VI APPENDIX

APPENDIX

PERFORMANCE DATA

Typical Meter Readings

Meter	SELECTOR Position				
	CALI-BRATE	TUNE BUFFER	TUNE FINAL	CW	PHONE
EXCITATION PLATE—ma.	32	60	60	60	60
GRID CURRENT—ma.	0	7	7	8	8
FINAL PLATE—ma.	0	0	135	300	225
ANTENNA CURRENT*—amp.	0	0	0.4	1.2	0.85
MODULATION—VM pos.**	0	0	270	490	425
MODULATION—Mod pos.	0	0	0	0	0–250

* With 70 ohm resistive load.
** Actual voltage is approx. 10% higher than indicated.

Typical Voltages

Tube Type	Circuit Function	Filament	Cathode	Control Grid	Screen Grid	Plate
6L6G	Oscillator	6.3	26	—12 to — 24	180	260
6L6G	Buffer/Doubler	6.3	35	—41 to —165	225	380
3—807's	Final Amplifier					
	(Phone Operation)	6.3	0	—90	260	450
	(CW Operation)	6.3	0	—90	315	540
6C5G	Speech Amplifier	6.3	8	0	---	215
4—6L6G	Modulator	6.3	25	0	310	450
2—866A H. V. Rectifier						
	(Phone Operation)	2.5	d-c output 450 v.			
	(CW Operation)	2.5	d-c output 540 v.			
80	L. V. & Bias Rectifier	5.0	d-c output 470 v. (total)			

APPENDIX

Typical Audio Frequency Data

FREQUENCY RESPONSE

The following data was taken with an input level of —19 db to the preamplifier at 75% modulation at a frequency of 1000 cps.

Frequency	DB	Frequency	DB
200	—6.5	2000	+0.2
400	—2.2	3000	—0.2
700	—0.4	5000	—2
1000	0	7000	—3.6
1500	+0.2		

AUDIO INPUT LEVEL REQUIREMENT

Audio level required for 100% modulation is —19 db.

AUDIO FREQUENCY DISTORTION

The a-f distortion at 75% modulation is 1.5% rms.

NOISE LEVEL

The noise level on the carrier below 100% modulation is —60 db.

CARRIER SHIFT

The carrier shift at 100% modulation is —1.5%.

Tuning Data

The table below may be filled in after the tuning data for the four channels has been obtained.

	CHANNEL			
	1	2	3	4
Operating Frequency—kc.	_____	_____	_____	_____
Crystal or M.O. Freq.—kc.	_____	_____	_____	_____
EXCITER dial setting	_____	_____	_____	_____
TUNING dial setting	_____	_____	_____	_____
Antenna coil-turns	_____	_____	_____	_____

PARTS LIST

33K-9 R-F Unit

CAPACITORS

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
C1A	Capacitor, Channel #1 M. O. Tank	.001 mf ±1% 1000 TV	912N210D	75C	1R	
C2A	Capacitor, Channel #1 M. O. Tank	.002 mf ±1% 1000 TV	912N220D	75C	1R	
C3A	Capacitor, Channel #2 M. O. Tank	Same as C1A				
C4A	Capacitor, Channel #2 M. O. Tank	Same as C2A				
C5A	Capacitor, Channel #3 M. O. Tank	Same as C1A				
C6A	Capacitor, Channel #3 M. O. Tank	Same as C2A				
C7A	Capacitor, Channel #4 M. O. Tank	Same as C1A				
C8A	Capacitor, Channel #4 M. O. Tank	Same as C2A				
C9A	Capacitor, Osc. Grid Leak Bypass	.008 mf ±20% 600 TV	909N280C	02S	C	
				75C	1W	
C10A	Capacitor, Oscillator Grid	.000025 mf ±10% 900 TV	909N425C	02S	D	
				64S	MT	
C11A	Capacitor, Oscillator Cathode Bypass	.00025 mf ±10% 900 TV	909N325C	02S	D	
				64S	MT	
C12A	Capacitor, Osc. Screen Bypass	.006 mf ±10% 1000 TV	910N260E	02S	BE-10	
C13A	Capacitor, Osc. Plate Supply Bypass	.006 mf ±10% 1000 TV	910N260A	75C	9L	
				02S	A-10	
				64S	XM	
C14A	Capacitor, Osc. Plate Coupling	.0005 mf ±10% 900 TV	909N350C	75C	1W	
				02S	C	
				64S	MW	
C15A	Capacitor, Doubler Cathode Bypass	Same as C13A				
C16A	Capacitor, Doubler Screen Bypass	Same as C13A				
C17A	Capacitor, Doubler Plate Coupling	.0005 mf ±10% 1000 TV	910N350A	75C	9L	
				02S	A2-10	
				64S	XM	
C18A	Capacitor, P. A. Grid Coupling	Same as C9A				
C19A	Capacitor, P. A. Cathode Bypass	.006 mf ±10% 1500 TV	915N260E	02S	BE-15	
C20A	Capacitor, P. A. Screen Bypass	.002 mf ±10% 1500 TV	915N220E	02S	BE-15	
C21A	Capacitor, P. A. Plate Coupling	.002 mf ±10% 1500 TV	950N220A	02S	BE-15	

PARTS LIST

CAPACITORS (Cont.)

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
C22A	Capacitor, P. A. Screen Bypass	Same as C20A				
C23A	Capacitor, Ch. #1 Antenna Tuning	420 mmf Variable	920N98A	77J	H	
C24A	Capacitor, Ch. #1 Plate Tuning	250 mmf Variable	920N97A	77J	F	
C25A	Capacitor, Ch. #2 Antenna Tuning	Same as C23A				
C26A	Capacitor, Ch. #2 Plate Tuning	Same as C24A				
C27A	Capacitor, Ch. #3 Antenna Tuning	Same as C23A				
C28A	Capacitor, Ch. #3 Plate Tuning	Same as C24A				
C29A	Capacitor, Ch. #4 Antenna Tuning	Same as C23A				
C30A	Capacitor, Ch. #4 Plate Tuning	Same as C24A				

MISCELLANEOUS ELECTRICAL PARTS

E1A	Thermocouple, Antenna Ammeter	0-3 amp a-c	457N97	80T		
E2A	Suppressor, P. A. Plate Parasitic	Special h-f suppressor	GC-1064A	64C	GC-1064A	
E3A	Suppressor, P. A. Plate Parasitic	Same as E2A				
E4A	Suppressor, P. A. Plate Parasitic	Same as E2A				

PLUG RECEPTACLES

J1A	Plug, 33K R-F Unit Connector	16 Contact Plug Recept.	367N816R	91J	S-1416	

INDUCTORS

L1A	Choke, Osc. Cathode R-F	2.5 mh 0.125 amp 50 ohm	240N53	05N		
L2A	Choke, Osc. Plate R-F	Special Choke Coil	GA-543A	64C	GA-543A	
L3A	Choke, Doubler Plate R-F	Same as L1A				
L4A	Coil, Ch. #1 Exciter Tank	Range to be specified	7000C-5	64C	7000C-5	
L5A	Coil, Ch. #2 Exciter Tank	Same as L4A				
L6A	Coil, Ch. #3 Exciter Tank	Same as L4A				
L7A	Coil, Ch. #4 Exciter Tank	Same as L4A				
L8A	Choke, P. A. Grid R-F	2.5 mh 0.125 amp 50 ohm	240N2	05N		
L9A	Choke, P. A. Plate R-F	2.5 mh 0.5 amp 8.0 ohm	240N25	05H		
L10A	Choke, Antenna Static Drain	1.0 mh 0.6 amp 6.0 ohm	240N26	82C		

INDUCTORS (Cont.)

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
L11A	Coil, Ch. #1 P. A. Plate Tank	Single-layer, plug-in type. Specify range	190E-1 or 190F-1	64C	190E-1 190F-1	
L12A	Coil, Ch. #2 P. A. Plate Tank	Same as L11A				
L13A	Coil, Ch. #3 P. A. Plate Tank	Same as L11A				
L14A	Coil, Ch. #4 P. A. Plate Tank	Same as L11A				

RESISTORS

R1A	Resistor, Osc. Grid Leak	10,000 ohm ±10% 1 w	704N10M	28J	BT1	
R2A	Resistor, Osc. Grid	50,000 ohm ±10% 1 w	704N50M	28J	BT1	
R3A	Resistor, Osc. Screen Supply	50,000 ohm ±10% 2 w	706N50M	28J	BT2	
R4A	Resistor, Osc. Plate Supply	5000 ohm ±10% 10 w	710NA5M	25P	Brown Devil	
R5A	Resistor, Doubler Grid	100,000 ohm ±10% 2 w	706N100M	28J	BT2	
R6A	Resistor, Doubler Cathode	1000 ohm ±10% 10 w	710NA1M	25P	Brown Devil	
R7A	Resistor, Doubler Screen Supply	Same as R5A				
R8A	Resistor, Osc. Cathode	1000 ohm ±10% 2 w	706N1M	28J	BT2	
R9A	Resistor, P. A. Grid	27 ohm ±10% ½ w	701N27	22A	EB	
R10A	Resistor, P. A. Grid	Same as R9A				
R11A	Resistor, P. A. Grid	Same as R9A				
R12A	Resistor, P. A. Screen Supply	10,000 ohm ±10% 25 w	710NC10M	25P		

SWITCHES

S1A	See S1A1, S1A2, S1A3, S1A4, S1A5, S1A6, S1A7, S1A8	Special 8 pole, 4 position, tap switch				
S1A1	Switch, M.O.—Crystal Selector	1 pole, 11 pos, 1 sec. shorting	269N8	05P	"H"	
S1A2	Switch, M. O.—Crystal Selector	Same as S1A1				
S1A3	Switch, Exciter Tank Coil Selector	Same as S1A1				
S1A4	Switch, Exciter Tank Coil Selector	Same as S1A1				
S1A5	Switch, Exciter Tank Coil Selector	Same as S1A1				

PARTS LIST

SWITCHES (Cont.)

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
S1A6	Switch, P. A. Tank Coil Selector	1 pole, 4 pos., shorting ceramic tap switch	269N26	05P	"H"	
S1A7	Switch, P. A. Tank Coil Selector	Same as S1A6				
S1A8	Switch, Antenna Selector	Same as S1A6				

VACUUM TUBES

V1A	Tube, R-F Oscillator	Beam Power Amplifier	6L6G			
V2A	Tube, Buffer-Amplifier	Same as V1A				
V3A	Tube, Power Amplifier	Beam Power Amplifier	807			
V4A	Tube, Power Amplifier	Same as V3A				
V5A	Tube, Power Amplifier	Same as V3A				

SOCKETS

X1A	Socket, R-F Oscillator Tube	8 prong bakelite	220N181	60A		
X2A	Socket, Buffer-Amplifier Tube	Same as X1A				
X3A	Socket, Power Amp. Tube	Five prong chassis mtg.	220N151	60A	S-5	
X4A	Socket, Power Amp. Tube	Same as X3A				
X5A	Socket, Power Amp. Tube	Same as X3A				
X6A	Socket, Ch. #1 M. O. & Crystal	Same as X3A				
X7A	Socket, Ch. #2 M. O. & Crystal	Same as X3A				
X8A	Socket, Ch. #3 M. O. & Crystal	Same as X3A				
X9A	Socket, Ch. #4 M. O. & Crystal	Same as X3A				
X10A	Socket, Ch. #1 Exciter Tank Coil	7 prong chassis mtg.	220N179	60A	S7L-1	
X11A	Socket, Ch. #2 Exciter Tank Coil	Same as X10A				
X12A	Socket, Ch. #3 Exciter Tank Coil	Same as X10A				
X13A	Socket, Ch. #4 Exciter Tank Coil	Same as X10A				

PARTS LIST

101L-7 Panel

JACKS AND RECEPTACLES

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
J1B	Jack, Key	Closed Circuit Midget for ¼" diam.	360N106	05M	Midget	
J2B	Receptacle, Microphone	3 prong conn. chassis mounting	369N7	60A	PC3F	

METERS

M1B	Milliammeter, Exciter Plate	0-200 ma. d. c.	450NF200	80T	227	
M2B	Milliammeter, Final Plate	0-500 ma d. c.	450NF500	80T	227	
M3B	Milliammeter, Final Grid	0-25 ma d. c.	450NF25	80T	227	
M4B	Voltmeter, H. V. Plate and Modulation	0-500 v d. c.	458N021F	80T		
M5B	Ammeter, Antenna	0-3 amp r. f., external thermocouple	457N98	80T		

PLUGS

P1B	Socket, R-F Unit Connector	16 Prong Connector Plug	367N816P	91J	P-1416	
P2B	Socket, Power Supply Connector	Same as P1B				
P3B	Socket, Modulator Connector	Same as P1B				

RESISTORS

R1B	Resistor, Keying	10,000 ohm ±10% 10 w	710NA10M	25P	Brown Devil	
R2B	Resistor, P. A. Tuning	2000 ohm ±10% 25 w	710NC2M	25P	0207	

SWITCHES

S1B	Switch, Plate Power	15 amp 125 v DPST Toggle	260N101	84A	80302	
S2B	Switch, Filament Power	Same as S1B				

SWITCHES (Cont.)

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
S3B	See S3B1, S3B2, S3B3, S3B4, S3B5, S3B6	6 circuit non-shorting 5 pos. adjustable stop	259N143	25C 05P		
S3B1	Switch, H. V. Plate Trans.	Part of S3B				
S3B2	Switch, Exc. Plate Meter	Part of S3B				
S3B3	Switch, Mod. Pl. Voltage	Part of S3B				
S3B4	Switch, P. A. Tuning	Part of S3B				
S3B5	Switch, Mod. Trans. Shtg.	Part of S3B				
S3B6	Switch, Mod. Screen	Part of S3B				

PARTS LIST

411B-4 Power Supply

CAPACITORS

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
C1C	Capacitor, H. V. Supply Filter	10 mf ±10% 600 WV	930N11	75C	KG	
C2C	Capacitor, H. V. Supply Filter	Same as C1C				
C3C	Capacitor, L. V. & Bias Supply Filter	4 mf ±10% 600 WV	930N62A-M	64S		
C4C	Capacitor, L. V. & Bias Supply Filter	Same as C3C				
C5C	Capacitor, P. A. Grid Bias Filter	2 mf ±10% 700 WV	930N61A-M	64S		

FUSES

F1C	Fuse, Power Line	10 amp plug type	264N110	40E	Plug	
F2C	Fuse, H. V. Plate Trans.	6 amp plug type	264N106	40E	Plug	
F3C	Fuse, L. V. & Bias Trans.	3 amp plug type	264N103	40E	Plug	

JACKS AND RECEPTACLES

J1C	Socket, Power Line Fuse	660 v 2⅜" x 1⅝" single mounting	265N101	90B	4063	
J2C	Socket, H. V. Plate Trans. Fuse	Same as J1C				
J3C	Socket, L. V. & Bias Trans. Fuse	Same as J1C				
J4C	Power Supply Unit Connector Plug	Same as J1A				

RELAYS

K1C	Relay, Push-to-Talk	6 v a-c coil N. O. cont.	410N15	85G	Series 40	

INDUCTORS

L1C	Reactor, H. V. Supply Filter	4 hy 400 ma	668S75B	55C	8A-40	
L2C	Reactor, H. V. Supply Filter	Same as L1C				
L3C	Reactor, L. V. & Bias Supply Filter	10 hy 200 ma	668S453A	55C	8A-31	

PARTS LIST

PLUGS

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
P1C	Plug, Power Line	A. C. Flush Mtg. Plug	368N1	80H		

RESISTORS

R1C	Resistor, H. V. Supply Bleeder	50,000 ohm ±10% 50 w	710ND50M	25P		
R2C	Resistor, L. V. & Bias Supply Bleeder	3,000 ohm ±10% 25 w	710NC3M	25P		
R3C	Resistor, L. V. & Bias Supply Bleeder	25,000 ohm ±10% 25 w	710NC25M	25P		
R4C	Resistor, L. V. & Bias Supply Bleeder	1000 ohm ±10% 25 w	710NC1M	25P		

TRANSFORMERS

T1C	Transformer, H. V. Supply Plate	Pri: 110, 115, 120, 125, 130 v 50/60 cps 350 VA Sec: 675/675 v 0.353 amp 480 VA	662S726	55C		
T2C	Transformer, Filament	Pri: 110 v 50/60 cps Sec: 5 v CT 3 amp, 5 v CT 6.0 amp, 2.5 v CT 2.0 amp, 6.3 v CT 10 amp	662S446	55C	2BE-5075	
T3C	Transformer, L. V. & Bias Supply Plate	Pri: 110 v 50/60 cps Sec: 400/400 v 0.27 amp	662S463	55C	2A2-50	

VACUUM TUBES

V1C	Tube, H. V. Supply Rect.	Half-wave Mercury vapor Rectifier	866A			
V2C	Tube, H. V. Supply Rect.	Same as V1C				
V3C	Tube, L. V. & Bias Supply Rectifier	Full-wave High Vacuum Rectifier	80			

SOCKETS

X1C	Socket, H. V. Supply Rect. Tube	4 prong bakelite	220N141	60A		
X2C	Socket, H. V. Supply Rect. Tube	Same as X1C				
X3C	Socket, L. V. & Bias Supply Rect.	Same as X1C				

PARTS LIST

9Z-8 Modulator

CAPACITORS

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
C1D	Capacitor, Mod. Meter Coupling	Same as C5C				
C2D	Capacitor, Modulator Cathode Bypass	20 mf 100 WV	183N5	75C	CCA-AY	
C3D	Capacitor, Microphone Supply Filter	Same as C3C				
C4D	Capacitor, Modulator Screen Bypass	Same as C3C				
C5D	Capacitor, Audio Amp. Plate Decoupling	Same as C3C				

MISCELLANEOUS ELECTRICAL PARTS

E1D	Rectifier, Modulation Meter	Copper-Oxide, Bridge Type Rectifier	353N3	67C	M-2	

JACKS AND RECEPTACLES

J1D	Modulator Unit Connector Plug Receptacle	Same as J1A				

RESISTORS

R1D	Resistor, H. V. Plate Voltmeter Multiplier	500,000 ohm ±10% 1 w	704N500M	28J	BT1	
R2D	Resistor, Mod. Indicator Control	10,000 ohm W. W. Pot.	377N225A	05M	M	
R3D	Resistor, Mod. Indicator	15,000 ohm ±10% 1 w	704N15M	28J	BT1	
R4D	Resistor, Mod. Grid	250 ohm ±10% ½ w	707N250	28J	BW–½	
R5D	Resistor, Mod. Plate	10 ohm ±10% 1 w	703N10	22A	GB	
R6D	Resistor, Mod. Plate	Same as R5D				
R7D	Resistor,	Same as R4D				
R8D	Resistor,	Same as R4D				
R9D	Resistor,	Same as R5D				
R10D	Resistor,	Same as R5D				
R11D	Resistor,	Same as R4D				
R12D	Resistor,	100 ohm ±10% 10 w	710NA100	25P	Brown Devil	

PARTS LIST

RESISTORS (Cont.)

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
R13D	Resistor,	50 ohm ±10% 10 w	710NA50	25P	Brown Devil	
R14D	Resistor,	20,000 ohm ±10% 1 w	704N20M	28J	BT1	
R15D	Resistor,	Same as R3A				
R16D	Resistor, Audio Amp. Cathode	2500 ohm ±10% 2 w	706N2500	28J	BT2	
R17D	Resistor, Microphone Current Balancing	Same as R13D				

TRANSFORMERS

T1D	Transformer, Modulation	Pri: 4100 ohm CT 30-8000 cps Sec: 11 & 12: 1880 ohm Sec: 11 to 13: 2200 ohm 2400 v test, 50 w	667S355A	55C		
T2D	Transformer, Audio Interstage	Pri: 20,000 ohm CT 30-10,000 cps Sec: 80,000 ohm CT	667S228H	55C		
T3D	Transformer, Microphone	17, 50, 125, 200, 250, 333, 500 ohm to 80,000 (split) 30-10,000 cps	667S210L	55C		

VACUUM TUBES

V1D	Tube, Modulator	Same as V1A				
V2D	Tube, Modulator	Same as V1A				
V3D	Tube, Modulator	Same as V1A				
V4D	Tube, Modulator	Same as V1A				
V5D	Tube, Audio Amplifier	Voltage Amplifier Triode	6C5 or 6C5G			

SOCKETS

X1D	Socket, Modulator Tube	Same as X1A				
X2D	Socket, Modulator Tube	Same as X1A				
X3D	Socket, Modulator Tube	Same as X1A				
X4D	Socket, Modulator Tube	Same as X1A				
X5D	Socket, Audio Amp. Tube	Same as X1A				

PARTS LIST

69H-1 Handset

Item	Circuit Function	Specification	Collins Part No.	Mfr. Code	Mfr's. Type	Notes
	Microphone Handset	Carbon Button Telephone Handset with push button in handle	977N18	82G	F-3AW-3	
	Microphone Plug	3 prong male cable connector. No positioning detent	369N6	60A	MC3M	
	Microphone Cable	5′ 3-conductor shielded rubber covered	425N031	24B	No. 8423	

65P-1 Telegraph Key Cord

	Telegraph Key Cable	Super-service cord rubber covered No. 18 A. W. G.	424N021	24B	"SJ" CAT. TUFFY 18	
	Telegraph Key Plug	2 circuit phone plug 0.248″ Dia. sleeve	361N104	05M	CAT. No. 75	
	Key-Cord Insulation	Insulating sleeving Size No. 6 .166″ I. D. .016″ Wall thickness	152N764	20V	Varflex	
	Key-Cord Insulation	Insulating sleeving Size No. 2 .263″ I. D. .020″ Wall thickness	152N768	20V	Varflex	

65J-1 Power Cord

	Power Cord and Plug	6′ 2-conductor 5 amp. cord with moulded plug	426N1	24B	KG3270	
	Female connector Body for Power Cord	15 amp. 125 volt female 2 contact connector	368N2	80H	CAT. No. 6630	

274N7 Telegraph Key

	Telegraph Key	3/8″ dia. contacts	274N7	42S	R-64	

SPARE PARTS LIST

Quan.	All Symbol Designations Involved	Description	Collins Part No.	Mfr.	Mfr's. Type	Notes
2	C1A, C3A, C5A, C7A	.001 mf ±1% 1000 TV	912N210D	75C	1R	
2	C2A, C4A, C6A, C8A	.002 mf ±1% 1000 TV	912N220D	75C	1R	
1	C9A, C18A	.008 mf ±20% 600 TV	909N280C	02S	C	
				75C	1W	
1	C10A	.000025 mf ±10% 900 TV	909N425C	02S	D	
				64S	MT	
1	C11A	.00025 mf ±10% 900 TV	909N325C	02S	D	
				64S	MT	
1	C12A	.006 mf ±10% 1000 TV	910N260E	02S	BE-10	
2	C13A, C15A, C16A	.006 mf ±10% 1000 TV	910N260A	75C	9L	
				02S	A-10	
				64S	XM	
1	C17A	.0005 mf ±10% 1000 TV	910N350A	75C	9L	
				02S	A2-10	
				64S	XM	
1	C14A	.0005 mf ±10% 900 TV	909N350C	75C	1W	
				02S	C	
				64S	MW	
1	C19A	.006 mf ±10% 1500 TV	915N260E	02S	BE-15	
1	C20A, C22A	.002 mf ±10% 1500 TV	915N220E	02S	BE-15	
1	C21A	.002 mf ±10% 1500 TV	950N220A	02S	BE-15	
2	C1C, C2C	10 mf ±10% 600 WV	930N11	64C	KG	
2	C3C, C4C, C4D, C5D	4 mf ±10% 600 WV	930N62A-M	64S		
1	C5C, C1D	2 mf ±10% 600 WV	930N61A-M	64S		
1	C2D, C3D	20 mf 100 v	183N5	75C	CCA-AY	
2	E2A, E3A, E4A	47 ohm ±10% 1 w	703N47	22A	GB	
6	F1C	10 amp plug type	264N110	40E	Plug	
6	F2C	6 amp plug type	264N106	40E	Plug	
6	F3C	3 amp plug type	264N103	40E	Plug	
1	R1A	10,000 ohm ±10% 1 w	704N10M	28J	BT1	
1	R2A	50,000 ohm ±10% 1 w	704N50M	28J	BT1	
1	R3A, R15D	50,000 ohm ±10% 2 w	706N50M	28J	BT2	
1	R4A	5000 ohm ±10% 8 w	710NA5M	25P	Brown Devil	

SPARE PARTS LIST

Quan.	All Symbol Designations Involved	Description	Collins Part No.	Mfr.	Mfr's. Type	Notes
1	R5A, R7A	100,000 ohm ±10% 2 w	706N100M	28J	BT2	
1	R6A	1000 ohm ±10% 10 w	710NA1M	25P	Brown Devil	
1	R8A	1000 ohm ±10% 2 w	706N1M	28J	BT2	
2	R9A, R10A, R11A	27 ohm ±10% ½ w	701N27	22A	EB	
1	R12A	10,000 ohm ±10% 25 w	710NC10M	25P		
1	R1B	10,000 ohm ±10% 10 w	710NA10M	25P	Brown Devil	
1	R2B	2000 ohm ±10% 25 w	710NC2M	25P	0207	
1	R1C	50,000 ohm ±10% 50 w	710ND50M	25P		
1	R2C	3000 ohm ±10% 25 w	710NC3M	25P		
1	R3C	25,000 ohm ±10% 25 w	710NC25M	25P		
1	R4C	1000 ohm ±10% 25 w	710NC1M	25P		
1	R1D	500,000 ohm ±10% 1 w	704N500M	28J	BT1	
1	R2D	10,000 ohm WW Pot.	377N225A	05M	M	
1	R3D	15,000 ohm ±10% 1 w	704N15M	28J	BT1	
2	R4D, R7D, R8D, R11D	250 ohm ±10% ½ w	707N250	28J	BW½	
2	R5D, R6D, R9D, R10D	10 ohm ±10% 1 w	703N10	22A	GB	
1	R12D, R17D	100 ohm ±10% 10 w	710NA100	25P	Brown Devil	
1	R14D	20,000 ohm ±10% 1 w	704N20M	28J	BT1	
1	R16D	2500 ohm ±10% 2 w	706N2500	28J	BT2	

APPENDIX

LIST OF MANUFACTURERS

22A Allen-Bradley Company
118 W. Greenfield Avenue
Milwaukee, Wisconsin

60A American Phenolic Corp.
1250 W. Van Buren St.
Chicago, Illinois

84A Arrow-Hart & Hegeman Co.
103 Hawthorne Street
Hartford, Connecticut

90B Bryant Electric Company
Barnum Station
Bridgeport, Connecticut

55C Chicago Transformer Corp.
3501 West Addison
Chicago, Illinois

67C Conant Electrical Labs.
135 North 66th Street
Lincoln, Nebraska

75C Cornell-Dubilier Electric Corp.
1000 Hamilton Blvd.
South Plainfield, New Jersey

82C Coto-Coil Company
73 Willard Avenue
Providence, Rhode Island

40E Economy Fuse & Mfr. Co.
Greenview Ave. at Diversey Pky.
Chicago, Illinois

85G Guardian Electric Mfg. Co.
1620-27 West Walnut St.
Chicago, Illinois

05H Hammarlund Mfg. Co.
424 W. 33rd St.
New York, New York

80H Harvey Hubbell, Inc.
1930 Thomas Street
Bridgeport, Connecticut

28J International Resistance Co.
1100 Terminal Commerce Bldg.
Philadelphia, Pennsylvania

77J E. F. Johnson Company
Waseca, Minnesota

91J Howard B. Jones
2300 West Wabansia Ave.
Chicago, Illinois

05M P. R. Mallory & Company
1941 Thomas Street
Indianapolis, Indiana

05N National Company, Inc.
Malden, Massachusetts

05P Oak Manufacturing Co.
1260 Clybourne Avenue
Chicago, Illinois

25P Ohmite Manufacturing Co.
4837 W. Flourney Street
Chicago, Illinois

02S Sangamo Electric Co.
1935 Funk Street
Springfield, Illinois

64S Solar Manufacturing Corp.
Bayonne, New Jersey

80T Triplett Elec. Inst. Co.
Bluffton, Ohio

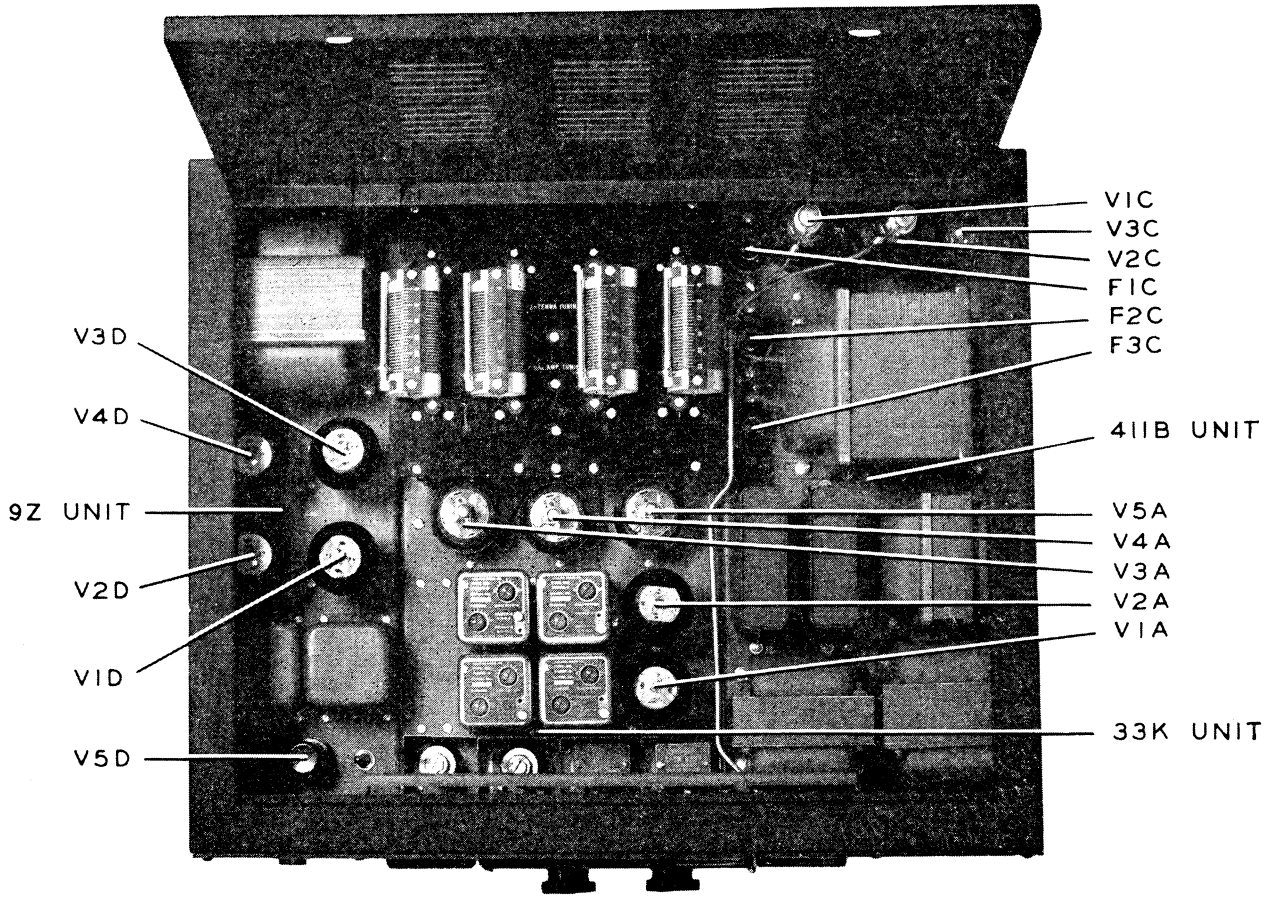


FIG. 2 32RA TRANSMITTER
TOP VIEW OPEN

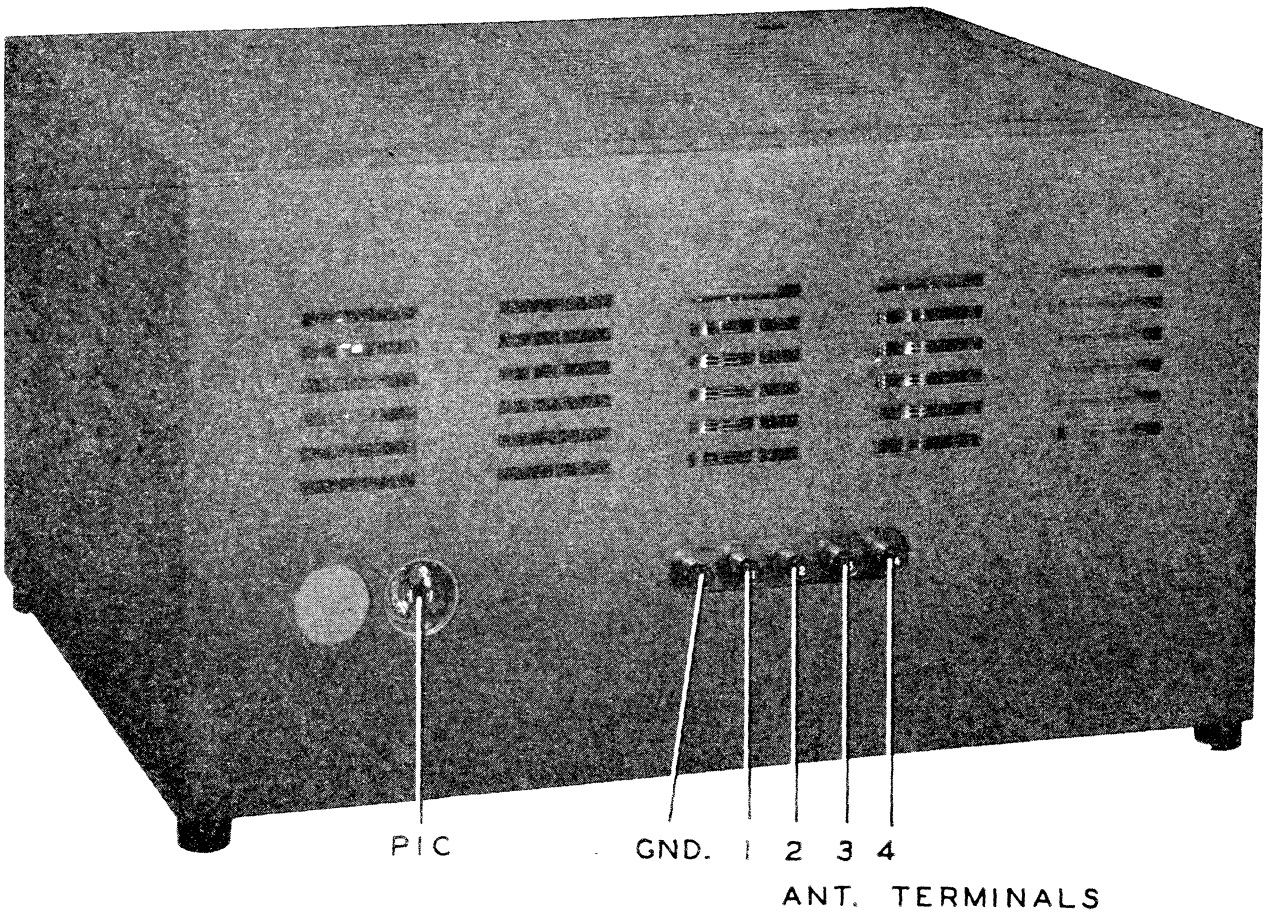


FIG. 3 32RA TRANSMITTER
REAR VIEW

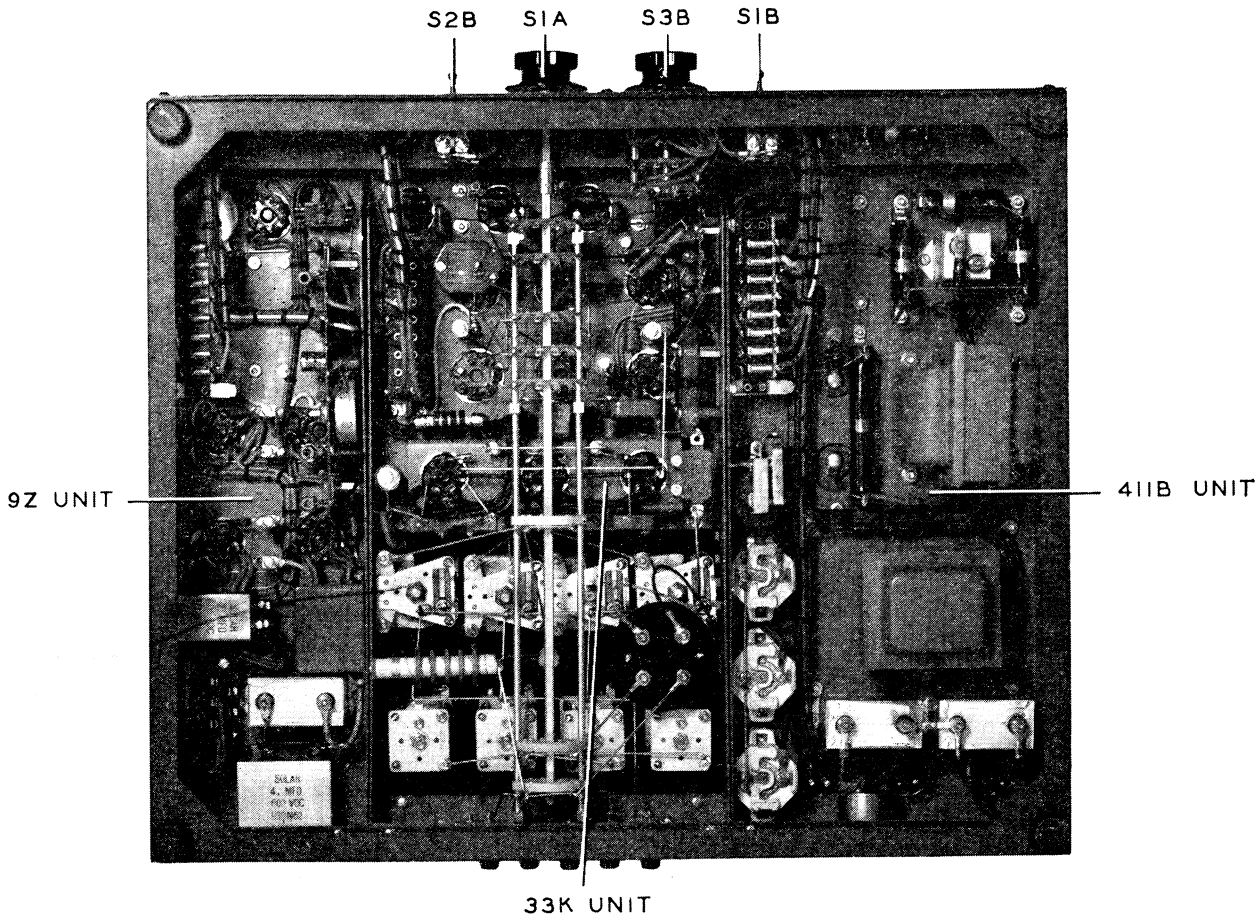


FIG 4 32RA TRANSMITTER
BOTTOM VIEW OPEN

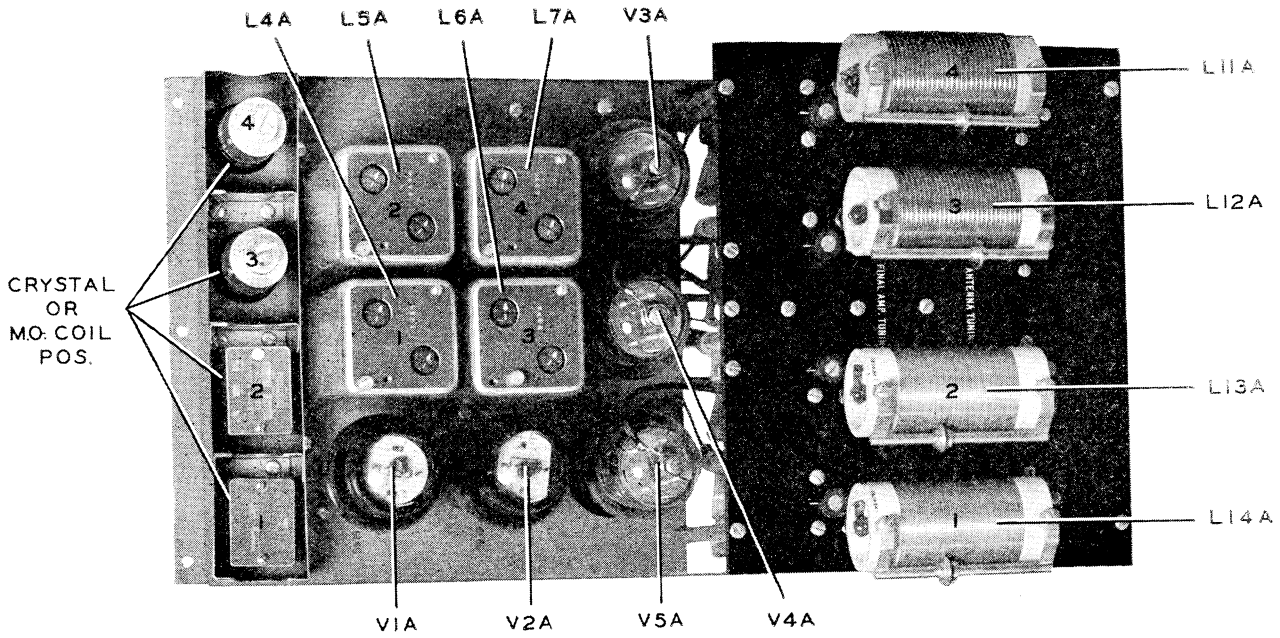


FIG. 5 33K R-F UNIT
TOP VIEW

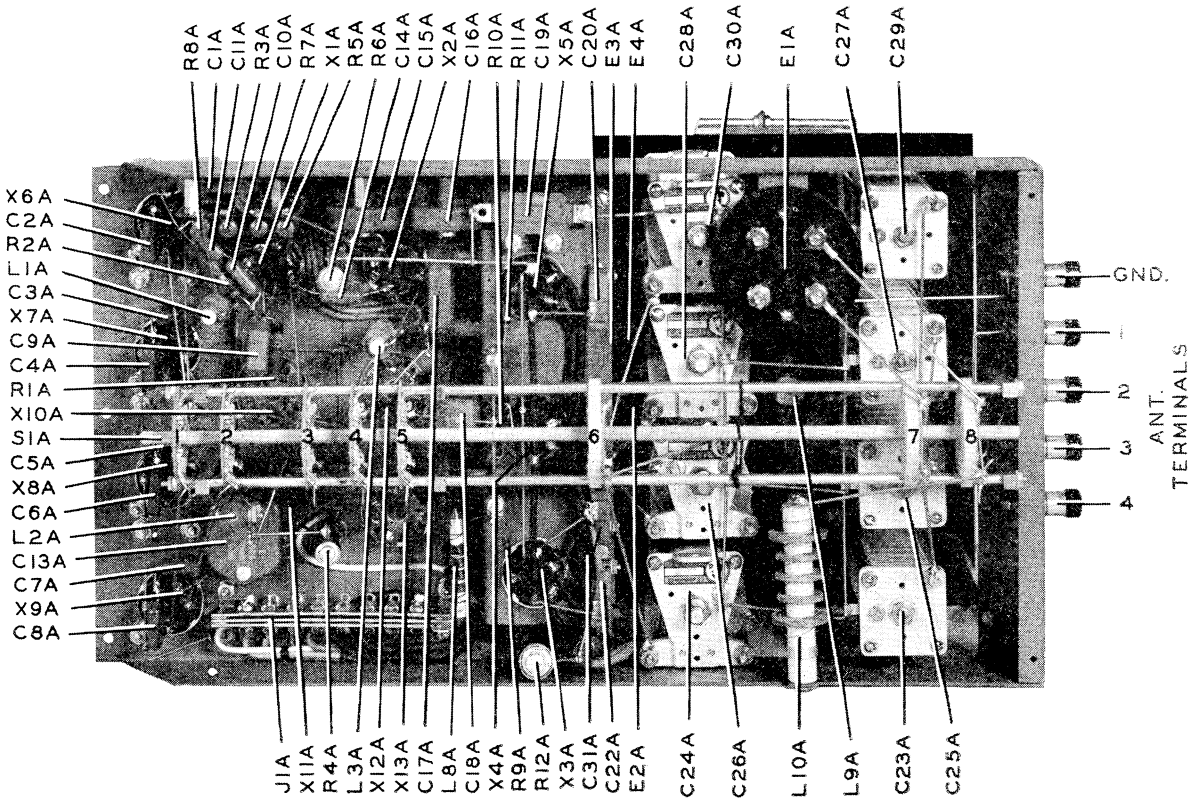


FIG. 6 33K R-F UNIT
BOTTOM VIEW

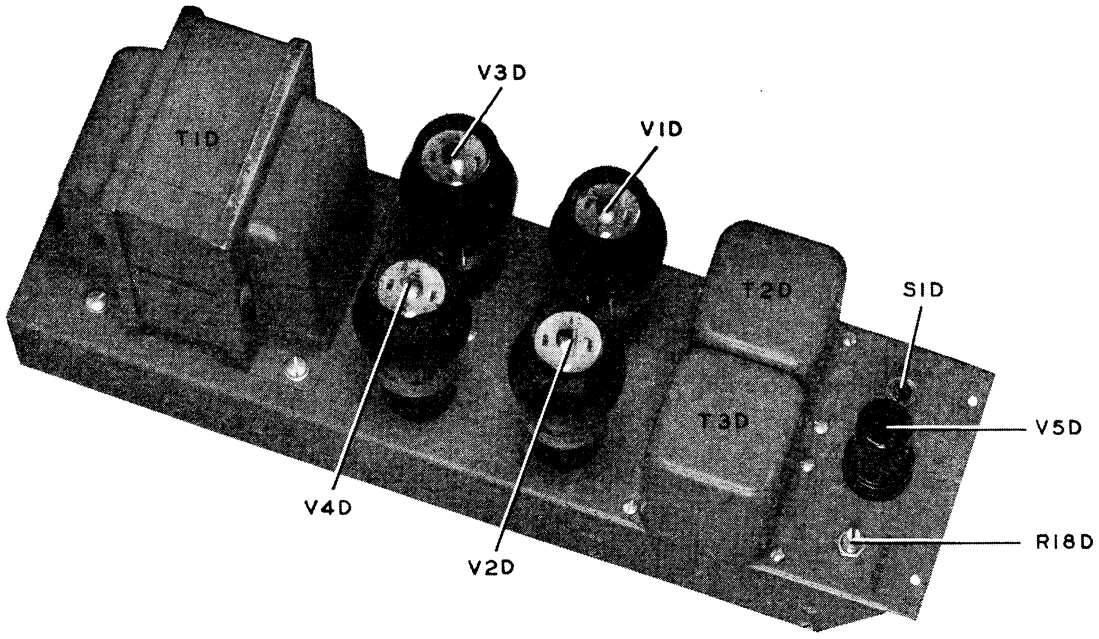


FIG. 7 9Z MODULATOR UNIT
TOP VIEW

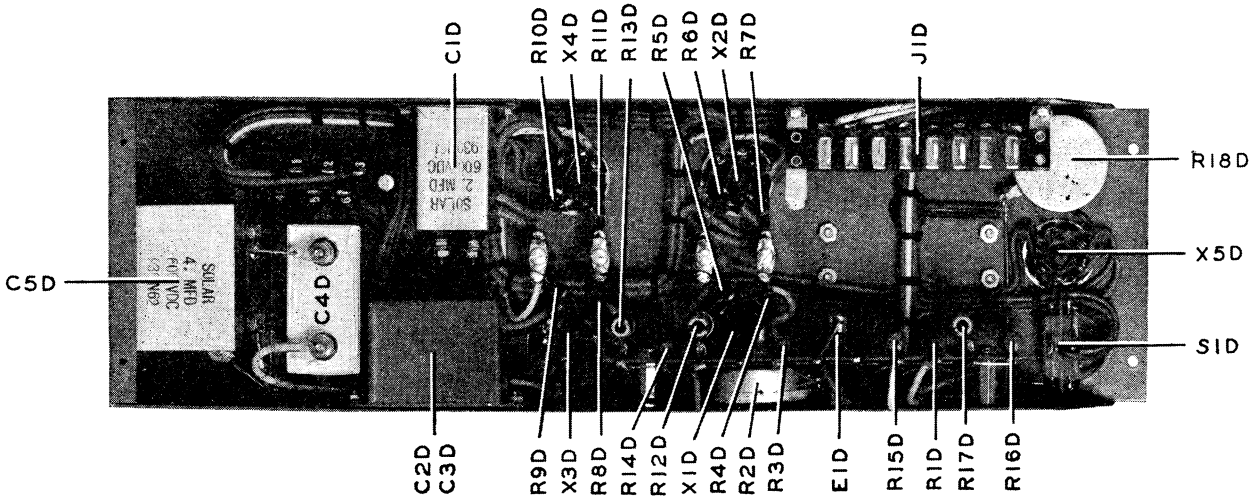


FIG 8 9Z MODULATOR UNIT
BOTTOM VIEW

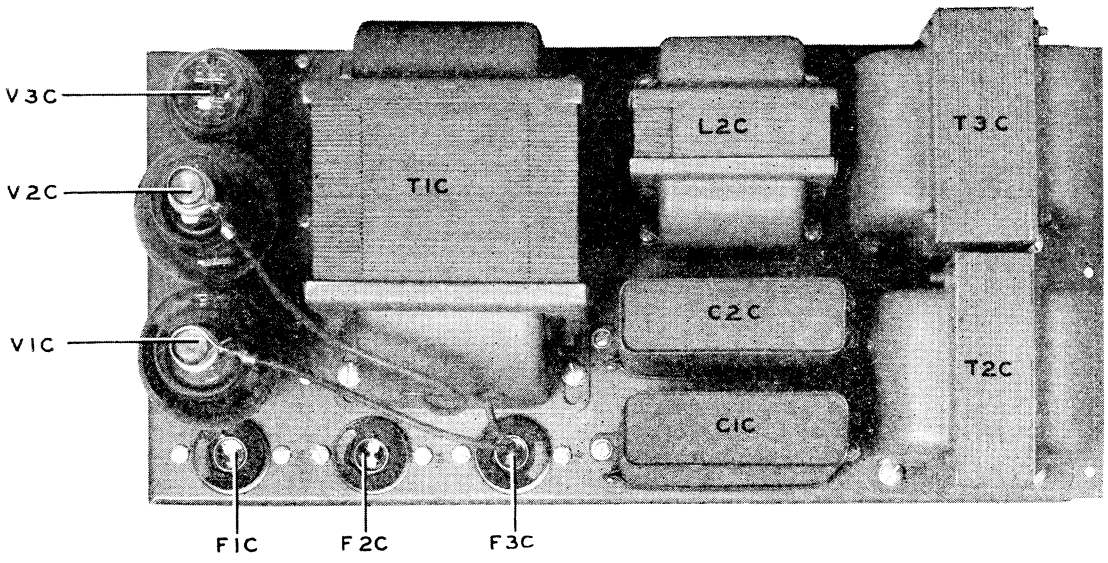


FIG. 9 411B POWER UNIT

TOP VIEW

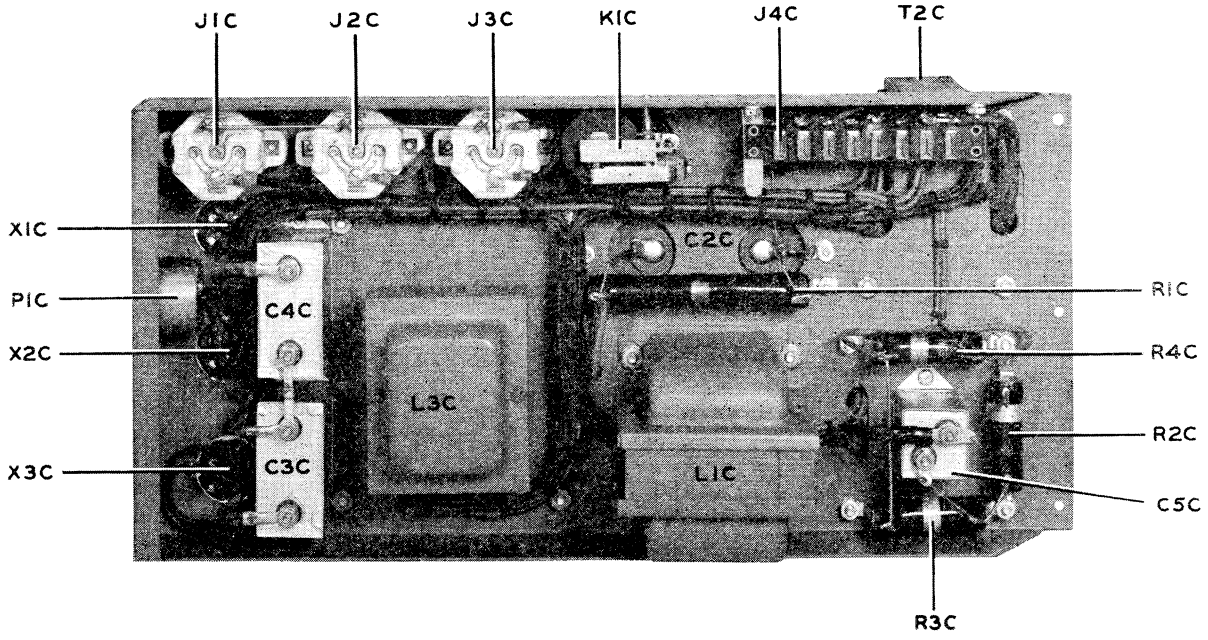


FIG. 10 411B POWER UNIT

BOTTOM VIEW

APPENDIX

STANDARD CABLE WIRE CODE

Numerals refer to RMA Color Code
Letters refer to wire size & type

ALL WIRE RUBBER INSULATED WITH BRAID COVERING

NEW Color Code	OLD Color Code	COLOR	CONSTRUCTION RATINGS
A0	B	Black	
*A1	N	Brown	16 Strands No. 30 Tinned
A2	R	Red	0.0156" Rubber Comp. Wall
A3	O	Orange	Glazed Cotton Braid
*A4	Y	Yellow	
A5	G	Green	3 Amp. 500 Volts D.C.
A6	L	Blue	
A9	W	White	
A02		Black—Red Tracer	
A32		Orange—Red Tracer	
A52		Green—Red Tracer	
A62		Blue—Red Tracer	
A92		White—Red Tracer	
B0	RB	Black	
B2	RR	Red	26 Strands No. 30 Tinned
B3		Orange	0.0313" Rubber Comp. Wall
*B4	RY	Yellow	Glazed Cotton Braid
B5	RG	Green	
B6	RL	Blue	6 Amp. 750 Volts D.C.
B9	RW	White	
C0		Black	
C2		Red	65 Strands No. 30 Tinned
C3		Orange	0.031" Rubber Comp. Wall
C5		Green	Glazed Cotton Braid
C6		Blue	
C9		White	20 Amp. 750 Volts D.C.
C09	CF	Black—White Tracer	
C29	CC	Red—White Tracer	
C39		Orange—White Tracer	
C59	CB	Green—White Tracer	
C69		Blue—White Tracer	
*C10	CA	Brown—Black Tracer	
*C40	CE	Yellow—Black Tracer	
*C90	CD	White—Black Tracer	
D0	H	Black	19 Strands No. 27 Tinned 3/64" Live Rubber Wall Lacquered Double Braid—5KV

APPENDIX

SERVICE REPORT

REPLACEABLE COMPONENTS

Please fill out this form and submit it by mail to the COLLINS RADIO COMPANY, CEDAR RAPIDS, IOWA, U.S.A., when reporting failure of component parts. A properly completed report must be submitted for each part before any accounts will be adjusted. An accurate report will assure the correct replacement part.

IDENTIFICATION OF COMPONENT

Owner_____

Equipment Type No._____ Serial No._____

Unit Type No._____ Serial No._____

Component Item No._____ Stock No._____

Description of Component_____

_____

_____

SERVICE DATA

Date Equipment Received_____ Date in Service_____

Date of Failure_____ Hours of Service_____

NATURE OF FAILURE _____ _____

_____

_____

_____

_____

OPERATING DATA AND CONDITIONS (At time of failure)

Line Voltage_____Abnormal Meter Readings_____

Ambient Temperature_____°F. Electrical Storm?_____

Associated Fuse Failure_____

Additional Comments_____

_____

_____

_____

_____

APPENDIX

SERVICE REPORT

REPLACEABLE COMPONENTS (CONT.)

PRESENT STATUS OF EQUIPMENT

Out of Service_____Component Replaced_____

Temporary Repair (state nature)_____

_____

Date of Report_____Signed_____

THESE ENTRIES TO BE MADE BY THE COLLINS RADIO COMPANY

Received_____R.T. No._____Results of Factory Test:_____

_____

_____Replacement Order No._____

Disposition_____

_____

Form CDF-7

APPENDIX

SERVICE REPORT

REPLACEABLE COMPONENTS

Please fill out this form and submit it by mail to the COLLINS RADIO COMPANY, CEDAR RAPIDS, IOWA, U.S.A., when reporting failure of component parts. A properly completed report must be submitted for each part before any accounts will be adjusted. An accurate report will assure the correct replacement part.

IDENTIFICATION OF COMPONENT

Owner_____

Equipment Type No._____ Serial No._____

Unit Type No._____ Serial No._____

Component Item No._____ Stock No._____

Description of Component_____

_____

_____

SERVICE DATA

Date Equipment Received_____ Date in Service_____

Date of Failure_____ Hours of Service_____

NATURE OF FAILURE_____ _____

_____

_____

_____

_____

OPERATING DATA AND CONDITIONS (At time of failure)

Line Voltage_____Abnormal Meter Readings_____

Ambient Temperature_____°F. Electrical Storm?_____

Associated Fuse Failure_____

Additional Comments_____

_____

_____

_____

_____

APPENDIX

SERVICE REPORT

REPLACEABLE COMPONENTS (CONT.)

PRESENT STATUS OF EQUIPMENT

Out of Service_____Component Replaced_____

Temporary Repair (state nature)_____

_____

Date of Report_____Signed_____

THESE ENTRIES TO BE MADE BY THE COLLINS RADIO COMPANY

Received_____R.T. No._____Replacement Order No._____

Results of Factory Test:_____

_____

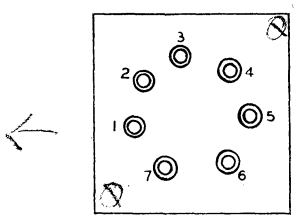
Disposition_____

_____

Form CDF-7

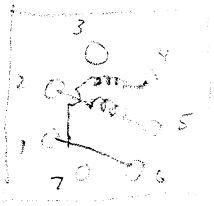
MAT.:	GRADE:	DRAWN BY: WFS	DATE:	COLLINS RADIO COMPANY
FINISH:		TRACED BY: MRJ	DATE: 1-29-41	CEDAR RAPIDS, IOWA
		CHECKED BY: WFS	DATE: 3-26-41	
UNIT: SCHEMATIC: 7000C-5 TUNING COIL ASSEMBLY			SCALE	DRAWING NO. 102A-1

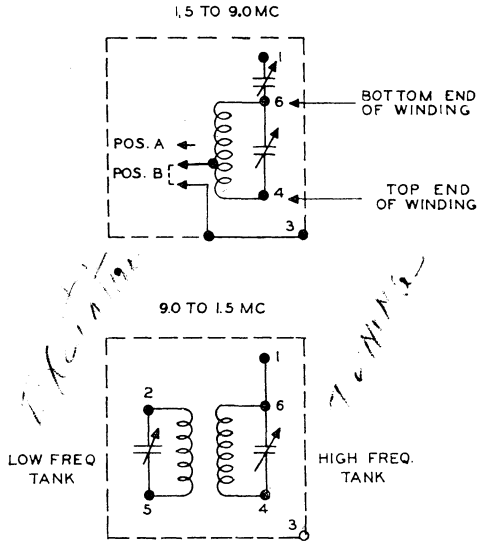
D145A



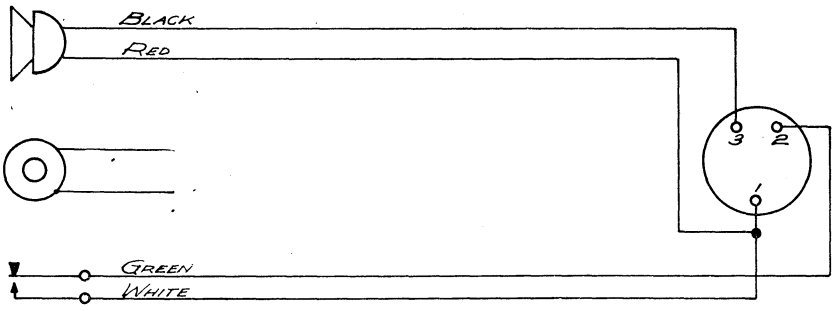
BOTTOM VIEW

COIL FORM BASE





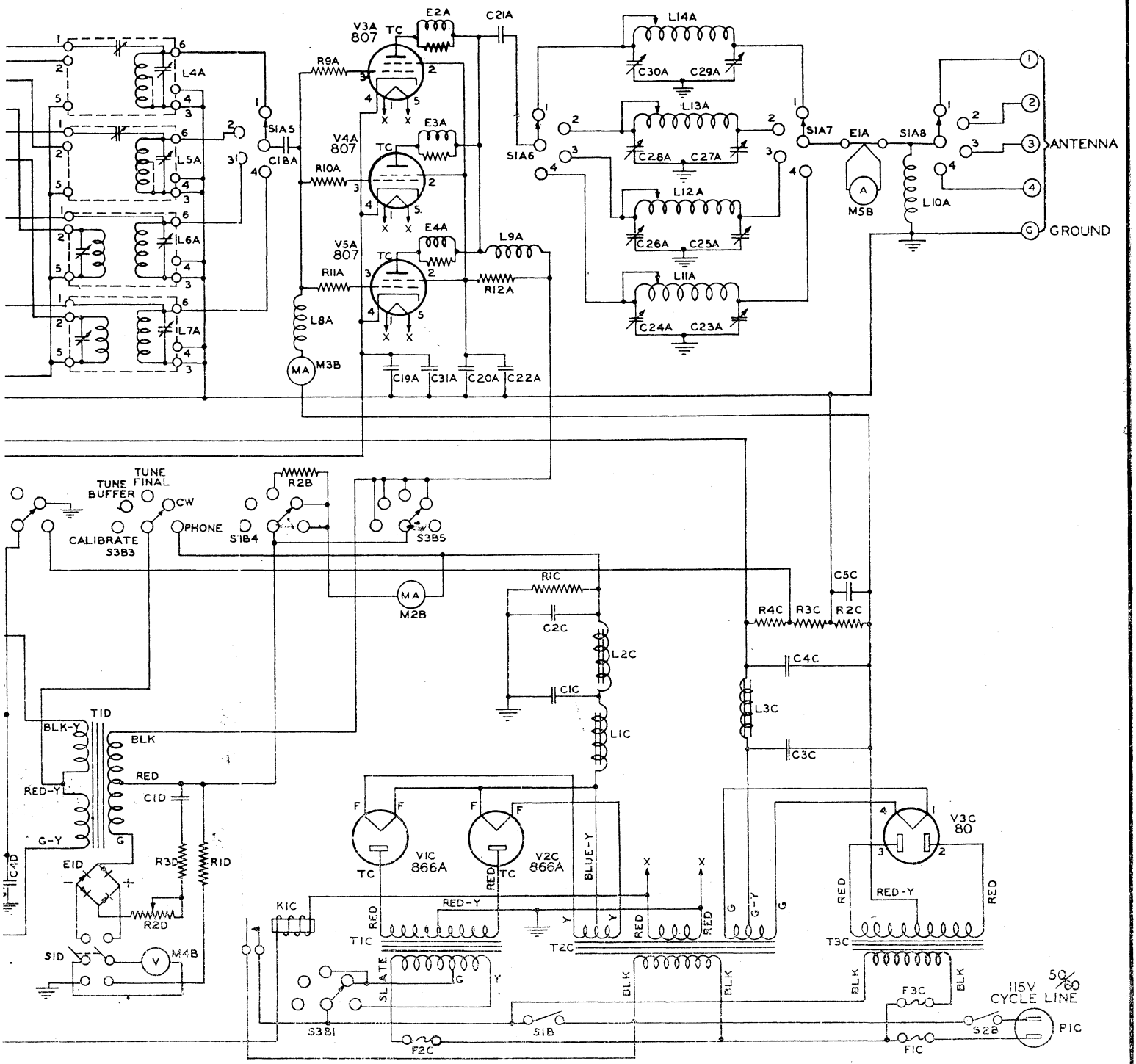
MAT.:	GRADE:	DRAWN BY: L.E.B	DATE:	COLLINS RADIO COMPANY
FINISH:		TRACED BY: B.R.M	DATE: 8-13-1940	CEDAR RAPIDS, IOWA
		CHECKED BY: L.E.B	DATE: 8-13-40	
UNIT: 69H-1 HANDSET SCHEMATIC			SCALE	DRAWING NO. 1580A-1



JS RADIO COMPANY DAR RAPIDS, IOWA	UNIT: 32RA-8 COMPLETE TRANSMITTER SCHEMATIC DESIGN: AG DETAIL: NDB DATE: 10-2-42 LAYOUT: CHECK: AG DATE:	REVISED: DATE:	SCALE	DWG. NO. 1275C	

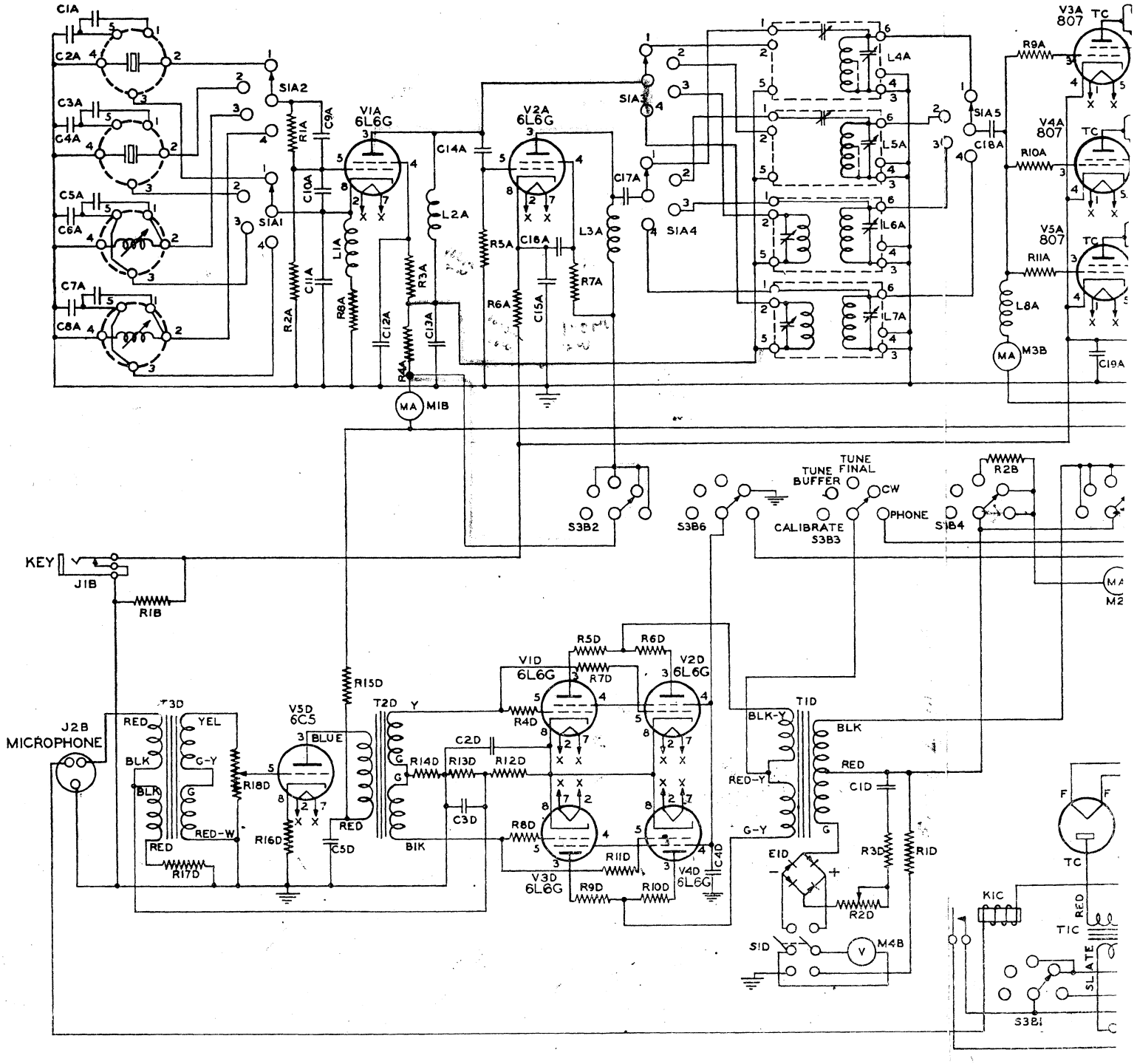
QUANTITY: G F E D C B A

IT.	PART NO.	DESCRIPTION	MAT'L	FIN.

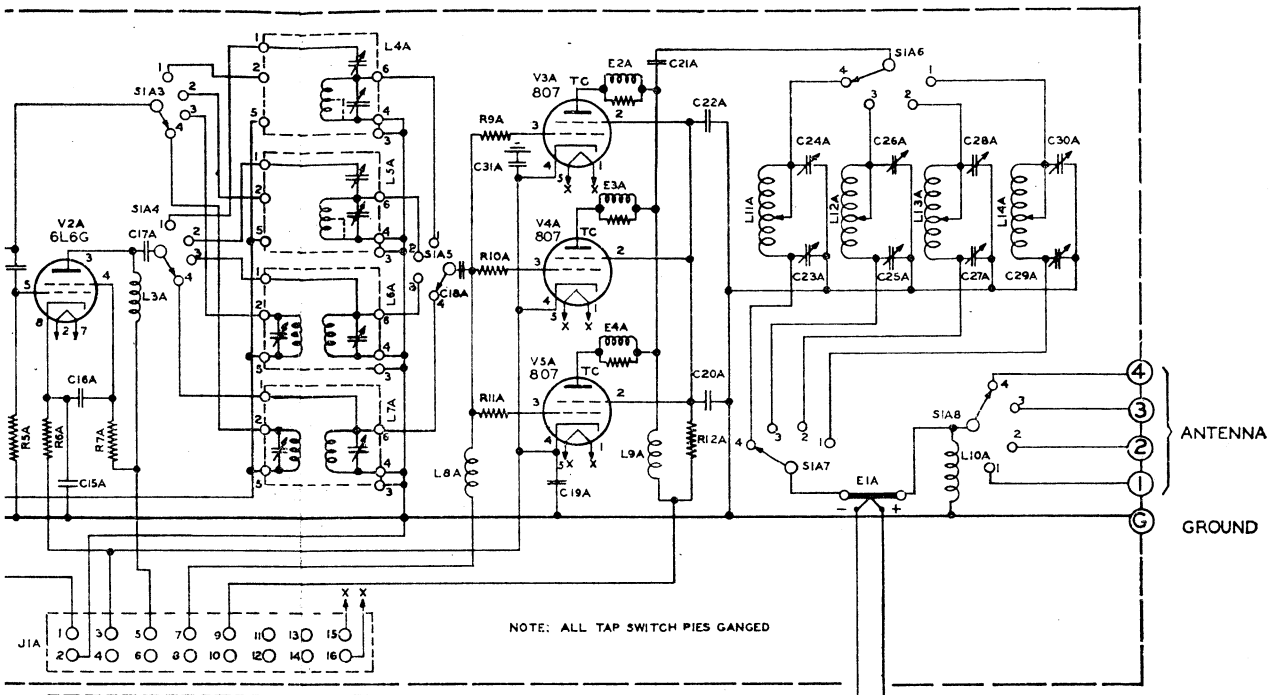


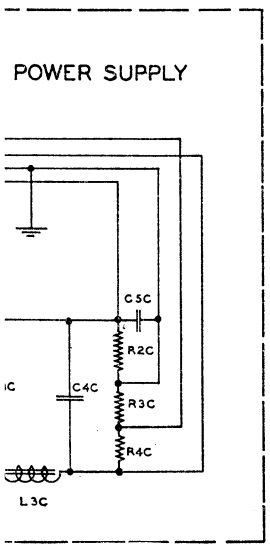
COLLINS RADIO COMPANY
CEDAR RAPIDS, IOWA

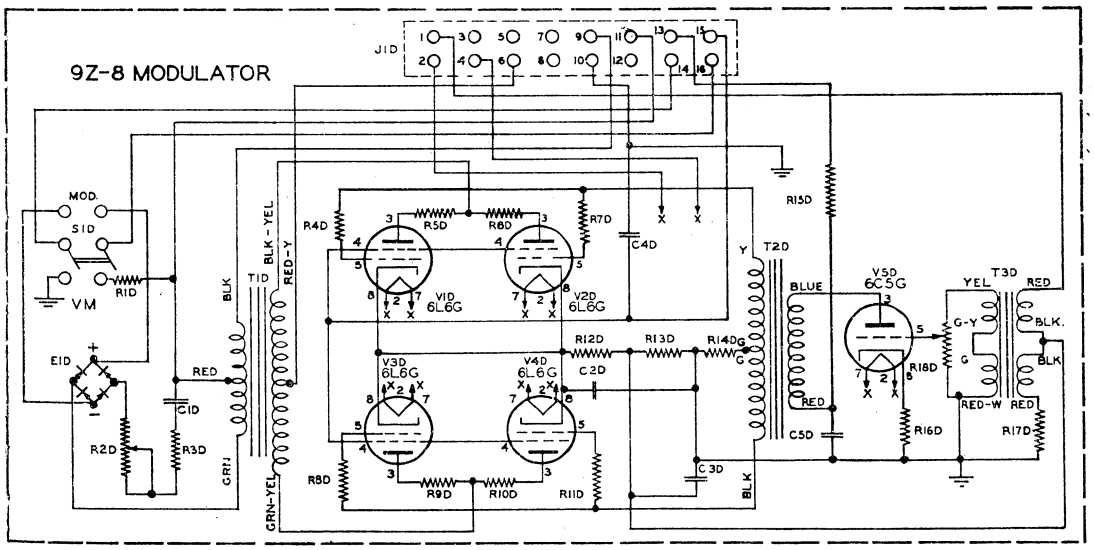
UNIT: 32RA-8 COMPL
DESIGN: [illegible] DETAIL: NDK
LAYOUT: [illegible] CHECK: [illegible]
QUANTI

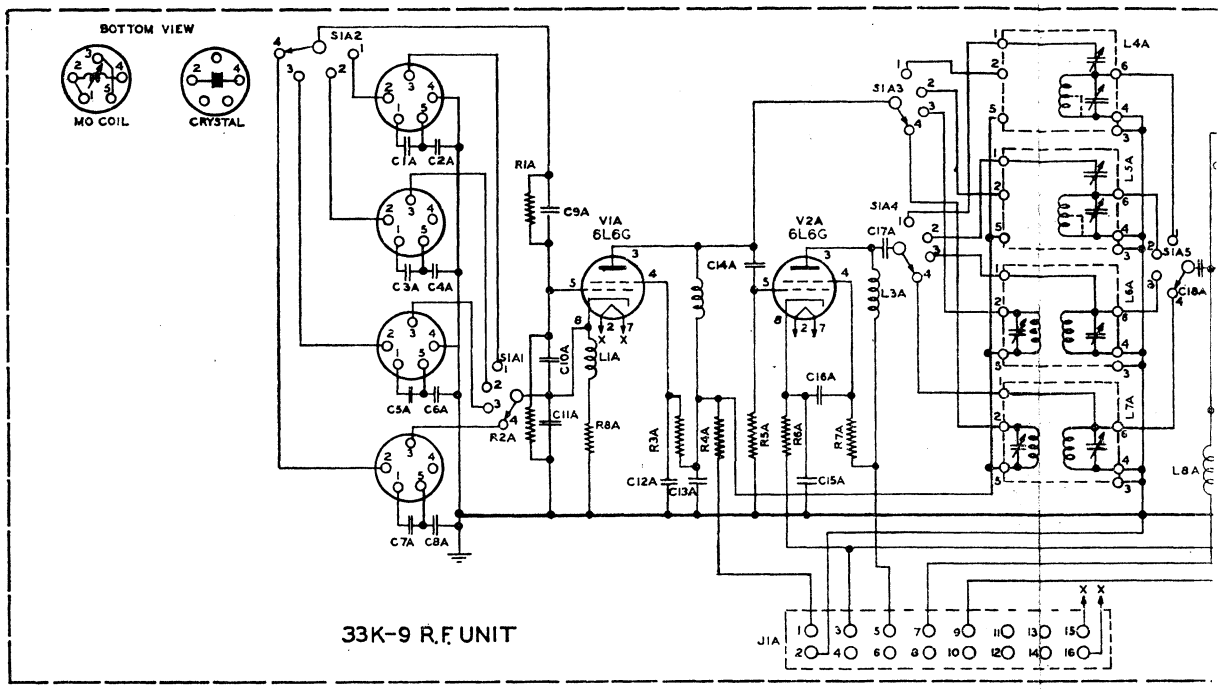


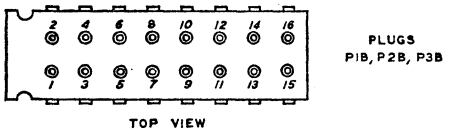
UNIT: 32RA-8 CABLING SCHEMATIC			
REVISED DATE	DRAWN BY: LEB	DATE	DWG NO. 622D
MAT	TRACED BY: NDK	DATE 10-13-42	
FINISH	CHECKED BY: JB	DATE	

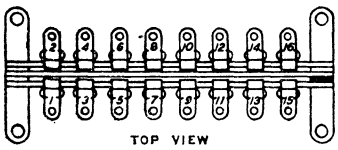


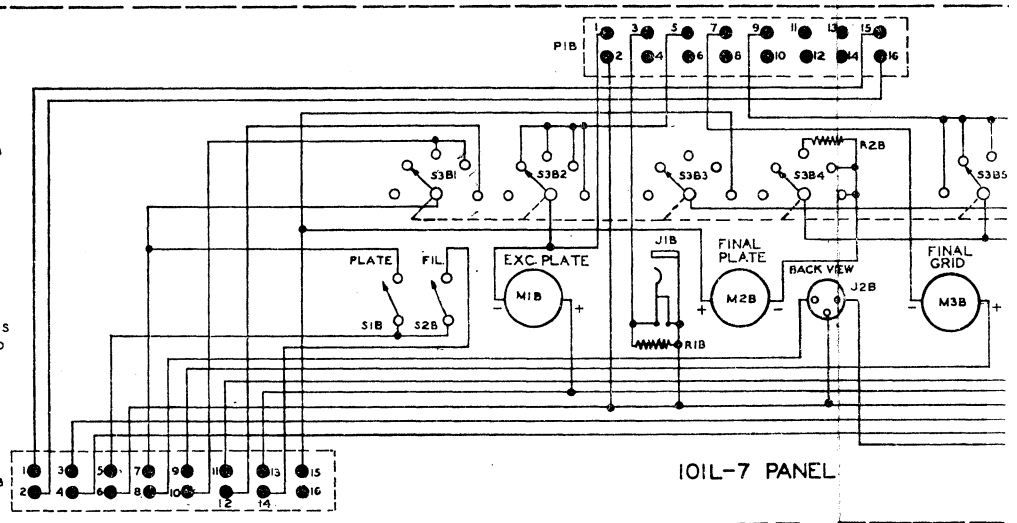


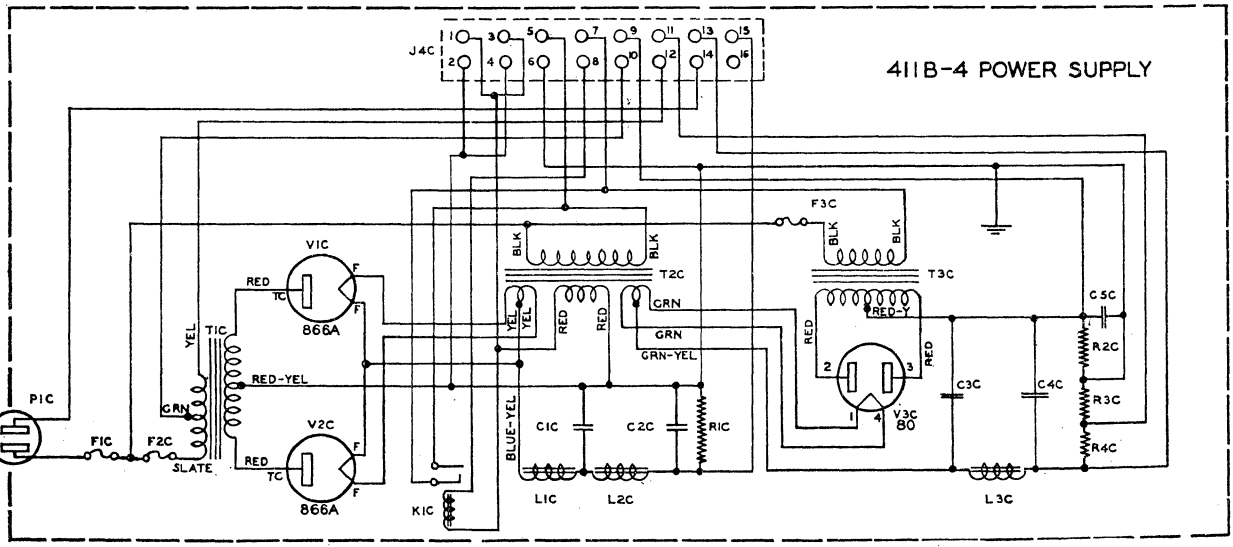


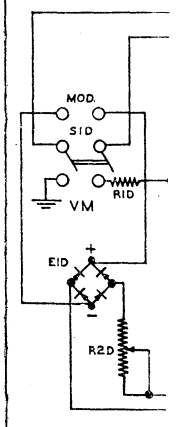

BOTTOM VIEW
MO COIL
CRYSTAL
S1A2
C1A C2A
C3A C4A
C5A C6A
C7A C8A
S1A1
R1A
C9A
V1A 6L6G
V2A 6L6G
C10A
L1A
C11A
R8A
R2A
C14A
C16A
C17A
S1A3
S1A4
S1A5
L3A
L4A
L5A
L6A
L7A
L8A
C18A
R3A
R4A
R5A
R6A
R7A
C12A C13A
C15A
J1A
33K-9 R.F. UNIT


PLUGS
P1B, P2B, P3B
TOP VIEW


RECEPTACLES
J1A, J4C, J1D
TOP VIEW


P1B
S3B1
S3B2
S3B3
S3B4
S3B5
R2B
PLATE
FIL
S1B
S2B
EXC. PLATE
M1B
J1B
R1B
FINAL PLATE
M2B
BACK VIEW
J2B
FINAL GRID
M3B
P2B
101L-7 PANEL


J4C
411B-4 POWER SUPPLY
110V 50/60~
P1C
F1C
F2C
SLATE
GRN
YEL
T1C
RED-YEL
V1C
V2C
866A
866A
RED
TC
F
K1C
BLK
T2C
T3C
F3C
GRN
GRN-YEL
BLUE-YEL
RED-Y
V3C 80
C1C
C2C
R1C
C3C
C4C
C5C
R2C
R3C
R4C
L1C
L2C
L3C

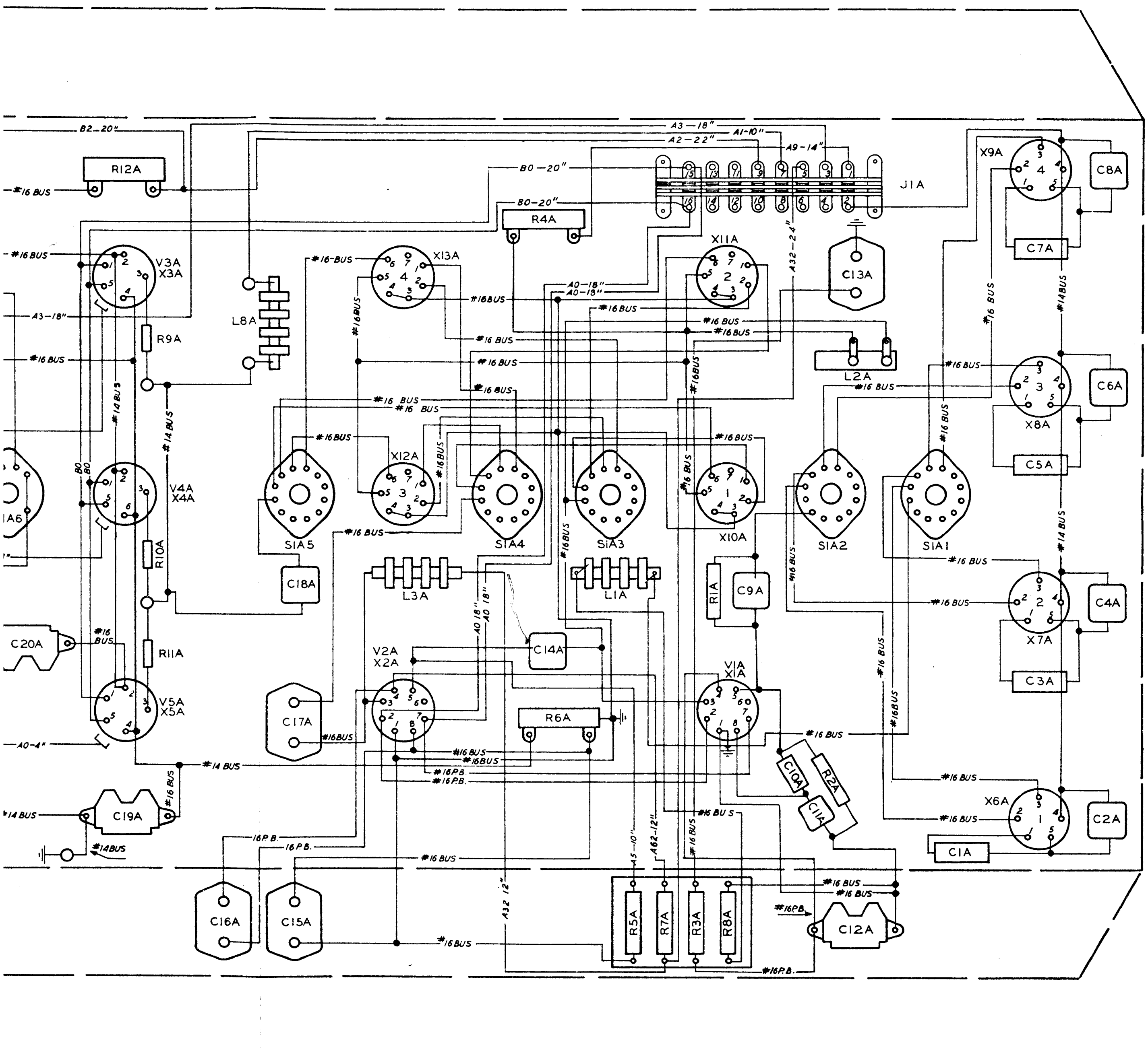

9Z-8 MOD
MOD.
S1D
VM
R1D
E1D
R2D

COLLINS RADIO COMPANY
CEDAR RAPIDS, IOWA

UNIT: 33 K-9 PRACTICAL WIRING DIAGRAM 32RA-8

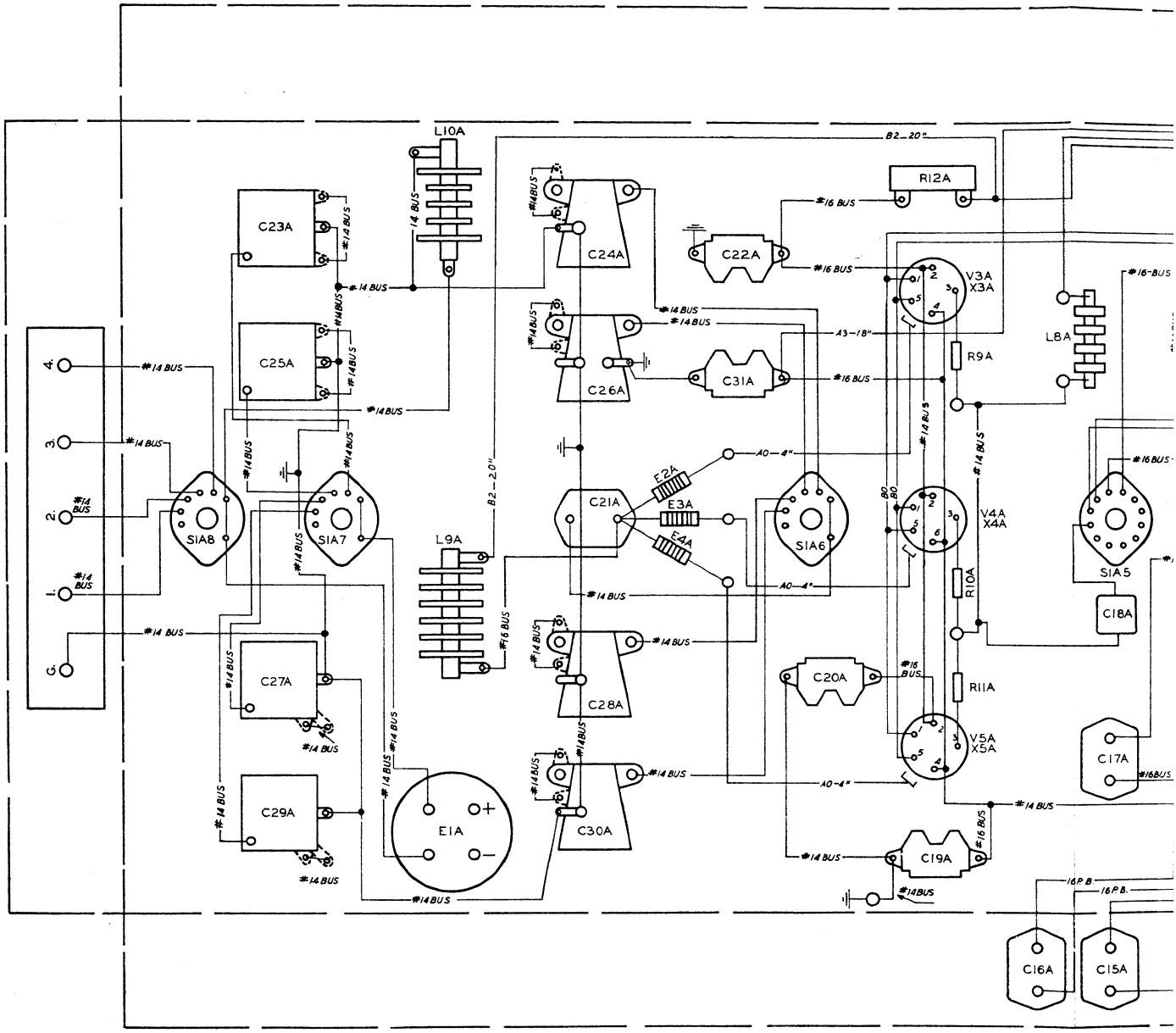
DESIGN: LAYOUT: DETAIL: F.T.F CHECK: DATE: 10-23-42 DATE: REVISED: REG D-3118 DATE: 1-14-43 SCALE DWG. NO. 531D-2

QUANTITY	IT.	PART NO.	DESCRIPTION	MAT'L	FIN.
G F E D C B A					



DO NOT SCALE DWG.

COLLINS RADIO
CEDAR RAPIDS



RADIO COMPANY
IR RAPIDS, IOWA

UNIT: 101L-7 PRACTICAL WIRING DIAGRAM 32RA-8

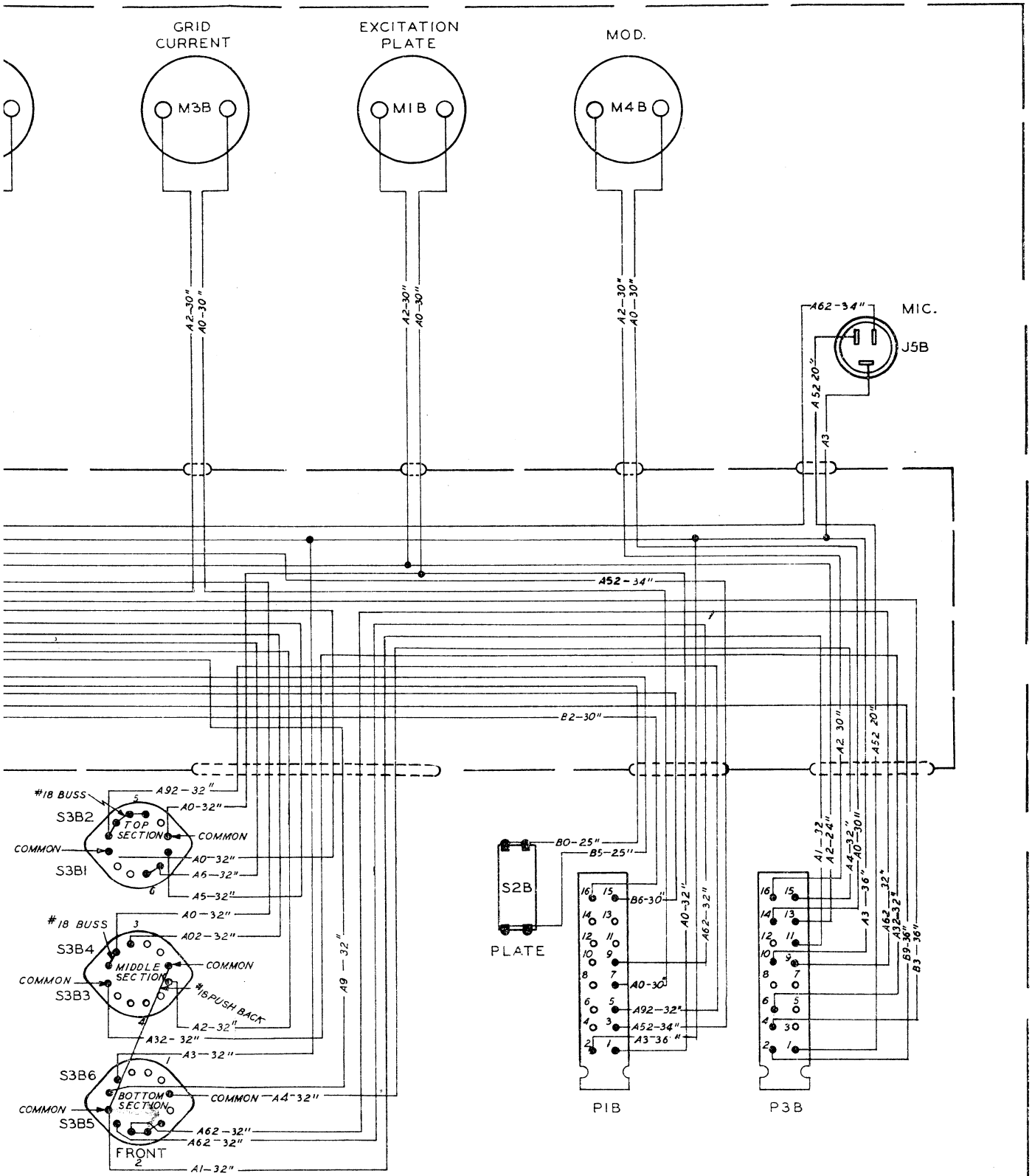
DESIGN: LAYOUT | DETAIL: DLS | CHECK: | DATE: 10-23-42 | DATE:

REVISED: REG D-3123 DATE: 1-14-43

SCALE

DWG. NO. 1154C-2

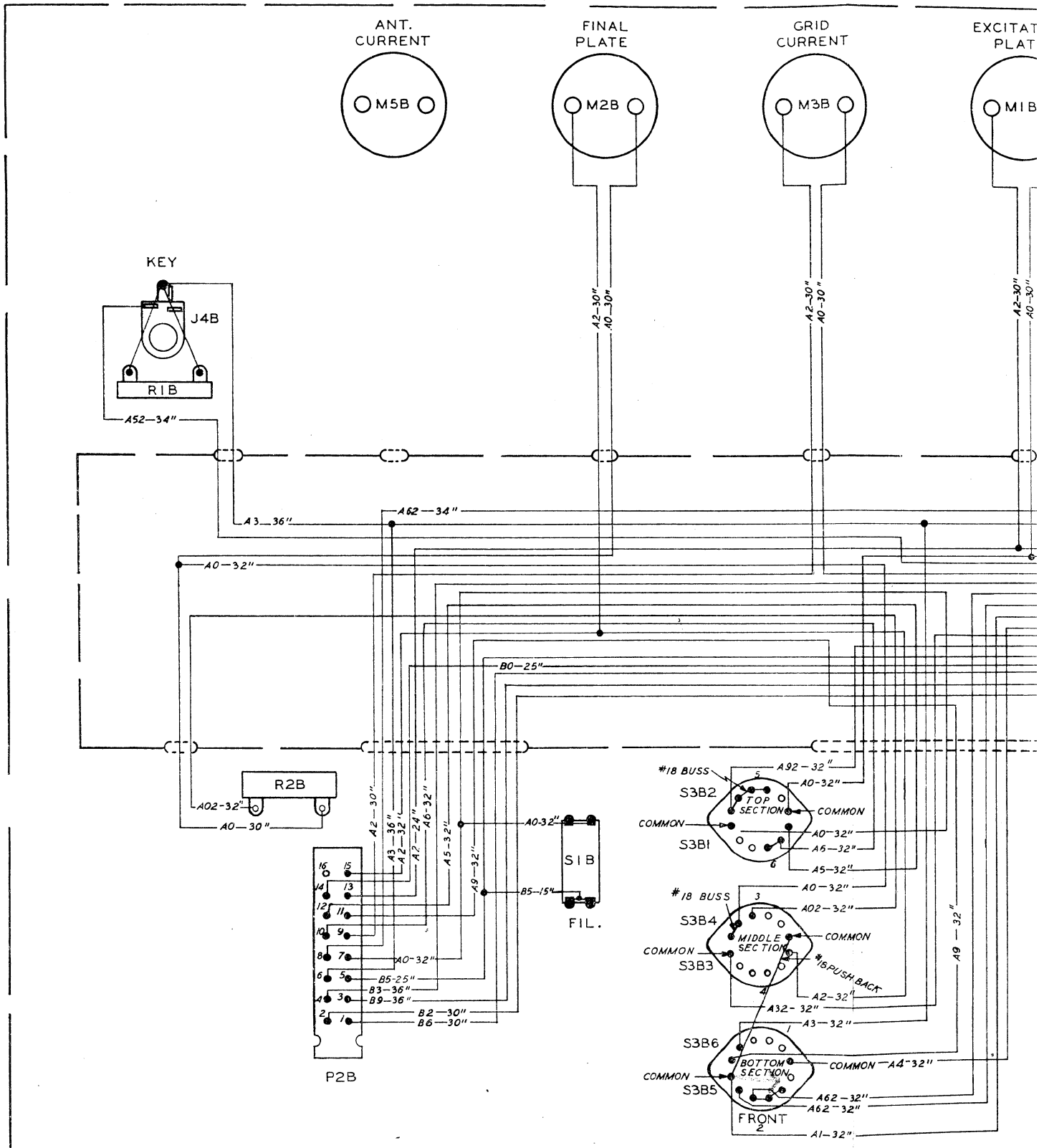
QUANTITY G F E D C B A	IT.	PART NO.	DESCRIPTION	MAT'L	FIN.



DO NOT SCALE DWG.

COLLINS RADIO COMPANY
CEDAR RAPIDS, IOWA

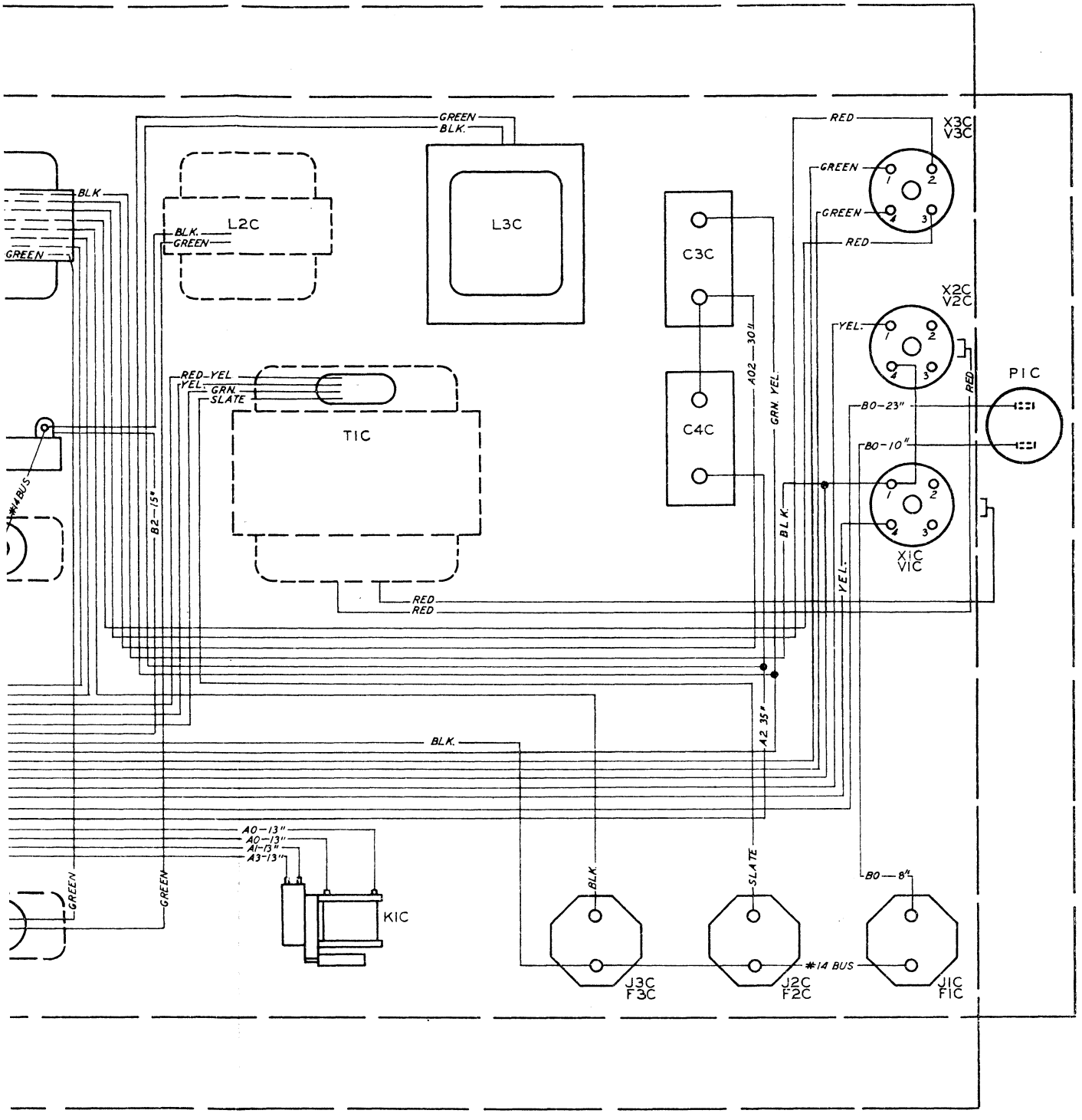
UNIT: 101L-7 PRACTIC
DESIGN: DETAIL: DLS DATE
LAYOUT CHECK: DATE
QUANTITY



ALL FRACTIONAL DIMENSIONS ± 1/64
ALL DECIMAL DIMENSIONS ± .005
UNLESS OTHERWISE NOTED.

S RADIO COMPANY AR RAPIDS, IOWA	UNIT: 411B-4 PRACTICAL WIRING DIAGRAM			32RA-8	DWG. NO. 1152C-2
	DESIGN: DETAIL: F.T.F. DATE: 10-23-42 LAYOUT: CHECK. DATE:	REVISED: REG D-3/24	DATE: 1-14-43	SCALE	

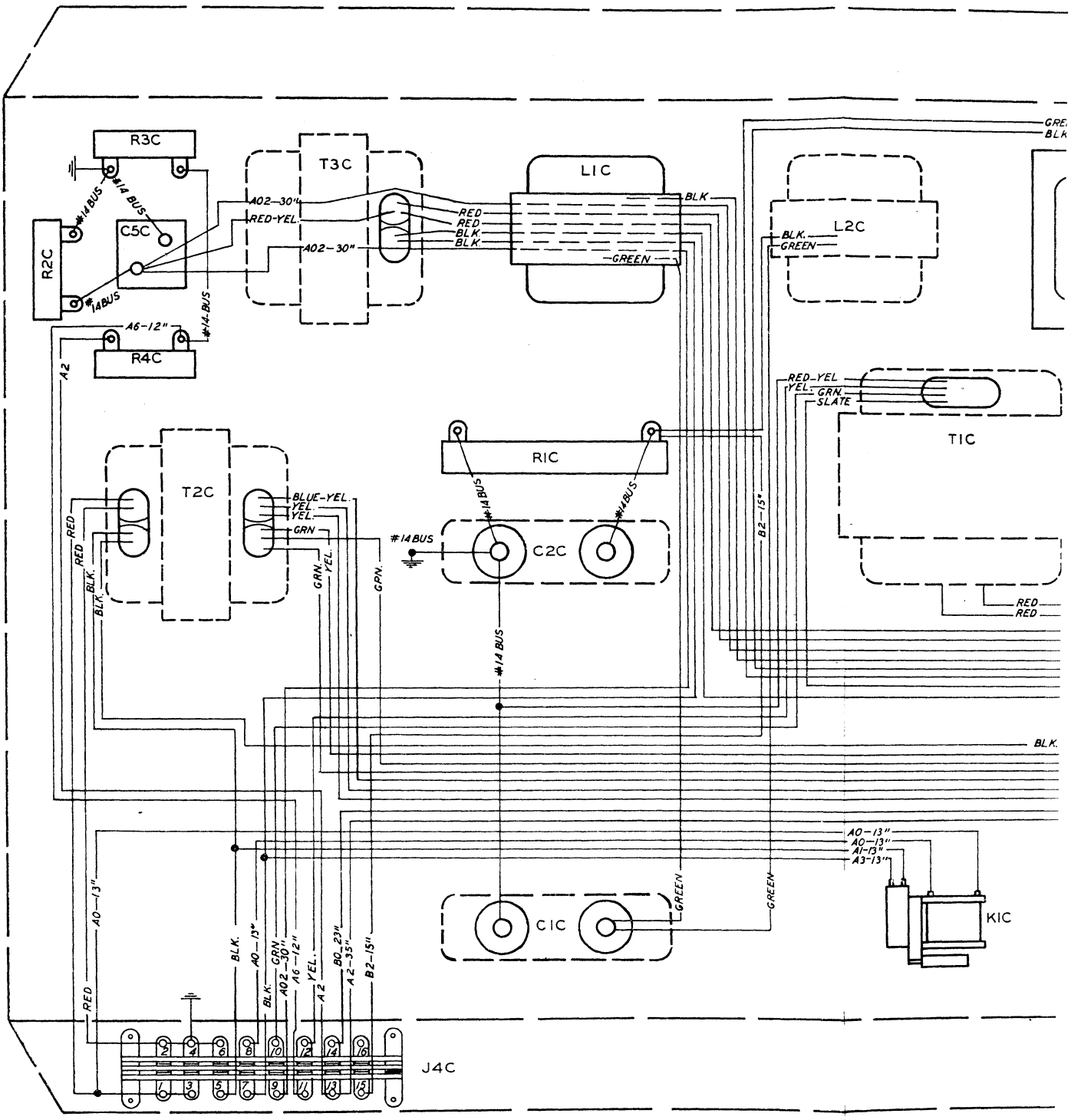
QUANTITY G F E D C B A	IT.	PART NO.	DESCRIPTION	MAT'L	FIN.



DO NOT SCALE DWG.

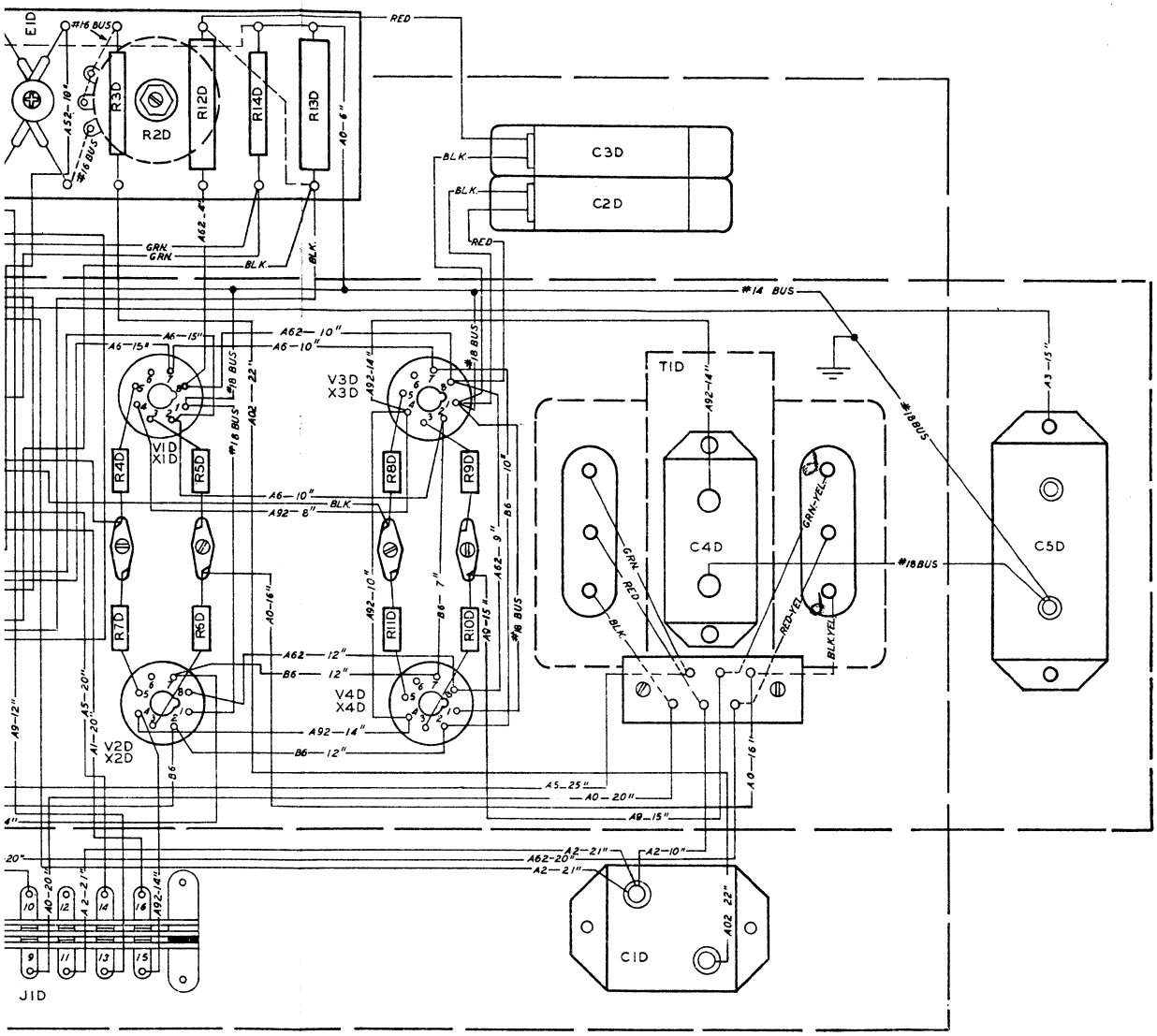
COLLINS RADIO COMPANY
CEDAR RAPIDS, IOWA

UNIT: 411B-4 PRACTI(
DESIGN: [illegible] DETAIL: F.T.F. DATE:
LAYOUT: CHECK. LB DATE:
QUANTITY



ALL FRACTIONAL DIMENSIONS ± 1/64
ALL DECIMAL DIMENSIONS ± .005
UNLESS OTHERWISE NOTED.

COLLINS RADIO COMPANY CEDAR RAPIDS, IOWA	UNIT: 9Z-8 PRACTICAL WIRING DIAGRAM				32RA-8	DWG. NO. 572D-1
	DESIGN: [illegible] DETAIL: N.D.F. DATE: 11-23-42 LAYOUT: CHECK: [illegible] DATE:	REVISED: REG D-3117 DATE: 1-14-43	SCALE			
QUANTITY G F E D C B A	IT.	PART NO.	DESCRIPTION	MAT'L	FIN.	



DO NOT SCALE DWG.

COLLINS RAD
CEDAR RAP