

PHOTOFACT® Folder



AIRLINE MODELS GAA-2213A,B/
23A,B/43A,B/53A,B (Ch. 13B, 9057)

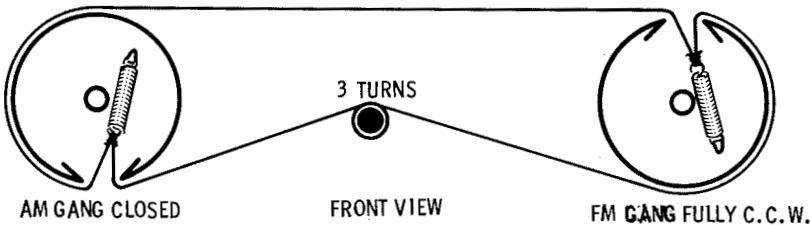


MODEL GAA2243A

TRADE NAME	Airline Models GAA-2213A, GAA-2213B, GAA-2223A, GAA-2223B, (Tuner Ch. 9057, Amp. Ch. 13B) GAA-2243A, GAA-2243B, GAA-2253A, GAA-2253B		
SUPPLIER	Montgomery Ward & Co., 619 Chicago Avenue, Chicago 7, Illinois		
TYPE SET	AC Operated 9 Tube AM-FM Tuner, 3 Tube Stereo Amplifier and 4 Speed Automatic Record Changer		
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles	RATING	78 Watts, .78 Amp. @117 Volts AC
TUNING RANGE — BROADCAST	540 — 1620KC	FREQ. MOD.	88 — 108MC

MODELS ENDING IN "A" USE RECORD CHANGER V-M 1235
MODELS ENDING IN "B" USE RECORD CHANGER V-M 1255

DIAL CORD STRINGING



AIRLINE MODELS GAA-2213A,B/
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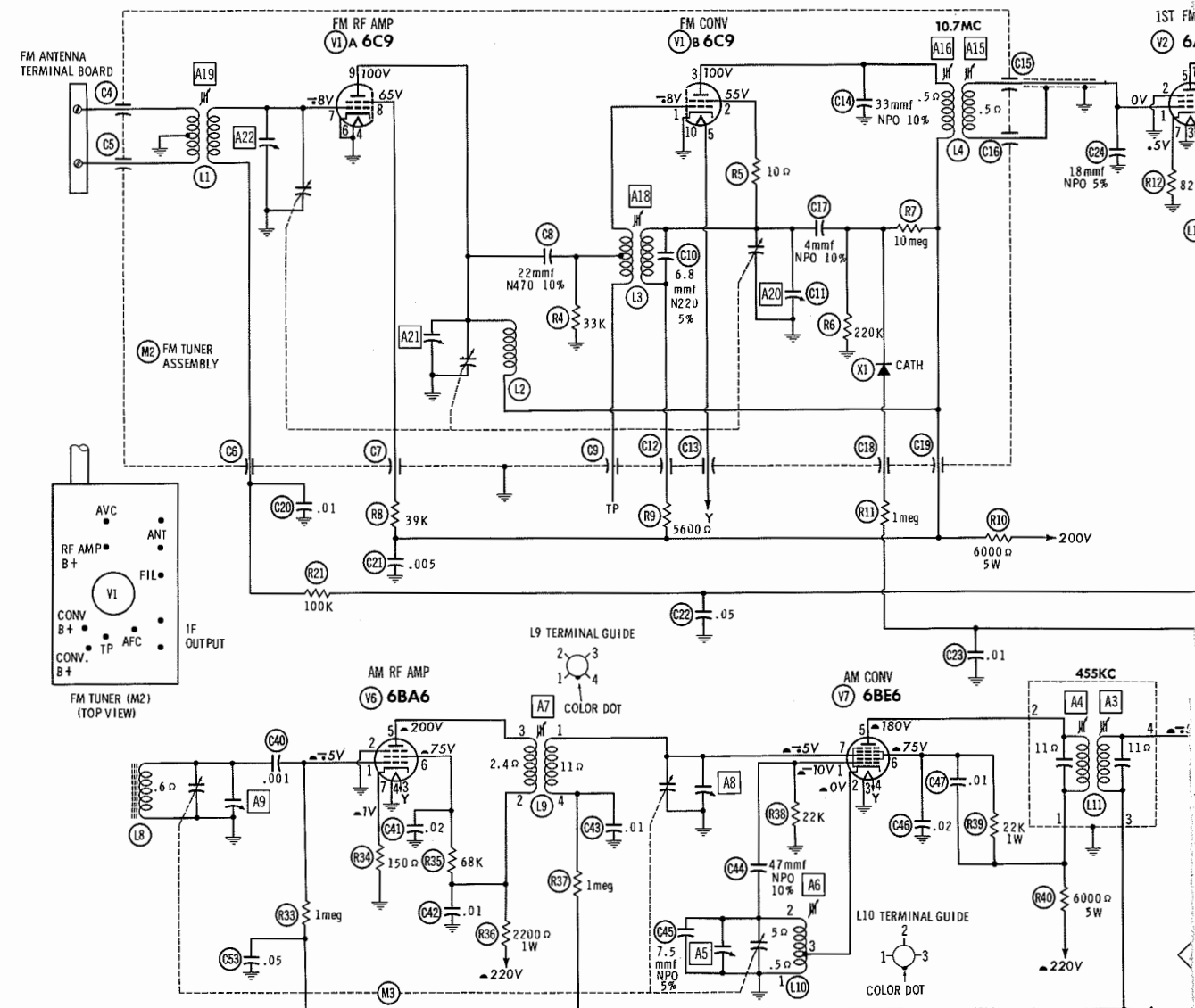
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



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

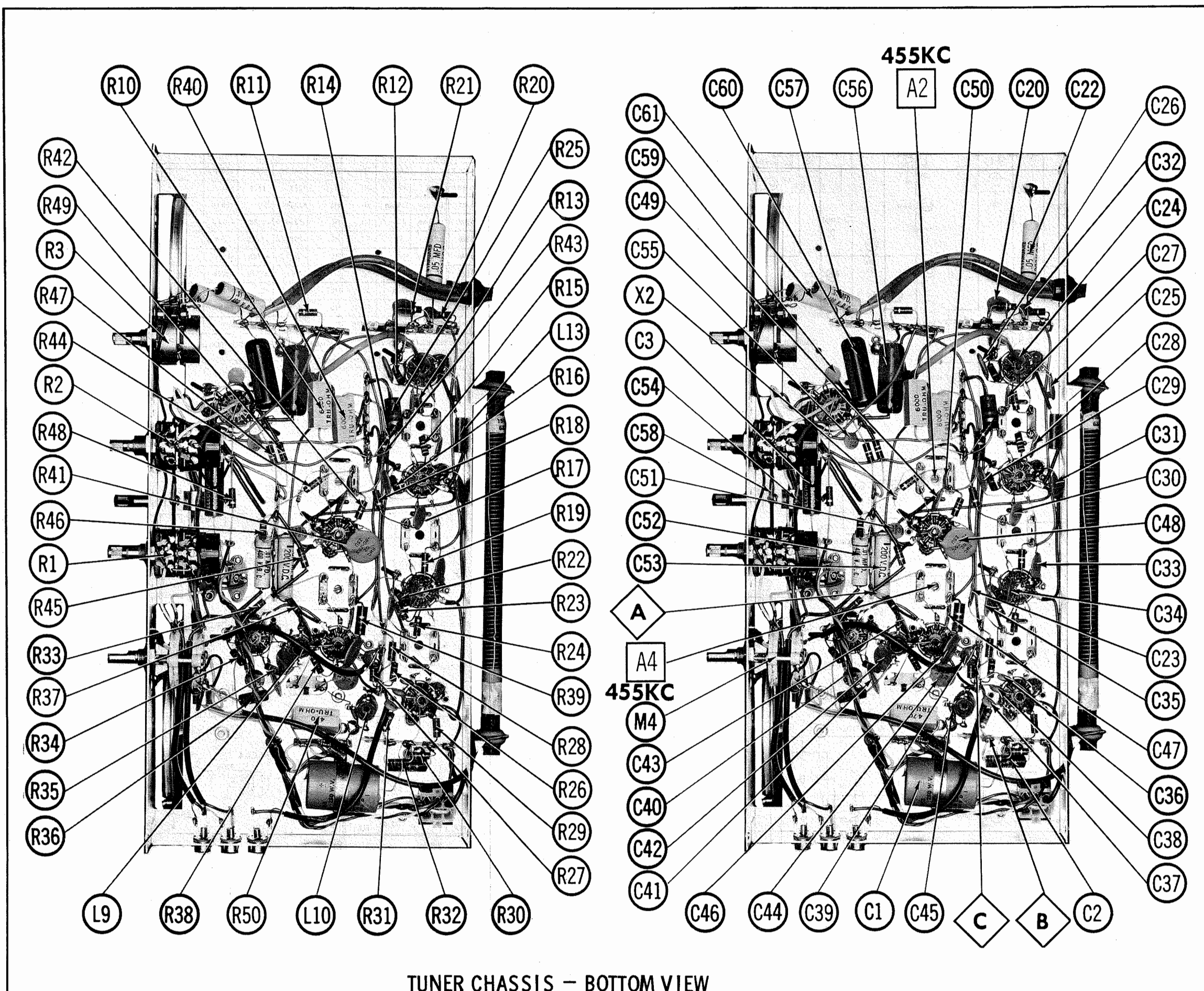
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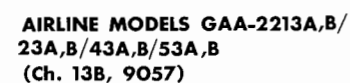
Printed in U.S. of America



1. Voltage measurements taken with vacuum tube voltmeter.
2. All controls set for normal operation, no signal applied.
3. Measured values are from socket pin or terminal to common ground.
4. All terminals viewed from bottom unless otherwise designated.
5. Numbers assigned to terminals may not be found on the unit.
6. Supply voltage maintained at rated value for voltage readings.


A PHOTOFAC STANDARD NOTATION SCHEMATIC
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ALIGNMENT INSTRUCTIONS

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:
A1 thru A5, A8, A9, A20, A21, A22...GENERAL CEMENT #8290, 8868, 9087...WALSCO #2525, 2528, 2587
A6, A7, A10 thru A19.....GENERAL CEMENT #8282, 8606, 9302...WALSCO #2543, 2544, 2508

AM ALIGNMENT — SELECTOR IN AM POSITION					
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
High side thru .1mfd to pin 7 (grid) AM Converter, low side to chassis.	455KC (Unmod.)	(AM) Tuning gang fully open.	DC probe of VTVM to point  common to chassis.	A1, A2, A3, A4	Adjust for maximum.
Fashion loop of several turns of wire and radiate signal into loop of receiver.	1620KC	1620KC	"	A5	"
"	600KC	600KC	"	A6, A7	"
"	1400KC	1400KC	"	A8, A9	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR & VTVM – SELECTOR IN FM POSITION						
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
	High side to ungrounded tube shield over V1, low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe of VTVM to point  common to chassis.	A10, A11, A12, A13, A14, A15, A16	Adjust for maximum.
	"	"	"	DC probe to point  , low side to chassis.	A17	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 & OSCILLOSCOPE — SELECTOR IN FM POSITION						
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.						
SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS	
High side to ungrounded tube shield over V1, low side to chassis.	10.7MC (450KC Swp.)	(FM) Point of non-interference.	Vert. amp. of scope to point  , low side to chassis.	A10, A11, A12, A13, A14, A15, A16	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. Reconnect C2.	
"	"	"	Vert. amp. to point  , low side to chassis.	A17	Adjust to place marker at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.	

FM RF ALIGNMENT — SELECTOR IN FM POSITION						
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	(FM) 90MC	DC probe of VTVM to point $\diamond B$, common to chassis.	A18, A19	Adjust for maximum.
	"	108MC	108MC	"	A20, A21, A22	"

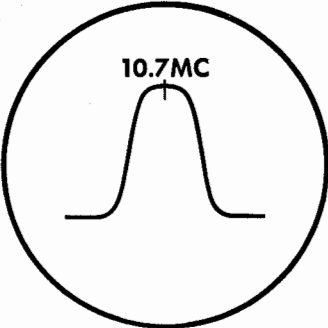


FIG. 1

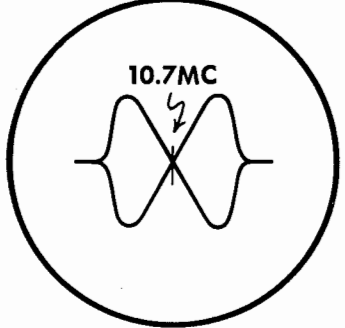
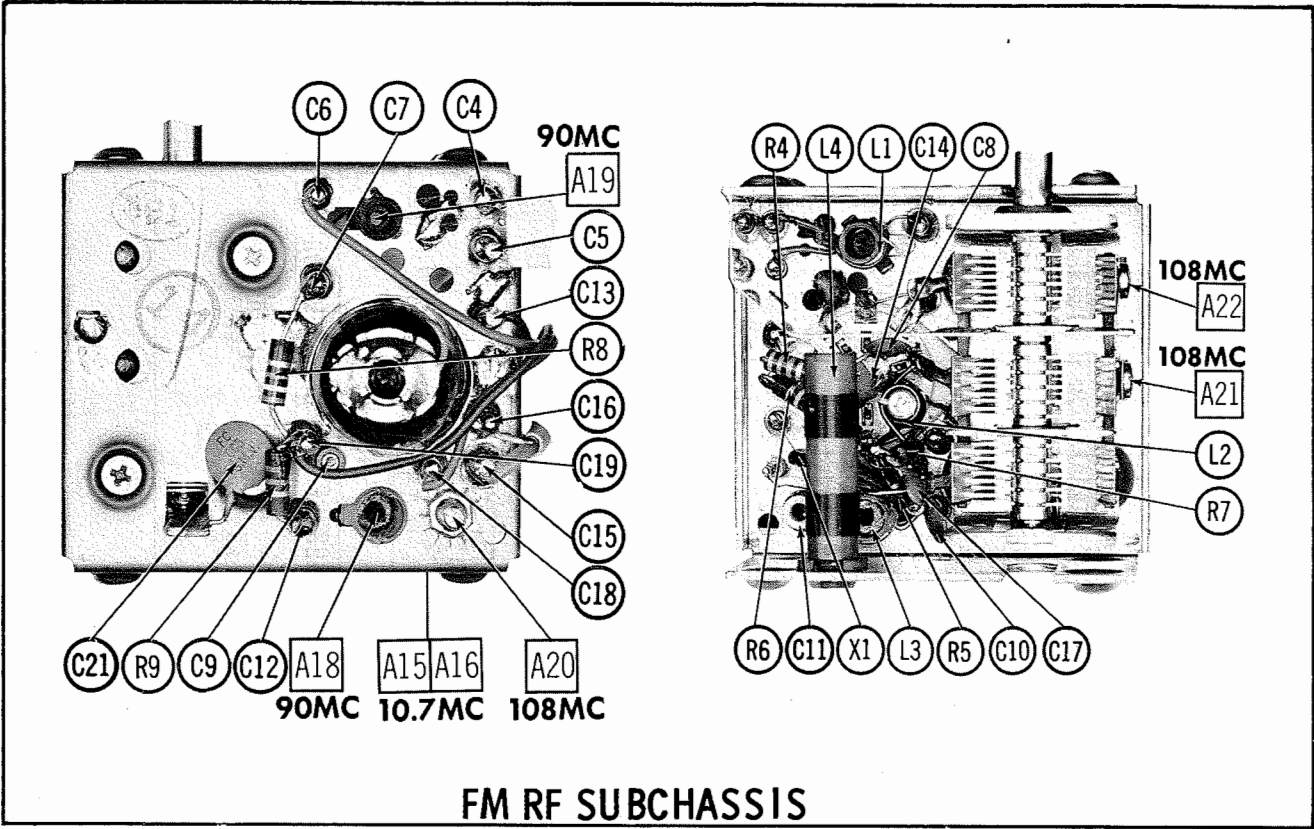
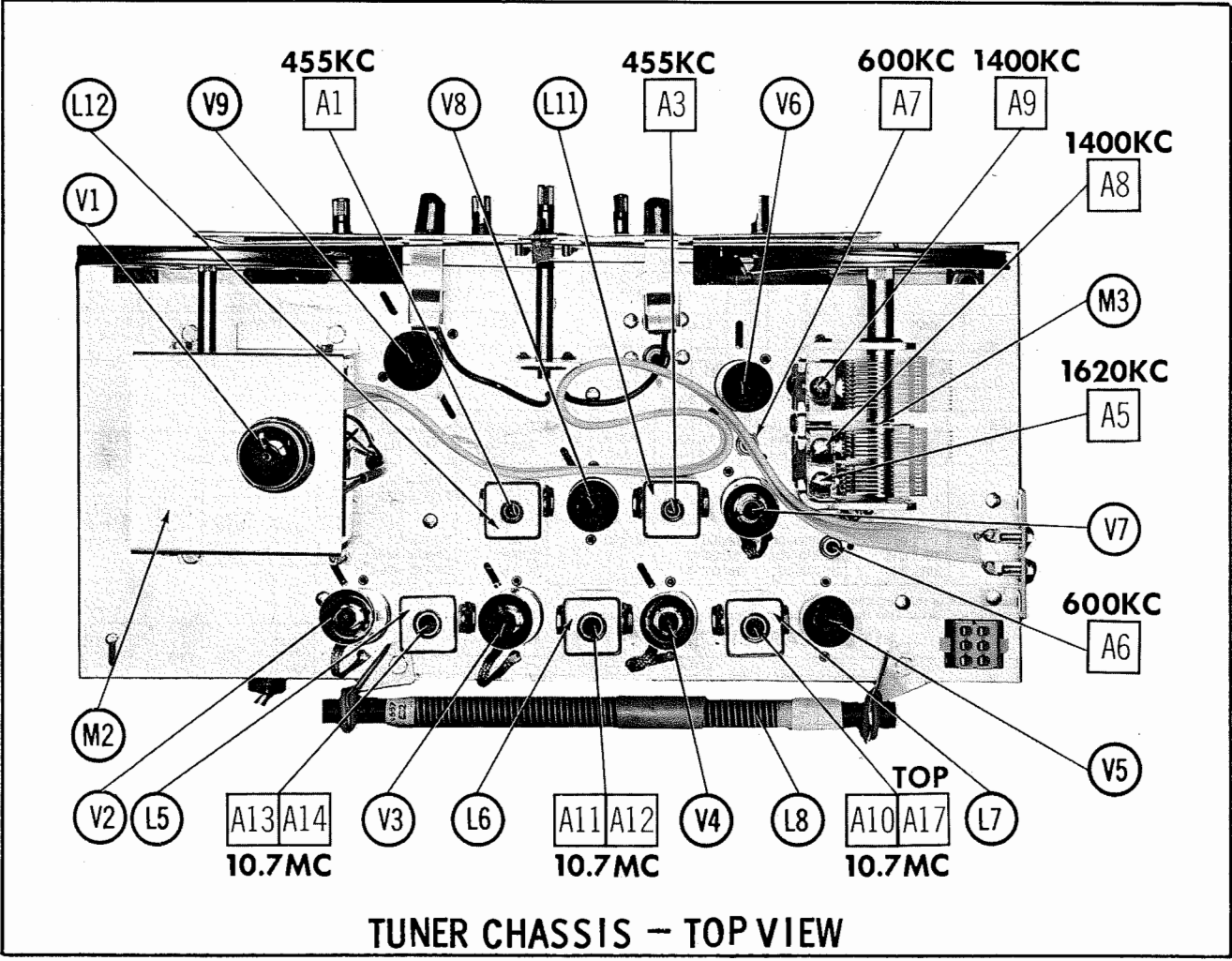


FIG. 2



FM RF SUBCHASSIS



TUNER CHASSIS — TOP VIEW

AIRLINE MODELS
GAA-2213A, B/23A, B/43A, B/53A, B (Ch. 13B, 9057)

TUNER PARTS LIST AND DESCRIPTION

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Conv.	6C9	V6	AM RF Amplifier	6BA6
V2	1st FM IF Amp.	6AU6A	V7	AM Converter	6BE6
V3	2nd FM IF Amp.	6AU6A	V8	AM IF Amplifier	6BA6
V4	FM Limiter	6AL5	V9	AF Amplifier	6EU7
V5	Ratio Detector				

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS			NOTES
			MALLORY PART No.	RCA PART No.	SARKES TARZIAN PART No.	
X1 X2		2751				A FC Diode AM Det. (1N64, 1N641)

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C1	30	250	DD-1053	PRS1575	BR30-250	GT1-12	TD-30-250	TC-77	TVA-1510
C2	10	25	916	PTT79	NLW10-25	MT1-5	MLV10-25	TT25X10	TE-1204
C3	50	25		PTT85	NLW50-25	MT1-17	MLV50-25	TT25X50	TE-1209

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.
C4								
C5								
C6								
C7								
C8	22 N470 10%					*		
C9								
C10	6.8 N220 5%							10TCR-V68
C11								
C12								
C13								
C14	33 NPO 10%		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C15								
C16								
C17	4 NPO 10%				C10V4C			10TCC-V39
C18								
C19								
C20	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.05 200V		P288N-05	DD-503	CUB285	4DP-3-503	GEM-415	2TM-S50
C23	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C24	18 NPO 5%				C10Q18C		CNO-418	10TCC-Q18
C25	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V10	Output	6BQ5	V12	Rectifier	6CA4
V11	Output	6BQ5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	GENERAL INSTRUMENT PART No.	MALLORY PART No.	SPRAGUE PART No.
C62A	▲ 80	300	1041	AFH2-34				FP420.4A TC65	TVL2585 TVA2730
B	▲ 80	300		PRS2390					
C	■ 20	300							
D	20	150							
C63	50	25	Note 1	PTT85	NLW50-25	MT1-17	MLV50-25	TT25X50	TE-1209
C64	10	12 NP	Note 1	PRS7315	BBR10-150	NPQT-3		TCN5010	TVANS-12041
C65	10	12 NP	Note 1	PRS7315	BBR10-150	NPQT-3		TCN5010	TVANS-12041

Note 1 Some versions may use 50mfd in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCOR PART No.	MALLORY PART No.	SPRAGUE PART No.
C66	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C67	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS			IRC PART No.	WORKMAN PART No.	REMARKS
R56	4700 5W	PW5-470	5W-SQ-470		R58	1300 5W	PW5-130	5W-SQ-130	
R57	4700 5W	PW5-470	5W-SQ-470						

FIXED CAPACITORS (cont)

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.
C26	.01	#854	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	250		DI-250	DD-251	L10Q75	CCD-251	GP325	10TS-T25
C33	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C34	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C37	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C38	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C39	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C40	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C41	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C42	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C45	7.5 NPO 5%							
C46	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C47	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C49	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C50	100 M1500			TCL-100			*	
C51	100 M1500			TCL-100			*	
C52	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C53	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C54	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C55	100 M1500			TCL-100			*	
C56	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C57	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C58	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C59	100 M1500		TCL-100			*		
C60	.05 400V	P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50	
C61	.01 400V	P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10	

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

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA				
			AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.
RLA B	Loudness, 2 Loudness, 1	3meg 3meg	457				
R2A B	Power Switch Balance, 2 Balance, 1	2.2meg 2.2meg	458				
R3A B	AFC Switch Tone, 2 Tone, 1	100K 100K	432-S	B-41, SR-41, or (F2-100K, R2-100K, TU304)		MB13-128, SK1, QCM, or (BUL, SC12, SS1, DC1)*	FA15A, RUI5A, CS3500

* "SNAPTROL"

AMPPARTS LIST AND DESCRIPTION

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
				AIRLINE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
T1	117VAC @.78A	480VCT @.100A DC	6.3VAC @4.8A	1110-A					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
			AIRLINE PART No.	MERIT PART No.	STANCOR PART No.	THORDARSON PART No.	TRIAD PART No.	
	PRI.	SEC.						
T2	4800Ω	3-4Ω	1219	A-3019	A-8092	26549	S-5Z	
T3	4800Ω	3-4Ω	1219-A	A-3019	A-8092	26549	S-5Z	

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		AIRLINE PART No.	QUAM PART No.	
SP1	8" PM 3-4Ω	2676	8A21	
SP2	4" PM 16Ω	2672	4A07Z16	
SP3	4" PM 16Ω	2672	4A07Z16	
SP4	8" PM 3-4Ω	2676	8A21	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Dial Pointer	1993	Knob, Loudness, Balance, Tone	2497
Knob Selector	2498	Knob, Tuning	2497A

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS
R10	6000Ω 5W	PW5-6000	5W-SQ-6000	(5600) †
R40	6000Ω 5W	PW5-6000	5W-SQ-6000	(5600) †

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN PART No.	REMARKS
R50	470Ω 5W	PW5-500	5W-SQ-470	

† Alternate

COILS (RF-IF)

ITEM No.	USE	AIRLINE PART No.	MERIT PART No.	MILLER PART No.	STANCOR PART No.	WORKMAN PART No.	NOTES
L1	FM Ant.						
L2	FM RF						
L3	FM Osc.						
L4	1st FM IF	1419	FM-254	1463	RTC-8599	T633	
L5	2nd FM IF	1419	FM-254	1463	RTC-8599	T633	
L6	3rd FM IF	1418	FM-255	1465	RTC-8600	T635	
L7	Ratio Detector	1557	BC-418	6300 *	RTC-8915	T532	
L8	Loopstick	1557	BC-388		RTC-8732	T501	
L9	AM RF	1412	BC-393	70-OSC	RTC-8647	T512	
L10	AM Osc.	1422	BC-352	14-C1	RTC-9287	T607	
L11	1st AM IF	1429	BC-352	14-C2	RTC-9288	T608	
L12	2nd AM IF	1429					
L13	Flt. Choke (1uh)	1305					

① Alternate Part #1421

PHONO CARTRIDGE & NEEDLES

* NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

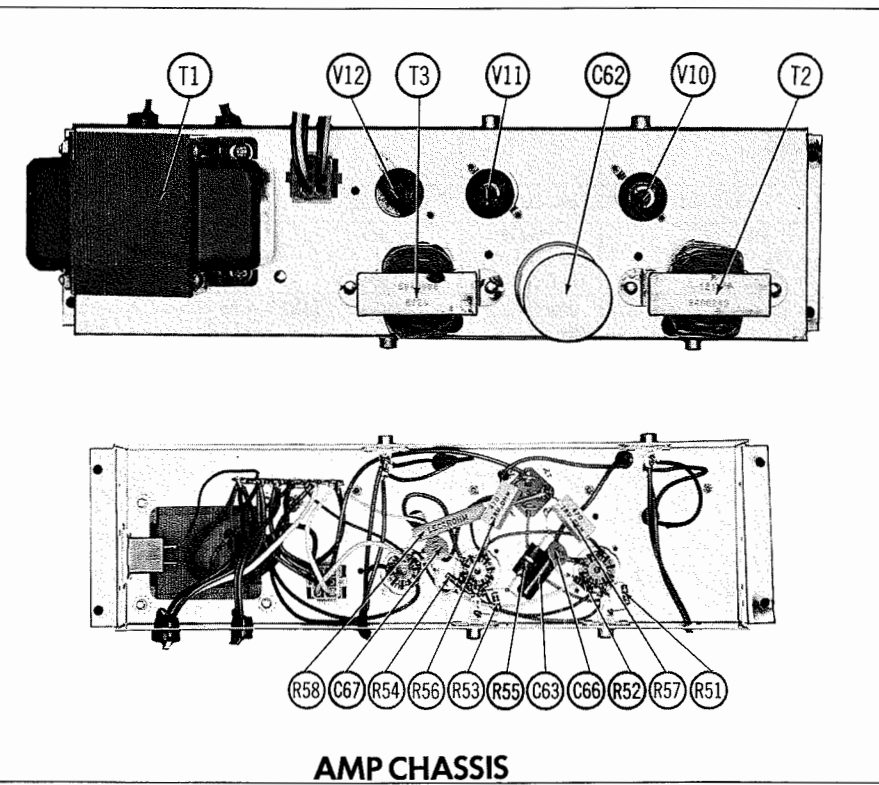
ITEM No.	REPLACEMENT DATA							NOTES	
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE		NEEDLE*
M1	60-86	J47XD (LP) *	13D	N50ad *	26D	2604D*	16TASD	N-16TASD*	
		J43 * (78)				2605 *			
				N326-7d (LP)		2677D			
				N326-3a (78)		2678			
									Replacement for original Cartridge

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	FM Tuner	1051	
M3	AM Tuning Gang	456	3 Gang Selector
M4	Switch		

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in 12 Colors
8524 (Stranded) Available in 12 Colors
Power Cord Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft.
17109 (Plastic) or 17129 (Rubber) - 9 Ft.
Power Cord (Interlock Type) Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)
Low-Loss Shielded Lead (Interconnecting) Use BELDEN No. 8401 or 8421
Phono Pick-up Arm Cable Use BELDEN No. 8430 (Two Conductor-Unshielded)
8429 (Two Conductor-Shielded)
8419 (Three Conductor-Shielded)



AMP CHASSIS

AIRLINE MODELS GA-2213A/B/
23A/B/43A/B/53A/B/Ch. 13B, 9057

FOLDER 4