

PHOTOFACT® Folder

with CIRCUITRACE™



For Supplier Address See PHOTOFACT Index

SOUNDESIGN CHASSIS
91033H (Service B)SOUNDESIGN CHASSIS
91033H (Service B)

MODEL	CHASSIS
S3201PR	91033H (Service No. B)
S4245PR	91033H (Service No. B)
S4544PR	91033H (Service No. B)
S5540FR	91033H (Service No. B)
S5586CR	91033H (Service No. B)



MODEL S5540FR (91033H Service #B)

RECORD CHANGER SERVICING

BSR Record Changer Number C129R2/H/5

ADJUSTMENTS

TONE ARM SETDOWN

Adjust screw B1 so the needle sets down in the center of the lead-in groove on a 12-inch record. Turning the screw clockwise moves the set-down point outward.

TONE ARM HEIGHT

Adjust B2 so the top of the tone arm clears a 12-inch record on the center spindle shelf during the change cycle. Turning B2 clockwise decreases the lift-up height.

CLEANING

Use a cloth dampened with isopropyl alcohol to clean the driving surfaces of the idler wheel, motor shaft and inside rim of the turntable.

LUBRICATION

Apply light nonhardening grease to sliding cam surfaces and pivot points, light machine oil on the tone arm lift rod, idler wheel bearings, and motor bearings.

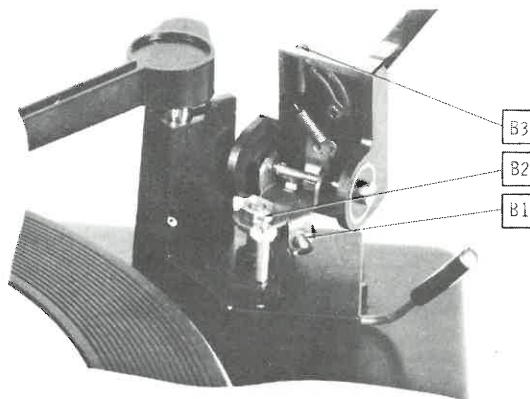
DO NOT lubricate turntable driving surface, the teeth on cycling gear or turntable hub.

NEEDLE PRESSURE

Nominal pressure 3 1/2 grams. Adjust B3 to obtain correct needle pressure. Turning B3 clockwise decreases needle pressure.

DRIVE IDLER HEIGHT

Select 33 rpm and adjust the screw in the idler support arm so the idler wheel is in the center of the 33 rpm section of the motor shaft.



HOWARD W. SAMS & CO., INC. Indianapolis, Indiana 46206

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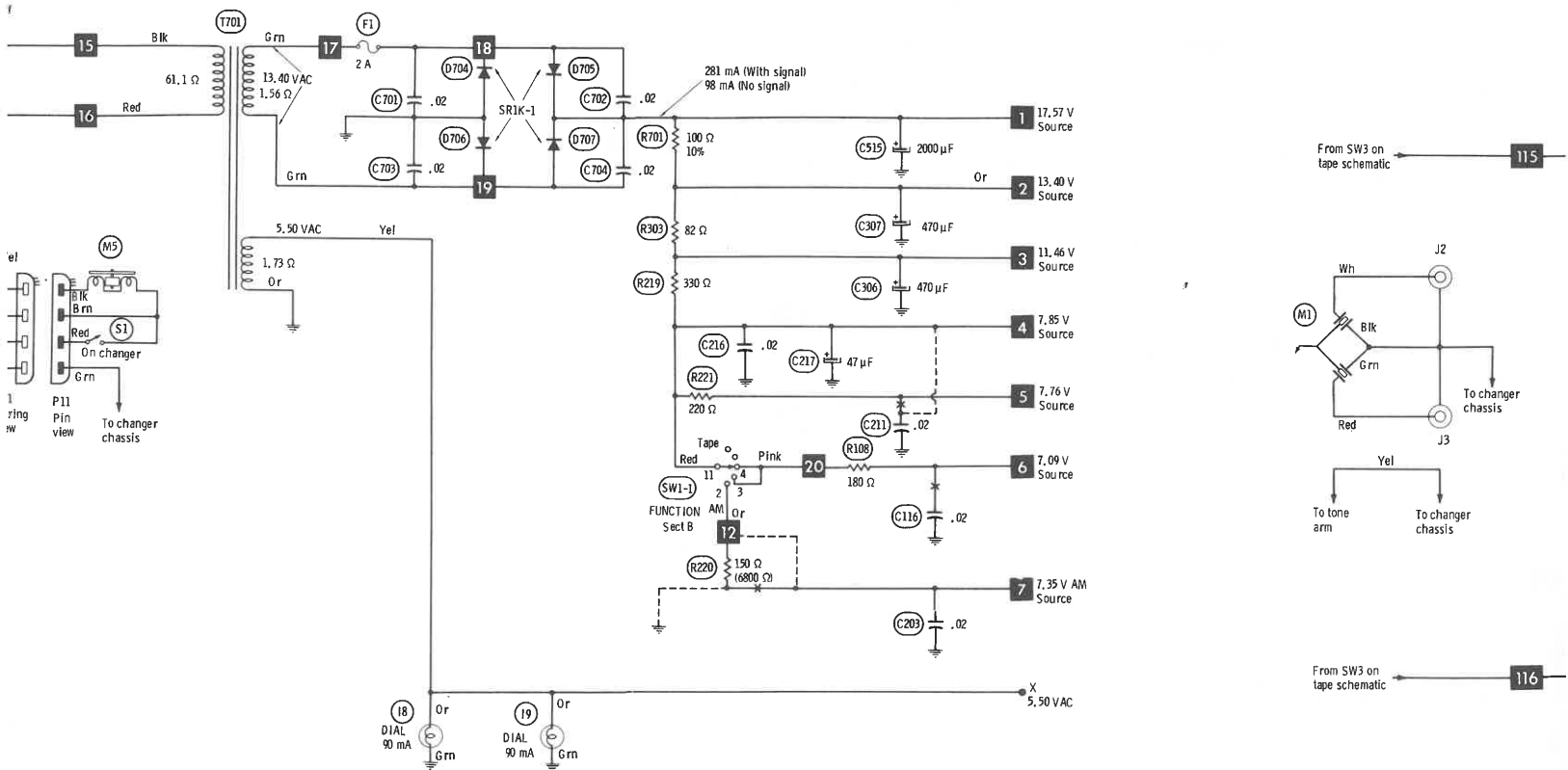


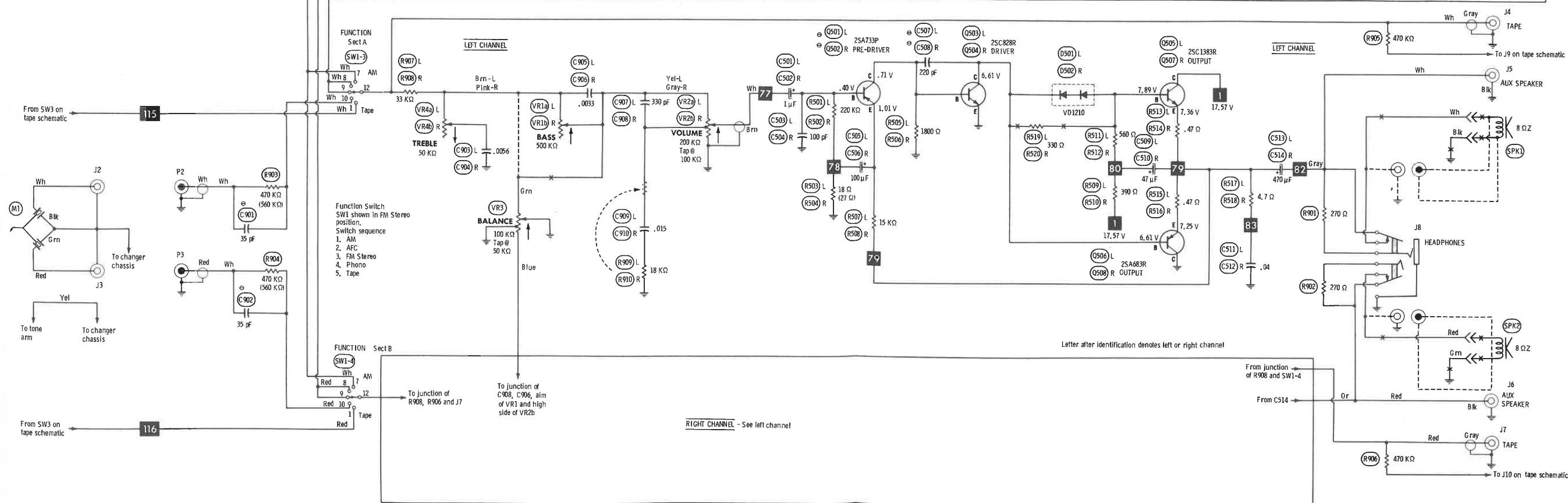
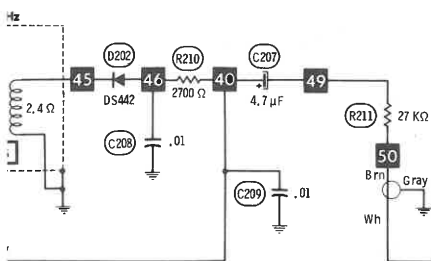
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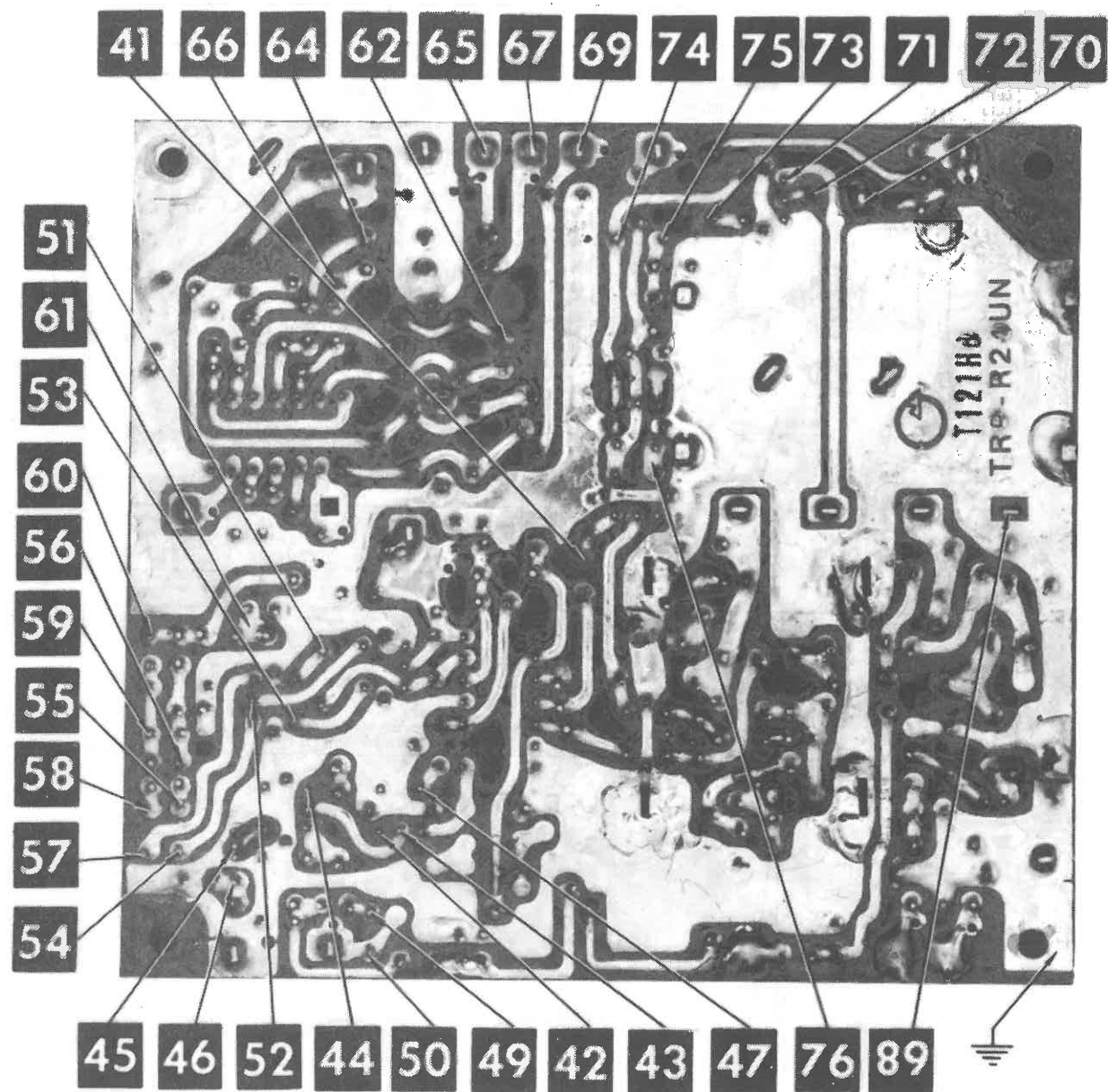
DATE 8-78

SET 1753 FOLDER 5

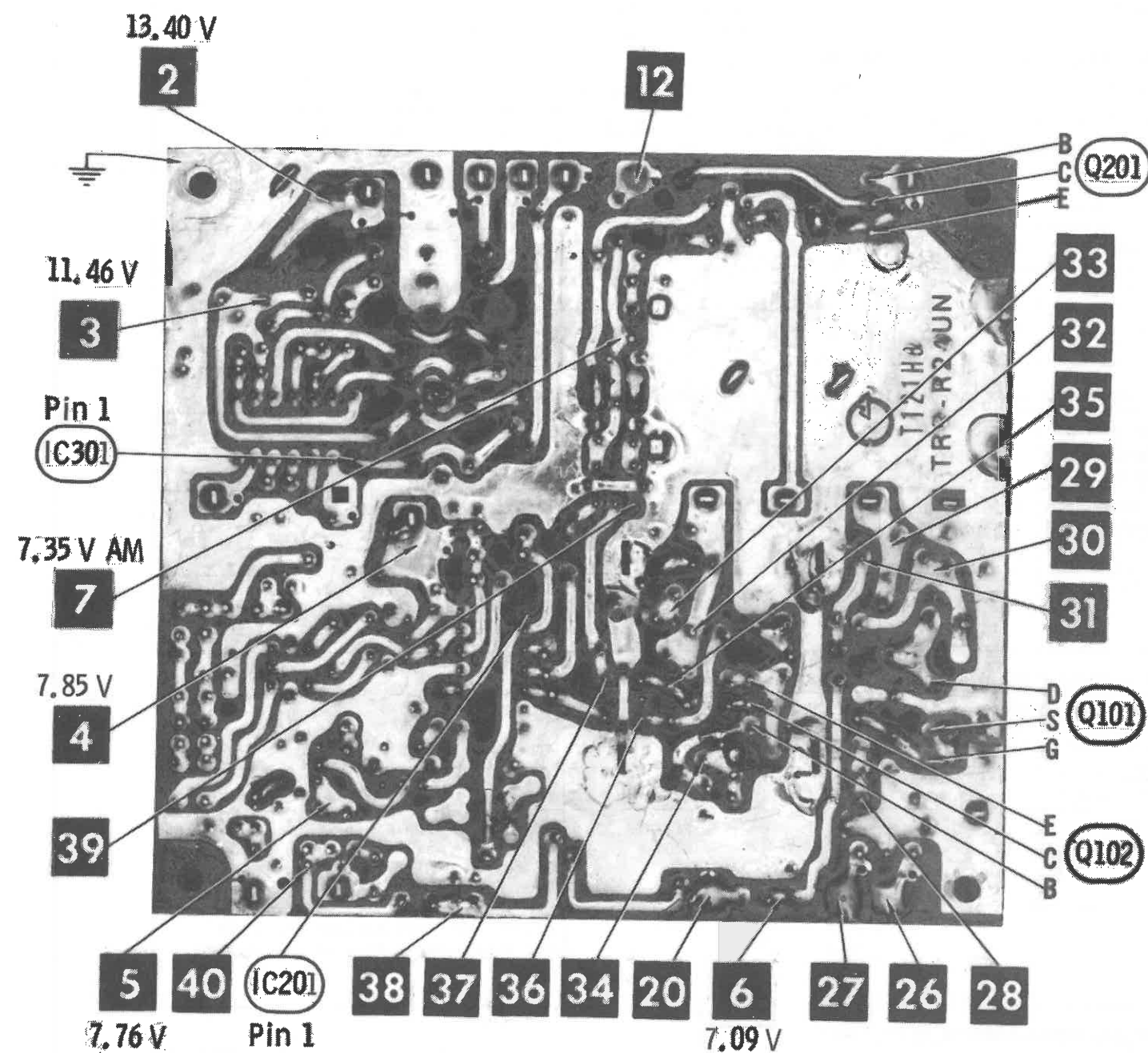
SOUNDESIGN CHASSIS
91033H (Service B)







MAIN BOARD A Howard W. Sams CIRCUITRACE® Photo



A Howard W. Sams CIRCUITRACE® Photo MAIN BOARD

SOUNDESIGN CHASSIS
91033H (Service B)

FOLDER 5

ALIGNMENT INSTRUCTIONS

CAUTION: Use isolation transformer or observe polarity when connecting test equipment. Connect low sides of generator and indicator to ground unless specified otherwise. Maintain line voltage at 120V AC. Allow a 15-minute warm-up period. Use only enough generator output to obtain a suitable indication. Suggested Alignment Tools: GC ELECTRONICS: T201 thru T207.5097 CT1 thru CT4.5000 T301 thru T302.9293-9394



AM ALIGNMENT—SELECTOR IN AM POSITION

Connect generator across loop fashioned of several turns of wire. Set volume at maximum.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
455kHz 400-hertz Modulation	Tuning gang fully open	Output meter across voice coil	T205,T203, T202	Adjust for maximum. Repeat until no further improvement is noted.
600kHz	600kHz	"	T201	Adjust for maximum.
1640kHz	1640kHz	"	CT4	Adjust for maximum.
1400kHz	1400kHz	"	CT3	Adjust for maximum. Repeat AM alignment until no further improvement is noted.

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

High side of generator thru .001uF to TP1.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz Unmodulated	Point of non- interference	DC probe of VTVM to TPB	T206,T204, T101(1)	Adjust for maximum.
"	"	DC probe of VTVM to TP3.	T207	Adjust for zero reading. A positive or negative reading will be obtained on either side of correct setting.

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

High side of generator thru .001uF to TP1. Use 60-hertz, frequency-modulated signal, 450kHz sweep. Use 60-hertz sawtooth voltage in scope for horizontal deflection.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
10.7MHz 450kHz Sweep	Point of non- interference	Vert input of scope to TPB.	(1)T206,T204, T101	Disconnect stabilizing capacitor C220 Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C220.
"	"	Vert input of scope to TP3.	T207	Adjust T207 for maximum amplitude and straightness of line, similar to Fig. 2.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

Connect generator across antenna terminals with 120-ohm carbon resistor in series with each lead. Adjustment of coils by bending should not be attempted unless the coil is deformed or replaced.

GENERATOR FREQUENCY	RADIO DIAL SETTING	INDICATOR	ADJUST	REMARKS
88MHz Unmodulated	88MHz	DC probe of VTVM to TPB.	L104,L102	Adjust for maximum.
108MHz Unmodulated	108MHz	"	CT1,CT2	Adjust for maximum. Repeat FM RF steps until no further improvement is noted.

(1) Before adjusting, vary generator frequency slightly. Maximum output indicates exact IF.

PARTS LIST AND DESCRIPTION (CONTINUED)

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

PHONO CARTRIDGE & NEEDLES

ITEM No.	REPLACEMENT DATA						NOTES
	MFRG. PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		
	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1 M2			1312d	N782-sd N782-sd		3395-DS	

MISCELLANEOUS

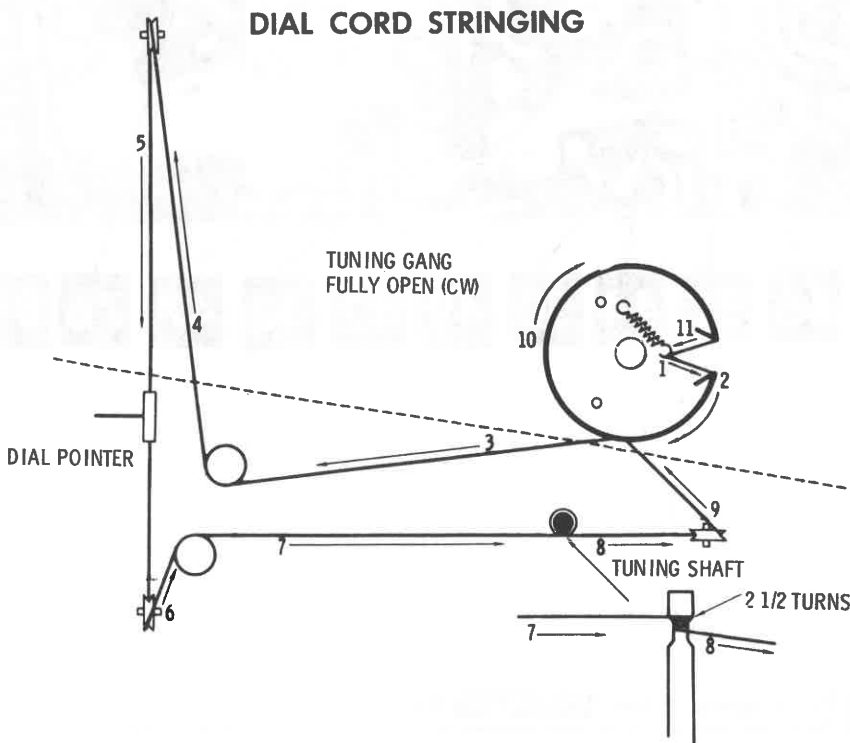
ITEM No.	PART NAME	PART No.	NOTES
CR301 CR302 DL12 DL13 DL14-17 DL18-19 I1 J5,6 J8 J9, 10 M2 M3 M4 M5 SW1 SW2 SW3 SW4 SW5 SW6	RC Coupling RC Coupling Lamp Lamp Lamp Lamp Lamp Lamp Jacks Jack Jacks Head Solenoid Motor Motor Switch Switch Switch Switch Switch Switch Switch Printed Circuit Board Printed Circuit Board Printed Circuit Board Printed Circuit Board Printed Circuit Board	F-19 F-19 ML06V30L480CL4.7 ML06V30L480CL4.7 ML06V50L280CL4.7 ML6.3V150L20CL ML06V30L480CL4.7 56317/91033H LJ172-1-1 LJ-097 560-04-05 ESR-E245K25Z ESB1134D34U CL210E SW-9 560-01-06 TRP-R24UN TRP-A51UN TRP-CS3UN TRP-H02UN TRP-B23UN	Stereo Indicator (5.89V @ 28.5mA) Record Indicator (4.52V @ 24mA) Program Indicators (5.50V AC @ 46mA) Dial (5.50V AC @ 90mA) Auto Stop Indicator (5.89V DC @ 28.3mA) Left and Right auxiliary Speakers Headphones Left and Right Microphone Record/Play/Erase Headshift Tape Transport (2500 rpm @ 15.65V DC) Changer Function-AM/AFC/FM Stereo/Phono/Tape AC Power Record/Play Manual Program Select Tape Transport (Actuated by insertion of tape cartridge) Auto Program Select (Actuated by foil on tape) Tuner Audio Control Recorder Preamplifier Oscillator Power Supply

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Front Panel	R-56301	Knob, Selector	R-99362
Dial Plate	R-56313	Knob, Slide	R-99363
Knob, Tuning	R-99361	Pushbutton, Channel	R-99365

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8528 (Solid) Available in 13 Colors 8522 (Stranded) Available in 13 Colors
Power Cord	Use BELDEN No. 17106 (Plastic) -6 Ft. 17109 (Plastic) -9 Ft.
Power Cord (Interlock Type)	Use BELDEN No. 8874 (Rubber), 8895 (Plastic) or 8873 (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)



PARTS LIST AND DESCRIPTION (CONTINUED)

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

CAPACITORS (cont)

ITEM No.	RATING	MFG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE Q-LINE	PART No. GENERAL LINE
C607	.01		UK50-103		MAG5011		
C608	.01		UK50-103		MAG5011		
C609	.1		CK-104		MAG5001		
C701	.01		UK50-103		MAG5011		
C702	.02		UK50-223		MAG5012		
C703	.02		UK50-223		MAG5012		
C704	.02		UK50-223		MAG5012		
C705	.002		UK50-223		MAG5012		
C901	35 50V		DTZ-33	NP033	CN0433		10TS-D20
C902	35 50V		DTZ-33	NP033	CN0433		10TCC-Q33
C903	.0056 50V 10%				M192P5629R8		10TCC-Q33
C904	.0056 50V 10%				M192P5629R8		192P5629R8
C905	.0033 50V 10%				M192P5629R8		192P5629R8
C906	.0033 50V 10%				M192P3329R8		192P3329R8
C907	330 50V 10%		DD-331	GP330	GP333		192P3329R8
C908	330 50V 10%		DD-331	GP330	GP333		10TS-T33
C909	.015 50V				GP333		10TS-T33
C910	.015 50V				GP333		1FT-S15
CT1		(1)					1FT-S15
CT2		CTV-12B47					
CT3		(1)					
CT4		(1)					
VC		B1446DT					

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

(1) Part of VC, Tuning Gang.

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM No.	FUNCTION	RESIST-ANCE	REPLACEMENT DATA			
			MFG. PART No.	CENTRALAB PART No.	MALLORY PART No.	TRW PART No.
VR1a	Bass-Left	500K	EV8G0AC25C55(5)			
VR2a	Bass-Right	500K	EV8G5AC25B25(5)			
VR2b	Volume-Left	200K tap 100K				
VR3	Volume-Right	200K tap 100K				
VR4a	Balance	100K tap 50K	EV8R5AC25G15(5)			
VR4b	Treble-Left	50K	EV8G0AC25A54(5)			
	Treble-Right	50K				

(5) Number on unit.

COILS (RF-IF)

ITEM No.	FUNCTION	REPLACEMENT DATA			REMARKS
		PART No.	OTHER IDENTIFICATION	MILLER PART No.	
L101	FM Antenna		ACA-16		
L102	FM RF		ACR-38		
L103	RF Choke		ACP-18		
L104	FM Osc		ACO-23		
L201	Loopstick	C21120/91033H	AR-11-05		
L601	RF Choke		101K		
T101	FM IF		7SF-10A		
T201	AM Osc		80-1025		
T202	AM IF		7SF-04		
T203	AM IF		7SF-05		
T204	FM IF		395-0		
T205	AM IF		7SA-06		
T206	Ratio Detector		7SA-03A		
T207	Ratio Detector		7SF-04A		
T301	19kHz Input		SHT-11		
T302	38kHz Output		SHT-12		
T601	Bias Osc		14S-1313		

TRANSFORMER (Power)

ITEM No.	RATING			REPLACEMENT DATA			NOTES
	PRI.	SEC. 1	SEC. 2	MFG. PART No.	THORDARSON PART No.	TRIAD PART No.	
T701	120V AC @ 84mA AC	13.4V AC @ 281mA DC	5.5V AC @ 225mA AC	PT-1405YA(1)			(1) On unit number.

SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		MFG. PART No.	QUAM PART No.	
SPK1	8" RD (CM) 8 ohms	96116D(1)	8C10 FEX	(1) Number on unit.
SPK2	8" RD (CM) 8 ohms	96116D(1)	CC10 FEX	

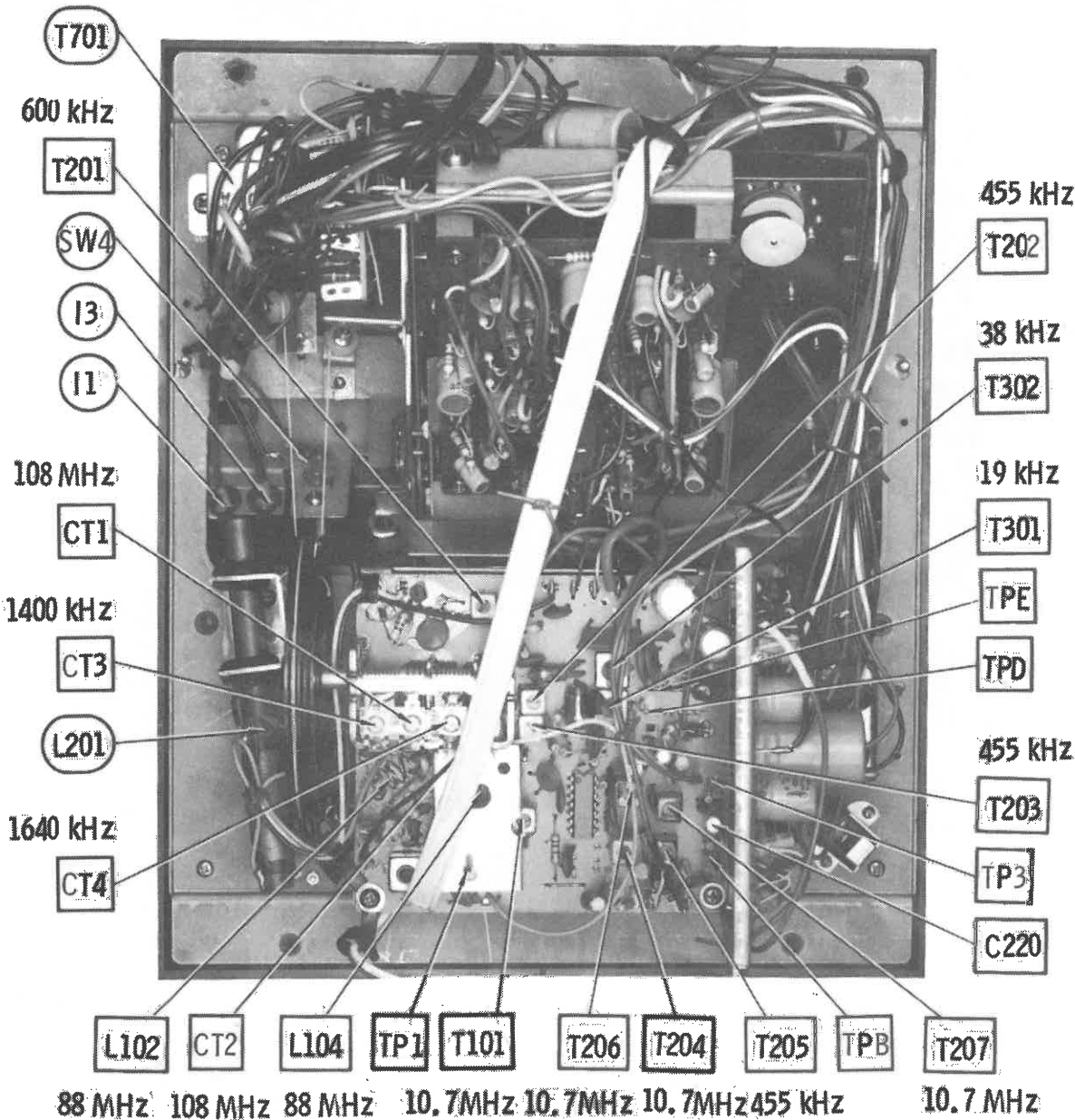
FUSE DEVICES

ITEM No.	DESCRIPTION	REPLACEMENT DATA					
		PART No.		BUSS		LITTELFUSE	
		DEVICE	HOLDER	DEVICE	HOLDER	DEVICE	WORKMAN PART No.
F1	2A @ 250V Quick-Acting Pigtail			GJV2		318002	

ALIGNMENT INSTRUCTIONS (Continued)

FM STEREO ALIGNMENT USING AUDIO GENERATOR

High side of generator to TP3 Tune receiver off station.			
GENERATOR FREQUENCY	INDICATOR	ADJUST	REMARKS
19kHz	Vert input of scope to TPD.	T301	Adjust for maximum 19kHz response.
19kHz	Vert input of scope to TPE.	T302	Adjust for maximum 38kHz response.

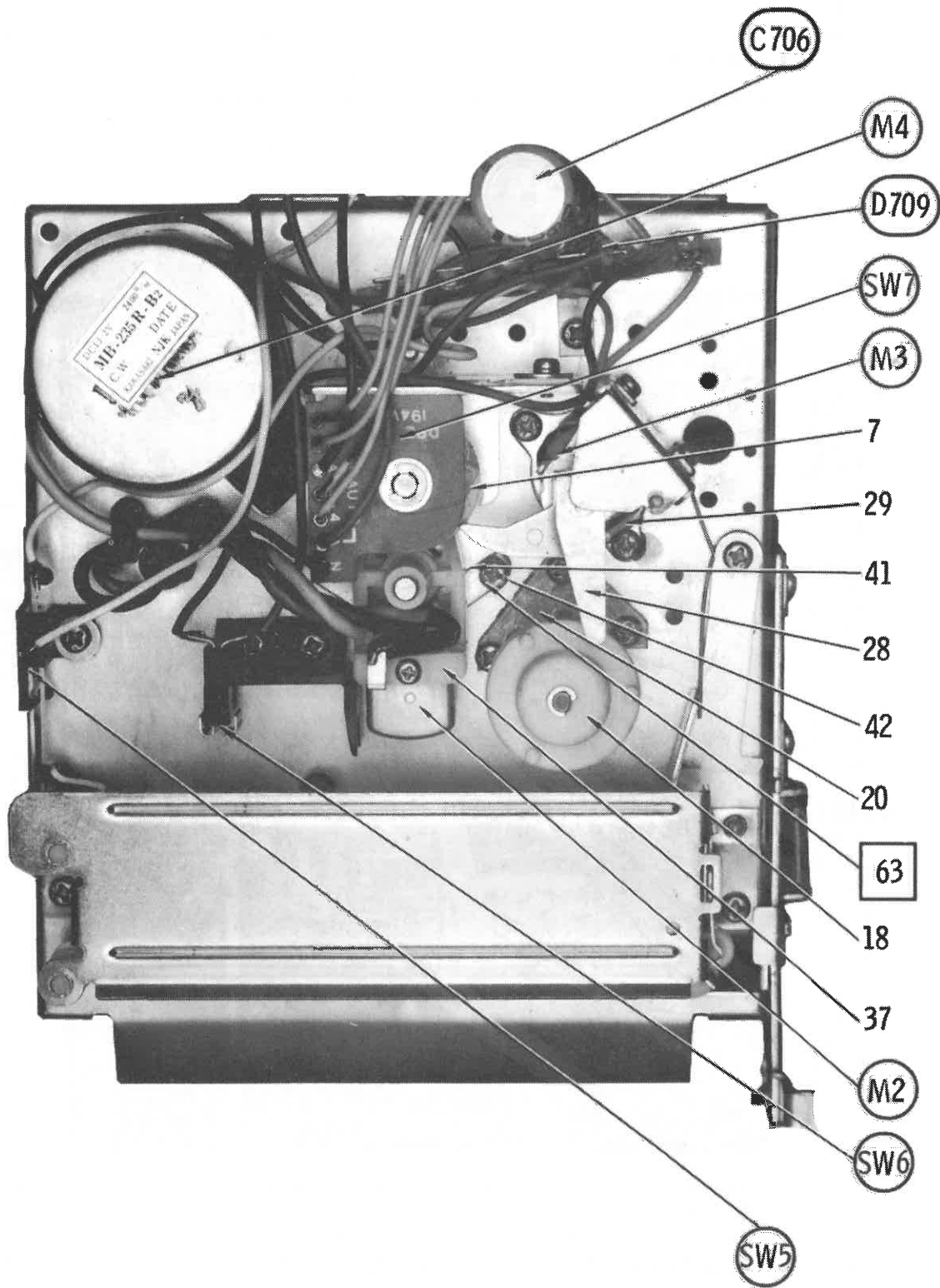


SOUNDESIGN CHASSIS
91033H (Service B)

FOLDER 5

OVERALL-TOP

TAPE DECK-TOP



PARTS LIST AND DESCRIPTION (CONTINUED)

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

ELECTROLYTIC CAPACITORS (cont)

ITEM No.	RATING	REPLACEMENT DATA				
		MFRG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
					Q-LINE	GENERAL LINE
C501	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C502	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C505	100 10V		PC100-10	VTT100E10	QV1-93	EV-1130
C506	100 10V		PC100-10	VTT100E10	QV1-93	EV-1130
C509	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C510	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226
C513	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C514	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250
C515	2000 20V		WBR2000-25*	TC2520A*	QE1-629*	TVA-1213*
C605	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222
C706	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615
C707	10 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260
C708	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222

CAPACITORS

ITEM No.	RATING	MFRG. PART No.	REPLACEMENT DATA				
			CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
						Q-LINE	GENERAL LINE
C101	13				CN0412		10TCC-Q12
C102	15				CN0415		10TCC-Q15
C103	10		DTZ-15	NP015	CN0410		10TCC-Q10
C104	.02		DTZ-10	NP010	MAG5012		
C105	3		UK50-223		CN0533		10TCC-V33
C106	15		DTZ-3R3	NP03P3	CN0415		10TCC-Q15
C107	330		DTZ-15	NP015	GP333		10TS-T33
C108	3		DD-331	GP330	CN0533		10TCC-V33
C109	.02		DTZ-3R3	NP03P3	MAG5012		
C110	10		UK50-223		CN0410		10TCC-Q10
C111	5		DTZ-10	NP010	*		10TCC-V50
C112	.04				GP140		56A-S40
C113	330		DD-331	GP330	GP333		10TS-T33
C114	.02		UK50-223		MAG5012		
C115	.01		UK50-103		MAG5011		
C116	.02		UK50-223		MAG5012		
C117	.02		UK50-223		MAG5012		
C201	.02		UK50-223		MAG5012		
C202	.005 10%				SX247		MMC-472
C203	.02		UK50-223	CD19FD472J03	MAG5012		
C204	.02		UK50-223		MAG5012		
C205	.02		UK50-223		MAG5012		
C206	.02		UK50-223		MAG5012		
C208	.01		UK50-103		MAG5011		
C209	.01		UK50-103		MAG5011		
C211	.02		UK50-223		MAG5012		
C212	.02		UK50-223		MAG5012		
C214	120		DTZ-120		CN0312		10TCC-T12
C215	120		DTZ-120		CN0312		10TCC-T12
C216	.02		UK50-223		MAG5012		
C218	33 10%		DTZ-33	NP033	CN0433		10TCC-Q33
C302	.01			WMF1S1	EW11A110	QF1-91	1PB-S10
C303	.0022 5%			CD19FD222J03	SX222		MMC-222
C304	.0033 10%				M192P3329R8		192P3329R8
C305	.0033 10%				M192P3329R8		192P3329R8
C308	.1		CK-104		MAG5001		
C309	.1		CK-104		MAG5001		
C310	.1		CK-104		MAG5001		
C311	.0015		DR-152		GP215		10TS-D15
C403	.1 50V		CK-104		MAG5001		
C404	60		DD-560		GP456		10TS-Q56
C409	.015		DD-560		GP456		10TS-Q56
C410	.015					QFT2-105	1FT-S15
C411	100					QFT2-105	1FT-S15
C412	100		DTZ-100	NP0100	CN0310		10TCC-T10
C419	47		DTZ-47	NP047	CN0447		10TCC-Q47
C420	47		DTZ-47	NP047	CN0447		10TCC-Q47
C421	47		DTZ-47	NP047	CN0447		10TCC-Q47
C422	47		DTZ-47	NP047	CN0447		10TCC-Q47
C425	680		DD-681	GP680	GP368		10TS-T68
C426	680		DD-681	GP680	GP368		10TS-T68
C430	100		DTZ-100	NP0100	CN0310		10TCC-T10
C431	100		DTZ-100	NP0100	CN0310		10TCC-T10
C503	100		DTZ-100	NP0100	CN0310		10TCC-T10
C504	100		DTZ-100	NP0100	CN0310		10TCC-T10
C507	220		DTZ-220	NP0100	CN0310		10TCC-T22
C508	220		DTZ-220				10TCC-T22
C511	.04				GP140		56A-S40
C512	.04				GP140		56A-S40
C601	.01		DD-1032	GP10000	GP110		56A-S10
	.02		UK50-223		MAG5012		
	.002				GP220		10TS-D20
C602	.01		DD-1032	GP10000	GP110		56A-S10
	.02		UK50-223		MAG5012		
C602	.002 50V				GP220		10TS-D20
C603	.0047 10%				M192P4729R8		192P4729R8
	.01		UK50-103		MAG5011		
C604	.0022 10%				GP222		10TS-D22
C606	.04				GP140		56A-S40

PARTS LIST AND DESCRIPTION

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

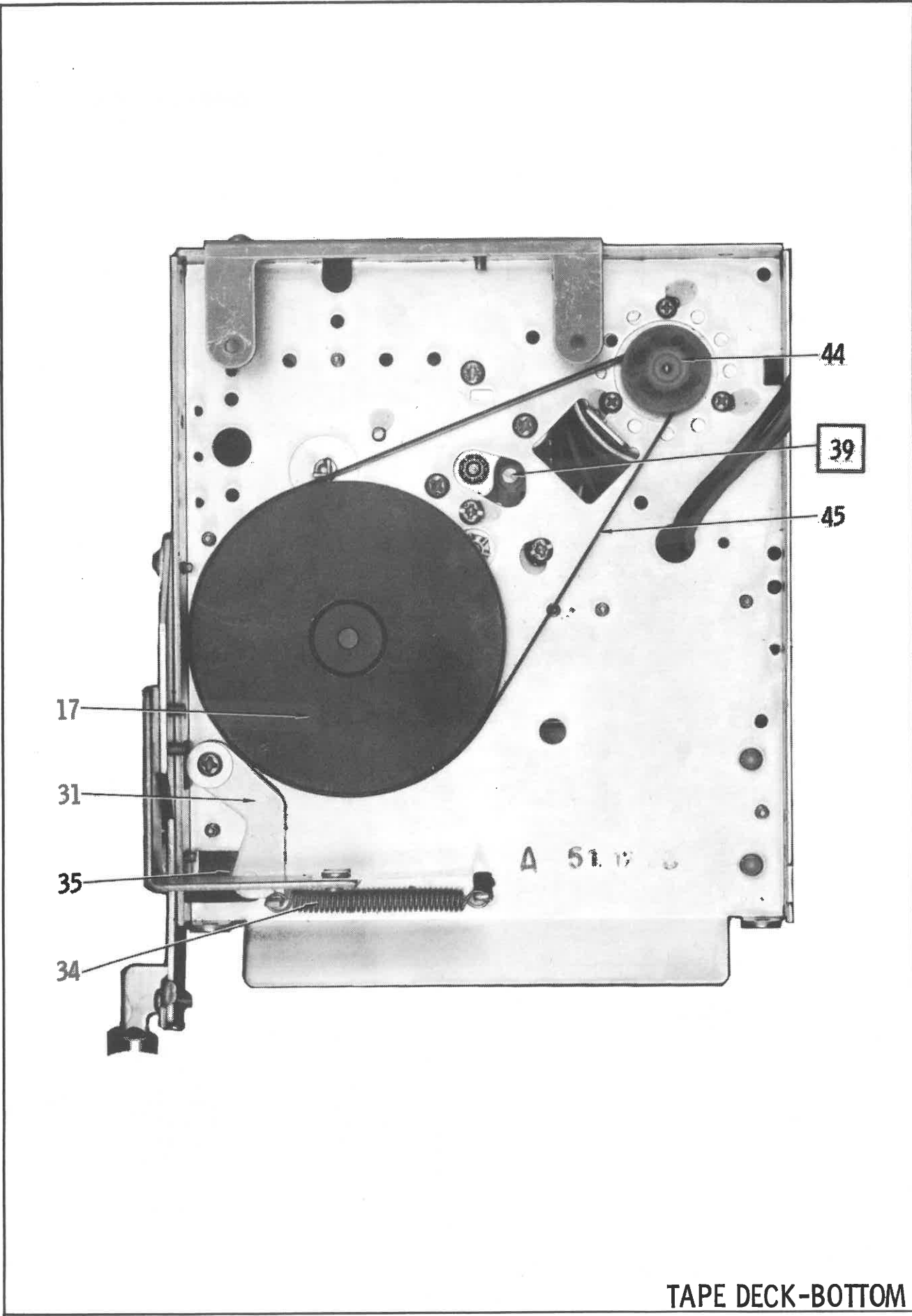
SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFG. PART No.	REPLACEMENT DATA									
			GENERAL ELECTRIC PART No.	MALLORY PART No.	MOTOROLA	RAYTHEON PART No.	RCA PART No.	SPRAGUE PART No.	SYLVANIA PART No.	THORDARSON PART No.	WORKMAN PART No.	ZENITH PART No.
D101	1S188AM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D102	1S351R			PTC311	HEPR2501				ECG611			ZEN-451
D201	1S188AM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D202	D5442		GE-300	PTC214	HEPRO602	REN 177	SK3100	RT-218	ECG177		WEP1062	
D203	1S188FM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D204	1S188FM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D401	1S188AM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D402	1S188AM		1N34AS	PTC207	HEPR9134A	REN 109	SK3087	RT-200	ECG109	1N34A	WEP134	ZEN-430
D501	VD1210			PTC302					ECG605			
D502	VD1210			PTC302					ECG605			
D701	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D702	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D703	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D704	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D705	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D706	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D707	SR1K-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
D708	2SF656			PTC651	HEPR1005	REN 5402			ECG5402			
D709	10D-1		GE-504A	PTC201	HEPRO052	REN 116	SK3030	RT-213	ECG116	1N4004	WEP156	212-76-02
IC201	A1201		GEIC-43		HEPC6063P	REN 1003	SK3288	TVM-75	ECG1003	LA1201	WEP2122	ZEN-605
	LA1201B		GEIC-43		HEPC6063P	REN 1003	SK3288	TVM-75	ECG1003	LA1201	WEP2122	ZEN-605
IC301	A3301		GEIC-38	PTC721	HEPC6094P	REN 1006	SK3358	TVM-6	ECG1006	LA3301	WEP2125	
	LA3301		GEIC-38	PTC721	HEPC6094P	REN 1006	SK3358	TVM-6	ECG1006	LA3301	WEP2125	
IC401	BA301					REN 1135			ECG1135	BA301	WEP2242	
IC402	UPC566H	(1)	GEIC-135			REN 1052	SK3249	TVM-82	ECG1052	UPC566H	WEP2242	
	BA301					REN 1135			ECG1135	BA301	WEP2242	
	UPC566H	(1)	GEIC-135			REN 1052	SK3249	TVM-82	ECG1052	UPC566H	WEP2242	
Q101	2SK616R		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312			ZEN-123
	2SK49F		GE-FET-2	PTC161	HEPF0021	REN 132	SK3448	RT-175	ECG312			ZEN-123
Q102	2SC785R		GE-60*	PTC132*	HEPS0016*	REN 229*	SK3018*	RT-187	ECG229*	2SC784	WEP535	ZEN-104
	2SC1675L		GE-213	PTC132*	HEPS0025*	REN 123A*	SK3124	RT-308	ECG229*		WEP956*	ZEN-127
Q201	2SC839F		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	2SC839	WEP736*	121-29000*
	2SC839H		GE-61*	PTC132*	HEPS0015*	REN 123A*	SK3444	RT-308	ECG123A*	2SC839	WEP736*	121-29000*
Q401	2SC1740R		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*		WEP736*	121-972
	2SC945Q,LQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q402	2SC1740R		GE-62	PTC121*	HEPS0015*	REN 123A*	SK3122	RT-109*	ECG123A*		WEP736*	121-972
	2SC945Q,LQ		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q403	2SC900F		GE-212	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	2SC900	WEP66	ZEN-119
	2SC945Q,L,P		GE-62	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q404	2SC900F		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	2SC900	WEP66	ZEN-119
	2SC945Q,L,P		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q405	2SC1685-0		GE-62*	PTC121*	HEPS0005*	REN 194*	SK3137*	RT-109*	ECG199*		WEP66*	121-972
	2SC900E,AE		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	2SC900	WEP66	ZEN-119
Q406	2SC1685-0		GE-62*	PTC121*	HEPS0005*	REN 194*	SK3137*	RT-109*	ECG199*		WEP66*	121-972
	2SC900E,AE		GE-62	PTC139*	HEPS0015*	REN 199	SK3124	RT-302	ECG199	2SC900	WEP66	ZEN-119
Q501	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	2SA733	WEP916	121-933
	2SA564R		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
Q502	2SA733P		GE-48	PTC127	HEPS0019*	REN 294	SK3138	RT-303	ECG294	2SA733	WEP916	121-933
	2SA564R		GE-65	PTC103*	HEPS0019*	REN 234	SK3114	RT-303	ECG234	2SA564	WEP564	121-879
Q503	2SC828R		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	2SC828	WEP828	ZEN-119
Q504	2SC828R		GE-61*	PTC139*	HEPS0015*	REN 199	SK3444	RT-302	ECG199	2SC828	WEP828	ZEN-119
Q505	2SC1383R		GE-47	PTC143*	HEPS3001*	REN 293	SK3024*	RT-302	ECG293		WEP912	
Q506	2SA683R		GE-48			REN 294			ECG294		WEP916	
Q507	2SC1383R		GE-47	PTC143*	HEPS3001*	REN 293	SK3024*	RT-302	ECG293		WEP912	
Q508	2SA683R		GE-48			REN 294			ECG294		WEP916	
Q601	2SD471K		GE-268	PTC144*	HEPS3001*	REN 289	SK3124	RT-114*	ECG289		WEP910	121-1014
	2SD471		GE-268	PTC144*	HEPS3001*	REN 289	SK3124	RT-114*	ECG289		WEP910	121-1014
	2SC945,P		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q602	2SC945		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
	2SC945P		GE-212	PTC121*	HEPS0015*	REN 199	SK3124	RT-107A	ECG199	2SC945	WEP1945	121-29000
Q701	2SD471K		GE-268	PTC144*	HEPS3001*	REN 289	SK3124	RT-114*	ECG289		WEP910	121-1014
	2SD471		GE-268	PTC144*	HEPS3001*	REN 289	SK3124	RT-114*	ECG289		WEP910	121-1014
	2SC1096L		GE-28	PTC110	HEPS3041	REN 186	SK3197	RT-166	ECG186A	2SC1096	WEP1096	

* Lead configuration may vary from original.
(1) Used in some versions.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING	REPLACEMENT DATA					
		MFG. PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
					Q-LINE	GENERAL LINE	
C207	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C210	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C217	47 10V		PC50-16	VTT47D16	QV1-73	EV-1226	
C219	1 50V		PC1-50	VTT1A50	QV1-11	EV-1615	
C220	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C301	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C306	470 10V		PC500-16	VTT470K16	QV1-149	EV-1150	
C307	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250	
C401	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C402	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C405	33 10V		PC30-25	VTT33B10	QV1-61	EV-1125	
C406	33 10V		PC30-25	VTT33B10	QV1-61	EV-1125	
C407	33 10V		PC30-25	VTT33B10	QV1-61	EV-1125	
C408	33 10V		PC30-25	VTT33B10	QV1-61	EV-1125	
C413	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C414	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C415	220 10V		PC250-10	VTT220F10	QV1-115	EV-1140	
C416	220 10V		PC250-10	VTT220F10	QV1-115	EV-1140	
C417	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C418	4.7 25V		PC5-50	VTT4R7B50	QV1-27	EV-1319	
C423	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C424	10 16V		PC10-25	VTT10B25	QV1-41	EV-1222	
C427	100 10V		PC100-10	VTT100E10	QV1-93	EV-1130	
C428	100 10V		PC100-10	VTT100E10	QV1-93	EV-1130	
C429	470 16V		PC500-16	VTT470K16	QV1-151	EV-1250	
	1000 16V		PC1000-16	VTT1000L16	QV1-183	EV-1260	



SOUND DESIGN CHASSIS
91033H (Service B)

TAPE DECK-BOTTOM

FOLDER 5

CLEANING

Clean all tape contact surfaces with a soft, lint-free material and head cleaner or methyl alcohol. Use alcohol to remove oil and grease from all driving surfaces.

CAUTION: Avoid getting head cleaner on any plastic surface.

ADJUSTMENTS

ADJUST	REMARKS
Head Azimuth	Play a test cartridge and adjust 63 for maximum on meter across output.
Head Height	Play a test cartridge, follow instructions with cartridge, and adjust 39 for proper response.

LUBRICATING

Bearings are oil-less type and do not need lubrication. Lubricate bushings lightly with #20 machine oil. Use a light film of nonhardening grease on cam surfaces.

HEAD DEMAGNETIZING

Demagnetize head when unit is serviced. Avoid using magnetic materials near head.

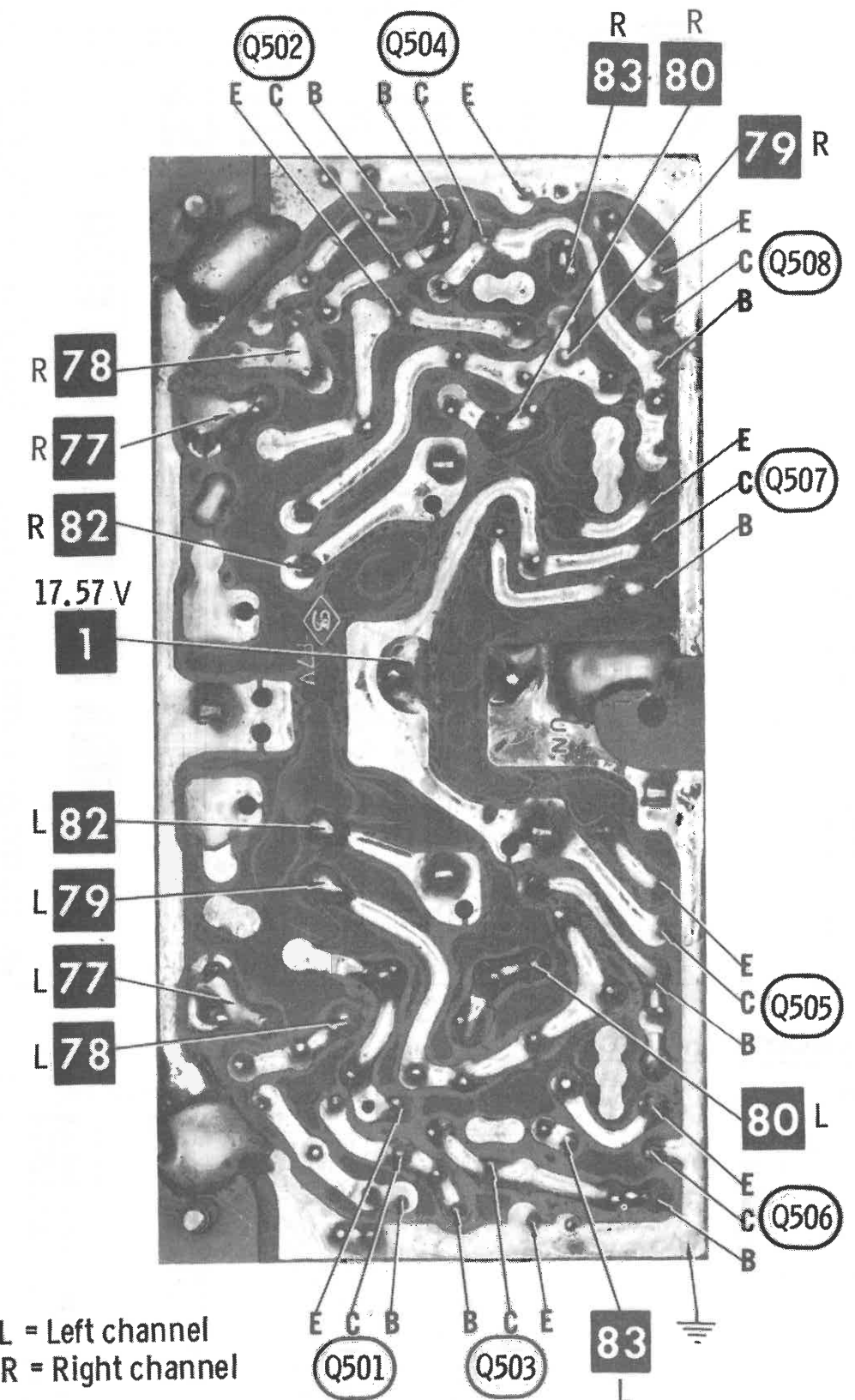
TROUBLE CHART

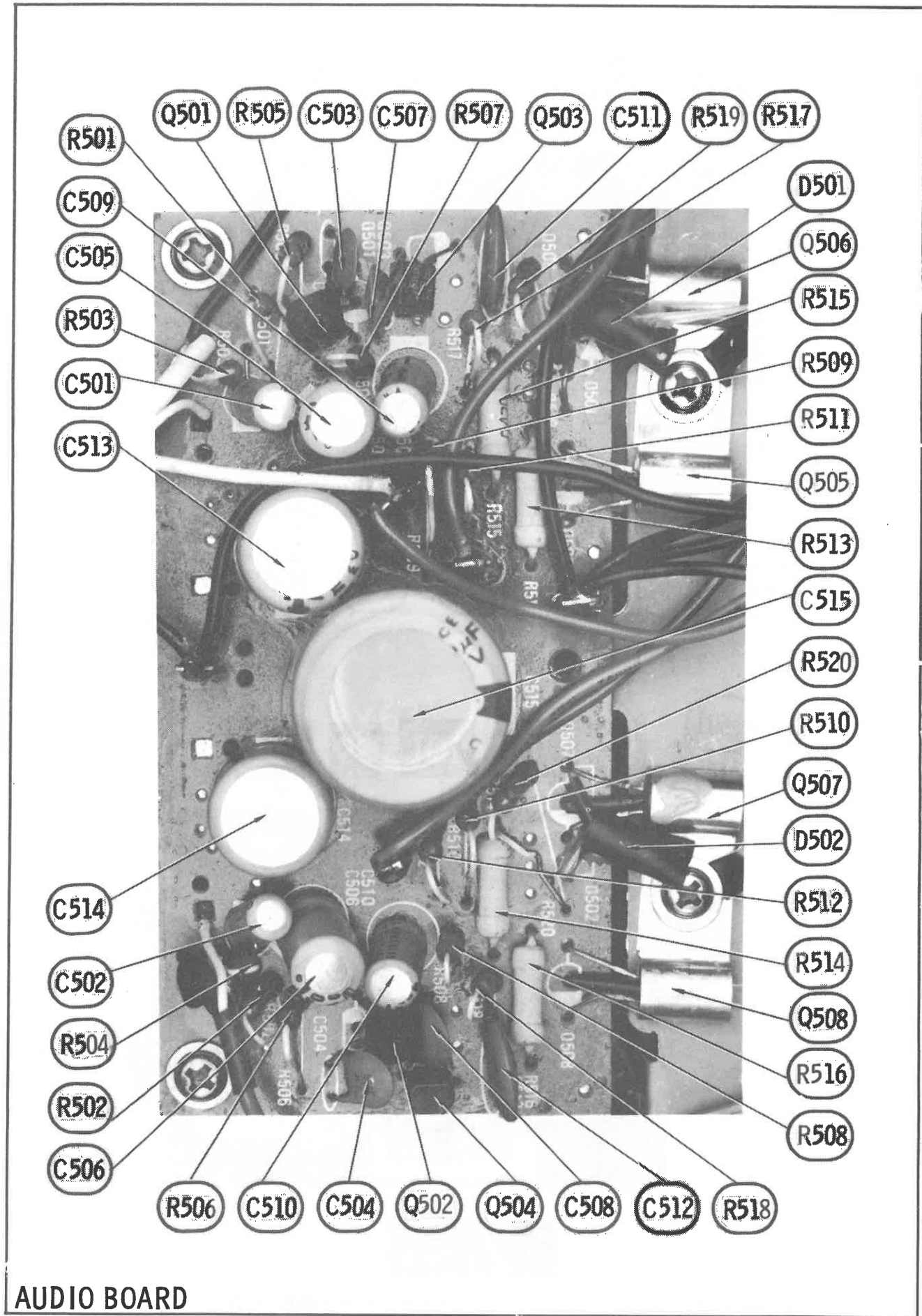
SYMPTOM	REMARKS
Capstan does not rotate.	Belt 45 dirty, worn, or broken. Assembly 20 binding. Motor defective or not supplied with power.
Track-shift mechanism inoperative	Switch SW6 dirty. Cam 7 binding or worn. Pawl 28 worn. Assembly 37 binding. Solenoid M3 defective or not supplied with power. Cartridge defective.
Wow or flutter	Belt 45 dirty or worn. Capstan dirty or binding. Cartridge defective. Motor defective.
Sound weak or distorted	Head dirty, misaligned, or defective. Cartridge defective. Amplifiers defective.

MECHANICAL PARTS LIST

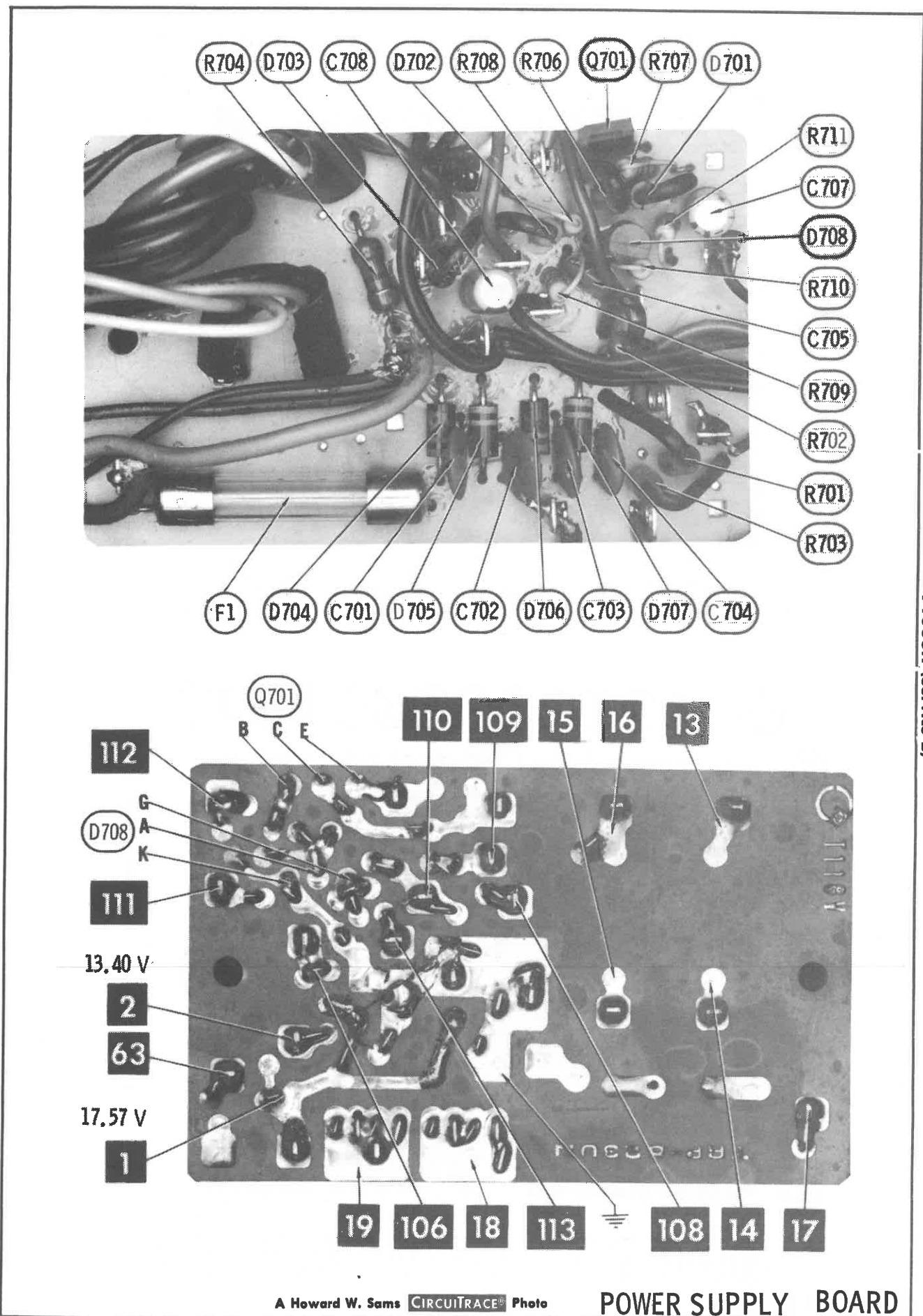
REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
7	560-02-10	Head Shift Cam	39	151-08-04	Height Adjust Screw
17	151-03-01B	Flywheel	41	151-08-07	Head Lifting Spring
18	560-03-02	Program Change Cam	42	11-06-08	Azimuth Spring
20	560-03-04	Flywheel Bearing	44	151-09-10	Motor Pulley
28	560-04-07	Pawl	45*	561-09-02*	Flywheel Drive Belt*
29	560-04-08	Pawl Spring	49	333-12-04	Record Slide Arm
31	560-06-01	Detent Arm	52	43-11-03	Record Slide Arm Spring
34	560-06-04	Detent Arm Spring	53	491-12-02	Record Lock Arm
35	11-03-05	Detent Roller	55	491-12-04	Record Lock Arm Spring
37	560-08-01	Head Shifting Assembly	63		Azimuth Adjust Screw

* Flywheel Drive Belt: E-V/GAME Replacement Number 1407-71
WALSCO Replacement Number 1424-16





AUDIO BOARD

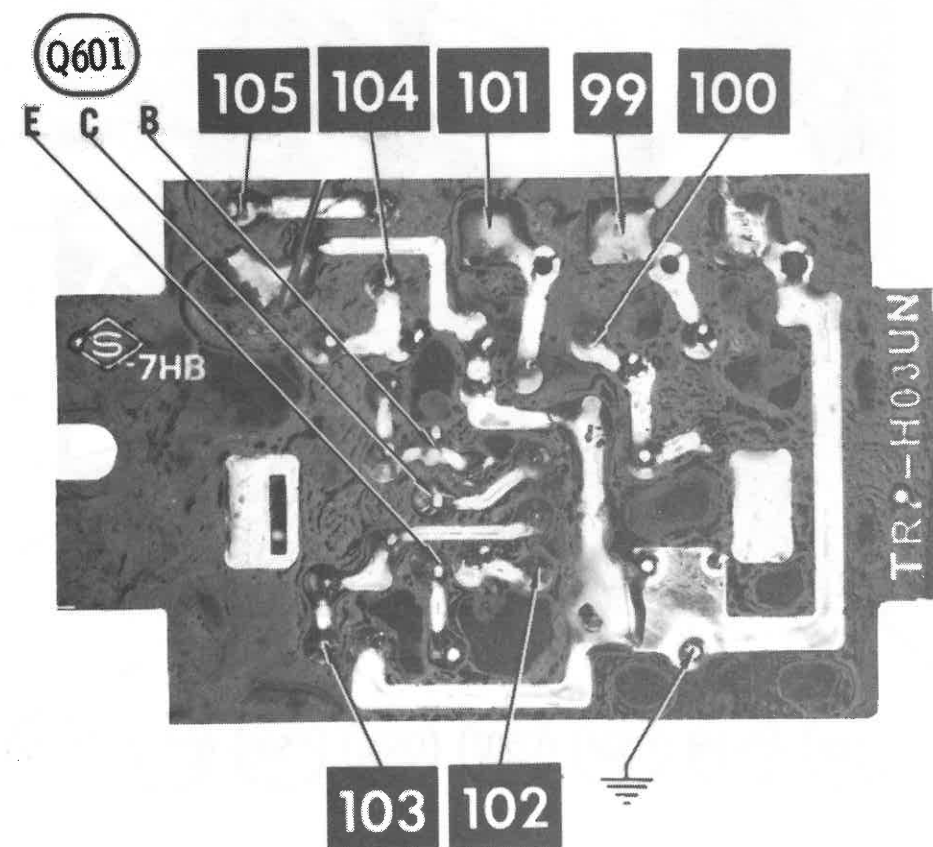
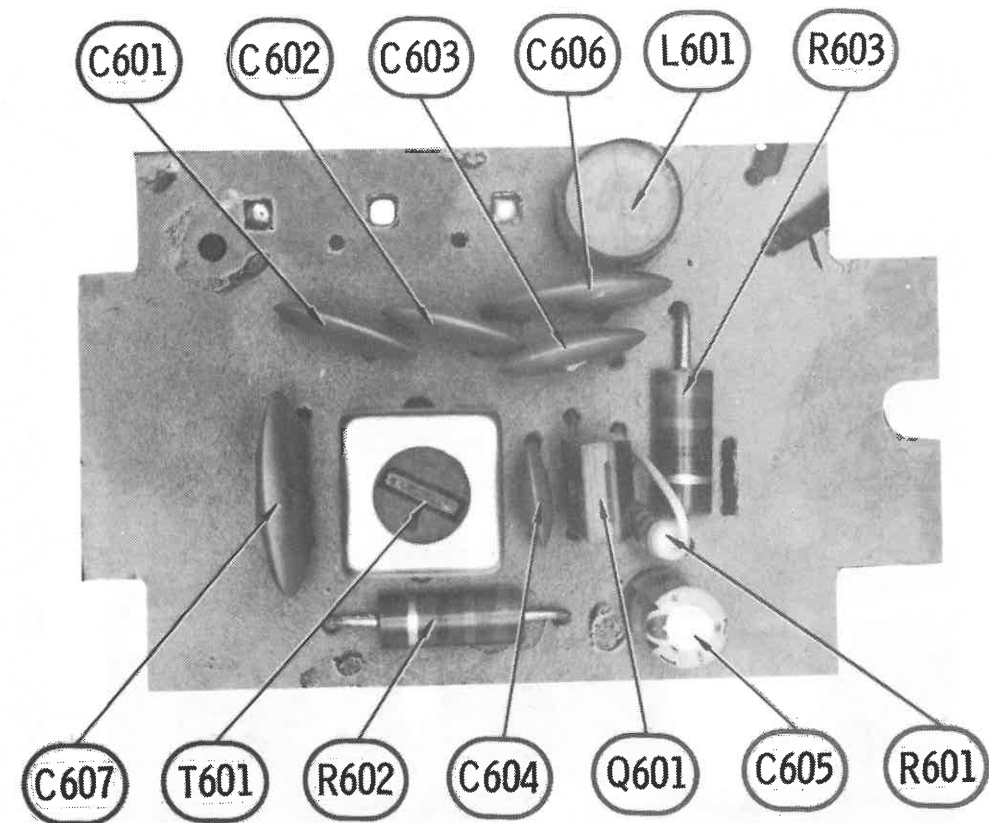
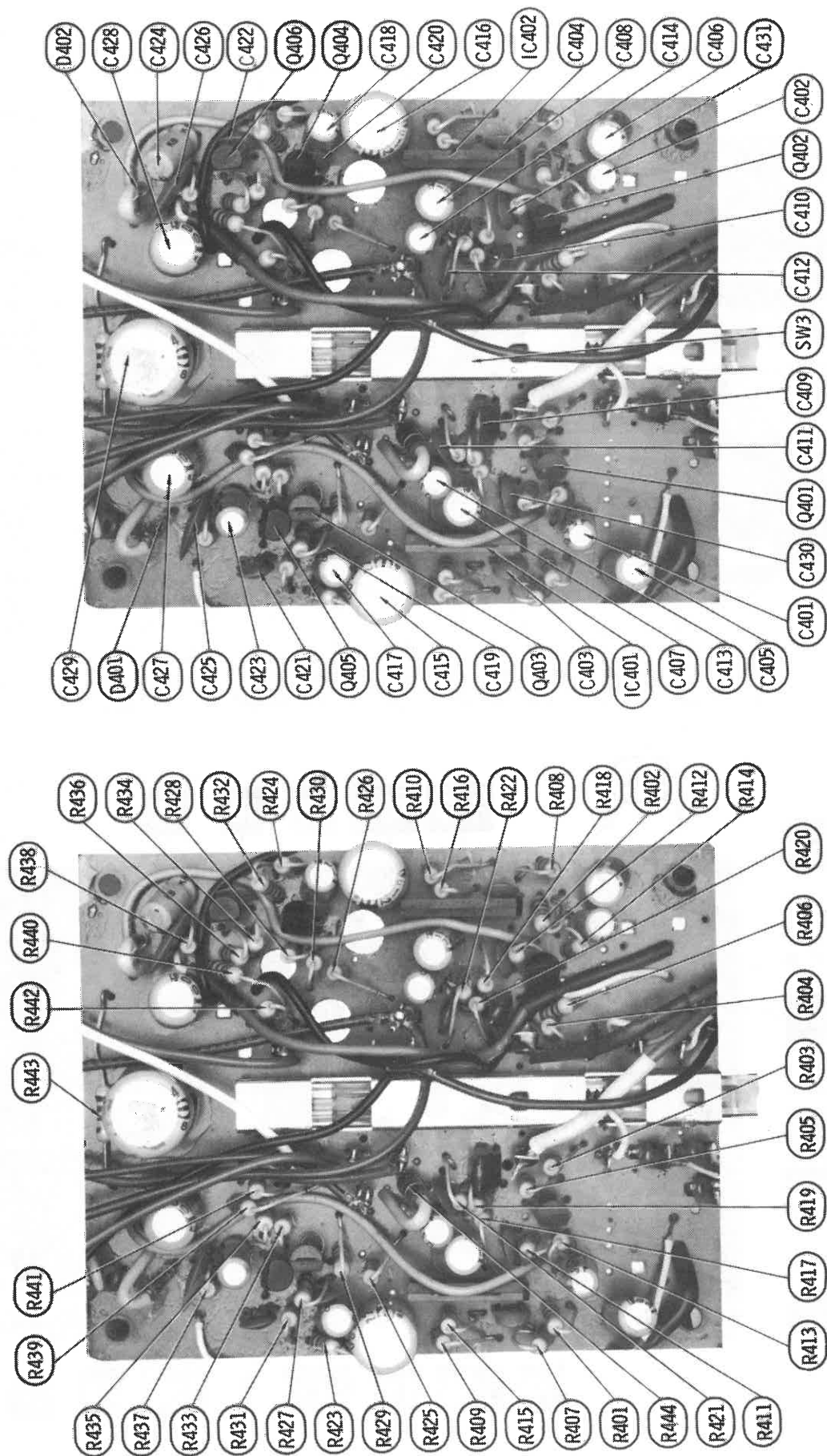


POWER SUPPLY BOARD

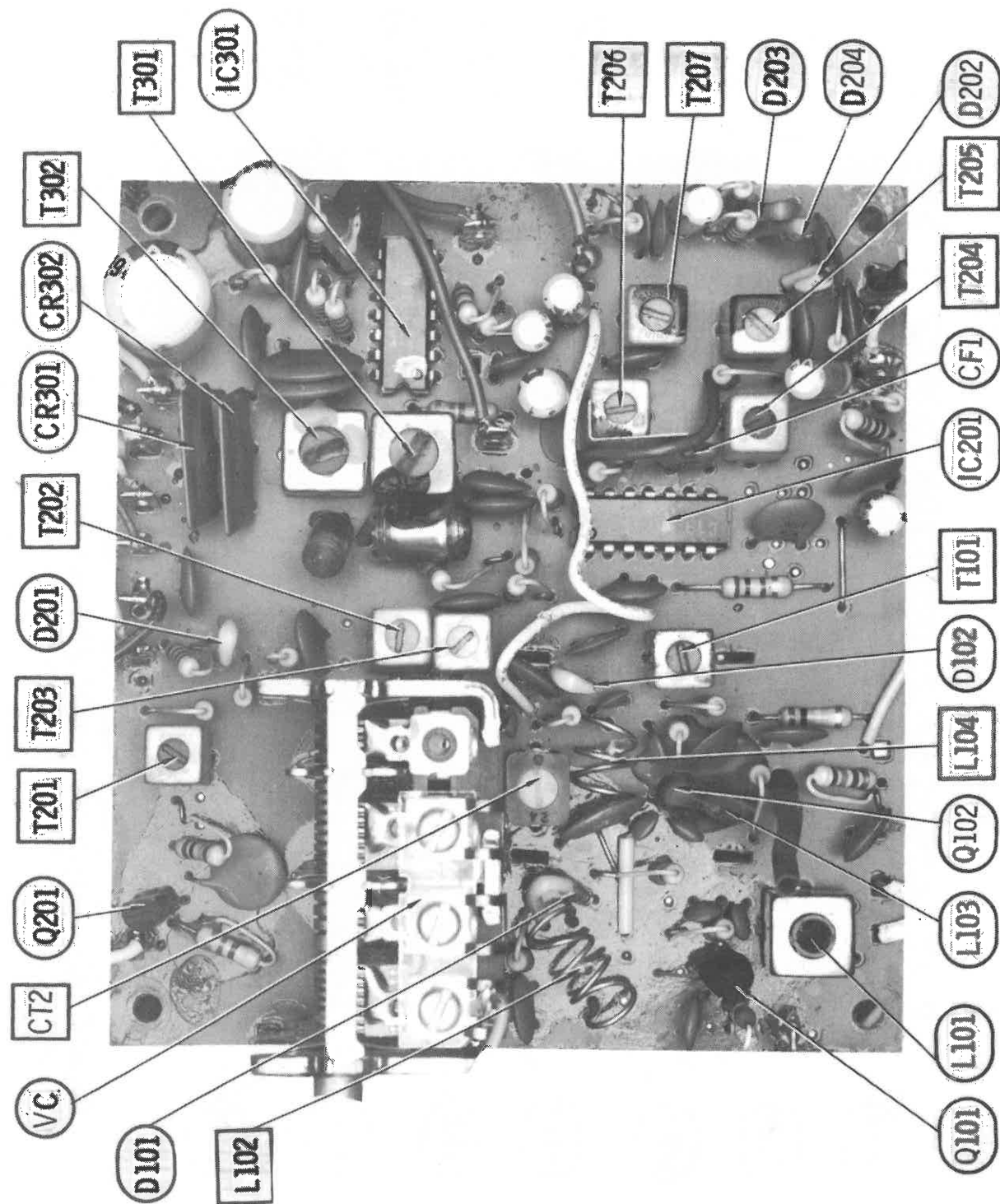
SOUNDESIGN CHASSIS
91033H (Service B)

FOLDER 5

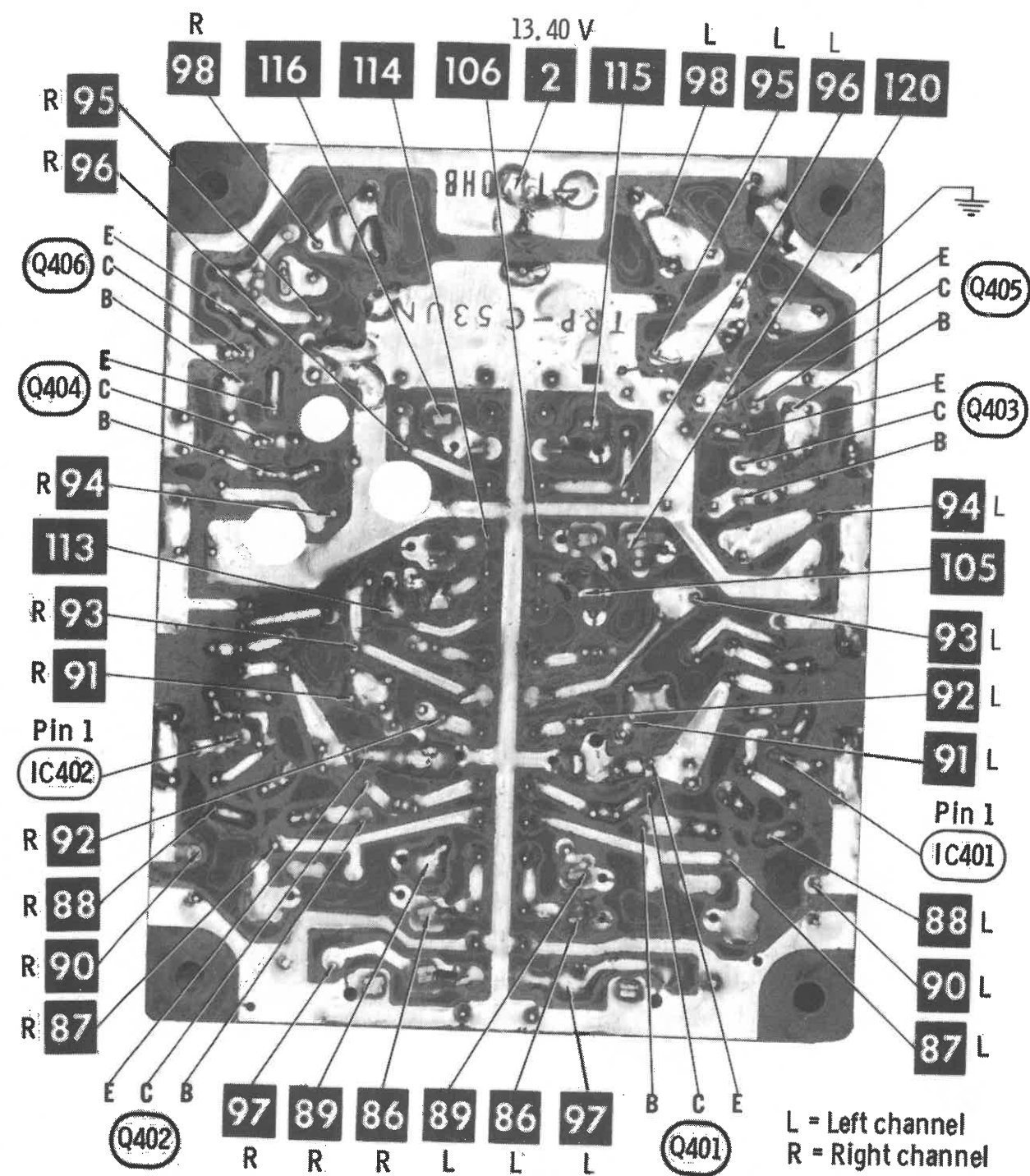
PREAMP BOARD



A Howard W. Sams CIRCUITRACE® Photo OSC BOARD



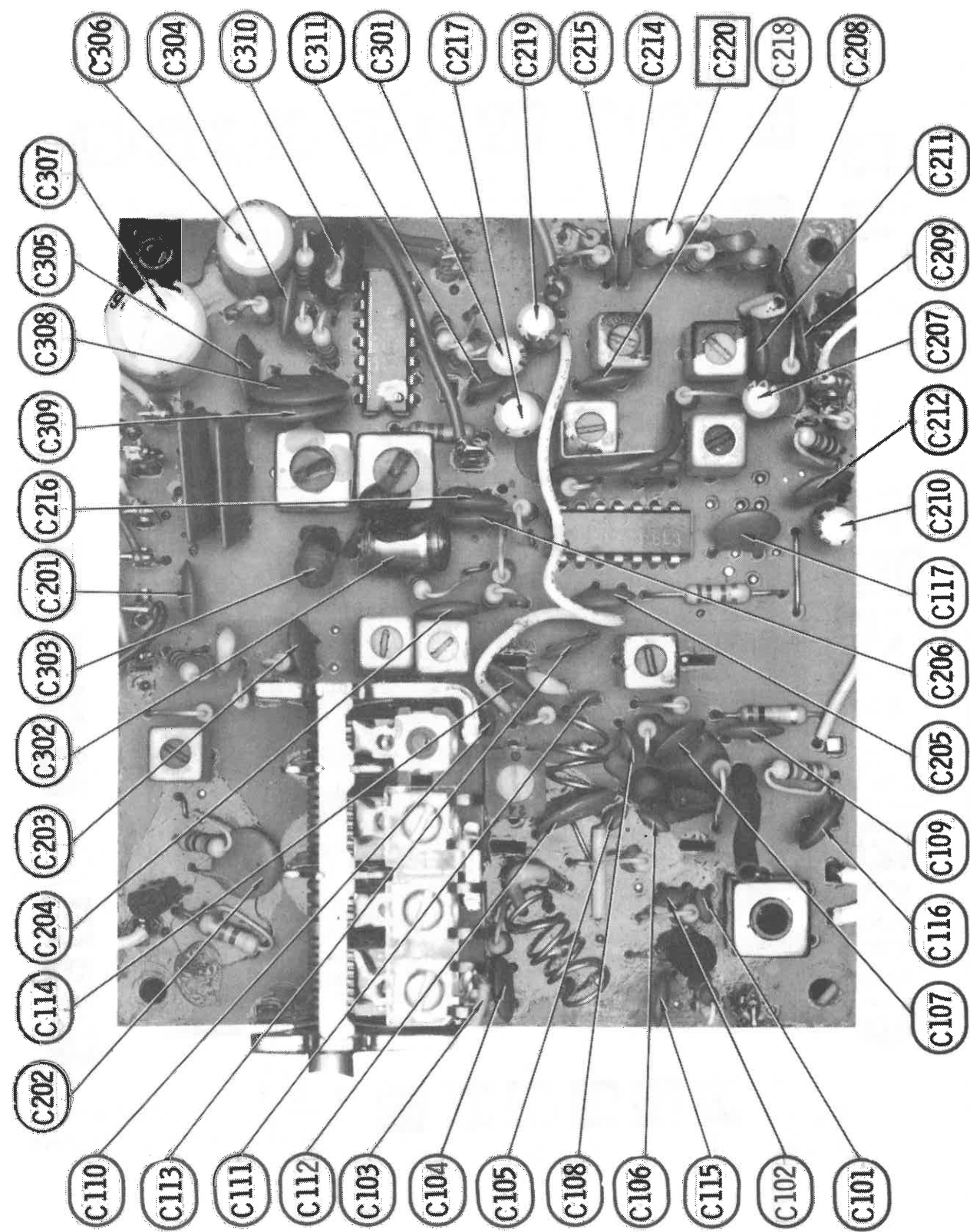
MAIN BOARD



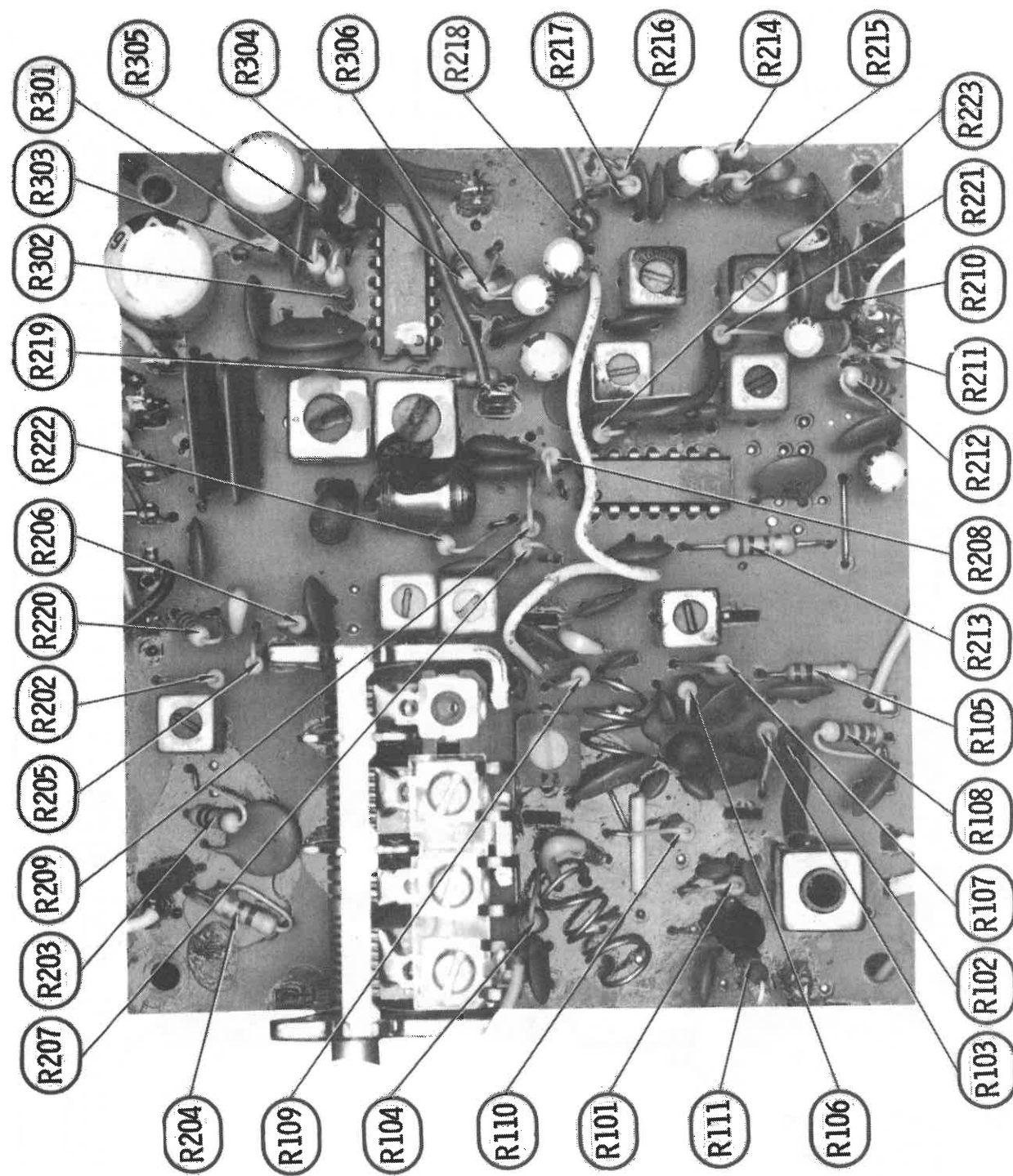
L = Left channel
R = Right channel

A Howard W. Sams CIRCUITRACE Photo PREAMP BOARD

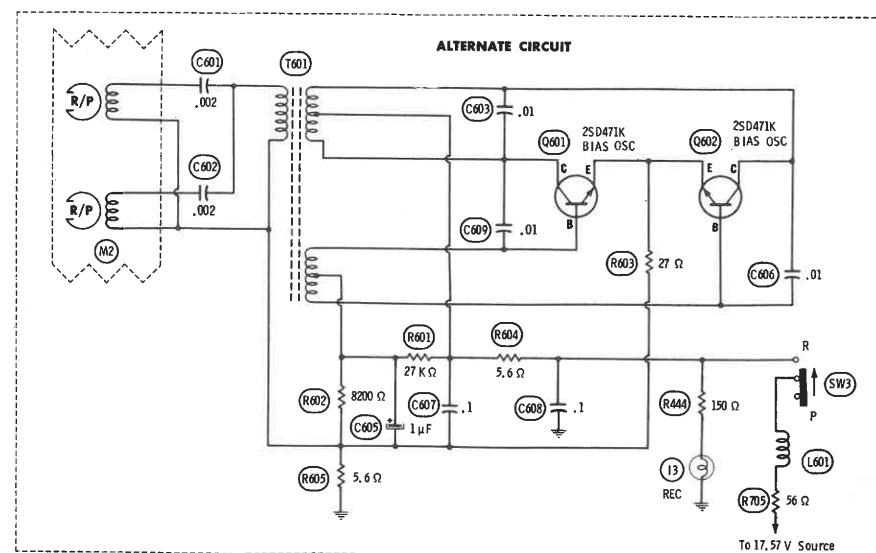
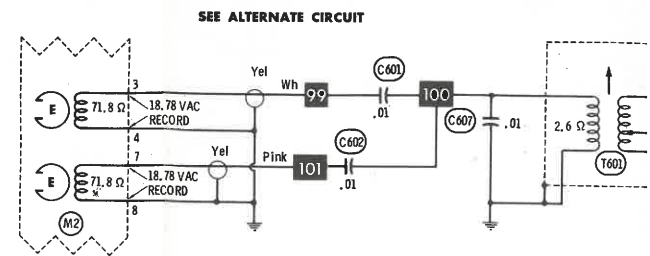
MAIN BOARD



MAIN BOARD



NOTE: DEMAGNETIZE HEADS AFTER SERVICING



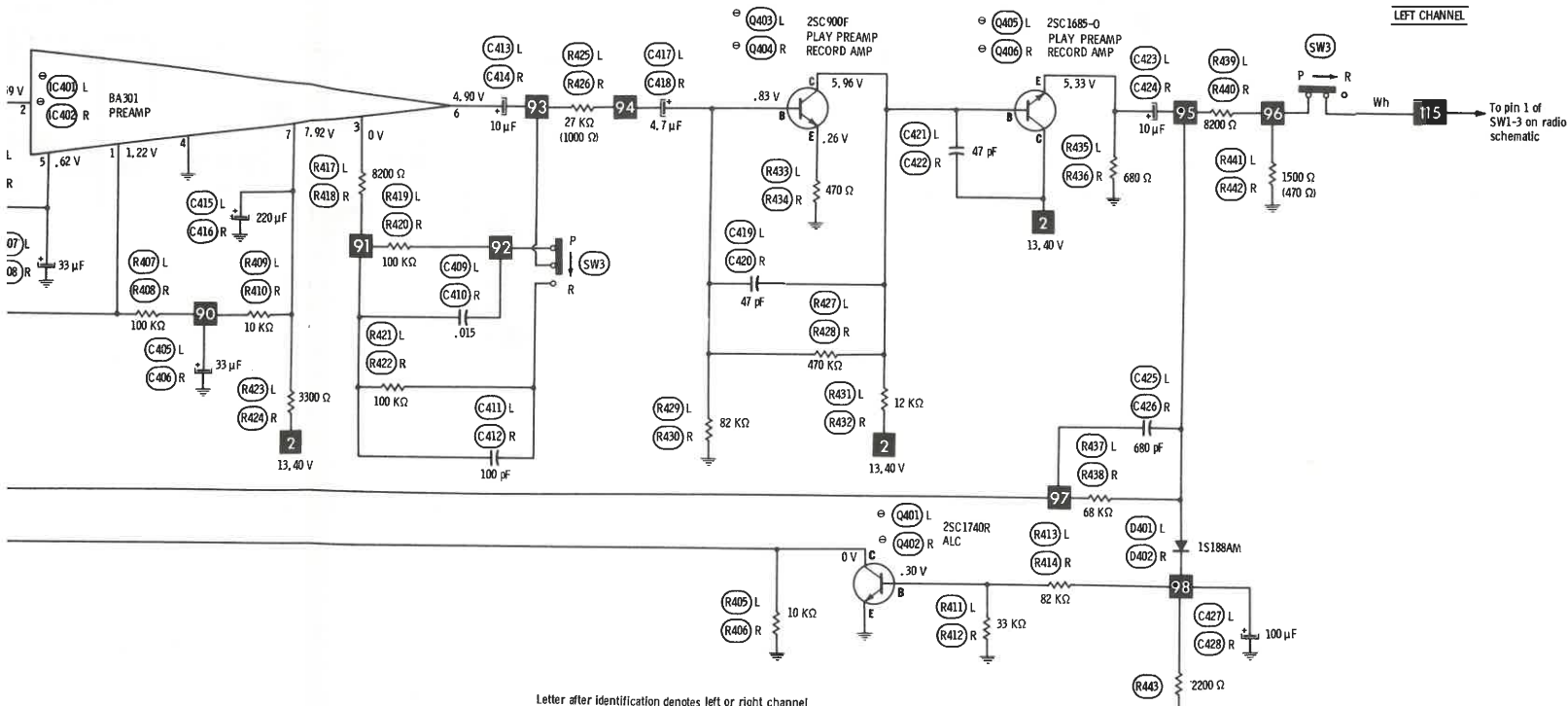
- ✖ Circuitry not used in some versions
- Circuitry used in some versions
- ⊙ See parts list
- ✱ Nominal value
- ⏏ Ground
- chassis Chassis
- ▽ Common tie point

Supply voltage maintained as shown at input.
 Voltages measured with digital meter, no signal.
 Controls adjusted for normal operation.
 Arrow at control indicates direction of advance.
 Terminal identification may not be found on unit.
 Resistors are 1/2W or less, 5% unless noted.
 Value in () used in some versions.

A PHOTOFAC STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE[®]**

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RIGHT CHANNEL - See left channel

