

LOUDSPEAKER PAGING SYSTEMS CONNECTIONS

1. GENERAL

1.01 This section contains schematic and descriptive drawings covering the various equipment items used with loudspeaker paging systems.

1.02 The following sections cover additional information on loudspeaker paging systems:

C70.900.00 - Description

C70.900.01 - Installation (Also includes various circuit descriptions)

*C70.900.02 - Maintenance

*Under preparation as of this printing.

2. CONTENTS

2.01 The following is a list of schematics and drawings found in this section:

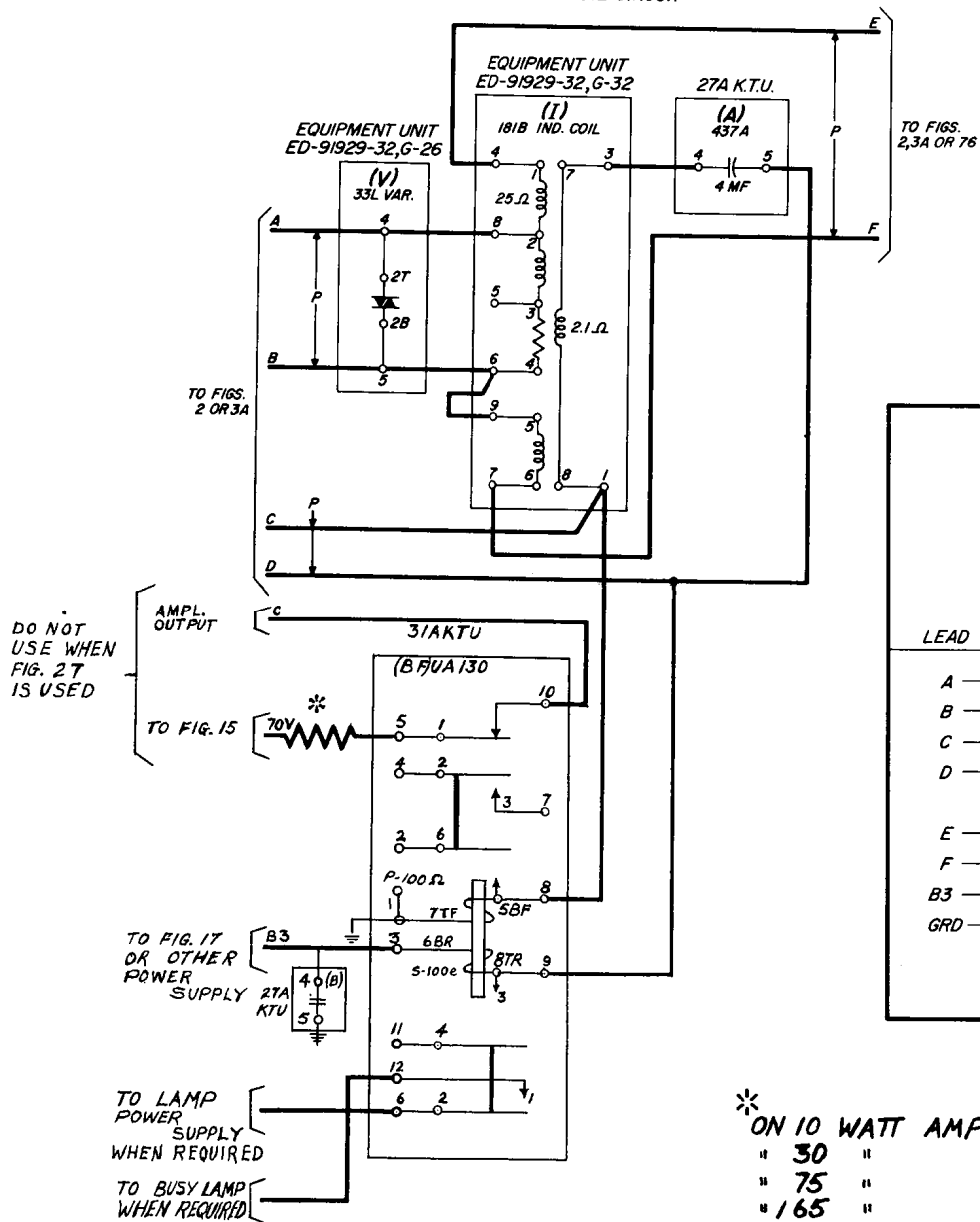
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2	Transfer circuit for one-position PBX
3A	Transfer circuit for two-position PBX
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Figure	Description
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53	1530-A " " (Altec)
54	1569-A " " (Altec)
55	1570-A " " (Altec)
56A	GB1026A dividing network
56B	Line level from 70 volt output
57A,B,C	Dial selective paging applique unit (Mfr. Disc.)
58	" " " " " mounting plate (Mfr.Disc.)
59	" " " " " (CS-25006)
60	" " " " " mounting plate (CE-25006)
61	" " " " " priority circuit
62	GB3302 amplifier shelf and backboard
63	KS12048 line matching transformer
64	KS14792, L-5 line matching transformer
65	KS14417 line matching transformer
66	TE6478 line matching transformer
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FIG. 1

INDUCTION COIL CIRCUIT



EQUIPMENT UNIT INTERCONNECTIONS FOR FIGURE 1

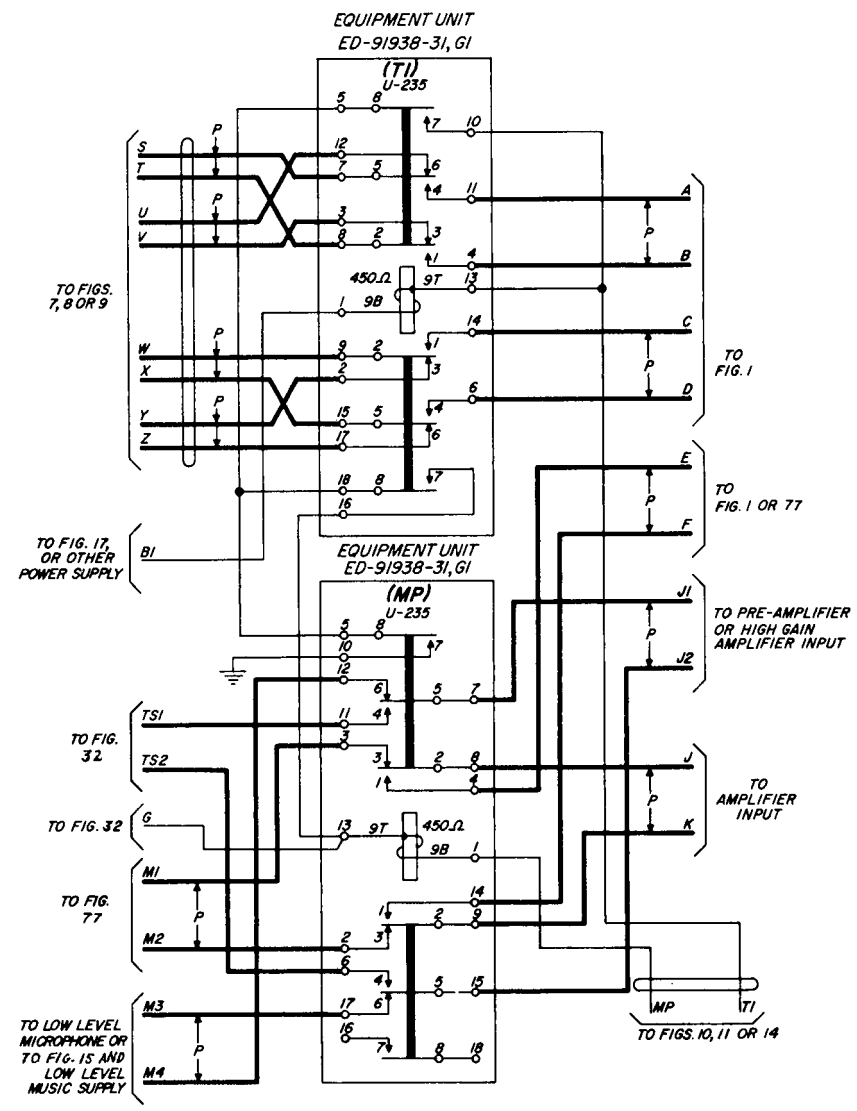
	(V)	(I)	(A)	(BF)	(B)	
LEAD						CONNECTS TO CIRCUIT
A — 4 — 8						TRANSFER CKT., FIG. 2 OR 3A
B — 5 — 6-9						TRANSFER CKT., FIG. 2 OR 3A
C — 1 — 8						TRANSFER CKT., FIG. 2 OR 3A
D — 5 — 9						TRANSFER CKT., FIG. 2 OR 3A
E — 4						TRANSFER CKT., FIG. 2 OR 3A
F — 7						TRANSFER CKT., FIG. 2 OR 3A
B3 — 3 — 4						BATTERY CKT., FIG. 17
GRD — 1 — 5						

* ON 10 WATT AMPLIFIER USE 500 OHM, 10 WATT RESISTOR

" 30 "	"	"	" 200 "	" 20 "	"
" 75 "	"	"	" 100 "	" 50 "	"
" 165 "	"	"	" 50 "	" 100 "	"

FIG. 2

TRANSFER CIRCUIT FOR ONE POSITION R.B.X.



EQUIPMENT UNIT INTERCONNECTIONS FOR FIGURE 2

LEAD	(TI)	(MP)	CONNECTS TO CIRCUIT
A	11		INDUCTION COIL CKT., FIG. 1
B	4		INDUCTION COIL CKT., FIG. 1
C	14		INDUCTION COIL CKT., FIG. 1
D	6		INDUCTION COIL CKT., FIG. 1
E	4		INDUCTION COIL CKT., FIG. 1 OR VOLUME CONTROL CKT. FIG. 77
F	14		INDUCTION COIL CKT., FIG. 1 OR VOLUME CONTROL CKT. FIG. 77
J	8		TO AMPLIFIER INPUT
K	9		TO AMPLIFIER INPUT
S	7		JACK CKTS., FIGS. 7, 8 OR 9
T	8		JACK CKTS., FIGS. 7, 8 OR 9
U	12		JACK CKTS., FIGS. 7, 8 OR 9
V	3		JACK CKTS., FIGS. 7, 8 OR 9
W	9		JACK CKTS., FIGS. 7, 8 OR 9
X	15		JACK CKTS., FIGS. 7, 8 OR 9
Y	2		JACK CKTS., FIGS. 7, 8 OR 9
Z	17		JACK CKTS., FIGS. 7, 8 OR 9
BI	1		BATTERY SUPPLY CKT., FIG. 17
M1		3	VOLUME CONTROL FIG. 77
M2		2	VOLUME CONTROL FIG. 77
M3		17	TO LOW LEVEL MICROPHONE
M4		12	TO LOW LEVEL MICROPHONE
J1		7	TO PRE-AMPLIFIER INPUT
J2		15	TO PRE-AMPLIFIER INPUT
T1		10-13	PAGING KEYS, FIGS. 10, 11 OR 14
MP		1	PAGING KEYS, FIGS. 10, 11 OR 14
TS1		11	TO TONE GENERATOR, FIG. 32 OR
TS2		6	TO TONE GENERATOR, FIG. 32 OR
GRD.		10	
STRAPS		5-18	5
STRAPS		16	13

FIG. 3A

TRANSFER CIRCUIT FOR TWO POSITION P.B.X.

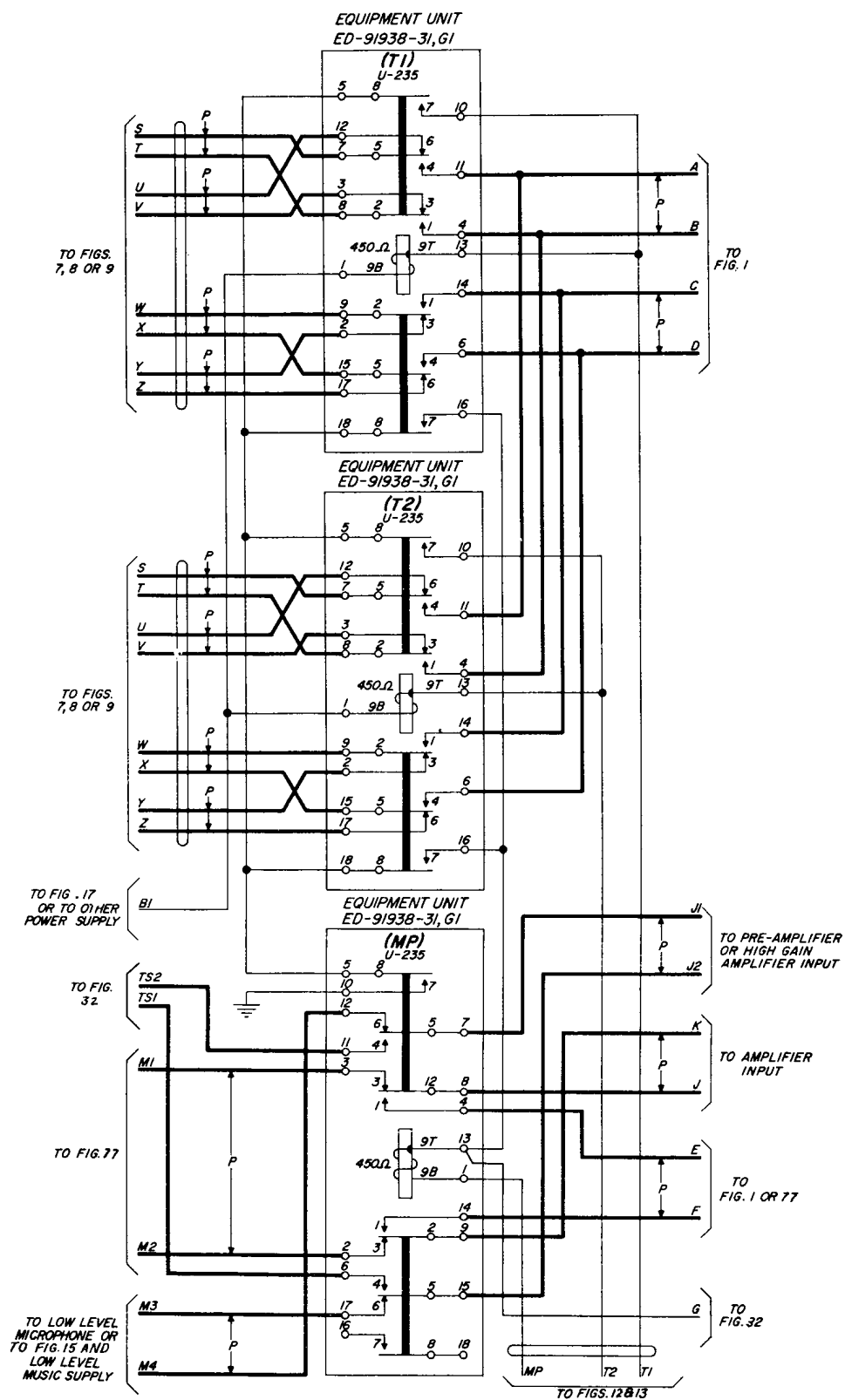


FIG. 3B**EQUIPMENT UNIT INTERCONNECTIONS FOR FIGURE 3A**

LEAD	(T1)	(T2)	(MP)	CONNECTS TO CIRCUIT
A ——— 11 ——— 11				INDUCTION COIL CKT., FIG. 1
B ——— 4 ——— 4				INDUCTION COIL CKT., FIG. 1
C ——— 14 ——— 14				INDUCTION COIL CKT., FIG. 1
D ——— 6 ——— 6				INDUCTION COIL CKT., FIG. 1
E ——— ——— ——— 4				INDUCTION COIL CKT., FIG. 1 OR VOLUME CONTROL CKT., FIG. 77
F ——— ——— ——— 14				INDUCTION COIL CKT., FIG. 1 OR VOLUME CONTROL CKT., FIG. 77
J ——— ——— ——— 8				TO AMPLIFIER INPUT
K ——— ——— ——— 9				TO AMPLIFIER INPUT
S (POS. 1) ——— 7				JACK CKT., FIGS. 7, 8 OR 9
S (POS. 2) ——— ——— ——— 7				JACK CKT., FIGS. 7, 8 OR 9
T (POS. 1) ——— 8				JACK CKT., FIGS. 7, 8 OR 9
T (POS. 2) ——— ——— ——— 8				JACK CKT., FIGS. 7, 8 OR 9
U (POS. 1) ——— 12				JACK CKT., FIGS. 7, 8 OR 9
U (POS. 2) ——— ——— ——— 12				JACK CKT., FIGS. 7, 8 OR 9
V (POS. 1) ——— 3				JACK CKT., FIGS. 7, 8 OR 9
V (POS. 2) ——— ——— ——— 3				JACK CKT., FIGS. 7, 8 OR 9
W (POS. 1) ——— 9				JACK CKT., FIGS. 7, 8 OR 9
W (POS. 2) ——— ——— ——— 9				JACK CKT., FIGS. 7, 8 OR 9
X (POS. 1) ——— 15				JACK CKT., FIGS. 7, 8 OR 9
X (POS. 2) ——— ——— ——— 15				JACK CKT., FIGS. 7, 8 OR 9
Y (POS. 1) ——— 2				JACK CKT., FIGS. 7, 8 OR 9
Y (POS. 2) ——— ——— ——— 2				JACK CKT., FIGS. 7, 8 OR 9
Z (POS. 1) ——— 17				JACK CKT., FIGS. 7, 8 OR 9
Z (POS. 2) ——— ——— ——— 17				JACK CKT., FIGS. 7, 8 OR 9
B1 ——— 1 ——— 1				BATTERY SUPPLY CKT., FIG. 17, OR TO OTHER POWER SUPPLY
M1 ——— ——— ——— 3				VOLUME CONTROL CKT., FIG. 77
M2 ——— ——— ——— 2				VOLUME CONTROL CKT., FIG. 77
M3 ——— ——— ——— 17				TO LOW LEVEL MICROPHONE
M4 ——— ——— ——— 12				TO LOW LEVEL MICROPHONE
J1 ——— ——— ——— 7				TO PRE-AMPLIFIER INPUT
J2 ——— ——— ——— 15				TO PRE-AMPLIFIER INPUT
T1 ——— 10-13				PAGING KEYS, FIGS. 12 OR 13
T2 ——— ——— ——— 10-13				PAGING KEYS, FIGS. 12 OR 13
MP ——— ——— ——— 1				PAGING KEYS, FIGS. 12 OR 13
TS1 ——— ——— ——— 6				TO TONE GENERATOR, FIG. 3.2
TS2 ——— ——— ——— 11				TO TONE GENERATOR, FIG. 3.2
GRD. ——— ——— ——— 10				
STRAP ——— 5-18 ——— 5-18 ——— 5				
STRAP ——— 16 ——— 16 ——— 13				

FIG. 4

TRANSFER CIRCUIT FOR 100 AND 101 TYPE KEY EQUIPMENTS
1A AND 1A1 KEY TELEPHONE SYSTEMS OR SUSPENSION HANDSETS

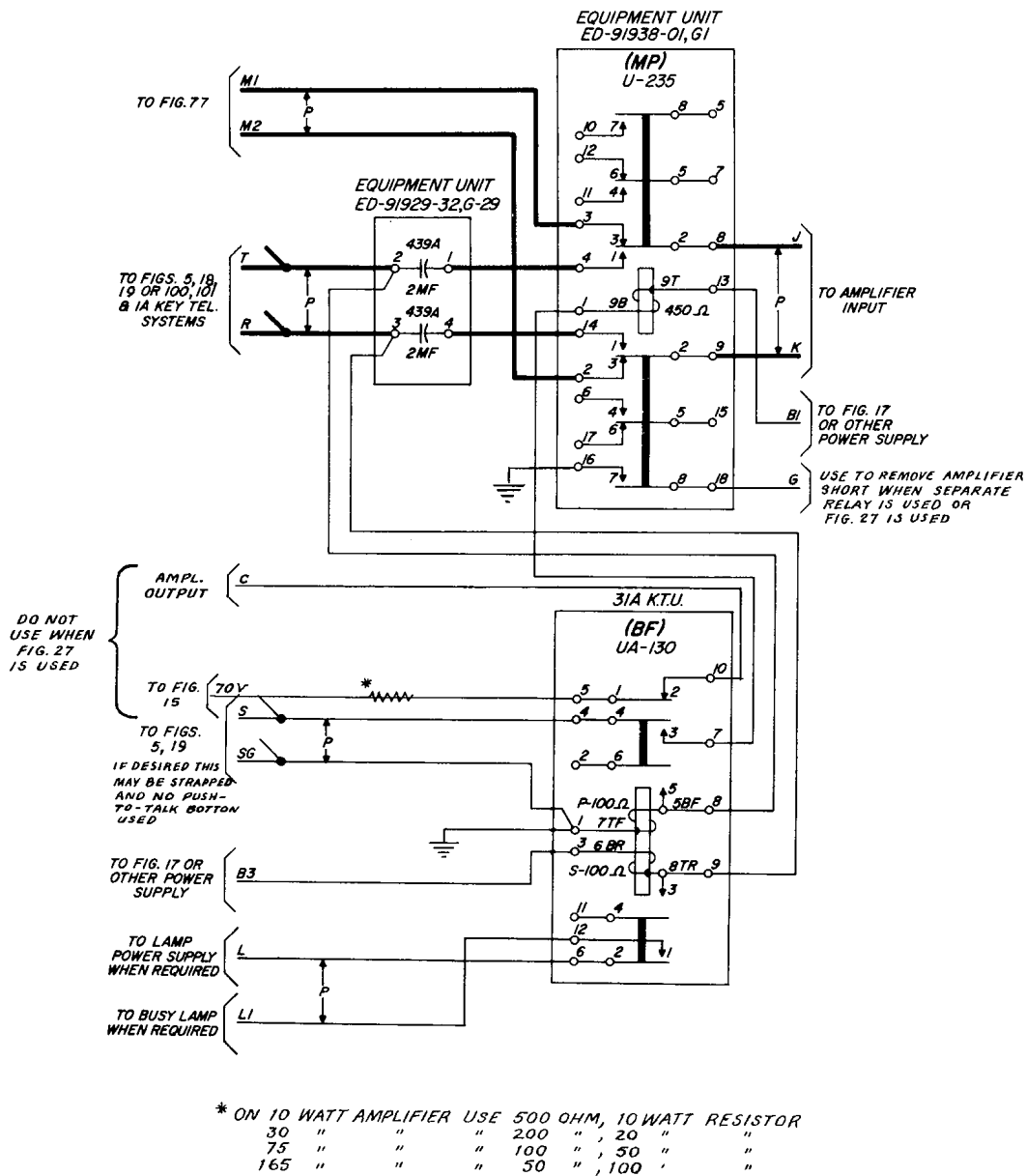
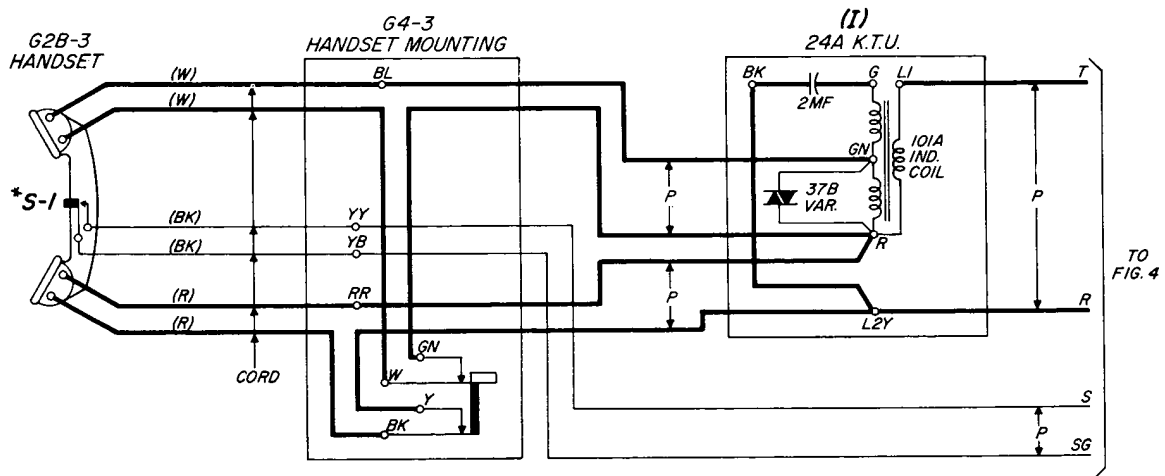


FIG. 5

HANDSET AND INDUCTION COIL CIRCUIT



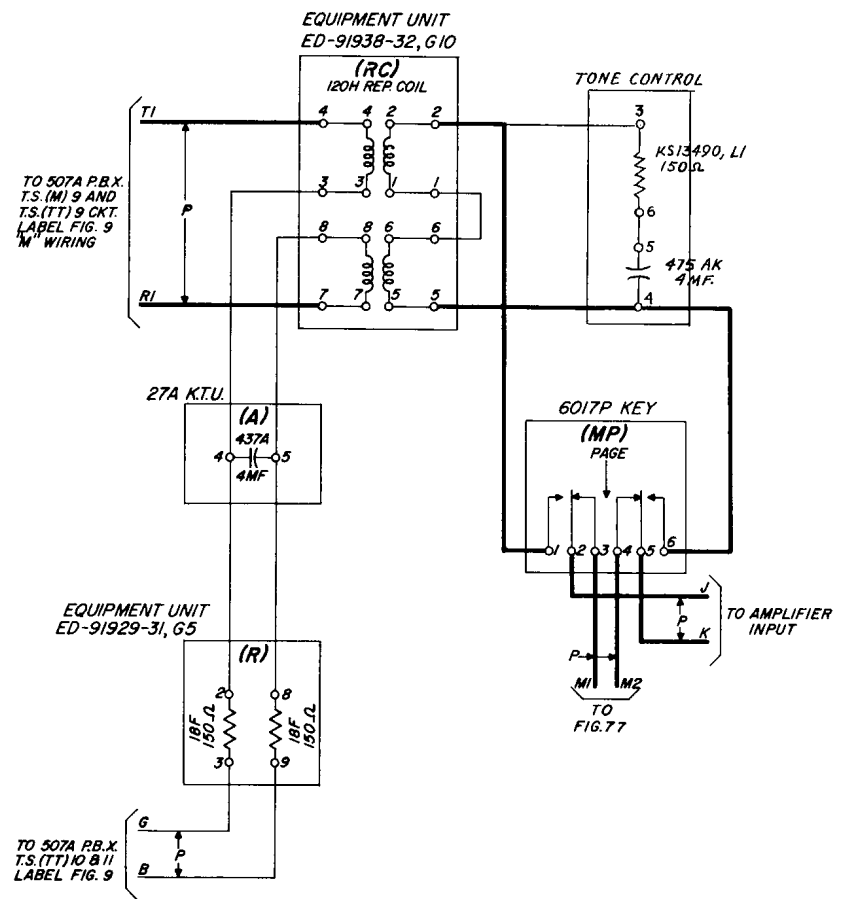
* EXTERNAL BUTTON OR FOOTSWITCH MAY BE USED

NOTES:

1. PROVIDE "W" OPTION ONLY AS A LAST RESORT WHEN REQUIRED TO MEET ACOUSTIC CONDITIONS.

FIG. 6

TRANSFER CIRCUIT FOR 507A OR 507B P.B.X.



EQUIPMENT UNIT INTERCONNECTIONS FOR FIGURE 6

LEAD	(RC)	KS 13490 (KS)	6017P KEY (MP)	27A K.T.U. (A)	(R)	CONNECTS TO CIRCUIT
J			2			TO AMPLIFIER INPUT
K			5			TO AMPLIFIER INPUT
M1			3			TO TONE CONTROL (FIG. 77)
M2			4			TO TONE CONTROL (FIG. 77)
T1	4					TO 507A P.B.X.
RI	7	2-3	1			TO 507A P.B.X.
G		5-4	6			TO 507A P.B.X.
B		3		4		TO 507A P.B.X.
STRAP		8		5	8	TO 507A P.B.X.
		1-6				

FIG. 7

MODIFIED WIRING TO TEL. SET JACKS
FOR 555 P.B.X. SEE SD-66520-011, FIG. 7
FOR 556A P.B.X. SEE SD-65658-011, FIG. 5

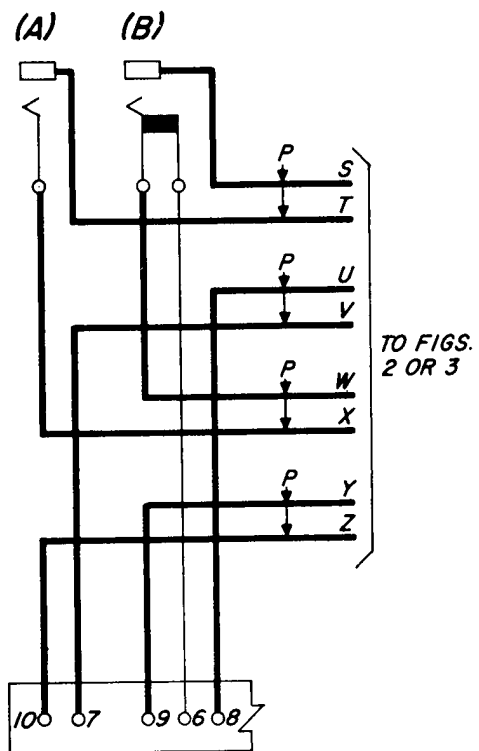


FIG. 8

MODIFIED WIRING TO TEL. SET JACKS
FOR 552A, 552D OR 605A P.B.X. SEE
SD-66425-011, FIG. B

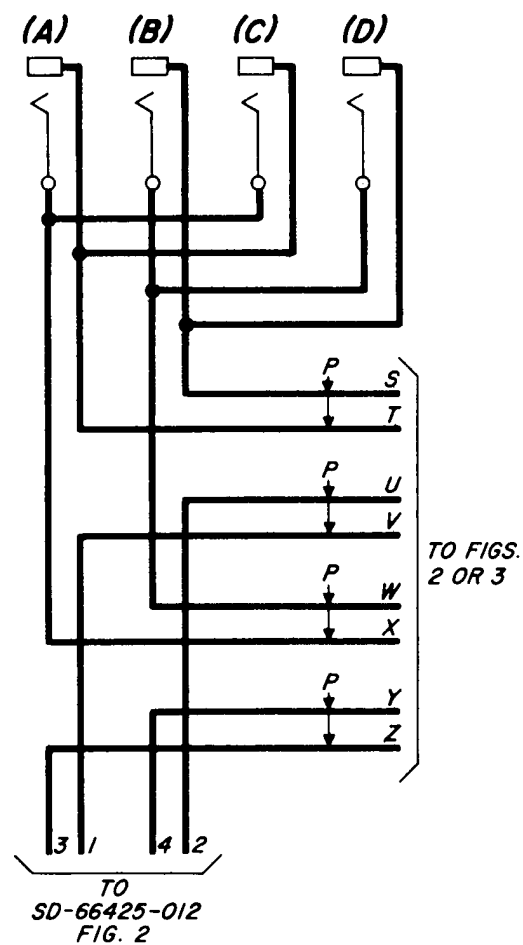
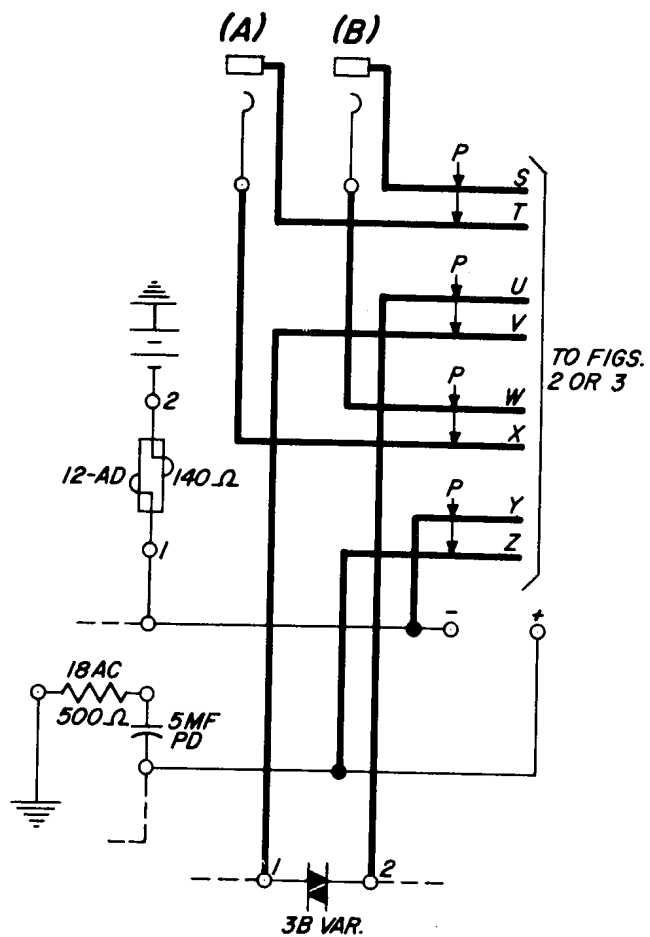
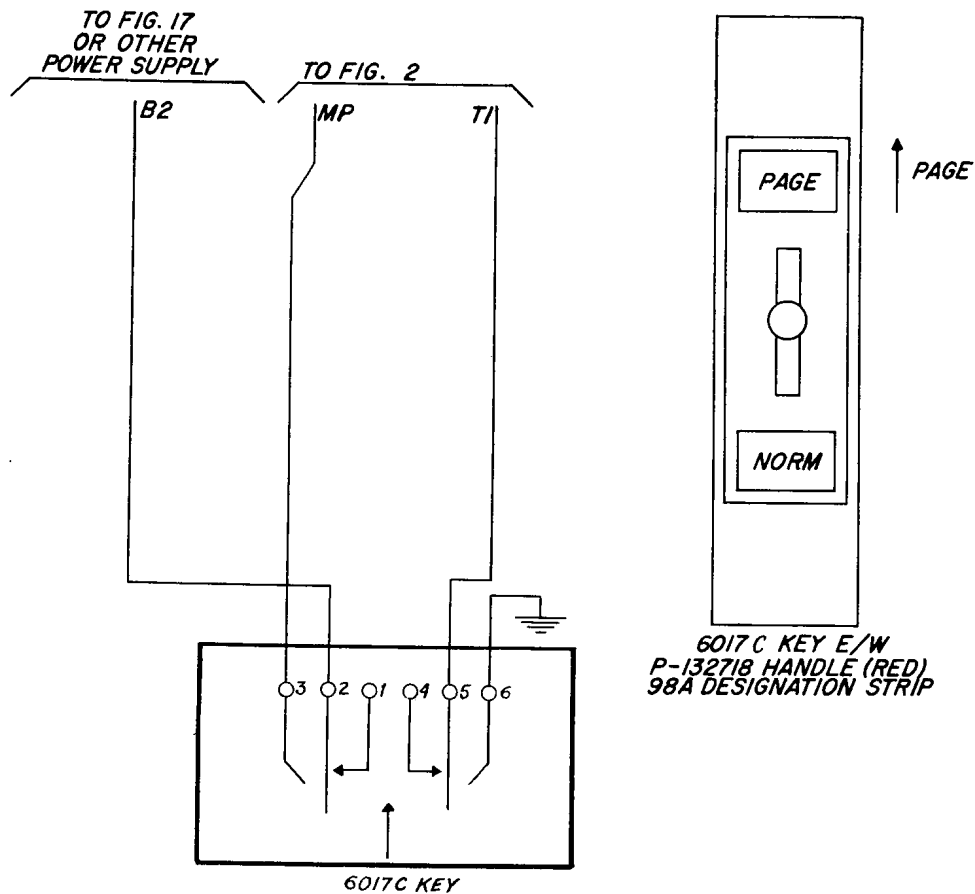


FIG. 9

MODIFIED WIRING TO TEL. SET JACKS
FOR 550C P.B.X. SEE SD-66023-011 FIG. 1
FOR 551A, 551B OR 551D P.B.X. SEE
SD-66180-01 FIG. 1

**FIG. 10**

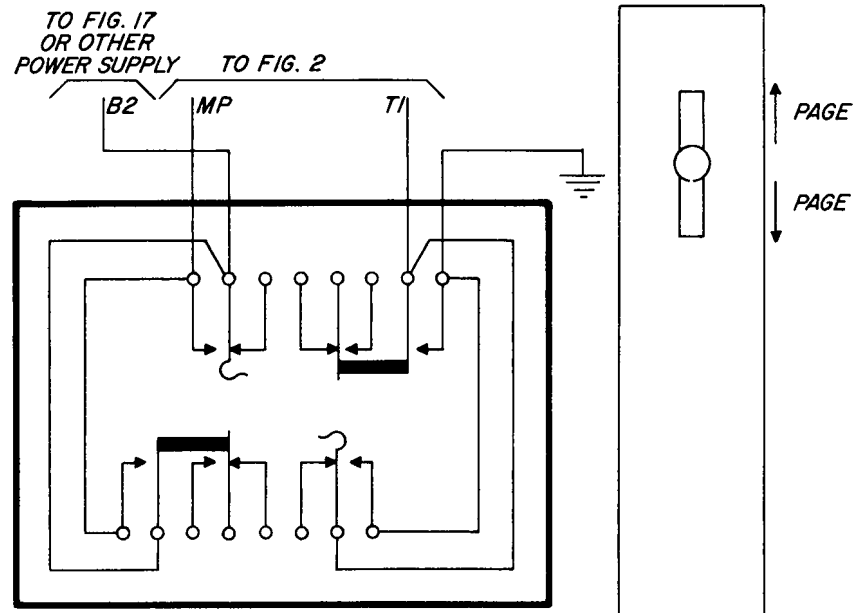
PAGING KEY FOR 555 OR 556A P.B.X.
(1 POSITION)



6017C KEY E/W
P-132718 HANDLE (RED)
98A DESIGNATION STRIP

FIG. 11

PAGING KEY FOR INSTALLATION IN A KEYSHELF
(1 POSITION)



2AW KEY UNIT E/W
P-136558 KEY TOP
38A SHIELD
P-214045 SCREWS
P-132718 HANDLE (RED)
P-136555 KEY BASE
AND MTG. STUD

FIG. 12

PAGING KEY FOR 555 OR 556A P.B.X.
(2 POSITION)

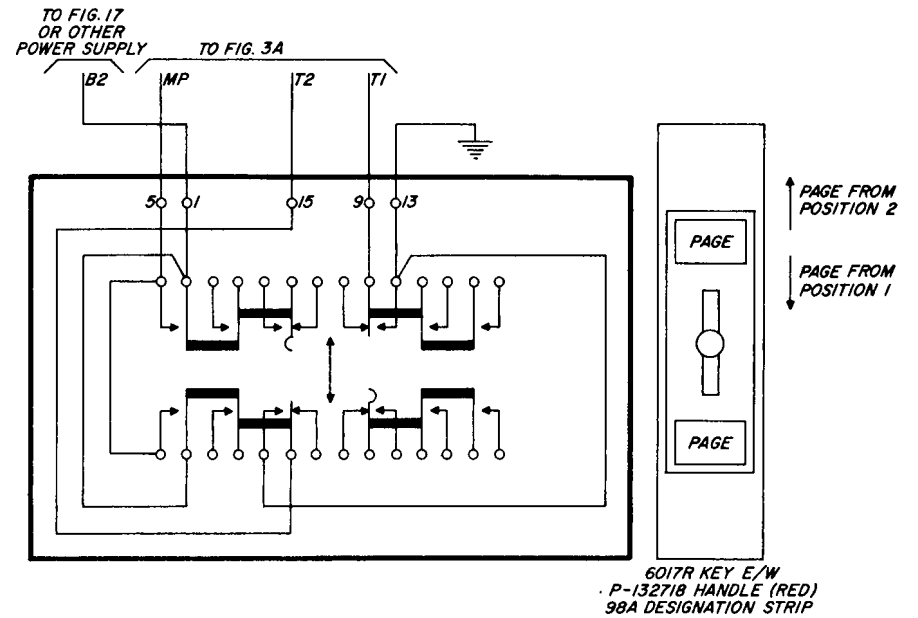


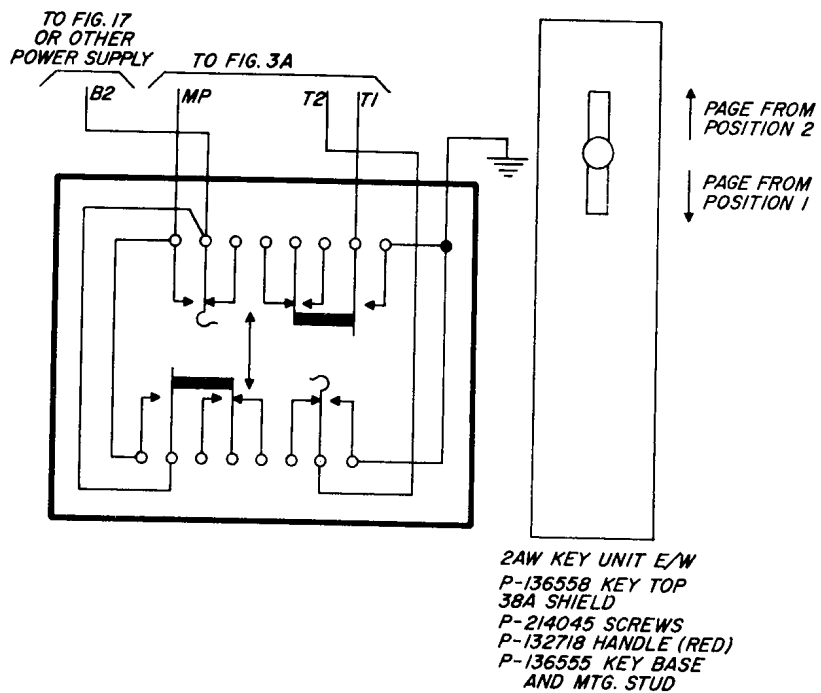
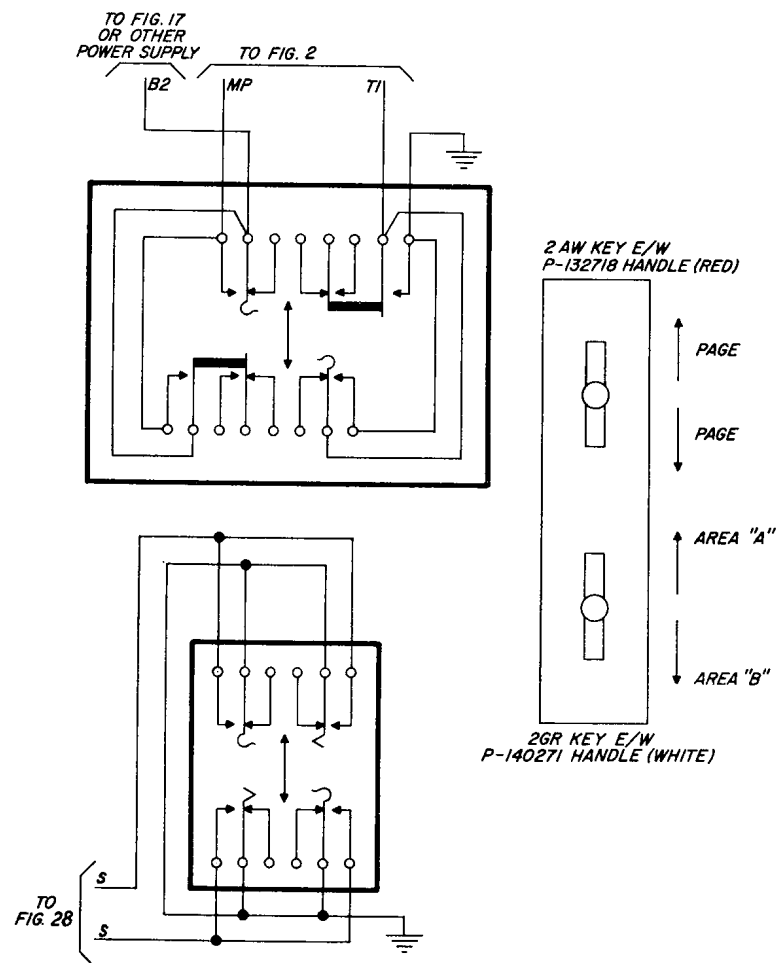
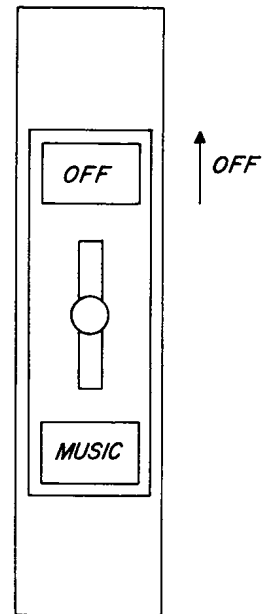
FIG. 13PAGING KEY FOR INSTALLATION IN A KEYSHELF
(2 POSITION)**FIG. 14**BIJB PAGING & AREA SELECTION KEY FOR
USE IN KEYSHELF

FIG. 15*MUSIC CUT-OFF KEY*

TO FIG. 77 FOR LINE LEVEL
 TO FIG. 2-3A-4-6 OR 57 FOR LOW
 LEVEL MUSIC SUPPLY (M1-M2)



6017 J KEY E/W
 P-132718 HANDLE (RED)
 98A DESIGNATION STRIP

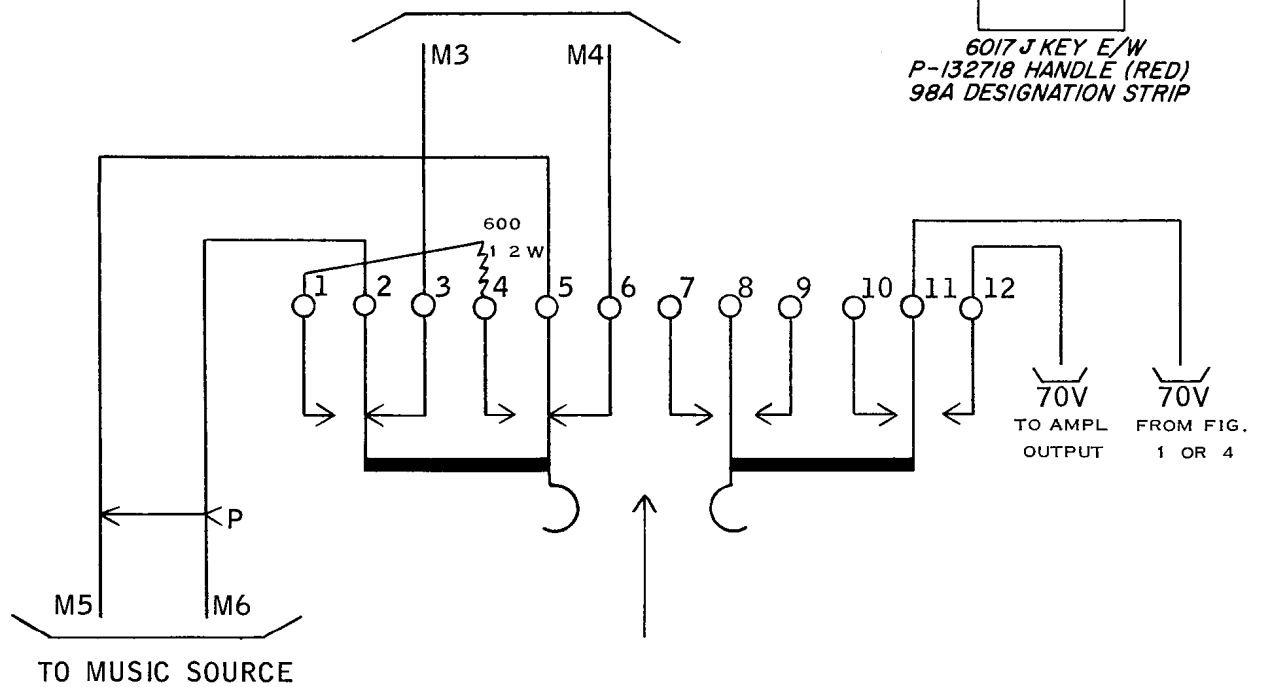
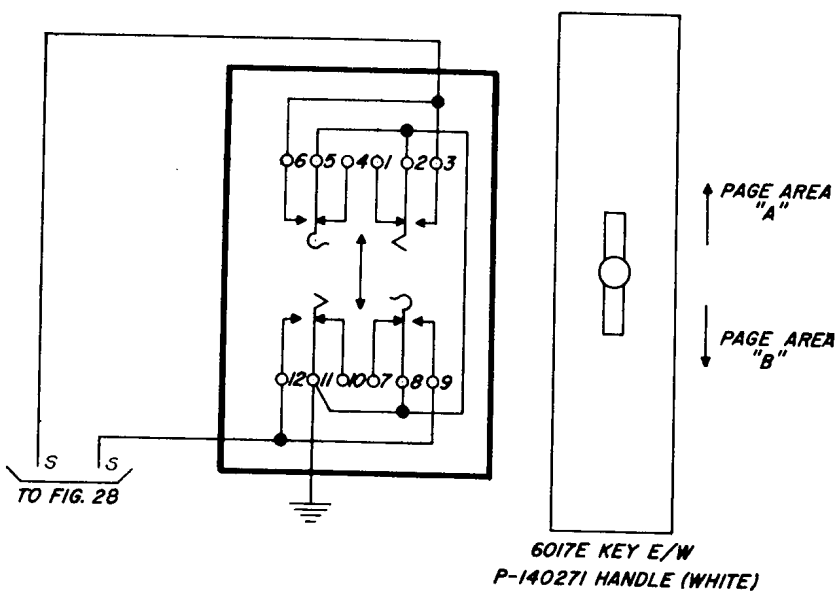
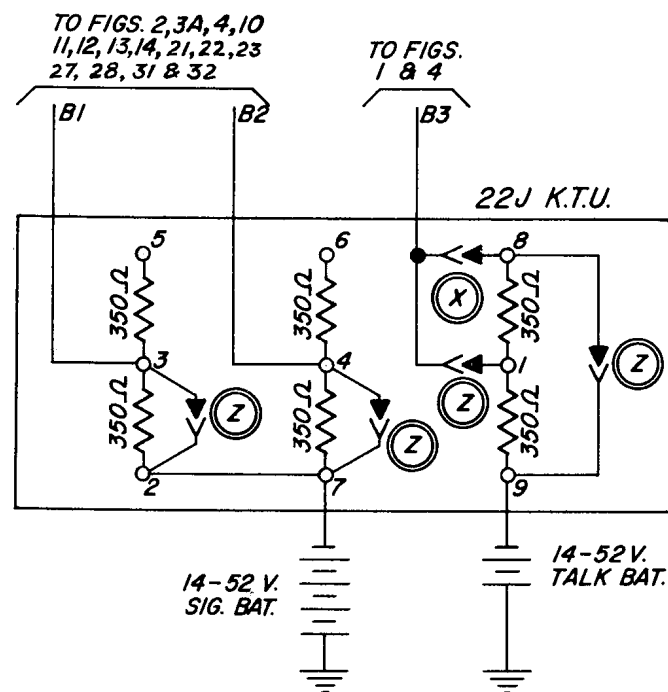


FIG. 166017E KEY FOR 2 AREA SELECTION
(EXTERNAL MOUNT)**FIG. 17**

BATTERY SUPPLY



NOTES:

1. USE "X" WIRING FOR 46-52V BATTERY.
USE "Z" WIRING FOR 14-26V BATTERY.
2. A RECTIFIER OR POWER PLANT MAY BE
USED WHERE REQUIRED.

FIG. 18

PAGING KEY FOR ANY TELEPHONE SET INPUT

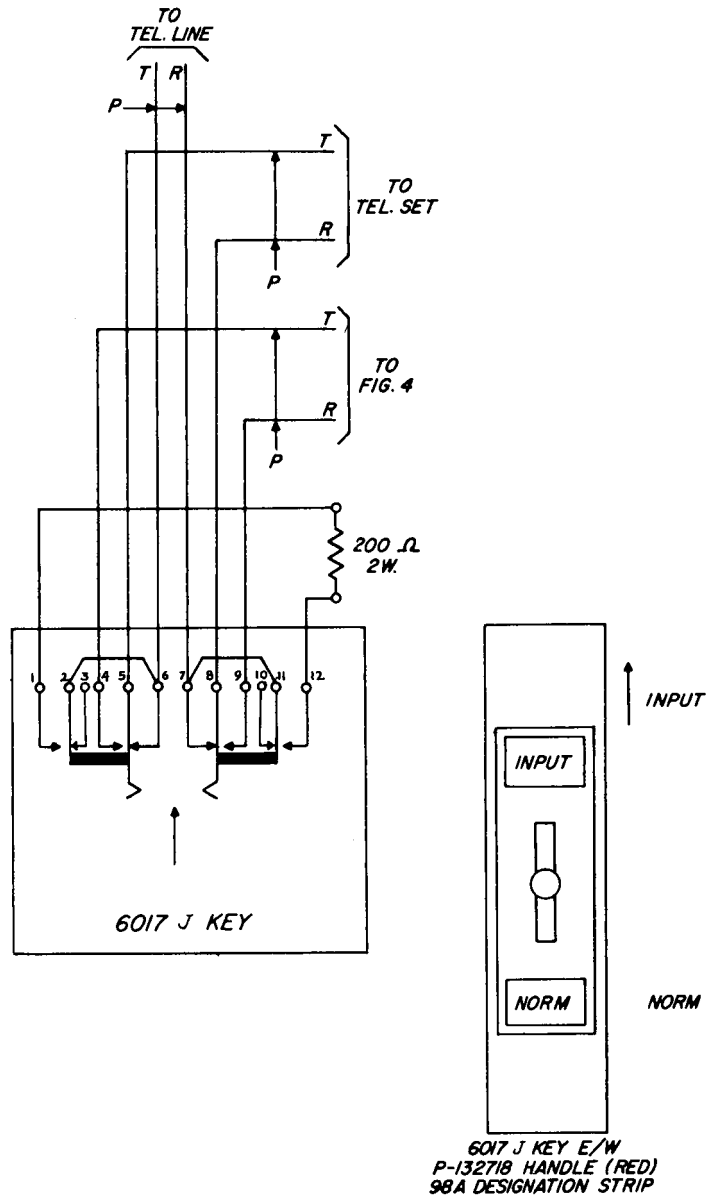


FIG. 19

MODIFICATION OF PICK-UP KEY FOR
KEY TELEPHONE SYSTEMS

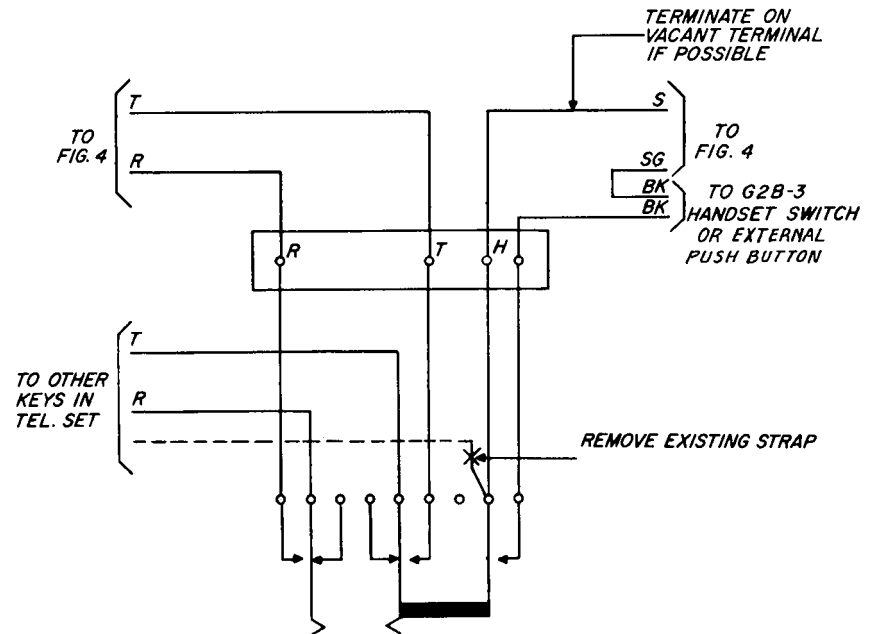
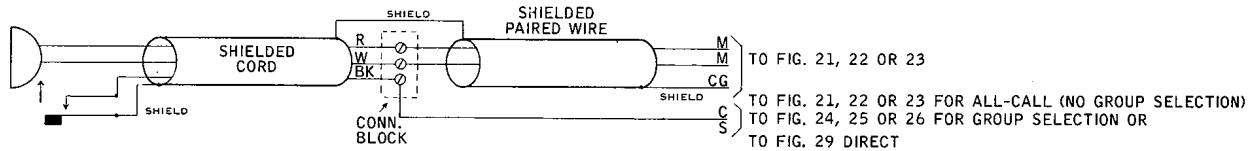


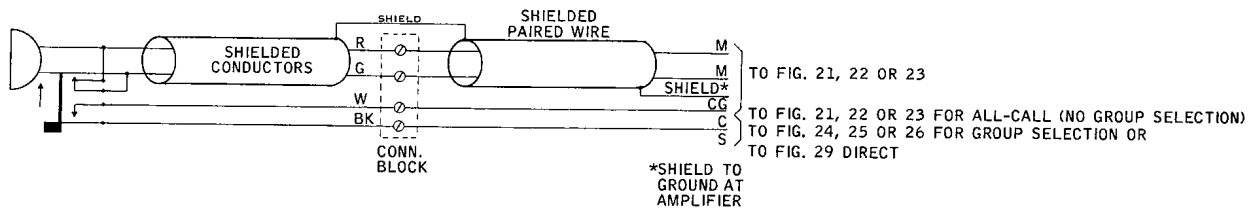
FIG. 20

H1 QUALITY MICROPHONES

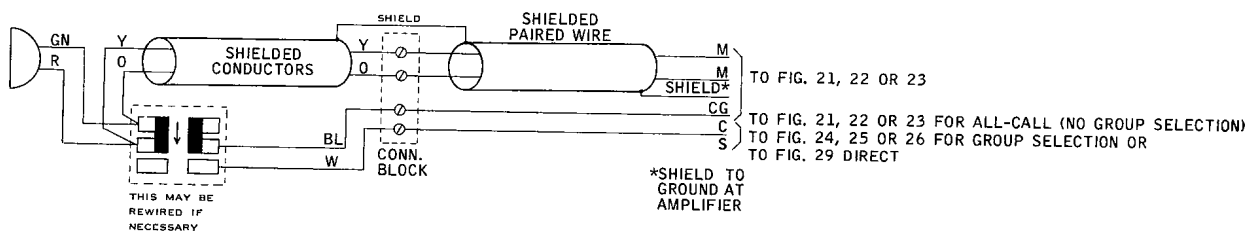
P-1 MICROPHONE ASSEMBLY (MFD.)



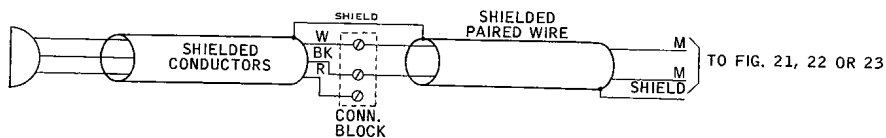
GB-1060A MICROPHONE ASSEMBLY GB-1064A OR GB-1065A TELESCOPING MICROPHONE ARM



E-V 602 D DYNAMIC MICROPHONE



TURNER 58-A DYNAMIC MICROPHONE



W AND BK = 50 OHMS
BK AND R = 200 OHMS

FIG. 21

MULTIPLE MIKE - SIMULTANEOUS ACCESS

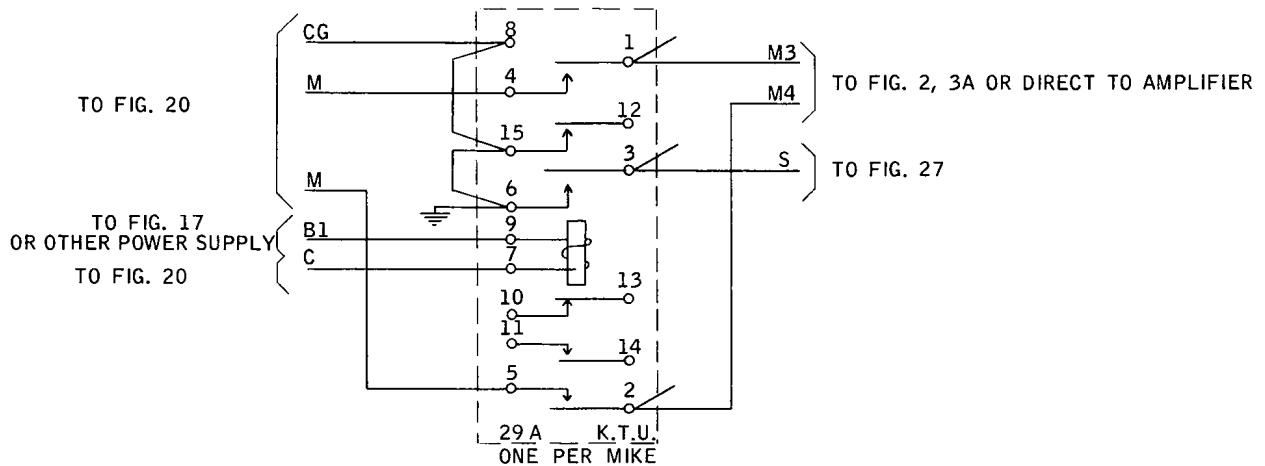


FIG. 22

MULTIPLE MIKE — AUTOMATIC EXCLUSION

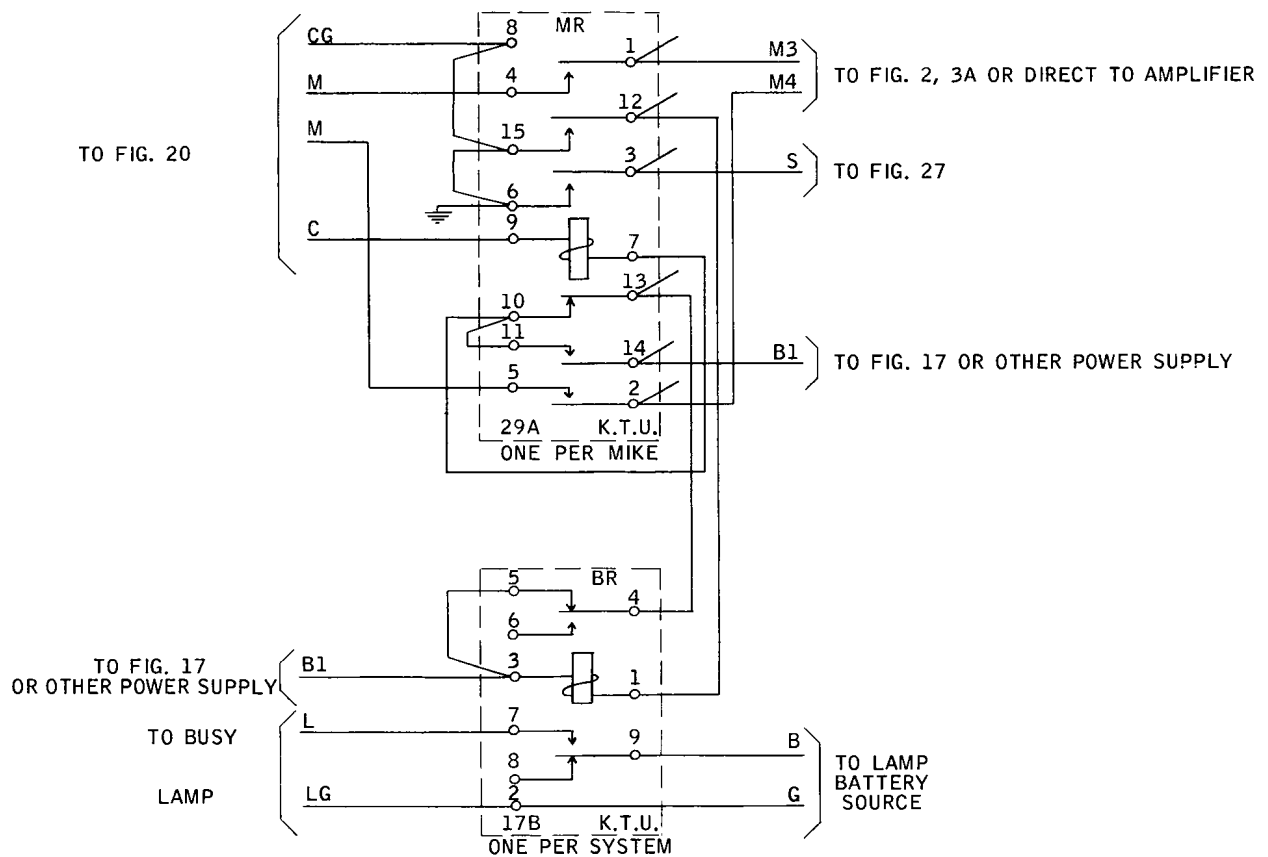


FIG. 23

MULTIPLE MIKE - PRIORITY CIRCUIT (3 MIKE INPUTS SHOWN)

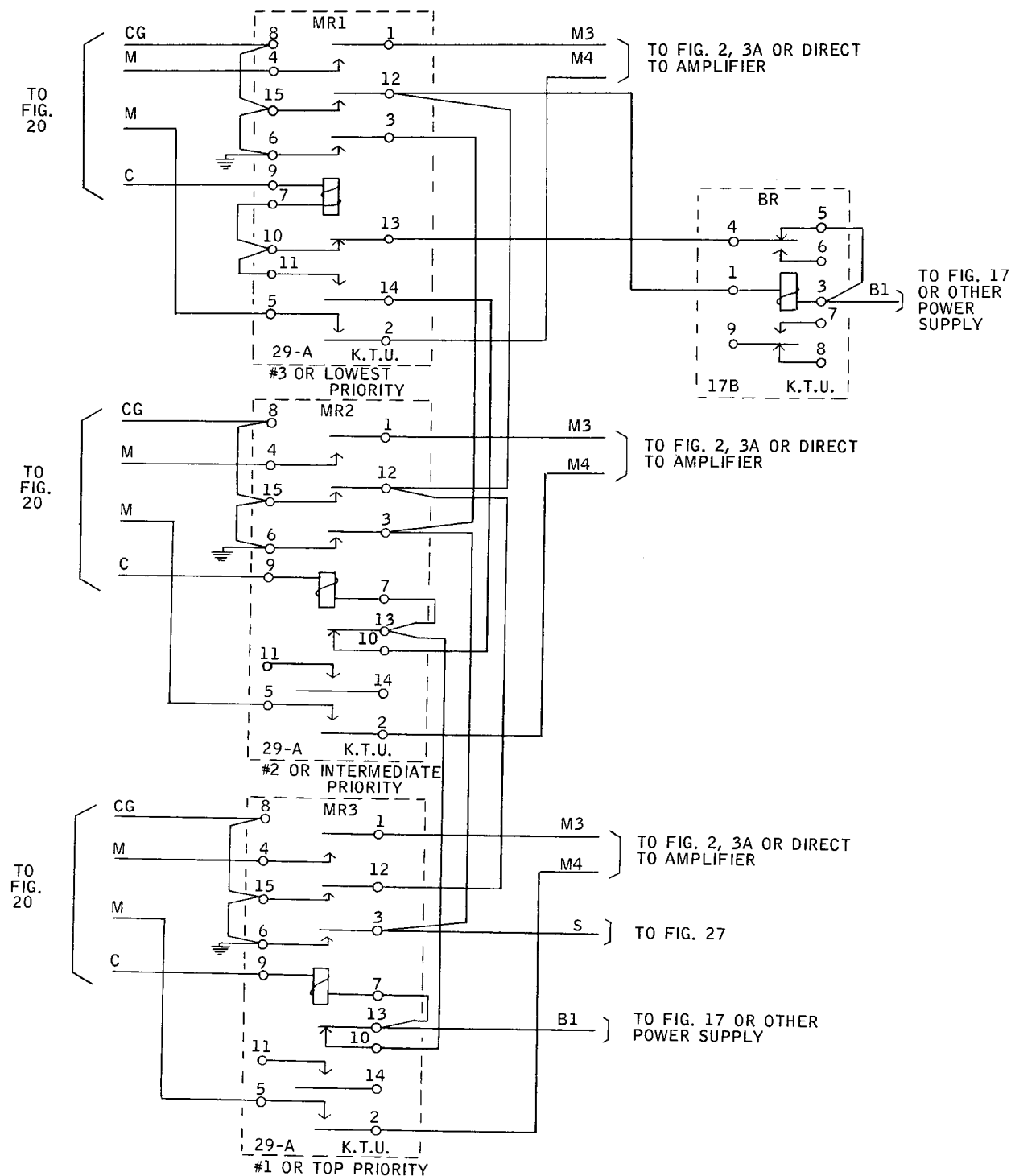


FIG. 24

GB-1030 OR GB-1042 AREA SELECTION KEY
(ACCUMULATIVE LOCK-IN)

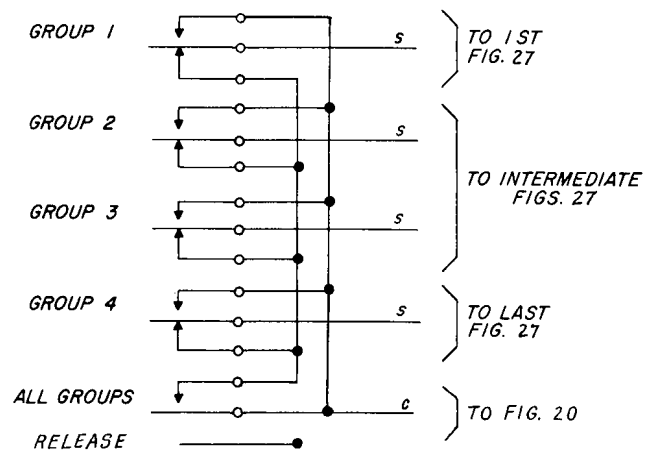


FIG. 25

GB 1209 OR GB 1043 AREA SELECTION KEY
(ACCUMULATIVE LOCK-IN)

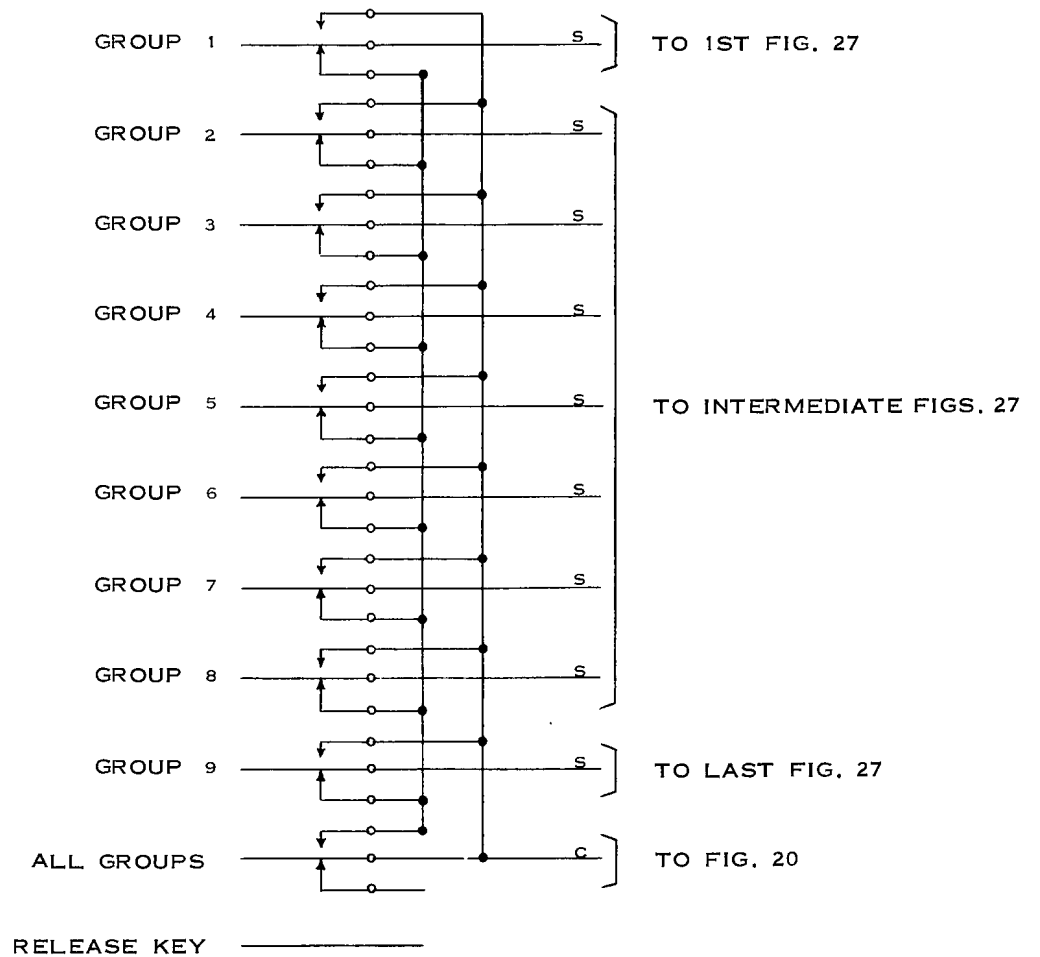


FIG. 26

GB-1040 OR GB-1041 AREA SELECTION KEY

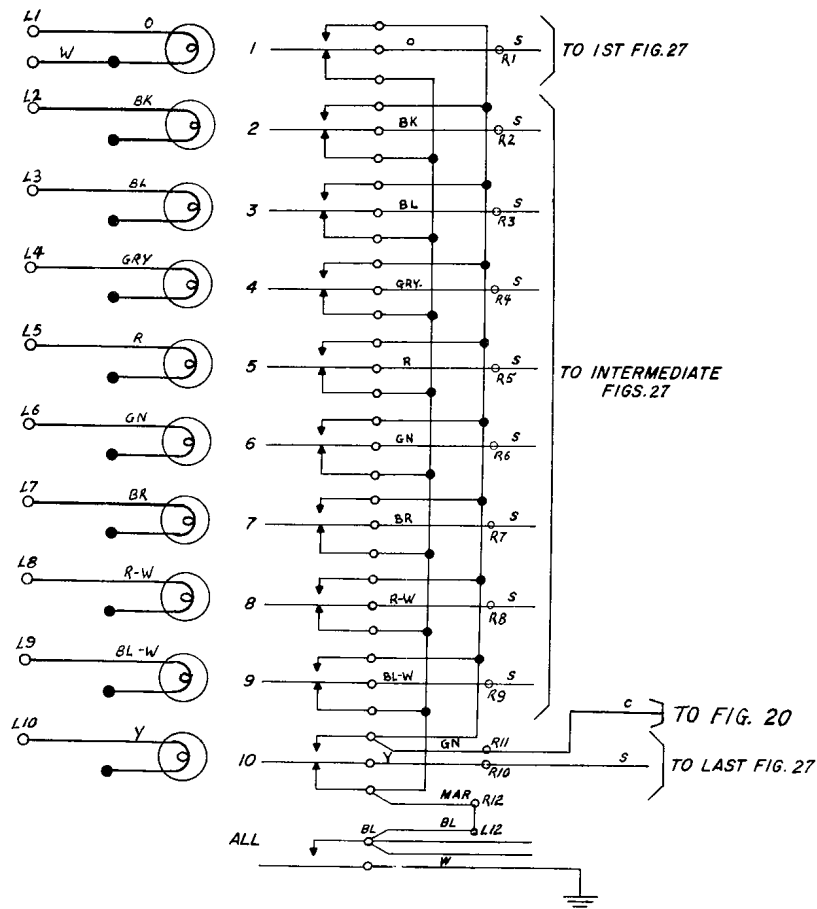
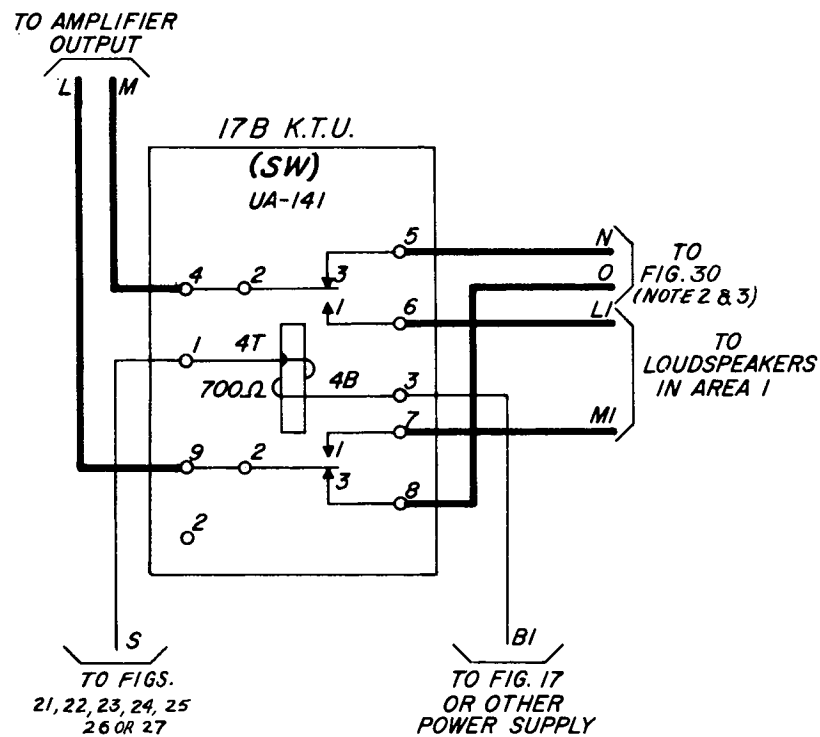


FIG. 27**INDIVIDUAL AREA SELECTION RELAY****NOTES:**

1. ONE REQUIRED PER AREA.
2. "N" - "O" ALTERNATE LOAD SHOULD APPROXIMATE THE SPEAKER GROUP THAT IS REPLACED. IT MUST BE NON-INDUCTIVE.
3. WHEN THE AMPLIFIER OUT-PUT IS TO ONE GROUP ONLY, "N" - "O" SHOULD BE AS FOLLOWS:

ON 10 WATT AMPLIFIER USE 500 OHM,	10 WATT RESISTOR
ON 30 WATT AMPLIFIER USE 200 OHM,	20 WATT RESISTOR
ON 75 WATT AMPLIFIER USE 100 OHM,	50 WATT RESISTOR
ON 165 WATT AMPLIFIER USE 50 OHM,	100 WATT RESISTOR

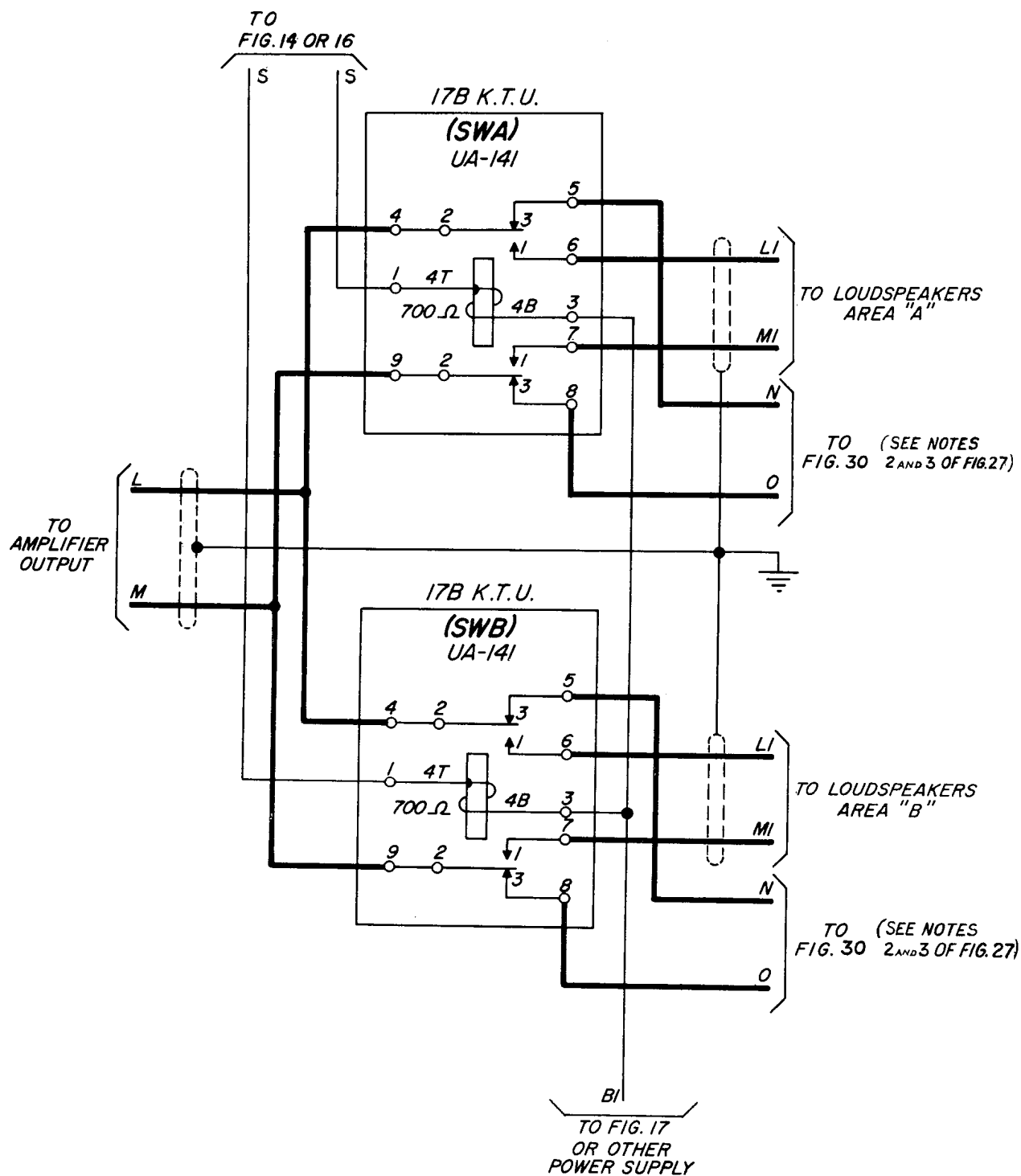
FIG. 28**TWO AREA SELECTION RELAYS**

FIG. 29

SIMPLEX CONTROL OF AMPLIFIER AND SHORT

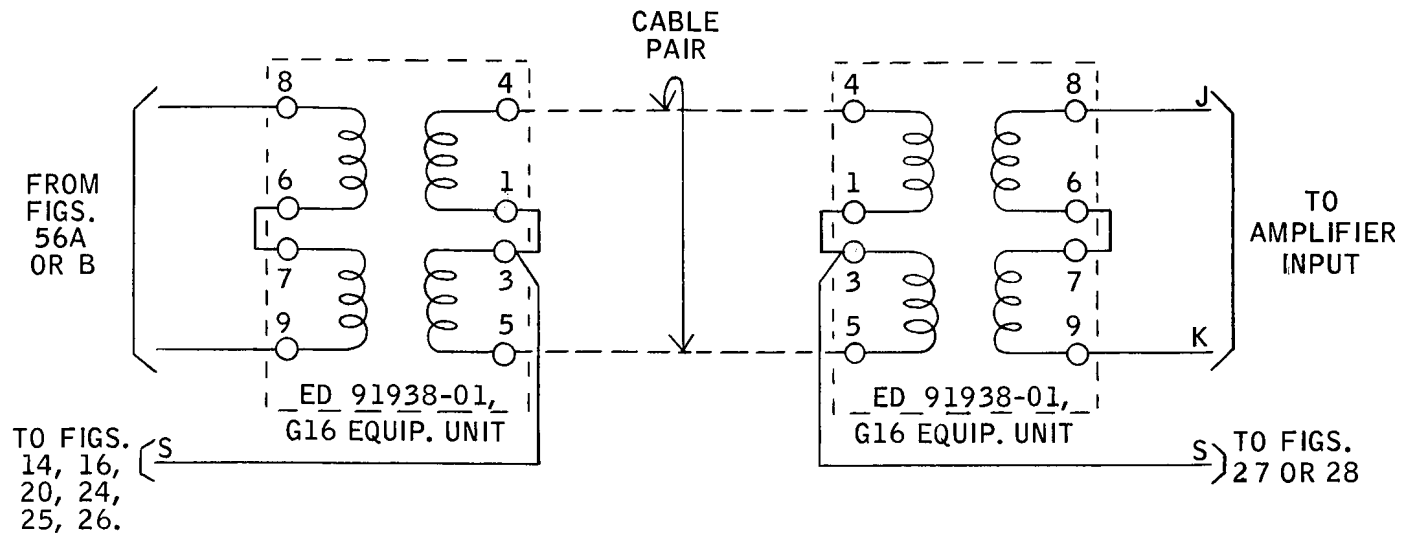


FIG. 30

ADJUSTABLE ALTERNATE LOAD FOR USE
WITH AREA SELECTION CKT.

1,18 BA & 3,18BH RESISTANCES MTD. ON
ED-91929-01,G-5 EQPT. UNIT

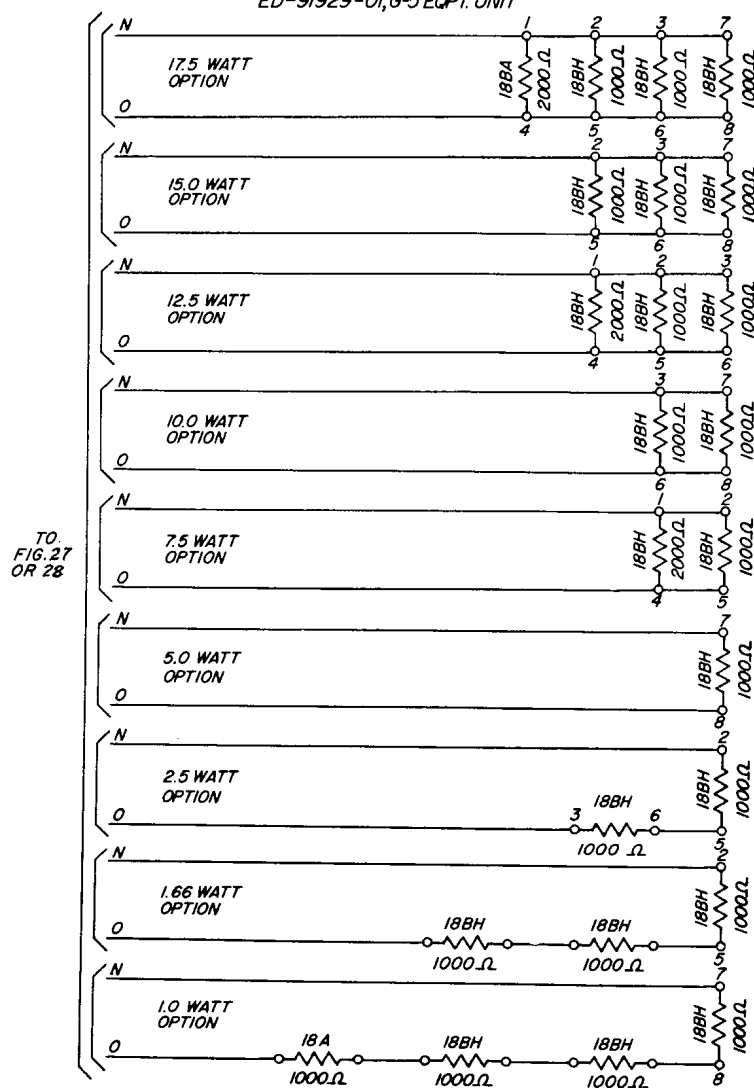


FIG. 31

TONE GENERATOR CONTROL CIRCUIT

NOTES

1. SWT AND SWS MUST BE LOCATED WITHIN 18 INCHES OF DUKANE 15U20 TONE GENERATOR.

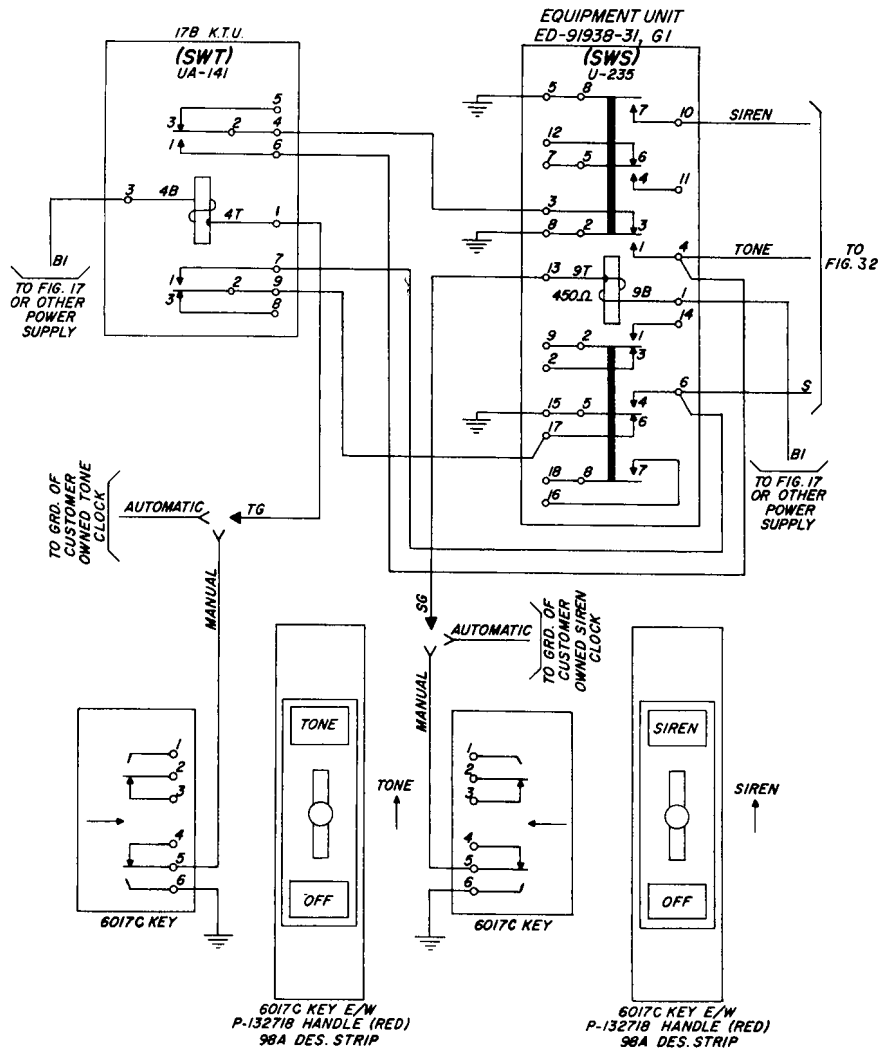
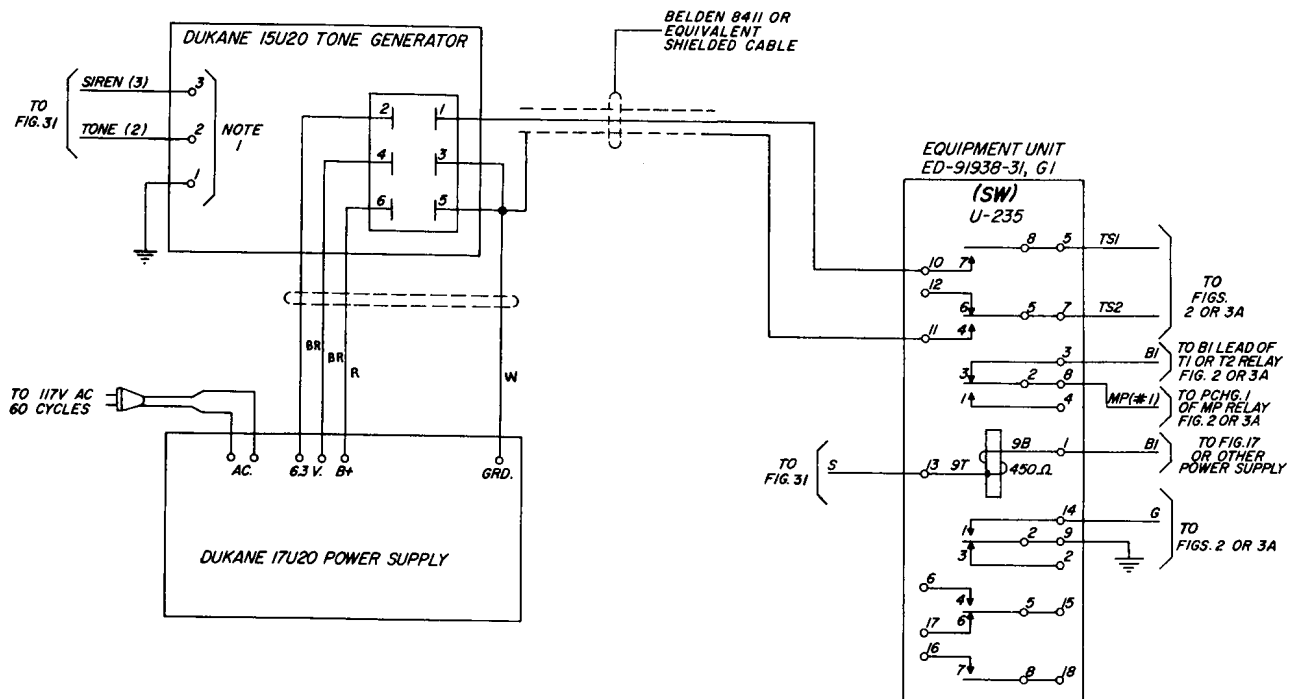


FIG.32

DUKANE 15U20 TONE GENERATOR

**NOTES**

1. STRAP 1 AND 2 FOR STEADY TONE.
2. STRAPS 1, 2 AND 3 FOR WARBLE TONE.

TCI Library- <http://www.telephonecollectors.info/>

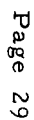


FIG. 34
17U20 DU KANE POWER SUPPLY

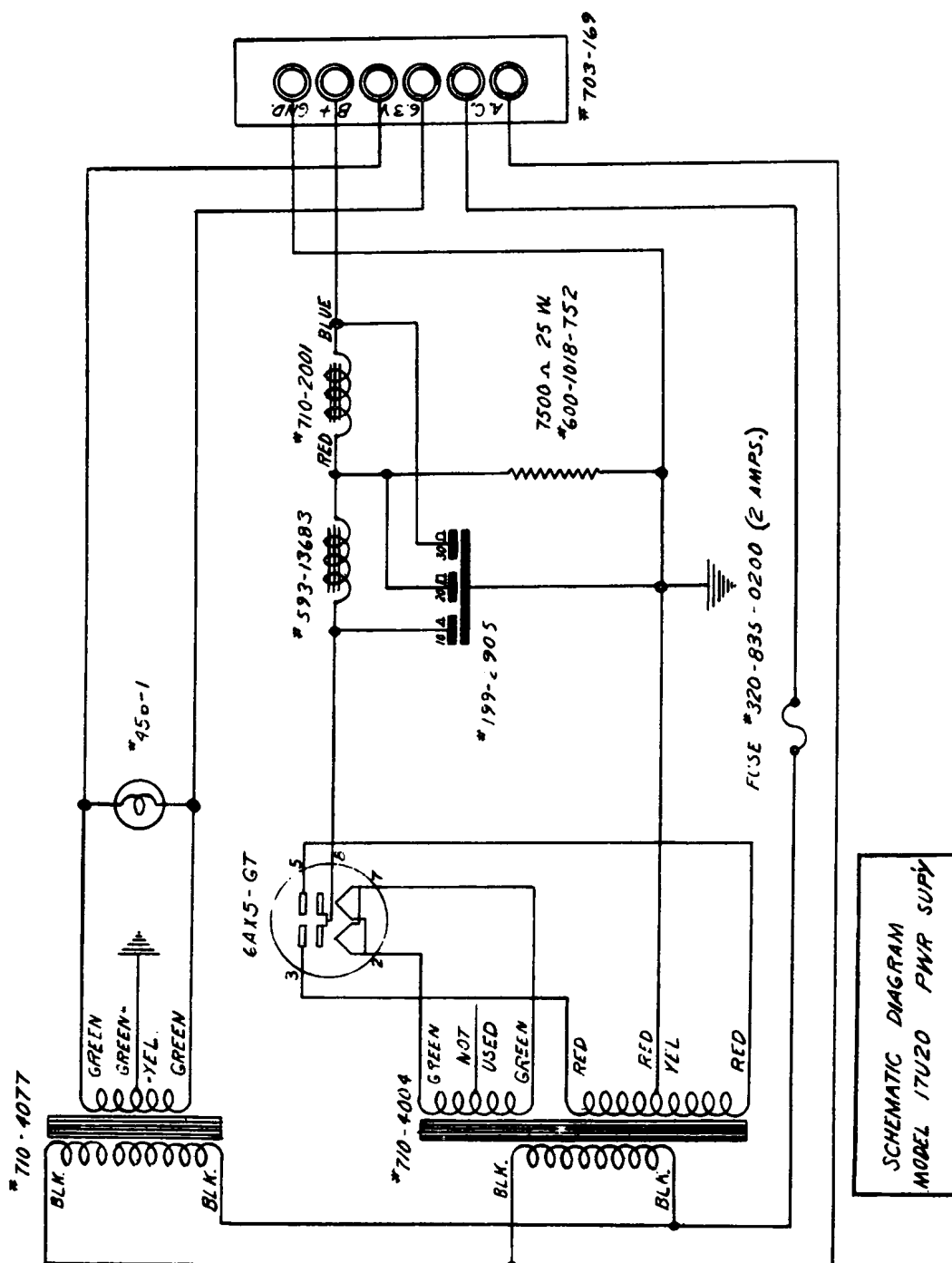


FIG. 35
BOGEN RP2 PRE AMPLIFIER

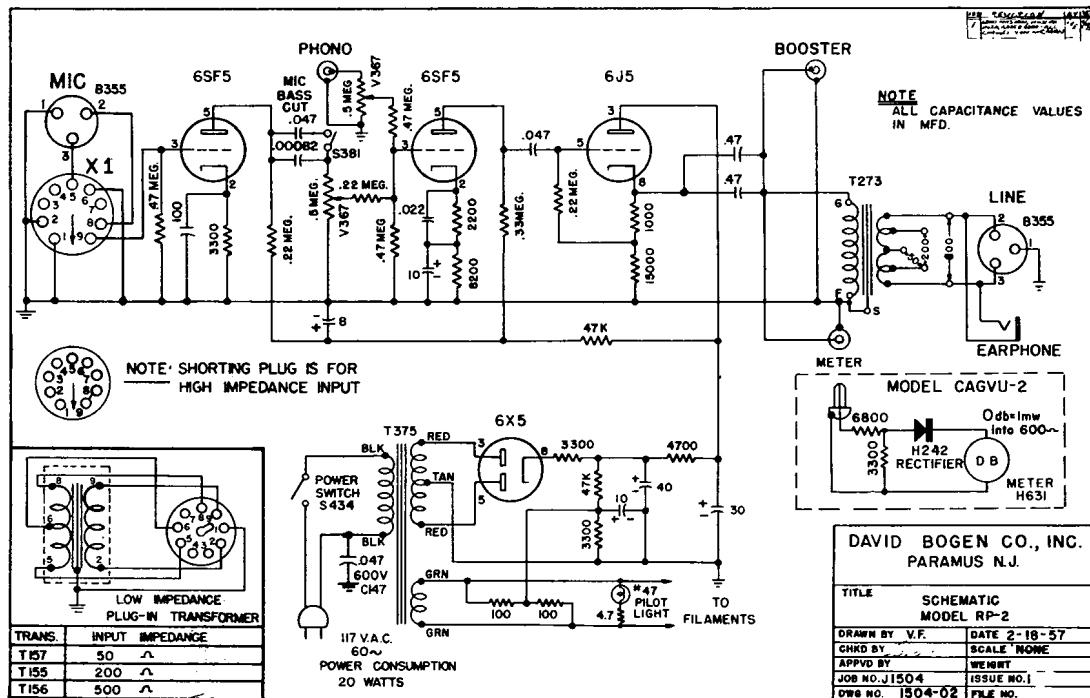
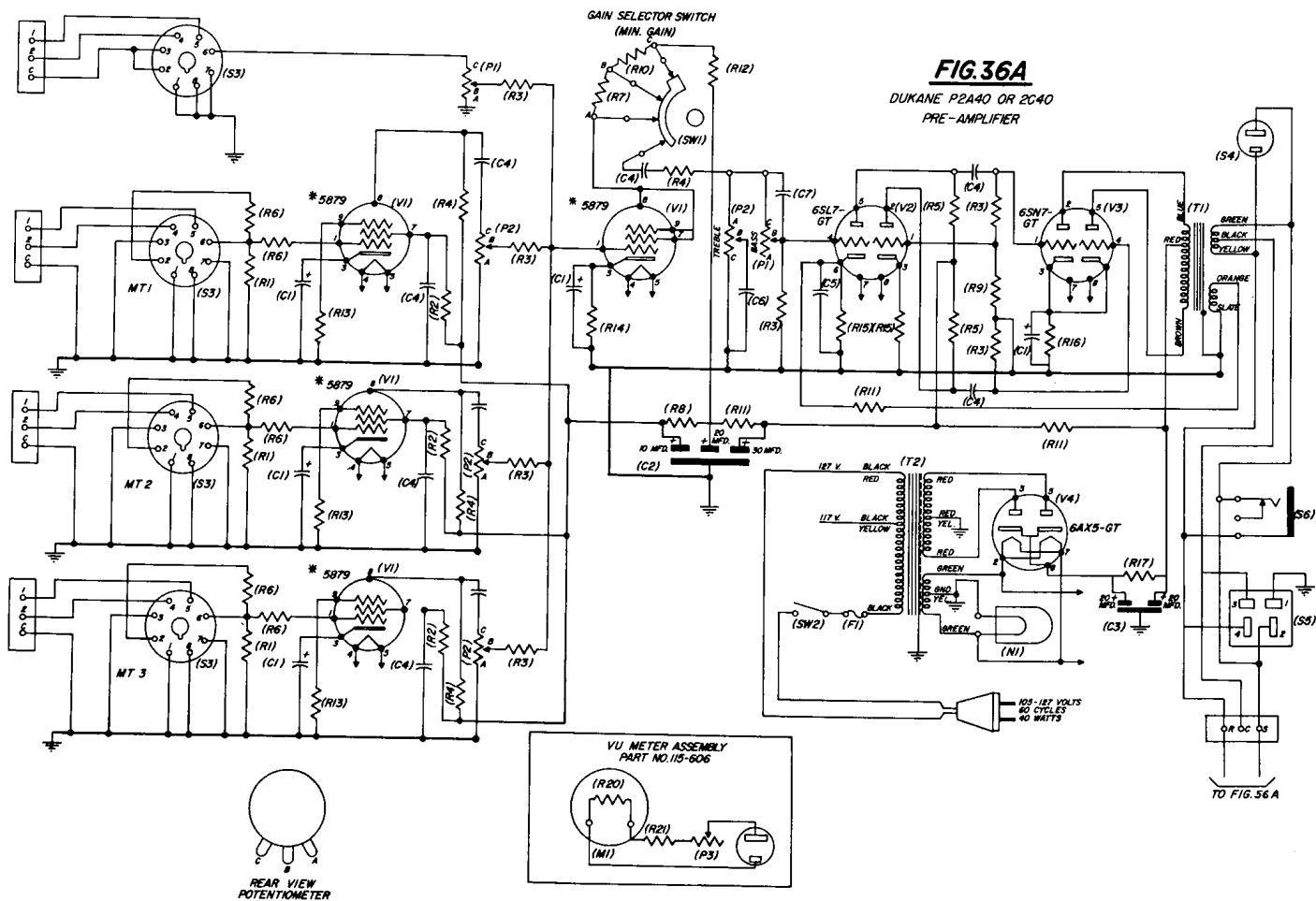


FIG.36A
DUKANE P2A40 OR 2C40
PRE-AMPLIFIER

NOTES

1. FOR 150 OHM OUTPUT USE TAPS "R" AND "C".
2. FOR 600 OHM OUTPUT USE TAPS "R" AND "S".



* V1 TUBE MAY BE EITHER THE
EF86 OR THE 5879 TYPE

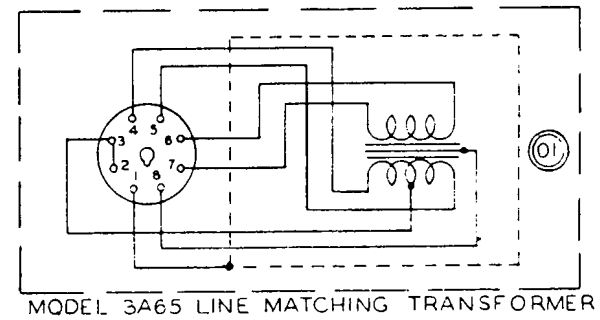
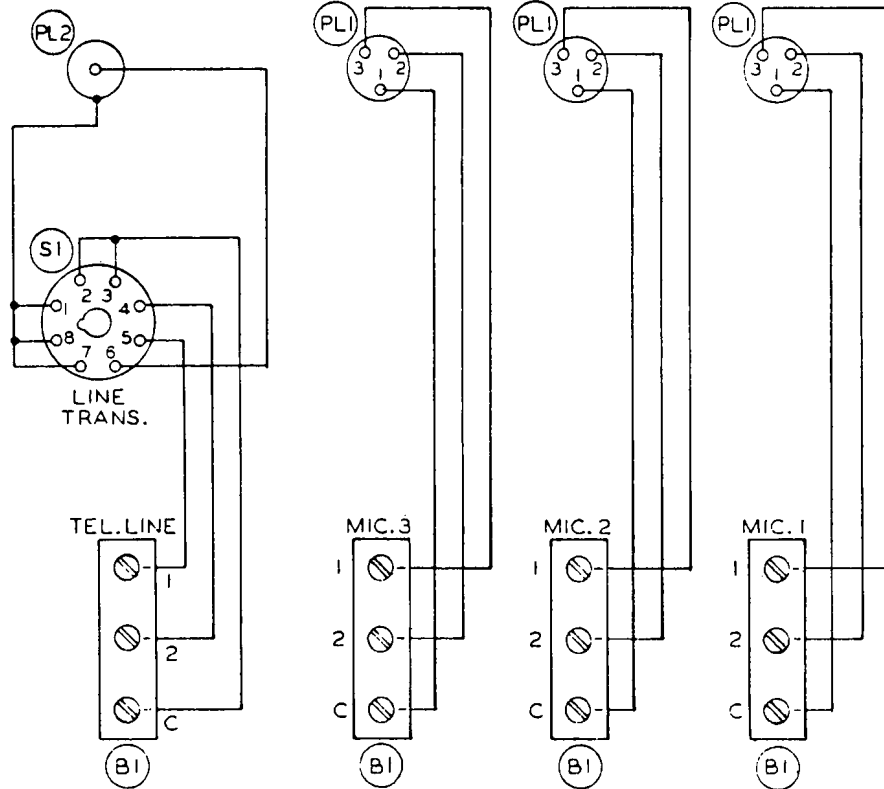
FIG. 36B

190-727

NO. 000 USED ON
P2A40

LIST OF ELECTRICAL PARTS

LEGEND	DESCRIPTION	QNTY.	PART NO.
PL1	PLUG - MIC.	3	570-92
PL2	" - PHONO	1	570-9159
S1	SOCKET	1	635-03-08653
B1	TERMINAL STRIP	4	703-229



MATERIAL _____ FINISH _____		01 ADD SCHEMATIC 3-11-57	
UNLESS OTHERWISE SPECIFIED DECIMAL DIMENSIONS TO BE $\pm$ FRACTIONAL DIMENSIONS TO BE $\pm$		ISSUE WAS	DATE APPR
DuKANE CORPORATION ESTABLISHED AS OPERAID 1922 ST. CHARLES, ILLINOIS U. S. A.		DATE 11-28-56	
		NO. 190-727	
		SCALE _____ DRAWN <i>(signature)</i> APP'D _____ CHECKED _____ ENGR. _____	

FIG. 36C

PARTS LIST & TUBE VOLTAGES FOR
DUKANE P2A40 OR 2C40
PRE-AMPLIFIER

LIST OF ELECTRICAL PARTS				
LEGEND	DESCRIPTION	QNTY.	PART NO.	
C1	CAPACITOR 20 MFD. 25V.	5	199-2001-206	
C2	CAPACITOR 30-20-10 MFD. 350V.	1	199-2905	
C3	CAPACITOR 20-20 MFD. 500V.	1	199-2914	
C4	CAPACITOR .1 MFD. 400V.	9	199-4021-104	
C5	CAPACITOR .02 MFD. 400V.	1	199-4020-203	
C6	CAPACITOR .001 MFD. 600V.	1	199-4030-102	
C7	CAPACITOR .0005 MFD. 500V.	1	199-3001-501	
R1	RESISTOR 1MEG. OHM. 1/4W	3	600-0043-105	
R2	RESISTOR 1MEG. OHM. 1W	3	600-0116-105	
R3	RESISTOR 470K OHM. 1W	7	600-0116-474	
R4	RESISTOR 270K OHM. 1W	4	600-0116-274	
R5	RESISTOR 100K OHM. 1W	2	600-0116-104	
R6	RESISTOR 47K OHM. 1/4W	6	600-0043-473	
R7	RESISTOR 33K OHM. 1W	1	600-0116-333	
R8	RESISTOR 27K OHM. 1W	1	600-0116-273	
R9	RESISTOR 18K OHM. 1W	1	600-0116-183	
R10	RESISTOR 18K OHM. 1W	1	600-0116-183	
R11	RESISTOR 10K OHM. 1W	3	600-0116-103	
R12	RESISTOR 9100 OHM. 1W	1	600-0110-912	
R13	RESISTOR 2700 OHM. 1W	3	600-0116-272	
R14	RESISTOR 1900 OHM. 1W	1	600-0116-192	
R15	RESISTOR 1000 OHM. 1W	2	600-0116-102	
R16	RESISTOR 470 OHM. 1W	1	600-0116-471	
R17	RESISTOR 5000 OHM. 10W	1	600-1011-502	
P1	POTENTIOMETER 2.5 MEGOHM.	2	601-3589	
P2	POTENTIOMETER 500K OHM.	4	601-3289	
V1 #	ELECTRON TUBE 5879	4	262-5879	
V2	ELECTRON TUBE 6SL7-GT	1	262-6SL7-GT	
V3	ELECTRON TUBE 6SN7-GT	1	262-6SN7-GT	
V4	ELECTRON TUBE 6AX5-GT	1	262-6AX5-GT	
F1	FUSE 2 AMPERE TYPE 3AG	1	20-835-0200	
N1	LAMP-PICOT MAZDA NO. 47	1	456-1	
SW1	SWITCH GAIN SELECTOR	1	680-133	
SW2	SWITCH AC LINE	1	680-74	

LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QNTY.	PART NO.
T1	TRANSFORMER OUTPUT	1	710-2039
T2	TRANSFORMER POWER	1	710-4030-02
S1	RECEPTACLE	1	597-7299
S2	RECEPTACLE	3	597-7219
S3	RECEPTACLE	3	635-03-08653
S4	RECEPTACLE	1	597-9696
S5	RECEPTACLE	1	597-8686
S6	RECEPTACLE JACK	1	415-4
B1	TERMINAL STRIP	1	703-22
VU METER ASSEMBLY PART NO. 115-606			
M1	METER	1	485-2003
R20	RESISTOR 6800 OHMS 1W	1	600-0116-682
R21	RESISTOR 3900 OHMS 1W	1	600-0116-392
P3	POTENTIOMETER 3000 OHM	1	601-43
PL1	PLUG	1	570-9614

TUBE VOLTAGES								
TUBE TYPE	SOCKET PIN NUMBER							
	2	3	4	5	6	7	8	9
5879 *		1.2V. D.C.	6.3V. A.C.	6.3V. A.C.		24V. D.C.	28V. D.C.	1.2V. D.C.
5879 +		2.2V. D.C.	6.3V. A.C.	6.3V. A.C.		70V. D.C.	70V. D.C.	70V. D.C.
6SL7-GT	90V. D.C.	1V. D.C.		90V. D.C.	1V. D.C.	6.3V. A.C.	6.3V. A.C.	
6SN7-GT	220V. D.C.			220V. D.C.	7V. D.C.	6.3V. A.C.	6.3V. A.C.	
6AX5-GT	6.3V. A.C.	290V. A.C.		290V. A.C.		6.3V. A.C.	320V. D.C.	

USE 20,000 OHMS PER V.D.C. METER.
ALL D.C. VOLTAGES MEASURED TO GND.

NOTE:

ALL FILAMENT VOLTAGES MEASURED BETWEEN PINS MARKED -

* 3-INPUT TUBES

+ 1 SECOND STAGE TUBE

V1 TUBE MAY BE EITHER THE EF86 OR THE 5879

FIG. 37

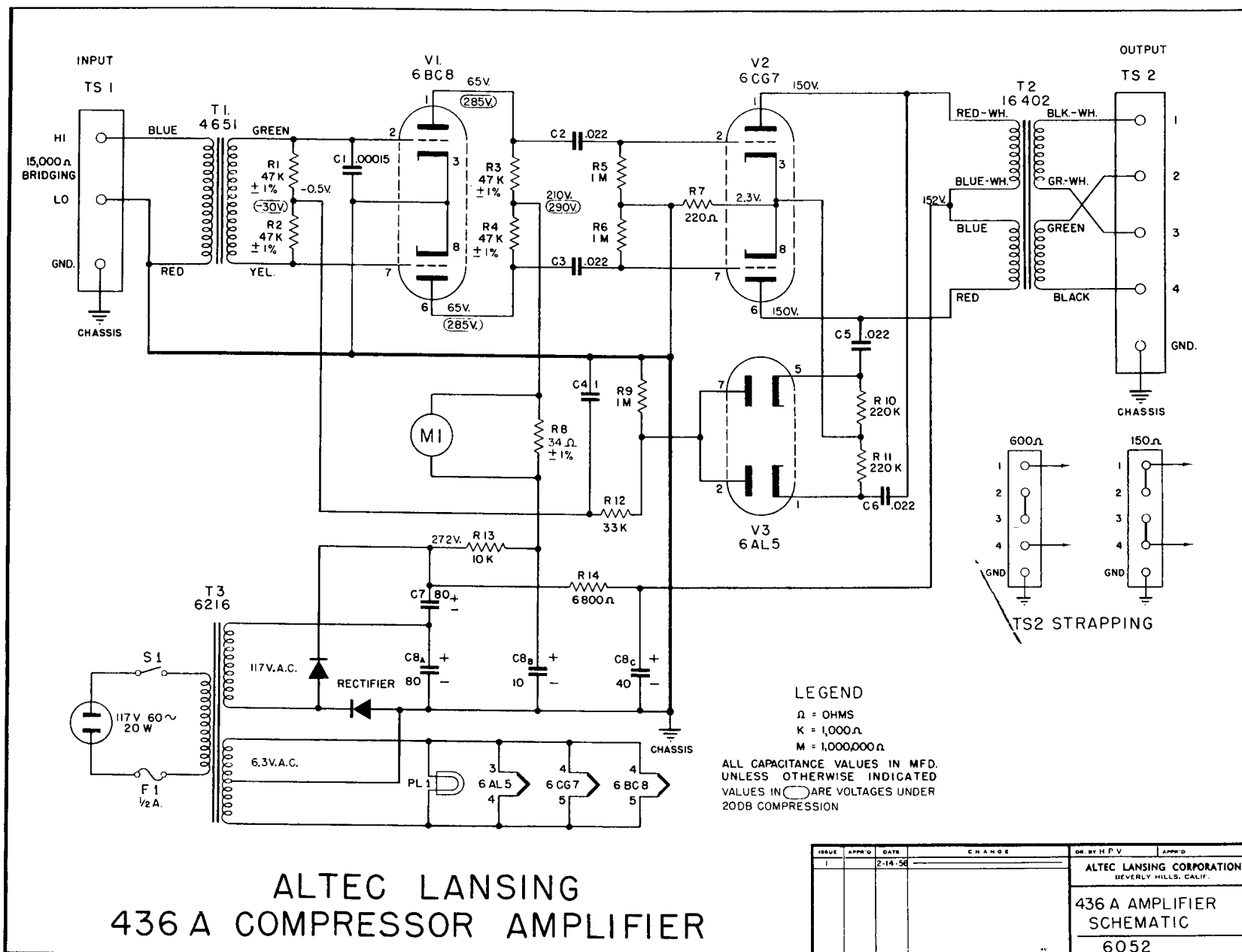
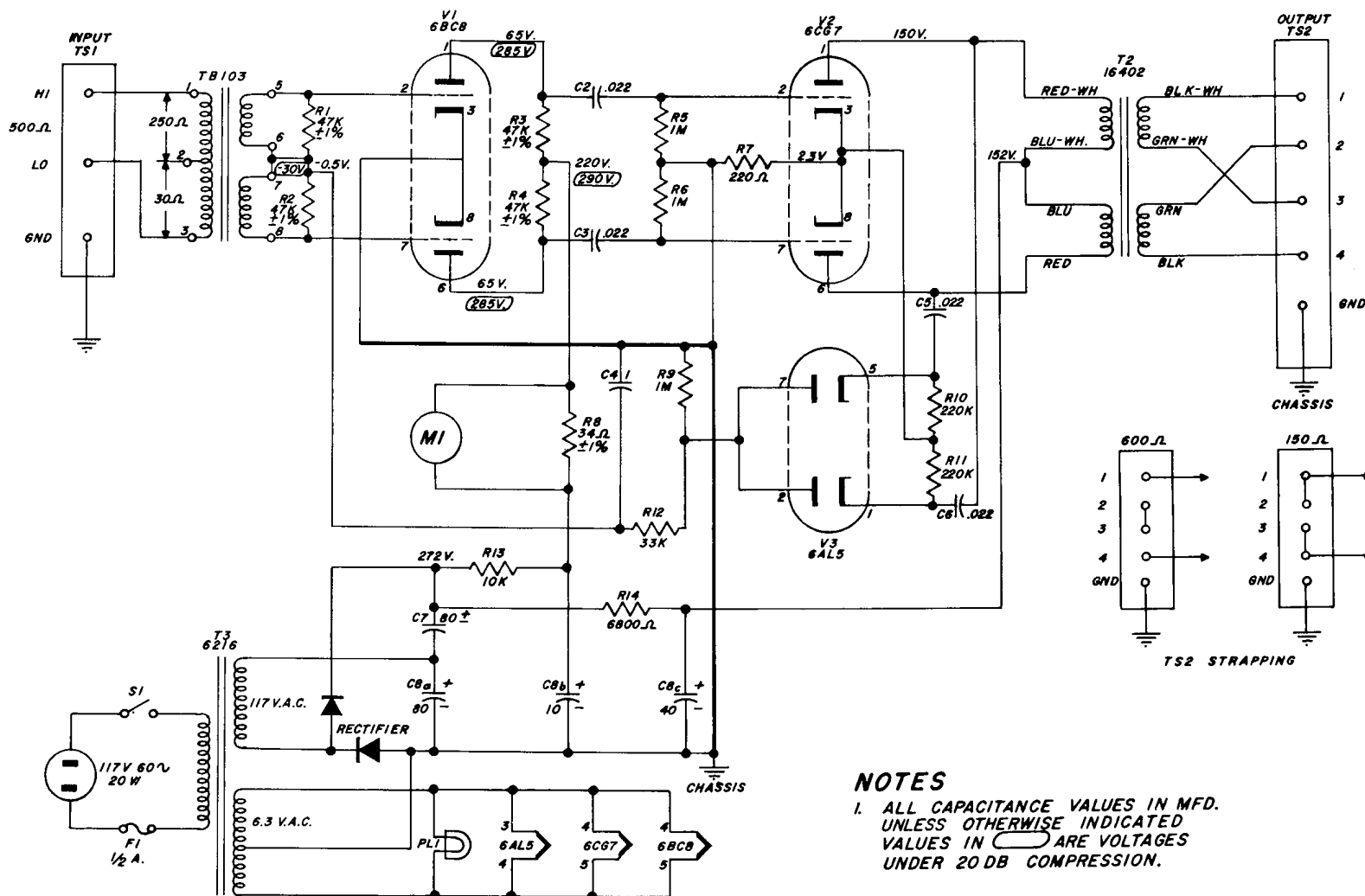


FIG. 38ALTEC LANSING
439 A COMPRESSOR AMPLIFIER**NOTES**

1. ALL CAPACITANCE VALUES IN MFD. UNLESS OTHERWISE INDICATED. VALUES IN ARE VOLTAGES UNDER 20 DB COMPRESSION.

ALTEC LANSING
438 A COMPRESSOR AMPLIFIER

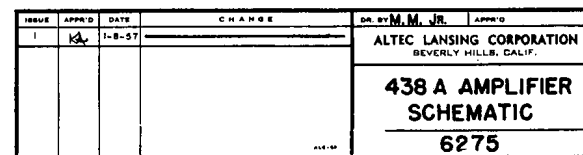
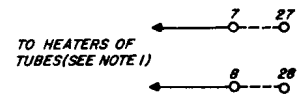


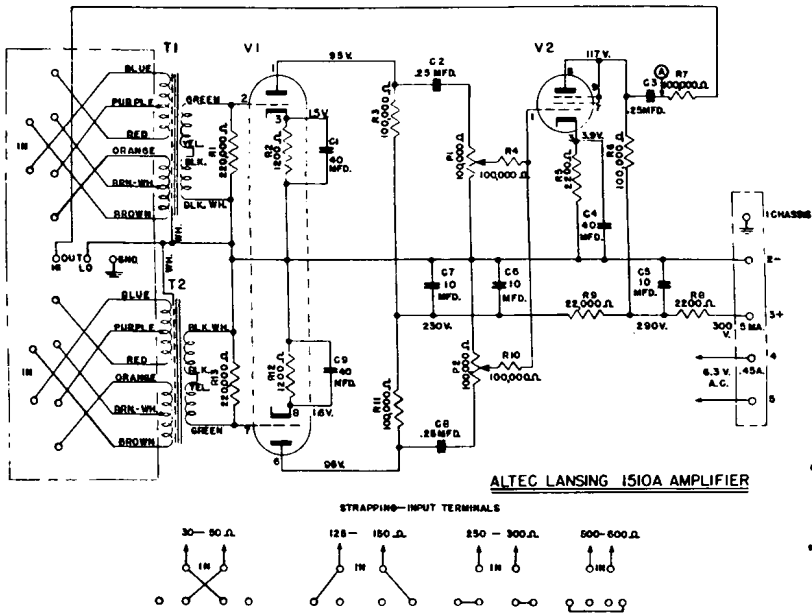
FIG. 40



NOTES:

1. THE NUMBERS IN PARENTHESES ARE THE VOLTAGES WITH R15 SHORTED.

FIG. 41



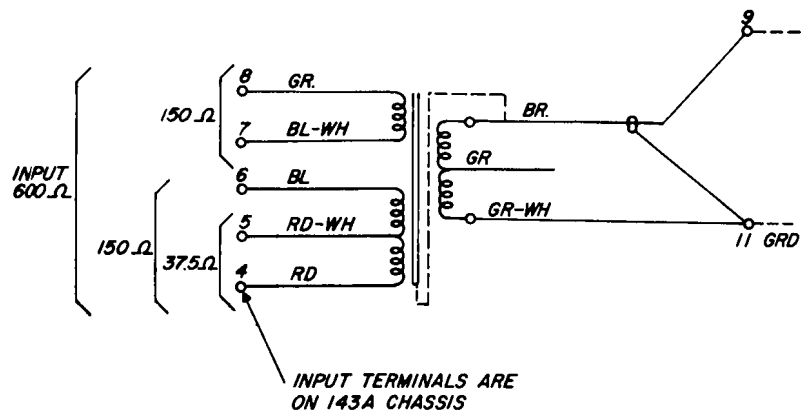
PARTS LIST	
C1,4,9	(1) 40-40MFD. 25V. ASTROM-XY
C2,3,8	25MFD. 400V. ASTROM ML-4-25
C5,6,7	(1) 10-10MFD. 300V. ASTROM-XY
R1,3	220,000 OHMS 1/2WATT 5% 10%
R2,12	1200 " 1/2 " " "
R3,6,11	100,000 " 1 " " "
R4,7,10	100,000 " 1/2 " " "
R5	2200 " 1/2 " " "
R8	2200 " 1 " " "
R9	22,000 " 1 " " "
P1,2	100,000 OHMS ALLEN BRADLEY JG-1041
V1	12AY7 (R.E.)
V2	6BD6 (R.C.A.)
T1,2	PEERLESS 6620

POWER REQUIREMENTS
300V.D.C. AT 5MA.
6.3V.A.C. AT 45A.

OPERATING DATA	
GAIN	47DB
FREQUENCY RESPONSE	5 100.30-10,000 G.P.S.
MAX. INPUT SIGNAL	-25 DBM
EQUIVALENT INPUT NOISE LEVEL	-180 DBM
REF. 0 DB = .008 W. 0 DBM = .001 W.	
* CALCULATED FOR 100,000 OHM LOAD CONNECTED BETWEEN POINT ① AND GROUND.	

FIG. 42

713A APPARATUS UNIT

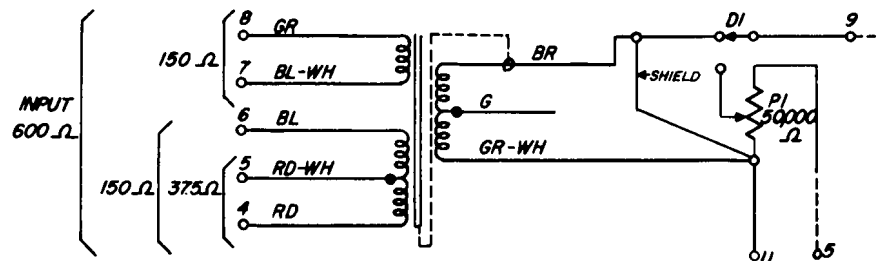


LINE INPUT CONNECTIONS

SOURCE OHMS	STRAP TERMINALS	CONNECT TO
600 Ω	6-7	4 & 8
150 Ω	—	7 & 8
150 Ω	—	4 & 6

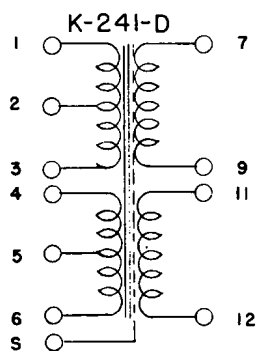
FIG. 43

713B APPARATUS UNIT



LINE INPUT CONNECTIONS

SOURCE OHMS	STRAP TERMINALS	CONNECT TO
600 Ω	6-7	4 AND 8
150 Ω	—	4 AND 6
150 Ω	—	7 AND 8
37.5 Ω	—	4 AND 5

FIG. 44

TEST VOLTAGE:
PRIMARY 500 V RMS
SECONDARY 1,000 V RMS

IMPEDANCE	CONN. TO	STRAP
30 / 50	1-6	1-5 2-6
125 / 150	1-6	1-4 3-6 (FOR C.T. STRAP 2-5)
250 / 300	1-6	2-4 3-5
500 / 600	1-6	3-4 (C.T.)
70,000 / 84,000	7-12	9-11 (C.T.)
17,500 / 21,000	7-12	7-11 9-12

COILS ARE IN SERIES AIDING CONNECTIONS WHEN 3-4, 6-7 AND 9-11 ARE STRAPPED

90 DB OF MAGNETIC SHIELDING PROVIDED BY CASE

SECONDARY WINDINGS BALANCED MAY BE USED SINGLE ENDED OR PUSH-PULL

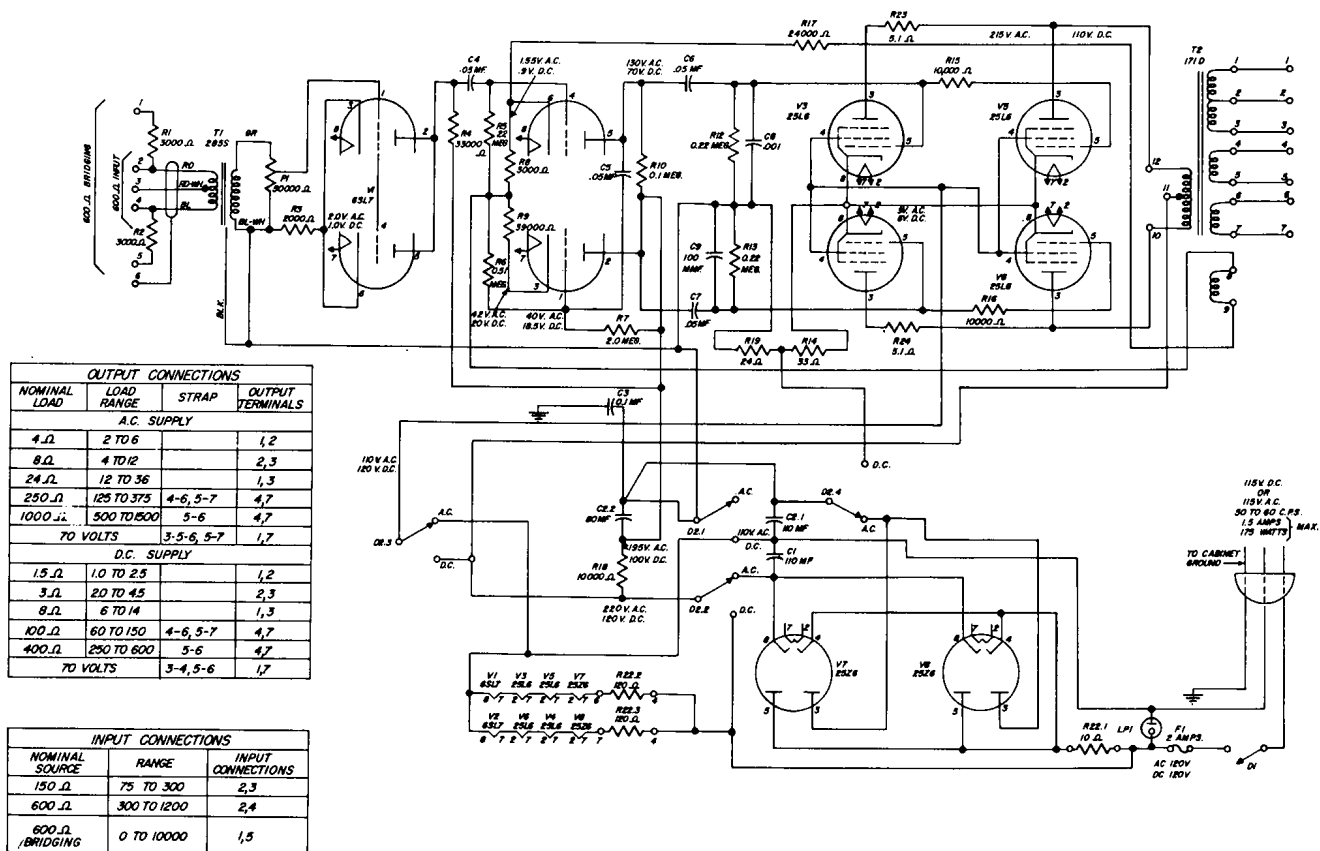
FREQUENCY RESPONSE ± 1 DB - 10 TO 30,000 CPS

MAXIMUM OPERATING LEVEL + 8 DBM

ALTEC LANSING 1550A APPARATUS UNIT

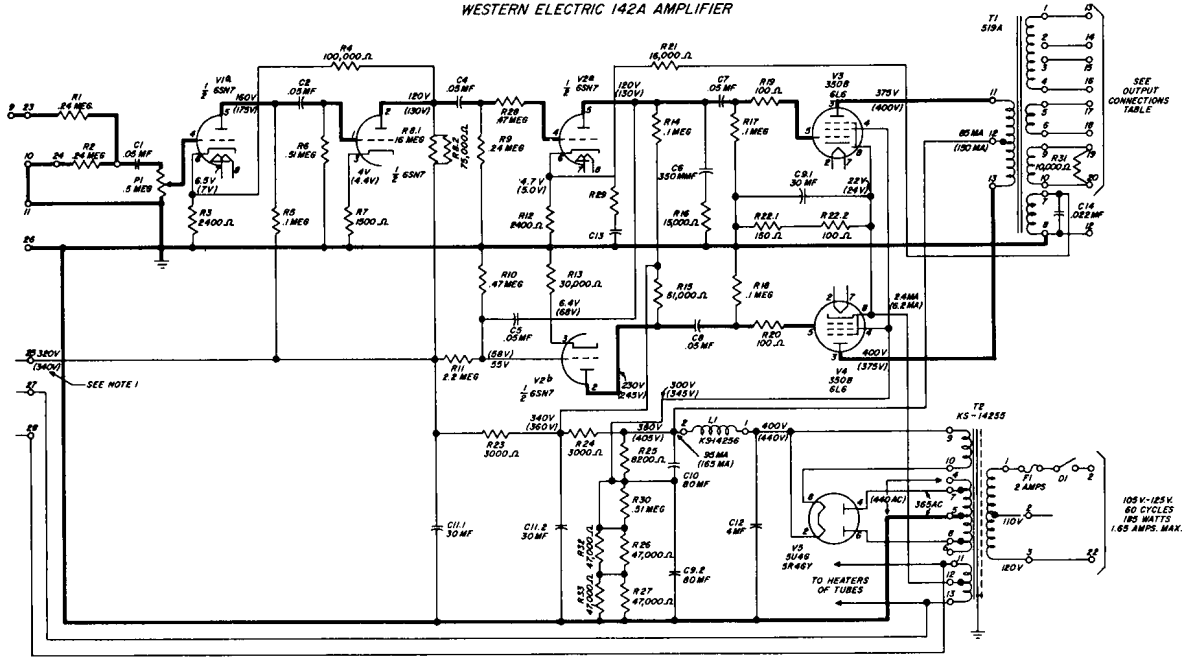
FIG. 45 (MFG. DISC.)

140A AMPLIFIER

**NOTES:**

- VOLTAGES SHALL BE MEASURED BETWEEN POINT INDICATED & B-(NOT CHASSIS). VALUES SHOWN ARE FOR 120V. LINE VOLTAGE MEASUREMENTS WITH VOLTMETER WHICH HAS RESISTANCE OF AT LEAST 20,000 OHMS PER VOLT. MEASURED VALUES MAY DEPART ±10% FROM VALUES SHOWN.

FIG. 46 (MFR. DISC.)
WESTERN ELECTRIC 142A AMPLIFIER



OUTPUT CONNECTIONS TABLE

NOMINAL LOAD IMPEDANCE	WORKING RANGE OF LOAD IMPEDANCE	STRAP TERMINALS	OUTPUT CONNECTIONS
200 Ω	150 Ω TO 300 Ω	—	19 & 20
24 Ω	18 Ω TO 36 Ω	14-15, 16-17	13 & 18
12 Ω	9 Ω TO 18 Ω	13-15, 14-16-17	15 & 18
8 Ω	6 Ω TO 12 Ω	14-15	13 & 16
4 Ω	3 Ω TO 6 Ω	—	17 & 18
2 Ω	1.5 Ω TO 3 Ω	13-15, 14-16	13 & 16
400 Ω	300 Ω TO 600 Ω	14-15, 16-17, 18-19	13 & 20

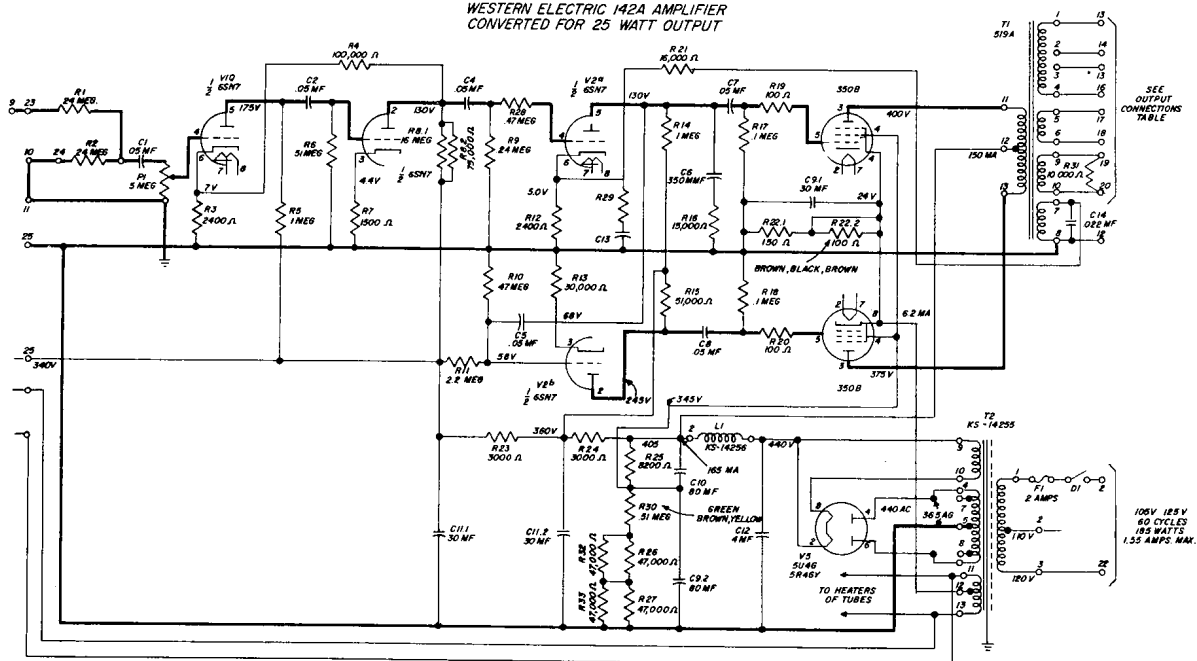
70 V. LOUDSPEAKER DISTRIBUTION LINE CONNECTIONS

POWER OUTPUT CONDITION	STRAP TERMINALS	OUTPUT CONNECTIONS
12 WATTS	14-15, 16-17, 18-19	13 & 20
25 WATTS	—	19 & 20

NOTES

1. CIRCUIT SHOWN FOR 12 WATTS POWER SUPPLY OUTPUT. THE NUMBERS IN PARENTHESES ARE THE VALUES FOR THE 25 WATT CONDITION.
2. WHEN FIG. 35 IS ADDED IT BECOMES A 142B AMPLIFIER.
3. WHEN FIG. 36 IS ADDED IT BECOMES A 142C AMPLIFIER.
4. WHEN FIG. 37 IS ADDED IT BECOMES A 142D AMPLIFIER.

FIG. 47 (MFR. DISC.)
WESTERN ELECTRIC 142A AMPLIFIER
CONVERTED FOR 25 WATT OUTPUT

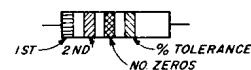
**NOTES**

1. FOR 25 WATTS OUTPUT THE FOLLOWING CHANGES ARE NECESSARY:
 - A. USE 350B TUBES.
 - B. SHORT R 22.2.
 - C. AT TRANSFORMER T2 TRANSFER LEAD FROM TERMINAL 7 TO TERMINAL 4 AND LEAD FROM TERMINAL 8 TO TERMINAL 6.
 - D. REMOVE SHORT ACROSS R30

LINE INPUT CONNECTIONS 142C & 142D		
SOURCE OHMS	STRAP TERMINALS	CONNECT TO
600 Ω	6 - 7	4 AND 8
150 Ω	4 - 7, 6 - 8	4 AND 8

AMPLIFIER	REMOVE STRAP BETWEEN TERMS.	STRAP TERMINALS
142 B	9 - 23	10 TO 11
142 C	1	10 TO 11
142 D		10 TO 11

COLOR CODE FOR FIXED RESISTORS



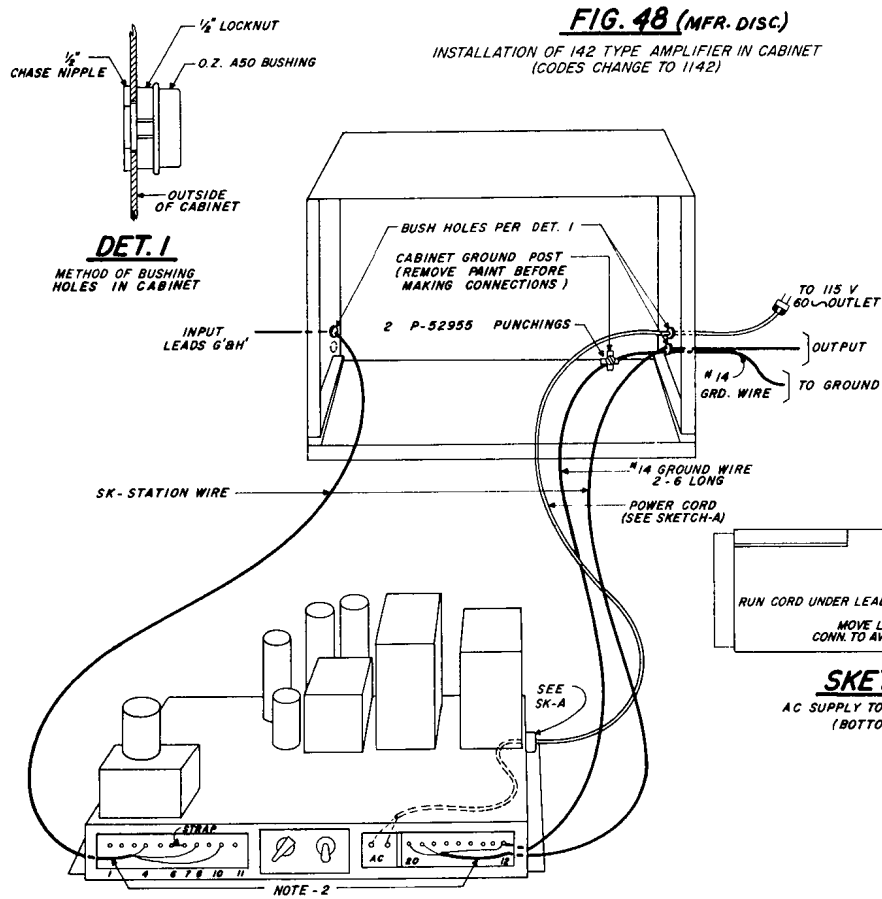
COLOR	1ST BAND	2ND BAND	3RD BAND	END BAND
BLACK	0	0	NONE	GOLD 5%
BROWN	1	1	0	SILVER 10%
RED	2	2	00	NONE 20%
ORANGE	3	3	000	
YELLOW	4	4	0000	
GREEN	5	5	00000	
BLUE	6	6	000000	
VIOLET	7	7	0000000	
GRAY	8	8	00000000	
WHITE	9	9	000000000	

OUTPUT CONNECTIONS TABLE

NOMINAL LOAD IMPEDANCE	WORKING RANGE OF LOAD IMPEDANCE	STRAP TERMINALS	OUTPUT CONNECTIONS
200 Ω	150 Ω TO 300 Ω		19 & 20
24 Ω	18 Ω TO 36 Ω	14-15, 16-17	13 & 18
12 Ω	9 Ω TO 18 Ω	13-15, 14-16-17	15 & 18
8 Ω	6 Ω TO 12 Ω	14-15	13 & 16
4 Ω	3 Ω TO 6 Ω		17 & 18
2 Ω	1.5 Ω TO 3 Ω	13-15, 14-16	13 & 16
400 Ω	300 Ω TO 600 Ω	14-15, 16-17, 18-19	13 & 20

70 V. LOUDSPEAKER DISTRIBUTION LINE CONNECTIONS

POWER OUTPUT CONDITION	STRAP TERMINALS	OUTPUT CONNECTIONS
12 WATTS	14-15, 16-17, 18-19	13 & 20
25 WATTS		19 & 20



LIST OF MATERIAL			
LINE	AMT	ITEM	NOTE
1	1	T&B 3302 CONNECTOR	
2	4	1/2" CONDUIT LOCKNUT, GALVANIZED	
3	4	0.2" A50 INSULATING BUSHING	
4	4	1/2" CHASE CONDUIT NIPPLE, GALVANIZED	
5	1	HUBBELL 7057 ARMORED CAP	
6	1	P-52955 TERMINAL PUNCHING	1
7	10 FT	KS-15143 18 GA. 2 COND. CORDAGE	
8	AS REQ'D	SK STATION WIRE (IVORY OR BROWN)	
9	AS REQ'D	#14 GROUND	
10	1	142 AMPLIFIER	
11	2	350 B VACUUM TUBE	
12	2	6SN7 6T VACUUM TUBE	
13	1	5U4G VACUUM TUBE	
14	1	KS-13625, L-3 CABINET	
15	5	LITTLEFUSE 313002 2 AMP, "SLO-BLO" FUSE	
16	1	GO-678 AMPLIFIER SHELF & BACKBOARD	
17	1	ES-528772 CORD CLAMP BRACKET	
18	1	TINNERMAN 6A CORD CLAMP	

- NOTES:**
1. P-52955 TERMINAL PUNCHING IS FURNISHED WITH CABINET.
 2. REFER TO JOB SCHEMATIC DRAWING FOR CONNECTION OF INPUT AND OUTPUT LEAD.
 3. THE CORD CLAMP & BRACKET LISTED SHALL BE INSTALLED TO HOLD THE CAP IN THE RECEPTACLE.

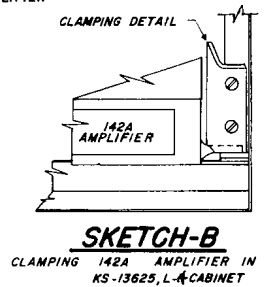
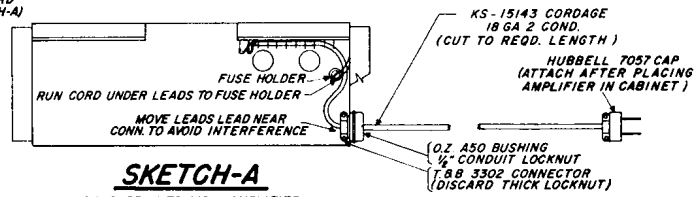


FIG. 49A

DUKANE MODEL 1A385 10 WATT AMPLIFIER

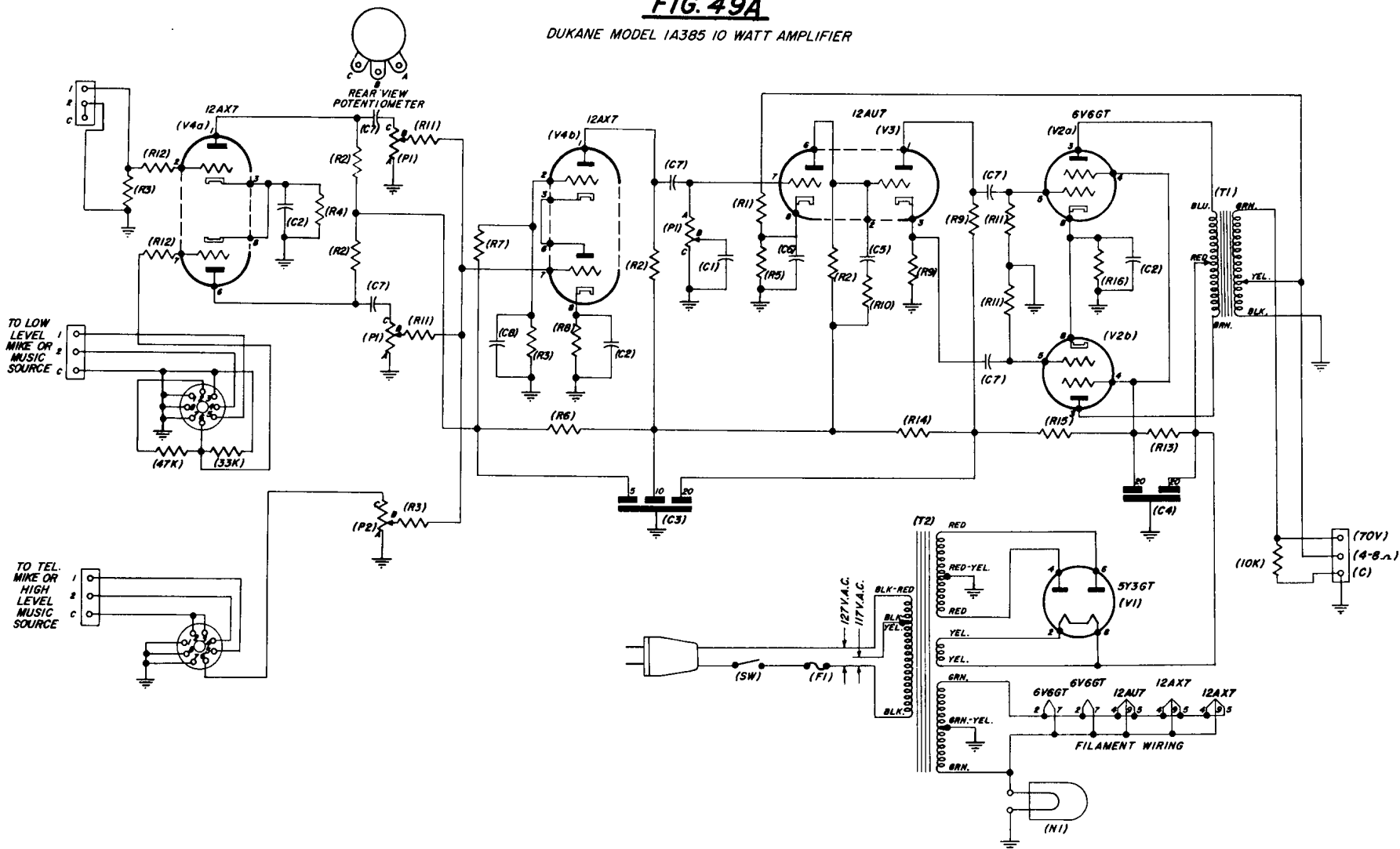


FIG. 49B

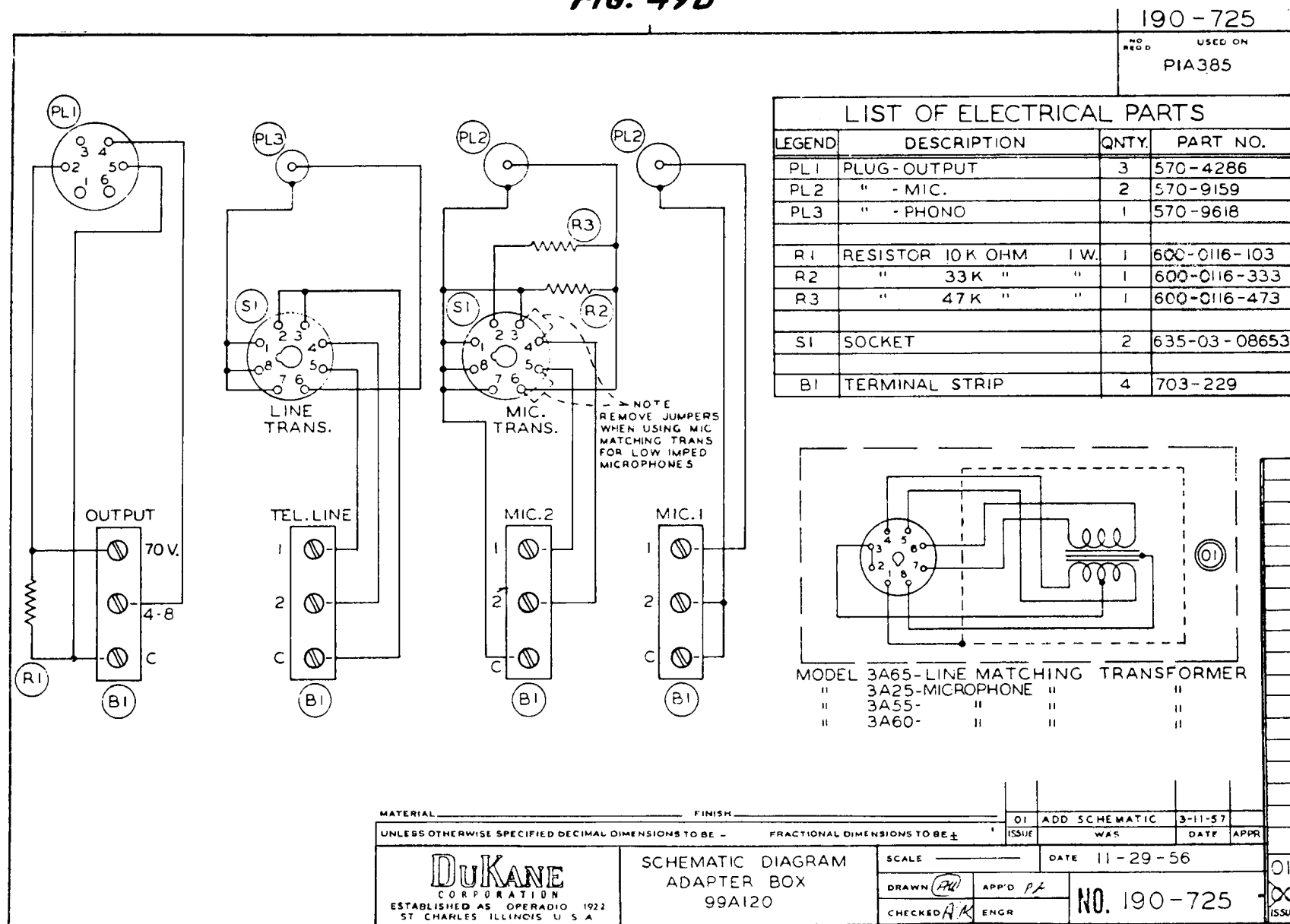


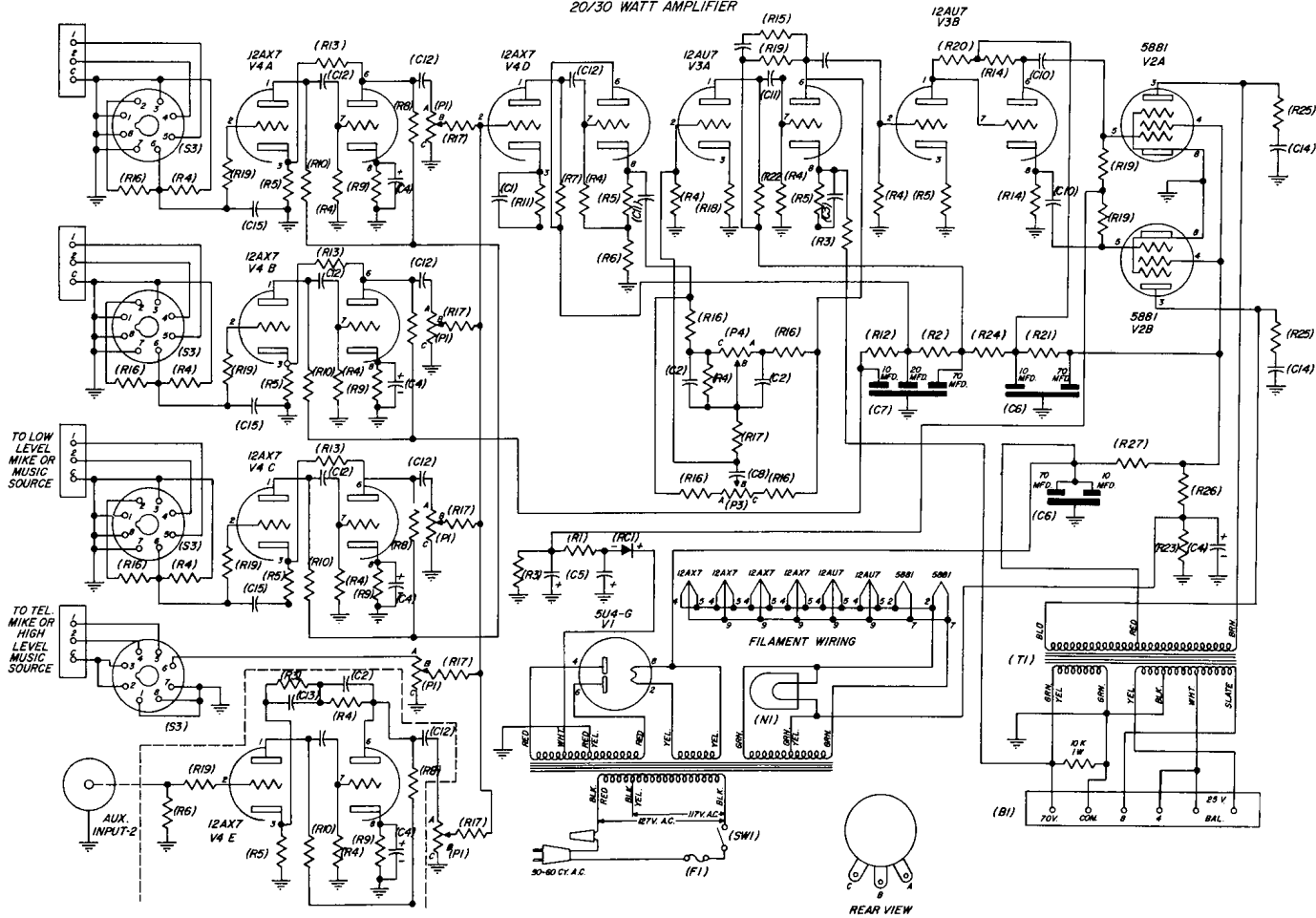
FIG. 49C**PARTS LIST AND TUBE VOLTAGES FOR PIA385 DU KANE AMPL.**

LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QTY.	PART NO.
C1	CAPACITOR .0022 MFD. 500V.	1	199-1002-222
C2	" 25 " 25V.	3	199-2001-256
C3	" 5-10-20 " "	1	199-2904
C4	" 20-20 " 500V.	1	199-2914
C5	" .00025 " 500V.	1	199-3001-251
C6	" .01 " 400V.	1	199-4025-103
C7	" .047 " 400V.	5	199-4025-473
C8	" .10 " 400V.	1	199-4025-104
V1	ELECTRON TUBE 5Y3GT	1	262-5Y3GT
V2	" 6V6GT	2	262-6V6GT
V3	" 12AU7	1	262-12AU7
V4	" 12AX7	2	262-12AX7
F1	FUSE 2 AMPERE TYPE 3AG2	1	320-835-0200
N1	LAMP PILOT MAZDA 47	1	456-1
S1	RECEPTACLE MICROPHONE	2	597-7299
S2	" AUX.	1	597-12692-01
S3	" OUTPUT	1	635-03-09651
R1	RESISTOR 6800 OHM " WATT	1	600-0080-682
R2	" 100K " " "	4	600-0080-104
R3	" 1 MEG. " " "	4	600-0080-105
R4	" 1200 " " "	1	600-0080-122
R5	" 1500 " " "	1	600-0080-152
R6	" 15K " " "	1	600-0080-153
R7	" 330K " " "	1	600-0080-334
R8	" 2700 " " "	1	600-0080-272
R9	" 33K " " "	2	600-0080-333
R10	" 4700 " " "	1	600-0080-472
R11	" 470K " " "	4	600-0080-474
R12	" 68K " " "	2	600-0080-683
R13	" 1K " 1 WATT	1	600-0116-102
R14	" 10K " 1 " "	1	600-0116-103
R15	" 4700 " 1 " "	1	600-0116-472
R16	" 200 " 5 " "	1	600-1008-201
P1	POTENTIOMETER 500K	3	601-61
P2	" 2.5 MEG	1	601-94
SW	SWITCH A.C.	1	680-192
T1	TRANSFORMER - OUTPUT	1	710-2054
T2	" - POWER	1	710-4097

TUBE VOLTAGES									
TUBE TYPE	SOCKET PIN NUMBERS								
	1	2	3	4	5	6	7	8	9
V4a 12 AX 7	161 V.D.C.		1.5 V.D.C.	6.3 V.A.C. *		161 V.D.C.		1.5 V.D.C.	6.3 V.A.C. °
V4b 12 AX 7	192 V.D.C.	152 V.D.C.	154 V.D.C.	6.3 V.A.C. *		154 V.D.C.		1.5 V.D.C.	6.3 V.A.C. °
V3 12 AU 7	210 V.D.C.	67 V.D.C.	74 V.D.C.	6.3 V.A.C. *		67 V.D.C.		2.3 V.D.C.	6.3 V.A.C. °
V2a 6V6GT		6.3 V.A.C. *	310 V.D.C.	305 V.D.C.			6.3 V.A.C. °	17 V.D.C.	
V2b 6V6GT		6.3 V.A.C. *	310 V.D.C.	305 V.D.C.			6.3 V.A.C. °	17 V.D.C.	
V1 5Y3GT		320 V.D.C.		305 V.A.C.		305 V.A.C.		320 V.D.C.	
USE A 10 MEGOHM INPUT V.T.V.M. FOR VOLTAGE MEASUREMENTS TO GROUND.									
NOTE: ALL FILAMENT VOLTAGES MEASURED BETWEEN PINS MARKED ° AND *									

FIG. 50A

DUKANE MODEL PIA460
20/30 WATT AMPLIFIER



NOTES:

1. PARTS SHOWN WITHIN DOTTED AREA ARE NOT FURNISHED WITH AMPLIFIER.
2. AUX. INPUT MAY BE WIRED FOR AN ADDITIONAL PHONO, MICROPHONE OR RELUCTANCE INPUT.
3. CIRCUIT SHOWN WITHIN DOTTED AREA FOR RELUCTANCE TYPE PICKUP.

FIG. 50B

190-726

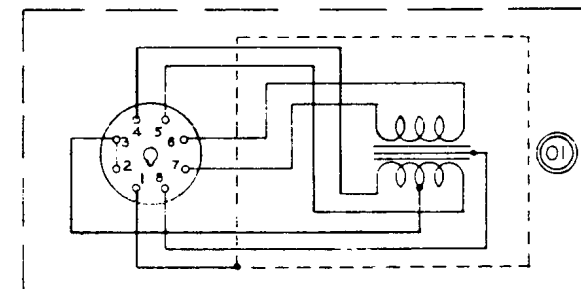
NO.
REG'D

USED ON

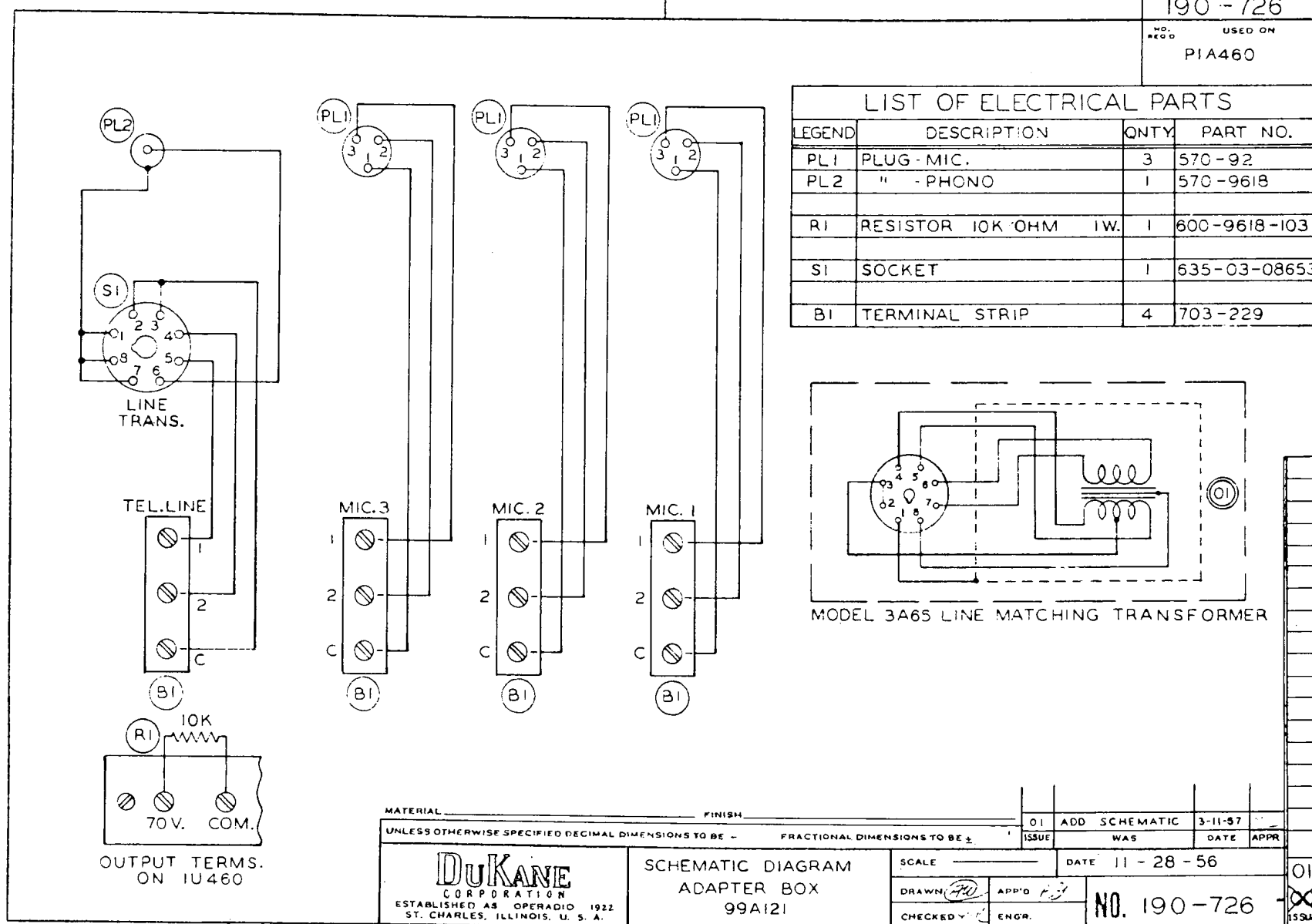
PIA460

LIST OF ELECTRICAL PARTS

LEGEND	DESCRIPTION	QNTY	PART NO.
PL1	PLUG - MIC.	3	570-92
PL2	" - PHONO	1	570-9618
R1	RESISTOR 10K OHM 1W.	1	600-9618-103
S1	SOCKET	1	635-03-08653
BI	TERMINAL STRIP	4	703-229



MODEL 3A65 LINE MATCHING TRANSFORMER

OUTPUT TERMS.
ON IU460

MATERIAL _____ FINISH _____

UNLESS OTHERWISE SPECIFIED DECIMAL DIMENSIONS TO BE -

FRACTIONAL DIMENSIONS TO BE ±

01

ADD SCHEMATIC

3-11-57

ISSUE

WAS

DATE

APPR

DuKANE
CORPORATION
ESTABLISHED AS OPERADIO 1922
ST. CHARLES, ILLINOIS, U. S. A.

SCHEMATIC DIAGRAM
ADAPTER BOX
99A121

SCALE _____

DATE 11-28-56

DRAWN *FW*APP'D *FW*

NO. 190-726

CHECKED *FW*

ENGR.

01

ISSUE

FIG. 50C

PARTS LIST AND TUBE VOLTAGES FOR
DUKANE MODEL PIA460 20/30 WATT
AMPLIFIER

LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QNTY.	PART NO.
C1	CAPACITOR .001 MFD. 500V.	1	199-1002-102
C2	CAPACITOR .0047 MFD. 500V.	2	199-1003-472
C3	CAPACITOR .0068 MFD. 500V.	1	199-1003-682
C4	CAPACITOR .25 MFD. 25 V.	4	199-2001-256
C5	CAPACITOR .20 MFD. 150V.	2	199-2016-206
C6	CAPACITOR .20-20 MFD. 500V.	2	199-2914
C7	CAPACITOR .70-20-10 MFD. 350V.	1	199-2933
C8	CAPACITOR .0001 MFD. 500V.	1	199-3001-101
C9	CAPACITOR .00035 MFD. 500V.	1	199-3001-351
C10	CAPACITOR .5 MFD. 400V.	3	199-4022-504
C11	CAPACITOR .25 MFD. 400V.	2	199-4022-254
C12	CAPACITOR .047 MFD. 400V.	7	199-4025-473
C13	CAPACITOR .0005 MFD. 400V.		199-4025-501
C14	CAPACITOR .003 MFD. 1600V.	2	199-4060-302
C15	CAPACITOR .00005 MFD. 500V.	3	199-3001-500
V1	VACUUM TUBE 5U46	1	262-5U46
V2	VACUUM TUBE 5881	2	262-5881
V3	VACUUM TUBE 12AU7	2	262-12AU7
V4	VACUUM TUBE 12AX7	4	262-12AX7
F1	FUSE 3AMP. TYPE 3AG	1	320-835-0300
N1	LAMP-PILOT MAZDA #47	1	456-1
RC1	RECTIFIER TYPE 4Y1L	1	595-21
S1	RECEPTACLE-MICROPHONE	3	597-7219
S2	RECEPTACLE- PHONO	2	597-1269-2
S3	RECEPTACLE	3	635-03-08653
R1	RESISTOR 1000 OHM. 1/2 W.	1	600-0080-102
R2	RESISTOR 10K OHM. 1/2 W.	1	600-0080-103
R3	RESISTOR 100K OHM. 1/2 W.	2	600-0080-104
R4	RESISTOR 1MEG. OHM. 1/2 W.	11	600-0080-105
R5	RESISTOR 1500 OHM. 1/2 W.	6	600-0080-152
R6	RESISTOR 15K OHM. 1/2 W.	1	600-0080-153
R7	RESISTOR 150K OHM. 1/2 W.	1	600-0080-154
R8	RESISTOR 180K OHM. 1/2 W.	3	600-0080-184
R9	RESISTOR 2200 OHM. 1/2 W.	3	600-0080-222
R10	RESISTOR 220K OHM. 1/2 W.	3	600-0080-224
R11	RESISTOR 2700 OHM. 1/2 W.	1	600-0080-272
R12	RESISTOR 27K OHM. 1/2 W.	1	600-0080-273
R13	RESISTOR 270K OHM. 1/2 W.	3	600-0080-274
R14	RESISTOR 33K OHM. 1/2 W.	2	600-0080-333
R15	RESISTOR 4700 OHM. 1/2 W.	1	600-0080-472
R16	RESISTOR 47K OHM. 1/2 W.	7	600-0080-473
R17	RESISTOR 470K OHM. 1/2 W.	6	600-0080-474
R18	RESISTOR 560 OHM. 1/2 W.	1	600-0080-561
R19	RESISTOR 68K OHM. 1/2 W.	6	600-0080-683
R20	RESISTOR 100K OHM. 1 W.	1	600-0116-104
R21	RESISTOR 2700 OHM. 1 W.	1	600-0116-272
R22	RESISTOR 33K OHM. 1 W.	1	600-0116-333
R23	RESISTOR 470 OHM. 1 W.	1	600-0116-471
R24	RESISTOR 10K OHM. 2 W.	1	600-0153-103
R25	RESISTOR 1000 OHM. 10 W.	2	600-1012-102
R26	RESISTOR 10K OHM. 25 W.	1	600-1014-103
R27	RESISTOR 2000 OHM. 25 W.	1	600-1014-202

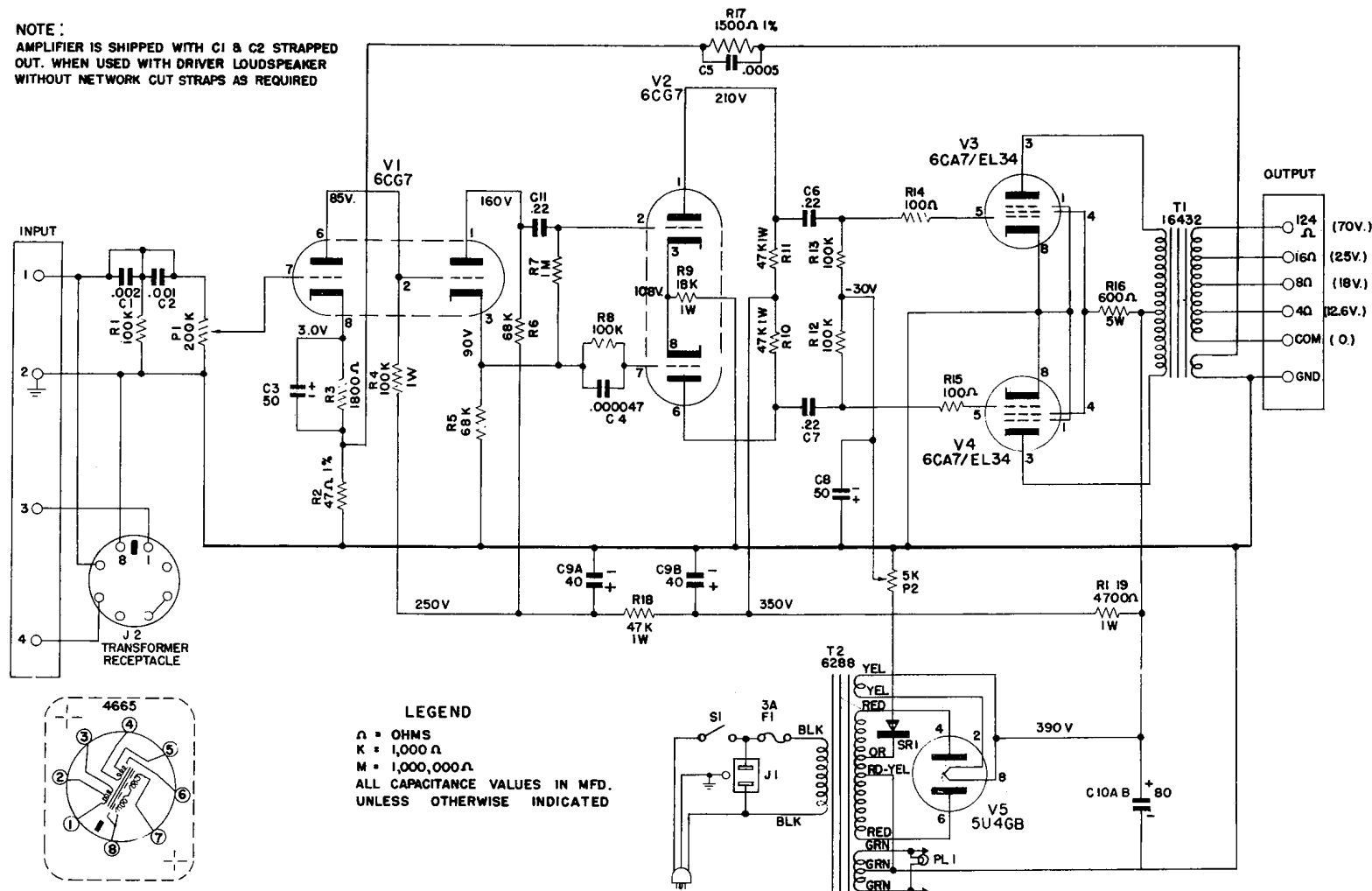
LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QNTY.	PART NO.
P1	POTENTIOMETER 500K	4	601-61
P2	POTENTIOMETER 2.5 MEG.	1	601-94
P3	POTENTIOMETER 1 MEG.	1	601-101
P4	POTENTIOMETER 2.5 MEG.	1	601-102
SW1	SWITCH S.P.S.T.	1	680-6615-01
B1	TERMINAL STRIP	1	703-219
T1	TRANSFORMER-OUTPUT	1	710-2062
T2	TRANSFORMER-POWER	1	710-4103

TUBE VOLTAGES									
TUBE TYPE	SOCKET PIN NUMBERS								
	1	2	3	4	5	6	7	8	9
V4 A&C 12AX7	75 V.D.C.		0.8 V.D.C.	6.3 V.A.C. °	6.3 V.A.C. °	55 V.D.C.	-0.3 V.D.C.	0.5 V.D.C.	6.3 V.A.C. X
V4 D 12AX7	125 V.D.C.			6.3 V.A.C. °	6.3 V.A.C. °	175 V.D.C.			6.3 V.A.C. X
V3 A 12AU7	90 V.D.C.			6.3 V.A.C. °	6.3 V.A.C. °	75 V.D.C.			6.3 V.A.C. X
V3 B 12AU7	80 V.D.C.			6.3 V.A.C. °	6.3 V.A.C. °	210 V.D.C.			6.3 V.A.C. X
V2 A-B 5881		6.3 V.A.C. °	435 V.D.C.	340 V.D.C.	-39 V.D.C.	-39 V.D.C.	6.3 V.A.C. X		
V1 5U4-6		5AC-440V.D.C.		370 V.A.C.		370 V.A.C.		5 V.A.C.	
USE A 10 MEGOHM INPUT V.T.V.M. FOR VOLTAGE MEASUREMENTS TO GROUND									
NOTE: ALL FILAMENT VOLTAGES MEASURED BETWEEN PINS MARKED O AND X									

FIG. 51

NOTE :

AMPLIFIER IS SHIPPED WITH C1 & C2 STRAPPED OUT. WHEN USED WITH DRIVER LOUDSPEAKER WITHOUT NETWORK CUT STRAPS AS REQUIRED



LEGEND

Ω = OHMS
K = 1,000 Ω
M = 1,000,000 Ω
ALL CAPACITANCE VALUES IN MFD.
UNLESS OTHERWISE INDICATED

4665 TRANSFORMER IMPEDANCES

OHMS	CONNECT TO	STRAP J2
30/50	1-6	1-5, 2-6
125/150	1-6	1-4, 3-6 (CT IS 2-5)
250/300	1-6	2-4, 3-5
500/600	1-6	3-4

ALTEC LANSING
1568 A AMPLIFIER

FIRST MADE FOR

TOLERANCES EXCEPT AS NOTED: FRACT. & 1/64" DEC. & .008" HOLE SIZES 0 TO 1/32" ± .001 OVER 1/32" & .008 ANGULAR ± 1/32"

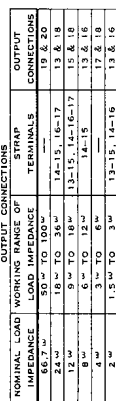
1568	APPROV	DATE	CHANGE
1	✓	6-65	

ALTEC
ANAHEIM, CALIFORNIA

1568 A AMPLIFIER
SCHEMATIC

BY G.J.S. 6344

WF 143A AMPLIFIER

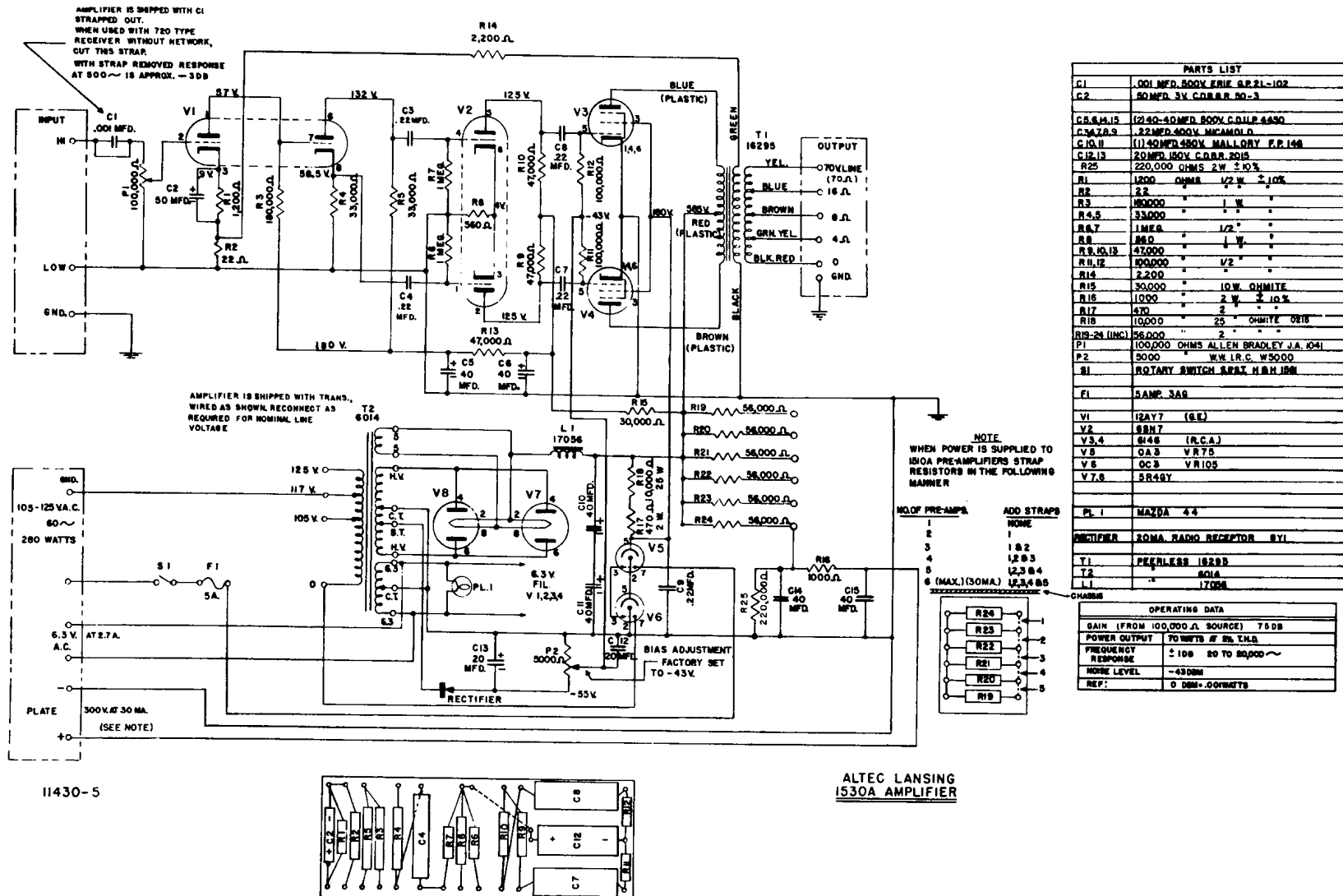


DISTRIBUTION LINE CONNECTIONS		
POWER OUTPUT CONDITION	STRAP TERMINALS	OUTPUT CONNECTIONS
50 WATTS	18-19	17 & 20
75 WATTS (SEE FIG. 1)	—	19 & 20

TE: 1. CIRCUIT SHOWN CONNECTED FOR USE WITH 350R TUBES

2. TO USE 6L6 TUBES (50 WATTS POWER OUTPUT) THE FOLLOWING CHANGES ARE NECESSARY:
 - A. SHORT CIRCUIT R34
 - B. REMOVE STRAPS BETWEEN TERMINALS 3 AND 4 ON SOCKET V8 AND V9 AND ADD STRAPS BETWEEN TERMINALS 6 AND 7 ON SOCKET V8 AND V9
 - C. RATED 75 WATTS FOR PROGRAM SERVICE ONLY. MAXIMUM R.M.S. POWER OUTPUT RATING 75 WATTS ON $\frac{1}{2}$ HOUR ON, $1\frac{1}{2}$ HOUR OFF (SEE TEXT)

FIG. 53



SECTION C70.900.03

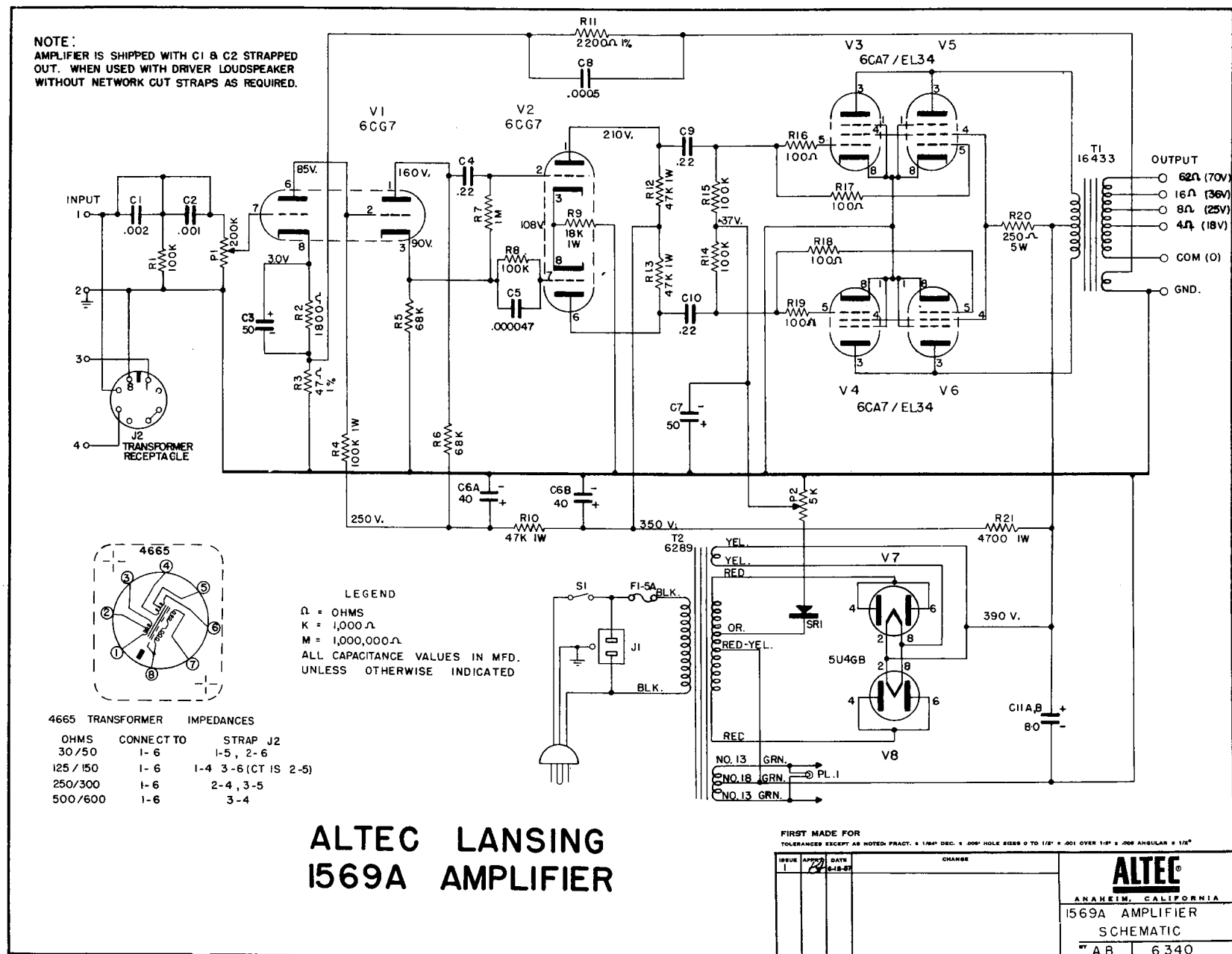


FIG. 55

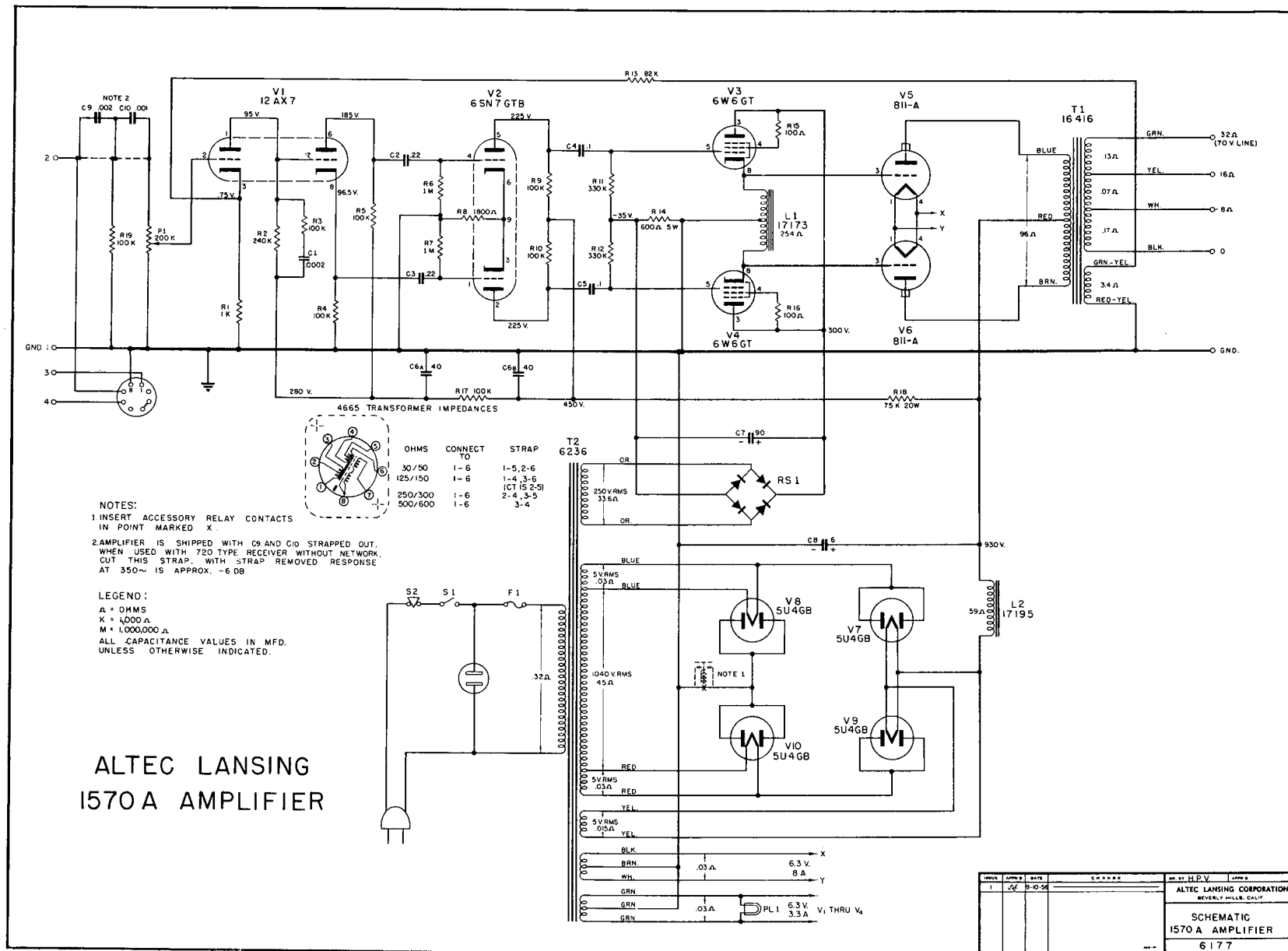


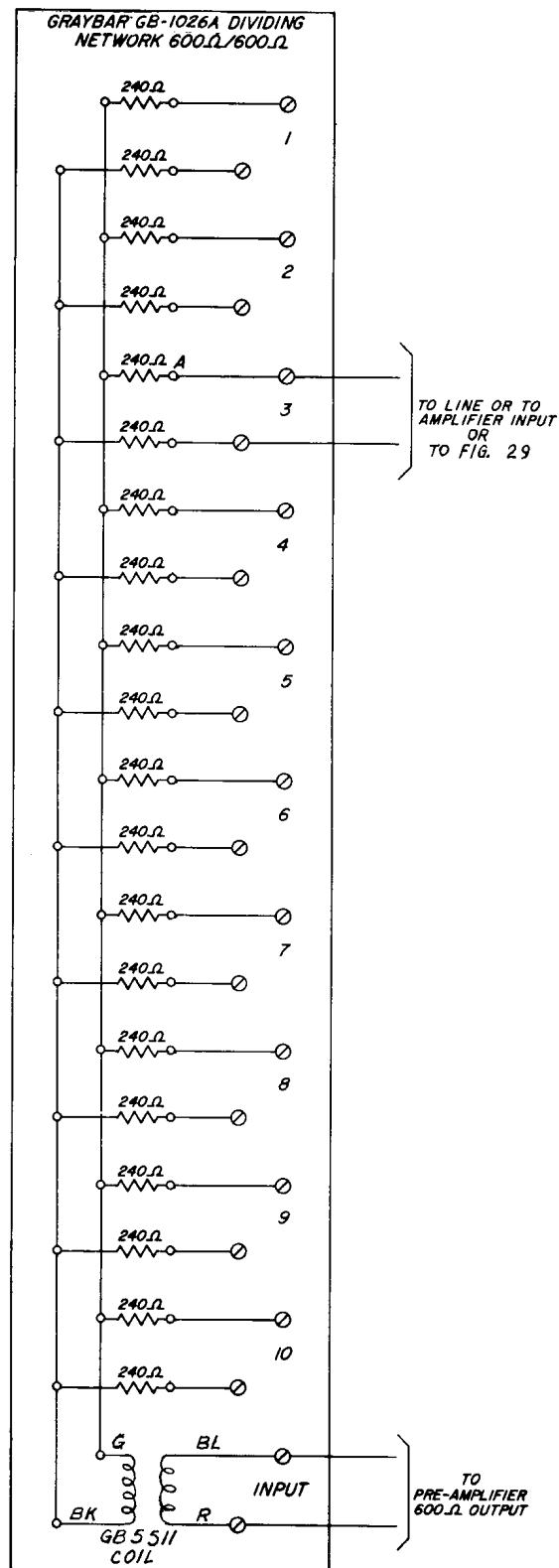
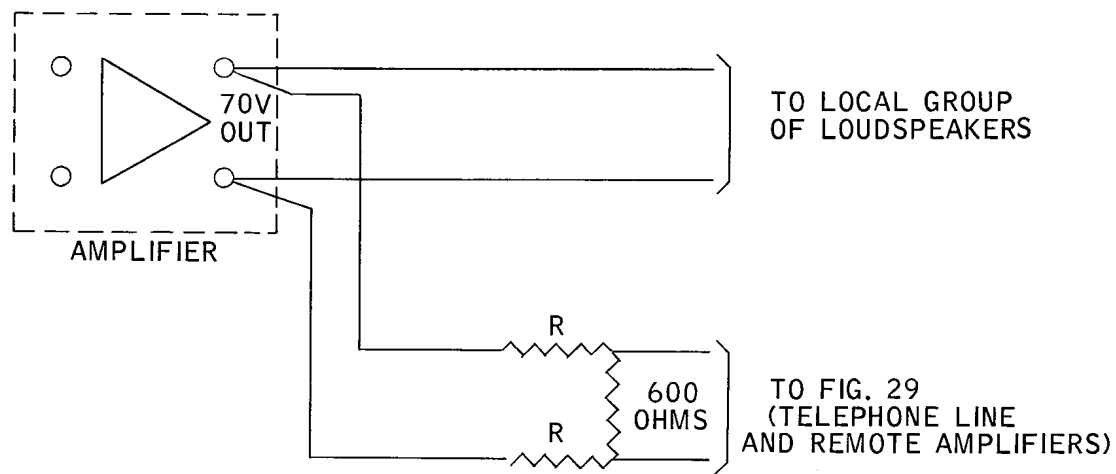
FIG. 56AGRAYBAR GB-1026A DIVIDING NETWORK 600 Ω /600 Ω 

FIG. 56 B

LINE-LEVEL FROM 70 VOLT OUTPUT



DB	R
15	1400
20	2700
25	5K
31	10K
34	15K
37	20K
41	33K

THE SHUNT RESISTOR IS ALWAYS 600 OHMS.

FIG. 57
K0602S
(MFR. DISC)

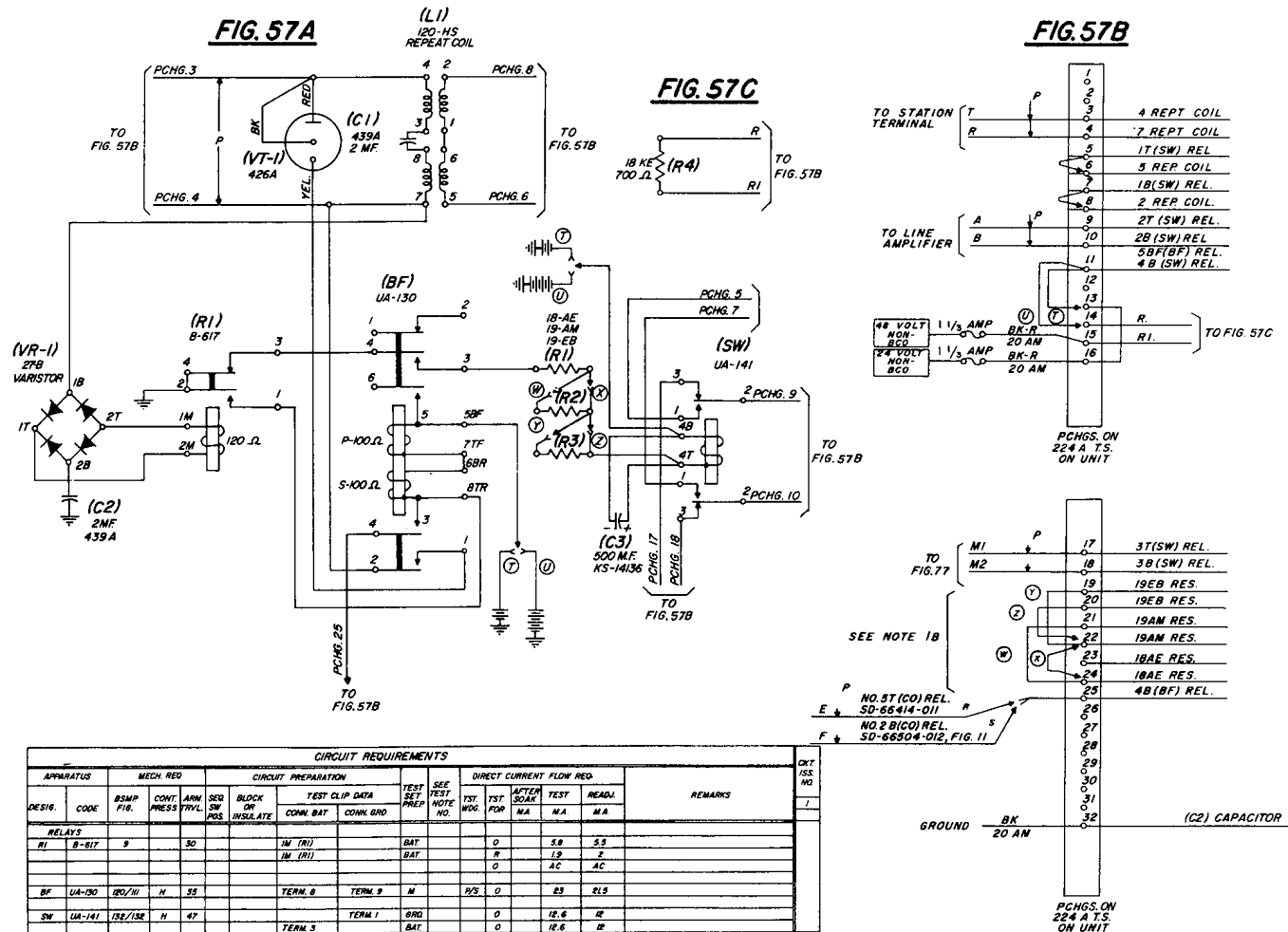
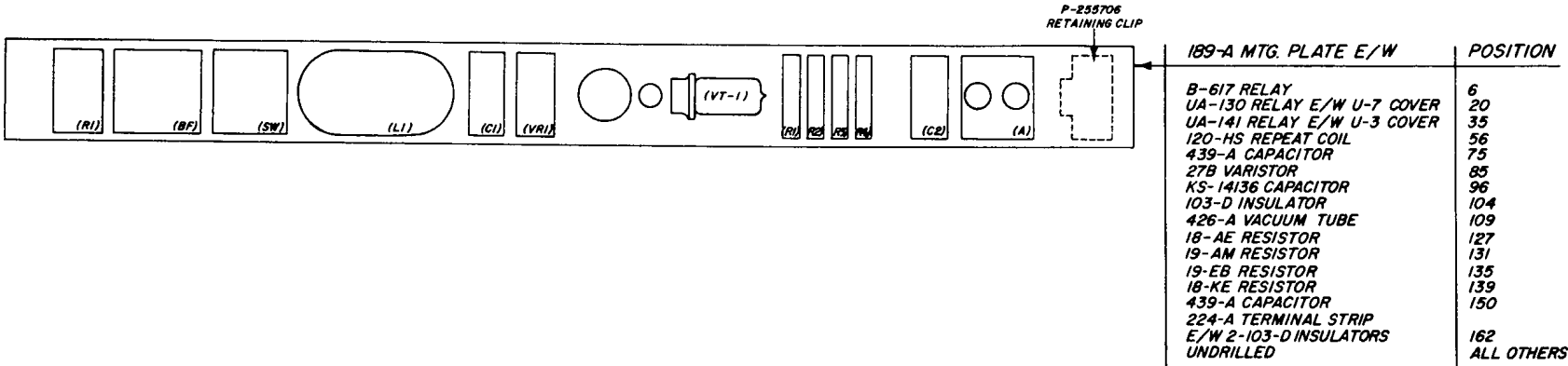


FIG. 58 (MFR. DISC.)
E096 - MOUNTING PLATE



ENGINEERING NOTES:

51. WHEN UNITS ARE MOUNTED ON FRAMES DRILLED FOR 1 3/4" MOUNTING PLATES, ADAPTER BARS PER ED-92243-01 WILL BE NECESSARY.
52. PROVIDE ONE P-255706 PLASTIC RETAINING CLIP WITH EACH MOUNTING PLATE HAVING A TERMINAL STRIP.
53. FOR WIRING DIAGRAM SEE FIG. 63.

MANUFACTURING NOTES:

1. THESE UNITS SHALL BE SURFACE WIRED.
2. DESIGNATIONS IN () SHALL BE STAMPED IN ACCORDANCE WITH JOB REQUIREMENTS.

FIG. 59 DIAL SELECTIVE PAGING APPLIQUE UNIT

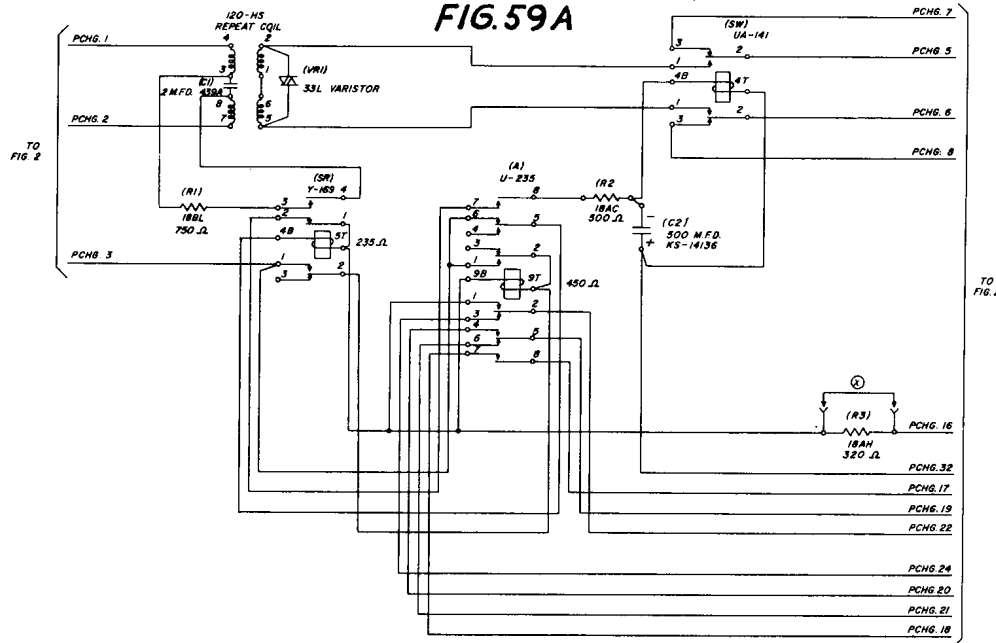


FIG. 59 B

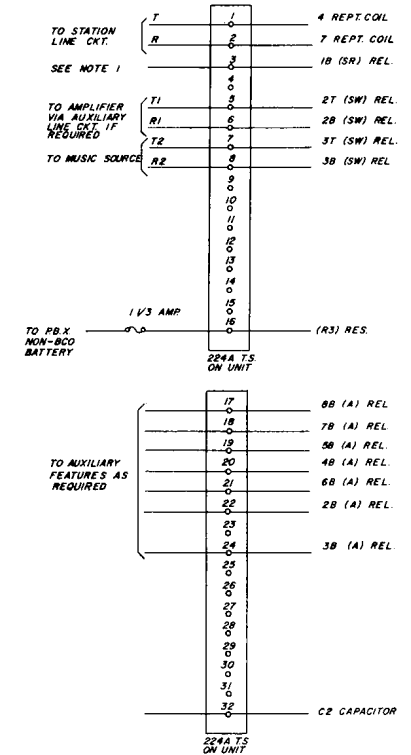


FIG. 59 C

CIRCUIT REQUIREMENTS										JSS NO.
APPARATUS	MECH. REQ.	CIRCUIT PREPARATIONS	TEST SET	SEE DIRECT CURRENT FLOW REQ.	TEST SET	TEST SET	TEST SET	TEST SET	TEST SET	REMARKS
DESIG. CODE	BSMP FIG.	CONTAINERS	SW. BLOCK	TEST CLIP DATA	SET NOTE	TEST NOTE	TEST NOTE	TEST NOTE	TEST NOTE	
RELAYS				CONN. BAT. CONN. GRD.	PREP. NG.	TEST NG.	TEST NG.	TEST NG.	TEST NG.	
SW. 141-141	132/132	N	47	48	GRD.	0	12.6	12		
A U-235	118/118	50		9T	GRD.	0	24.5	23.5		
SR Y-169	116/116	SPL. 41		48		0	34	44.5	42	
						N	3.6	3.3		
						R	1.9	2.0		
TEST NOTES:										
Y-169 RELAY - MIN. TENSION 17, 28 SPRINGS - READJ. 10 GRAMS, TEST 8 GRAMS.										

NOTES:

1. CONNECT PUNCHING 3 OF THE 224A TS TO 5T (CO) RELAY OF SD-66414-011 OR TO 1T (CO) RELAY OF SD-66414-011 OR TO 2T (CO) RELAY OF SD-66414-011 OR TO 2B (CO) RELAY OF SD-66504-002, FIG. 11.

2. USE X OPTION IF PB X BATTERY IS 24 VOLTS. OMIT X OPTION IF PB X BATTERY IS 48 VOLTS.

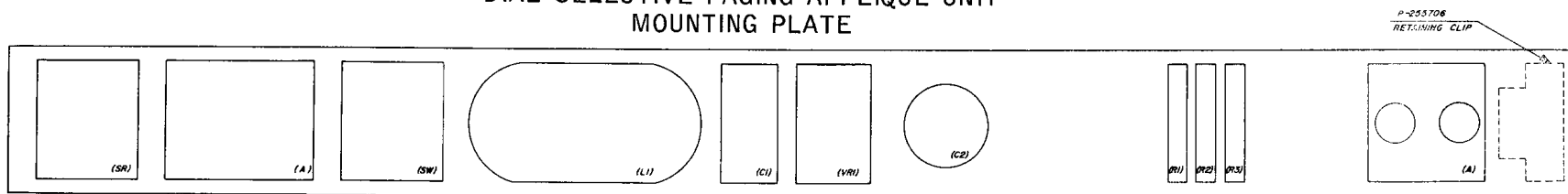
ASSOCIATED DRAWING CHART	
CE-25006-010	EQUIPMENT DWG
CT-25006-0103	T WIRING

REPLACES DWG. NO-6025

THE PACIFIC TEL. & TEL. CO. OFFICE OF CHIEF ENGINEER PORTLAND		SIZE 6S
STATION SYSTEMS 701A, 711A, 740E, 740AX & 755A DIAL PBX. DIAL SELECTION PAGING APPLIQUE UNIT		RATING
DRAFTSMAN <i>[Signature]</i>	ENGINEER <i>[Signature]</i>	SCALE
CHECKER <i>[Signature]</i>	APPROVED <i>[Signature]</i>	CS-25006-0102

FIG. 60

DIAL SELECTIVE PAGING APPLIQUE UNIT MOUNTING PLATE

**NOTES:**

1. THESE UNITS SHALL BE SURFACE WIRED.
2. DESIGNATIONS IN () SHALL BE STAMPED IN ACCORDANCE WITH JOB REQUIREMENTS.

189-A MTG PLATE E/W	POSITION	UNDRILLED
Y-189 RELAY E/W U-3 COVER	7	
U-238 RELAY E/W U-7 COVER	23	
UA-141 RELAY E/W U-3 COVER	39	
120-MS REPEAT COIL	60	
439-A CAPACITOR	80	
33L VARISTOR	90	
KS-14136 CAPACITOR	101	
18BL RESISTOR	127	
18AC RESISTOR	131	
18AH RESISTOR	135	
224-A TERMINAL STRIP E/W 2-105-D INSULATORS	162	
UNDRILLED	ALL OTHERS	

ENGINEERING NOTES

1. WHEN UNITS ARE MOUNTED ON FRAMES DRILLED FOR 1 3/4" MOUNTING PLATES, ADAPTER BARS PER ED-98243-01 WILL BE NECESSARY.

2. PROVIDE ONE P-255706 PLASTIC RETAINING CLIP WITH EACH MOUNTING PLATE HAVING A TERMINAL STRIP

ASSOCIATED DRAWING CHART

CS-25006-0102	SD WIRING DIAGRAM
CT-25006-0103	T WIRING DWG.

REPLACES DWG. ED-96

THE PACIFIC TEL. & TEL. CO.		SIZE 6S
OFFICE OF CHIEF ENGINEER PORTLAND		RATING
STATION SYSTEMS 701A, 71A, 740E, 740AX & 755A DIAL PBX DIAL SELECTION PAGING APPLIQUE UNIT		
DRAFTSMAN <i>W. J. Sullivan</i>	ENGINEER <i>R. E. Stephenson</i>	SCALE
CHECKER <i>C. J. Ramey</i>	APPROVED <i>C. J. Ramey</i>	CE-25006-0101

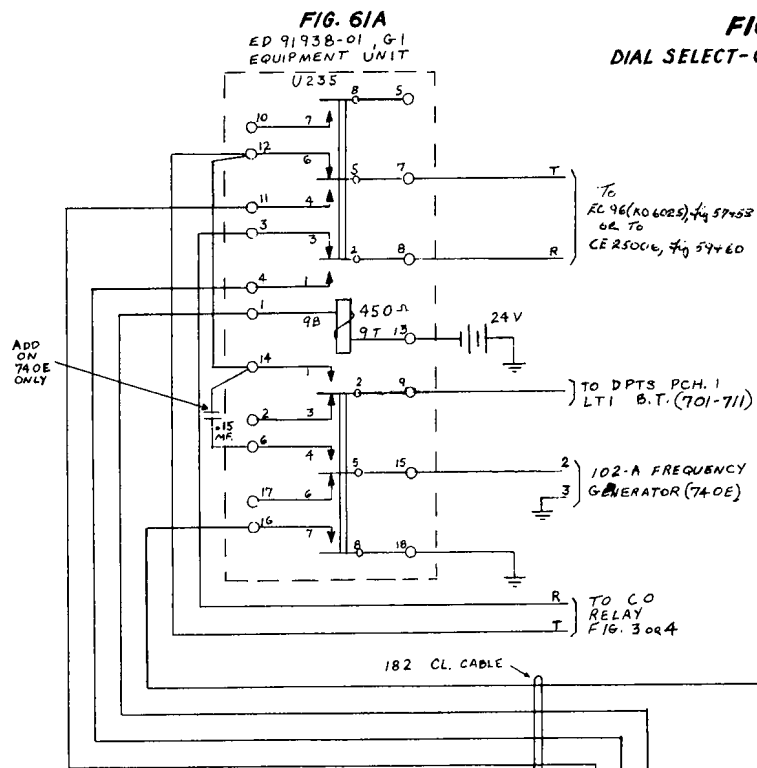
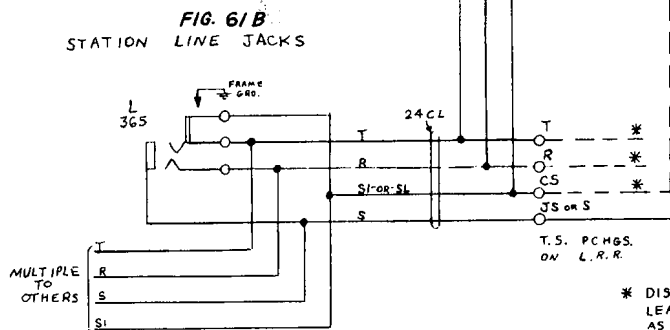


FIG. 61
DIAL SELECT-OPERATOR PRIORITY



* DISCONNECT DOTTED
LEADS & REROUTE SI or SL
AS SHOWN

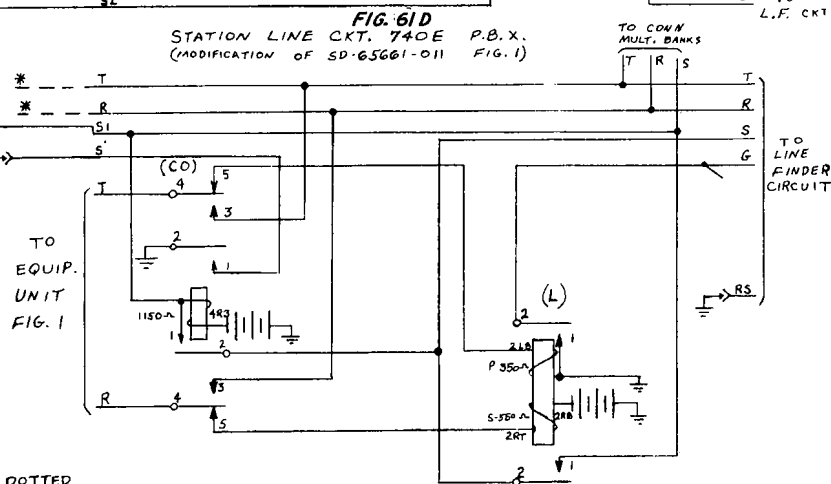
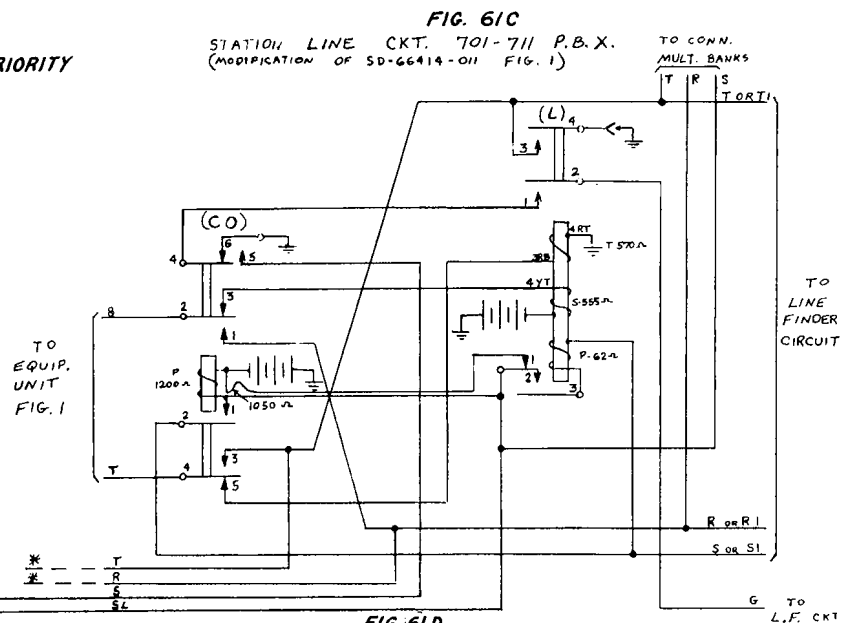


FIG.62

GB 3302 , AMPLIFIER SHELF AND BACKBOARD

NOTES:

1. SHELF ASSEMBLY TO BE MADE OF 3/4" INTERIOR PLYWOOD.
2. ALL JOINTS ARE TO BE SCREWED & GLUED
3. FINISH WITH LIGHT GREY ENAMEL.
4. SHELF ASSEMBLY TO BE STAMPED "DWG.KCO-380" WITH BLACK LETTERS OF NOT LESS THAN 1/2" HEIGHT IN THE CENTER OF THE AREA DESIGNATED.
5. HOLES TO EXTEND THROUGH PRINT SHELF.

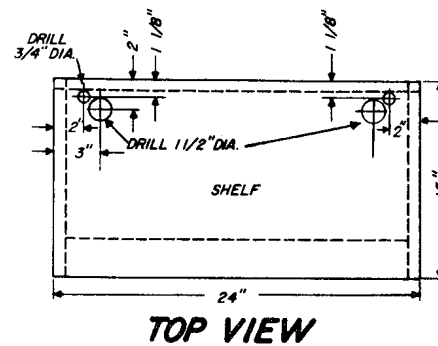
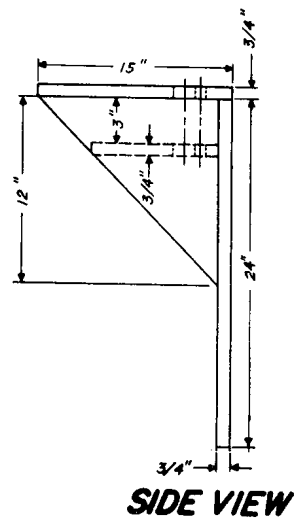
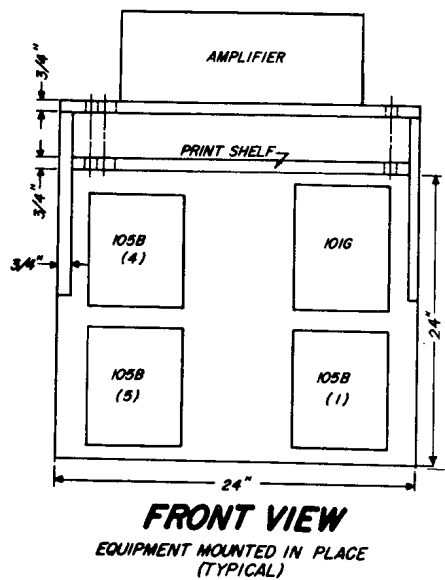


FIG. 63

LINE MATCHING TRANSFORMER KS-12048

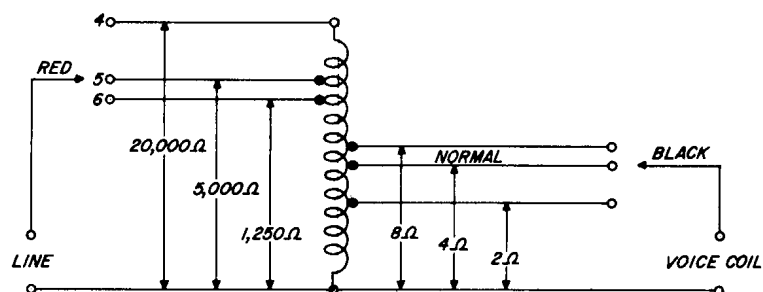
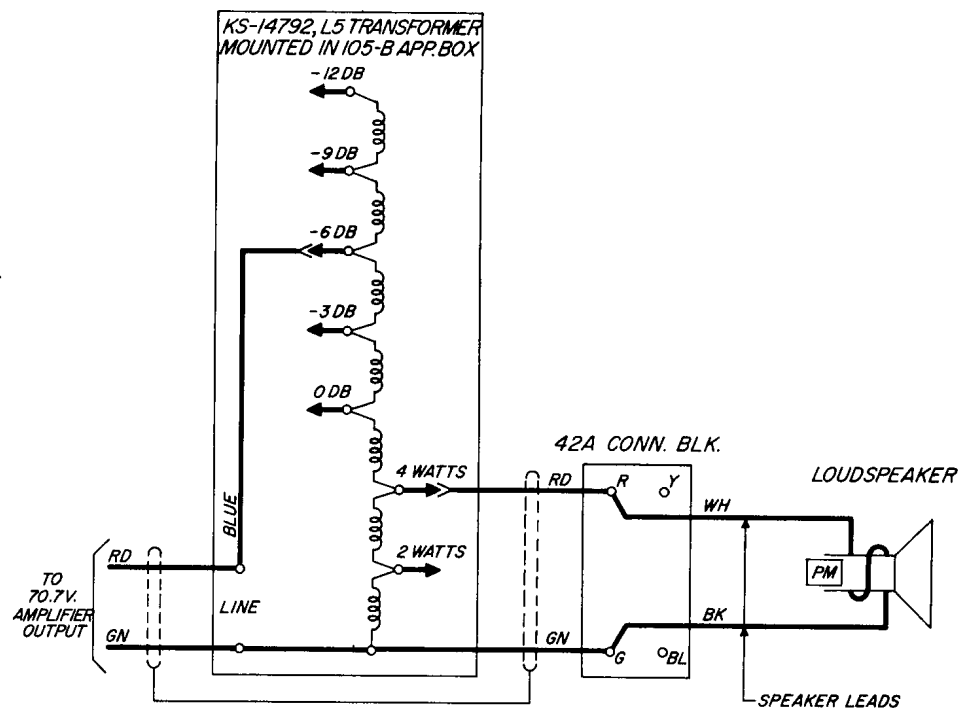


FIG. 64

KS-14792, L5 LINE MATCHING TRANSFORMER FOR INDOOR USE



VOLUME ADJUSTMENT CHART

*DESIRED VOLUME	PRIMARY TAP	SECONDARY TAP	NOMINAL WATTAGE
4 N	0	4 WATTS	4
2 N	-3 DB	4 WATTS	2
N	-6 DB	4 WATTS	1
1/2 N	-9 DB	4 WATTS	1/2
1/4 N	-12 DB	4 WATTS	1/4
1/8 N	-12 DB	2 WATTS	1/8

* N= NORMAL LOUDNESS OF LOUDSPEAKER

FIG. 65
KS-14417 LINE TRANSFORMER

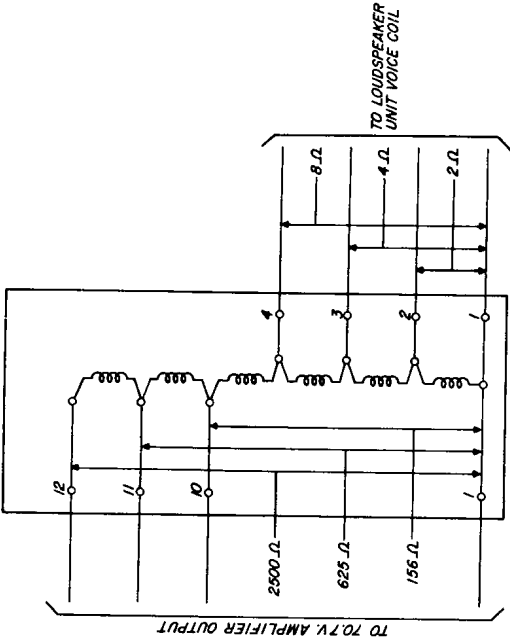
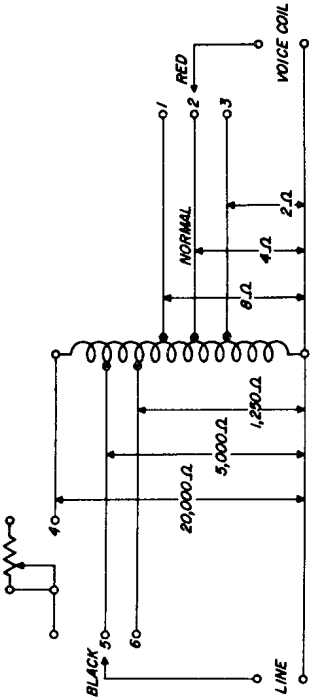


FIG. 66
TE-6478 LINE TRANSFORMER
(PART OF S1)



CONNECTION CHART		
POWER DELIVERED TO 8 Ω LOUDSPEAKER IN WATTS	CONNECT LINE TO TERMINALS	CONNECT LOUDSPEAKER TO TERMINALS
1	1-12	1-3
2	1-12	1-4
4	1-11	1-3
8	1-11	1-4
16	1-10	1-3
32	1-10	1-4

FIG. 67

GB-3609 TRANSFORMER ASSEMBLY
(PART OF S3 & S5)

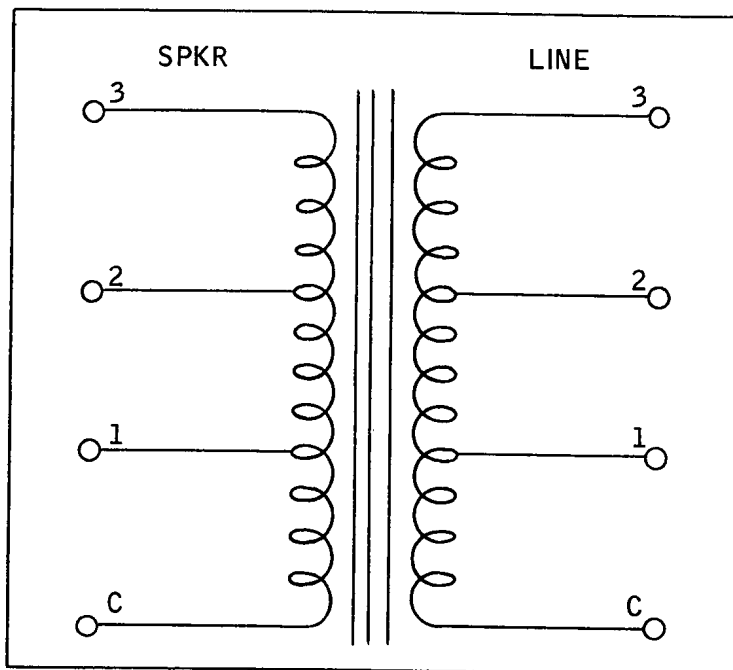


FIG. 68

GB-3608 TRANSFORMER ASSEMBLY

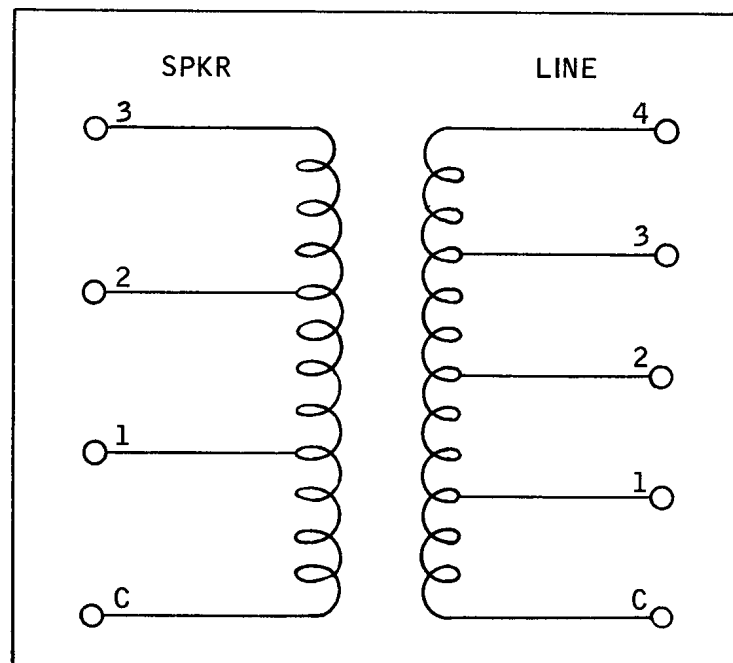


FIG. 69

DUKANE 710-3060 TRANSFORMER AND 5A105 LOUDSPEAKER

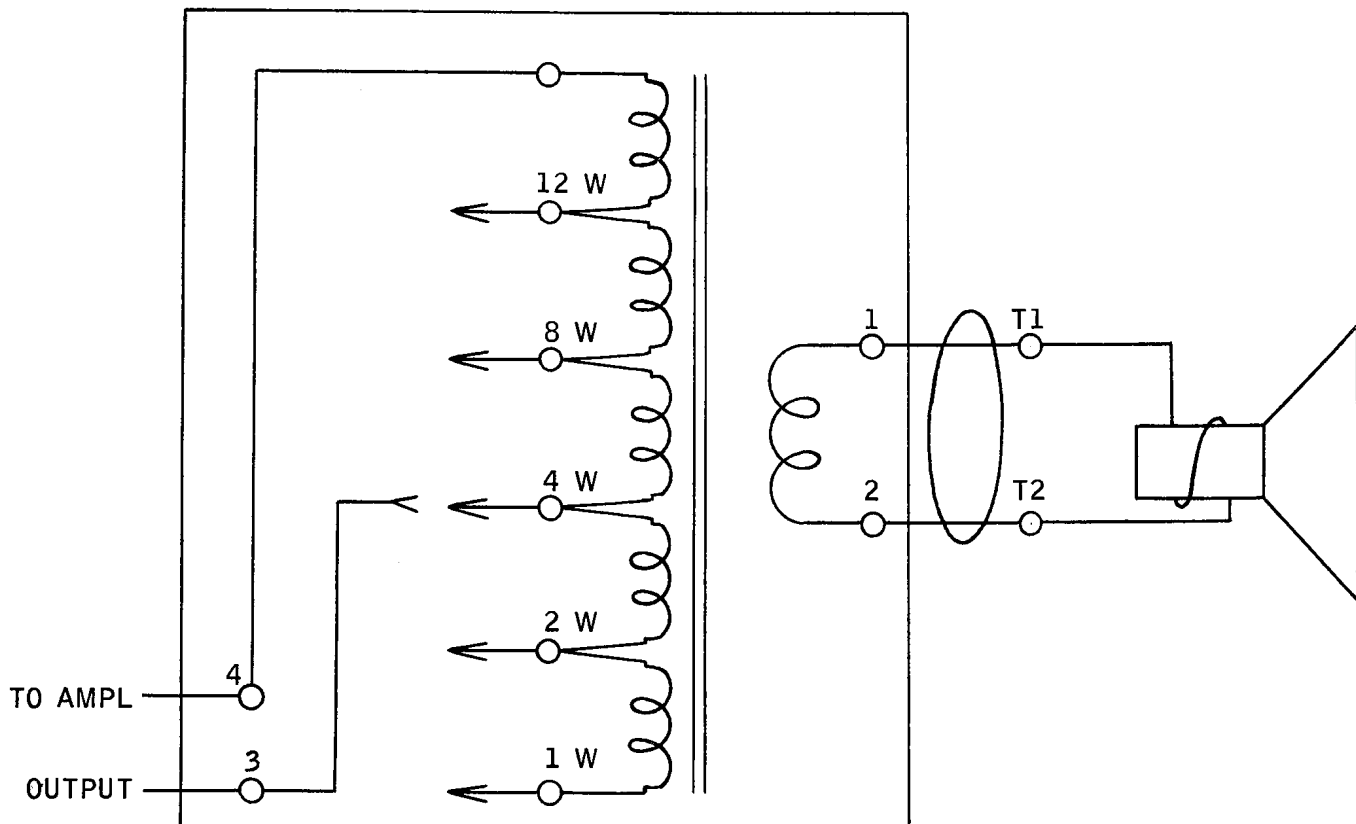


FIG. 70

DUKANE 710-3050 TRANSFORMER AND
5A90 LOUDSPEAKER

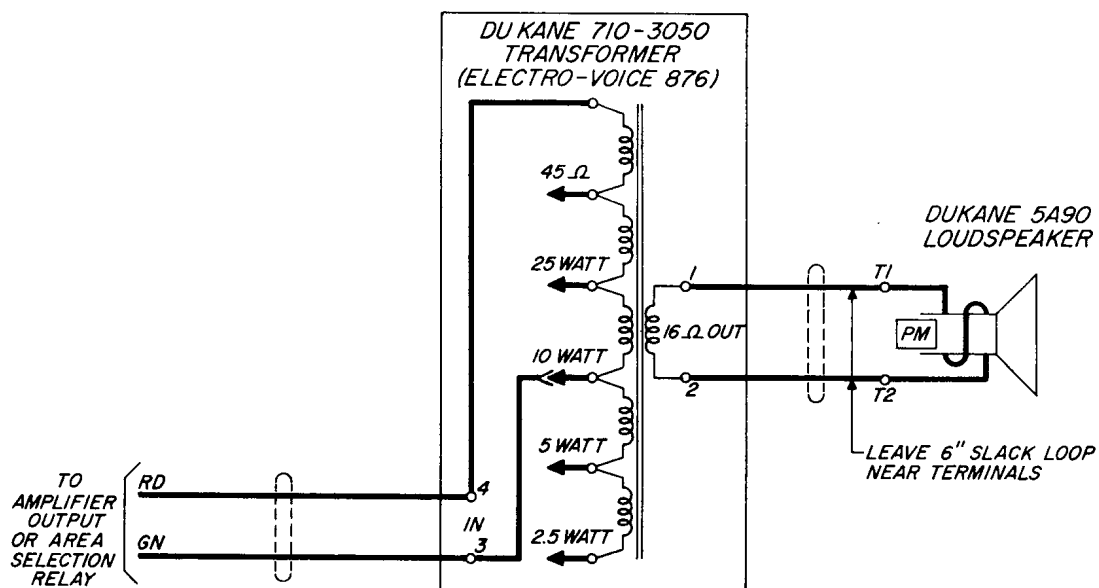


FIG. 71

LOUDSPEAKER AUTO-TRANSFORMER COMBINATIONS

LOUDSPEAKER TYPE	IB8	KS-14705 HORN AND KS-14704 REC. UNIT		S-1	S-2 OR KS-12046	S-3 S-4 S-5	KS-14792-L1	IMPEDANCE PRESENTED TO LINE (OHMS)	WATTAGE TO SPEAKER FROM 70 VOLT LINE							
IMPEDANCE (OHMS)	8	8		4	4	8	8									
MAX. POWER (WATTS)	12	30		4	8	4	4									
AUTO-TRANSFORMER	KS-12048	KS-14417	27A	#TE-6478	#KS-12048	GB-3609 ASSEMBLY	KS-14792-L5									
AUTO-TRANSFORMER CONNECTIONS																
	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	LINE	SPKR.	PRI	SEC		
	4	2					4*	3	4	3			-12 db	2 Watts	40,000	1/8*
	4	1					4	2	4	2	C-1	C-1	-12 db	4 Watts	20,000	1/4
	5	2			1-12	1-2	4	1	4	1	C-1	C-2	- 9 db	4 Watts	10,000	1/2
	5	1	1-12	1-3	1-12	1-3	5	2	5	2	C-1	C-3	- 6 db	4 Watts	5,000	1
	6	2	1-12	1-4	1-12	1-4	5	1	5	1	C-2	C-3	- 3 db	4 Watts	2,500	2
	6	1	1-11	1-3	1-11	1-4	6	2	6	2	C-3	C-3	0	4 Watts	1,250	4
	**		1-11	1-4	1-10	1-4			6	1					625	8
			1-10	1-3	1-9	1-4									312	16
			1-10	1-4	1-8	1-4									156	32

* - The S-1 loudspeaker has a potentiometer which may be connected between the black line wire and terminal 4 for variable volume control below 1/8 Watt (See PT-729).

** - For 8 Watts use 27A or KS-14417 auto-transformer and connect as shown for KS-14704 Receiver Unit.

- S-1 and S-2 loudspeakers, assembled by Webster Electric, have auto-transformers of different code but identical electrical characteristics.

FIG. 72 A

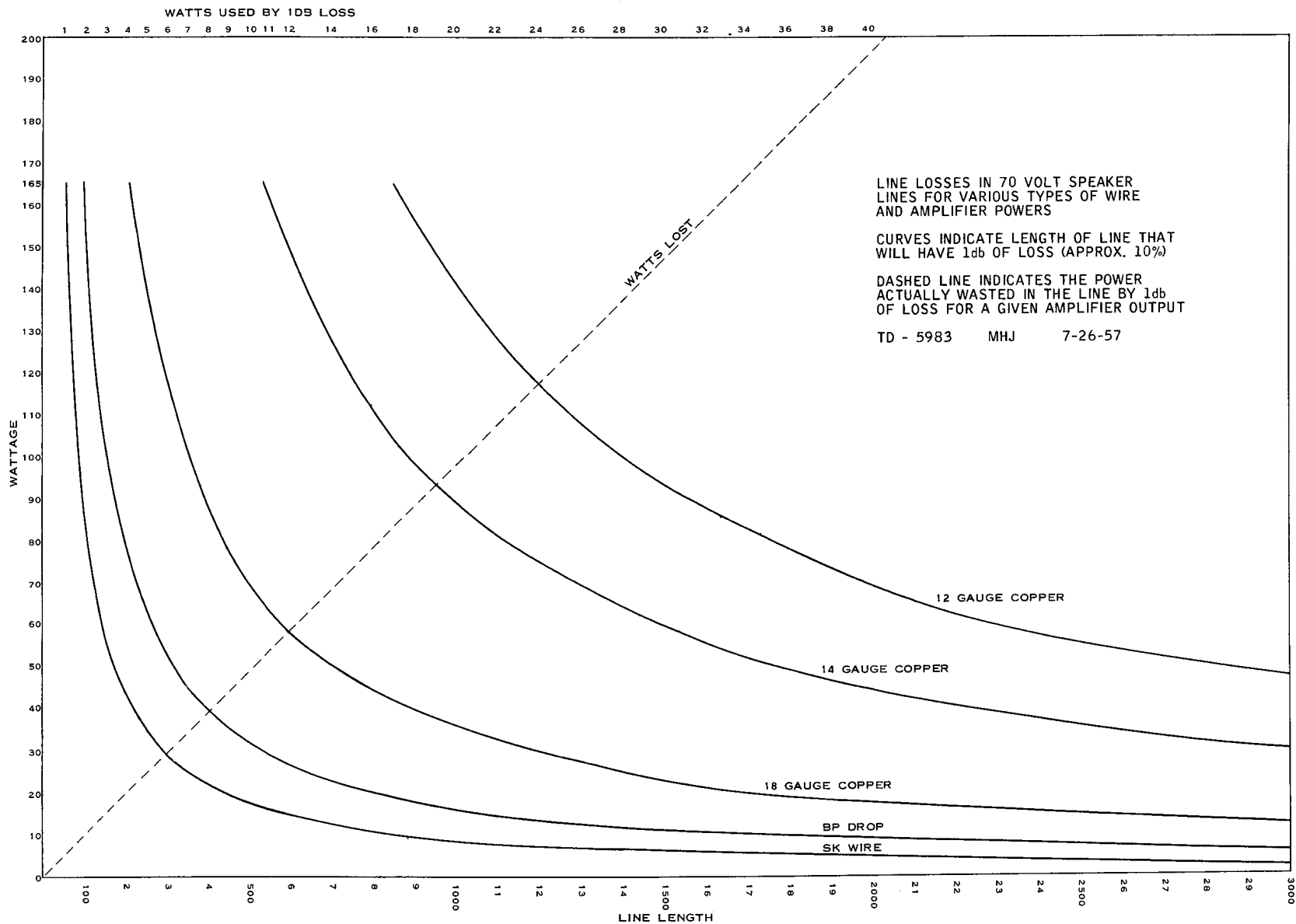


FIG.72B

AMPLIFIER OUTPUT TAPS FEEDING SPEAKERS	MAXIMUM LENGTH OF SPEAKER CABLE - FEET			
	#20 AWG PAIR	#18 AWG PAIR	#16 AWG PAIR	#14 AWG PAIR
500 OHM	1200	2000	3000	4000
250 OHM	700	1100	2000	3000
70 VOLTS (10 WATT AMPL)	1200	2000	3000	4000
70 VOLTS (30 WATT AMPL)	450	750	1200	2000
70 VOLTS (50 WATT AMPL)	290	450	750	1200
70 VOLTS (100 WATT AMPL)	150	230	360	560

These maximum lengths are one-way distances from the amplifier to the line matching transformer. They are the maximum lengths speaker leads can be run without exceeding a 10% power loss in the line.

FIG. 73

IMPEDANCES AND LINE CURRENTS AS PROVIDED BY 70.7 VOLT LINE OPERATION
OF VARIOUS AMPLIFIER WATTAGES.

WATTS MAX. OUTPUT	IMPEDANCE	LINE CURRENT IN AMPERES
1 WATT	4980 OHMS	.0142 AMPERES
5	1000	.0707
10	498	.142
15	334	.212
20	250	.283
25	200	.354
30	166	.424
35	142	.495
40	125	.567
45	111	.637
50	100	.707
55	91	.778
60	83	.85
65	77	.92
70	71	.99
75	67	1.06
80	62.5	1.13
85	59	1.20
90	56	1.27
95	53	1.34
100	50	1.41
125	40	1.77
150	33	2.12
17.5	30	2.34

FIG. 74

SOUND LEVEL OUTPUTS OF VARIOUS SPEAKERS

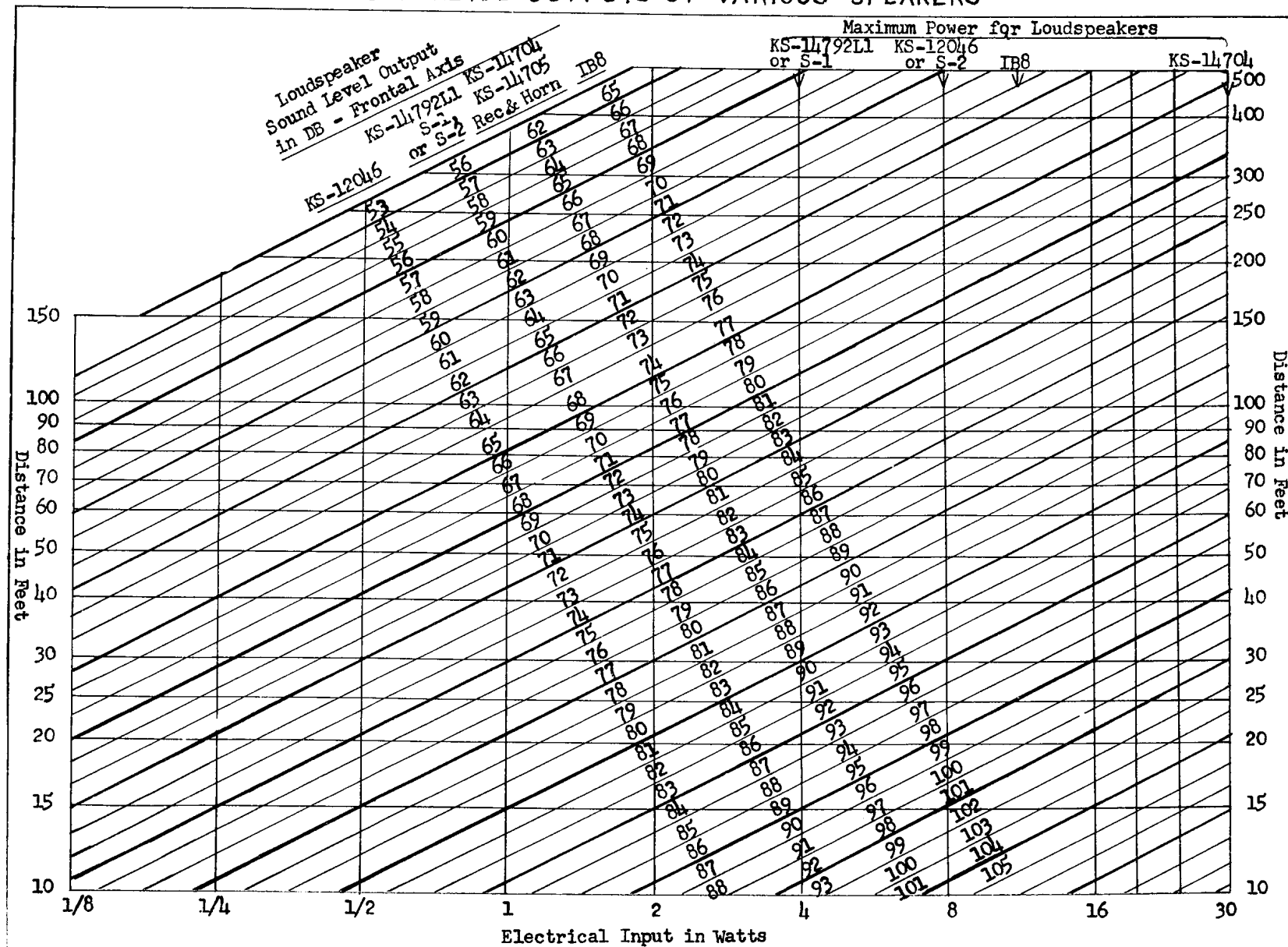


FIG. 75
SHIELDED WIRE SPLICE
ON 44 TYPE BLOCK

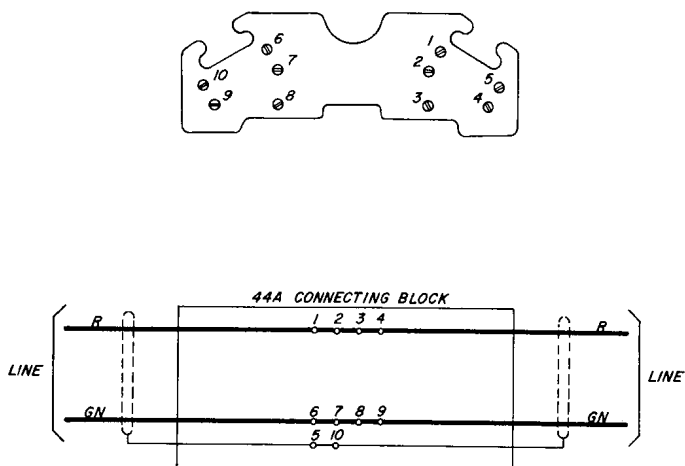
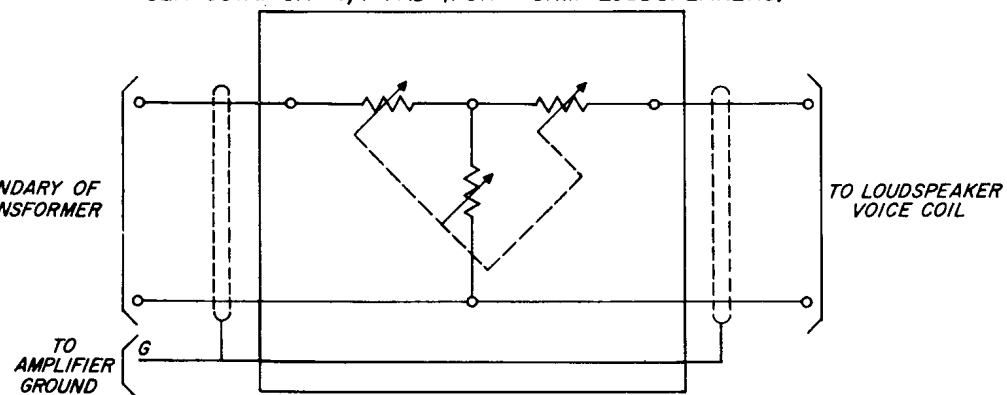


FIG. 76
EXTERNAL VOLUME CONTROL
FOR SINGLE LOUDSPEAKER

CLAROSTAT CIT-8, T-PAD (FOR 8 OHM LOUDSPEAKERS)
CLAROSTAT CIT-4, T-PAD (FOR 4 OHM LOUDSPEAKERS)



NOTES:

1. THE MAXIMUM POWER RATING FOR "CIT" PADS IS 10 WATTS. CIB-4 OR CIB-8 PADS MAY BE USED UP TO 30 WATTS.
2. MOUNTING INFORMATION TO BE SUPPLIED BY DISTRICT TECHNICAL MAN OR CHIEF ENGINEER'S DEPARTMENT.

FIG. 77
VOLUME CONTROLS
FOR MUSIC AND PAGING

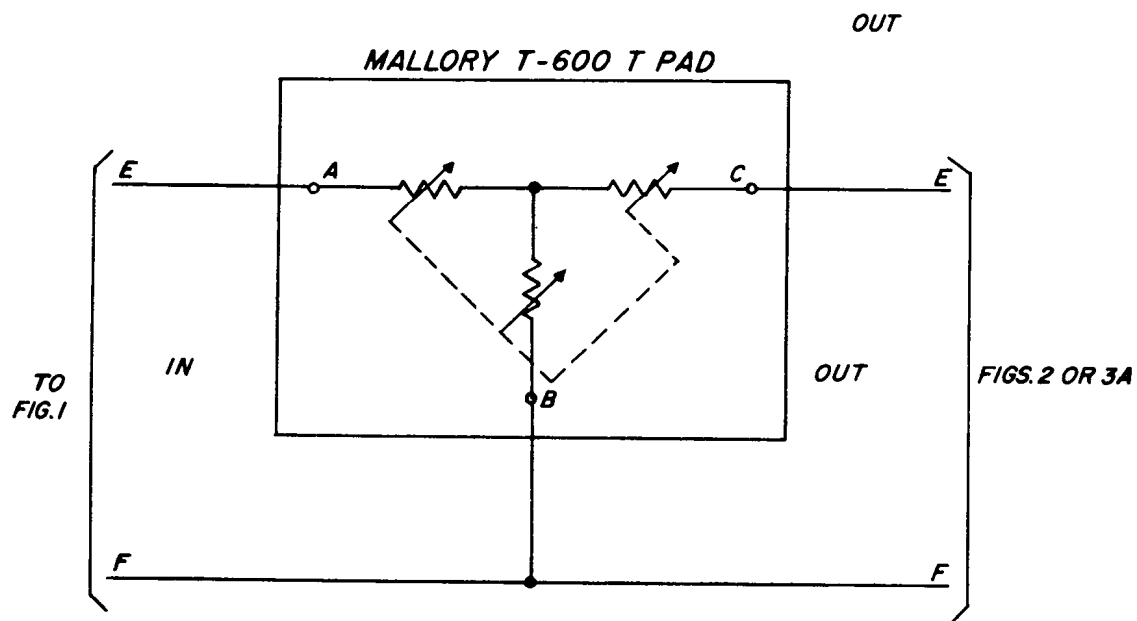
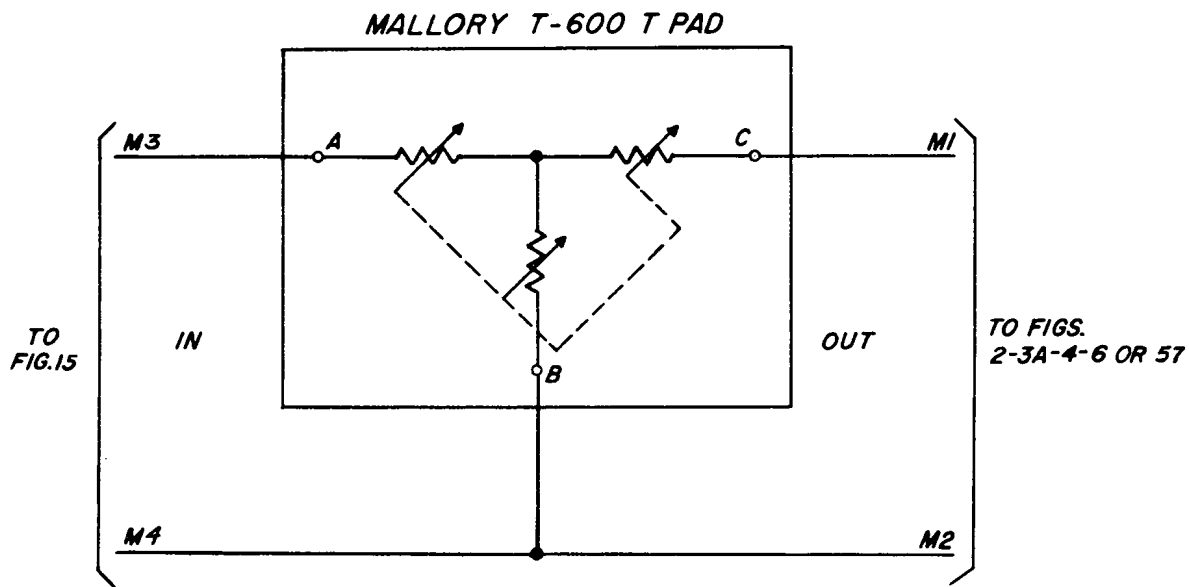


FIG. 78

LOUDSPEAKER PATTERNS

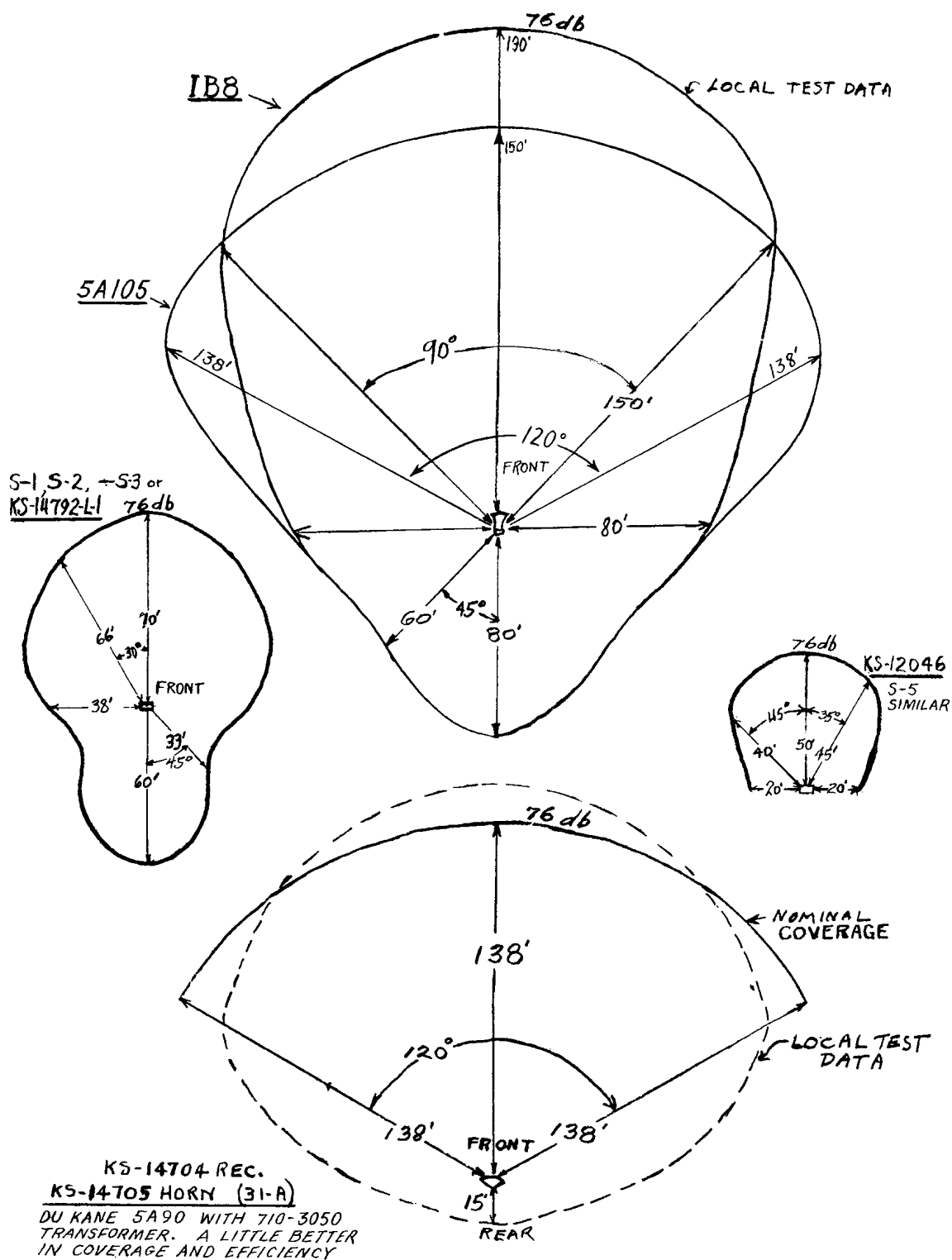
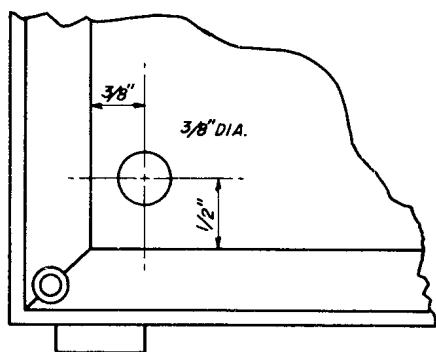
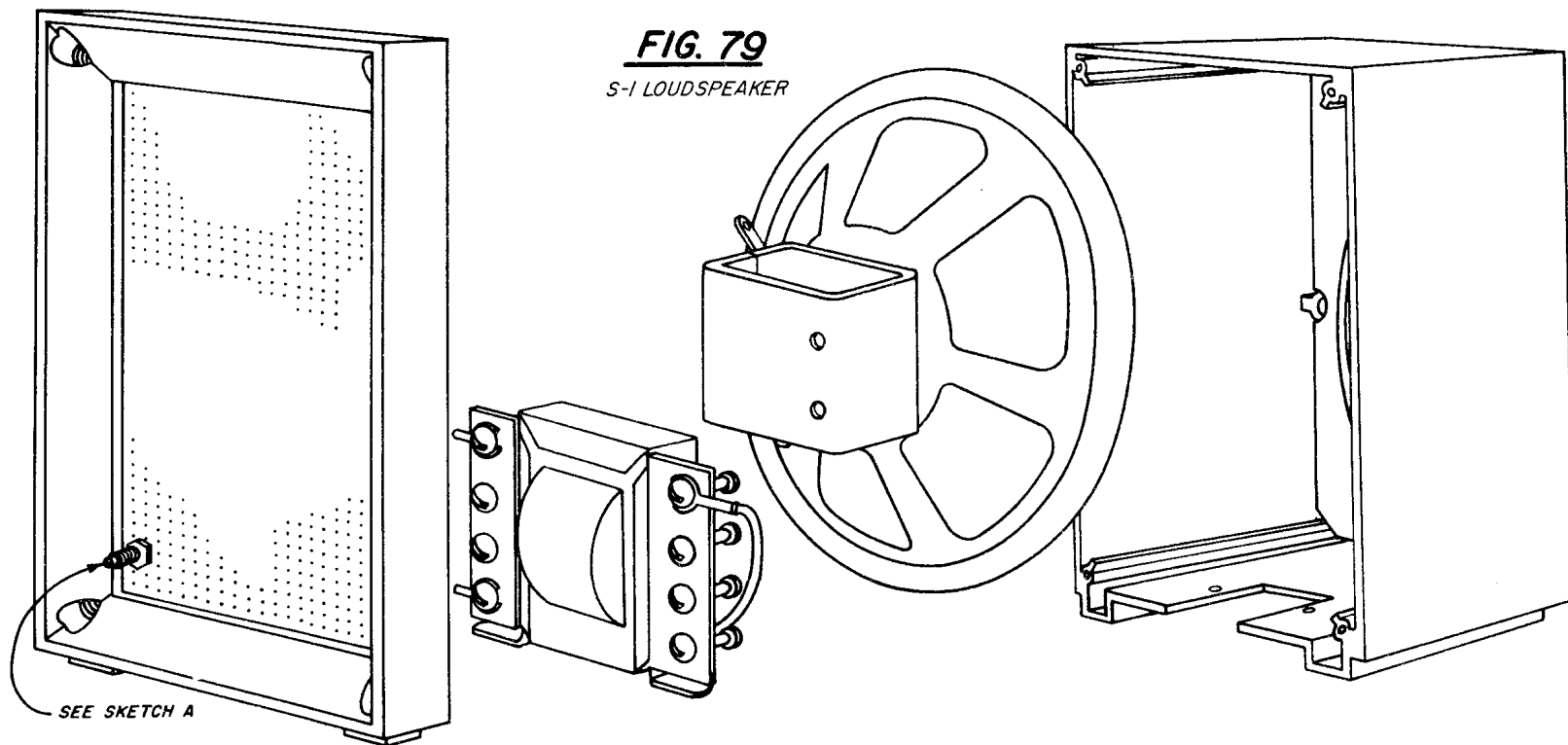


FIG. 79
S-1 LOUDSPEAKER

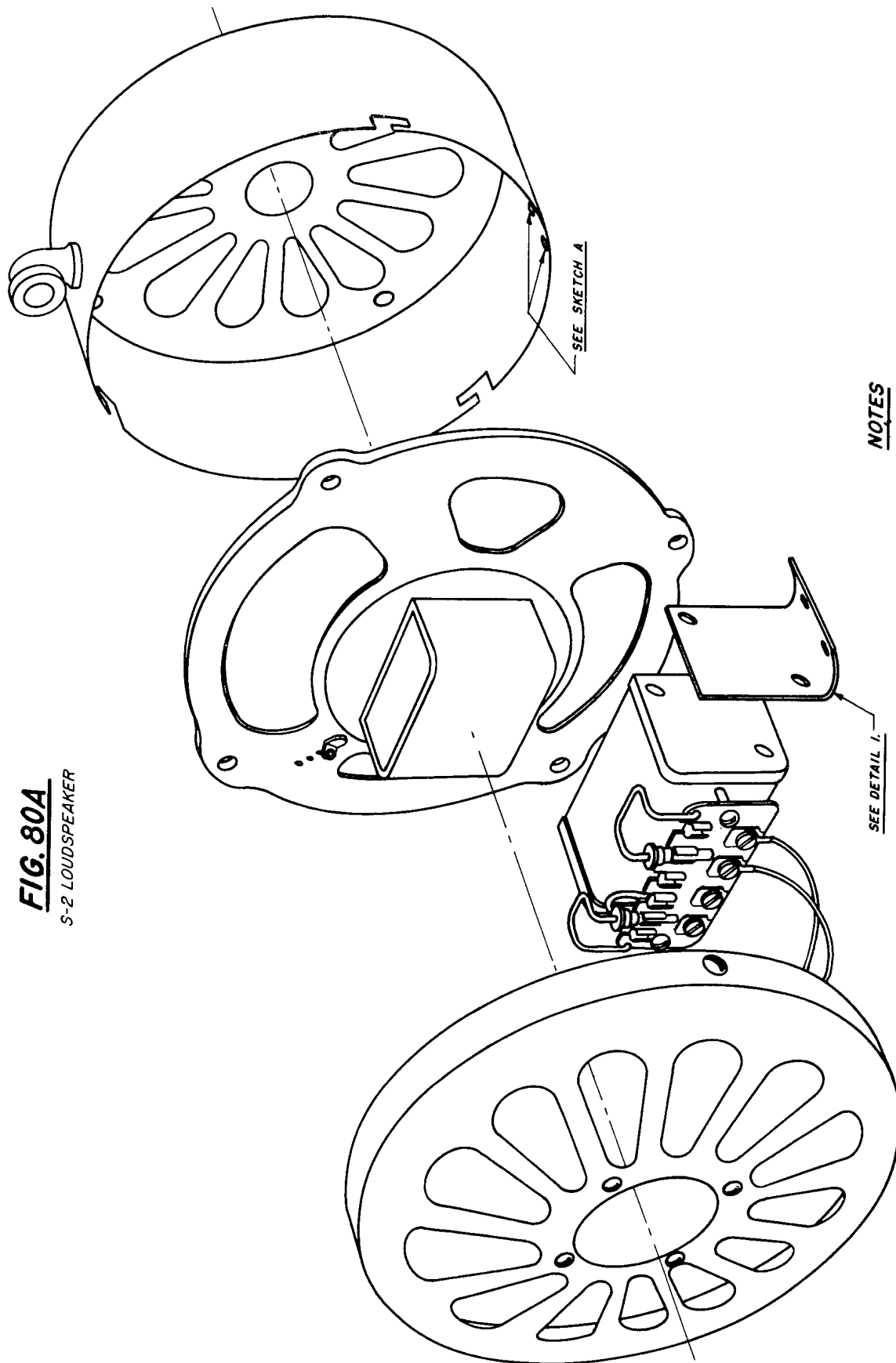


SKETCH A

NOTE: ON LATER MODELS THE POTENTIOMETER
IS LOCATED IN THE TOP LEFT CORNER (REAR)

REQ.	DET. OR PIECE PART NO.	DESCRIPTION	NOTE/ITEM
1	211-16292	CABINET (WEBSTER ELEC.CO. TELETALK)	
1	211-15479	CABINET BACK (WEBSTER ELEC.CO. TELETALK)	
1	211-15486	FRONT SCREEN (WEBSTER ELEC.CO. TELETALK)	
1	211-15485-1	BACK SCREEN (WEBSTER ELEC.CO. TELETALK)	
1	211-15480	SPEAKER BAFFLE (WEBSTER ELEC.CO. TELETALK)	
1	5CMS	SPEAKER OXFORD MODEL	
1	RQ 13-123	POTENTIOMETER I.R.C.	
1	TE 6478	TRANSFORMER TRANS. ENGINEERS	

FIG. 80A
S-2 LOUDSPEAKER



NOTES

1. LOCKWASHERS USED TO MOUNT TRANSFORMER ON DETAIL 1.
2. FOUR (4) LOCKWASHERS REQ. FOR MOUNTING SPEAKER. TWO (2) LOCKWASHERS REQ. FOR MOUNTING DETAIL 1 TO CASE.
3. FASTEN NAME PLATE ON FRONT OF SPEAKER HOUSING CENTERED ABOVE GRILL OPENING.

S-2 LOUDSPEAKER



REQ.	DET. OR PIECE PART NO.	DESCRIPTION	NOTE	ITEM
	164 A	BACKBOARD		
1	P- 30401	NAME PLATE SIG. ENG. & MFG. CO.		
2	P- 29973	MACHINE SCR. R.H. NICK. PLATED 256 x 1/8"		
4	P- 139469	HEX NUT 10/32		
4	P- 182113	BINDING HD. M. SC - 10/32 x 3/4		
3	P- 287906	SELF TAPPING SCREWS		
4	P- 205651	8-32 x 1/4" LONG R.H.M.S.		
2	1208	SHAKEPROOF LOCK WASHER	1	
6	1108	SHAKEPROOF LOCK WASHER	2	
2	P- 206518 164-32	HEX NUT		
1	211-30280	FLOOR FLG. WEBSTER ELEC. CO. TELE TALK		
1	P- 8814	COUPLING " "		
1	P- 8813	ELL " "		
1	211-30229	SCREEN " "		
1	P- 8809	NIPPLE " "		
1	P- 8811	LOCKNUT " "		
1	P- 9456	NIPPLE, CLOSE " "		
1	S- 6122-1	REAR COVER ASSEMBLY " "		
1	P- 6924-3	SPEAKER HOUSING " "		
1	P8T	SPEAKER (JENSEN)		
1	KS-12048	TRANSFORMER (W.E. CO.)		
1	DET. 1	BACKET (W.E. CO.) 16 GA.		

FIG. 81

SIMPLE SYSTEM USING ONE HIGH QUALITY LOW LEVEL MICROPHONE
AND ONE HIGH GAIN AMPLIFIER

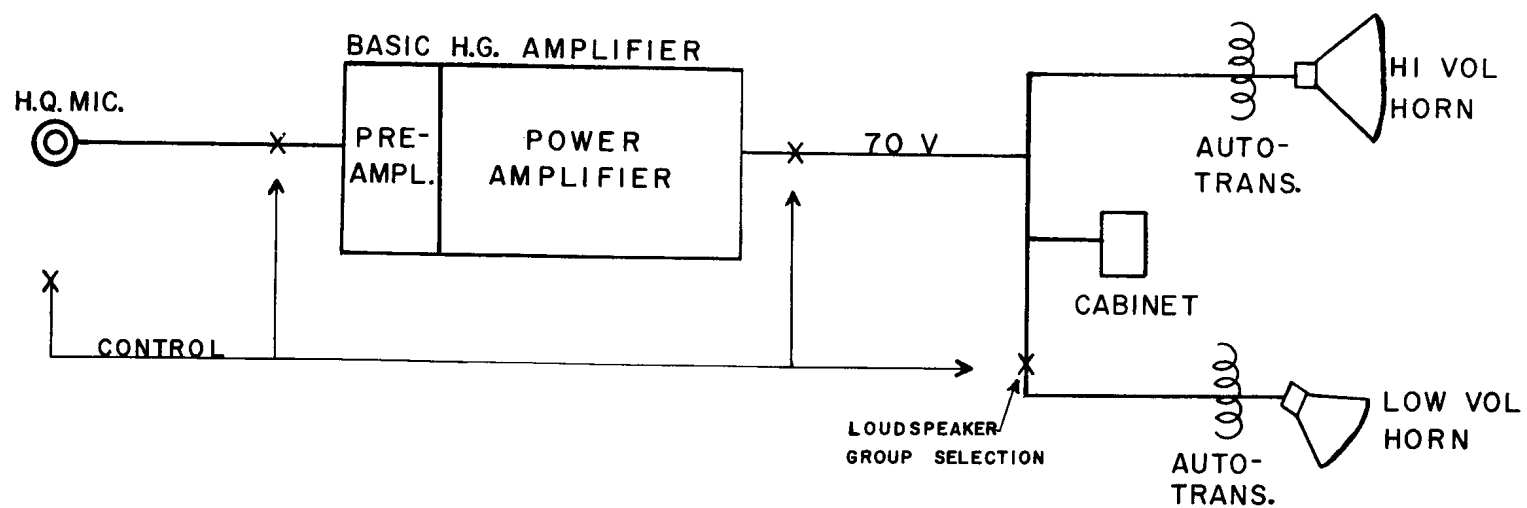
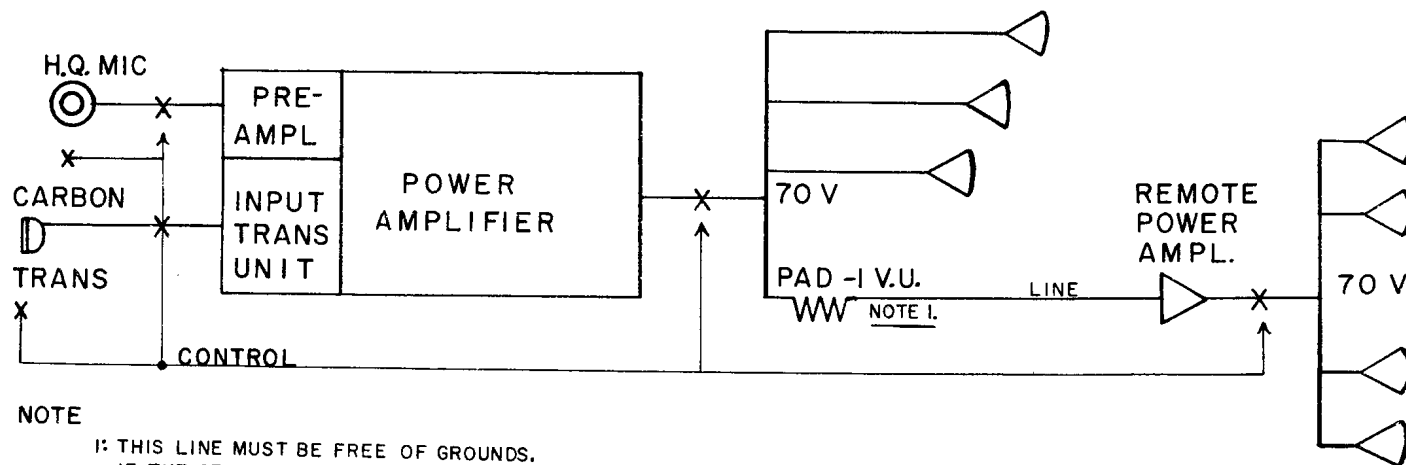


FIG. 82

WITH ALTERNATE HIGH QUALITY MICROPHONE AND CARBON
TRANSMITTER—ALSO REMOTE AMPLIFIER AND SPEAKER GROUP

**NOTE**

1: THIS LINE MUST BE FREE OF GROUNDS.
IF THE SENDING POWER AMPLIFIER
HAS AN UNBALANCED OUTPUT
(E.G. DU KANE TYPE) PLACE
A 1:1 REPEATING COIL AT THE
PAD OUTPUT.

FIG. 83

WITH MULTIPLE MICROPHONE LOCATIONS, MULTIPLE LOCAL OR
REMOTE LOUDSPEAKER GROUPS, AND GROUP SELECTING CONSOLES

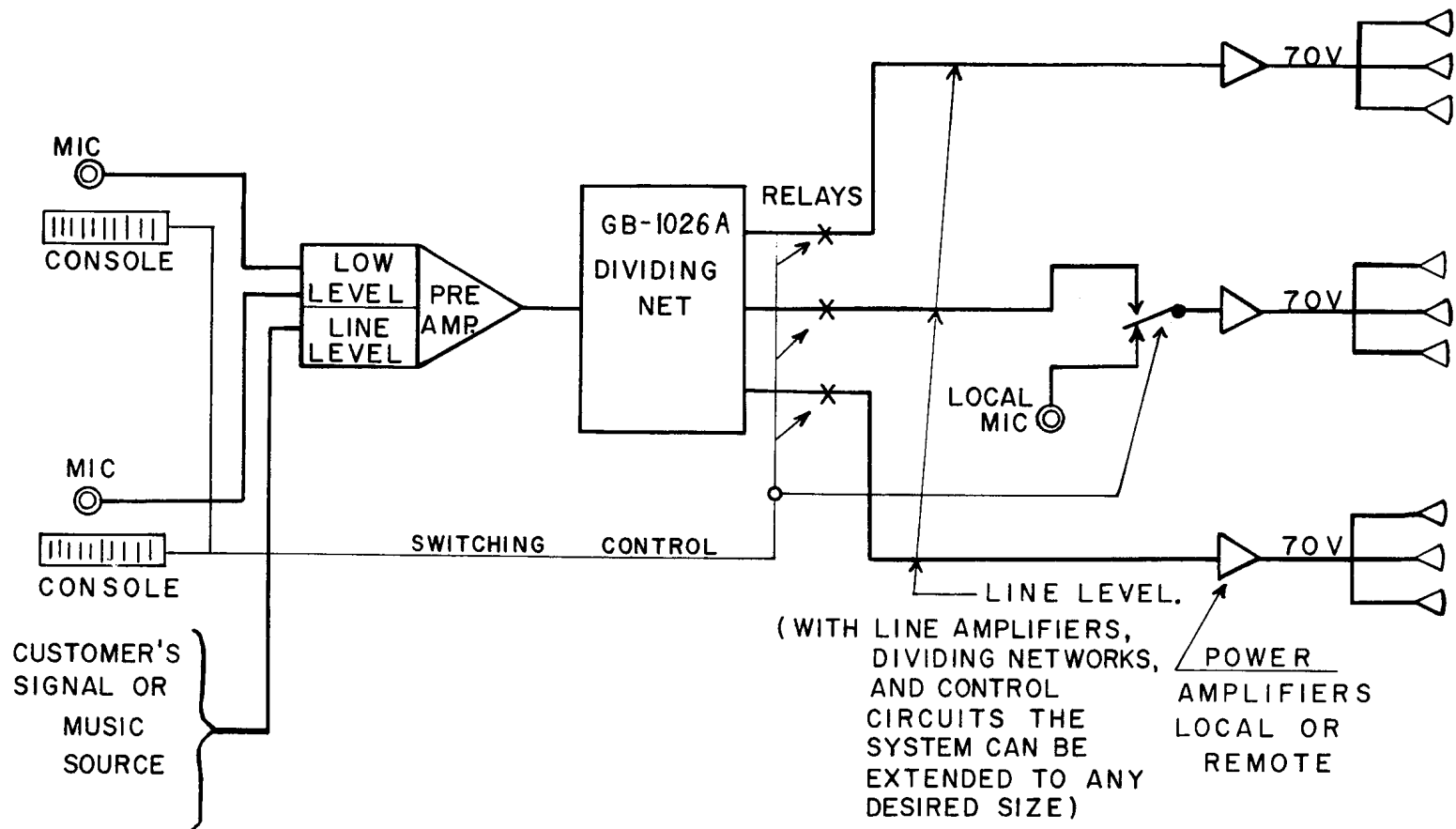


FIG. 84

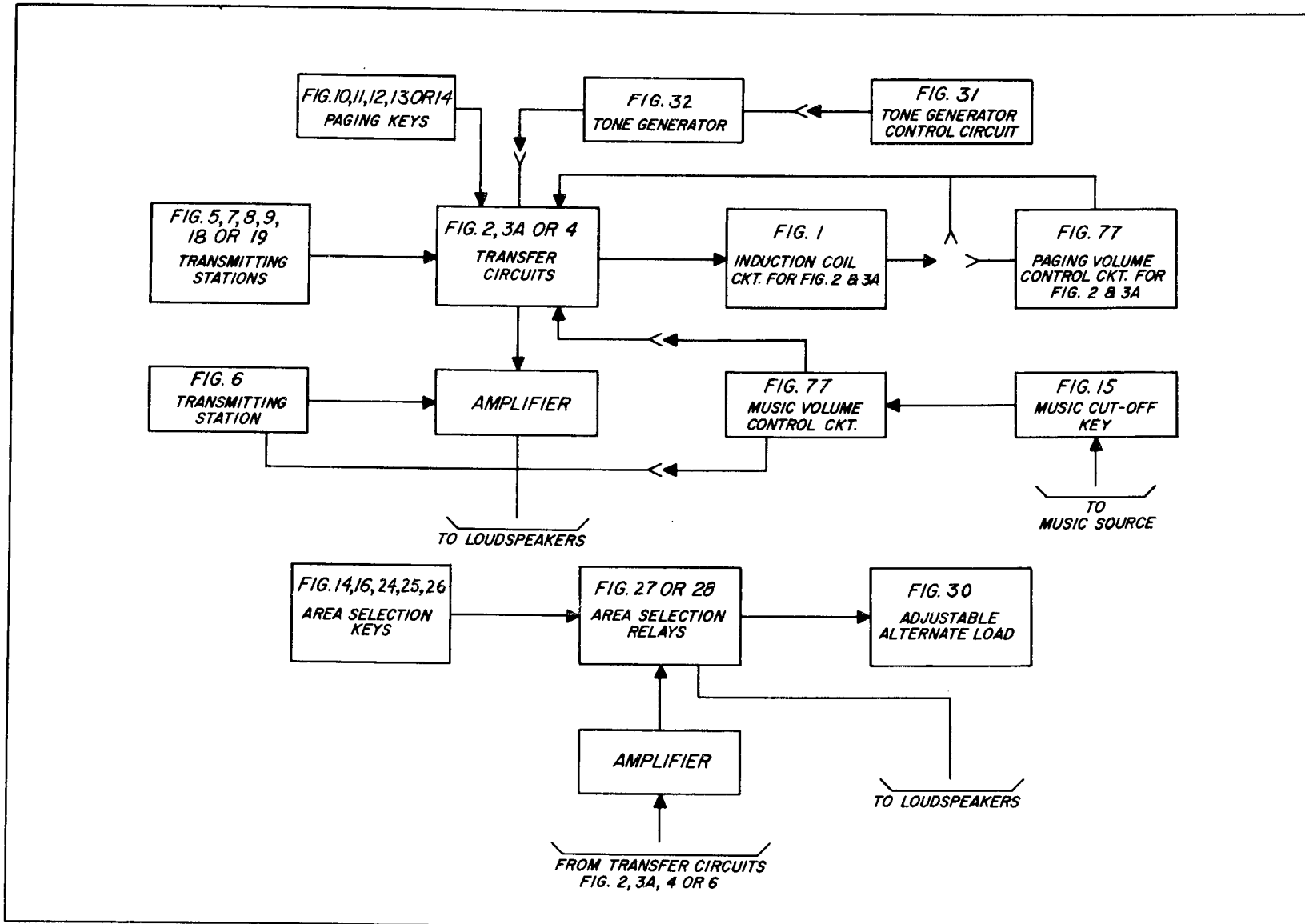


FIG. 85

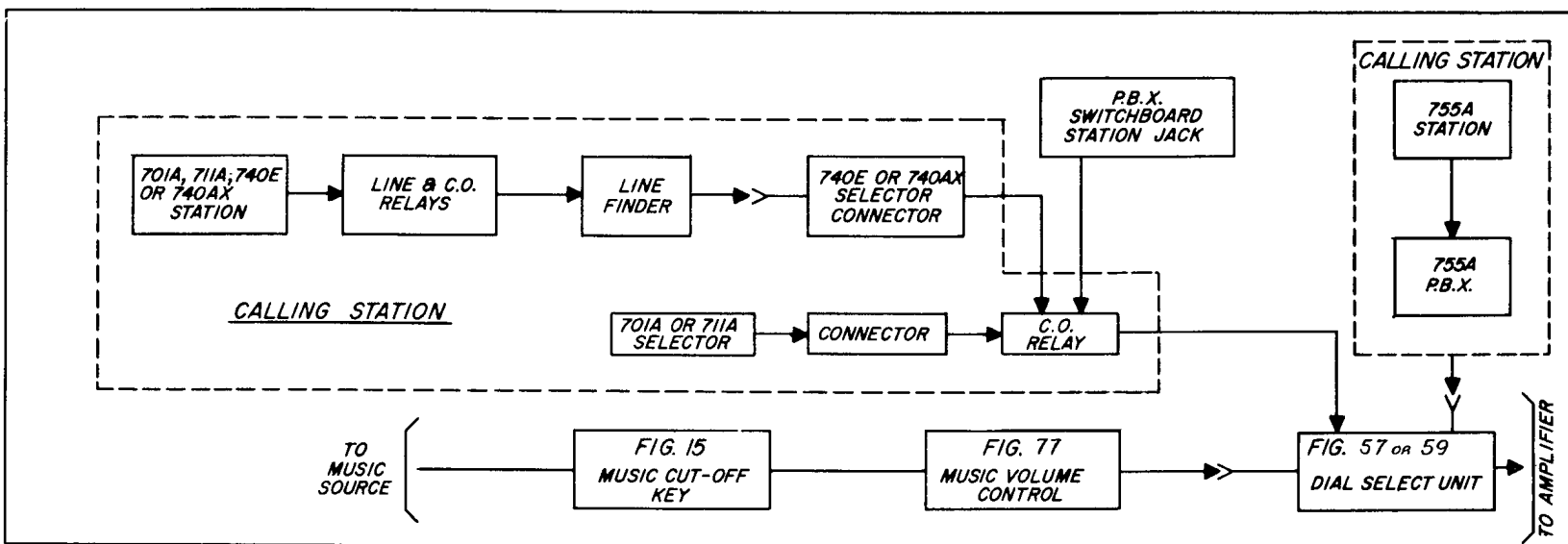
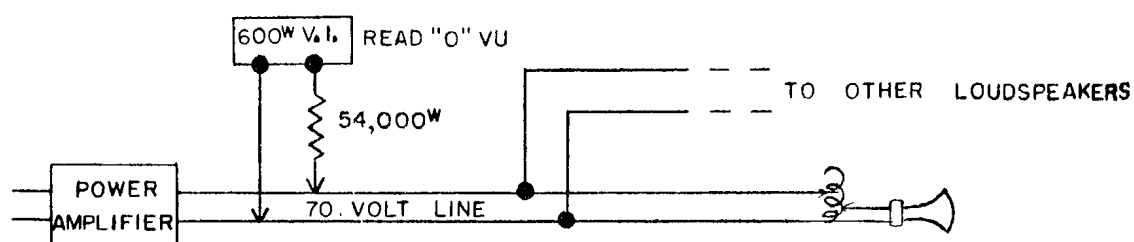
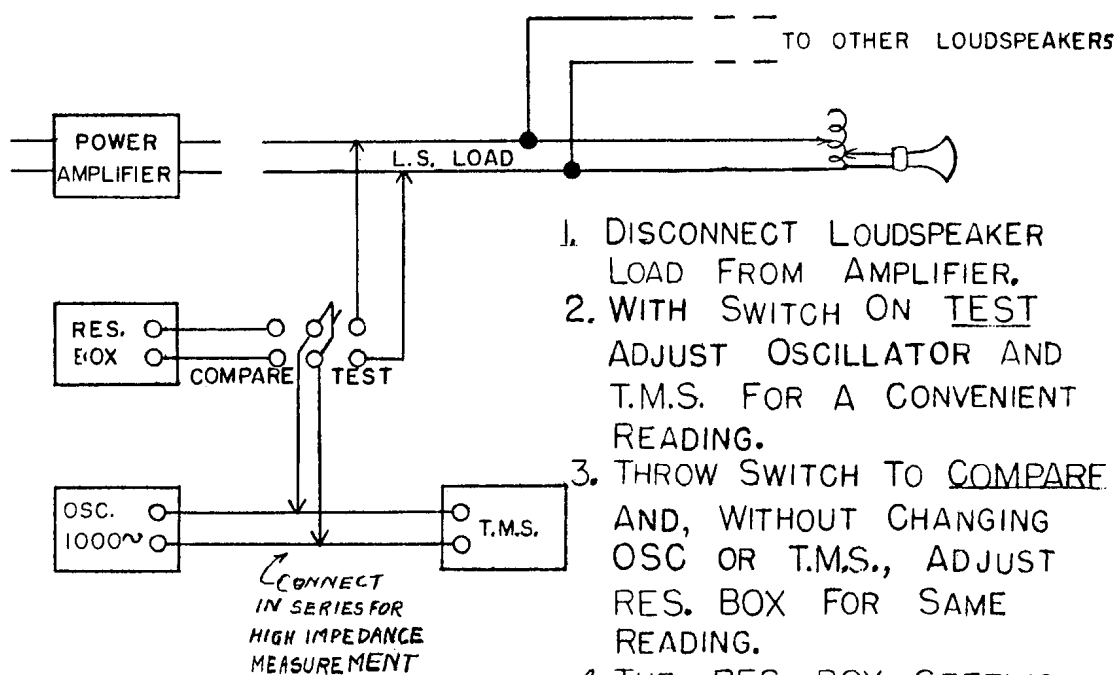


FIG. 86

VOLUME MEASUREMENT



CAUTION: DO NOT CONNECT V.I. ACROSS
70 VOLT LINE WITHOUT 54,000
OHM RESISTOR; DO NOT OPER-
ATE V.I. KEY TO HIGH IM-
PEDANCE.

FIG. 87IMPEDANCE MEASUREMENT OF LOUDSPEAKER LOAD

1. DISCONNECT LOUDSPEAKER LOAD FROM AMPLIFIER.
2. WITH SWITCH ON TEST ADJUST OSCILLATOR AND T.M.S. FOR A CONVENIENT READING.
3. THROW SWITCH TO COMPARE AND, WITHOUT CHANGING OSC OR T.M.S., ADJUST RES. BOX FOR SAME READING.
4. THE RES. BOX SETTING IS THE APPROXIMATE 1000 CYCLE IMPEDANCE OF THE LOUDSPEAKER LOAD.