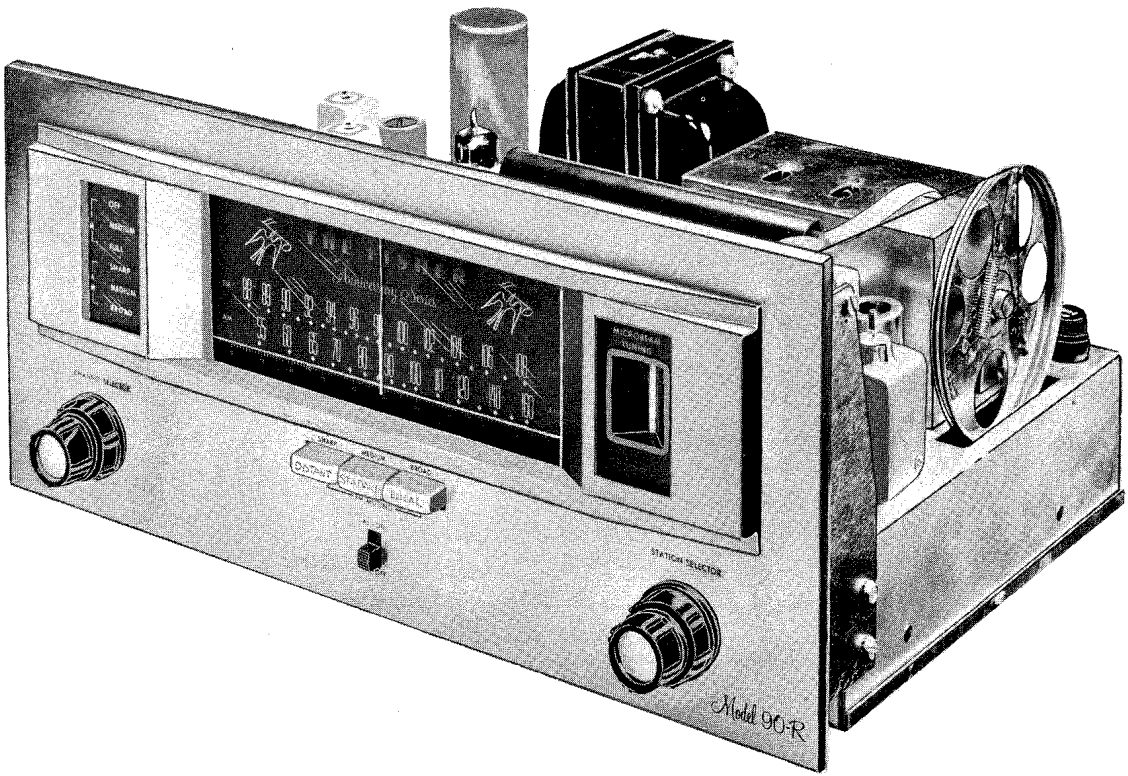


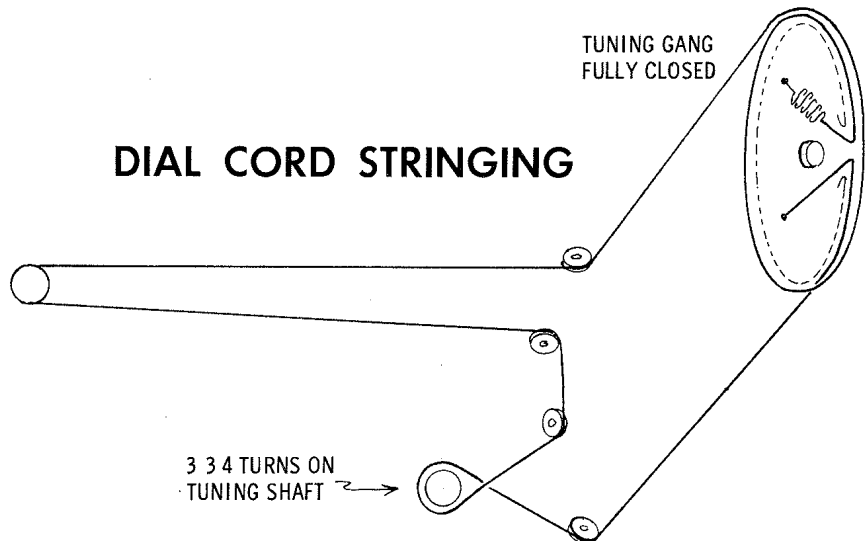


FISHER MODEL
90R



FISHER MODEL
90R

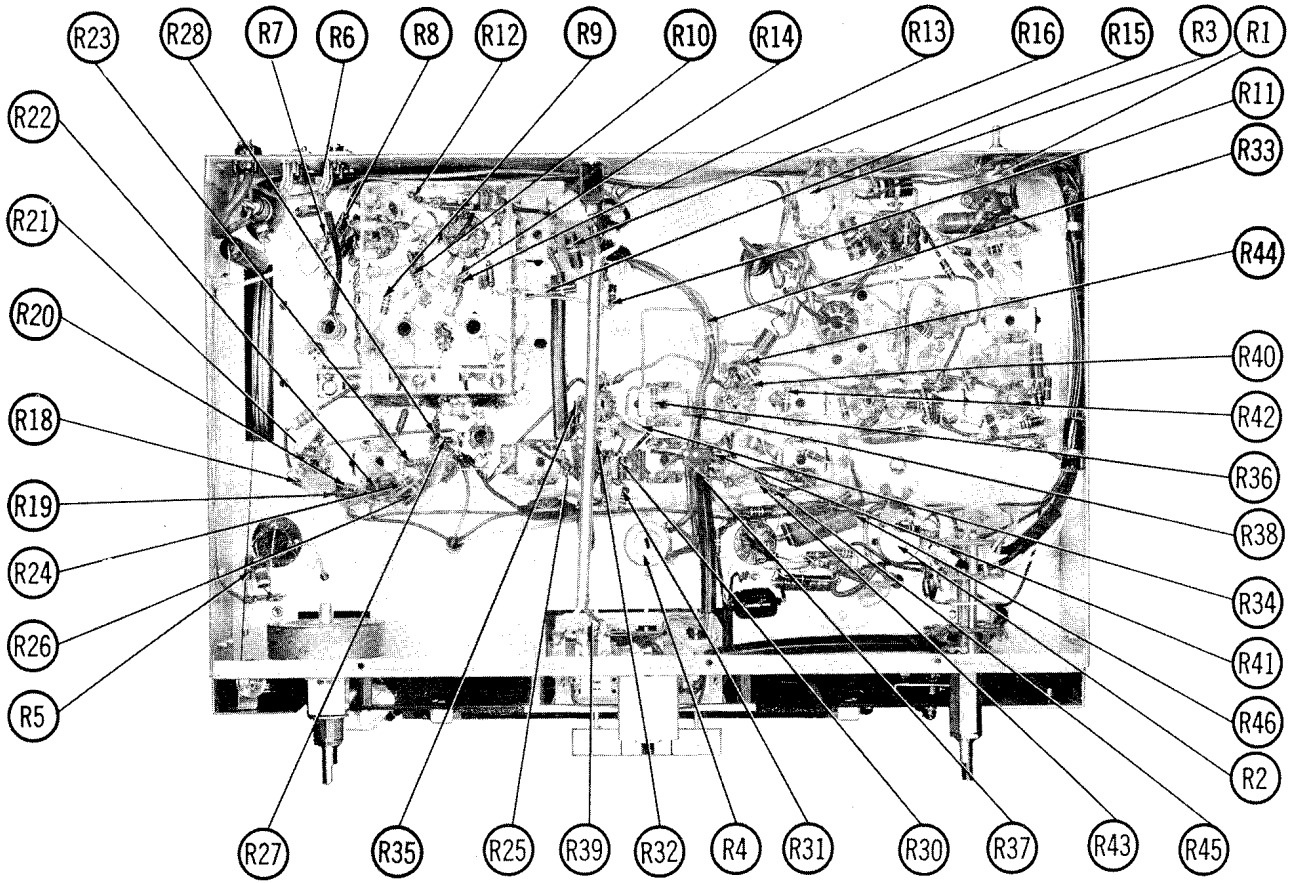
TRADE NAME	Fisher Model 90-R (Serial #19999 And Lower)		
MANUFACTURER	Fisher Radio Corp. , 21-21 44th Drive, Long Island City 1, N. Y.		
TYPE SET	AC Operated FM-AM Tuner		
TUBES	Twelve		
POWER SUPPLY	105-125 Volts AC-60 Cycles	RATING	.45 Amp. @ 117 Volts AC (45 Watts) FM
TUNING RANGE--BROADCAST	540 - 1700KC	FREQ. MOD.	88-108MC



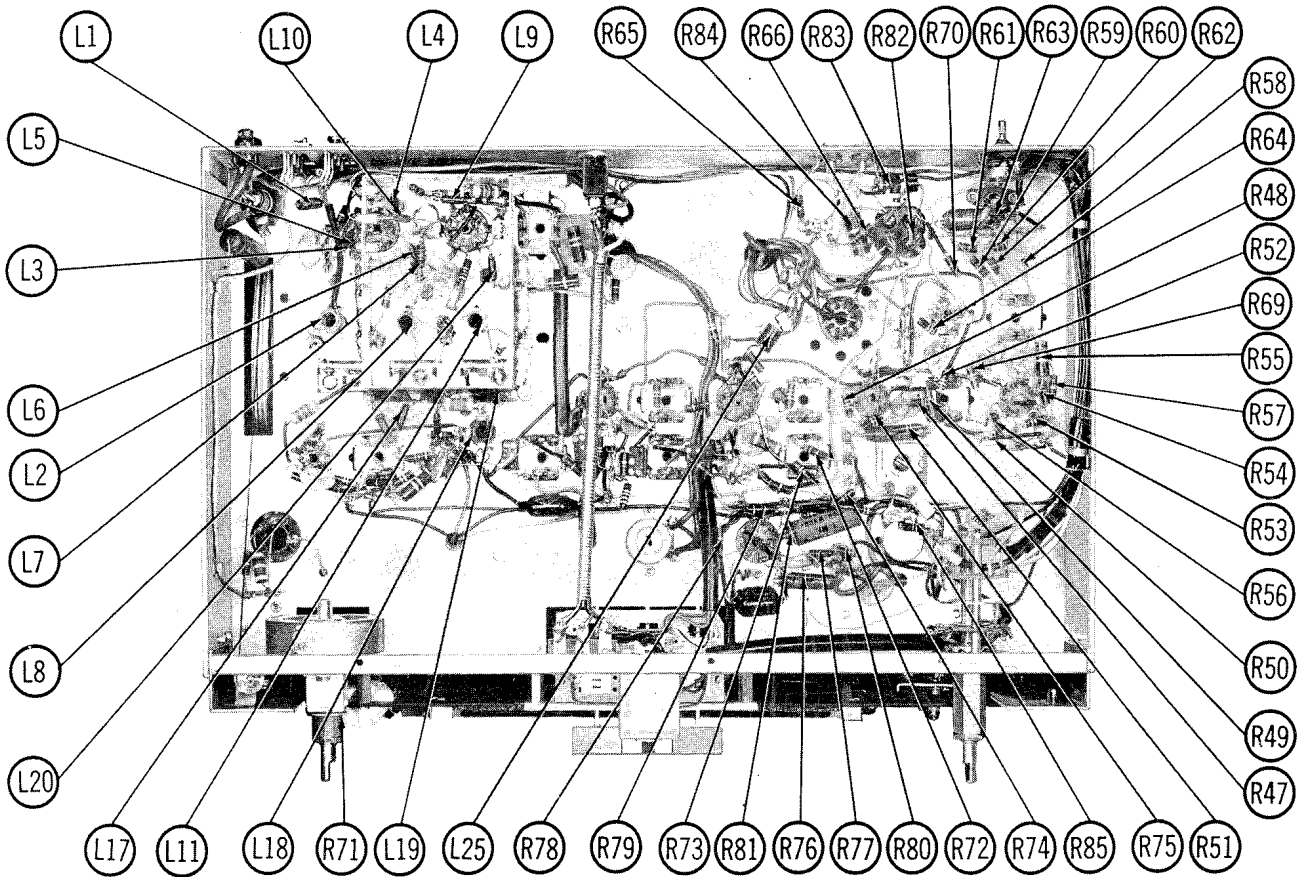
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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 H752

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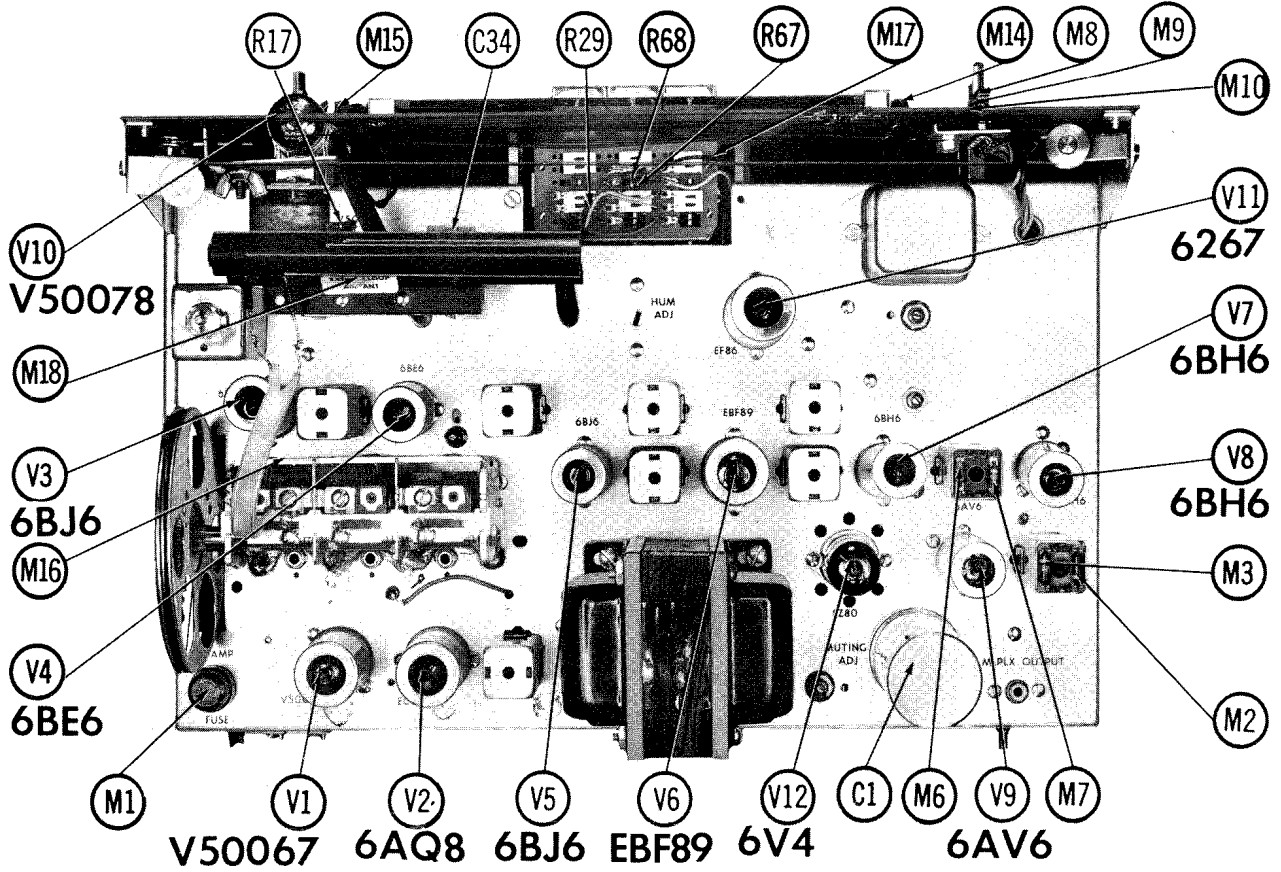


CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R1-R46)



CHASSIS BOTTOM VIEW INDUCTOR & RESISTOR IDENT. (R47-R85)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.	V50067/ PCC88	V7	3rd FM IF Amp.	6BH6
V2	FM Mixer-FM Osc.	6A08/ ECC85	V8	4th FM IF Amp.	6BH6
V3	AM RF Amp.	6BJ6	V9	FM RF AVC Clamper	6AV6
V4	AM Conv.	6BE6		FM-AM AVC Clamper	
V5	1st FM-AM IF Amp.	EBF89		Squelch	
V6	2nd FM-AM IF Amp.		V10	Tuning Indicator	V50078/ EMB40
			V11	AF Amp	6267/ EFB6
			V12	Rect.	6V4/ EZ80

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL DUBIERRE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	40	300	C-829-126	A7H4-04-50	D0034	FP420-38	TMQ-120	Q-012	TVL-4635-3
C1B	40	300							
C1C	40	250							
C1D	40	250							
C2	4	50	C-629-175	PWE50005	NL5-50	TF50X5	ML4-50	MQ-1504	TE-1302-1
C3	8	50	C-629-138	PWE50008	NL10-50	TF10X50	ML8-50	MQ-1507	TE-1303-3
C4	1	250	C-546-126	PRK450V1	BR145	TF250X1	ML30-6	MMT-4301	RZ102 *
C5	25	6	C-639-114	XPP-6025	NL25-6	TF6X25		MQ-0225	TE-1091

* Not normally in distributors stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	FISHER PART No.	AEROVOX PART No.	CORNELL DUBIERRE PART No.	MALLORY PART No.	SPRAGUE PART No.		
C6	24	1000	CC21GF240K5	NPO-S15	TCZ-24	CTA8Q24C	ZT-555		10% NPO N1500 N1500
C7	5	1000	CC20CH050P5	HVD-15-1000	DD-102	L10D1	DC3021	5GA-D1	
C8	100	1000	C-50070-5	EF-001	MFT-1000			503C-D1	
C9	100	1000	C-50071-2	EF-001	MFT-1000			503C-D1	
C10	1000	1000	C-50071-2	EF-001	MFT-1000			503C-D1	
C11	1000	1000	C-629-172	EF-001	MFT-1000	BYA6D1	DC521	5HK-D1	
C12	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C13	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C14	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C15	1000	1000	C-50071-4	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C16	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C17	5000	1000	C-50071-2	HVD-15-1000	DD-102	L10D1	DC3021	5GA-D1	
C18	1000	1000	C-50071-4	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C19	5000	1000	CC21GP80K5	NPO-S168	D6-680	CTA8Q68C		5TCC-Q88	
C20	68		C-643-153						10%
C21	5		CC20CH050P5	NPO-S15					NPO NPO
C22	5		CC20CH050P5	NPO-S15					N470 N470
C23	5		CC20CH050P5	NPO-S15					10%
C24	24	100	CC21GF240K5	BPD-001	TCZ-24	CTA8Q24C	ZT-555	5GA-T1	
C25	100	100	C-577-121		DD-101	L10T1	UC-531		
C26	15		CC20TJ150J6						
C27	100	1000	C-643-153						
C28	100	1000	C-577-121	BPD-001	DD-101	L10T1	UC-531	5GA-T1	
C29	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C30	1000	1000	CC21GP102K5	NPO-DH20	DD-121	L10T1	MCR255	MS-21	10%
C31	120	1000	CC21GP121K5	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	10%
C32	1000	1000	C-629-172	EF-001	MFT-1000			503C-D1	
C33	1000	1000	C-629-151-2						10%
C34	120	20000	CC21GP121K5	NPO-SU20	DD-121	L10T1	MS-312	MS-312	
C35	20000	20000	C-50071-3	BPD-02	DD-203	BYB8S2	DC525	5HK-S2	
C36	20000	20000	C-50071-3	BPD-02	DD-203	BYB8S2	DC525	5HK-S2	
C37	20000	20000	C-50071-3	BPD-02	DD-203	BYB8S2	DC525	5HK-S2	
C38	5000	5000	C-50071-4	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C39	.68		C-50071-4		TCZ-R68				
C40	10	1000	CC20CH100G5	NPO-S110	TCZ-10	CTA6Q1C	ZT-551	5TCC-Q1	10% NPO N1500
C41	47	1000	C-50070-4						
C42	100	1000	C-50070-5						

FISHER MODEL
90R

FOLDER 8

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		FISHER PART No.	Meissner PART No.	Meritt PART No.	Miller PART No.	Rom PART No.	
L15	AM Ant. Trans.	L-629-171					
L16	AM R.F. Coil	L-556-125			4602		1.2 Microhenries
L17	R.F. Choke	L-50066-3	19-1000	BC-561			
L18	AM Osc. Coil	C-550-122					
L19	R.F. Choke	L-50066-3	19-1000	BC-561	4602		1.2 Microhenries
L20	R.F. Choke	L-50066-3	19-1000	BC-561	4602		1.2 Microhenries
L21	1st FM IF	ZZ-630-114	16-3487				
L22	2nd FM IF	ZZ-629-135		FM-254	1463		
L23	2nd AM IF	ZZ-629-142					
L24	2nd AM IF	ZZ-629-135					
L25	FIL. Choke	L-520-156	19-1000	BC-561	4602		1.2 Microhenries
L26	3rd FM IF	ZZ-629-142	16-3487	FM-254	1463		
L27	3rd AM IF	ZZ-2984	16-6758	BC-353	12-C2		RF-2
L28	FM Limiter	L-551-121					
L29	Ratio Detector	ZZ-592-170					
L30	10K Filter Choke	L-629-152					

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA					Triod PART No.
		FISHER PART No.	Halderson PART No.	Meritt PART No.	Rom PART No.	Stancor PART No.	
T1	PRI. SEC. 1 SEC. 2 400VCT TV Tap ③ .45A ③ .060A 6.3V ③ 3.6A SEC. 3 SEC. 4 SEC. 5 6.3V ③ .2A	T-628-121					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA				
			FISHER PART No.	LITTELFUSE PART No.	BUSS PART No.	Holder	
M1	3AG	1A 250V	F-3329	312001. (3AG 1A 250V)	342001	AGC 1	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		FISHER PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N541	V-1N542	IN636	IN295	Matched Pair
M3	1N541	V-1N542	IN636	IN295	
M4	1N295 †	V-1N541 *	IN60	IN295	
M5	1N295 †	V-1N541 *	IN60	IN295	
M6	1N295	V-1N295	IN60	IN295	
M7	1N295	V-1N295	IN60	IN295	

† Some versions may use 1N66 in this application.
Alternate Part #V-1N66.

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M8	Lamp	1-588-120	6.3 Volts, .150 Amp.
M9	Lamp	1-588-120	6.3 Volts, .150 Amp.
M10	Lamp	1-588-120	6.3 Volts, .150 Amp.
M11	Lamp	1-588-120	6.3 Volts, .150 Amp.
M12	Lamp	1-588-120	6.3 Volts, .150 Amp.
M13	Lamp	1-588-120	6.3 Volts, .150 Amp.
M14	Lamp	1-563-145	6 Volts, 2 Watts
M15	Lamp	1-563-145	6 Volts, 2 Watts
M16	Tuning Cap.	C-628-118	AM-FM, 6 Gang, Ant. 19-493mmf } AM RF 20-489mmf } Osc. 18-165mmf }
M17	Switch	S-628-117	Muting, Bandwidth (Pushbutton Type)
M18	Switch	S-629-156	AM Antenna (SPDT, Slide Type)
M19	Switch	S-628-122	On-Off (SPST, Slide Type)
M20	Switch	S-628-124	Channel Selector (Rotary, Wafer Type)
	Switch	S-628-123	Chassis with Serial Numbers Ending in "B" Channel Selector (Rotary, Wafer Type) Chassis with Serial Numbers Ending in "A"

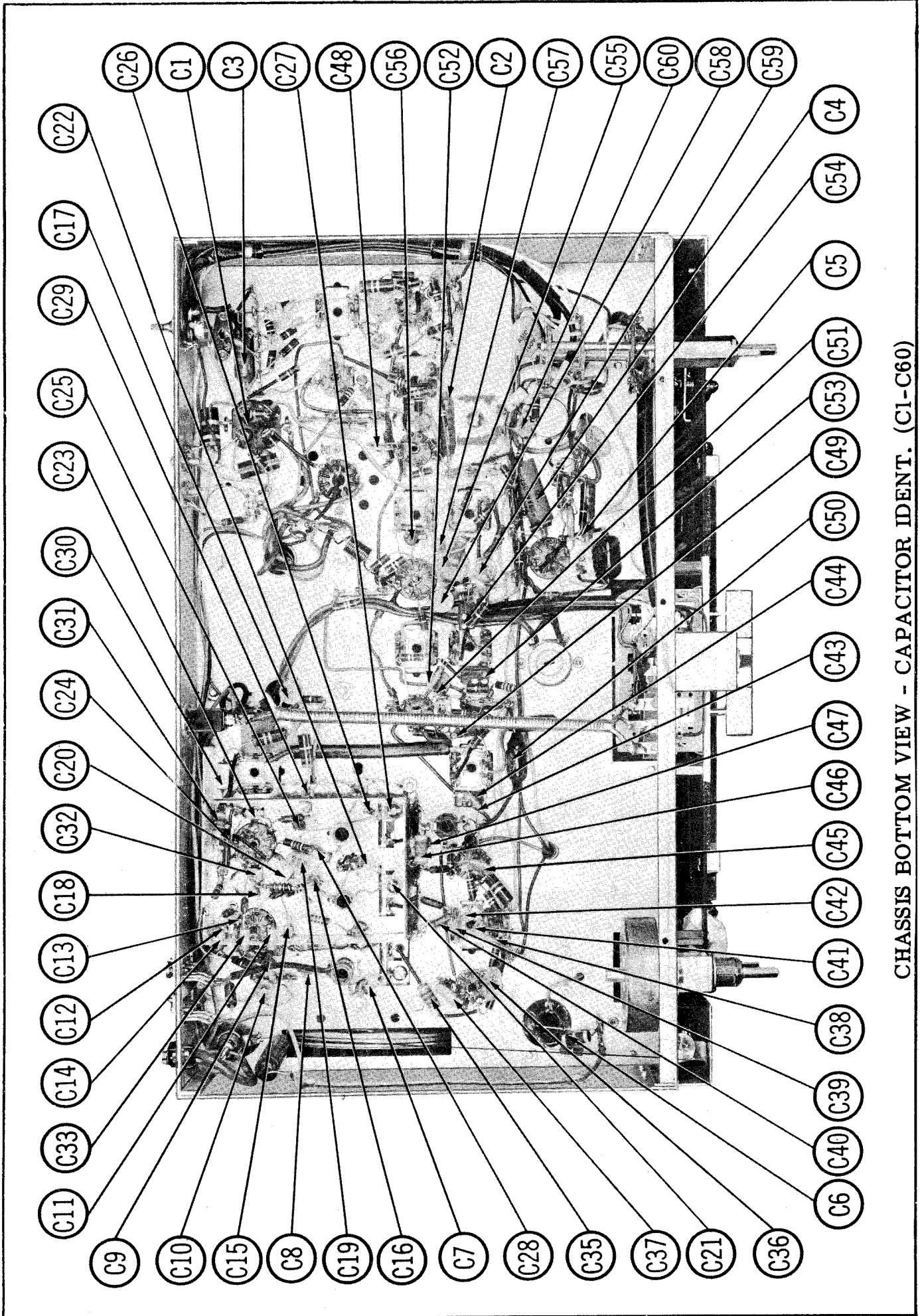
CABINETS & CABINET PARTS

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

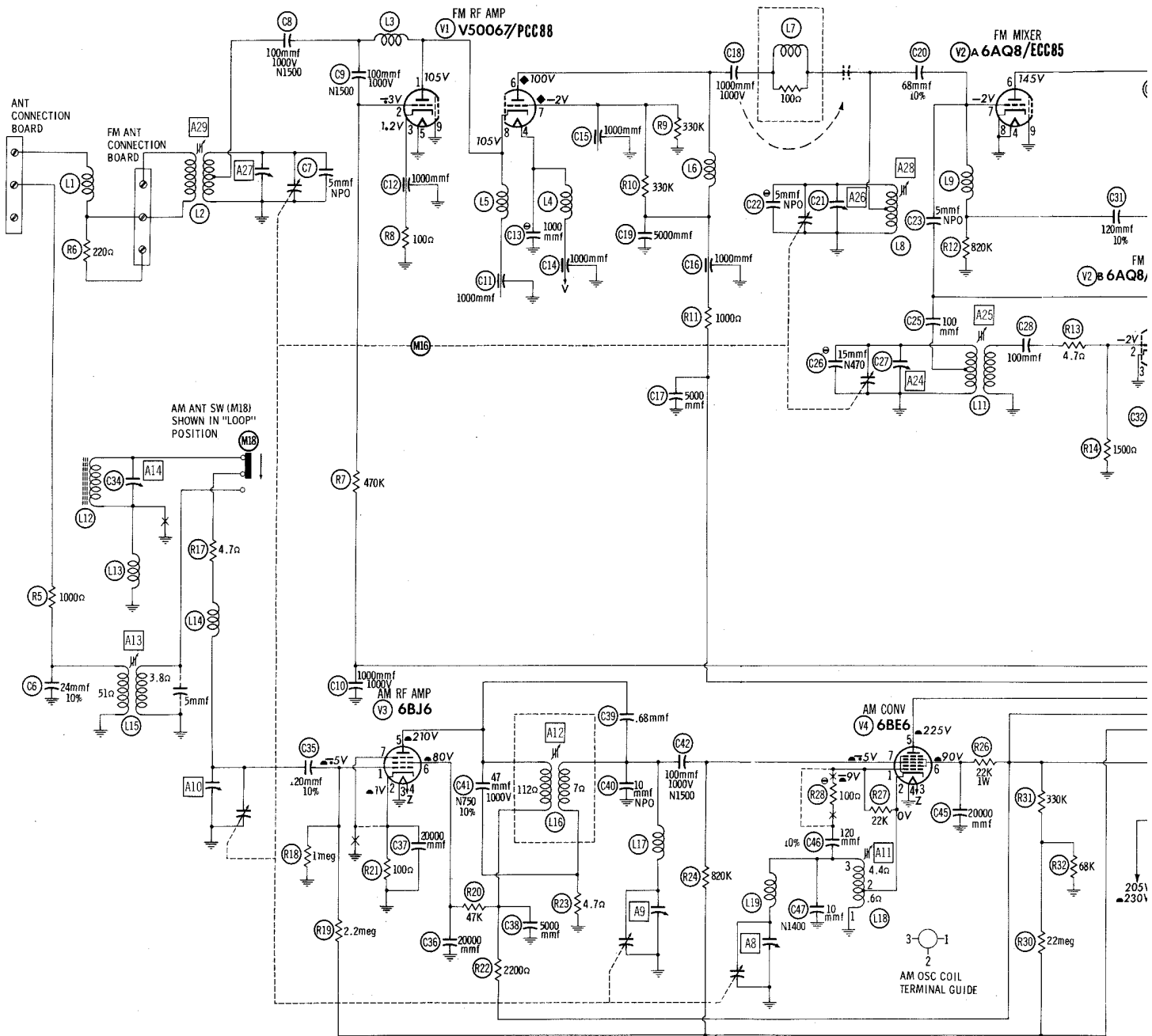
NAME	PART NO.	DESCRIPTION
Knob	E-50049-3	For Chassis Serial Numbers Ending in "B"
Knob	E-50049-1	Tuning for Chassis Serial Numbers Ending in "A"
Knob	E-50049-12	Selector for Chassis Serial Numbers Ending in "A"
Panel	AS-628-129	Dress, Assembled, Includes Escutcheon
Panel	AS-628-112	Dress, Without Escutcheon
Pointer	A-629-154	Dial
Dial Glass	N-629-133	

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord Use BELDEN No. 1768-B (6 Ft. Length)
1728-K (7 1/2 Ft. Length)



CHASSIS BOTTOM VIEW - CAPACITOR IDENT. (C1-C60)



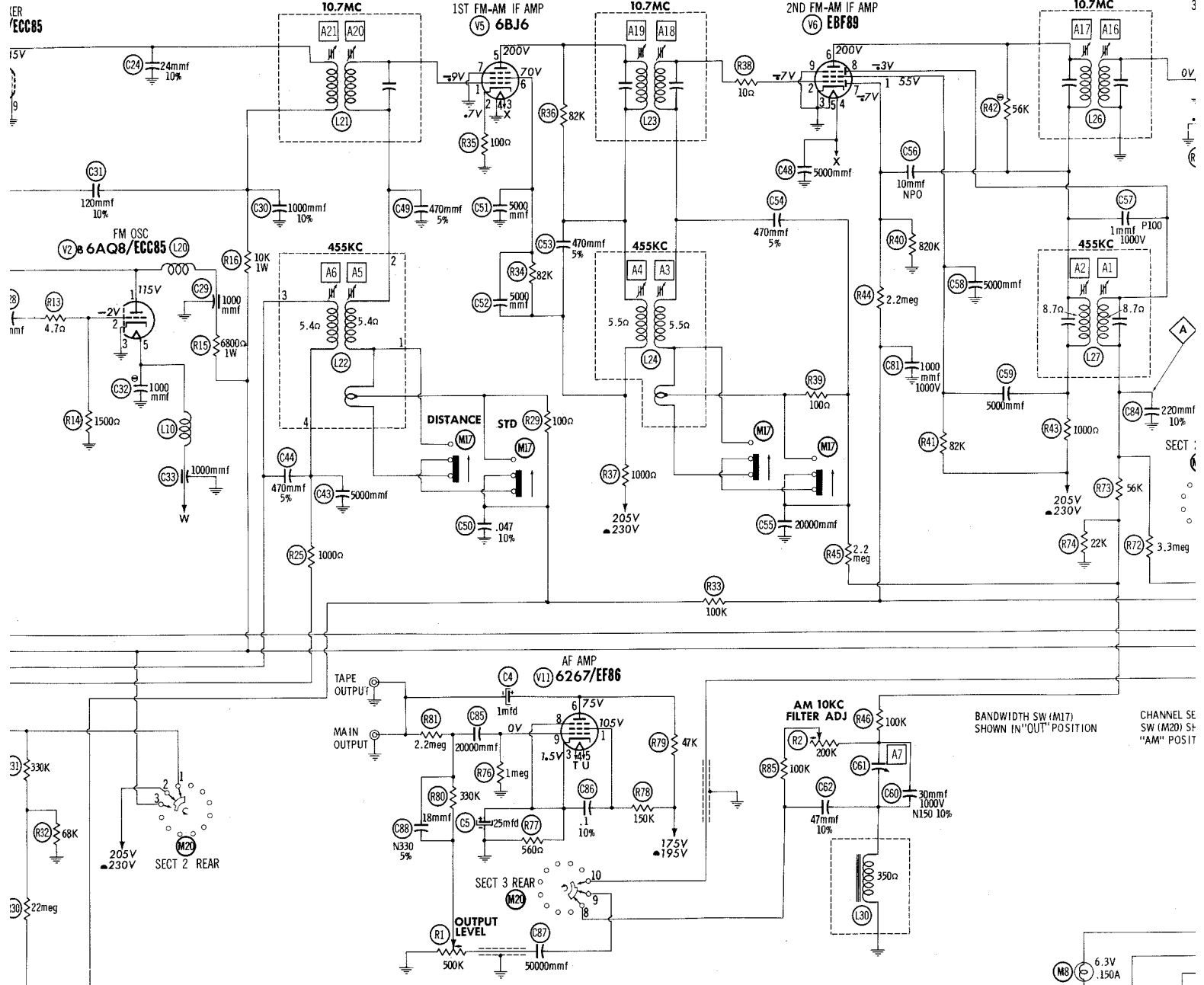
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

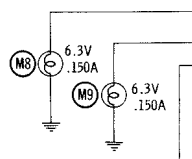
A PHOTOFAC STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1959

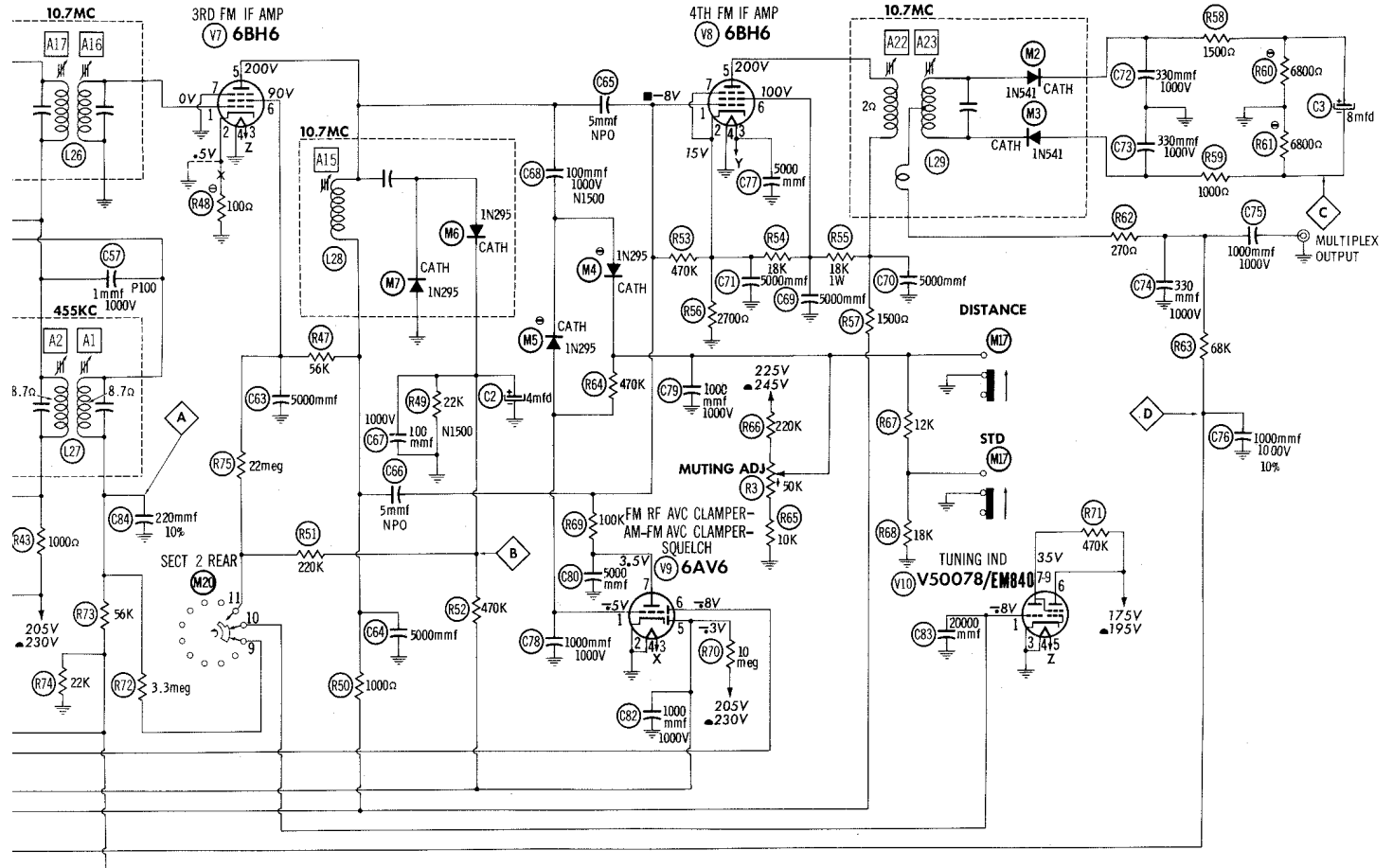


RESISTANCE READINGS

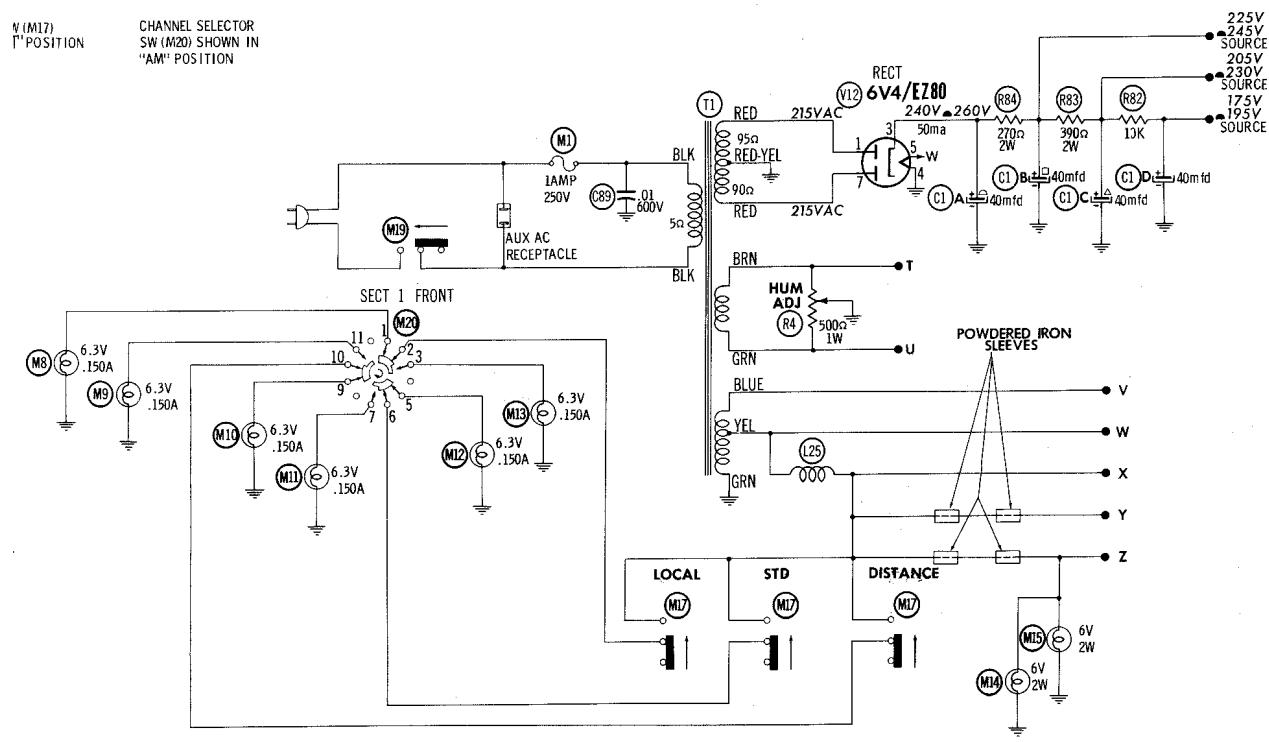
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	V50067 PCC88	∞	1meg	100Ω	.1Ω	0Ω	†1600Ω	160K	∞	0Ω
V2	6AQ8 ECC85	†7400Ω	1500Ω	0Ω	0Ω	.1Ω	†10K	820K	0Ω	0Ω
V3	6BJ6	≈ 850K	100Ω	0Ω	.1Ω	†= 2800Ω	†= 50K	0Ω		
V4	6BE6	≈ 22K	≈ .6Ω	.1Ω	0Ω	†=1600Ω	†= 22K	2.2meg		
V5	6BJ6	1.5meg	100Ω	.1Ω	0Ω	†1600Ω	†82K	0Ω		
V6	EBF89	†82K	2.2meg	0Ω	.1Ω	0Ω	†1600Ω	650K	78K	0Ω
V7	6BH6	.6Ω	100Ω	.1Ω	0Ω	†1600Ω	†65K	0Ω		
V8	6BH6	470K	2700Ω	.1Ω	0Ω	†2100Ω	†17K	2700Ω		
V9	6AV6	470K	0Ω	.1Ω	0Ω	490K	1.4meg	590K		
V10	V50078 EM840	230K	TP	0Ω	0Ω	.1Ω	†10K	†480K	TP	†480K
V11	6267 EF 86	†160K	0Ω	560Ω	120Ω	120Ω	†57K	0Ω	560Ω	1meg
V12	6V4 E280	95Ω	NC	†	0Ω	.1Ω	NC	90Ω	NC	NC

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
 † THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
 ‡ MEASURED FROM PIN 3 OF V2
 • MEASURED IN "AM" POSITION
 • MEASURED FROM PIN 8 OF V1
 • MEASURED FROM PIN 2 OF V8
 NC NO CONNECTION
 TP TIE POINT

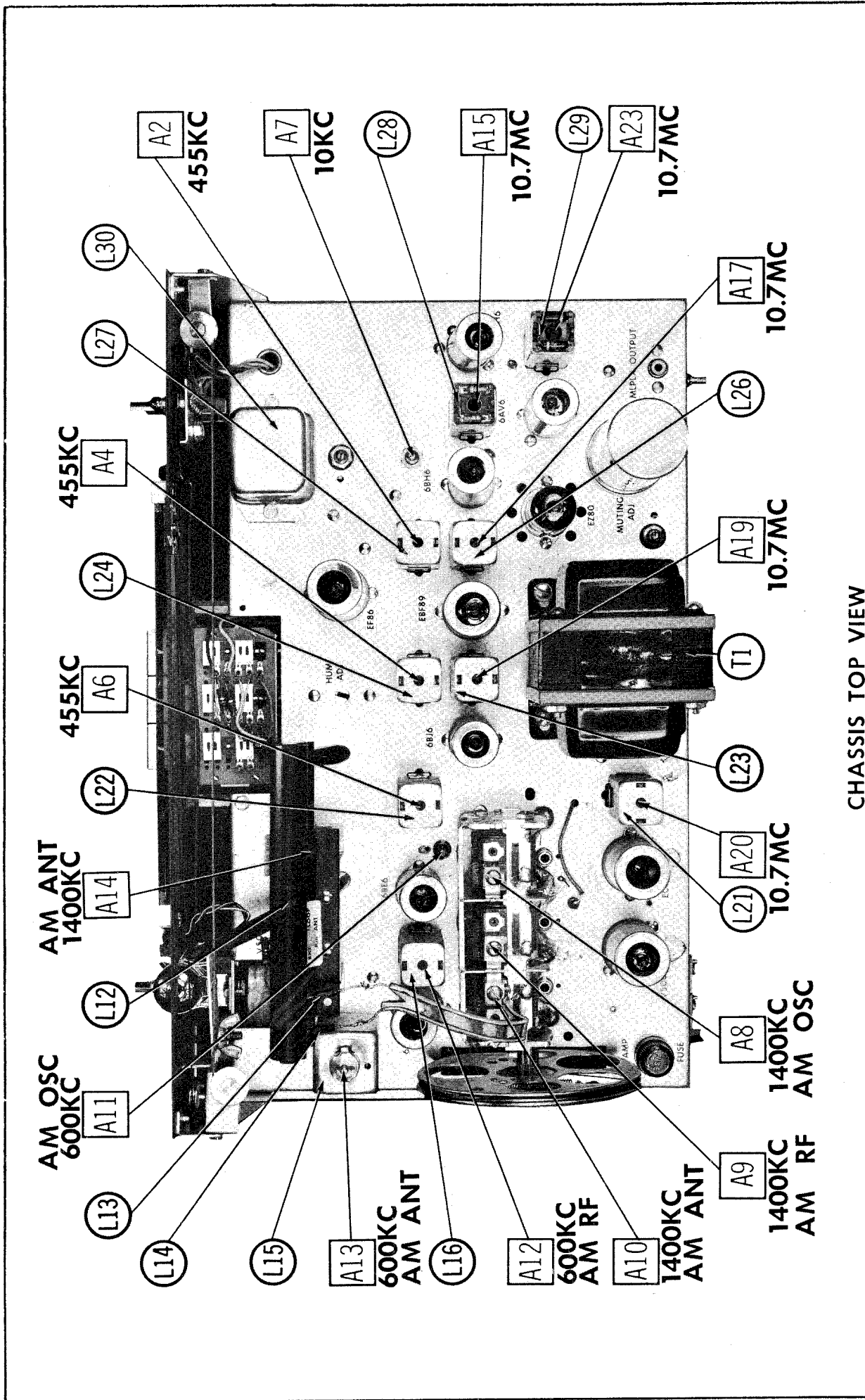




M (M17)
 I¹ POSITION
 CHANNEL SELECTOR
 SW (M20) SHOWN IN
 "AM" POSITION



FISHER MODEL 90R





CHASSIS TOP VIEW

ALIGNMENT INSTRUCTIONS





ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Remove external antenna & antenna link between Terminals 1 & 2. Adjust pointer to coincide with zero index mark on logging scale with tuning gang fully closed.

AM ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS	
1. .01mf	High side to pin 7 (grid) of 6BE6 (V4). Low side to chassis	455KC (400% Mod.)	AM Sharp Distant	Tuning gang fully open	DC Probe to point  Common to chassis	A1, A2 A3, A4 A5, A6	Adjust for maximum deflection.	
2.	High side to junction of R73, & R74. Low side to chassis	10KC	"	"	AC probe to main audio output jacks common to chassis	R2, A7	Adjust for MINIMUM deflection.	
3.	220mf	High side to AM antenna terminal. Low side to chassis	1400KC	"	1400KC	DC probe to point  Common to chassis	A8, A9, A10	Adjust for maximum deflection.
4.	"	"	600KC	"	600KC	"	A11, A12 A13	Adjust for maximum deflection. Repeat Steps 3 & 4.
5.	Loop	1400KC	"	1400KC	"	A14	"	
6. .01mf	High side to pin 7 (grid) of 6BE6 (V4). Low side to chassis	455KC (30KC SWP)	AM Broad Local Ext.	Tuning gang fully open	(Use Scope) Vert. amp to main audio output jack. Low side to Chassis	A2	Adjust SLIGHTLY for symmetrical curve	

FM IF ALIGNMENT, USING AM SIGNAL GENERATOR & VTVM

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side to ungrounded tube shield of 6AQ8/ ECC85 (V2). Low side to chassis.	10.7MC (Unmod)	FM Off Distant	Point of non-interference	DC probe to point  Common to chassis.	A15, A16, A17, A18, A19, A20, A21	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point  Common to chassis.	A22	"
9.	"	"	"	"	DC probe to point  Common to point  .	A23	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

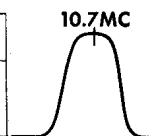





FIG. 1

FM IF ALIGNMENT, USING FM SIGNAL GENERATOR & OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	High side to ungrounded tube shield of 6AQ8/ ECC85 (V2). Low side to chassis	10.7MC (450KC SWP)	FM Off Distant	Point of non-interference	Vert. Amp to point  . Low side to chassis.	A15, A16, A17, A18, A19, A20, A21	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	"	"	"	Vert. amp to point  . Low side to chassis.	A22	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
9.	"	"	"	"	Vert. amp to point  . Low side to chassis.	A23	Reconnect syablizing capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A22 for maximum amplitude and straightness of crossover lines.

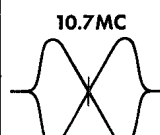

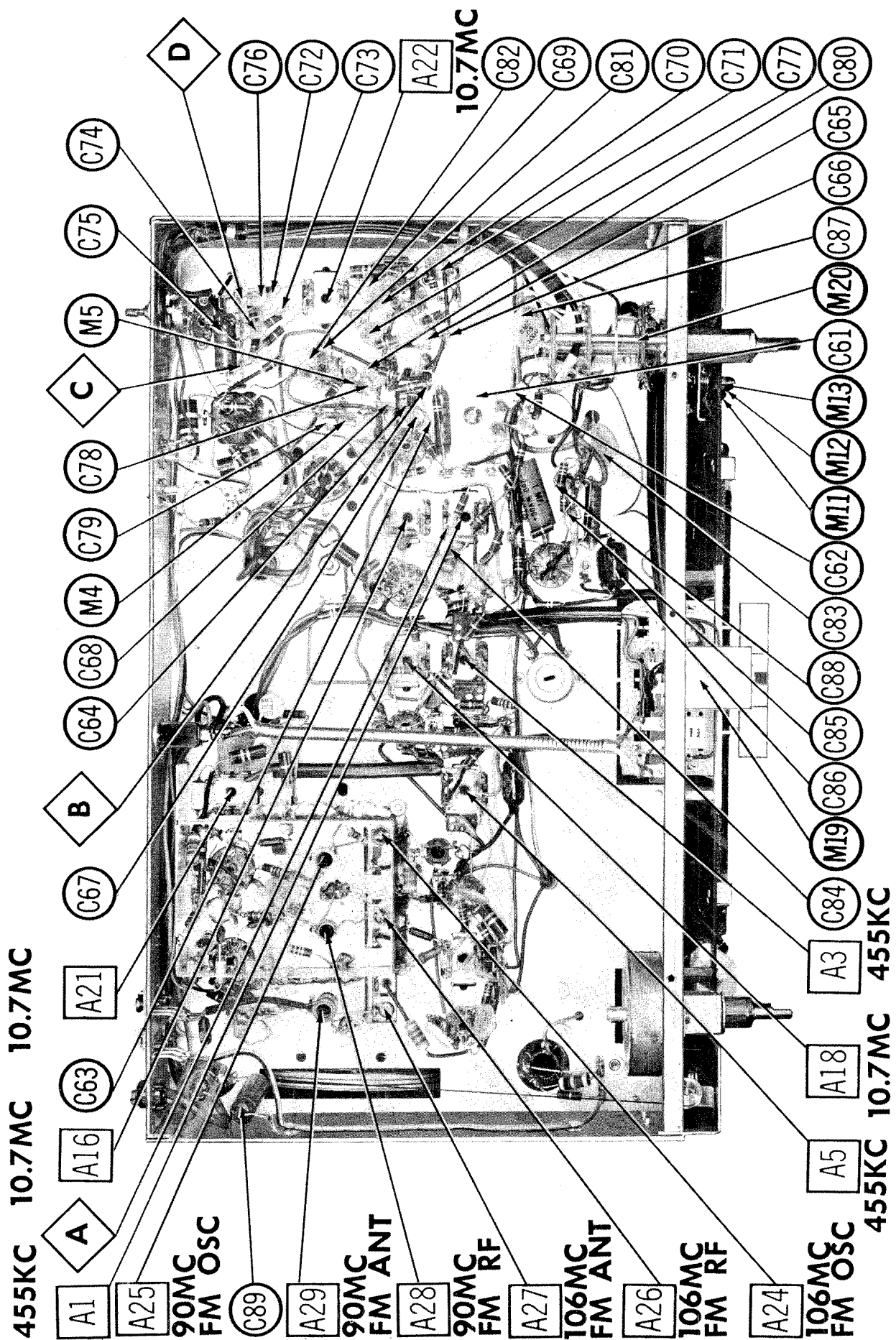


FIG. 2

FM RF ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10. Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each side.	106MC (Unmod.)	FM Off Distant	106MC	DC probe to point  Common to chassis. Vert. amp of scope to main audio output jack. Low side to chassis	A24	Adjust for maximum deflection and for sine wave output.
11. "	"	90MC	"	90MC	"	A25	"
12. "	"	106MC	"	106MC	"	A26, A27	"
13. "	"	90MC	"	90MC	"	A28, A29	Adjust for maximum deflection and for sine wave output. Repeat Steps 4 thru 7.
14. "	"	98MC @ 100micro-volts	"	Tune for 90MC signal	(Use Scope) Vert. amp to main audio output jack. Low side to chassis.		Check for no overload and clipping of wave form.
15. "	"	"	"	"	VTVM AC probe to main audic output jack. Common to chassis.	R3	Observe deflection with "Distant" pushbutton depressed. Depress "Local" pushbutton and adjust R3 for reading of 2DE below reading with "Distant" pushbutton depressed.



CHASSIS BOTTOM VIEW - ALIGN., MISC. & CAPACITOR IDENT. (C61-C89)