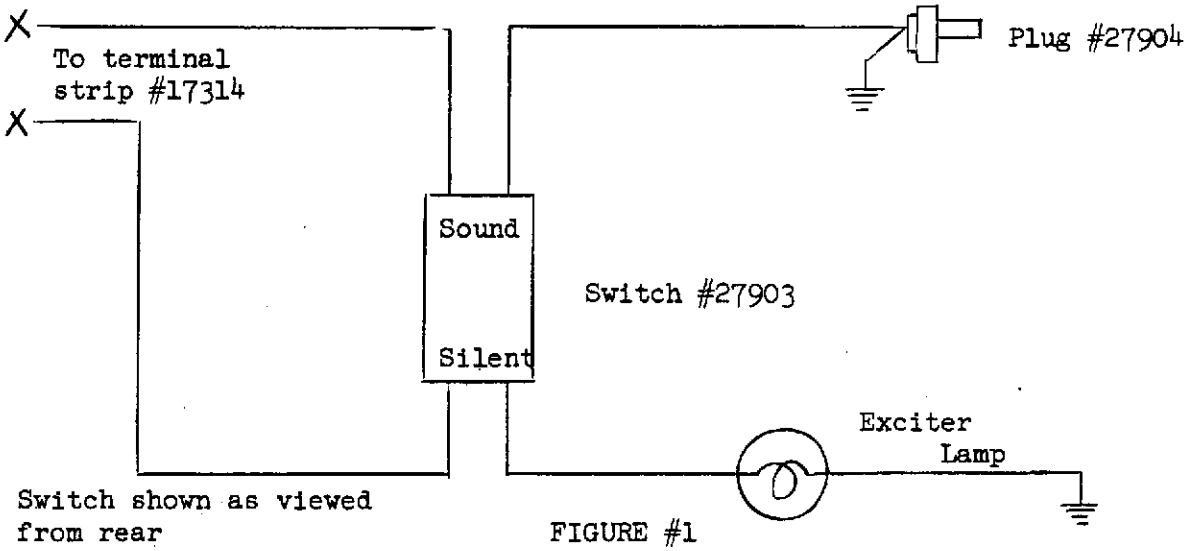


FIGURE #1

8. Disconnect the remaining lead of the old sound-silent switch and remove the switch itself. NOTE: Save the sound-silent nameplate.

9. Attach the new switch assembly #08882, nameplate removed in step #8 and secure with the switch nut.

10. Connect the remaining switch lead to the exciter lamp as shown in Figure #1.

11. Dress the leads against the projector housing.

12. Install the terminal cover removed in step #5. NOTE: Check the line cord assembly installed in step #6, being sure it is not pinched by the cover.

13. Install the new amplifier #08855 in the projector. Plug the single pin exciter lamp plug into the amplifier input jack located on the amplifier top near the power transformer.

14. Secure the amplifier in place with the screws removed in step #2.

15. Plug the line cord installed in step #6 into the amplifier.

16. Plug the adapter #29097 into the proper speaker output jack of the amplifier.

NOTE:

On 6" speakers a 7.5 ohm 10-watt limiting resistor must be added in series to prevent possible damage to the speaker. See Figure #2. A cable clamp should be used to secure the resistor onto speaker basket.

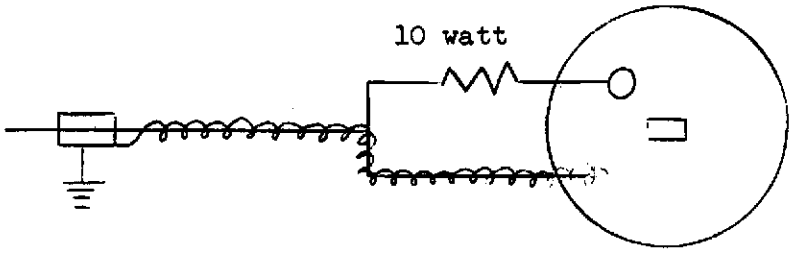
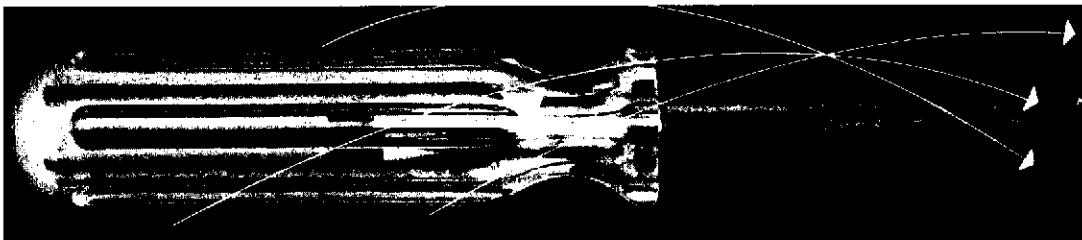


FIGURE #2

17. Check the projector and amplifier for proper operation.

GENERAL SERVICE DEPARTMENT



GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-32

SUBJECT

JAN PROJECTOR DESIGN 614 CB, CBM, CBRM LUBRICATION SYSTEM
ADDITION OF PART #620870 SPACER

DATE

1-15-59

If part #061156 *(Figure #27, Page #90) is a sand casting (rough finish as compared to the rear mechanism plate *(Figure #15-21, Page #77), do not alter the lubrication system in any manner whatsoever.

If, however, the front mechanism plate is a die casting, this can be readily determined if the finish is as smooth as the rear mechanism plate, remove the adapter *(Figure #18-62, Page #82) and install a spacer, Bell & Howell part #620870, between the adapter and the front mechanism plate.

This will insure that the oil wick thread *(Figure #18-61, Page #82) rather than the oil wick felt will properly meter the oil to the shuttle and its adjacent parts.

* Refer to Jan Service Manual #620855.

GENERAL SERVICE DEPARTMENT

GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-33

SUBJECT JAN PROJECTOR DESIGN 614 SYNCHRONOUS MOTOR INSTALLATION KITS DATE 1-15-59

Bell & Howell part #067335 has been the number designated for a synchronous motor 1/20 horsepower and the other items necessary for the modification of a JAN projector for 60 cycle operation.

If the projector is to be used for 50 cycle 24 frame per second operation, then Bell & Howell part #067334 should also be ordered in addition to Bell & Howell part #067335 for this mode of operation.

Instructions for the actual modification are included in the service manual Bell & Howell part #620855.

GENERAL SERVICE DEPARTMENT

GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-34

SUBJECT EXCITER LAMPS IN FILMOSOUND PROJECTORS DATE 1-15-59

We have received several complaints from our customers and service stations reporting "no sound" or "very low level sound" when projecting optical sound track on the Filmosounds. In the process of examining these complaints, it has come to our attention that exciter lamps other than those recommended by Bell & Howell are being used as replacements in some instances. The arrangement of the optical slit in the Optical Slit Assembly is such that only an exciter lamp (mounting in the base down position) with a horizontal filament should be used. A vertical filament lamp will not perform satisfactorily!

For this reason, we recommend that you use only the following exciter lamps in our Filmosound projectors as indicated:

Exciter Lamp	Filmosound Models
B&H part #17327	185, 285-385, and 202-302
B&H part #12134	156, 179, etc.

Voltage rating - 4 volts

Current rating - 0.75 amps.

GENERAL SERVICE DEPARTMENT

GENERAL SERVICE BULLETIN

Bell & Howell 7125 NORTH KIMBALL AVENUE / CHICAGO 45, ILLINOIS

A-59-35

SUBJECT ADAPTER PLUGS FOR SOUND PROJECTORS DATE 1-15-59

There has been a need for using older model Filmosound speakers with the latest design 385 projectors and vice versa.

Therefore, a line of adapters has been introduced to permit various interconnections between older style equipment and the latest Filmosound series.

The table below shows various combinations that can be obtained and the correct adapter to be used.

PROJECTOR	12" SPEAKER	ADAPTER
179 185 285	179 185 285	None None None
179 185 285	385 385 385	29096 29096 29096
385 385 385 385	179 185 285 385	29097 29097 29097 None
JAN 614 (All Models) JAN 614 (All Models) JAN 614 (All Models) JAN 614 (All Models)	179 185 285 385	067244 067244 067244 09398

Adapter part #29096 has the old style Amphenol two-pin male connector at one end with the new phone-type jack at the other end.

Adapter part #29097 has an old style Amphenol two-pin female receptacle at one end and a male two-conductor phone plug at the other end.

Adapter #067244 has a JAN style connector at one end and an old style Amphenol connector at the other end.

Adapter cord #09398 has a JAN style connector at one end with a female phone plug for 385 model equipment at the other end.

The new design 302 projector has speaker connectors that are identical to those used on the design 385 projector. However, the electronic monitor mixer, part #08295, when used with the design 302 projector, no longer plugs into the dual speaker jack.

The monitor mixer (part #08295) can be used with the 302 projector providing a new connecting cable is used. This new cable carries the part #09241 and has a 2 conductor Amphenol-type connector at one end with a new miniature phone plug at the other end that plugs into the monitor receptacle on the back of the 302 amplifier.

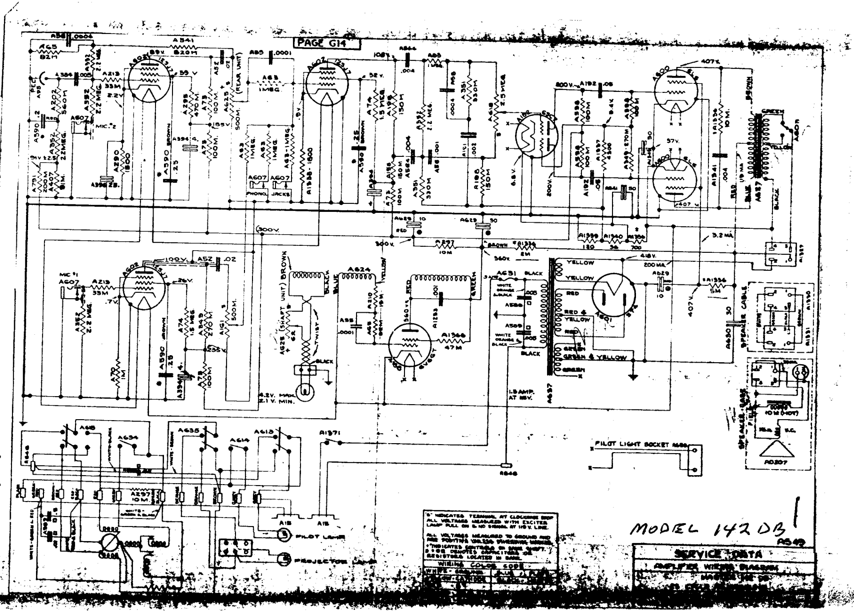
In the case of the single monitor earphone, part #08048, it can only be used with Filmosound 202 projectors. When using an earphone for the 302 projector, order part #28996 which has a special plug that plugs into the monitor receptacle at the back of the 302 amplifier panel.

These two earphone assemblies are not interchangeable and there is no provision for adapting one to the other, therefore, you must be careful in specifying the correct unit for the correct projector.

Reference to the table below will show the correct part numbers.

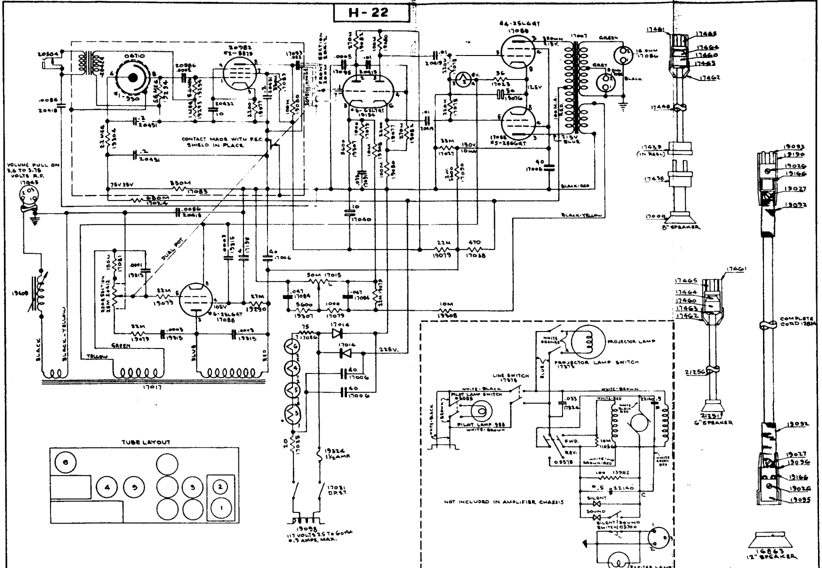
PROJECTOR	MONITOR MIXER CORD	MONITOR EARPHONE
202	08296	08048
302	09241	28996

GENERAL SERVICE DEPARTMENT



PAGE G14
MODEL 142DB
A549
SERVICE DATA
AMPLIFIER WIRING DIAGRAM
"S" INDICATES TERMINAL AT CLOCKWISE STOP
ALL VOLTAGES MEASURED WITH EXCITER LAMP FULL ON & NO SIGNAL AT 115 V. LINE.
ALL VOLTAGES MEASURED TO GROUND AND ARE POSITIVE UNLESS OTHERWISE MARKED.
* INDICATES CONTROLS ON SAME SHAFT.
WIRING COLOR CODE
PILOT LIGHT SOCKET A686
PILOT LAMP
PROJECTOR LAMP
SPEAKER CABLE
SPEAKER BASE
PHONO JACKS
MIC #1
MIC #2
YELLOW
RED
BLACK
GREEN
BROWN
BLUE
WHITE
RED & YELLOW
GREEN & YELLOW
1.5 AMP. AT 115V.
6.2 V. MAX. 2.1 V. MIN.

H-22



WIRE COLOR CODE			
WHITE	GROUND	BROWN	SCREEN
YELLOW	CATHODE	BLACK	AC
RED	B+	WHITE & BLACK	B-
GREEN	GRID		
BLUE	PLATE		

ALL VOLTAGES MEASURED WITH METER WITH 11 MEGOHM INPUT.

F.O.S. SERIAL NO'S. 767267 & UP

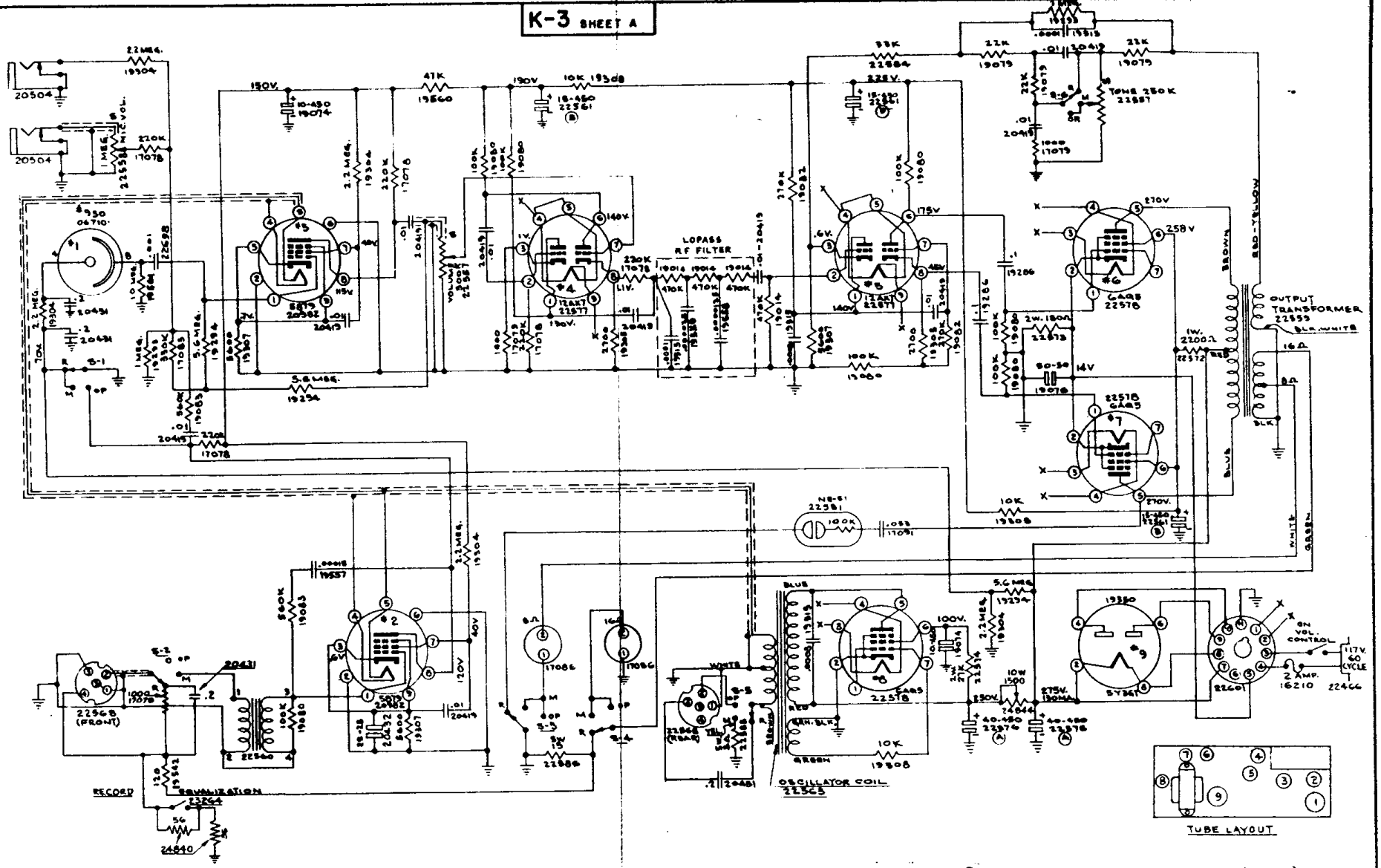
REVISION OF OCTOBER 1950

Bell & Howell Co. Chicago U.S.A.

AMPLIFIER WIRING DIAGRAM 05975 FOR DESIGNS 185 (ALL)

DATE 6-20-51 | SERVICE DATA | DRAWN | APVD.

K-3 SHEET A



NOTE: VOLTAGES POINT TO POINT ARE BASED ON 117 VOLT A.C. LINE INPUT.

(A)-INDICATES CAPACITORS IN SAME CAN (22576)
(B)-INDICATES CAPACITORS IN SAME CAN (22561)
S-INDICATES TERMINAL AT CLOCKWISE STOP.
VOLTAGES INDICATED MEASURED TO CHASSIS GROUND (FUNCTION SWITCH IN MAG. OR OPT. PLAY BACK POSITION)
ALL RESISTORS ½ WATT UNLESS INDICATED OTHERWISE
S-1 TO S-6 (INCL.) INDICATE SECTIONS OF SELECTOR SWITCH (22558)

WIRE COLOR CODE			
WHITE	GROUND	BROWN	SCREEN
YELLOW	CATHODE	BLACK	AC
RED	B+	WHITE & BLACK	B-
GREEN	GRID		
BLUE	PLATE		

Bell & Howell Co. Chicago U.S.A.

AMPLIFIER WIRING DIAGRAM FOR DESIGNS 202 (ALL)

DATE 3-3-52 REVISED- 4-25-52	SERVICE DATA	DRAWN acl APVD.

G.B. Bell & Howell

"621" Projector

AMPLIFIER CIRCUIT

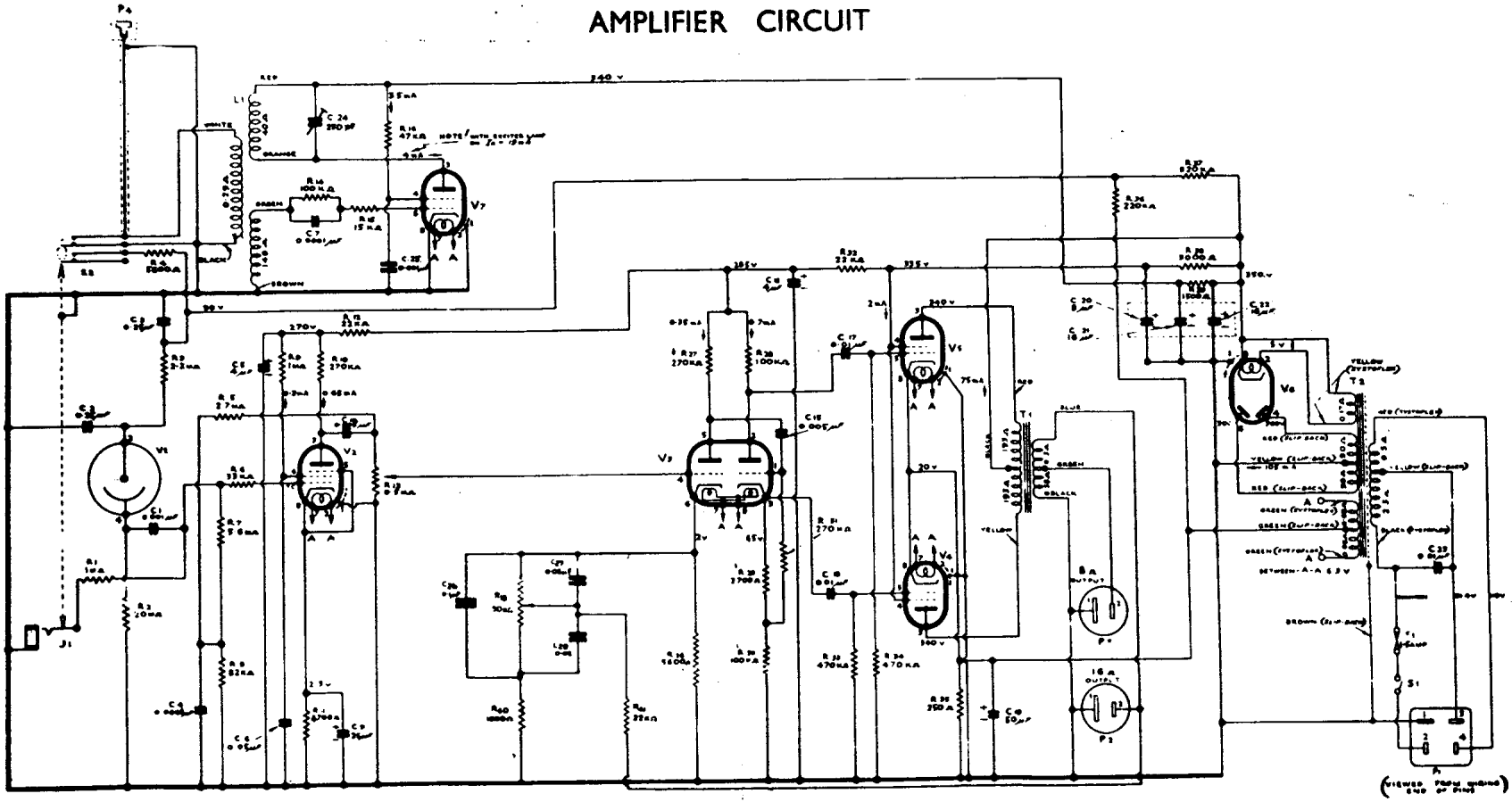
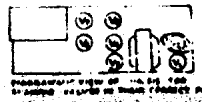


FIG. 17

NOTE VOLTAGES AND CURRENTS SHOWN REFER TO THE ON-LOAD, ZERO SIGNAL CONDITION FOR AMPLIFIER AND WITH EXCITER LAMP DISCONNECTED



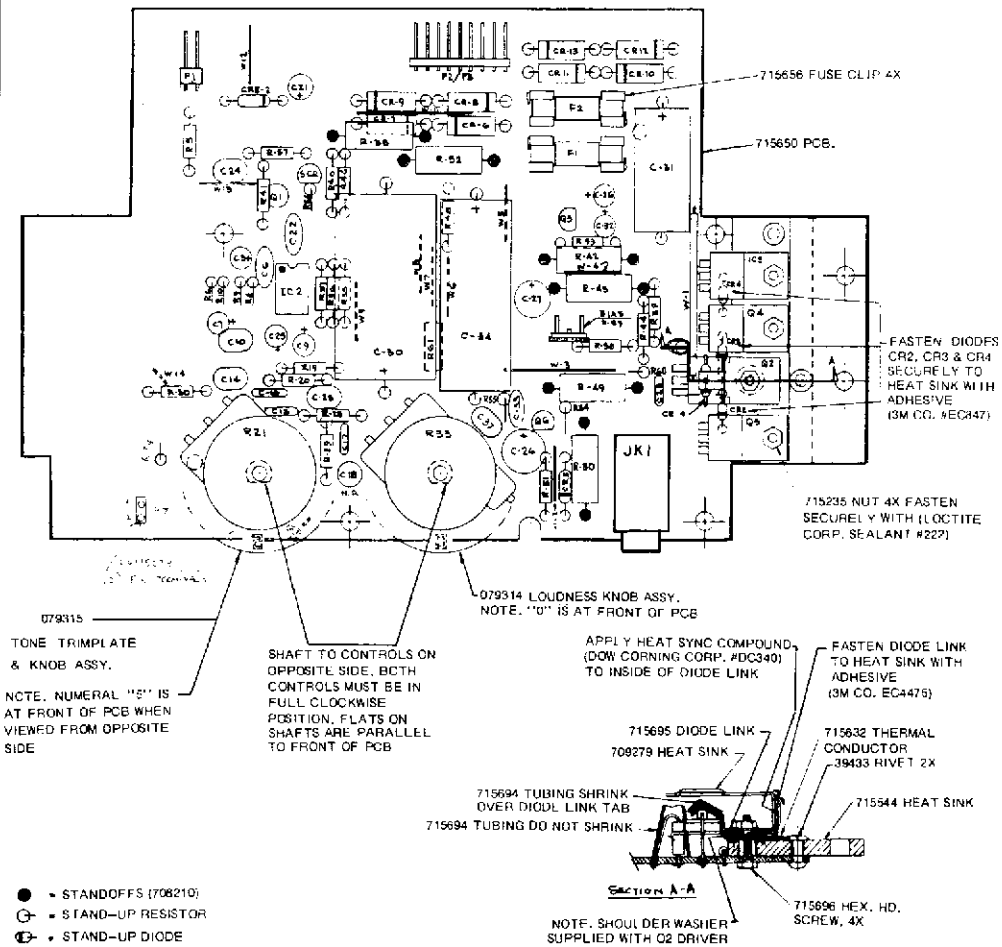
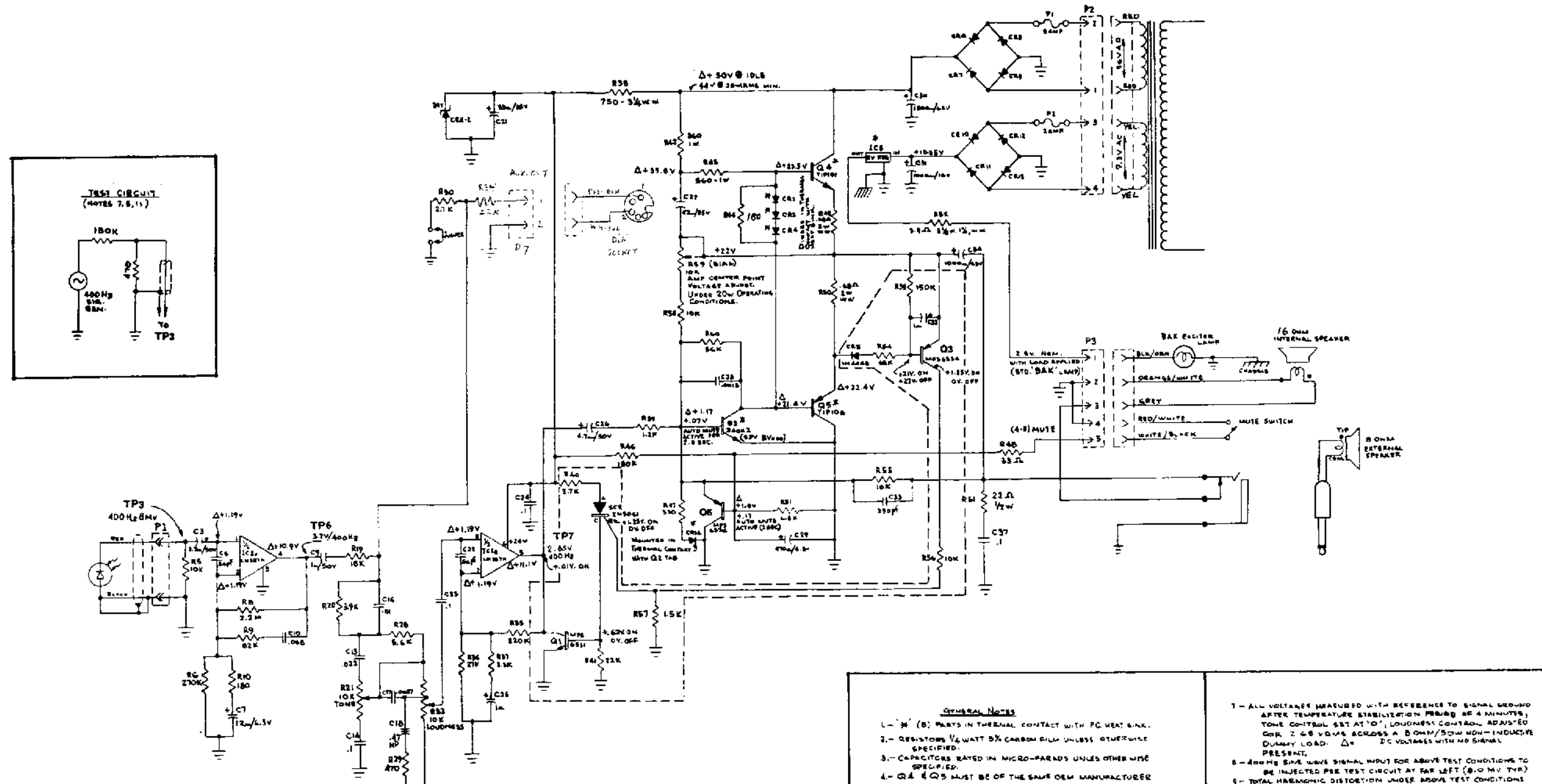


FIGURE 25 AMPLIFIER

Sym Pt. No		Description
	39433	Rivet
	706210	Stand-off Insulator
	709279	Heat Dissipator
	713544	Heat Sink
	715235	Nut; Hex: #3-48
	715632	Thermo Conductor
	715650	P.C.B.
	715656	Fuse Clip
	715694	Heat Shrink Sleeving
	715695	Diode Link
	715696	Screw; Hex Head: #3-48
	079314	Loudness Trimplate & Knob Assembly
	079315	Tone Trimplate & Knob Assembly
C 3	671176	3.3MFD 50V
C 6	715224	56PFD 100V
C 7	671177	22MFD 25V
C 9	671164	1MFD 50V
C10	671292	0.068MFD 100V
C13	671188	0.022MFD 100V
C14	671189	0.1MFD 100V
C16	671205	0.01MFD 100V
C17	671202	0.0047MFD 100V
C18	671182	0.47MFD 50V N P
C21	671178	33MFD 35V
C22	715224	56PFD 100V
C23	671189	0.1MFD 100V
C24	671189	0.1MFD 100V
C25	671164	1MFD 50V
C26	671134	4.7MFD 50V
C27	671180	47MFD 35V
C28	671304	0.0015MFD 100V
C29	671181	470MFD 6.3V
C30	671157	1500MFD 63V
C31	671159	1000MFD 16V
C32	671164	1MFD 50V
C33	715634	390PFD 500V
C34	671150	1000MFD 63V
C37	671189	0.1MFD 100V
CR 2	671009	Diode (Heat Sensing)
CR 3	671009	Diode (Heat Sensing)
CR 4	671009	Diode (Heat Sensing)
CR 5	671002	Diode
CR 6	671008	Diode (Bridges)
CR 7	671008	Diode (Bridges)
CR 8	671008	Diode (Bridges)
CR 9	671008	Diode (Bridges)
CR10	671008	Diode (Bridges)
CR11	671008	Diode (Bridges)
CR12	671008	Diode (Bridges)
CR13	671008	Diode (Bridges)
CR14	671014	Diode (Heat Sensing)
CRZ2	671015	Diode (Zener +24V)
F 1	713413	Fuse: 2 Amp
F 2	713413	Fuse: 2 Amp
IC2	708957	LM387AN
IC3	671222	Regulator: 5V
JK1	713909	Loudspeaker Jack: 1 4"
P 1	715251	2 Pin Header (Right Angle)
P 2	715657	9 Pin Header (Right Angle)
P 3	715657	9 Pin Header (Right Angle)
Q 1	671230	Transistor MPS6531 NPN
Q 2	671221	Transistor NPN: D40
Q 3	671231	Transistor MPS6534 PNP
Q 4	671209	Transistor NPN TIP101
Q 5	671214	Transistor PNP: TIP106
Q 6	671231	Transistor MPS6534 PNP
R 5	100804	10K Ohm 1 4W
R 6	115638	0.27Meg Ohm 1 4W Stand-Up
R 8	115660	2.2Meg Ohm 1 4W Stand-Up
R 9	115626	82K Ohm 1 4W Stand-Up
R10	115662	180 Ohm 1 4W Stand-Up
R19	100813	18K Ohm 1 4W
R20	100789	3.9K Ohm 1 4W
R21	079652	10K Ohm Tone Control
R28	100795	5.6K Ohm 1 4W
R29	100756	470 Ohm 1 4W
R30	100783	2.7K Ohm 1 4W
R33	079651	10K Ohm Loudness Control
R35	100852	220K Ohm 1 4W
R36	100819	27K Ohm 1 4W
R37	100786	3.3K Ohm 1 4W
R38	671085	750 Ohm 3-1 4W
R39	100771	1.2K Ohm 1 4W
R40	100783	2.7K Ohm 1 4W
R41	100816	22K Ohm 1 4W
R42	671092	360 Ohm 1W
R43	671093	560 Ohm 1W
R44	100741	180 Ohm 1 4W
R46	100849	180K Ohm 1 4W
R47	115568	330 Ohm 1 4W Stand-Up
R48	100714	33 Ohm 1 4W
R49	671095	0.68 Ohm 2W
R50	671095	0.68 Ohm 2W
R51	100798	6.8K Ohm 1 4W
R52	671091	3.9 Ohm 3-1 4W
R53	100846	150K Ohm 1 4W
R54	115624	68K Ohm 1 4W
R55	115604	10K Ohm 1 4W Stand-Up
R56	115604	10K Ohm 1 4W Stand-Up
R57	100774	5K Ohm 1 4W
R58	100804	10K Ohm 1 4W
R59	715659	Bias: 10K Ohm Pot
R60	115622	56K Ohm 1 4W Stand-Up
R61	100456	22 Ohm 1 2W
SCR	671220	SCR 2N5061
W 1		Jumper Insulated
W 2		Jumper
W 3		Jumper
W 4		Jumper
W 5		Jumper
W 6		Jumper
W 7		Jumper
W 8		Jumper
W 9		Jumper
W11		Jumper
W12		Jumper
W13		Jumper
W14		Jumper

FIGURE 25 AMPLIFIER PICTORIAL WIRING DIAGRAM

AMPLIFIER 087059
LAYOUT



General Notes

1.– '*' (B) Parts in thermal contact with PC heat sink.

2.– Resistors ¼ watt 5% carbon film unless otherwise specified.

3.– Capacitors rated in micro-farads unless otherwise specified.

4.– Q4 & Q5 must be of the same OEM manufacturer.

5.– Auto/mute will limit all power amp. signal functions for approx. 2 seconds after turn-on via R/C time constants of R46, R51, C29.

6.– Short circuit protection will actuate with load currents exceeding 3.65A peak. SCR 2N5061 can be reset by turning system off for approx. 6 seconds.

Signal Conditions

Note: Photo diode must be dis-connected for the following tests.

7 – All voltages measured with reference to signal ground after temperature stabilization period of 4 minutes, tone control set at 'O', loudness control adjusted for 12.65 volts across a 8 ohm/50W non-inductive dummy load. Δ = DC voltages with no signal present.

8 – 400Hz sine wave signal input for above test conditions to be injected per test circuit at far left (8.0 mV typ.)

9 – Total harmonic distortion under above test conditions not to exceed 1% (adj. R59 for minimum distortion).

10 – Frequency response (typical)

A – Set loudness at electrical tap or "3¾" control knob number position.

B – Set signal generator level to 1.0 mV at TP3.

Tone Control Setting

	"–5"	"O"	"+5"
50Hz	+9	+9	+9
400Hz REF	0 DB	0 DB	0 DB
10K Hz	–15	+6	+6

11.– Optical signal to noise reference. 20W power out with input TP3 shorted. Tone set at 'O' position ___ –70 DB minimum hum & noise.

FIGURE 26. AMPLIFIER SCHEMATIC WIRING DIAGRAM

087059

AMPLIFIER 087059

USED ON MODELS 1595-C, 2585-C, AND 2592-C, CX

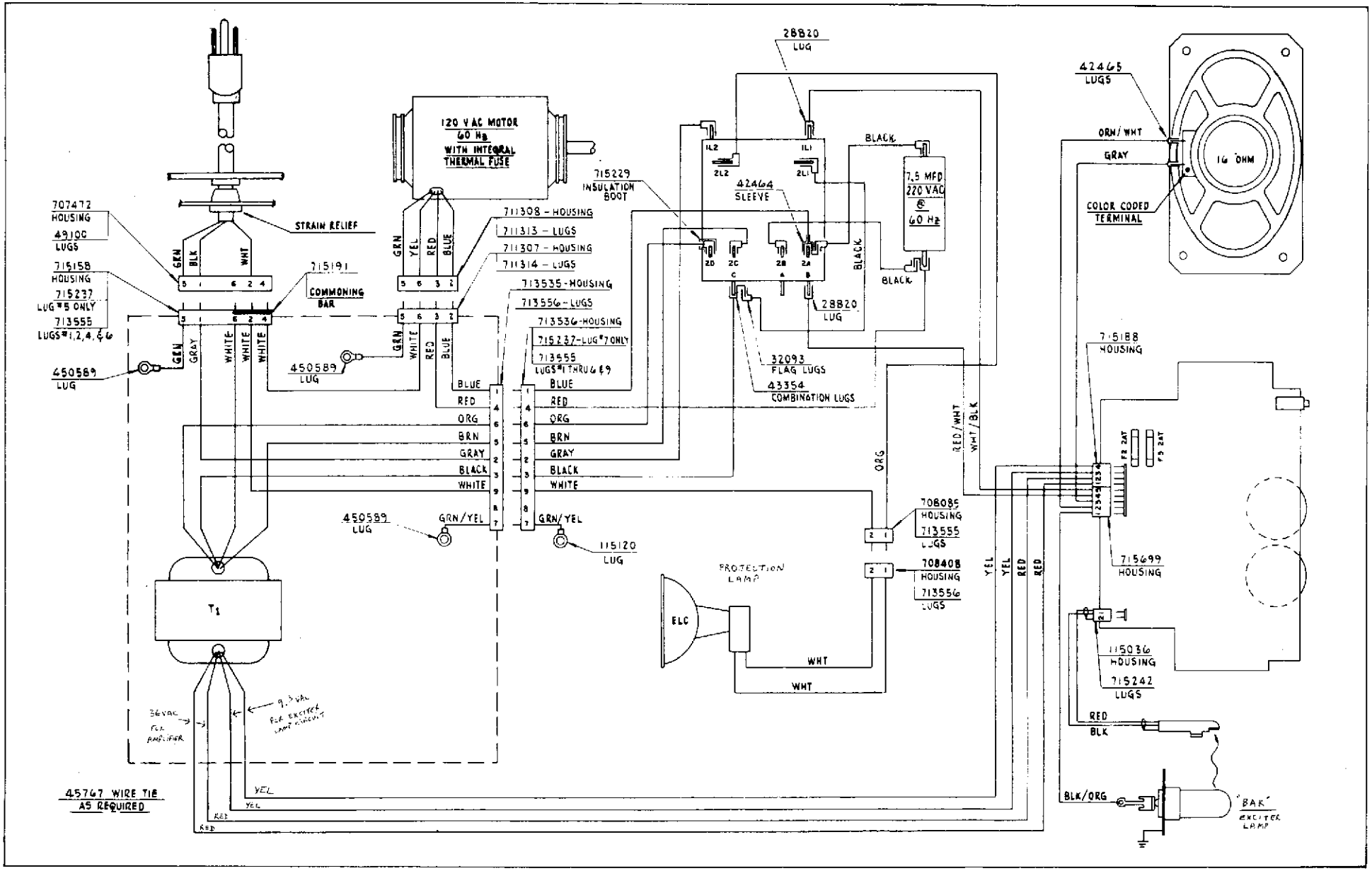


FIGURE 27. PICTORIAL WIRING DIAGRAM CODE A

2585 C

2585-C

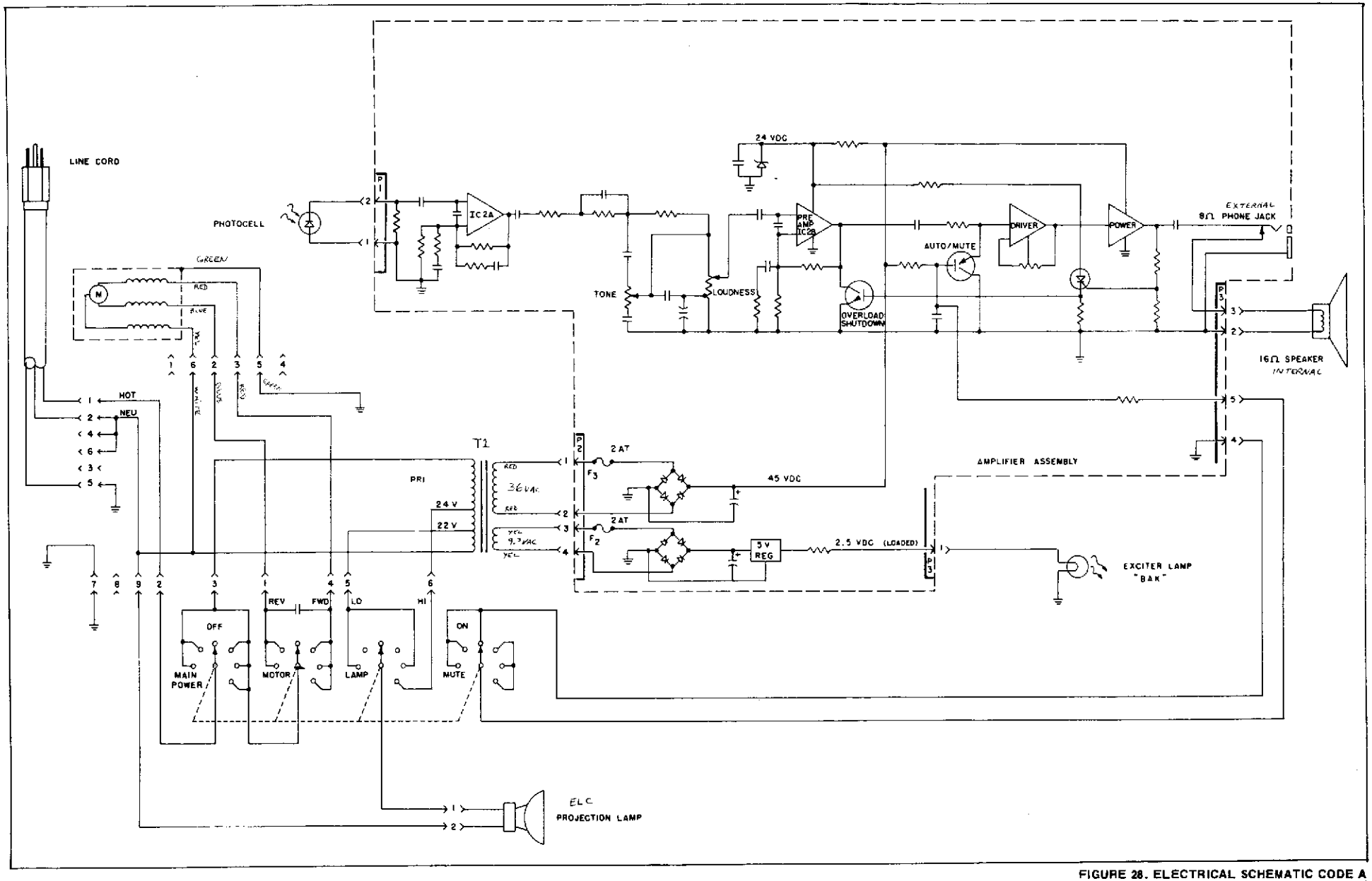


FIGURE 28. ELECTRICAL SCHEMATIC CODE A

2585 C

2585-C

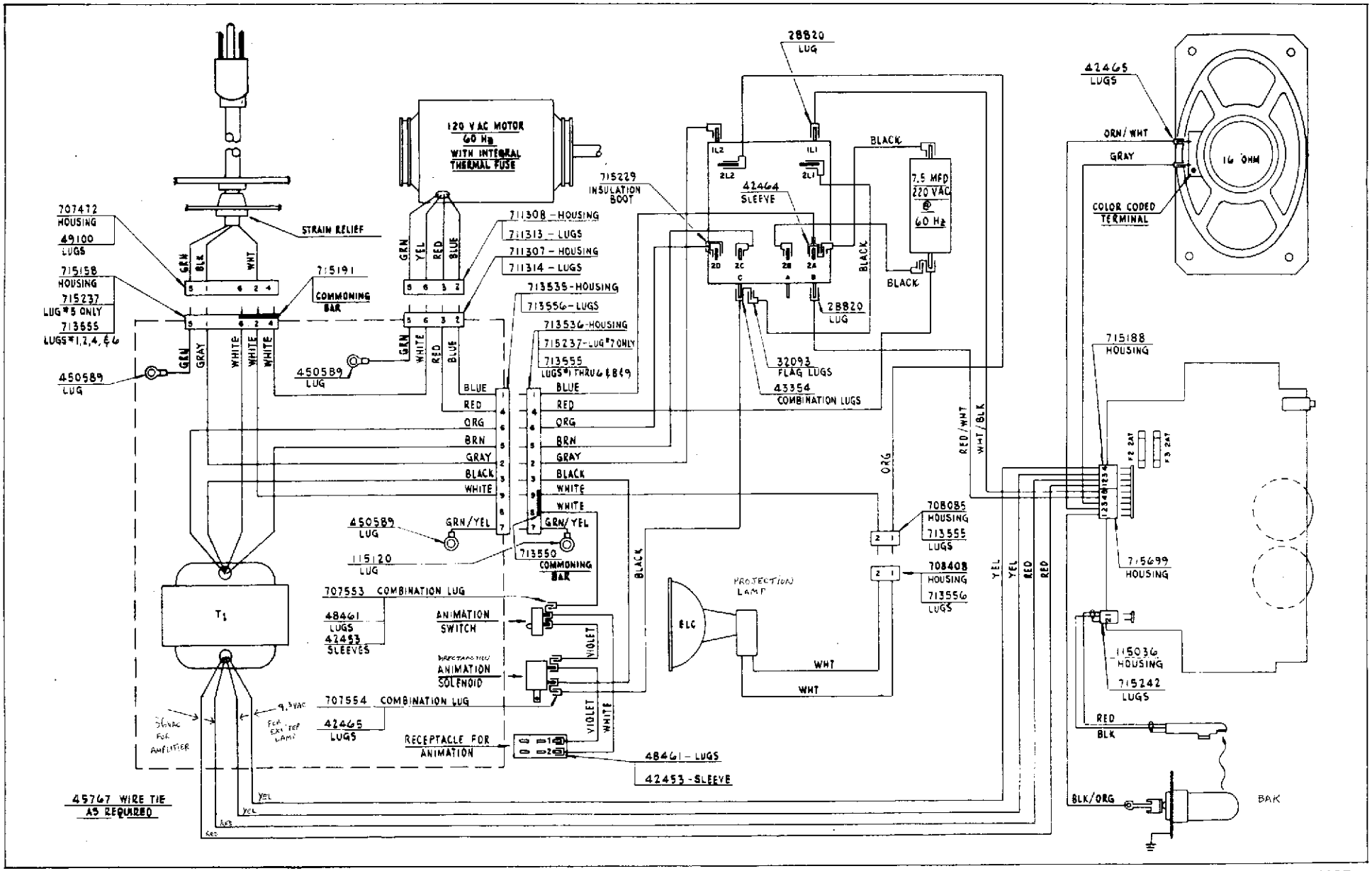


FIGURE 29. PICTORIAL WIRING DIAGRAM CODE B

2592 C

2592-C

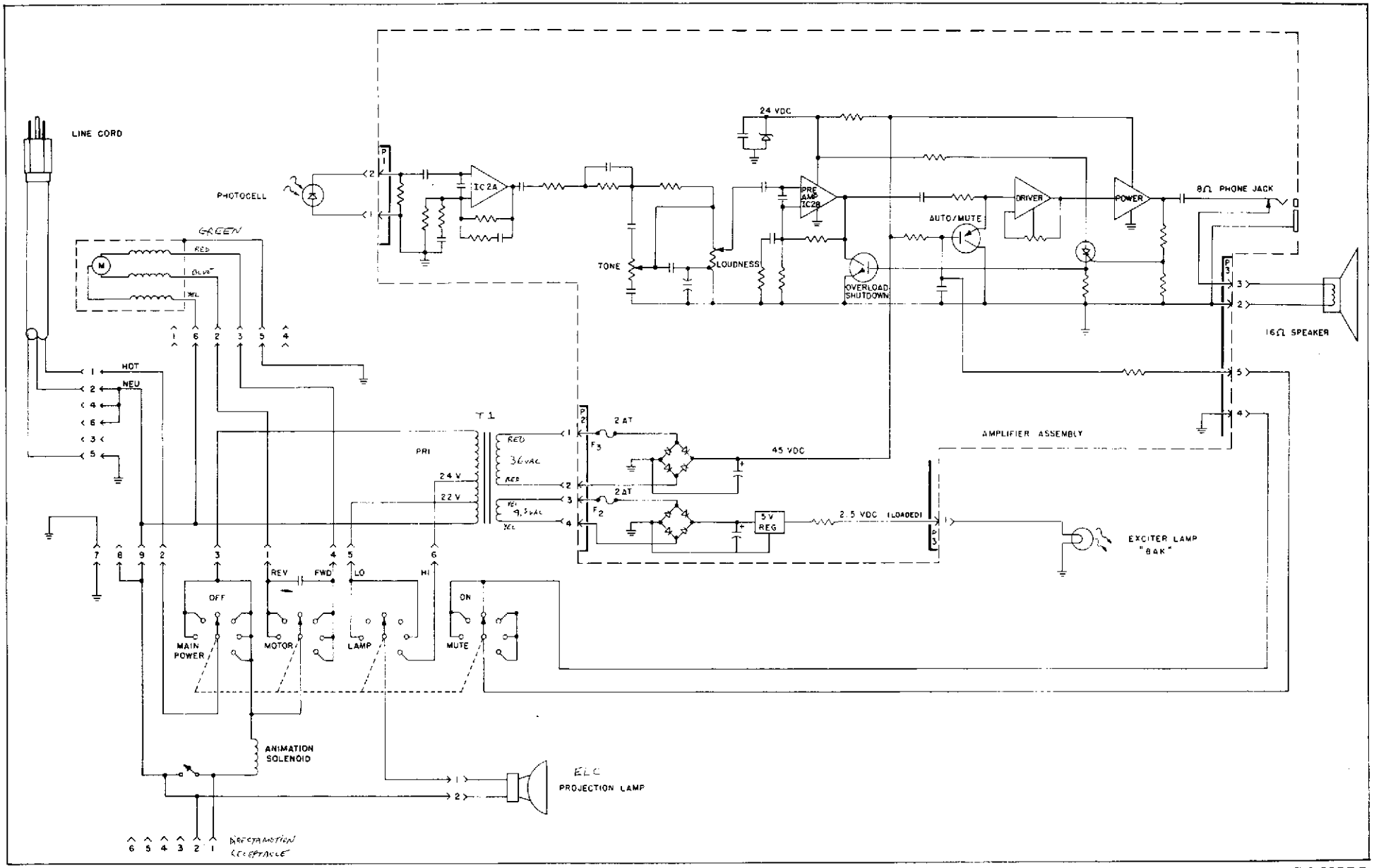
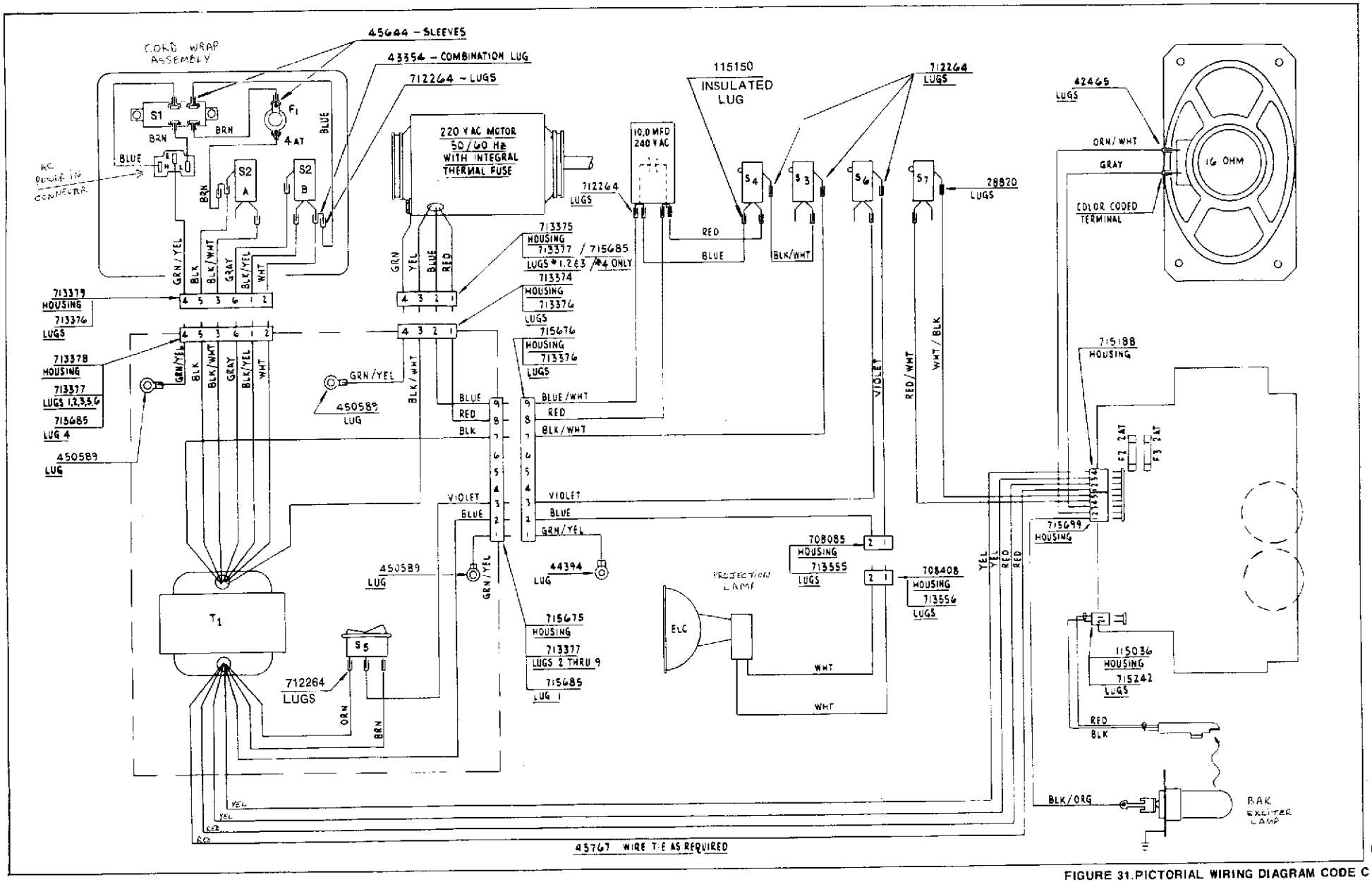


FIGURE 30. ELECTRICAL SCHEMATIC CODE B

2592 C

2592 - C



66

FIGURE 31. PICTORIAL WIRING DIAGRAM CODE C

2592 CX INTERNATIONAL MODEL

66

2592-CX

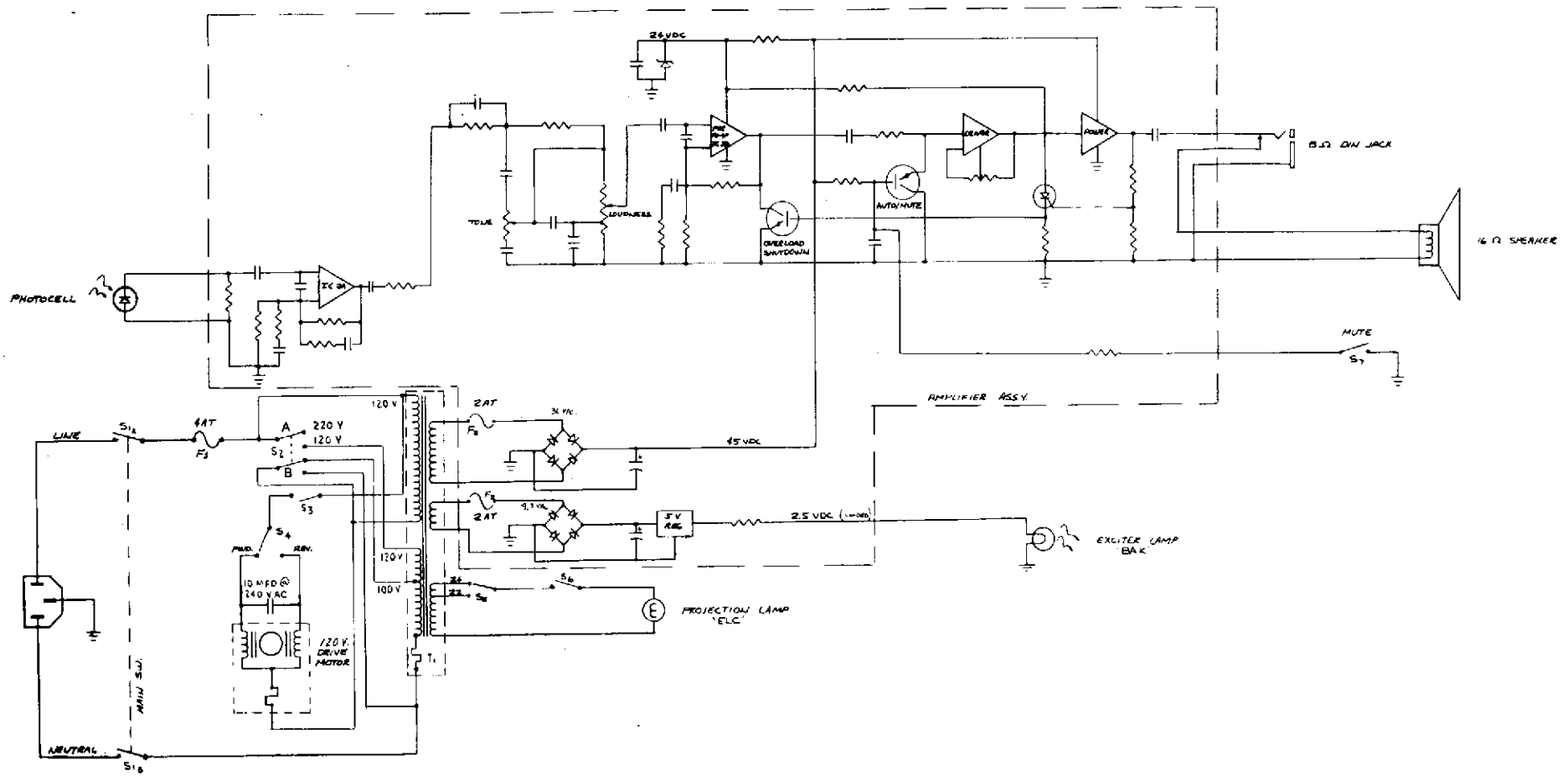


FIGURE 32. ELECTRICAL SCHEMATIC CODE C

MULTI-VOLTAGE 2592 CX
MODEL FOR INTERNATIONAL USE

2592-CX
115/220 VOLT
EXPORT

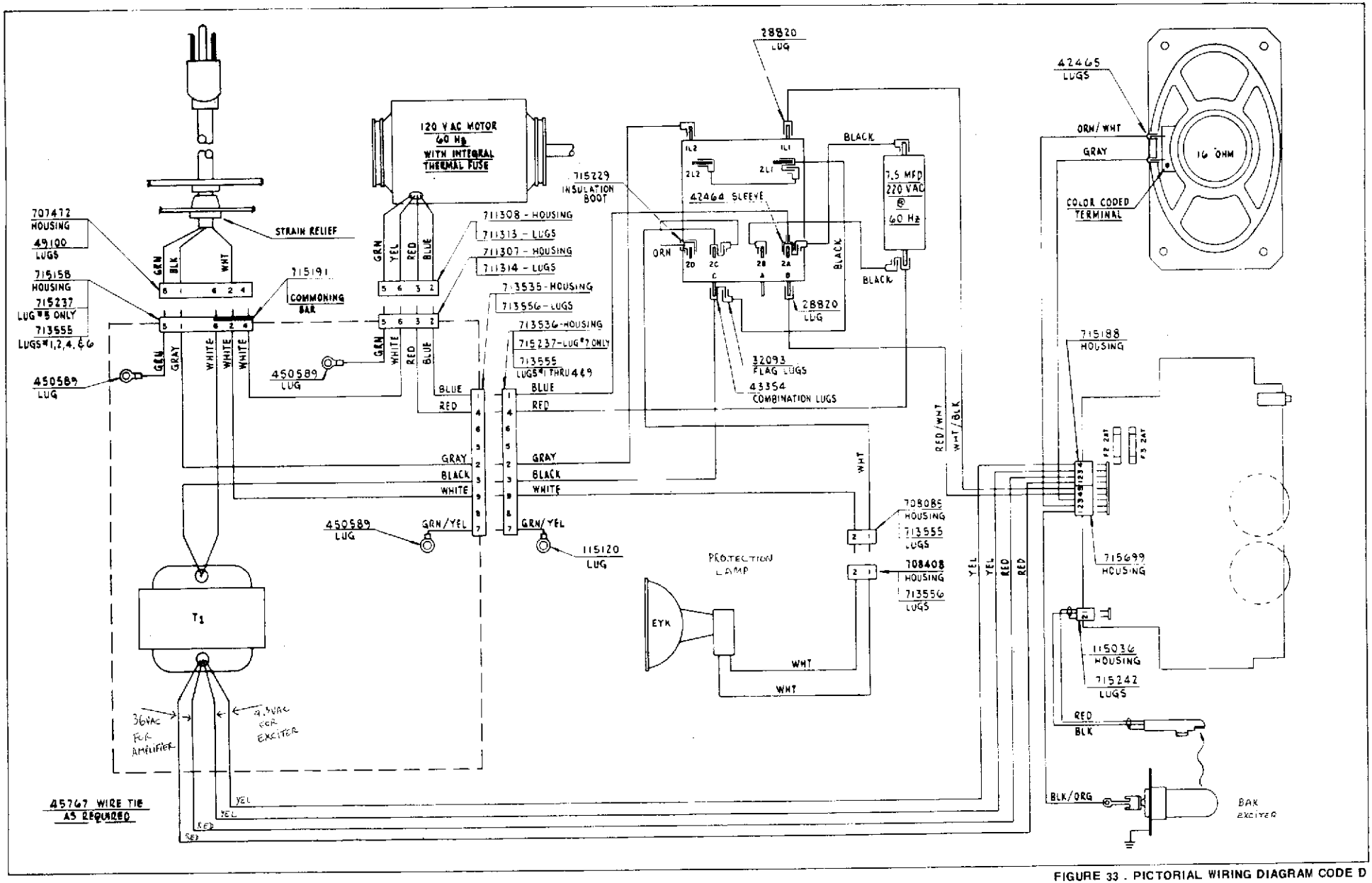


FIGURE 33 . PICTORIAL WIRING DIAGRAM CODE D

1595 C ECONOMY MODEL

1595 - C

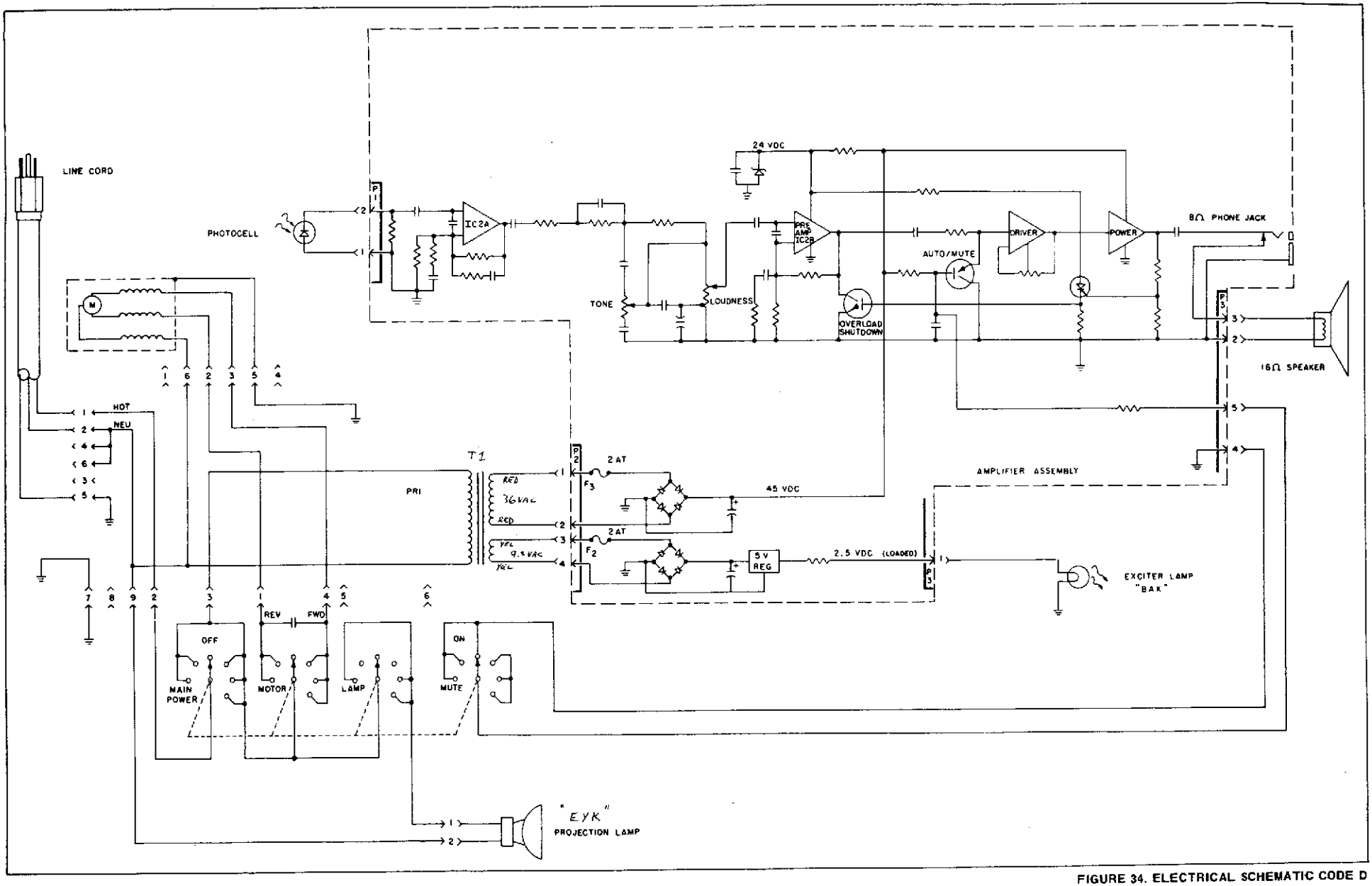


FIGURE 34. ELECTRICAL SCHEMATIC CODE D

1595 C

1595-"C" WIRING

BELL & HOWELL DESIGN 1733, 1742, 1744, AND 1745

Bell & Howell Filmosonic projectors Design 1733, 1742, 1744, and 1745 are basic look-alikes. All the models feature magnetic sound Super 8 playback facilities. All have automatic film threading capabilities, and can be operated at selected film speeds of 18 or 24 frames per second. The projectors are designed for sound (24 frames per second) operation, but silent (18 frames per second) Super 8 may be projected. The sound system is disconnected when the projector is operated in reverse. An 8-ohm speaker is built into the rear cover.

Models 1733 and 1742 are equipped with a 3-watt, solid-state amplifier (Figs. 3-28 and 3-29). Models 1744 and 1745 have a 5-watt amplifier (Figs. 3-30 and 3-31).

Models 1742, 1744, and 1745 are more sophisticated than the Design 1733 in that they include not only magnetic sound playback features, but they are also designed for magnetic sound recording. The circuitry allows the user to record music, voice, or both onto unrecorded sound tracks, or to mix in voice or music onto pre-recorded tracks by means of a special circuit with a variable mixing control. All inputs are automatically leveling and can be monitored through the built-in speaker. The models 1744 and 1745 have the added professional feature of a manual override of the automatic leveling system, permitting manual adjustment of the sound input. A separate VU meter indicates the level of input, whether automatic or manually controlled. The 1744 and 1745 also have two other basic differences. Only the model 1744 is provided with a receptacle on the rear cover for plugging in a room lamp. The circuitry is designed so that the lamp will go out when the projector switch is flipped to the lamp position.

The model 1745 projector has two additional jacks which are mounted at the rear of the projector main frame. One jack is for an external speaker and the other is for a microphone input. The speaker jack is for an 8-ohm speaker.

The primary difference between the 1700 series and other models is the addition of parts and assemblies necessary for sound reproduction. Troubleshooting takes on a new dimension with the inclusion of an audio amplifier, sound head, and capstan. Regular maintenance is necessary to prevent the sound from becoming distorted and the possibility of a decrease in audio level. To insure maximum performance from the magnetic sound system, the tape heads and the capstan should be cleaned whenever oxide deposits are observed. Dirt and oxide from magnetic tape can accumulate rapidly and reduce the life of the tape heads. Although there is an easier access to the heads and capstan with the film track assembly removed from the projector, these parts are accessible through the openings in the film track when the snap-on cover is removed. Use a Q-Tip with head cleaning fluid or isopropyl alcohol. Turn the fly-wheel with your hand, or switch on the projector. If the oxide will not come off, you can try a toothpick followed by another swabbing with a Q-Tip dipped in cleaning solution.

You should also demagnetize the head and capstan with a commercial head demagnetizer to insure proper operation. Failure to do so will result in poor, or no, erasing or reproduction by the tape heads, depending on the severity of the problem. With the projector off, bring the tip of the demagnetizer close to, but not in contact with, the face of the head. Withdraw the demagnetizer slowly away from the head several inches before turning it off. Turning the demagnetizer off too soon will defeat its purpose. If the desired results are not obtained on the first attempt, then repeat the procedure until the result is satisfactory. Repeat the same procedure with the capstan.

Amplifier repairs and parts replacement is not recommended unless you are qualified and wish to tackle soldering and unsoldering parts on a PC board. It's much simpler to remove the entire assembly and replace it with a new one. The major distinction of amplifier replacement is the connector assemblies.

To replace the amplifier module, disconnect the edge connector from the rear edge of the amplifier assembly. The amplifier is not screw mounted, but snaps down onto five plastic standoffs in the base. Carefully unsnap the amplifier and remove the entire assembly.

A small quantity of early model 1742 and 1744 projectors were equipped with a modified amplifier assembly. These early units can be identified by a red (1742) or white (1744) dot on the edge connector and the record play switch, and by the part number 19701A imprinted on the foil side of the circuit board. Later circuit boards are imprinted with the number 19701C. If you are replacing one of the earlier amplifier assemblies, refer to Figs. 3-32 and 3-33 for the edge connector wiring modifications which must be made to accommodate the later amplifiers. A contact pin removal tool Stk 11655 is necessary if the amplifier to be installed is in an earlier model (Fig. 3-34). The contact pin removal tool is used to press the contact pins from the edge connector. The flat end of the tool is inserted into the bottom channel of the pin opening until the spring

leaf of the pin is lifted to clear the step in the channel. When rerouting the wires to the edge connector, make certain the contact pins are fully seated. When the rewiring is finished, be sure to remove the red and/or white dot from the edge connector to show that the current amplifier has been installed and the edge connector modification has been made. Also remove the dot on the switch if it also has been replaced.

Most of the problems that occur with the sound assemblies can be traced to faulty heads and/or the amplifier assembly PC board. The simplest procedure to follow is to have a replacement for a tape head or amplifier PC board to use as a direct substitution in case of difficulty. Some of the symptoms that can be traced to either the tape head or amplifier board are:

- No sound in any operating position
- No record bias output (all models except 1733)
- Cannot adjust for bias current (all models except 1733)
- Cannot record (all models except 1733)

Normally the DC bias is preadjusted at the factory, but it sometimes needs adjustment in the field. This adjustment requires the use of an audio oscillator and a VU meter.

If there is sound in the still and reverse positions but no sound is evident in the forward operating position, a faulty or out-of-adjustment muting switch can be suspected. Checking this switch requires the use of an ohmmeter.

With the ohmmeter set at the X1 scale, attach the ohmmeter leads to the muting switch lead terminals on the printed circuit board. Place the forward-reverse lever in the still position. Loosen the switch screw and adjust the switch so that the ohmmeter reads open and hold the switch securely while retightening the screw. Place the forward-reverse lever in the reverse position, and the ohmmeter should read short. To be correct, the ohmmeter must read open in the still and forward positions, and short in the reverse position. If the proper reading cannot be obtained, then replace the switch.

One safety reminder. Do not operate the projector with the rear cover removed. Inadequate cooling will cause burn damage around the aperture. Also place the forward-reverse lever in the still position when not in use.

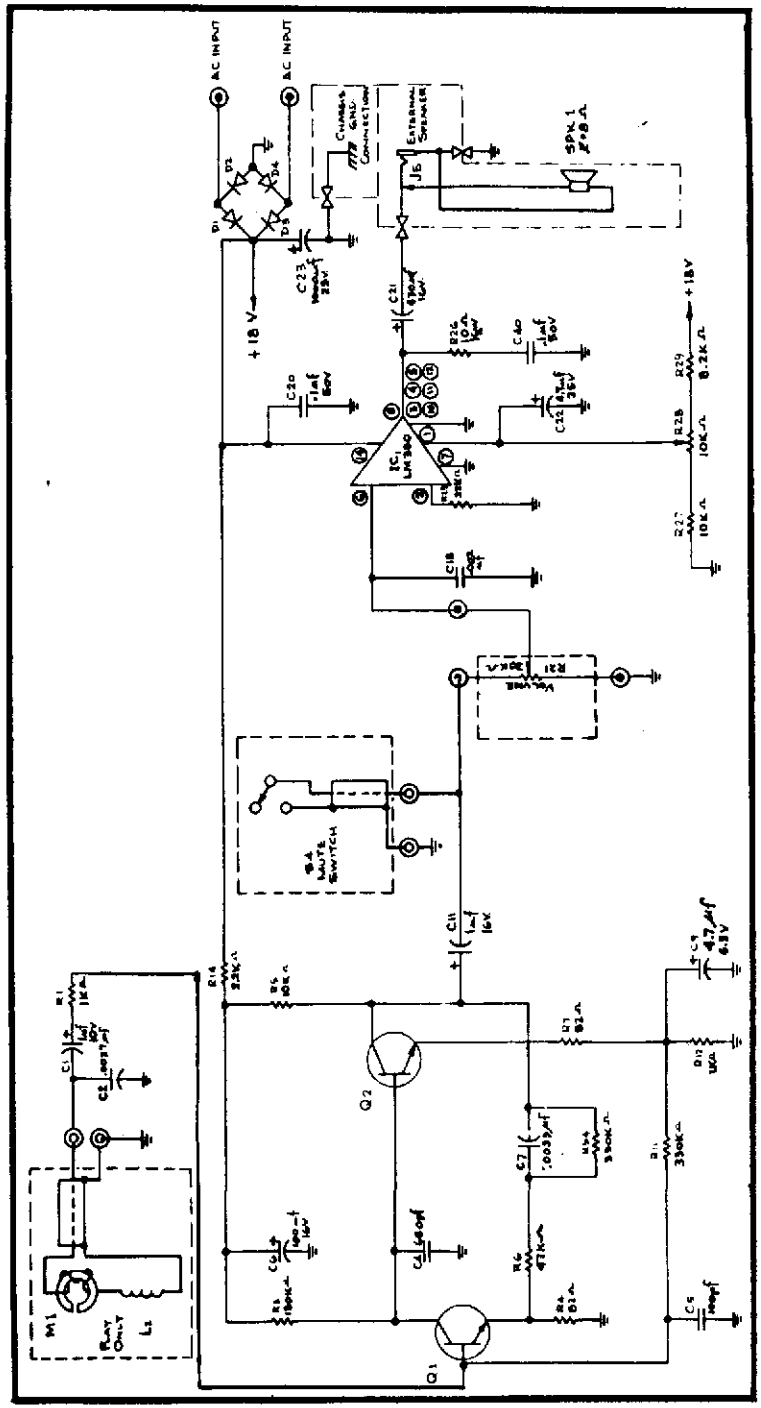


Fig. 3-28. Schematic, amplifier assembly model 1733. (Courtesy Bell & Howell)

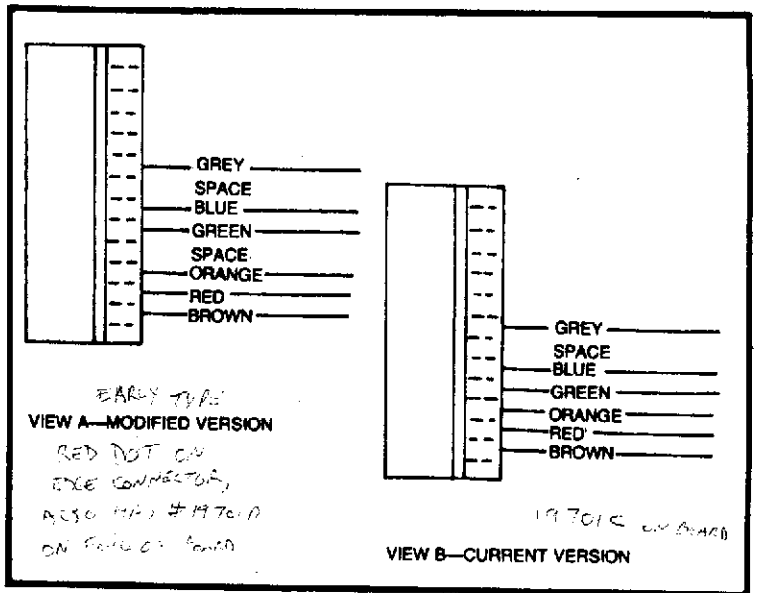


Fig. 3-32. Modified and current edge connector wiring for Design 1742. (Courtesy Bell & Howell)

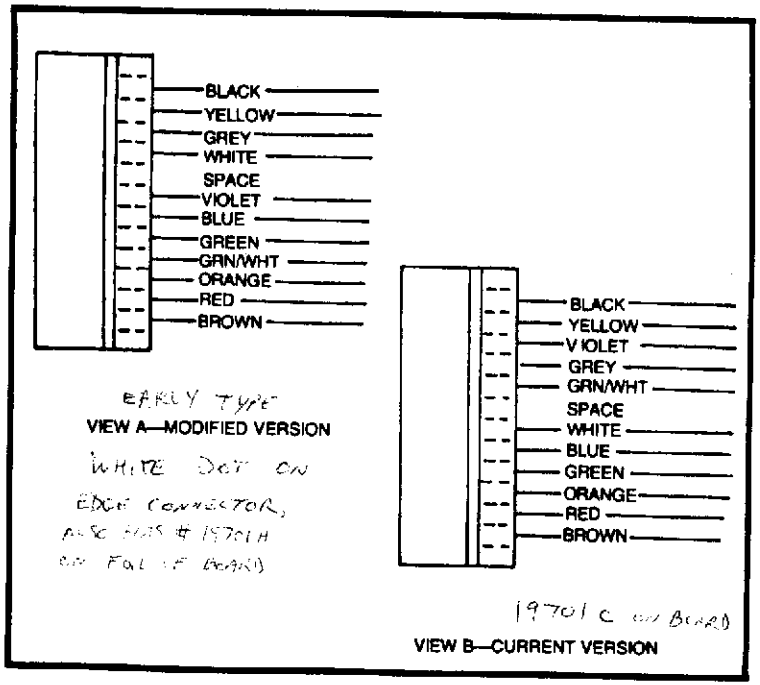


Fig. 3-33. Modified and current edge connector wiring for Design 1744. (Courtesy Bell & Howell)

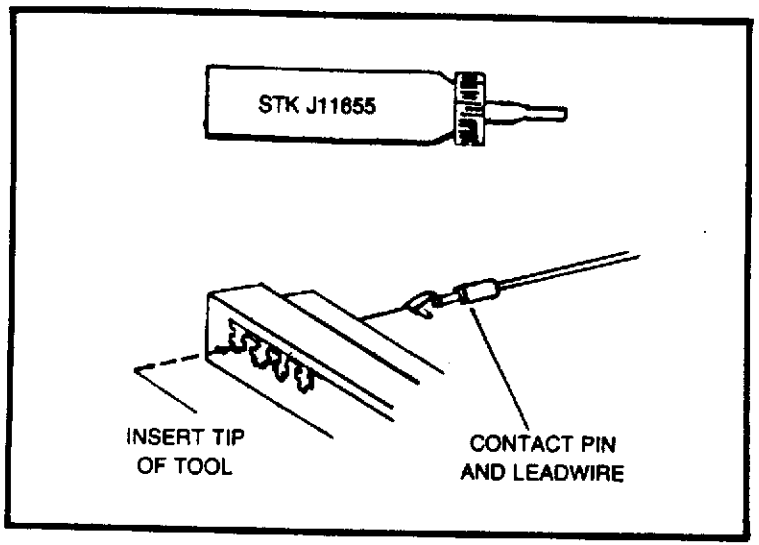


Fig. 3-34. Contact pin removal tool STK 11655 (Courtesy Bell & Howell)

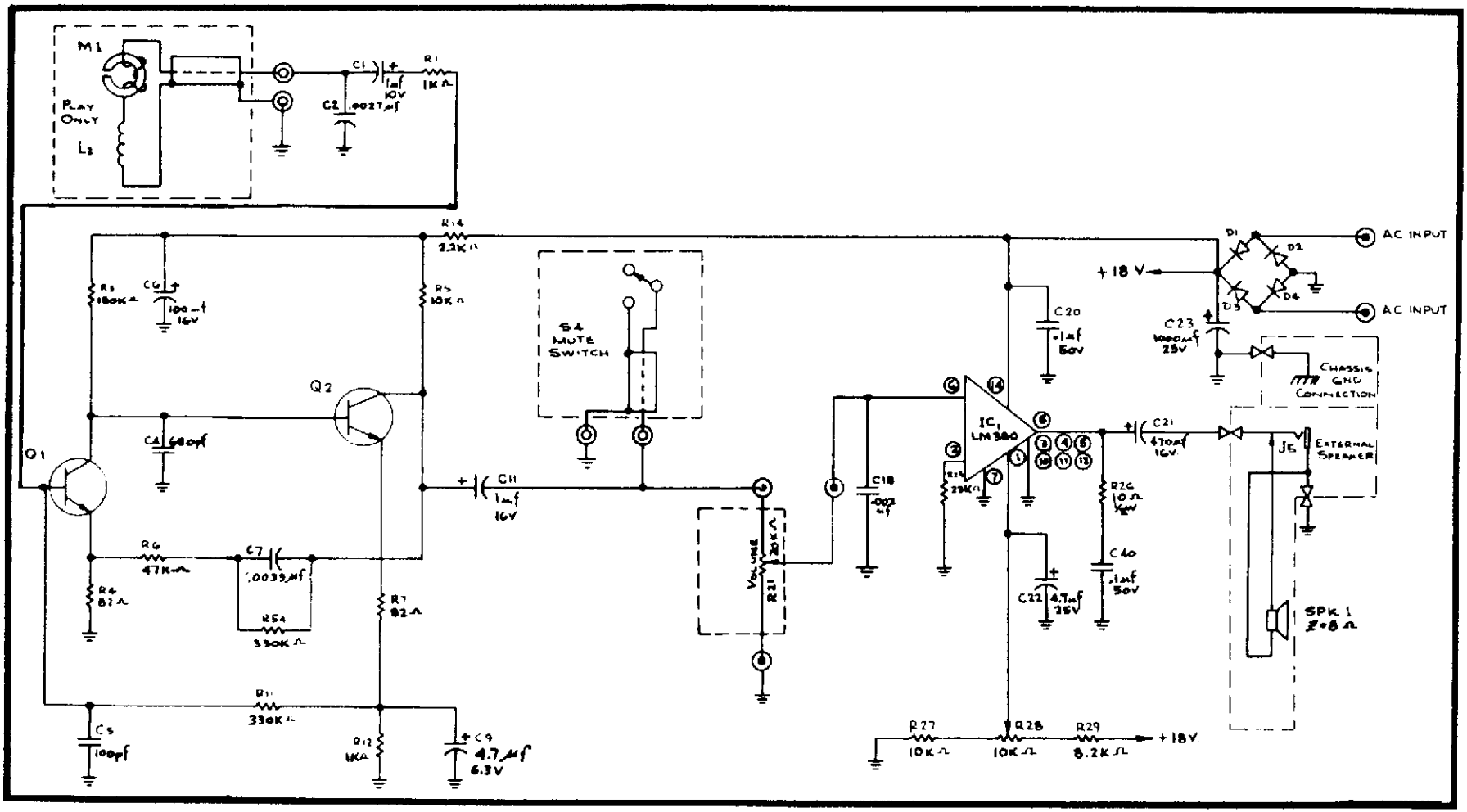


Fig. 3-28. Schematic, amplifier assembly model 1733. (Courtesy Bell & Howell)

3-WATTS OUTPUT
MAGNETIC SOUND
PLAYBACK ONLY

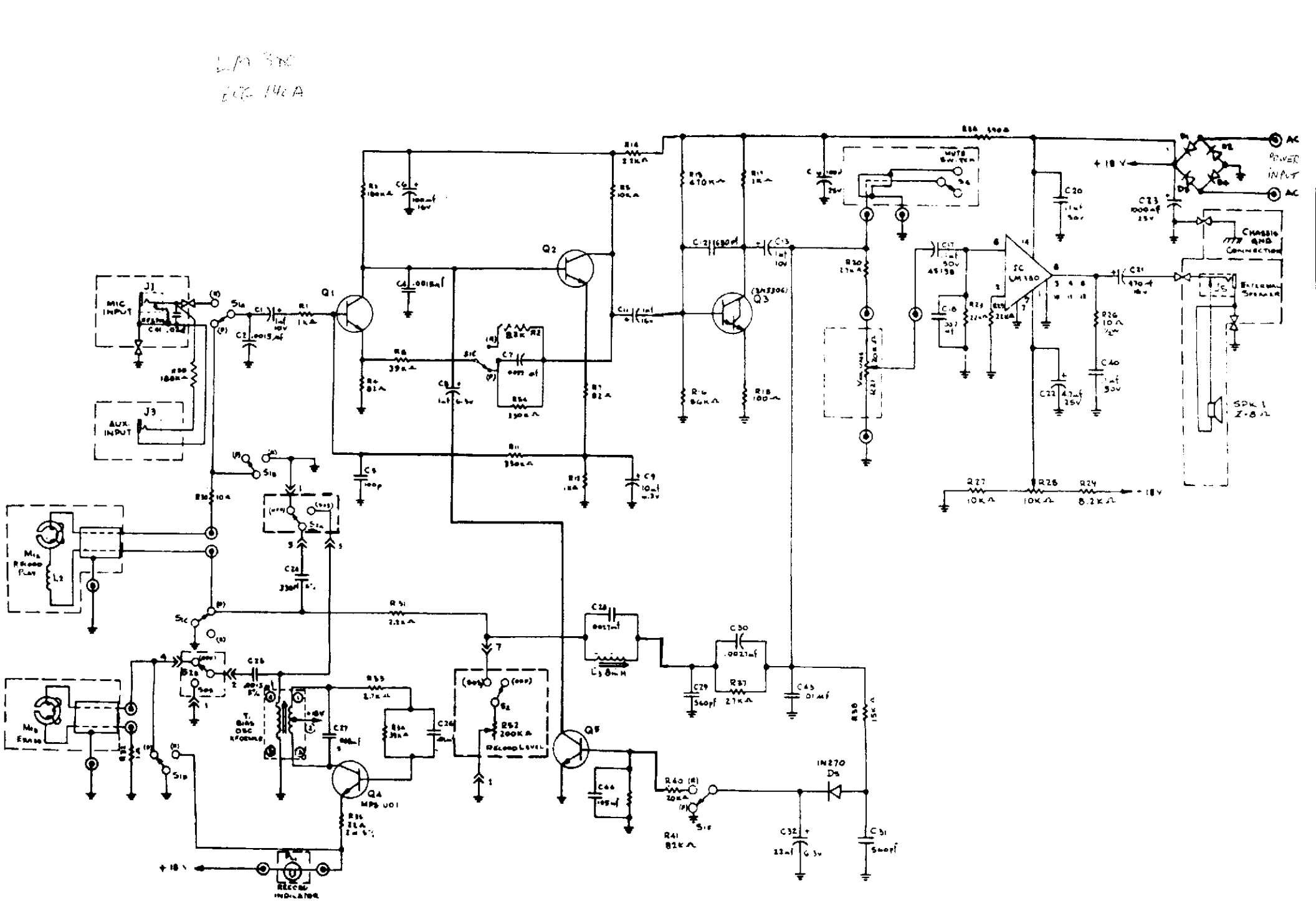


Fig. 3-29. Schematic, amplifier assembly model 1742. (Courtesy Bell & Howell)

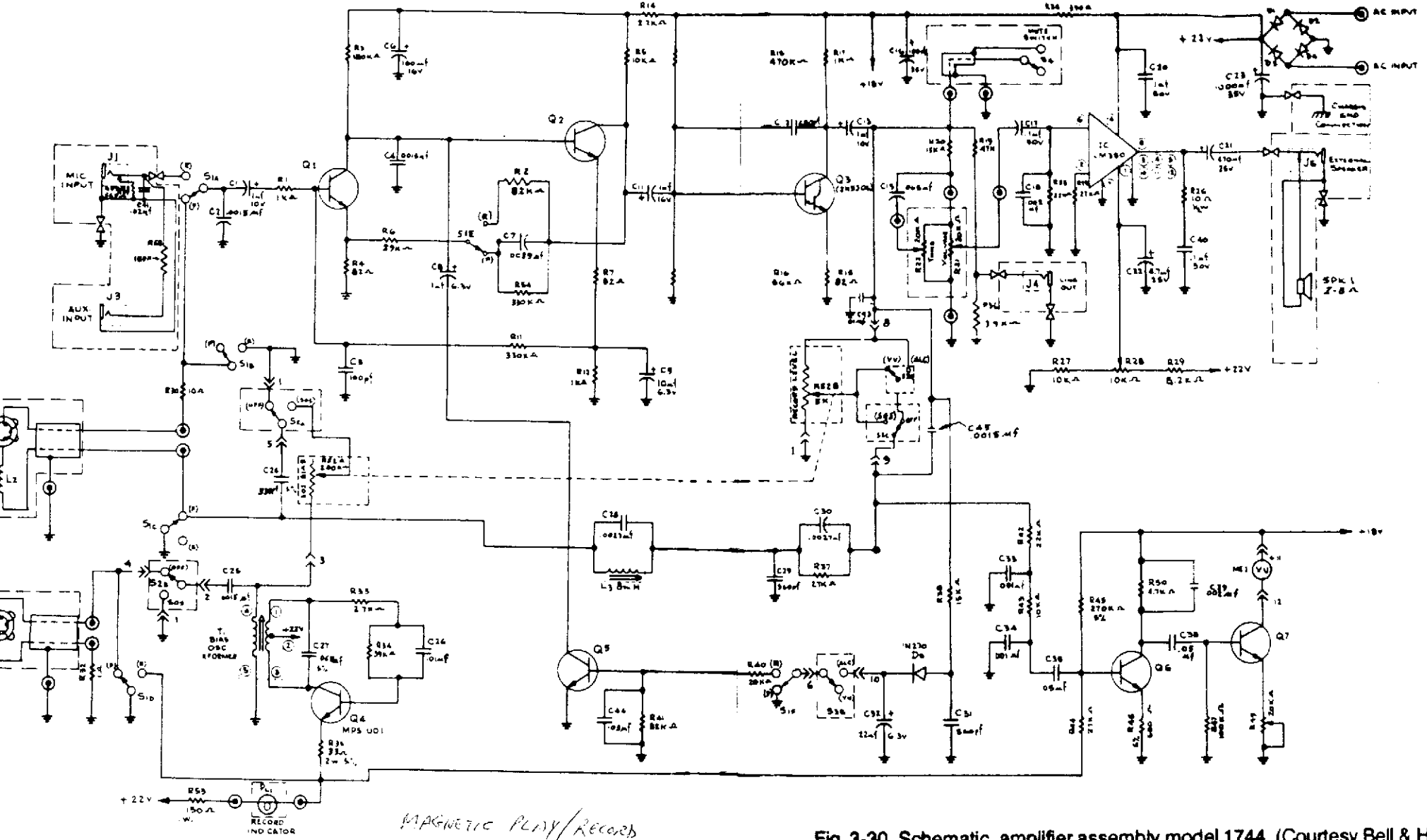


Fig. 3-30. Schematic, amplifier assembly model 1744. (Courtesy Bell & Howell)

nd/or white dot from the edge connector to show that the
nt amplifier has been installed and the edge connector modifica-
as been made. Also remove the dot on the switch if it also has
replaced.

- No sound in any operating position
- No record bias output (all models except 1733)
- Cannot adjust for bias current (all models except 1733)
- Cannot record (all models except 1733)

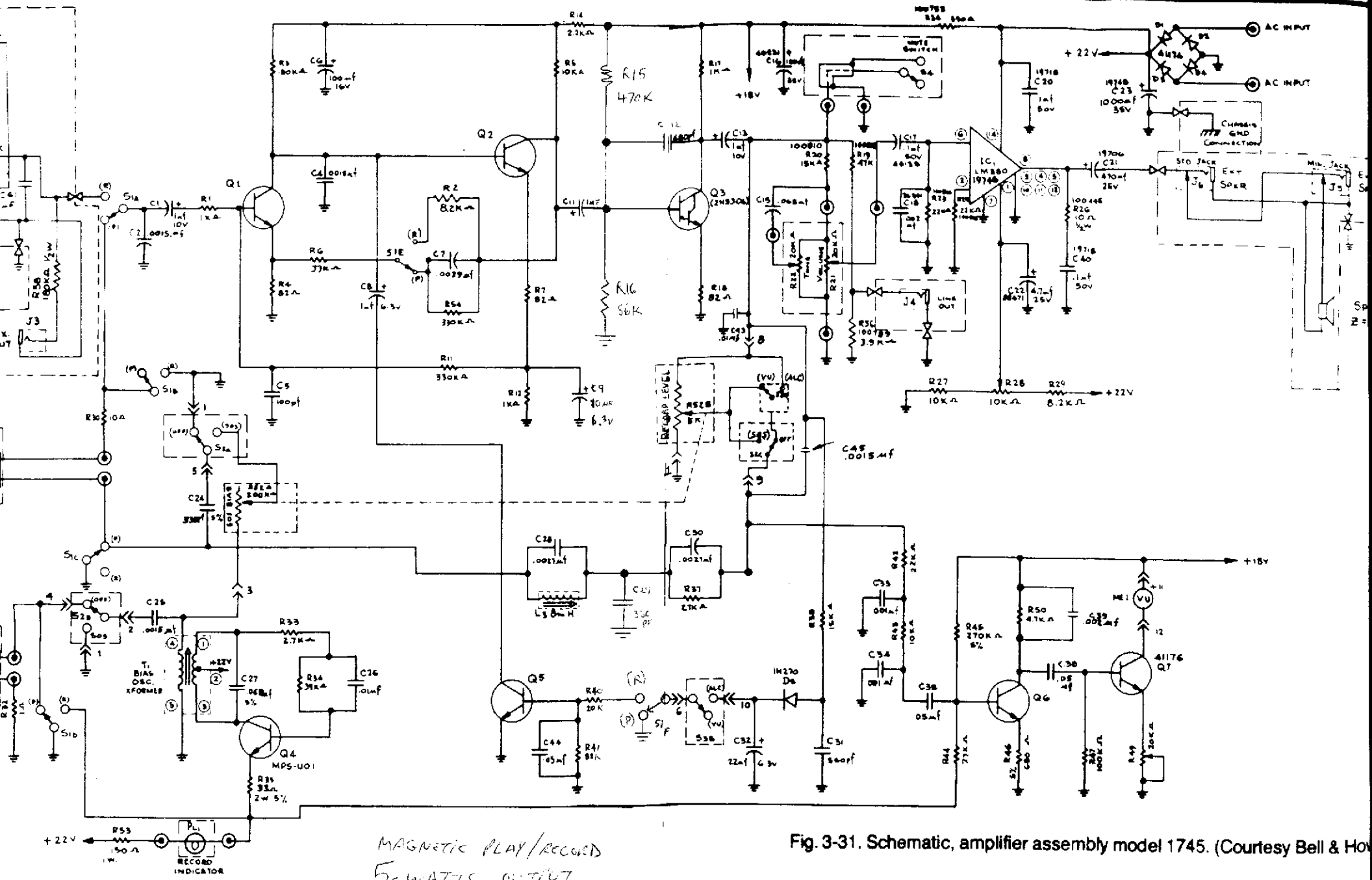
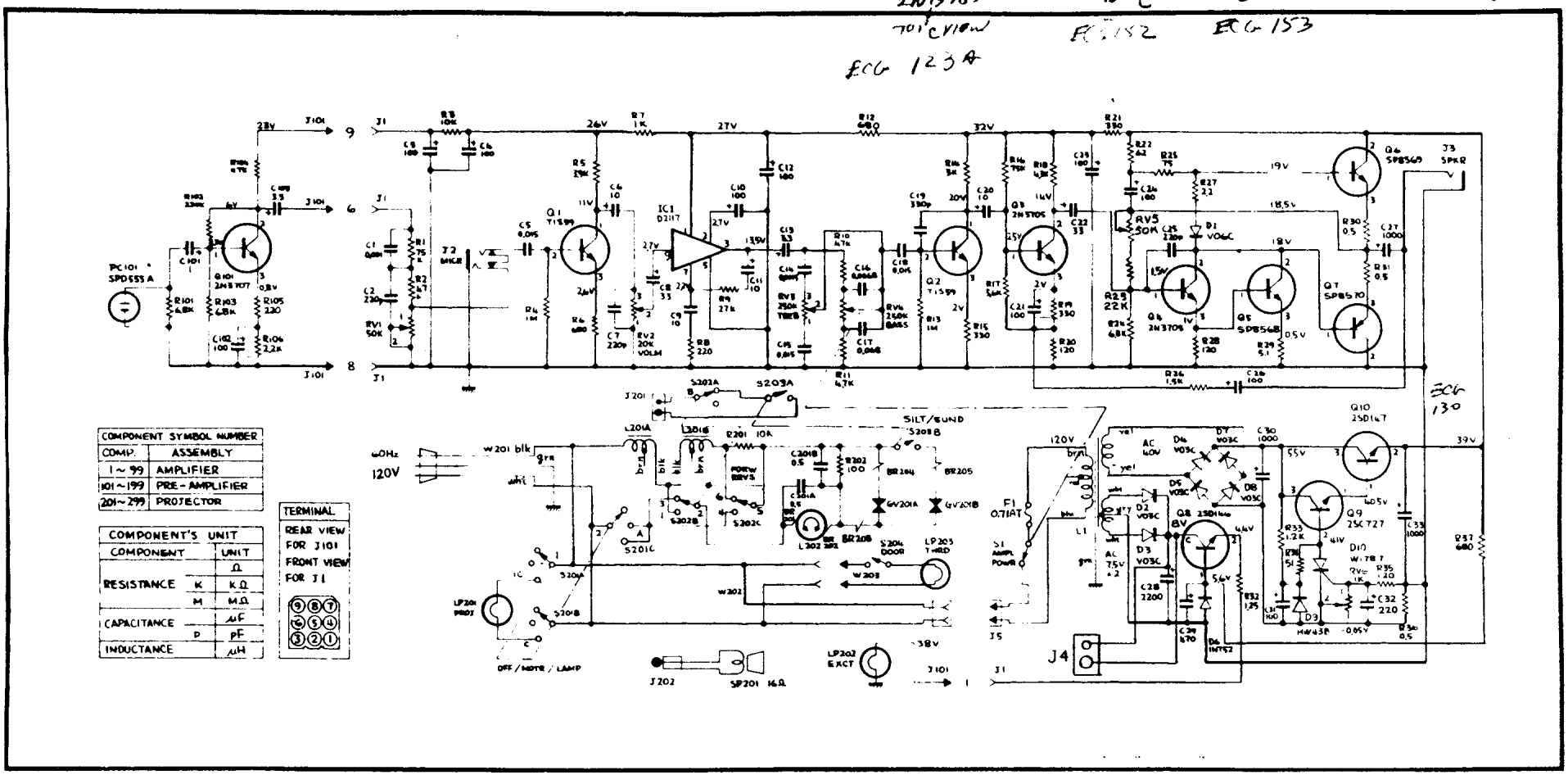


Fig. 3-31. Schematic, amplifier assembly model 1745. (Courtesy Bell & Ho

ing switch can be suspected. Checking this switch
e of an ohmmeter.
hmmeter set at the X1 scale, attach the ohmmeter

ohmmeter should read short. To be correct, the ohmmeter m
read open in the still and forward positions, and short in the reve
position. If the proper reading cannot be obtained, then replace



(050939) Schematic Circuit Diagram - 8399T