

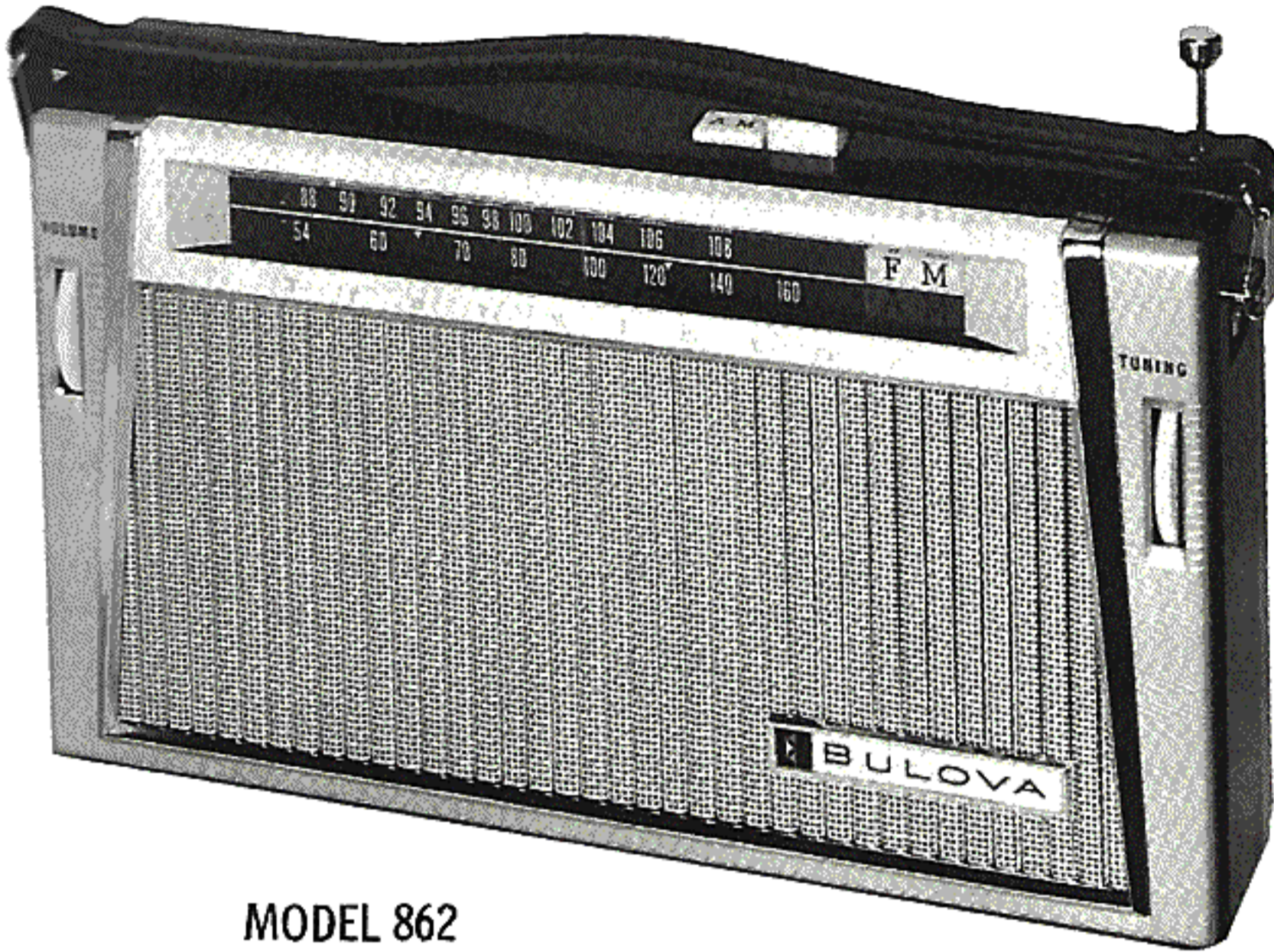
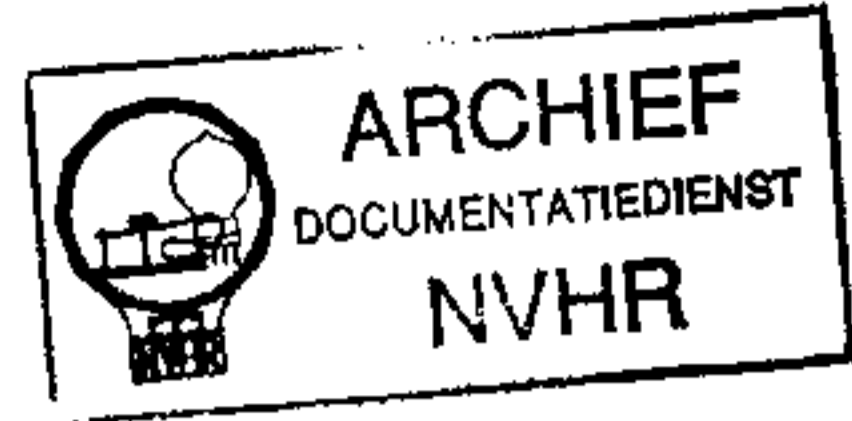
FACTORY Folder

with **CIRCUITRACE**

**BULOVA MODELS
860 SERIES, 862, 863, 865**

Met dank aan Jef Bos

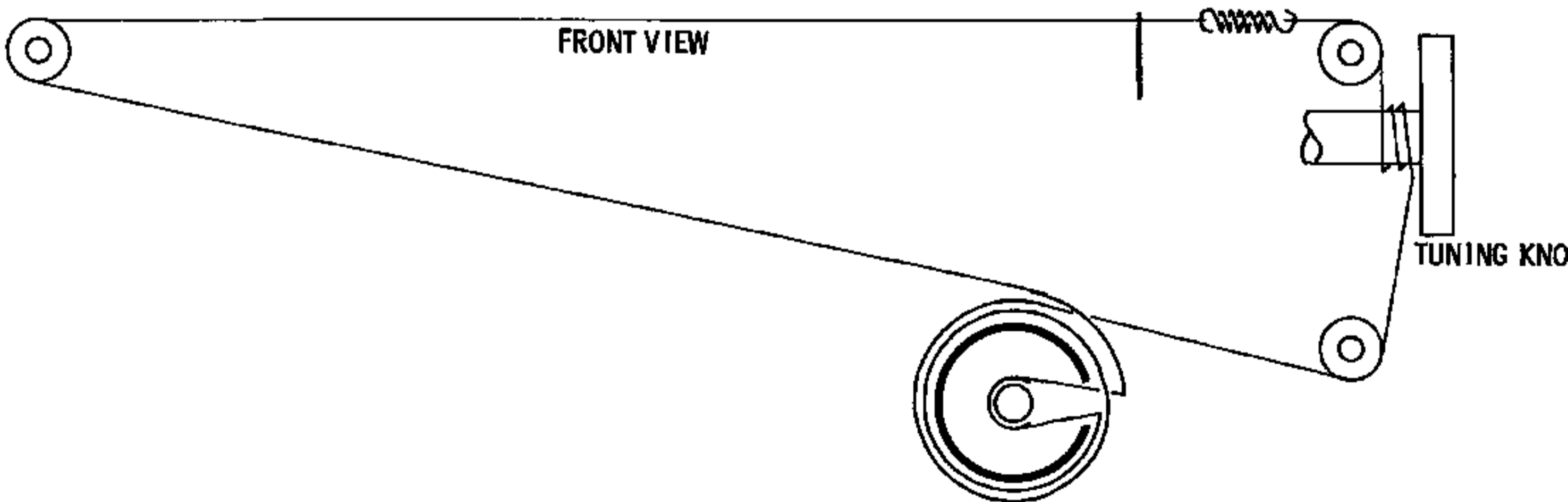
Ned. Ver. v. Historie v/d Radio



MODEL 862

TRADE NAME	Bulova Models 860 Series, 862, 863, 865		
SUPPLIER	Bulova Watch Co., Bulova Park, Flushing 70, New York		
TYPE SET	Battery Operated 9 Transistor Portable AM-FM Receiver		
POWER SUPPLY	6 Volts DC	RATING	AM: 10MA @ 6 Volts DC (No Signal, Min. Volume) 18MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE	BROADCAST 530 - 1610KC		FM: 15MA @ 6 Volts DC (No signal, Min. Volume) 22MA @ 6 Volts DC (Signal, Normal Volume)
	FREQ. MOD. 88 - 108MC		

DIAL CORD STRINGING



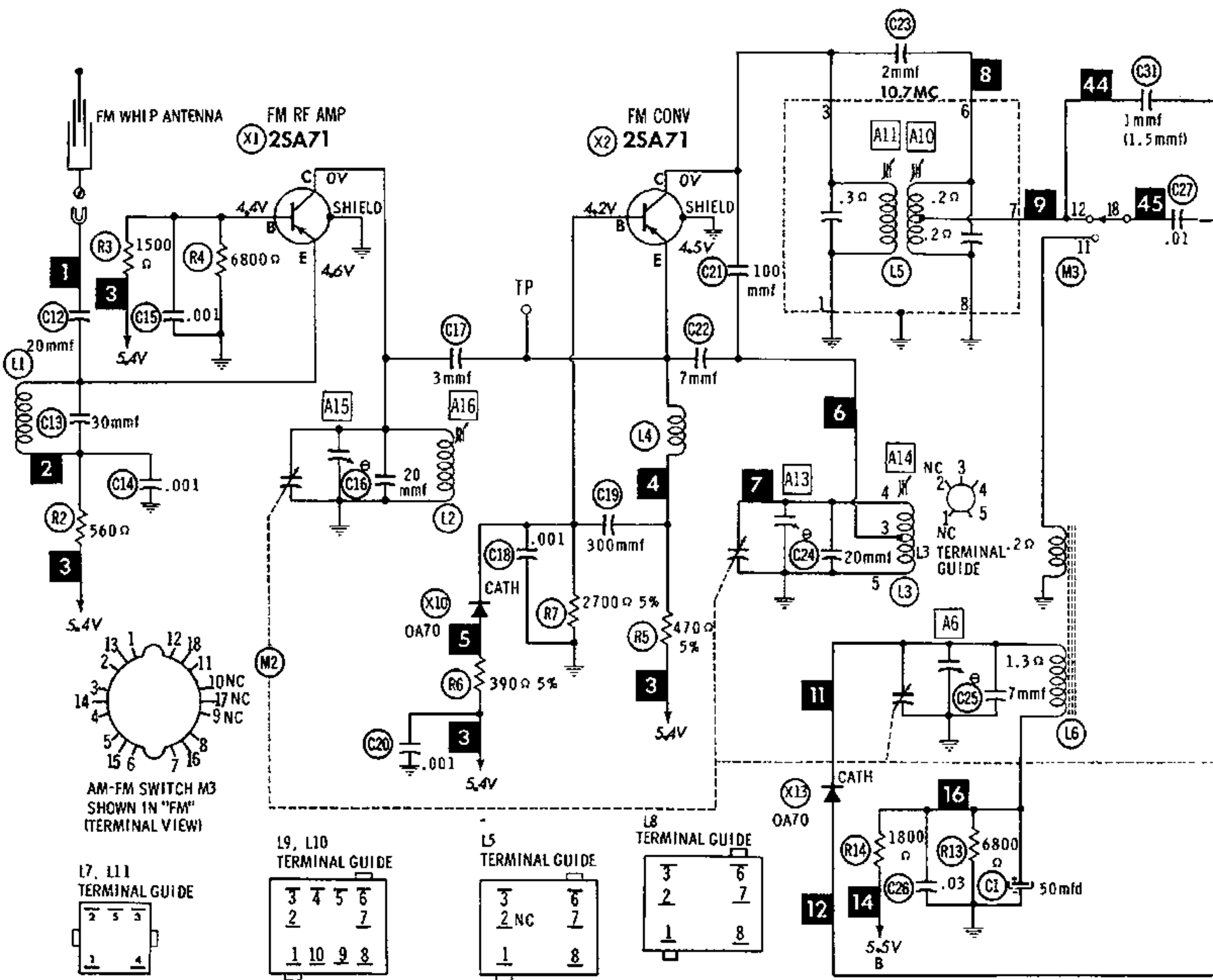
TUNING GANG FULLY CLOCKWISE

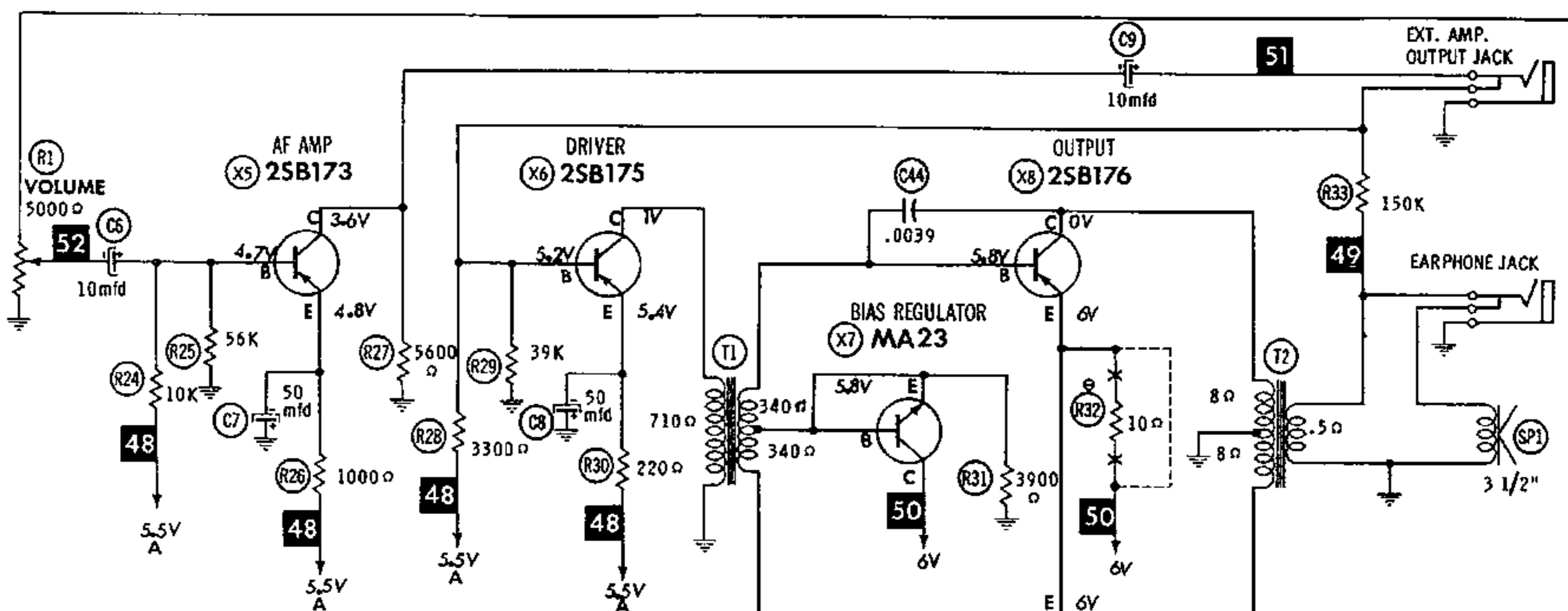
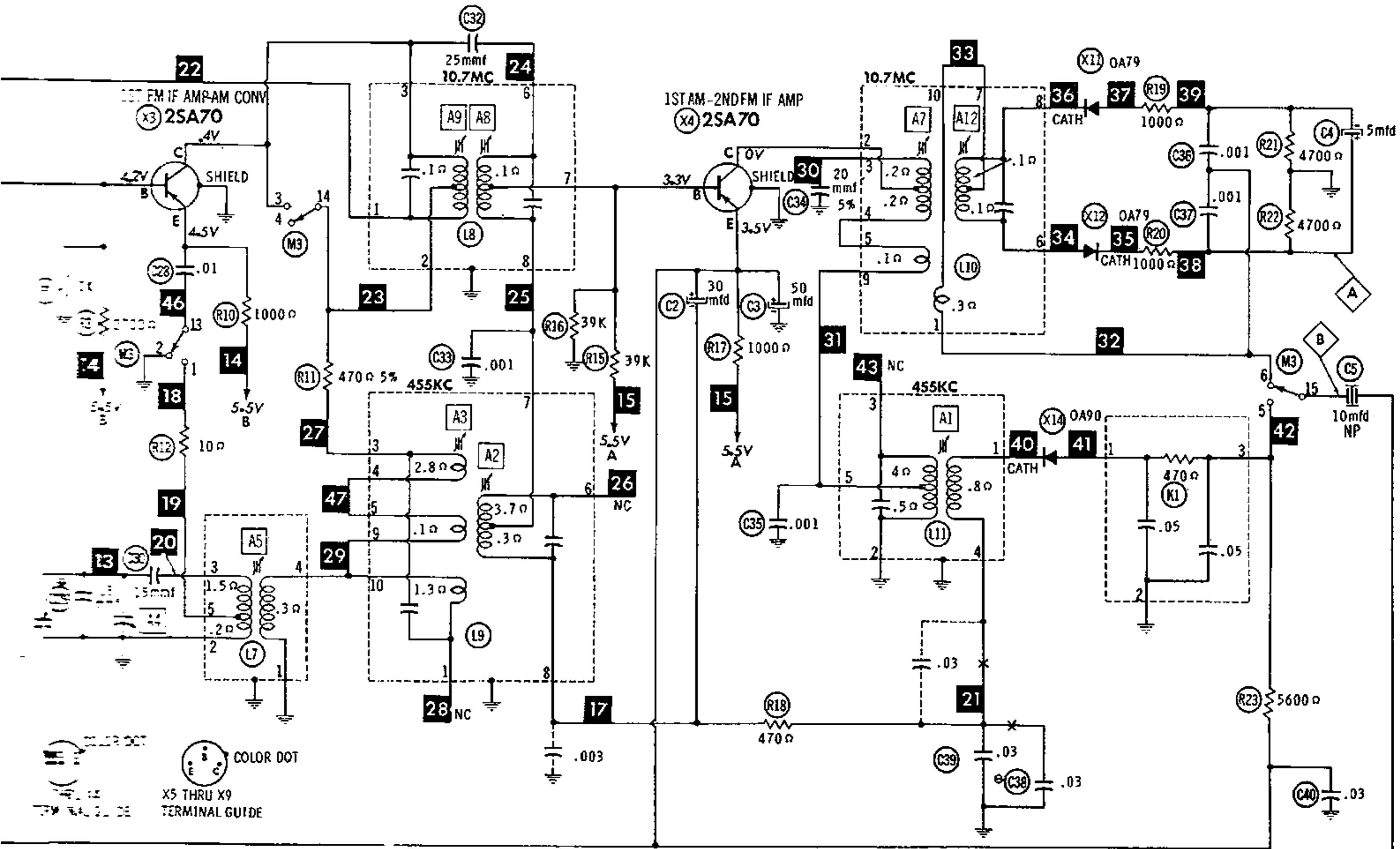
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement LK678

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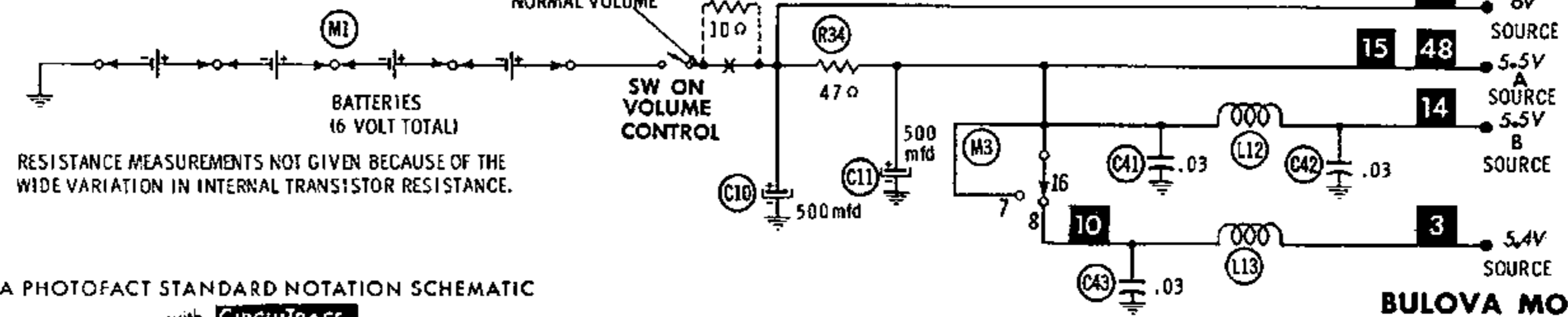




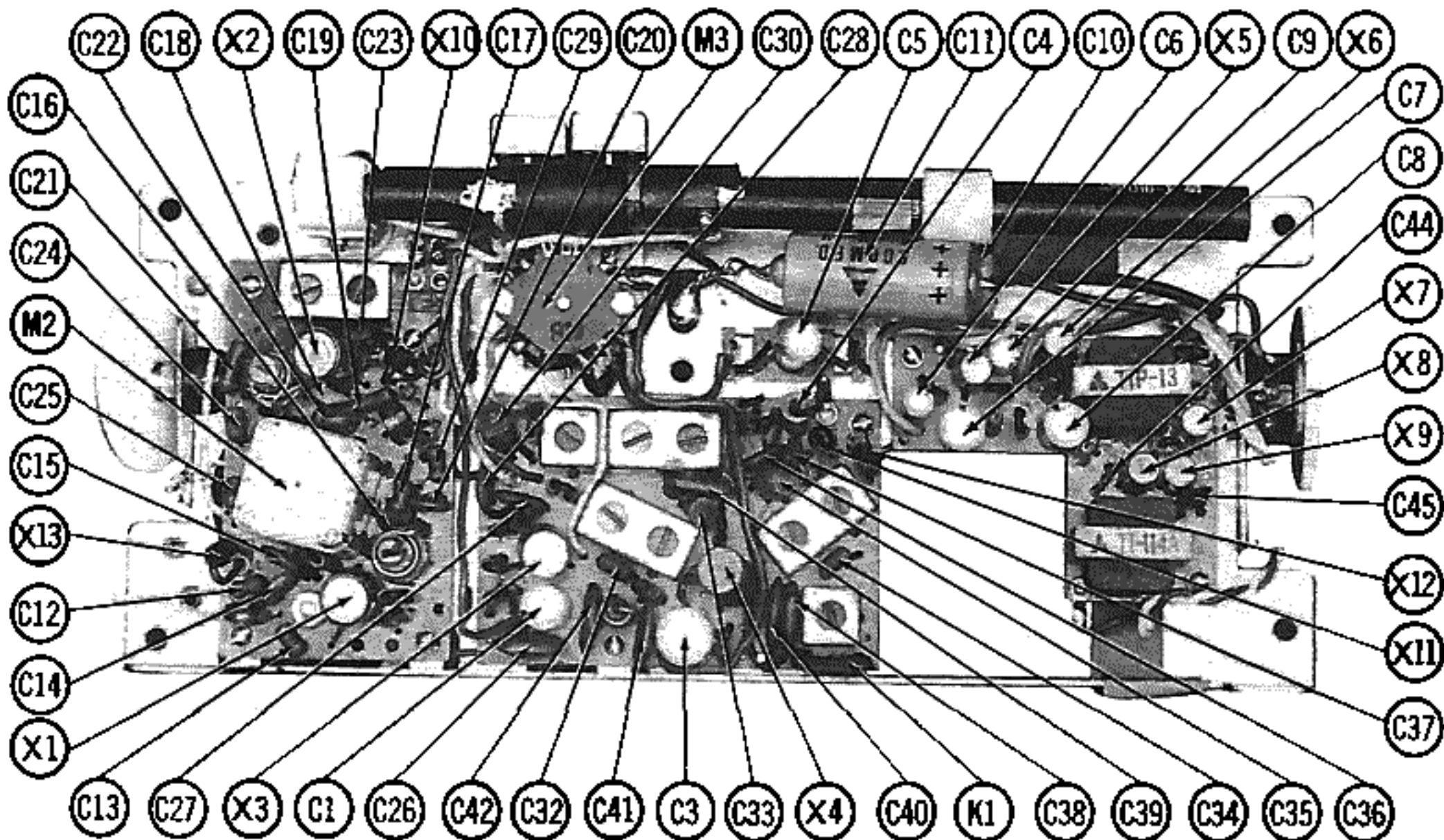
- SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- DC voltage measurements taken with vacuum tube voltmeter.
 - Socket connections or transistor terminals are shown as bottom views.
 - Measured values are from socket pin or terminal to common ground.
 - Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
 - Volume control at maximum, no signal applied for voltage measurements.
- 10ma. (AM)
18ma. (FM)
- NO SIGNAL
- 15ma. (AM)
22ma. (FM)
- NORMAL VOLUME

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

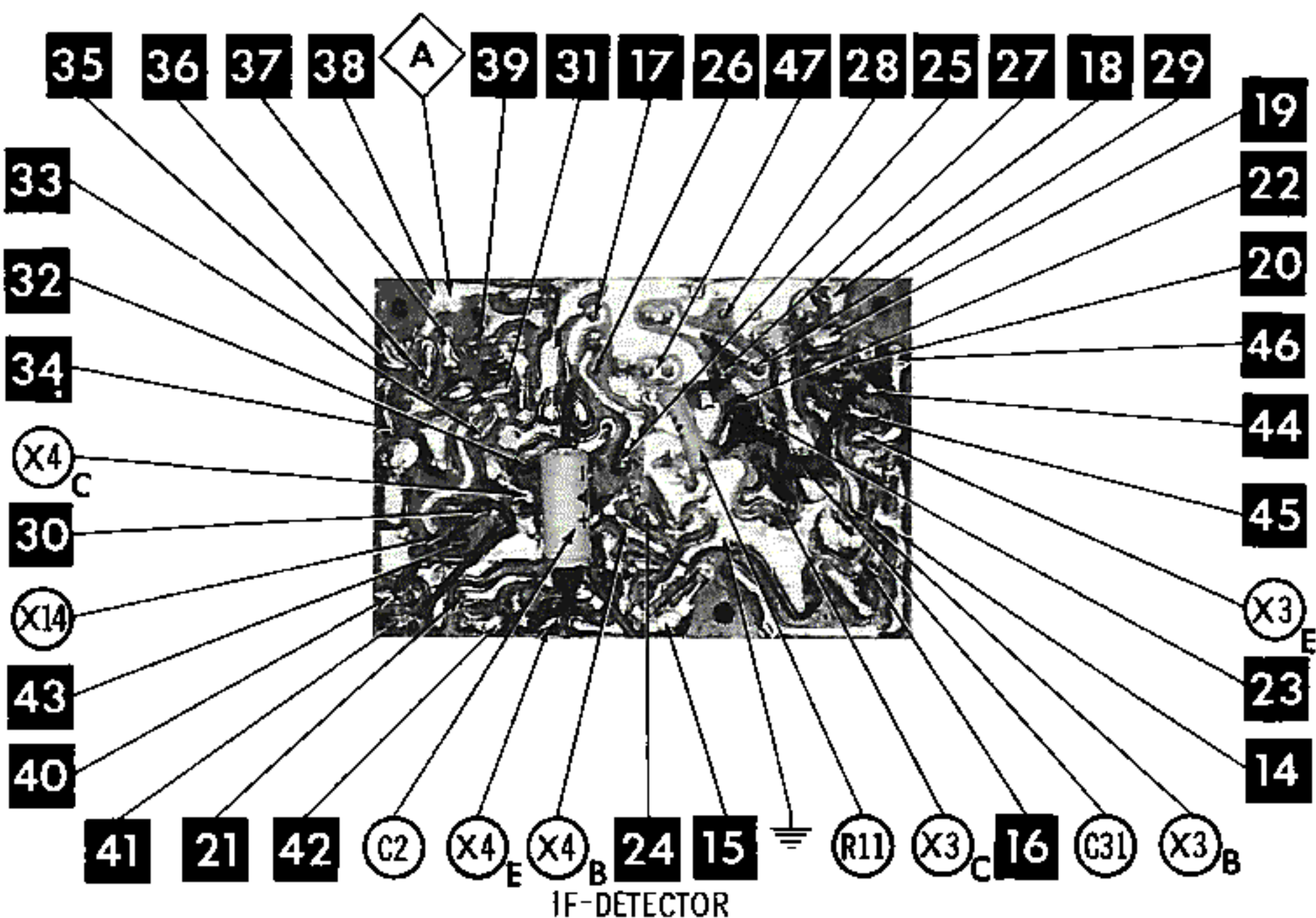
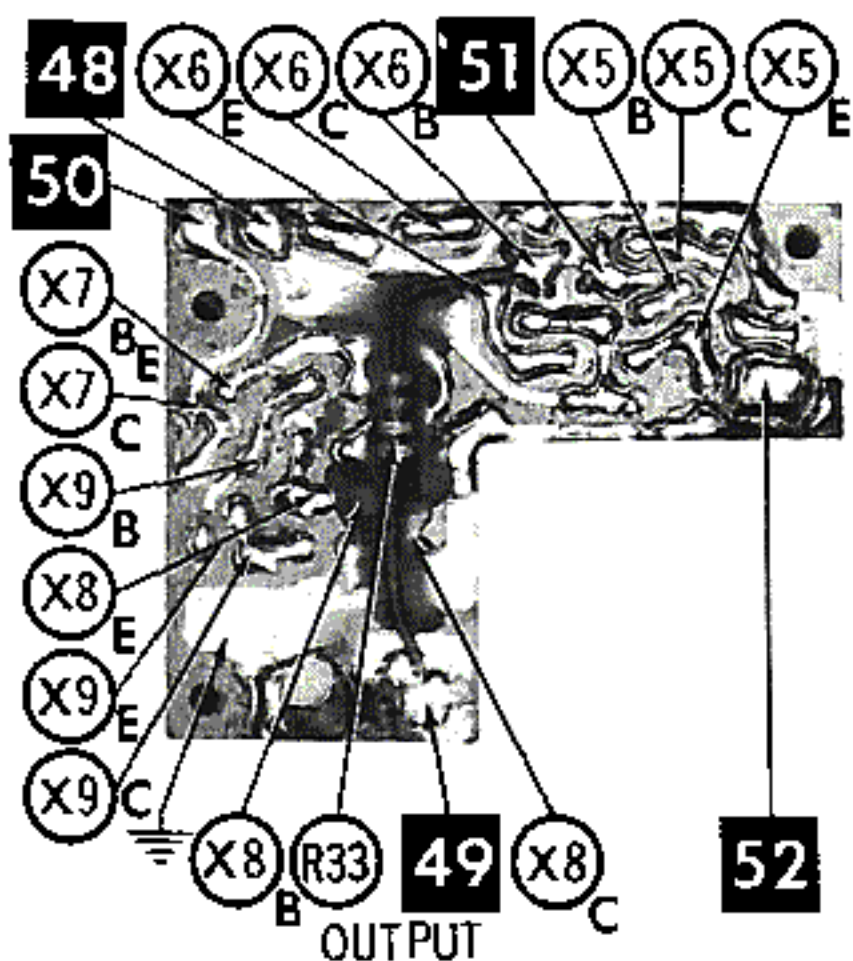
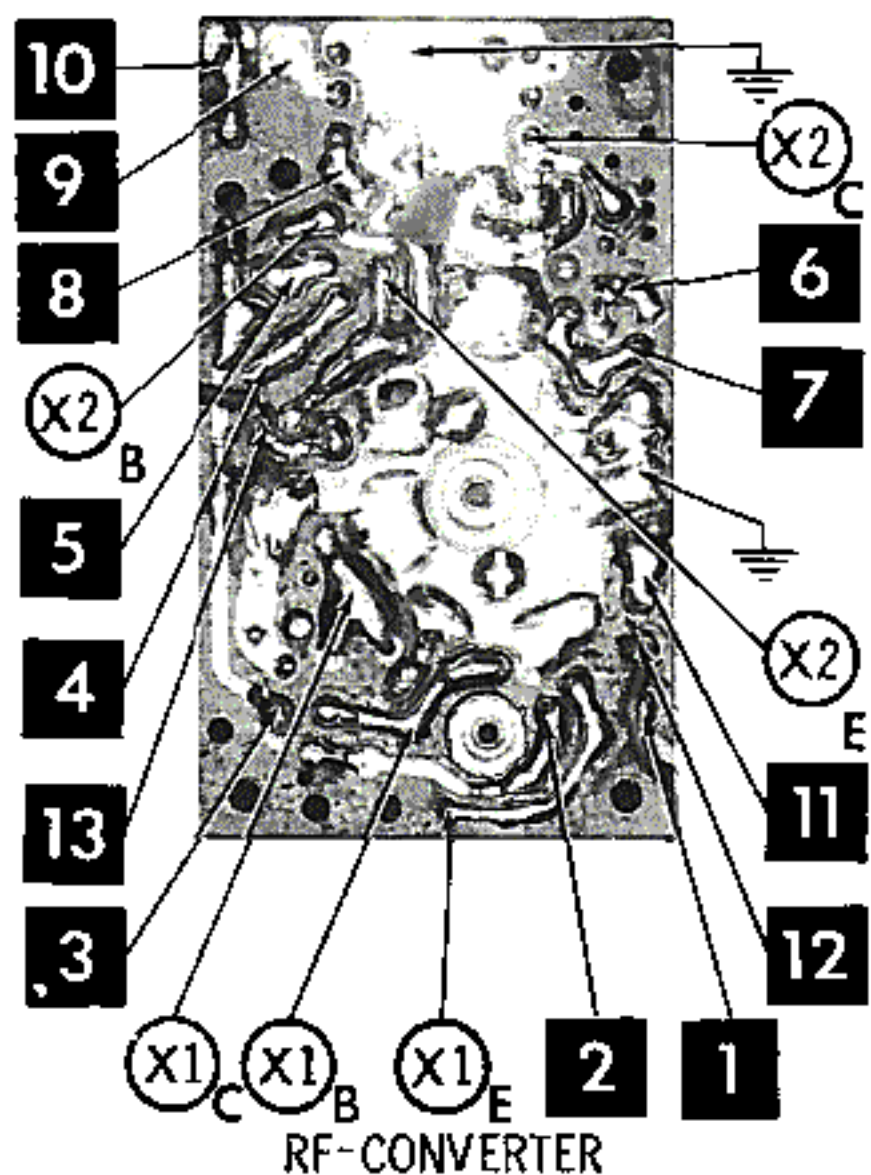
ALL READINGS TAKEN IN "FM" POSITION



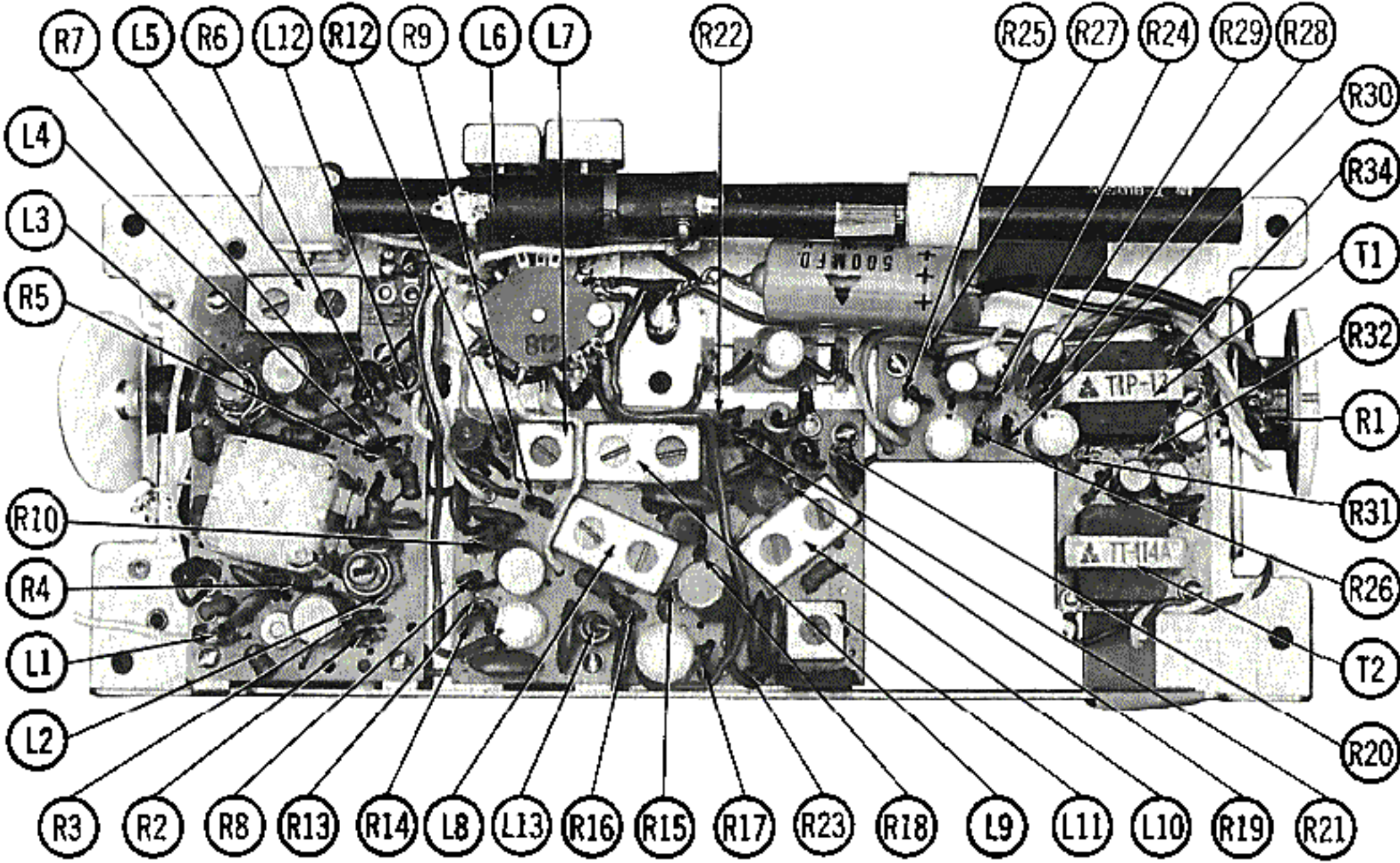
A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUITRACE



CHASSIS TOP VIEW - CAPACITOR & MISC. IDENT.



B-BASE
E-EMITTER
C-COLLECTOR



CHASSIS TOP VIEW - RESISTOR & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be as high as necessary to obtain an output reading.

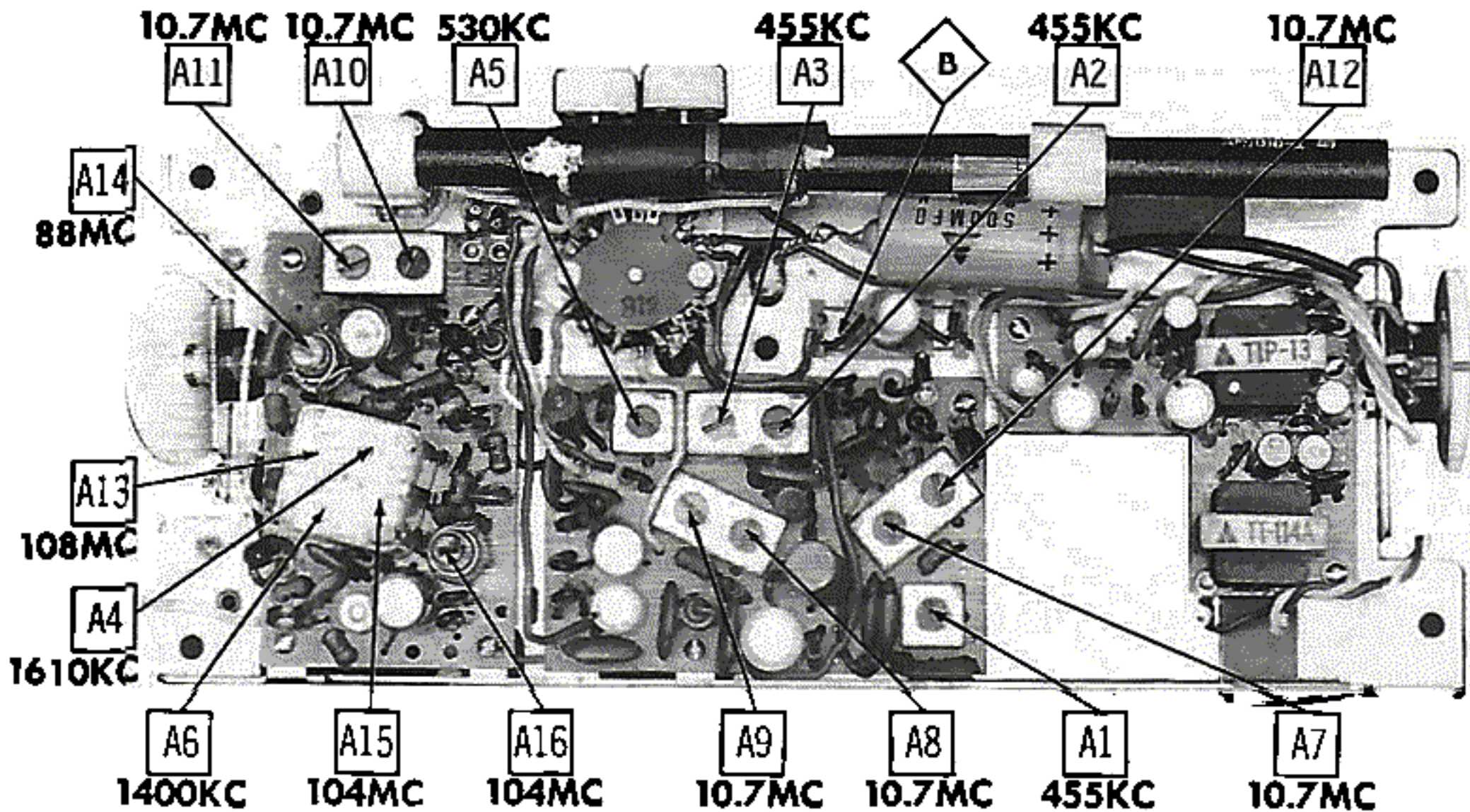
Suggested Alignment Tools: A1 thru A13, A15 .. GENERAL CEMENT #5000, 5003, 5058, 5071, 5072, 5073, 5074, 5290, 8609, 8722, 9150, 9298
 WALSCO #2515, 2516, 2518, 2519, 2525, 254
 A14, A16 GENERAL CEMENT #8282, 8606, 8607, 8608, 8609
 WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400v Mod.)	(AM) Tuning gang fully open	Output Meter Across voice coil	A1, A2, A3	Adjust for maximum deflection.
2.	"	1610KC	"	"	A4	"
3.	"	530KC	Tuning gang fully closed.	"	A5	Adjust for maximum deflection while rocking tuning gang. Repeat step 2.
4.	"	1400KC	1400KC	"	A6	Adjust for maximum deflection.

FM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
5.	High side to FM antenna terminal. Low side to ground.	10, 7MC (Unmod.)	(FM) Tuning gang fully open	DC Probe of VTVM to Point \diamond A. Low side to ground.	A7, A8, A9, A10, A11	Adjust for maximum deflection.
6.	"	"	"	DC Probe to point \diamond B. Low side to ground.	A12	Adjust for zero reading, A positive and negative reading will be obtained on either side of the correct setting.
7.	"	108MC	"	DC Probe to point \diamond A. Low side to ground.	A13	Adjust for maximum deflection.
8.	"	88MC	Tuning gang fully closed	"	A14	"
9.	"	104MC	104MC	"	A15, A16	"



CHASSIS TOP VIEW — ALIGNMENT IDENT

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X1	2SA71	FM RF Amplifier	DS25	GE-1		PNP
X2	2SA71	FM Converter	DS25	GE-1		PNP
X3	2SA70	1st FM IF Amplifier - AM Converter	DS25	GE-1		PNP
X4	2SA70	2nd FM-1st AM IF Amp.	DS25	GE-1		PNP
X5	2SB173	AF Amplifier	DS26	GE-2	2N406	PNP
X6	2SB175	Driver	DS26	GE-2	2N408	PNP
X7	MA23	Bias Regulator		GE-8	2N647	NPN (Diode Connected)
X8	2SB176	Output	DS26	GE-2	2N270	PNP
X9	2SB176	Output	DS26	GE-2	2N270	PNP

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	CURRENT RATING (Measured)	ORIGINAL Part or Type No.	RECTIFIERS		DIODES	NOTES
			RCA PART No.	SARKES TARZIAN PART No.		
X10		T-32-92				FM AFC (OA70)
X11		T-32-93				Ratio Detector (OA79)
X12		T-32-93				
X13		T-32-92				
X14		T-32-94				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	BULOVA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.
C1	50	6	T-32-22	BCD6050	ECPB115	MT1-15	TT6X50	MLV50-6	VL-1094
C2	30	3	T-32-20	PTT10	NLW30-6	MT1-13	TT6X30	MLV30-6	TE-1092
C3	50	6	T-32-22	BCD6050	ECPB115	MT1-15	TT6X50	MLV50-6	VL-1094
C4	5	6	T-32-23	PTT21	NLW5-15	MT1-3	TT6X5	MLV5-6	TE-1084
C5	10	6 NP	T-32-62						
C6	10	6	T-32-21	BCD6010	NLW10-6	MT1-5	TT6X10	MLV10-6	VL-1087
C7	50	6	T-32-22	BCD6050	ECPB115	MT1-15	TT6X50	MLV50-6	VL-1094
C8	50	6	T-32-22	BCD6050	ECPB115	MT1-15	TT6X50	MLV50-6	VL-1094
C9	10	6	T-32-21	BCD6010	MLW10-6	MT1-5	TT6X10	MLV10-6	VL-1087
C10	500	6	T-32-24		BR500-6				
C11	500	6	T-32-24		BR500-6				

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA						
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C12	20	Note 1 #T-32-32		D6-200				GP420	5GA-Q20
C13	30							GP430	5GA-Q30
C14	.001			DM-102	H05D1	CCD-102		GP210	
C15	.001			DM-102	H05D1	CCD-102		GP210	
C16	20			D6-200				GP420	5GA-Q20
C17	3			D6-030					
C18	.001			DM-102	H05D1	CCD-102		GP210	
C19	300			D6-301				GP330	5GA-T30
C20	.001			DM-102	H05D1	CCD-102		GP210	
C21	100				D6-101			GP310	5GA-T10

PARTS LIST AND DES

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		BULOVA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman PART No.	
L1	FM Ant.	T-32-3					
L2	FM RF	T-32-5					
L3	FM Osc.	T-32-6					
L4	RF Choke	T-32-8					
L5	1st FM IF	T-32-10					
L6	Loopstick	T-32-4					
L7	Osc. (AM)	T-32-7					
L8	2nd FM IF	T-32-11					
L9	1st AM IF	T-32-13					
L10	Ratio Detector	T-32-12					
L11	2nd AM IF	T-32-14	BC-578				
L12	RF Choke	T-32-9					
L13	RF Choke	T-32-9					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
			BULOVA PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T1	1	1	T-32-15					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	BULOVA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	200Ω CT	8-8Ω	T-32-2					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BULOVA PART No.	QUAM PART No.	
SP1	3½"	PM	8-8Ω	T-32-1		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BULOVA PART No.	REPLACEMENT DATA
K1	AM Det. RF Filter	(2) .05mfd, 470Ω	T-32-83	

BATTERIES

ITEM No.	VOLTAGE	BULOVA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1½V			130		835		M-14R	4 Required

DESCRIPTION (CONTINUED)

MISCELLANEOUS

ITEM No.	PART NAME	BULOVA PART No.	NOTES
M2 M3	Tuning Cap Switch Antenna	T-32-84 T-32-19 T-32-127W	4 Gang, AM-FM FM-AM (Rotary Wafer Push Button Operated) FM Whip

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	T-32-116	Tuning Volume Complete (Specify Color)
Knob	T-32-117	
Knob	T-32-118	
Handle	T-32-119	
Cabinet	T-32-127	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid 22AWG)	Available in 12 Colors
	8524 (Stranded 22AWG)	
	8570 (Stranded 26AWG)	