

AMP PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	REPLACEMENT DATA			INSTALLATION NOTES
	RATING RESISTANCE	STEELMAN PART No.	CENTRALAB PART No.	
R31A	3meg *	368071		Loudness, Channel 1
B	3meg *			Loudness, Channel 2
C	3meg *			Balance, Channel 1
R32A	3meg	368062		Balance, Channel 2
B	3meg			Treble, Channel 1
R33A	3meg	368074		Treble, Channel 2
B	3meg			Bass, Channel 1
R34A	3meg	368072		Bass, Channel 2
B	3meg			Power-Off/On
C	3meg			
D	3meg			

* Taps @ 1meg & 2meg. Tap #2 not used.

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	RATING	REMARKS	ITEM No.	RATING	REMARKS
R35	100K		100K		R71	100K	
R36	2.2meg		1meg		R72	1meg	
R37	100K		47K		R73	47K	
R38	100K		47K		R74	2200Ω	
R39	5Ω 5W		2200Ω		R75	47K	
R40	100Ω		100Ω		R76	100Ω	
R41	5Ω 5W		470K		R77	470K	
R42	100Ω		100Ω		R78	100Ω	
R43	2200Ω		470K		R79	470K	
R44	6.8meg		100Ω 2W		R80	100Ω 7W	
R45	100K		100K		R81	4700Ω	
R46	47K		6.8meg		R82	18K 1W	
R47	100K		100K		R83	18K 1W	
R48	100K		100K		R84	1.2meg	
R49	100K		100K		R85	7.5Ω 10W	
R50	100K		100K		R86	7.5Ω 5W	
R51	6800Ω		6800Ω		R87		

Note 1. Not used in some versions.
† Alternate Value.

CROSSOVER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (10 CURRENT 1000 °C)	STEELMAN PART No.	Merit PART No.	Stencor PART No.	
L17		.3Ω	250uH	455071			
L18		.3Ω	250uH	455071			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA			NOTES
	SEC. 1	SEC. 2	SEC. 3	STEELMAN PART No.	Merit PART No.	Stencor PART No.	
T2	117V @ .88A	100V @ 12.6VCT @ 3A		440023			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE			REPLACEMENT DATA			NOTES
	PR	SEC.	SEC.	STEELMAN PART No.	Merit PART No.	Stencor PART No.	
T3	5100Ω CT	6-8Ω CT		480565			
T4	5100Ω CT	6-8Ω CT		480565			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	STEELMAN PART No.	QUAM PART No.	
SP1	12"	PM	3-4Ω	409005	I2A6A	
SP2	6"	PM	3-4Ω	406002	6A31	
SP3	4"	PM	3-4Ω	404022	4A1	
SP4	12"	PM	3-4Ω	409005	I2A6A	
SP5	6"	PM	3-4Ω	406002	6A31	
SP6	4"	PM	3-4Ω	404022	4A1	

RECTIFIERS

ITEM No.	BATING			REPLACEMENT DATA			NOTES
	CURRENT (Measured)	STEELMAN PART No.	GENERAL ELECTRIC PART No.	SARLES TAZIAN PART No.	SILVANIA PART No.		
M6	.180A	380020					
M7	.180A	380020					

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	STEELMAN PART No.			REPLACEMENT DATA			NOTES
	CARTRIDGE	NEEDLE	ASTATIC PART No.	ELECTRO-VOICE PART No.	SONOTONE PART No.		
M8			137B	26S	1072-S	Not Req.	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE			REPLACEMENT DATA			NOTES
	STEELMAN PART No.	RAYTHEON PART No.	SILVANIA PART No.	STEELMAN PART No.	RAYTHEON PART No.	SILVANIA PART No.	
M9	IN295	359021	IN295	IN295	IN295	IN295	
M10	IN295	359021	IN295	IN295	IN295	IN295	

MISCELLANEOUS

ITEM No.	PART NAME	STEELMAN PART No.	NOTES
M11	Switch	370059	
M12	Meter	830151	Function Selector (Rotary Wafer) Balance

CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Knob	272327	Tuning, Model 704
Knob	272328	Function, Model 704 (Tuner)
Knob	272315	Loudness, Bass, Treble, Balance, Function (Amplifier)
Cabinet	211270	Mahogany, Model 604
Cabinet	211271	Limited Oak, Model 604
Cabinet	211272	Walnut, Model 604
Cabinet	211320	Cherry, French Provincial, Model 604
Cabinet	211280	Mahogany, Model 704
Cabinet	211281	Limited Oak, Model 704
Cabinet	211282	Walnut, Model 704
Cabinet	211330	Cherry, French Provincial, Model 704

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors (Standard) Available in Ten Colors
Power Cord	Use BELDEN No. 8524 (Solid) Available in Ten Colors (Standard) Available in Ten Colors
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 1795-B (6 Ft. Length)
Phono Pick-up Arm Cable	Use BELDEN No. 1795-K (1 1/2 Ft. Length)
	Use BELDEN No. 8400 (Two Conductor - Twisted)

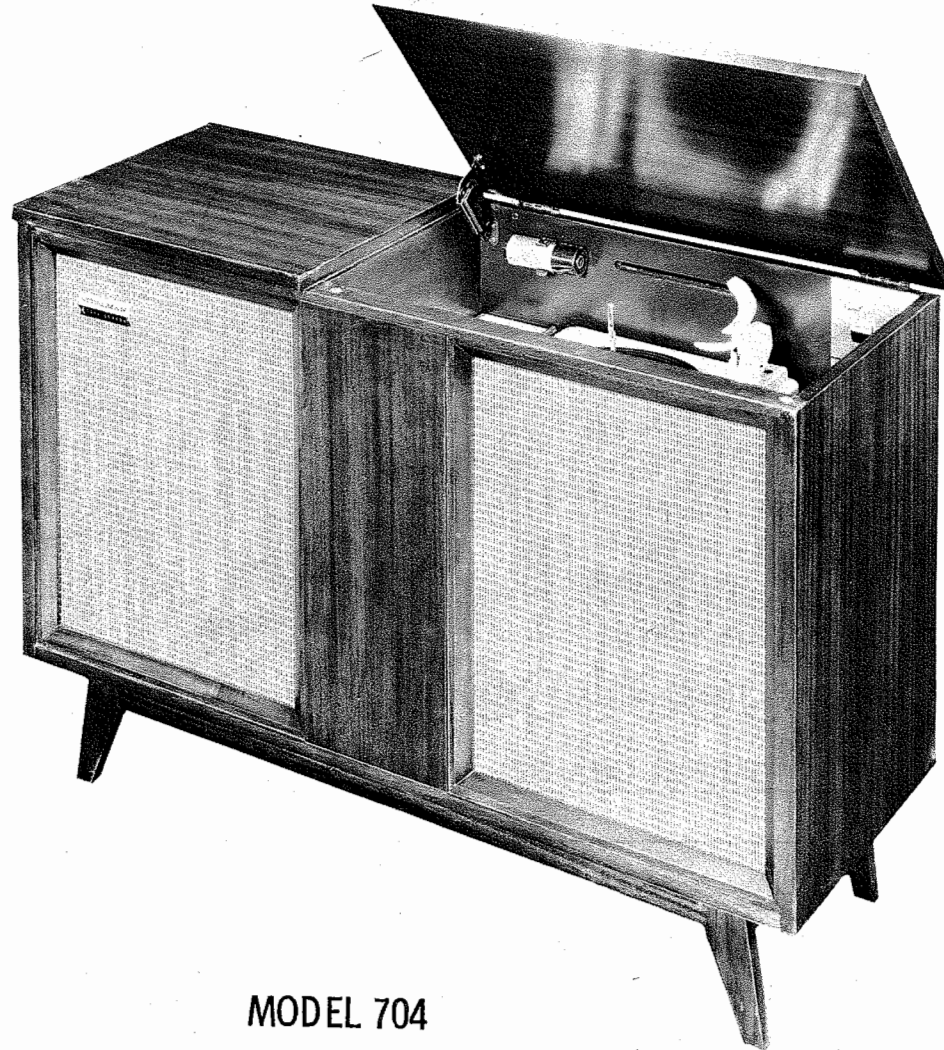
FOLDER 13
SET 518

PHOTOFACT® Folder

with CIRCUITRACE®



STEELMAN MODELS
604, 704



MODEL 704

TRADE NAME	Steelman Models 604, 704
MANUFACTURER	Steelman Phono & Radio Co., 2-30 Anderson Ave., Mount Vernon, N. Y.
TYPE SET	AC Operated 8 Tube FM-AM Tuner, 7 Tube Stereo Amplifier, And 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles
TUNING RANGE—BROADCAST	540 - 1600KC
RATING	38 Watts, .37 Amp. @ 117 Volts AC (Tuner)
FREQ. MOD.	88 - 108MC
	92 Watts, .86 Amp. @ 117 Volts AC (Amp.)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #300070 — SEE V-M 1201 — PHOTOFACT SET 436
FOLDER 18 OR RECORD CHANGER MANUAL RC-12



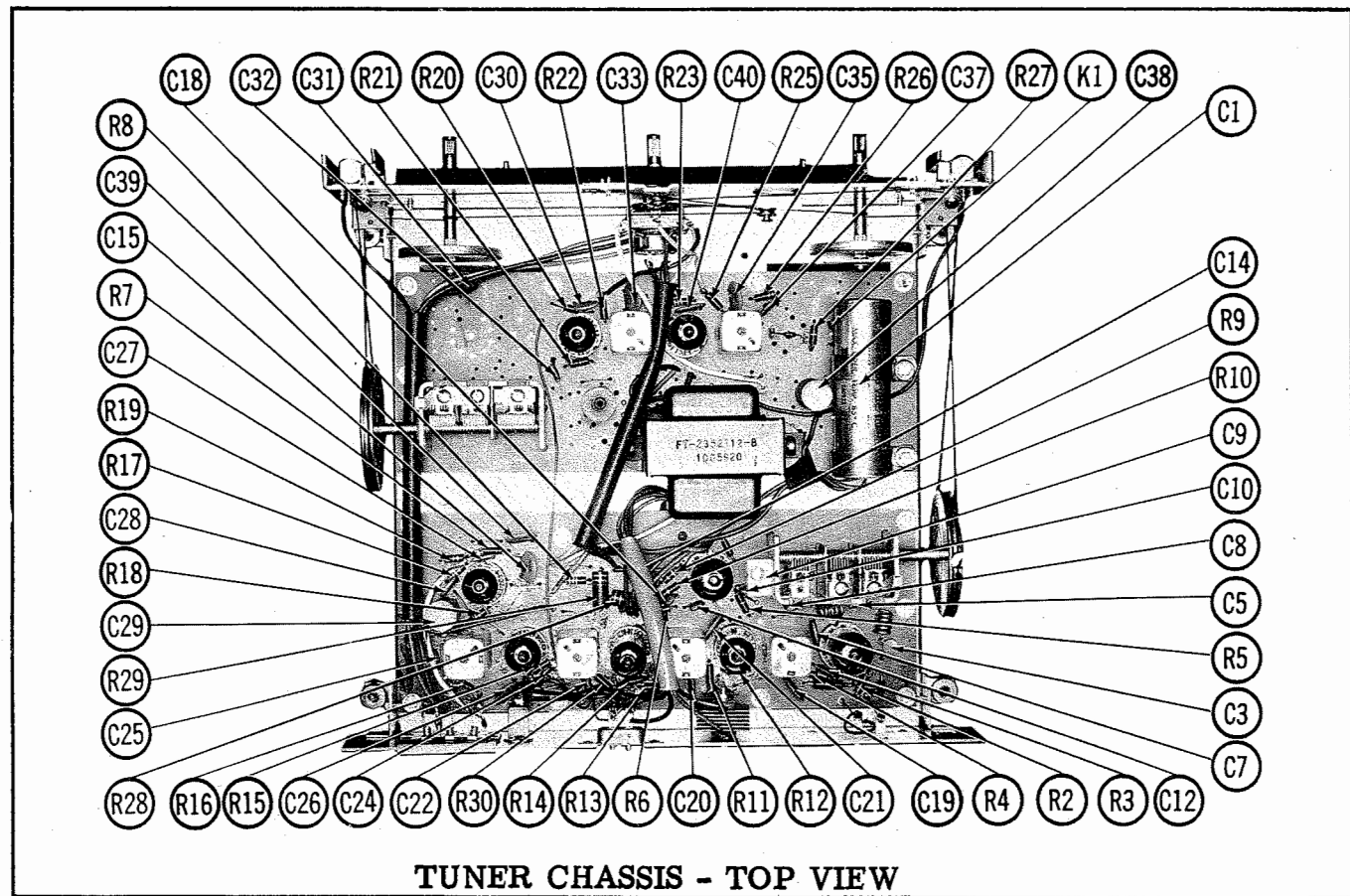
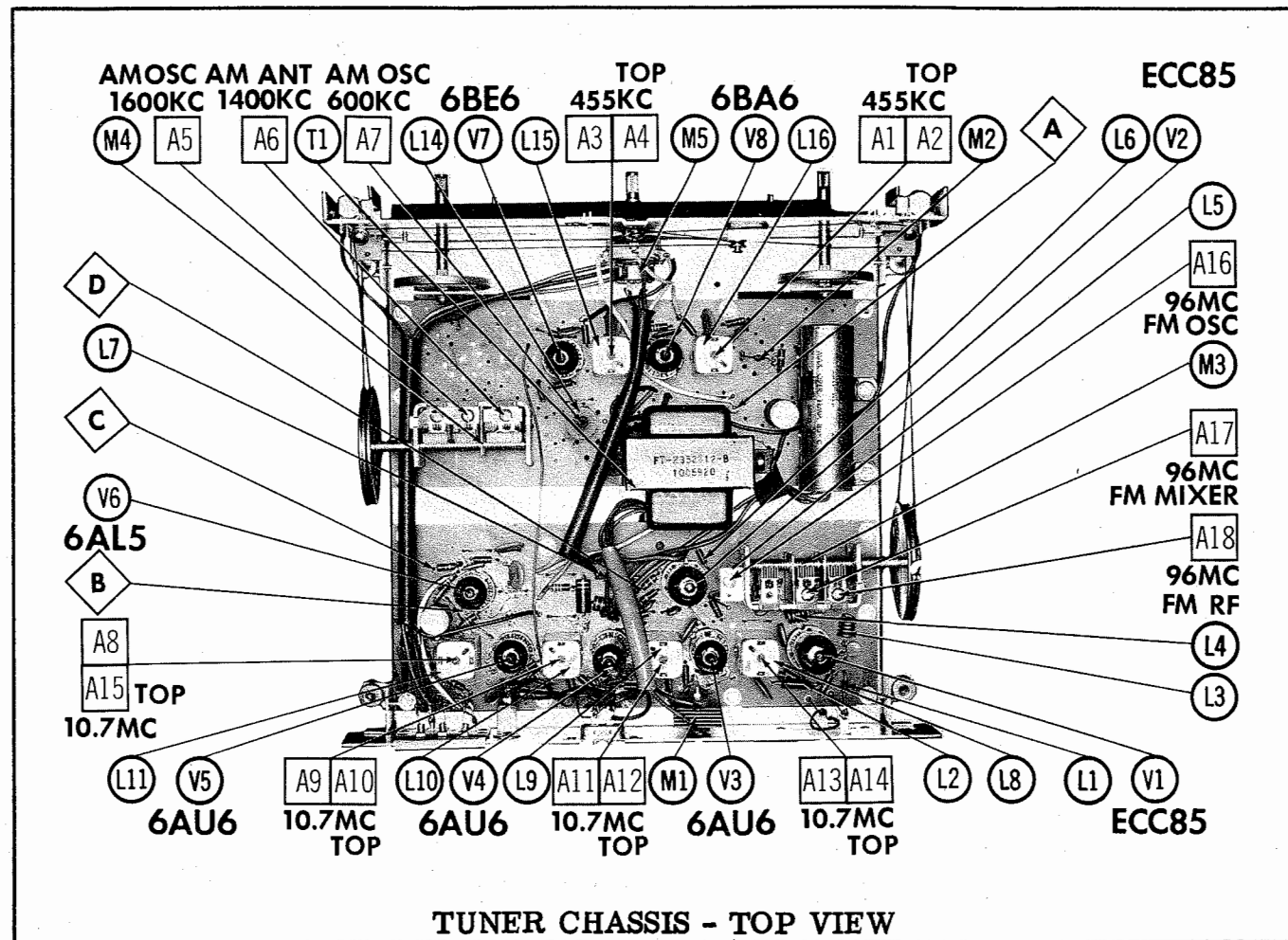
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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STEELMAN MODELS
604, 704

SET 518
FOLDER 13



TUNER PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		STEELMAN PART No.	RAYTHEON	SILVANIA	
			PART No.	PART No.	
M2	IN87	Z2923361	IN87	IN87	AM Detector (Pigtail)

MISCELLANEOUS			
ITEM No.	PART NAME	STEELMAN	NOTES
		PART No.	
M3	Tuning Cap.		FM, 3 Gang AM, 3 Gang Function Selector (Includes Power Off-On) (Rotary Type)
M4	Tuning Cap.		
M5	Switch		

AMP PARTS LIST AND DESCRIPTIONS

TUBES					
• GENERAL ELECTRIC •		• RAYTHEON •		• SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V9	Channel 1 AF Amp. - Channel 2 AF Amp.	12A U7A	V12	Channel 1 Output	12L6GT
V10	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V13	Channel 1 Output	12L6GT
V11	Channel 1 Phase Inv. - Channel 2 Phase Inv.	12AX7	V14	Channel 2 Output	12L6GT
			V15	Channel 2 Output	12L6GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	STEELMAN PART No.	AEROVOX PART No.	CORNEILL DUBILIER PART No.	MALLOY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C41	40	150	581004	PR81470	BR8015	TC48	TD-40-150	TVA-1413	①
C42	40	150	581004	PR81470	BR8015	TC48	TD-40-150	TVA-1413	
C43A	40	450	583026 ①	AFH3-44	C0380	FP377	TMT-3748	TVL-3787	
B A 40	450								
C 40	450								
C44	50	50NP	581048	PR87450	BR5015	TC3501 ↑		TVANS-1440 *	TVANS-1440 *
C45	50	50NP	581048	PR87450	BR5015	TC3501 ↑		TVANS-1440 *	

① C43 may be a 350V unit (Part #582014).
 * Not normally in distributor's stock. Available thru distributor on order to manufacturer.
 † Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

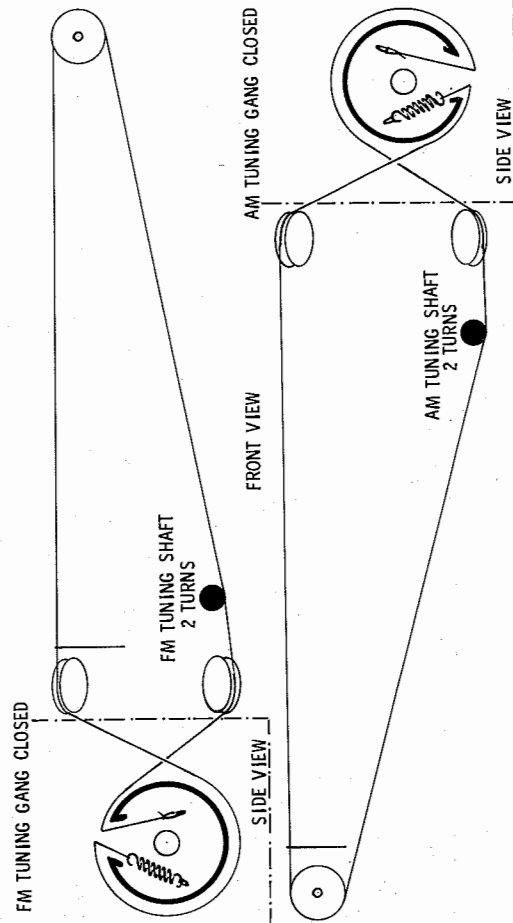
FIXED CAPACITORS

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.	BATING	REMARKS	AEROVOX CENTRAL LAB PART No.	REPLACEMENT DATA CENTRAL LAB PART No.	ELMENCE PART No.	MALLOY PART No.	SPRAGUE PART No.
C46	3000		SI 3000	D8-302	BYA10D3	CCD-302	107S-D30
C47	10000		BFD-01	DD-103	BYA10S1	CCD-103	5HK-S10
C48	.047 400V		P488N-047	DD-503	CUB4S1	GEM-4147	41M-S47
C49	220		DI-220	DD-102	LYOT22	CCD-321	107S-T22
C50	1000		BFD-001	DD-202	BYA10D1	CCD-202	5HK-D10
C51	2000	(2000) †	P488N-002	DD-203	CUB4S2	GEM-412	3HK-S20
C52	.02 400V		P488N-02	DD-103	CUB4S2	CCD-103	41M-S20
C53	10000		BFD-01	DD-103	BYA10S1	B-110	5HK-S10
C54	220		DI-220	DD-102	LYOT22	CCD-321	107S-T22
C55	.02 400V		P488N-02	DD-203	CUB4S2	GEM-412	41M-S20
C56	10000		BFD-01	DD-103	BYA10S1	CCD-103	5HK-S10
C57	10000		BFD-01	DD-103	BYA10S1	B-110	5HK-S10
C58	10000		BFD-01	DD-103	BYA10S1	B-110	5HK-S10
C59	3000		SI 3000	D8-302	BYA10D3	CCD-302	107S-D30
C60	10000		BFD-01	DD-103	BYA10S1	CCD-103	5HK-S10
C61	.047 400V		P488N-047	DD-503	CUB4S47	GEM-4147	41M-S47
C62	220		DI-220	DD-102	LYOT22	CCD-321	107S-T22
C63	1000		BFD-001	DD-202	BYA10D1	CCD-202	5HK-D10
C64	2000		P488N-002	DD-203	CUB4S2	GEM-412	41M-S20
C65	.02 400V	(2000) †	P488N-02	DD-103	BYA10S1	B-110	5HK-S10
C66	10000		BFD-01	DD-103	BYA10S1	CCD-103	5HK-S10
C67	220		DI-220	DD-102	LYOT22	CCD-321	107S-T22
C68	.02 400V		P488N-02	DD-203	CUB4S2	GEM-412	41M-S20
C69	10000		BFD-01	DD-103	BYA10S1	CCD-103	5HK-S10
C70	10000		BFD-01	DD-103	BYA10S1	B-110	5HK-S10
C71	10000		BFD-01	DD-103	BYA10S1	B-110	5HK-S10
C72	680	1468-00068	D8-681	SW5768	CM-19B-681M	MCJ249	1FM-368
C73	680	1468-00068	D8-681	SW5768	CM-19B-681M	MCJ249	1FM-368
C74	.05 400V	Note 1	P488N-05	DD-503	CUB4S5	GEM-415	41M-S50

† Alternate Value
Note 1. Not used in some versions.

TUNING DRIVE CORD STRINGING



RESISTORS (IRC or EQUIVALENT)
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R1	10K		R11	1000Ω		R21	22K	
R2	68Ω		R12	100Ω		R22	1000Ω	
R3	1meg		R13	1000Ω		R23	470K	
R4	15K		R14	100K		R24	470K	
R5	10K		R15	100K		R25	1000Ω	
R6	1000Ω		R16	6800Ω		R26	3.3meg	
R7	2.2meg		R17	180K		R27	220K	
R8	470K		R18	180K		R28	330Ω 2W	
R9	39Ω		R19	22K		R29	330Ω 2W	
R10	1000Ω		R20	1meg		R30	1000Ω	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	STEELMAN PART No.	REPLACEMENT DATA
K1	AM Diode RF Filter	150mm, 150mm, 47K		Aerovox Centralab Cornell-Dublier Sprague

COILS (RF-IF)

ITEM No.	USE	STEELMAN PART No.	REPLACEMENT DATA	NOTES
L1	FM Ant. Coil		Merit PART No.	
L2	RF Choke		4584 PART No.	
L3	FM RF Coil		BC-564 PART No.	
L4	FM Mixer Coil			
L5	FM Osc. Coil			
L6	Cathode Choke			
L7	RF Choke			
L8	1st FM IF Trans.			
L9	2nd FM IF Trans.			
L10	3rd FM IF Trans.			
L11	Discriminator			
L12	Loopsick			
L13	RF Choke			
L14	AM Osc. Coil			
L15	1st AM IF Trans.			
L16	2nd AM IF Trans.			

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING	REPLACEMENT DATA	NOTES
T1	120V @ .860A Tap @ 6.3V @ 2.6A	STEELMAN PART No.	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA	NOTES
M1	.060A	STEELMAN PART No.	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA	NOTES
C1A	60 200	STEELMAN PART No.	
C1B	60 200		
C1C	60 200		

* Not normally in distributor's 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	REMARKS	REPLACEMENT DATA	NOTES
C2	470		SPRAGUE PART No.	
C3	47 N750			
C4	6.8 10K			
C5	4.7 10K			
C6	4.7 N750			
C7	2000			
C8	1.5 p100 ± .25mmf			
C9	1-10			
C10	100 N750			
C11	4.7 N750			
C12	470			
C13	10 N6000			
C14	470			
C15	10000			
C16	47 N750			
C17	10000			
C18	470			
C19	10000			
C20	2000			
C21	10000			
C22	2000			
C23	10000			
C24	47 N750			
C25	2000			
C26	10000			
C27	100 N750			
C28	2000 10K			
C29	.05 200V			
C30	100 N750			
C31	.05 400V			
C32	47 N750			
C33	10000			
C34	10000			
C35	10000			
C36	10 N6000			
C37	10000			
C38	.05 200V			
C39	10000			
C40	10000			

Note 1. Not used in some versions.

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

† Alternate Value.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools: A1 thru A4 and A8 thru A15...GENERAL CEMENT #5097, 8727

A5, A6, A16, A17 and A18.....WALSCO #2515

A7.....GENERAL CEMENT #5004, 5008, 5009

WALSCO #2520

GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440

WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400v Mod.)	(AM) Tuning gang fully open.	AC probe to point A. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A6	"
4.	"	600KC	600KC Signal.	"	A7	Adjust for maximum deflection. Repeat Steps 2, 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to point B. Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
6.	"	"	"	DC probe to point C. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

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

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .001mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. thru 27K to point B. Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	Vert. amp. to point C. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Short Point D to chassis to disable the A. F. C.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	High side thru 270Ω to FM antenna terminals. Low side to chassis.	96MC (Unmod.)	(FM) 96MC	DC probe thru 1meg to point B. Common to chassis.	A16, A17, A18	Adjust for maximum output.

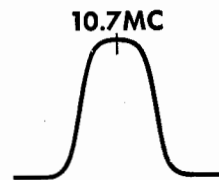


FIG. 1

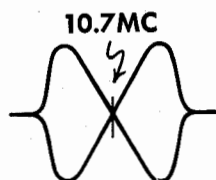
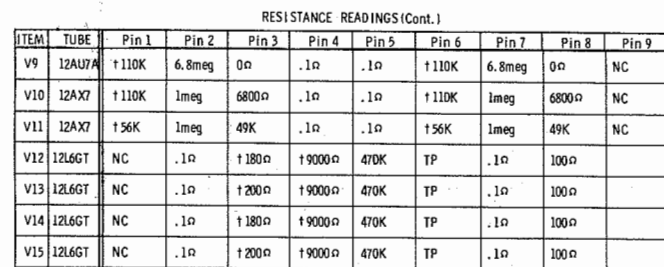
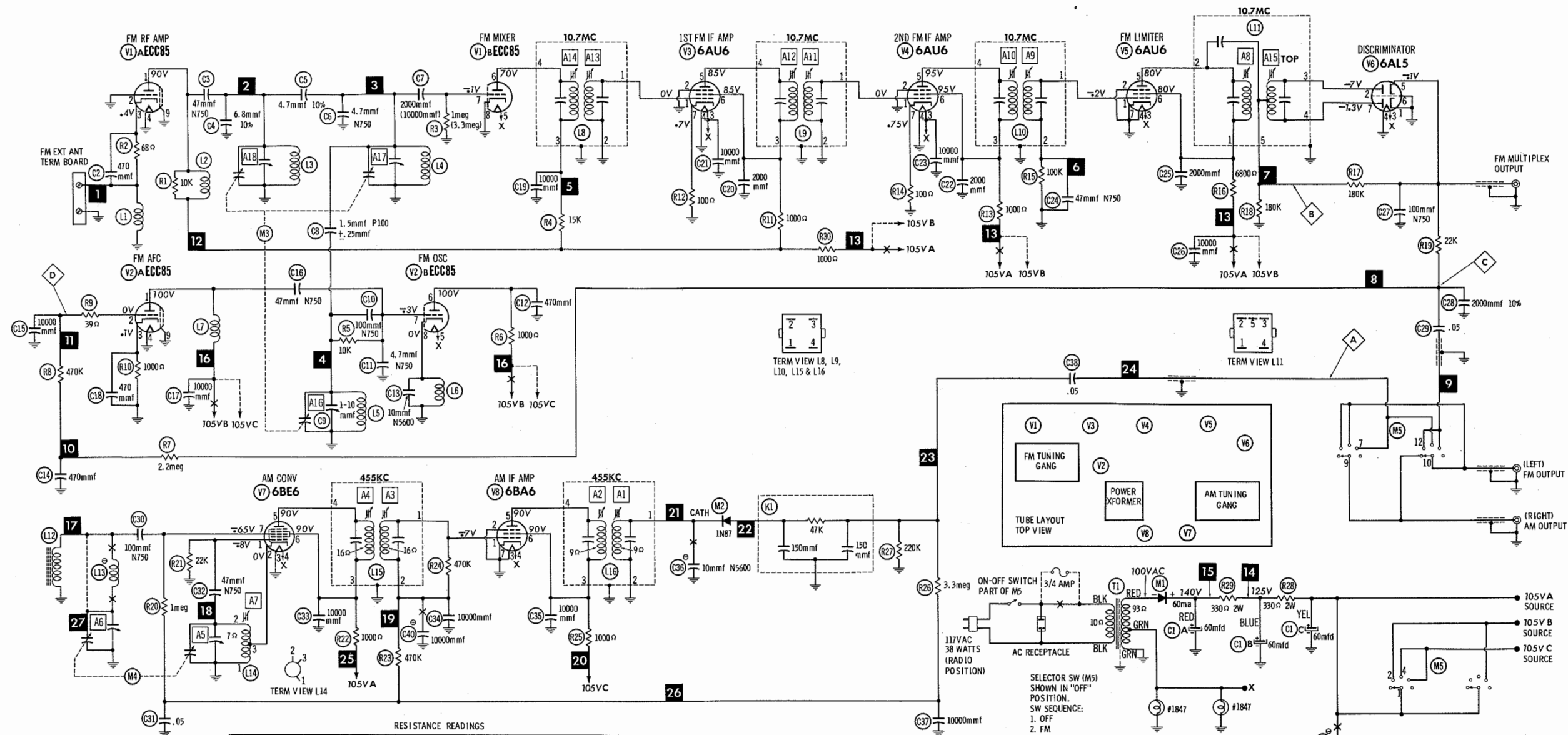


FIG. 2

[illegible]

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





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6ECC85	11660Ω	0Ω	68Ω	0Ω	.1Ω	116K	1meg	0Ω	0Ω
V2	6ECC85	11660Ω	3meg	1000Ω	0Ω	.1Ω	11660Ω	10K	0Ω	0Ω
V3	6AU6	0Ω	0Ω	.1Ω	0Ω	112600Ω	112600Ω	100Ω		
V4	6AU6	0Ω	0Ω	.1Ω	0Ω	11600Ω	11600Ω	100Ω		
V5	6AU6	100K	0Ω	.1Ω	0Ω	117400Ω	117400Ω	0Ω		
V6	6AL5	0Ω	180K	.1Ω	0Ω	360K	0Ω	180K		
V7	6BE6	22K	.2Ω	0Ω	.1Ω	11660Ω	11660Ω	4.3meg		
V8	6BA6	3.9meg	0Ω	0Ω	.1Ω	11660Ω	11660Ω	0Ω		

ALL MEASUREMENTS MADE IN "STEREO" POSITION.
 †† MEASURED FROM OUTPUT OF M1.
 NC NO CONNECTION
 TP TIE POINT

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

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.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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