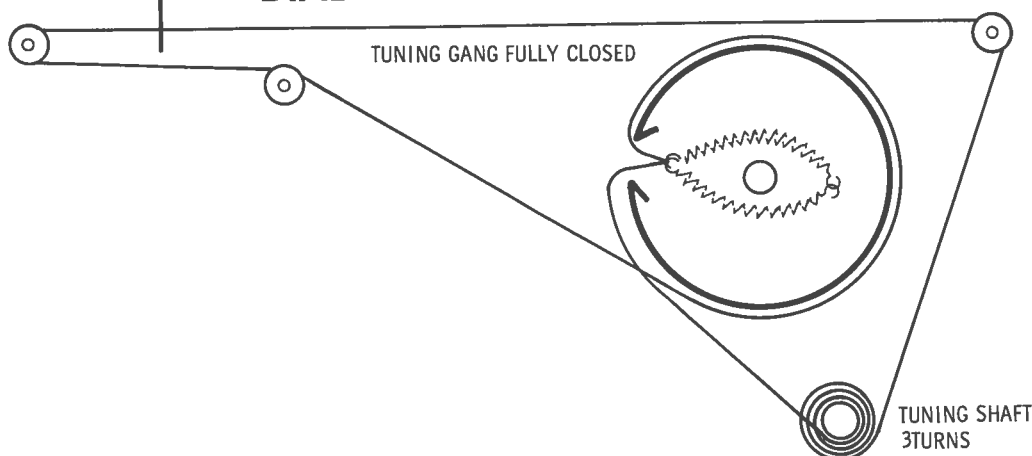


TRADE NAME:	Emerson Models 33C01, 33C02, 33C03 (Tuner Chassis 120767, 120770) (Amp. Chassis 120761)		
SUPPLIER:	For Current Address, See Master Index.		
TYPE SET:	10 Tube AM-FM-FM Stereo Tuner, 8 Transistor Stereo Amplifier W/4 Speed Automatic Record Changer.		
POWER SUPPLY:	105-120 Volts AC, 60 Cycles	RATING:	45 Watts, .5 Amp. @ 117 Volts AC (Less Motor)
TUNING RANGE:	BROADCAST 540-1620KC	FREQ. MOD:	87.5-108.5MC

FOR SERVICE INFORMATION ON RECORD CHANGER—SEE SIMILAR CHANGER—PHOTOFACT SET 638, FOLDER 7.

DIAL CORD STRINGING



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

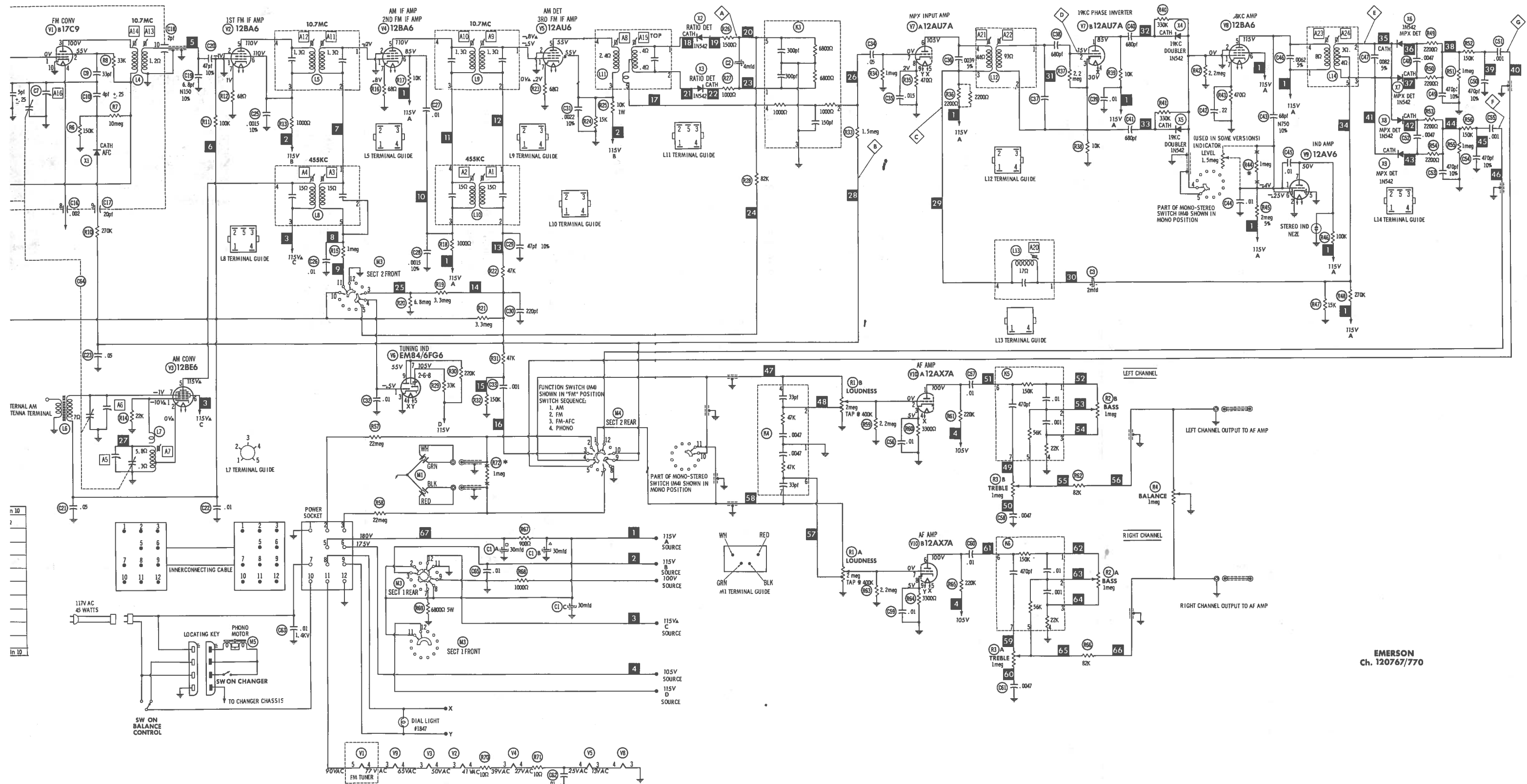


The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. NN389

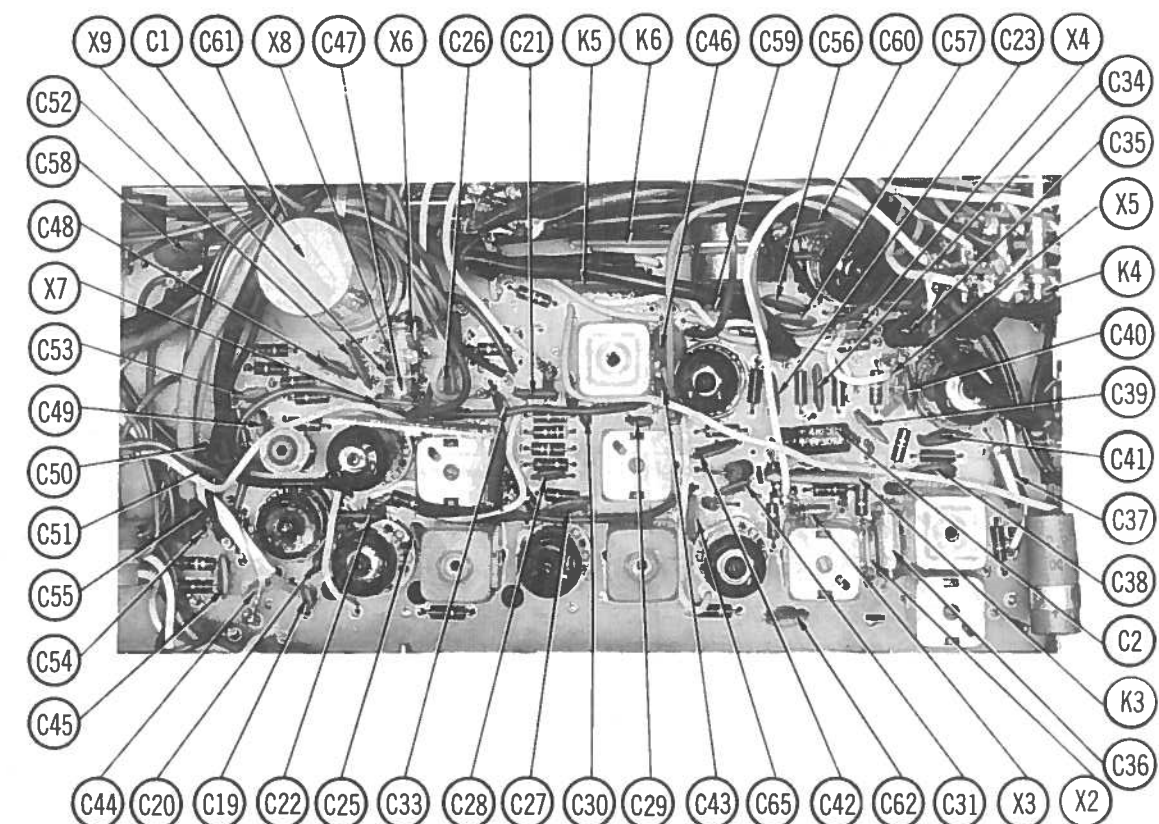
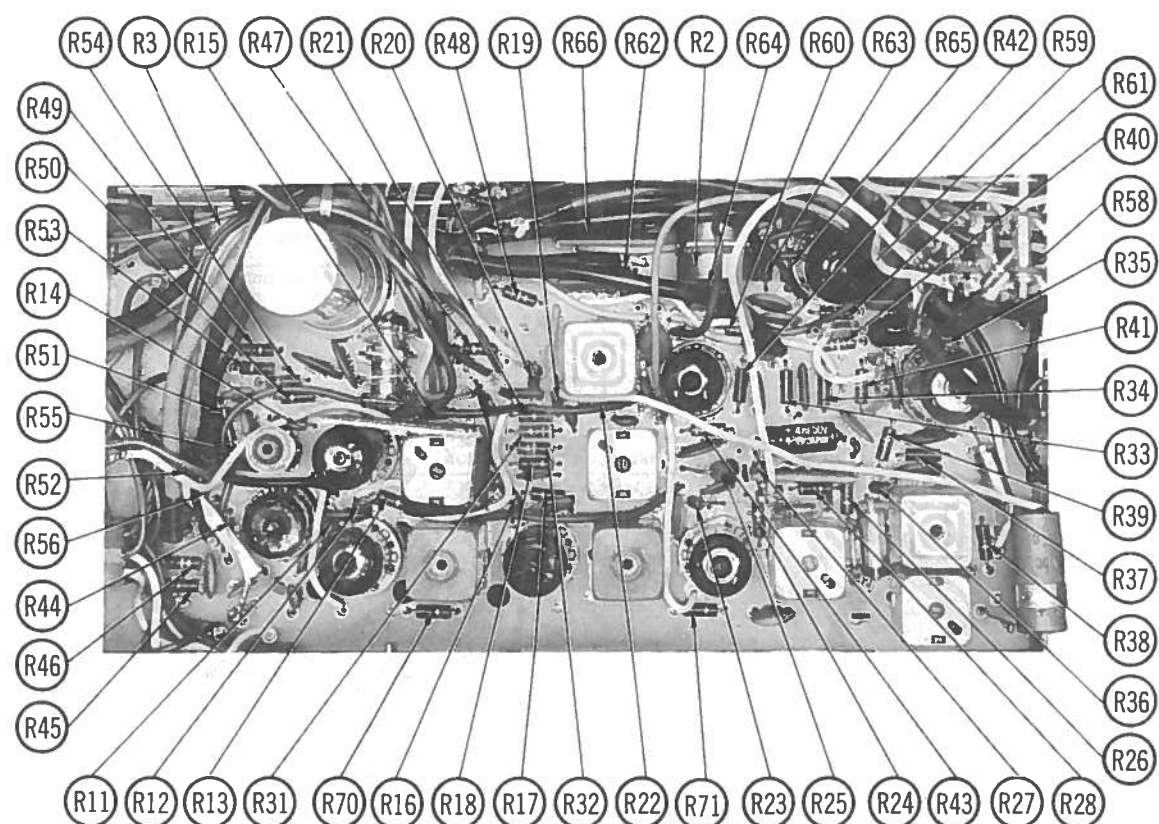
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DATE 1 -66

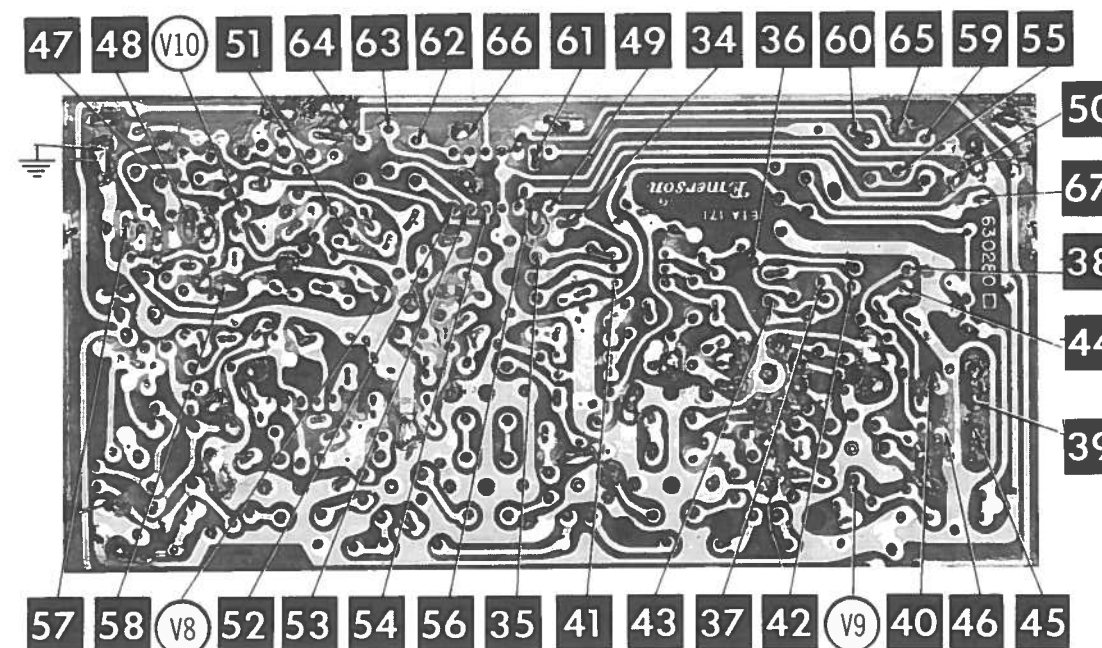
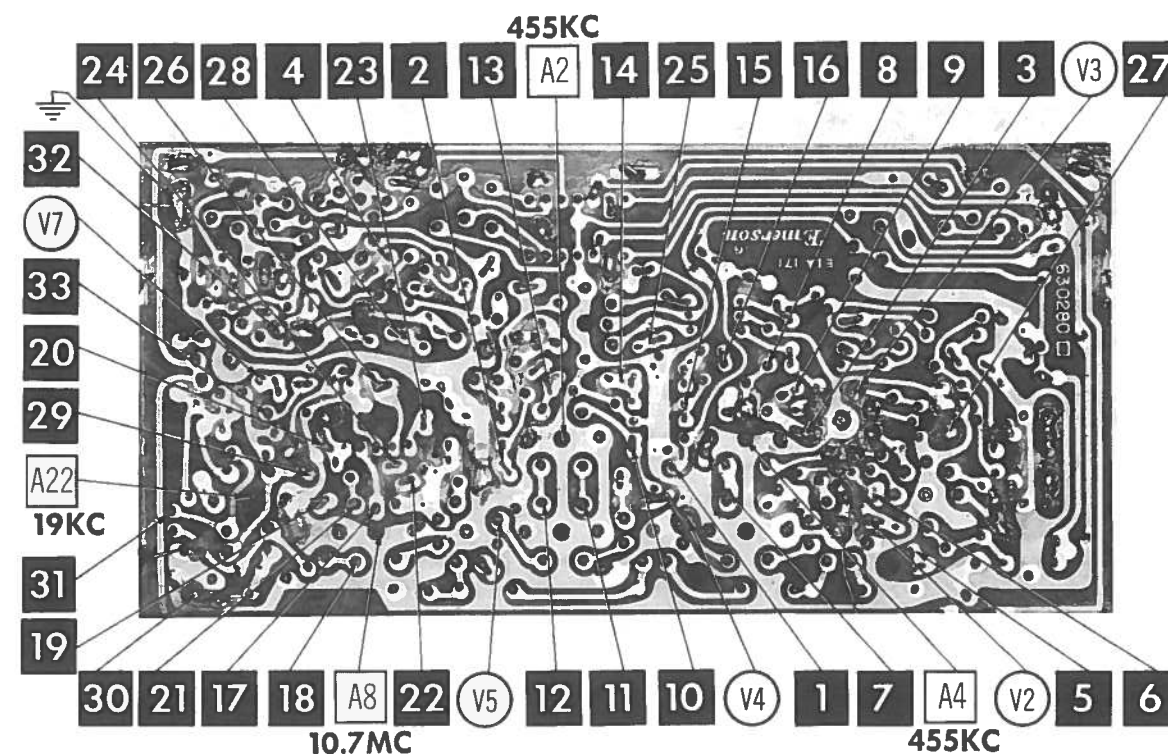
SET 792 FOLDER 7



EMERSON
Ch. 120767/770



TUNER PRINTED BOARD - TOP VIEW



ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER PRINTED BOARD A Howard W. Sams CIRCUITRACE[®] Photo



Maintain line voltage at 117 volts. Use only enough generator output to obtain a suitable indication. Allow a 15 minute warmup for receiver and equipment.

CAUTION: Use isolation transformer, if available. If not, observe polarity when connecting test equipment.

Suggested Alignment Tools:

A1 thru A4, A8, A15, A20.	GENERAL CEMENT: 5097, 8727	WALSCO: 2515
A5, A6, A16, A17, A18.	GENERAL CEMENT: 8868, 8987, 9089	WALSCO: 2531-X, 2541,
A7, A9 thru A14, A19, A21 thru A24.	GENERAL CEMENT: 8806, 8606L, 8869	WALSCO: 2543, 2544, 256

Fashion loop of several turns of wire and connect generator across loop. Set volume control at maximum.

FM ALIGNMENT USING AM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side to ungrounded shield over FM converter tube, low side to ground.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR - SELECTOR IN FM POSITION

High side to ungrounded shield over FM converter, low side to ground. Use only enough marker signal to obtain indication. Use 60% frequency modulated signal with 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

FM RF ALIGNMENT

Connect generator across antenna terminals with 120Ω carbon resistors in series with each lead.

FM STEREO MULTIPLEX ALIGNMENT USING FM STEREO SIGNAL GENERATOR ($\pm .0001\%$) ACCURACY)

Connect high side of generator to point **B**, low side to ground.

To align multiplex section using an air signal, first make sure FM section is properly aligned. Tune in a strong FM stereo signal. Follow steps 9 thru 13 above except in step 9 adjust to eliminate whistle or interference.

FM STEREO LAMP INDICATOR, Adjust when Chassis incorporates this type control.

Tune to a strong FM Stereo Station and adjust FM Stereo Lamp Indicator Control until lamp just glows. Tune to a weaker FM Stereo Station, and if indicator lamp fails to glow slightly, advance control until it does. Adjust control so the weaker FM Stereo Station will allow indicator lamp to glow with MINIMUM indication from noise pulses when turning through the dial.

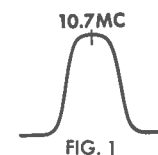


FIG. 1

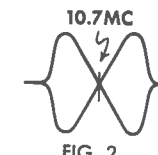


FIG. 2

AMP PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X10	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X11	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X12	40022	Output	DS-503	GE-3	SK-3013	PNP
X13	40022	Output	DS-503	GE-3	SK-3013	PNP
X14	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X15	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X16	40022	Output	DS-503	GE-3	SK-3013	PNP
X17	40022	Output	DS-503	GE-3	SK-3013	PNP

Ⓛ When replacing, apply silicon grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS			DIODES
			GENERAL ELECTRIC PART No.	MALLORY PART No.	SARKIS TARZIAN PART No.	
X18	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X19	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X20	.06A	817133	GE-504 or 1N1095	1N2093 or A300	SK-3016 or SK-3017	F-4 or 40C

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLT.	REPLACEMENT DATA			SPRAGUE PART No.
			EMERSON PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	
C66	1000	25	925604	AA0130	AFH1-10	TVL-1230
C67A	10000	25	925603	BR1000-25	BR2000-25	TVLS-2241.10*
C68	100	10	925607	NLW100-12	MT1-19	TE-1119.3
C69A	80	300	925600	DD0042	AFHS3-26-87	TVLS-3583.2*
C70	40	300	925581	NLW50-10	MT1-16	TL-1133
C71	50	10	925581	NLW50-10	MT1-16	TL-1133
C72	50	10	925507	BRNP4-50	NPQT-2	TL-1133
C73	50	10	925581	NLW50-10	MT1-16	TL-1133
C74	50	10	925581	NLW50-10	MT1-16	TL-1133
C75	4	50	925507	BRNP4-50	NPQT-2	TVAN-1302.5

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

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	SPRAGUE PART No.
C76	.01		BPD-01	DD-103	BYV102ZU103M	B110
C77	.01		BE2P5	DD-103	BYV102ZU103M	5HK-S10
C78	.5		BE2P5	DD-103	PKM4P5	B110
C79	.01		BPD-01	DD-103	BYV102ZU103M	2PS-P50
C80	.01		BPD-01	DD-103	BYV102ZU103M	5HK-S10
C81	.47	600V	P688N-47	DD-103	PM6P47	6TM-P47
C82	.5	200V	BE2P5	DD-103	PKM4P5	2PS-P50

TRANSISTORS

(When ordering parts, state Model, Part Number, and Description.)

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X10	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X11	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X12	40022	Output	DS-503	GE-3	SK-3013	PNP
X13	40022	Output	DS-503	GE-3	SK-3013	PNP
X14	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X15	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X16	40022	Output	DS-503	GE-3	SK-3013	PNP
X17	40022	Output	DS-503	GE-3	SK-3013	PNP

Ⓛ When replacing, apply silicon grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS			DIODES
			GENERAL ELECTRIC PART No.	MALLORY PART No.	SARKIS TARZIAN PART No.	
X18	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X19	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X20	.06A	817133	GE-504 or 1N1095	1N2093 or A300	SK-3016 or SK-3017	F-4 or 40C

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLT.	REPLACEMENT DATA			SPRAGUE PART No.
			EMERSON PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	
C66	1000	25	925604	AA0130	AFH1-10	TVL-1230
C67A	10000	25	925603	BR1000-25	BR2000-25	TVLS-2241.10*
C68	100	10	925607	NLW100-12	MT1-19	TE-1119.3
C69A	80	300	925600	DD0042	AFHS3-26-87	TVLS-3583.2*
C70	40	300	925581	NLW50-10	MT1-16	TL-1133
C71	50	10	925581	NLW50-10	MT1-16	TL-1133
C72	50	10	925507	BRNP4-50	NPQT-2	TL-1133
C73	50	10	925581	NLW50-10	MT1-16	TL-1133
C74	50	10	925581	NLW50-10	MT1-16	TL-1133
C75	4	50	925507	BRNP4-50	NPQT-2	TVAN-1302.5

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

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	SPRAGUE PART No.
C76	.01		BPD-01	DD-103	BYV102ZU103M	B110
C77	.01		BE2P5	DD-103	BYV102ZU103M	5HK-S10
C78	.5		BE2P5	DD-103	PKM4P5	B110
C79	.01		BPD-01	DD-103	BYV102ZU103M	2PS-P50
C80	.01		BPD-01	DD-103	BYV102ZU103M	5HK-S10
C81	.47	600V	P688N-47	DD-103	PM6P47	6TM-P47
C82	.5	200V	BE2P5	DD-103	PKM4P5	2PS-P50

TRANSISTORS

(When ordering parts, state Model, Part Number, and Description.)

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X10	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X11	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X12	40022	Output	DS-503	GE-3	SK-3013	PNP
X13	40022	Output	DS-503	GE-3	SK-3013	PNP
X14	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X15	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X16	40022	Output	DS-503	GE-3	SK-3013	PNP
X17	40022	Output	DS-503	GE-3	SK-3013	PNP

Ⓛ When replacing, apply silicon grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS			DIODES
			GENERAL ELECTRIC PART No.	MALLORY PART No.	SARKIS TARZIAN PART No.	
X18	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X19	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X20	.06A	817133	GE-504 or 1N1095	1N2093 or A300	SK-3016 or SK-3017	F-4 or 40C

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLT.	REPLACEMENT DATA			SPRAGUE PART No.
			EMERSON PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	
C66	1000	25	925604	AA0130	AFH1-10	TVL-1230
C67A	10000	25	925603	BR1000-25	BR2000-25	TVLS-2241.10*
C68	100	10	925607	NLW100-12	MT1-19	TE-1119.3
C69A	80	300	925600	DD0042	AFHS3-26-87	TVLS-3583.2*
C70	40	300	925581	NLW50-10	MT1-16	TL-1133
C71	50	10	925581	NLW50-10	MT1-16	TL-1133
C72	50	10	925507	BRNP4-50	NPQT-2	TL-1133
C73	50	10	925581	NLW50-10	MT1-16	TL-1133
C74	50	10	925581	NLW50-10	MT1-16	TL-1133
C75	4	50	925507	BRNP4-50	NPQT-2	TVAN-1302.5

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

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA			
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	SPRAGUE PART No.
C76	.01		BPD-01	DD-103	BYV102ZU103M	B110
C77	.01		BE2P5	DD-103	BYV102ZU103M	5HK-S10
C78	.5		BE2P5	DD-103	PKM4P5	B110
C79	.01		BPD-01	DD-103	BYV102ZU103M	2PS-P50
C80	.01		BPD-01	DD-103	BYV102ZU103M	5HK-S10
C81	.47	600V	P688N-47	DD-103	PM6P47	6TM-P47
C82	.5	200V	BE2P5	DD-103	PKM4P5	2PS-P50

TRANSISTORS

(When ordering parts, state Model, Part Number, and Description.)

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			DELCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	
X10	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X11	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X12	40022	Output	DS-503	GE-3	SK-3013	PNP
X13	40022	Output	DS-503	GE-3	SK-3013	PNP
X14	2N2613	AF Amp.	DS-26	GE-2	SK-3004	PNP
X15	2N2614	Driver	DS-26	GE-2	SK-3004	PNP
X16	40022	Output	DS-503	GE-3	SK-3013	PNP
X17	40022	Output	DS-503	GE-3	SK-3013	PNP

Ⓛ When replacing, apply silicon grease to both sides of insulator. Tighten mounting screws securely.

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS			DIODES
			GENERAL ELECTRIC PART No.	MALLORY PART No.	SARKIS TARZIAN PART No.	
X18	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X19	.13A	817134	1N91 or 1N1092	A100 or D100	SK-3016 or SK-3017	F-1 or 10C
X20	.06A	817133	GE-504 or 1N1095	1N2093 or A300	SK-3016 or SK-3017	F-4 or 40C

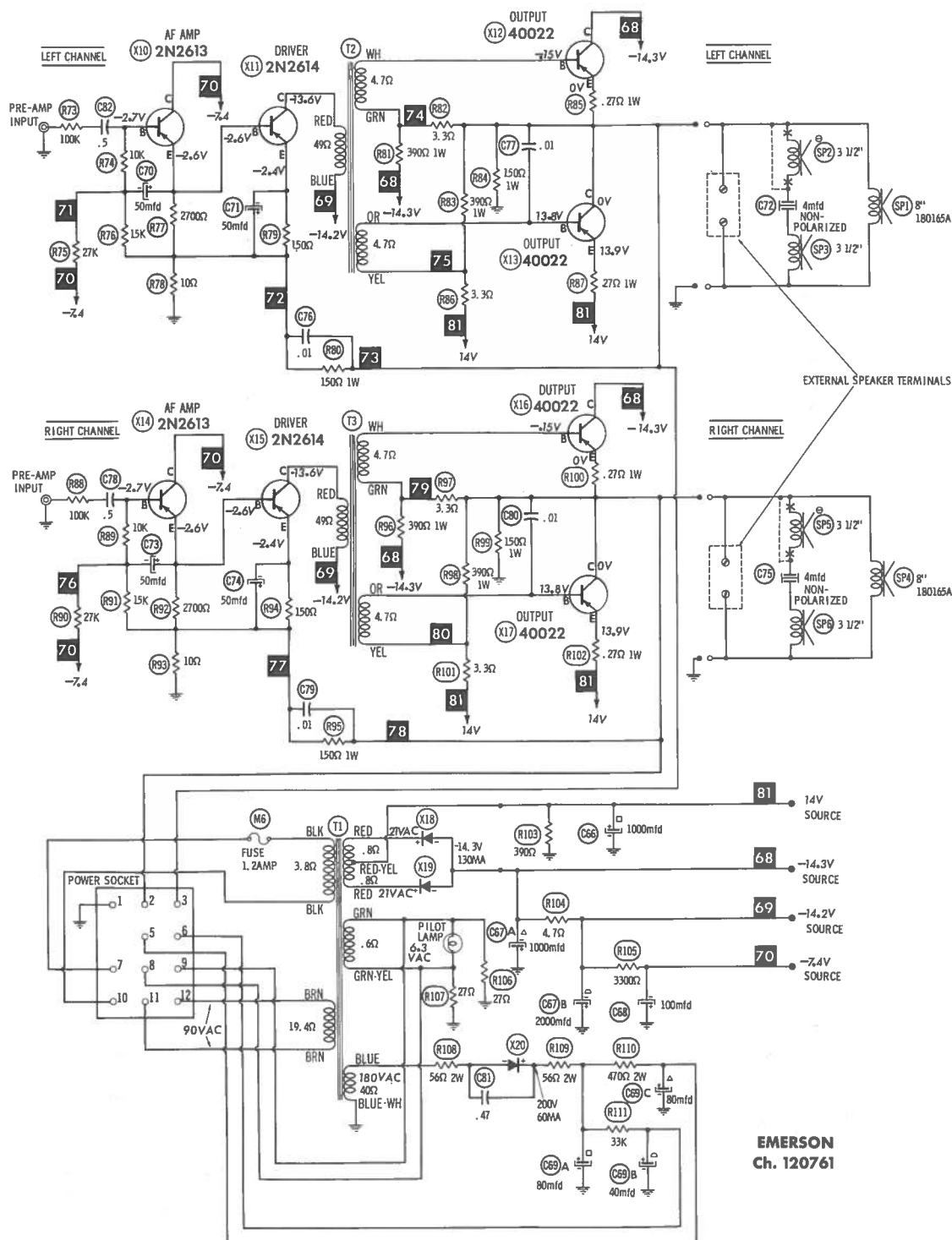
ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	VOLT.	REPLACEMENT DATA			SPRAGUE PART No.
			EMERSON PART No.	CORNELL-DUBILIER PART No.	GENERAL ELECTRIC PART No.	
C66	1000	25	925604	AA0130	AFH1-10	TVL-1230
C67A	10000	25	925603	BR1000-25	BR2000-25	TVLS-2241.10*
C68	100	10	925607	NLW100-12	MT1-19	TE-1119.3
C69A	80	300	925600	DD0042	AFHS3-26-87	TVLS-3583.2*
C70	40	300	925581	NLW50-10	MT1-16	TL-1133
C71	50	10	925581	NLW50-10	MT1-16	TL-1133
C72	50	10	925507	BRNP4-50	NPQT-2	TL-1133
C73	50	10	925581	NLW50-10	MT1-16	TL-1133
C74	50	10	925581	NLW50-10	MT1-16	TL-1133
C75	4	50	925507	BRNP4-50	NPQT-2	TVAN-1302.5

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

CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENDO PART No.	MALLORY PART No.	SPRAGUE PART No.
C76	.01		BPD-01	DD-103	BYV102ZU103M	CCD-103	B110	5HK-S10
C77	.01		BPD-01	DD-103	BYV102ZU103M	CCD-103	B110	5HK-S10
C78	.5		BE2P5		PKM4P5	2DP-5-504	PVC205	2PS-P50
C79	.01		BPD-01	DD-103	BYV102ZU103M	CCD-103	B110	5HK-S10
C80	.01		BPD-01	DD-103	BYV102ZU103M	CCD-103	B110	5HK-S10
C81	.47	600V	P688N-47		PM6P47	9DP-6-474	PVC0047	6TM-P47
C82	.5	200V	BE2P5		PKM4P5	2DP-5-504	PVC205	2PS-P50



Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.

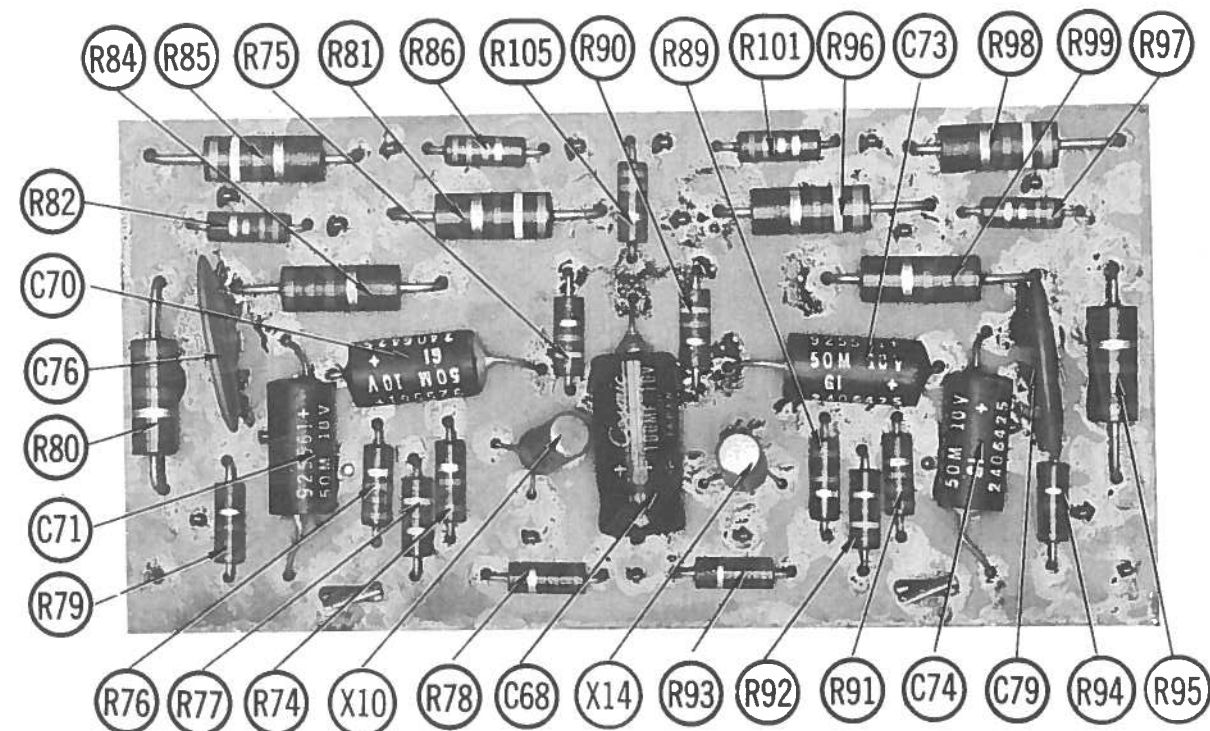
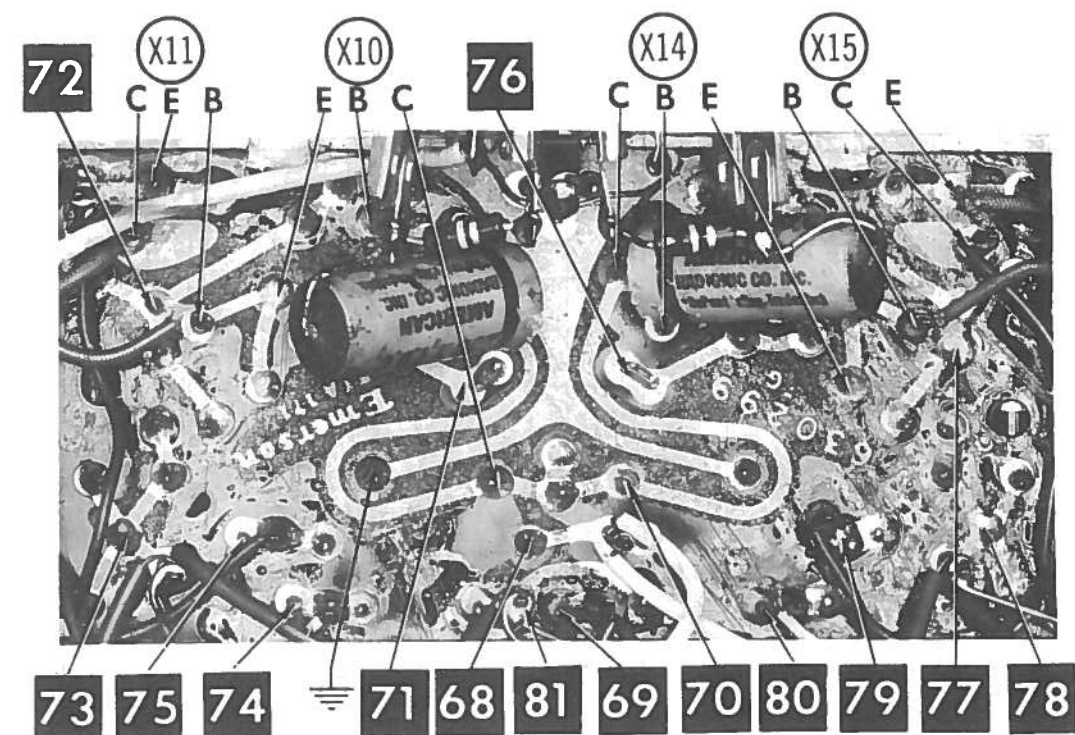
See parts list

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.
7. Resistance measurements not given because of the wide variation in internal resistance of transistor.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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AMP SCHEMATIC



A Howard W. Sams CIRCUITRACE Photo

AMP PRINTED BOARD

TUNER PARTS LIST AND DESCRIPTION

(When ordering parts, state Model, Part Number, and Description.)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in 12 Colors
Power Cord	Use BELDEN No. 8524 (Stranded) Available in 12 Colors
Power Cord (Interlock Type)	Use BELDEN No. 17106 (Plastic) or 17128 (Rubber) - 8 Ft.
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)

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	17C9	V6	Tuning Ind.	EM84/6FG6
V2	1st. FM IF Amp.	12BA6	V7	MPX Input Amp-19KC Phase Inv.	12AU7A
V3	AM Conv.	12BE6	V8	38KC Amp.	12BA6
V4	AM IF Amp.-2nd. FM IF Amp.	12BA6	V9	MPX Ind. Amp.	12AV6
V5	AM Det-AVC-FM Limiter	12AU6	V10	AF Amp	12AX7A

POWER RECTIFIERS & SIGNAL DIODES

ITEM No.	MEASURED CURRENT	ORIGINAL Part or Type No.	RECTIFIERS	DIODES
			GENERAL ELECTRIC PART No.	GENERAL ELECTRIC PART No.
X1		964298		
X2		817082		
X3		817082		
X4		817082		
X5		817082		
X6		817082		
X7		817082		
X8		817082		
X9		817082		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA
	CAP. VOLT.	EMERSON PART No. AEROVOX PART No. CORNELL-DUBILIER PART No. GENERAL ELECTRIC PART No. MALLORY PART No. SPRAGUE PART No.
C1A	30 400	925590
B	30 400	925509
C	30 400	925501
C2	50	CRE753A
C3	2 400	PR81705

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
 ① Connect C1B & C1C in parallel, (60mfd.).

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	.002		
C5	.002		
C6	NPO		
C7	5	±.25	
C8	33	±.25	
C9	4	±.25	
C10	.002		
C11	.002		
C12	.002		
C13	.002		
C14	.001		
C15	20		
C16	.002		
C17	20		
C18	2		
C19	6.8	N150 10%	
C20	47	10%	
C21	.05	100V	
C22	.01		
C23	.05	100V	
C24	.01		
C25	.0015	10%	
C26	.01		
C27	.01		
C28	.0015	10%	
C29	47	10%	
C30	220		
C31	.0022	10%	
C32	.01		
C33	.001		
C34	.05	100V	
C35	.015	400V	
C36	.0039	5%	
C37	.0016	5%	
C38	680		
C39	.01		
C40	680		
C41	680		
C42	.22	10V	
C43	68	N750 10%	
C44	.01		
C45	.01		
C46	.0062	5%	
C47	.0082	5%	
C48	.0047		
C49	470	10%	
C50	470	10%	
C51	.001		
C52	.0047		
C53	470	10%	
C54	470	10%	
C55	.001		
C56	.01		
C57	.01		
C58	.0047		
C59	.01		
C60	.01		
C61	.0047		
C62	.01		
C63	.01	1.4KV	
C64			
C65	.01		

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
 ① Tuning Gang.

CONTROLS

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

ITEM No.	USE	RESISTANCE	REPLACEMENT DATA
			EMERSON PART No. CENTRALAB PART No. CLAROSTAT PART No. CTS-IRC PART No. MALLORY PART No.
R1A	Loudness, Right	2meg.	390800
B	Loudness, Left	400K Tap	
R2A	Bass, Right	1meg.	390798
B	Bass, Left	1meg.	
R3A	Treble, Right	1meg.	390798
B	Treble, Left	1meg.	
R4	Balance, Switch	1meg.	390801

**"SNAPTROL"

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA
		IRC PART No. WORKMAN PART No. REMARKS
R87	900Ω 10W	PW10-900 10W-SQ-900 #394270
R89	8800Ω 5W	PW10-7000 10W-SQ-8800

Emerson Part Number.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA
		EMERSON PART No. MEISSNER PART No. MERIT PART No. MILLER PART No. STANCOR PART No. WORKMAN PART No.
L1	FM Antenna	
L2	FM RF	
L3	FM Oscillator	
L4	1st. FM IF	964297
L5	2nd. FM IF	720484
L6	Loopstick	700196
L7	AM Oscillator	716150
L8	1st. AM IF	720485
L9	3rd. FM IF	720484
L10	2nd. AM IF	720492
L11	Ratio Det.	708419
L12	19KC Amp.	708420
L13	67KC Trap	708450
L14	38KC Output	708421

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DUMONT PART NO.	REPLACEMENT DATA
K1	Antenna Isolation	.3-1meg, 470pf	923152	Centralab RC-471
K2	Antenna Isolation	.3-1meg, 470pf	923152	Sprague AC1-1
K3	Ratio Det. Network	6800Ω, 6800Ω, 300pf, 300pf	923187	Centralab RC-471
K4	Loudness Comp.	47K, 47K, 33pf, .0047mfd., .0047mfd., 33pf	923188	Sprague AC1-1
K5	Tone Comp.	150K, 56K, 22K, .01, .001mfd., 470pf	923189	
K6	Tone Comp.	150K, 56K, 22K, .01, .001mfd., 470pf	923189	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA	NOTES
	EMERSON PART No. ASTATIC PART No. ELECTRO-VOICE PART No. SONOTONE PART No.	
M1	820073 820074 * 153RD N56SD* 149D 2622DS* 22TS N-21TS*	

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	FM Tuner	471470	
M3	Function	510217	Switch
M4	Mono-Stereo	510218	Switch
M5	Phono Motor	963804	

CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

ITEM	PART No.	ITEM	PART No.
Knob-Action Selector	461943	Knob-Amp. Controls (4 Required)	461829
Knob-Tuning-Balance	461828	Knob-Stereo Balance	461847

TROUBLE CHART (CONT'D.)

Symptom.	Cause	Remedy
	2. Idler wheel (44) or motor pulley height incorrect.	2. Place the speed change in the 16 2/3 rpm position. Adjust the motor pulley so the top of the pulley is level with the top of the idler wheel (44). Next, adjust the idler wheel adjusting strip (120) so the bottom of the idler wheel is 1/64" above the adjacent pulley step.
	3. Wrong motor pulley.	3. Make sure the correct motor pulley for the line frequency is on the motor. Nickel for 50 cycle and brass for 60 cycle.

MECHANICAL PARTS LIST (CONT'D.)

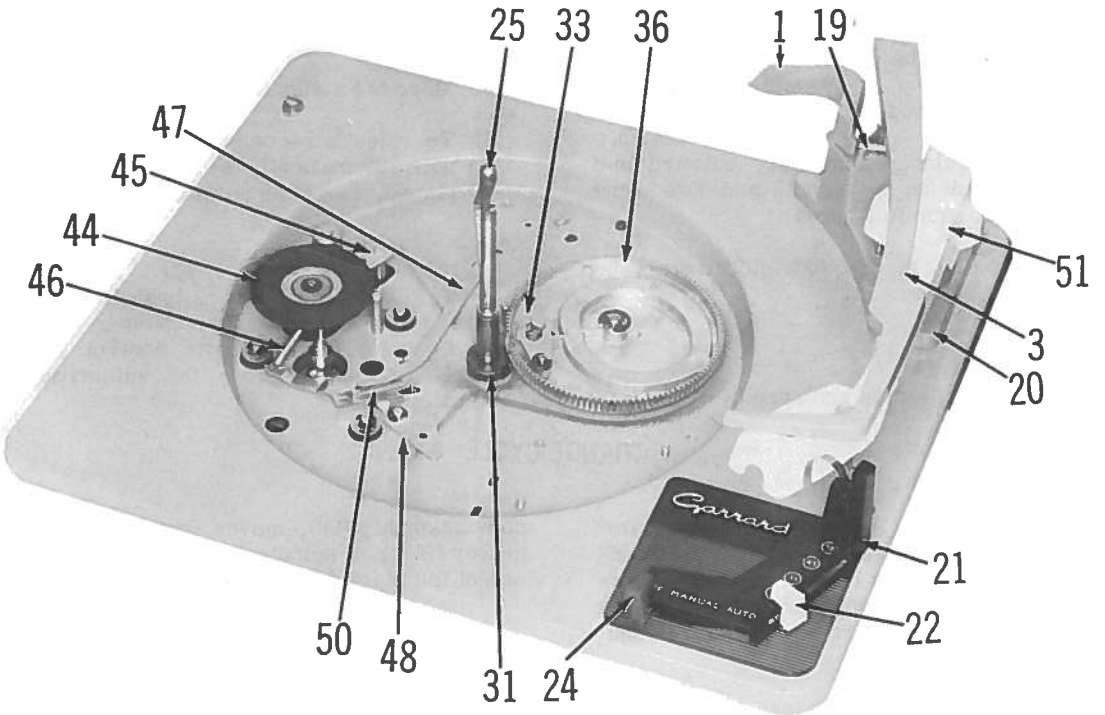
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
54	44705	Spring-Model Autoslim	88	58343	Lifting Spindle
55	44128	Lifting Screw-Model Autoslim	89	58348	Friction Link
56	44710	Counterbalance Spring-Model Autoslim	90	58958	Pickup Cam-Model AT6
				58317	Pickup Cam-Model Autoslim
57		Mtg. Screw, Tone Arm Bracket	91	41787	Spring Clip
58		Safety Spring	92	58324	Release Lever
59	58392	Bracket, Tone Arm-Model Autoslim	93	40695	Washer
60	41757	Locking Spring-Model Autoslim	94	41787	Spring Clip
61	40000	Stylus Set-down Adj. Screw-Model Autoslim	95	58325	Control Lever Unit
			96	41787	Spring Clip
62	58384	Adjusting Plate-Model Autoslim	97	58310	Switch Lever
63	41093	Adjusting Nut-Model Autoslim	98	41787	Spring Clip
64	44127	Cartridge Mtg. Screw - Model Autoslim	99	58303	Selector Lever
			100	44706	Selector Spring
65	58719	Cartridge Mtg. Bracket-Model Autoslim	101	41095	Fixing Nut
66	44127	Cartridge Mtg. Screw-Model AT6	102	44715	Index Spring-Model AT6
				41993	Index Spring-Model Autoslim
67	58891	Tone Arm Head Ass'y. - Model AT6	103	41998	Return Spring
			104	41759	Pawl Spring-Model Autoslim
68	58719	Cartridge Mtg. Bracket-Model AT6	105	58731	Switch Cover-Model AT6
69	44120	Transit Screw		58277	Switch Cover-Model Autoslim
70	41787	Spring Clip	106	44708	Lifting Spring
71	40695	Washer	107	42526	Spring Washer
72	41991	Spring Blade	108	41008	Nut
73	44125	Screw, Spring Blade	109	41787	Spring Clip
74	41631	Return Spring	110		Spring Clip
75	58327	Reject Lever	111	41848	Index Spring
76	58325	Lever Unit, Speed Control	112	41848	Index Spring
77		Automatic Switch Lever	113	58209	Support Bracket
78		Automatic Control Lever	114	41787	Spring Clip
79	58563	Lower Casting Ass'y.	115	58274	Speed Lever
80	44125	Mounting Screw	116	43129	Motor Mounts
81	43813	Spring Clip, Overarm	117	58640	Motor D35-Model AT6
82	43200	Steel Ball		58640/ 01	High Range Motor-Model Autoslim
83	58293	Pickup Lever Unit		58640/ 03	Low Range Motor-Model Autoslim
84	41985	Friction Spring		58640/ 05	Dual Range Motor-Model Autoslim
85	58316	Collar	118	58212	Index Bracket
86	58313	Auto Stop Link	119	58219	Speed Cam
87	44133	Screw, Auto Stop Link	120	58210	Adjusting Strip

SET 638 FOLDER 7

PHOTOFACT® Folder



TRADE NAME	Garrard Models AT6, Autoslim
SUPPLIER	Garrard Sales Corp., 80 Shore Road, Port Washington, N. Y.
TYPE SET	AC Operated 4 Speed Automatic Record Changer for Playing 7", 10", or 12" Records which may be intermixed if they are of the same speed.
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles



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



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C551

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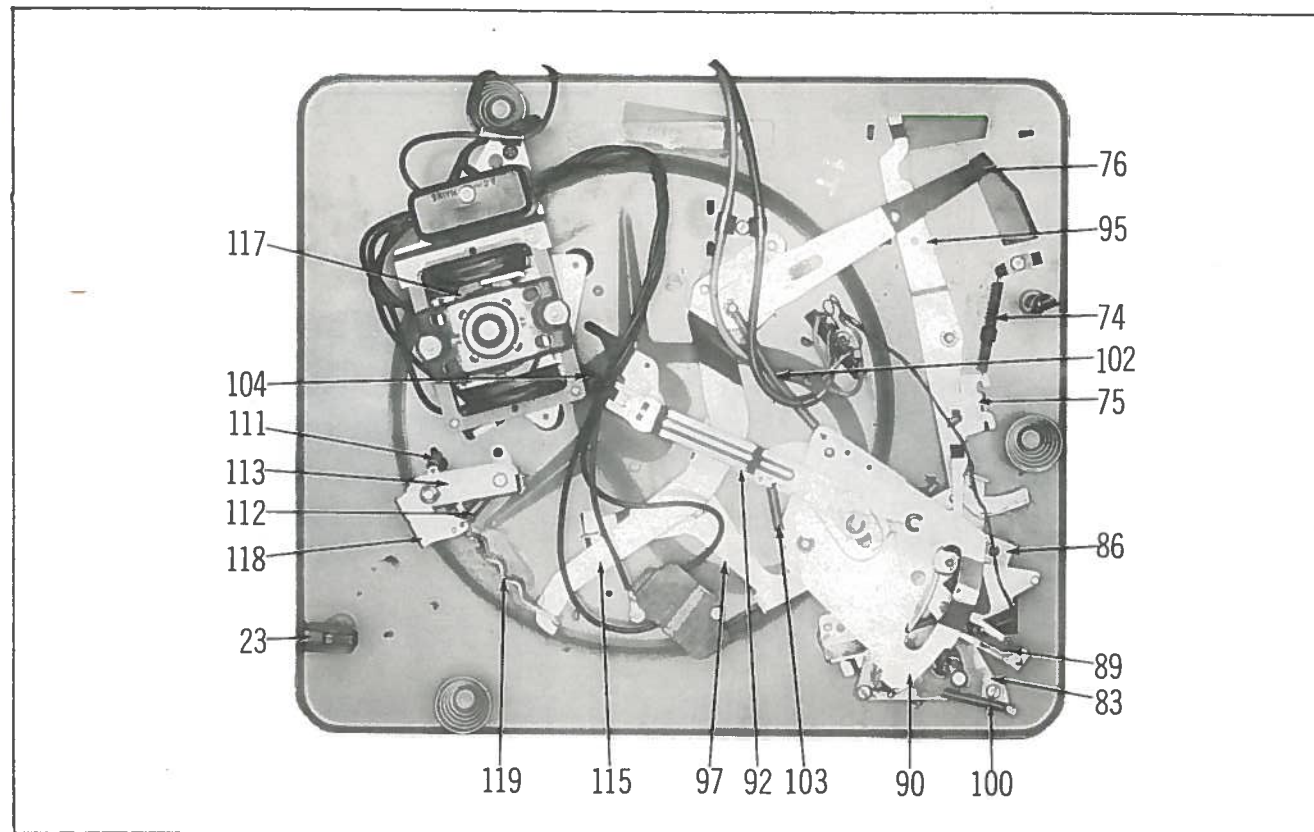
Printed in U.S. of America

DATE 6-63

SET 638 FOLDER 7

GARRARD MODELS
AT-6, AUTOSLIM

SET 638 FOLDER 7



BOTTOM VIEW OF MECHANISM

OPERATING INSTRUCTIONS

Automatic

1. Select the correct stylus and raise the tone arm to release it from the catch.
2. Select the correct speed.
3. Swing record balance arm fully outward and place the records on the spindle and then swing record balance arm fully inward.
4. Move the automatic control to "Auto" to start the changer.

Manual

1. Select the correct stylus and speed.

When the reject lever (75) is pushed to the "Auto" position, power is applied to the changer. It also contacts and pushes the auto stop link (86) inward and the collar on the auto stop link (86) pushes the trip pawl (33) on cam assembly (36) outward so it makes contact with the turntable hub.

The cam assembly (36) is driven by the turntable as it rotates. As the cam assembly (36) rotates, the pickup cam assembly (90) is pivoted by the collar following the groove in cam assembly (36). As the pickup cam assembly (90) pivots, the lifting spindle (88) rides up the incline portion of the pickup cam assembly (90), lifting the tone arm. At the same time, the release lever (92), which is connected to the pickup

2. Swing record balance arm fully outward and place a record on the turntable; then swing record balance arm fully inward.
3. Move the automatic control to "Manual".
4. To reject a record or switch the changer so it will automatically shut off after the record is played, move the automatic control to "Auto".

Stop

The changer automatically shuts off after playing the last record. To stop the changer while playing a record, move the automatic control to "Off". To restart the record, move the automatic control to "Manual".

CHANGE CYCLE

cam assembly (90), moves forward and actuates the center finger of spindle (25), leaving the bottom record of the stack fall onto the turntable.

Tone arm setdown for 7-, 10-, and 12-inch records is determined by the position of selector arm (1) and selector lever (99).

When a 7-inch record drops to the turntable, the diameter of the record is such that it doesn't strike selector arm (1). Consequently, the 7-inch notch on selector lever (99) engages with the selector lever stop pin. The shaft on selector arm (1) is thus positioned to engage the 7-inch step on pickup lever (83).

TROUBLE CHART (CONT'D.)

Symptom	Cause	Remedy
	2. Lack of lubrication on turntable spindle and ball-race.	2. Clean and lubricate with light oil.
	3. Power leads to motor tight.	3. Make sure power leads are free and have some slack so the motor floats freely on its suspension.
	4. Tire on idler wheel (44) defective.	4. Replace idler wheel (44).
	5. Motor pulley defective.	5. Replace motor pulley.
Reproduction interference.	1. Cartridge leads loose.	1. Make sure the cartridge leads are tight on the cartridge connection.
	2. Switch contacts bad.	2. Make sure the leads are soldered properly on the switch leaf and clean the contacts.
Motor does not run.	1. Loose connection.	1. Make sure all power connections are properly made.
	2. Switch contacts bad.	2. Clean the contacts. If motor still does not run, replace the switch.
	3. Motor defective.	3. Replace motor.
Motor runs hot.	1. Shorted winding.	1. Replace motor.
Motor runs slow.	1. Lack of lubrication.	1. Clean the motor shaft and bearings and lubricate with a thin oil.
	2. Bearing out of alignment.	2. Hit the body of the motor a sharp blow with a piece of wood. If motor still runs slow, remove the bearing cover and check the retaining spring. If spring is broken, replace the cover and bearing assembly.
Records will not drop.	1. Spindle (25) damaged.	1. Replace spindle (25).
	2. Record spindle pawl rough.	2. Polish with fine emery cloth.
	3. Record balance arm (3) tight.	3. Remove, clean the record balance arm spindle and lubricate with thin oil.
	4. Return spring (103) broken or stretched.	4. Replace return spring (103).
	5. Pawl spring (104) broken or stretched.	5. Replace pawl spring (104).
Two records drop at once.	1. Center hole in record too large.	1. Discard record or play manually.
	2. Record spindle latch sticking.	2. Check for burrs on latch. Check to see it it is perfectly flat.
Erratic speed.	1. Oil on motor pulley, idler wheel (44), or inside rim turntable.	1. Clean these surfaces with a cloth and alcohol.
	2. Motor pulley loose.	2. Reposition motor pulley and tighten.
	3. Warped records.	3. Replace records.
Pickup repeats in record groove when nearing center of record.	1. Stylus pressure insufficient.	1. Adjust to manufacturer's recommendation.
	2. Stylus worn.	2. Replace stylus.
	3. Cartridge touching record.	3. Make sure the cartridge mounting screws are tight.
	4. Pickup leads binding.	4. Check pickup leads and make sure the tone arm will move freely.
	5. Trip link (86) has too much friction.	5. Check all associated levers for freedom of movement and lightly grease the slot and end of trip link (86).
The turntable speed is too fast or too slow.	1. Idler wheel (44) binding.	1. If the speed is too slow, remove the idler wheel (44) and clean the spindle and idler wheel bearing; lubricate with light oil and reassemble.

TROUBLE CHART (CONT'D.)

Symptom	Cause	Remedy
	3. Motor pulley loose.	3. Position the pulley and tighten the two set screws.
	4. Flat spots on idler wheel (44).	4. Replace idler wheel (44).
	5. Unbalanced rotor or bent shaft.	5. In either case, replace the rotor and shaft since they are one unit.
Does not shut off after the last record is played or before the record is played.	1. Record support arm spindle binding. 2. Too much friction on the automatic control lever (78). 3. Automatic switch lever(97) stiff.	1. Remove record support arm; clean the spindle and grease lightly. 2. Check for restriction by associated levers. Grease the end of the automatic control lever (78) where it actuates the switch lever (97). 3. Check to see if the tail of the automatic switch lever (97) is square with the base-plate and will return under its spring tension when moved away from the pick-up arm.
Tone arm lands too far in or out.	1. Tone arm setdown misadjusted. 2. Nut (101) on selector lever (99) loose. 3. Record selector arm (1) damaged.	1. See "Tone Arm Setdown" under "Adjustments". 2. Tighten the nut. 3. Replace record selector arm (1).
The selection of records is erratic.	1. Nut (101) on selector lever (99) loose. 2. Selector spring (100) weak, broken, or off its connecting pin. 3. Friction link (89) needs lubricating.	1. Tighten nut (101). 2. Replace selector spring (100). 3. Lubricate friction link (89) with grease on its surface and in the slot.
Tone arm jumps the first few grooves after landing on record.	1. Too light a stylus pressure. 2. Worn or wrong stylus. 3. "Changer not level. 4. Pickup leads binding. 5. Friction too great in friction link (89). 6. Records being played have a groove guard.	1. Adjust stylus pressure according to manufacturer's recommendation. 2. If stylus is worn, replace. Check stylus for records being played. 3. Level the changer by placing a level on the turntable and placing a shim under the cabinet if necessary. 4. Make sure leads are free and not restricting the tone arm movement. 5. Lubricate friction link (89) on its surface and in the slot. 6. Adjust the set-down position so the stylus will just clear the groove guard.
Tone arm fails to lower onto record.	1. Lifting spindle(88) sticking. 2. Tone arm pivot screw (15) binding.	1. Lubricate lifting spindle (88) with light oil. Check lifting spring (106) to see if it has slipped over the retaining shoulder of the lifting spindle (88). 2. Lubricate the hinge pin with light oil.
Tone arm begins to lower and then swings in.	1. Pickup leads not free. 2. Lifting spring (106) or friction spring (84) defective.	1. Free the leads so the tone arm moves freely. 2. Replace defective spring.
Stylus does not track.	1. Worn or wrong stylus. 2. Stylus pressure too light. 3. Tone arm pivot screw (15) binding.	1. Replace worn stylus or select correct stylus for records being played. 2. Adjust to manufacturer's recommendation. 3. Lubricate the hinge pin with light oil.
Rumble noise when changer is running.	1. Dirty idler wheel (44).	1. Clean tire of idler wheel (44) with a cloth dipped in alcohol.

When a 10-inch record drops to the turntable, the edge of the record strikes and moves selector arm (1). This, in turn, pivots selector lever (99) far enough for the 10-inch notch to engage the selector lever stop pin. The shaft on selector arm (1) is thus positioned to engage the 10-inch step on pickup lever (83).

When a 12-inch record drops to the turntable, the edge of the record strikes and moves selector arm (1) far enough to allow the 12-inch notch on selector lever (99) to engage the selector lever stop pin. The shaft on selector arm (1) is positioned to engage the 12-inch step on pickup lever (83).

After the record drops, the pickup cam assembly (90) pivots and pulls the friction link (89) along with it and swings the tone arm in over the lead-in groove of the record. As the pickup cam assembly (90) continues to pivot, the lifting spindle (88) rides down the incline portion of the pickup cam assembly (90) and sets the stylus down on the record. At the same time, the pickup cam assembly (90) contacts the selector lever (99) and pushes it clear of the pickup lever assembly (83) so the pickup lever assembly (83) is free to move as the stylus follows the groove of the record.

When the tone arm nears the end of the record, the pin on the pickup lever assembly (83) contacts and slowly moves the auto stop link (86) toward the trip pawl (33). When the tone arm enters the lead-out groove of the record, the faster movement of the tone

arm causes the auto stop link (86) to make firm contact with the trip pawl (33), pushing it out so it contacts the turntable hub. As the turntable rotates, cam assembly (36) rotates and the collar on pickup cam assembly (90) follows the groove of cam (36) and pivots the pickup cam assembly (90) so the lifting spindle (88) will raise the tone arm from the record. Due to friction applied to the pickup cam assembly (90), the tone arm will swing out over the rest post and the next record is dropped onto the turntable. After the record drops, the pickup cam assembly (90) continues to pivot and pulls the tone arm in over the lead-in groove of the record.

When the last record drops, the record support arm (3) drops and automatic switch lever (77) falls into the cutout in the shaft of the record support arm (3). After the last record is played, the changer will cycle. As the pickup cam assembly (90) pivots, the automatic switch lever (77) is pulled in against the third step of the pickup lever assembly (83) by its tension spring and prevents the tone arm from moving in over the record. The pin on the switch lever (97) is engaged in the slot of the automatic switch lever (77). As the pickup cam assembly (90) continues to pivot, it contacts the vertical tab of the automatic switch lever (97) and moves it away from the pickup cam assembly (90).

At the same time, it exerts pressure on the switch lever assembly (97), causing it to pivot and leaving the spring-loaded switch to open and remove the power from the changer.

ADJUSTMENTS

Height

On Model AT6, adjust screw (7A); and on Model Autoslim, adjust screw (55) so the point of the stylus will be 7/8-inch above the turntable mat surface at the outside edge position of a 7-inch record as the tone arm returns to its rest post.

Set Down

On Model AT6, turn screw (13B); and on Model Autoslim, turn screw (61) clockwise to move the tone

arm in and counterclockwise to move the tone arm out.

Stylus Pressure

On Model AT6 loosen knurled nut (14) and slide the pointer to the desired pressure and tighten knurled nut (14).

On Model Autoslim turn knurled nut (63) clockwise to decrease the pressure and counterclockwise to increase pressure. On both models, adjust pressure to the cartridge manufacturer's recommendation.

LUBRICATION

The motor, turntable spindle, and idler wheel have oilite bearings and should not need lubricating for a long period of time. If lubrication is needed, lubricate with a good fine grade of machine oil.

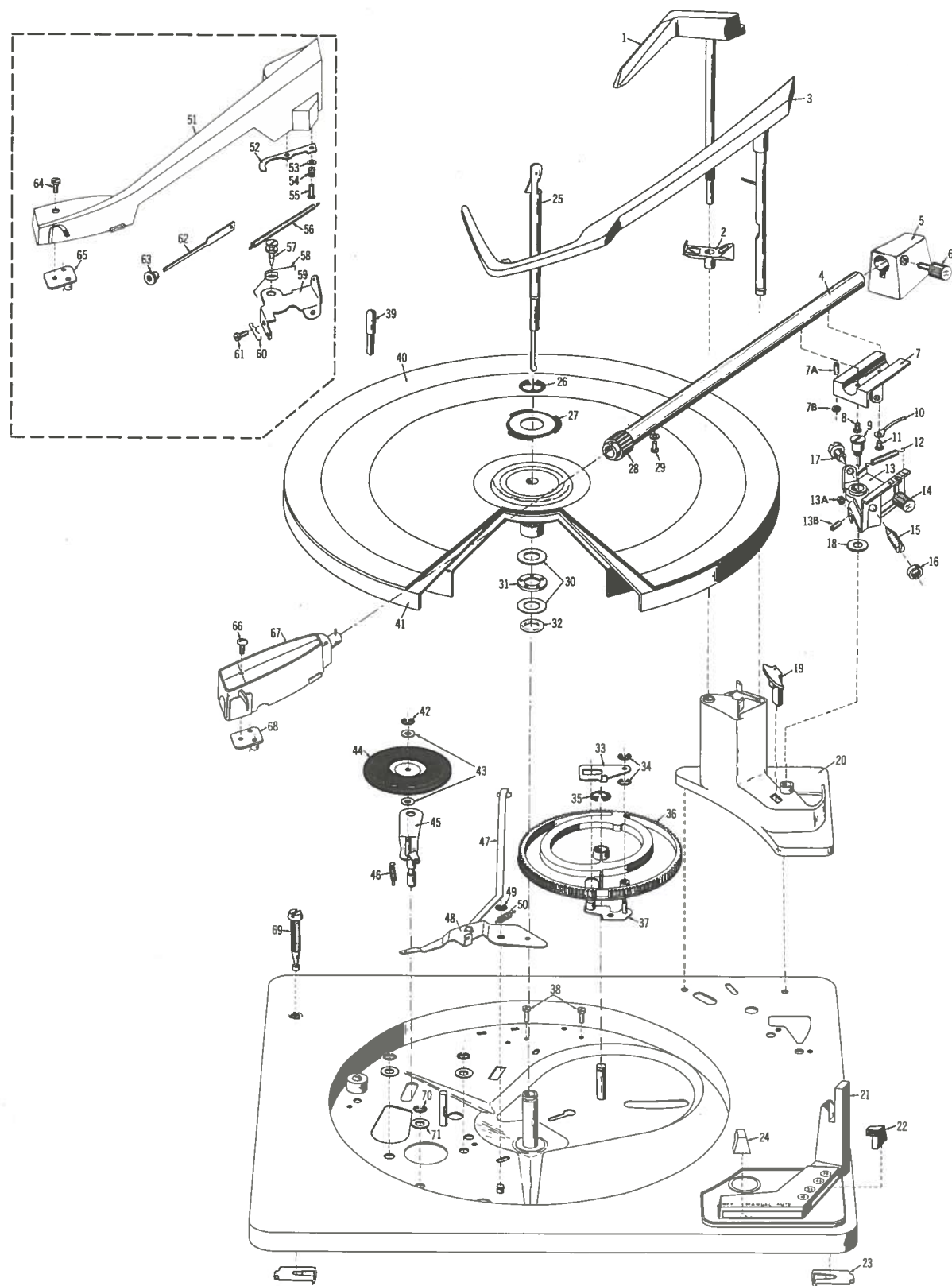
Grease the under side of auto stop link assembly (86) where it slides on the bottom of the baseplate and the slot where it slides on the outer end.

Grease the slot in the pickup cam assembly (90) and the friction link (89).

Grease the automatic switch lever (97) where it slides on the baseplate and where it contacts the steps in the pickup cam assembly (90).

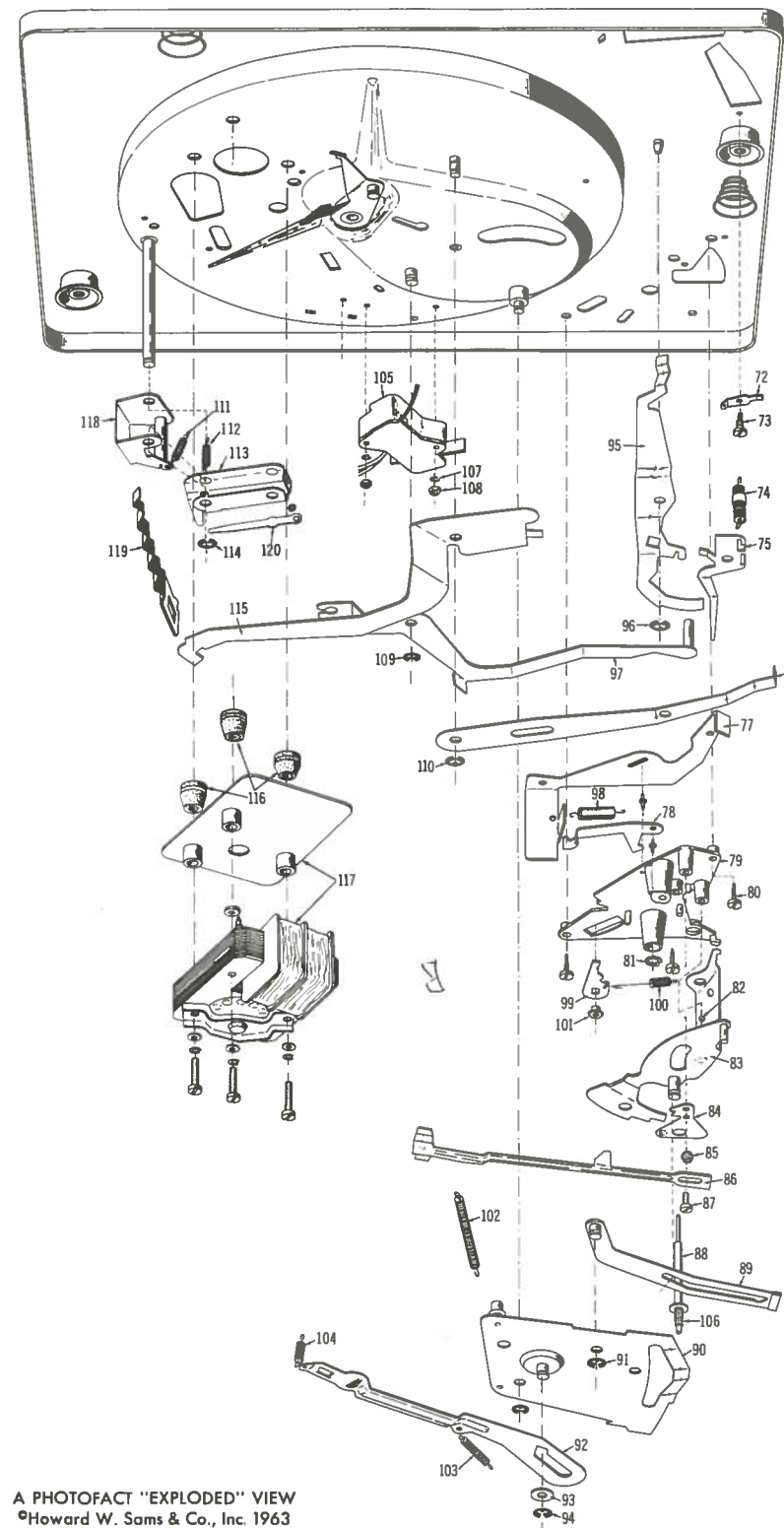
TROUBLE CHART

Symptom	Cause	Remedy
Turntable does not rotate when motor is running.	1. Driving surfaces oily. 2. Idler wheel tension spring (46) off or broken.	1. Clean all driving surfaces with a cloth and alcohol. 2. Replace idler wheel tension spring (46).
Wow and Flutter.	1. Turntable spindle tight. 2. Inside of turntable rim dirty.	1. Clean the spindle and lubricate the spindle and ball race with light oil. 2. Clean inside of rim with a cloth and alcohol.



EXPLODED VIEW OF MECHANISM

A PHOTOFACT "EXPLODED" VIEW
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MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	58868	Selector Arm-Model AT6
	58301	Selector Arm-Model Autoslim
2	58953	Extension,Selector-Model AT6
3	58870	Record Balance Arm-Model AT6
	58305	Record Balance Arm-Model Autoslim
4	58586	Tone Arm-Model AT6
5	58595	Counter Balance, Tone Arm - Model AT6
6	58919	Screw,Counter Balance- Model AT6
7		Base, Tone Arm-Part of Ref.No. 4
7A	40240	Height Adjustment Screw-Model AT6
7B	41037	Height Nut - Model AT6
8		Screw, Tone Arm Base
9		Mtg. Screw, Tone Arm Bracket-Model AT6
10		Clamp, Ground
11		Screw, Tone Arm Base
12	44713	Pressure Spring, Pointer Stylus - Model AT6
13	58884	Bracket Ass'y. Tone Arm-Model AT6
13A		Nut Set-down - Model AT6
13B		Screw, Set-down - Model AT6
14	44135	Clamping Screw, Pointer-Model AT6
15	58592	Pivot Screw - Model AT6
16	41098	Pivot Locking Nut - Model AT6
17	58590	Pivot Screw Ass'y. -Model AT6
18		Washer - Model AT6
19		Stop - Model AT6
20	59022	Upper Casting - Model AT6
	58284	Upper Casting-Model Autoslim
21	58883	Control Moulding-Model AT6
	58396	Control Moulding-Model Autoslim
22	58273	Knob-Ivory
23	41977	Transit Screw Clip
24	58273	Knob-Red
25	58874	Spindle, Automatic-Model AT6
	58338	Spindle, Automatic-Model Autoslim
26	43826	Clip, Turntable
27	58011	Nameplate, Turntable-Model AT6
28		Collar, Tone Arm
29		Set Screw
30	40894	Thrust Washer
31	58229	Ball Race
32	58749	Ring, Cushion
33	58335	Trip Pawl
34	41787	Spring Clip
35	41788	Spring Clip
36	58330	Cam
37	58331	Pivot Plate Unit
38	44129	Screws, Switch Mounting
39	58954	Spindle, Manual
40	57422	Turntable Mat-Model AT6
	58361	Turntable Mat-Model Autoslim
41	58856	Turntable Ass'y. -Model AT6
	58224	Turntable Ass'y. -Model Autoslim
42	43818	Spring Clip
43	40826	Presspahn Washer
44	58220	Idler Wheel
45	58215	Support Lever
46	41992	Tension Spring, Intermediate Wheel
47	58568	Tension Link
48	58298	Tension Lever
49	41787	Spring Clip
50	41503	Tension Spring
51	58382	Tone Arm Casting-Model Autoslim
52	58385	Height Setting Blade-Model Autoslim
53	40690	Washer - Model Autoslim

(CONTINUED ON PAGE 8)