

MODEL SP-8 PREAMPLIFIER

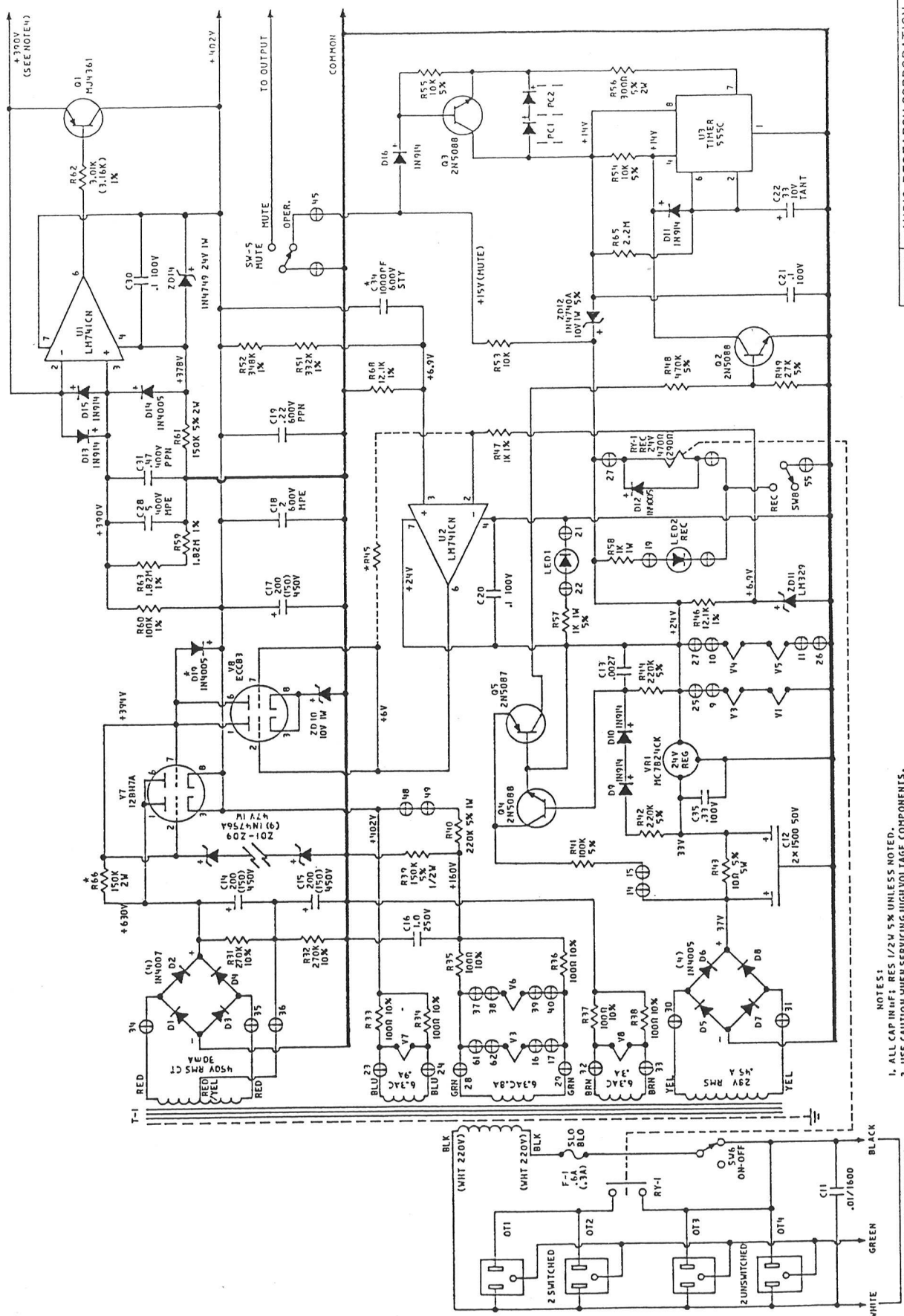
SCHEMATIC & PARTS LIST

7-1-81

Rev. 1 & 2

audio research corporation

6801 SHINGLE CREEK PARKWAY
MINNEAPOLIS, MINNESOTA 55430



PROPRIETARY NOTICE

THE INFORMATION CONTAINED HEREIN IS
CONSIDERED PROPRIETARY BY AUDIO RESEARCH
AND IS FURNISHED ON A CONFIDENTIAL
BASIS FOR IDENTIFICATION PURPOSES ONLY.

1. ALL CAP INDUCT. RES. 1/2W, 5% UNLESS NOTED.
2. USE CAPTION WHEN SPECIFYING HIGH VOLTAGE COMPONENTS.
3. CONTACT WITH STORED ENERGY EVEN WITH POWER OFF COULD BE FETALITIAL.
4. ALL VOLTAGES AT 20VAC, 60Hz LINE.
5. MEASURE DC VOLTAGES THRU ISOGLASSATION RESISTOR TO MINIMIZE CAPACITIVE LOADING EFFECTS.
6. A. EFFECTIVE OCT. 81 SONIC AND RELIABILITY IMPROVEMENT: ADDED C34 AND D19, R66 3W WAS 1/2W. R45 DELETED WAS 100K. LITZ WIRE ADDED.

AUDIO RESEARCH CORPORATION
MINNEAPOLIS, MINNESOTA

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[illegible]

	Schematic
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SP-8 POWER SUPPLY

SP-8 PARTS LIST

COMPONENT	QUAN.	DESCRIPTION	VALUE	RATING	TOL.	ARC PART NO.
V1,2,4,5	4	E83CC Reference				
V3,6	2	6DJ8				32001000
V7	1	12BH7A				32001100
V8	1	EC83/12AX7A				32001200
D1-4	4	IN4007(1N4006)	1A	1000V		32001000
D5-8,12,14,19	7	IN4005	1A	600V		30501000
D9-11,13,15-18	10	IN914		100V		30500900
ZD1-9	9	IN4756A Zener		47V	1W	30503200
ZD10,12	2	IN4740A Zener		10V	1W	30500300
ZD11	1	LN3290Z Zener Ref.		6.9V		31000700
ZD14	1	IN4749 Zener		24V	1W	30502500
LED 1,2	2	LED Green				34300100
Q1	1	M4361 Transistor				30004400
Q2,3,4	3	2N5088 Transistor				30003100
Q5	1	2N5087 Transistor				30003000
RV1	1	Balance Control	100K		10%	45100525
RV2	1	Gain Control	100K		10%	45100523
VR1	1	MC7824CK	24V	LinTaper LogTaper 1A		31001200
U1,U2	1	LM741CN				31000400
U3	1	LM555CN Timer				31000800
PC1,2	2	VTL5C1 Photo Coupler				34400100
R1	2	Metal Film	49.9K	100V	1%	42499403
R2,4,21,23	8	Metal Film	1.82K	1/2W	1%	42182303
R3,7,22,26	8	Metal Film	301K	1/2W	1%	42475503
R5,20,24,67	8	Metal Film	475K	1/2W	1%	42100303
R6,25	4	Metal Film	1.0K	1/2W	1%	42150303
R8	2	Metal Film	1.5K	1/2W	1%	46350401
R9,59,63	4	Metal Film	39K	2W	2%	42182603
R10,60	3	Metal Film	1.82Meg	1/2W	1%	42100503
R11,14-17,19	10	Metal Film	100K	1/2W	1%	42464302
R12,18,30	6	Metal Film	4.64K	1/4W	1%	42511202
R13	2	Metal Film	510	1/4W	1%	42100603
R27	2	Metal Film	1.0Meg	1/2W	1%	46330401
R29(R28)	2	Metal Film	33K	2W	2%	42392403
R31,32	2	Metal Film	39.2K	1/2W	1%	40270505
R33-38	6	Carbon	270K	2W	10%	40270505
R39	1	Carbon	100K	1/2W	10%	41150503
R40	1	Carbon	150K	1/2W	5%	41220504
R41	1	Carbon	220K	1W	5%	41100502
R42,44	2	Carbon	220K	1/4W	5%	41220502
R43	1	Wirewound	10K	5W	5%	43100104
R45	2	Metal Film	100K	1/4W	1%	42100502
R46,68	2	Metal Film	12.1K	1/2W	1%	42121403
R47	1	Metal Film	1K	1/4W	1%	42100302
R48	1	Carbon	470K	1/4W	5%	41470502
R49	1	Carbon				
R50	2	Carbon				
R51	1	Metal Film				
R52	1	Metal Film				
R53,54,55	3	Carbon				
R56	1	Wirewound (M. Film)				
R57,58	2	Carbon				
R61,66	2	Carbon				
R62	1	Metal Film				
R64	1	Metal Film				
R65	1	Carbon				
C1,2,8	6	Dipped Mica				
C3,9	4	Polypropylene				
C4,25	4	Polyester				
C5	2	Dipped Mica				
C6	2	Dipped Mica				
C10,28	3	Polyester				
C11	1	Polyester				
C12	1	Electrolytic				
C13	1	Polyester				
C14,15,17	3	Electrolytic				
C16	1	Polypropylene				
C18	1	Polyester				
C19,32,33	3	Polypropylene				
C20,21,30	3	Ceramic Monolithic				
C22	1	Dipped Tantalum				
C23,24,31	5	Polypropylene				
C26	2	Polypropylene				
C27	2	Dipped Mica				
C29	1	Dipped Mica				
C34	1	Polystyrene				
C35	1	Ceramic Monolithic				
F1	1	Sto-Blo 120V				
T1	1	Transformer				
OT1-4	4	AC Receptacle				
SW1	1	Input Selector Switch				
SW2	1	Tape Monitor Switch				
SW3	1	Mode Switch				
SW5	1	Mute-Operate Switch				
SW6,8	1	On-Off Switch				
RY-1	1	Relay, 24V				
V1-J16	16	Phono Jack				

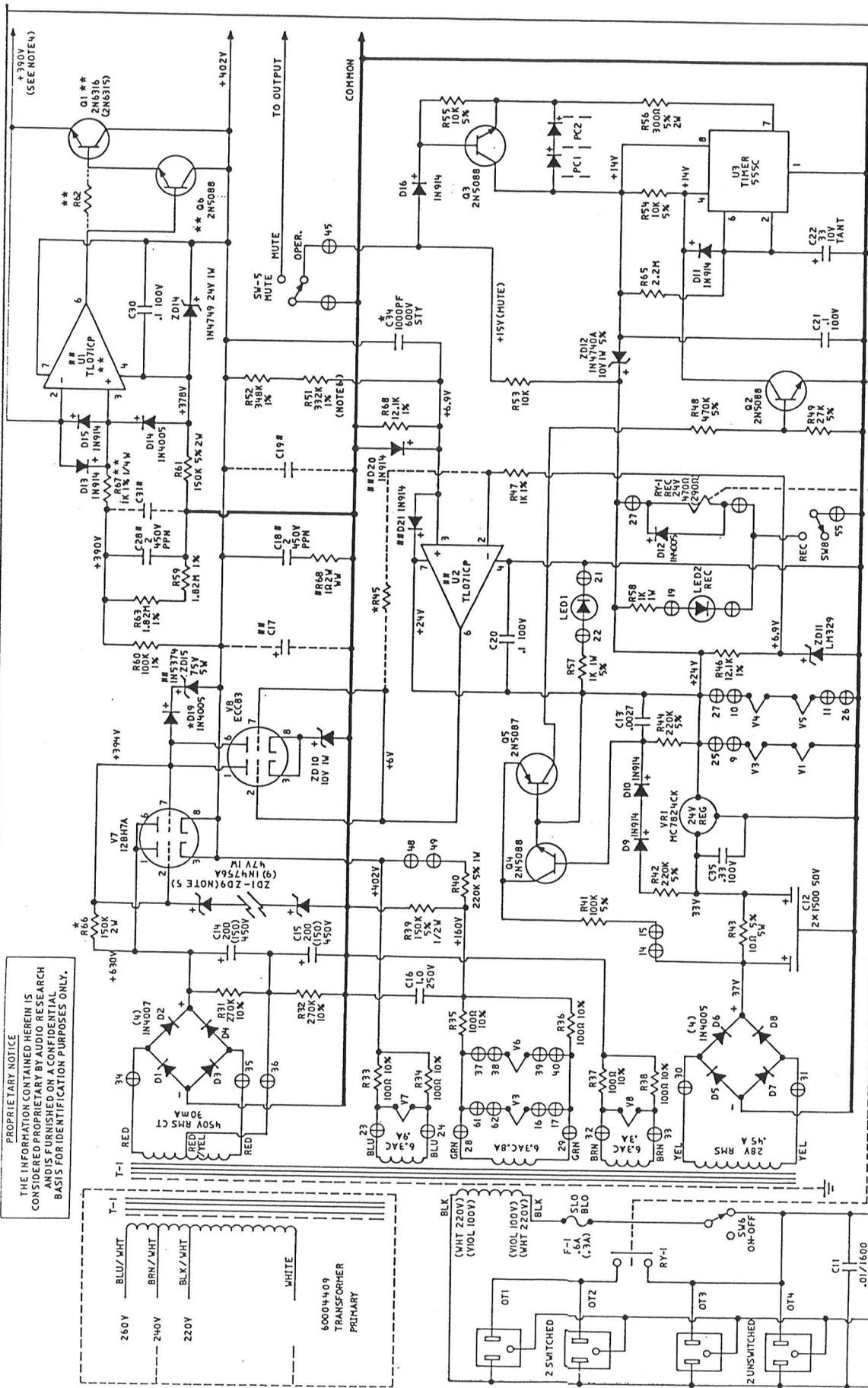
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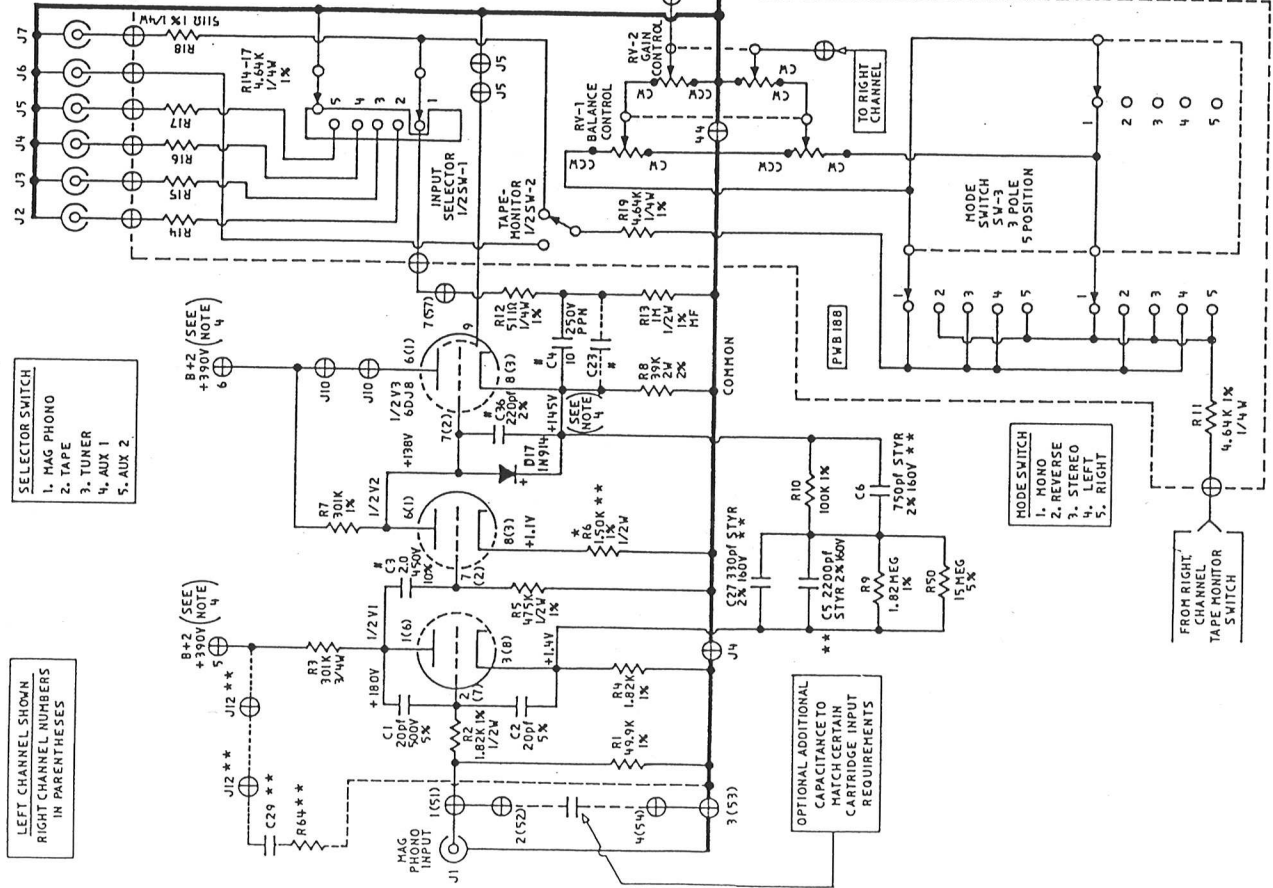


- NOTES:
1. ALL CAP IN 4% RES 1/2W 5% UNLESS NOTED.
 2. USE CAUTION WHEN SERVICING HIGH VOLTAGE COMPONENTS. CONTACT WITH STORED ENERGY EVEN WITH POWER OFF COULD BE LETHAL.
 3. ALL VOLTAGES AT 120VAC 60Hz LINE.
 4. MEASURE DC VOLTAGES THRU ISOLATION RESISTOR TO MINIMIZE CAPACITIVE LOADING EFFECTS.
 5. LEGAL ADDITIONAL IN4756A (10 TOTAL) TO ENSURE AT LEAST 100% YIELD. 100% YIELD WITH 'Y8' REMOVED.
 6. R51 MAY BE 398K OR 331K TO TRIM +402V WITH SOME ZD11.

- * REV 1 OCT '81 SONIC AND RELIABILITY IMPROVEMENT:
ADDED C34 AND D9, R66 2M WAS V24, R45 DELETED
WAS 100K, LITZ WIRE ADDED.
** REV 2 SEP '82 SONIC IMPROVEMENT: ADD 06, R67 DELETED
WAS 100K, LITZ WIRE ADDED.
REL-CAP MAY '82 SONIC IMPROVEMENT: ADD R68, C18 WAS 74F 400V, DELETED
C18 WAS 51F 400V, DELETED C31 WAS 474F 400V, DELETED
C19 WAS 224F 600V.
REV 3 JUL '83 SONIC AND RELIABILITY IMPROVEMENT: ADDED
ZD15, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100, C101, C102, C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C154, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, 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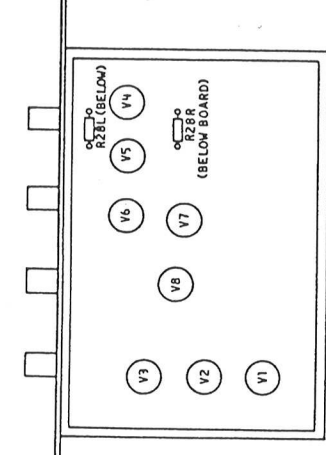
LEFT CHANNEL SHOWN
RIGHT CHANNEL NUMBERS
IN PARENTHESES

SELECTOR SWITCH
1. MAG PHONO
2. TAPE
3. TUNER
4. AUX 1
5. AUX 2



J2 TAPE
J3 TUNER
J4 AUX 1
J5 AUX 2
J6 MONITOR INPUT
J7 TAPE OUTPUT

PROVISION ONLY
RIGHT CHANL



SP-8 TUBE LOCATIONS - (TOP VIEW)

NOTES:
1. TUBES: V1,2,4,5 E83CC REFERENCE DUAL TRIODE (V1 SELECTED LOW NOISE)
V3,6 6DJ8 DUAL TRIODE
FOR BEST SONIC RESULTS, USE ONLY TUBES
SUPPLIED BY AUDIO RESEARCH CORPORATION.
2. ADD R28 39.2K TO CUT GAIN 6dB.
3. MEASURE DC VOLTAGES WITH ZERO SIGNAL.
4. MEASURE DC VOLTAGES THRU 1KΩ ISOLATION RESISTOR
TO MINIMIZE CAPACITIVE LOADING EFFECTS.

* REV 1 OCT'81 SONIC IMPROVEMENT: R6,25 1K WAS 1.5K.
* REV 2 FEB'82 SONIC IMPROVEMENT: R6,25 1K WAS 1.5K.
* REV 3 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 4 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 5 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 6 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 7 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 8 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 9 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.
* REV 10 MAY'82 SONIC IMPROVEMENT: C3 WAS 250PF; C6 WAS 500V; DELETED C29 WAS 50PF; DELETED R4.

PROPRIETARY NOTICE
THE INFORMATION CONTAINED HEREIN IS
CONSIDERED PROPRIETARY BY AUDIO RESEARCH
AND IS FURNISHED ON A CONFIDENTIAL
BASIS FOR IDENTIFICATION PURPOSES ONLY.

AUDIO RESEARCH CORPORATION			
MINNEAPOLIS, MINNESOTA			
TOLERANCES UNLESS OTHERWISE SPECIFIED	RESISTORS	CAPACITORS	PERCENTS
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

910079-10 B

SP-8 PREAMPLIFIER
SCHEMATIC & PARTS LIST

Rev. E
4-4-84

audio research corporation

6801 SHINGLE CREEK PARKWAY
MINNEAPOLIS, MINNESOTA 55430

[illegible]

4-4-34
RDL

7. REV 5, DEC. 8, 1983, CORRECTION TO ACTIVATE LOW LINE VOLTAGE MUFING. (R41 WAS INCORRECTLY CONNECTED TO C35.) (NEW CIRCUIT BOARD PWB247).

SP-8 PARTS LIST

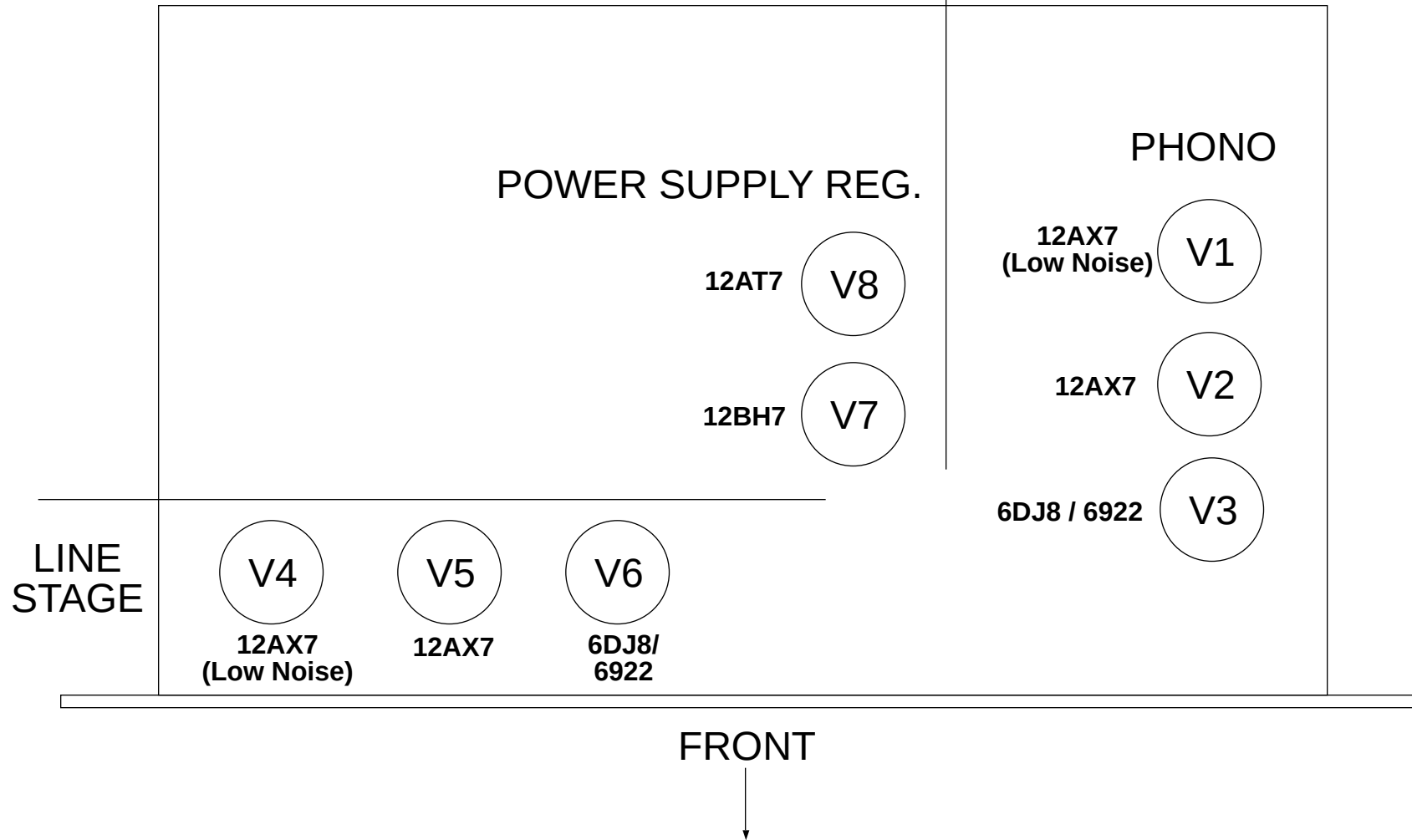
COMPONENT	QUAN.	DESCRIPTION	VALUE	RATING	TOL.	ARC PART NO.
V1,2,4,5	4	EC83AR				32001300
V3,6	2	6D3H				32001100
V7	1	12B7A				32001200
V8	1	12A7				32000900
D1-4	4	1N4006	1A	800V		30502200
D5-8,12,19	6	1N4005	1A	600V		30500400
D9,10,11,14,16	7	1N914		100V		30500900
20,21						
ZD1-8	8	1N4756A Zener	47V	1W		30503200
ZD10,14	2	1N5359A Zener	24V	5W		30503500
ZD11	1	1N4329D Zener Ref.	6.9V			31000700
ZD12	1	1N4740A Zener	10V	1W		30500300
ZD15,16	2	1N5374A Zener	75V	5W		30502900
ZD17	1	Z20 Zener	20V	1W		30503700
LED1,2	2	LED Green				34300100
Q2,3,4	3	2N5088 Trans	NPN			30003100
Q5	1	2N5087 Trans	PNP			30003000
Q6	1	D40K1 Trans	Dar1 NPN			30005200
Q7	1	TIP41 Trans				30005000
Q12, 13	4	2N5462 FET	P-Chan			30005900
RV1	1	Balance Control	100K	LinTaper	10%	45100525
RV2	1	Gain Control	100K	LogTaper	10%	45100528
VR1	1	MC7824CK	24V	1A		31001200
U1,2	2	TL071CP Op Amp				31001900
U3	1	LM555CN Timer				31000800
PC1,2	2	VTL5C1 Photocoupler				34400100
R1	2	Metal Film	49, 9K	1/2W	1%	42499403
R2	2	Metal Film	2.37K	1/4W	1%	42237302
R3,7,22,26	8	Metal Film	1.82K	1/2W	1%	42182303
R4,23	4	Wirewound	300K	0.2W	1%	43300501
R5,20,24,29	8	Wirewound	1.8K	1W	1%	43182300
R6,25	4	Metal Film	475K	1/2	1%	42475503
R8	2	Wirewound	1.5K	2W	1%	43150302
R9,47,59,63	5	Wirewound	40K	5W	3%	43400400
R10,60	3	Metal Film	1.82Meg	1/2W	1%	42182603
R11,14-17,19	10	Metal Film	100K	1/2W	1%	42100503
R12,18,62,85	7	Metal Film	4.64K	1/4W	1%	42464302
R13	2	Metal Film	511	1/4W	1%	42511202
R21	2	Metal Film	1Meg	1/2W	1%	42100603
R27	2	Metal Film	1.82K	1/2W	1%	42182303
R28	2	Wirewound	2.70K	2W	1%	43270301
R31,32	2	Metal Film	6.98K	1/2W	1%	42698303
R33,35-38	5	Carbon	270K	2W	10%	40270505
R39	1	Carbon	100	1/2W	10%	40100203
R40	1	Carbon	150K	1/2W	5%	41150503
R41	1	Carbon	270K	1W	5%	41270504
R42,44	2	Carbon	100K	1/4W	5%	41100502
R43	1	Carbon	220K	1/4W	5%	41220502
R46	1	Wirewound	10	5W	5%	43100104
R48	1	Metal Film	4.99K	1/2W	1%	42499303
R49	1	Carbon	470K	1/4W	5%	41470502
R50	2	Carbon	27K	1/4W	5%	41270402
R51	1	Carbon	15Meg	1/2W	5%	41150703
R52	1	Metal Film	332K	1/2W	1%	42332503
R53-55	3	Metal Film	348K	1/2W	1%	42348503
		Carbon	10K	1/4W	5%	41100402

NOTE: Resistor values are in "ohms" except "K" = x 1,000; "Meg" = x 1,000,000

SP-8 PARTS LIST

COMPONENT	QUAN.	DESCRIPTION	VALUE	RATING	TOL.	ARC PART NO.
R56	1	Wirewound (M. Film)	300	2W	5%	43300200
R57,58	2	Carbon	1K	1W	5%	41100304
R61	1	Wirewound	100K	7W	5%	43100500
R65	1	Carbon	2.2Meg	1/4W	5%	41220602
R66	1	Metal Film	150K	2W	2%	46150500
R67	1	Wirewound	1.0	2W	5%	43100002
R68	1	Metal Film	12.1K	1/2W	1%	42121403
R70,71,86,87	6	Metal Film	1K	1/4W	1%	42100302
R72,73,88,89	2	Metal Film	1K	1/2W	1%	42100303
R83	6	Wirewound	33K	5W	1%	43330400
C1	2	Polystyrene	56pF	630V	2.5%	53560102
C2,8	4	Polystyrene	20pF	630V	5%	53200101
C3,18,28	4	Polystyrene	20pF	630V	5%	53200101
C4,10	4	Polypropylene	2uF	450V	10%	53200602
C5	4	Polypropylene	10uF	250V	10%	53100700
C6	2	Polystyrene	220pF	160V	2.5%	53220302
C7,20,21,23	2	Polystyrene	750pF	160V	2.5%	53750200
24,30,44	9	Polypropylene	.22uF	100V	10%	53220506
C9	2	Polypropylene	.47uF	450V	10%	53470509
C11	1	Polyester	.01uF	1600V	10%	53100403
C12,35	2	Electrolytic	1000uF	40V		50100904
C13	1	Polyester	.0027uF	200V	10%	53270301
C14,15	2	Electrolytic	100uF	450V		50100802
C16	1	Electrolytic	10uF	150V		50100703
C17,31,40-43,45	12	Polystyrene	.015uF	630V	5%	53150404
C22	1	Tantalum	33uF	10V	10%	51330700
C27	2	Polystyrene	330pF	160V	2.5%	53330200
C34	1	Polystyrene	1000pF	630V	5%	53100301
F1	1	Fuse, S10-B10	0.6A	250V		34500220
T1	1	Transformer	0.3A	250V		34500120
		Transformer		120V		60004402
		Transformer		100V		60004403
		AC Receptacle		240V		60004409
OT1-4	4	Input Selector Sw.	2Pole			23201300
SW1	1	Tape Monitor Sw.	DPDT	5Position		24001000
SW2	1	Mode Switch	3Pole	Gold		24100400
SW3	1	Mute-Operate Sw.	DPDT	Gold		24000700
SW5	1	On-Off Switch	DPDT	Gold		24100400
SW6	1	Receptacle Sw.	DPDT	Silver		24100700
SW8	1	Relay 24V	SPST	Silver		24100700
RY1	1	Phono Jack		N.O.		64100600
J1-J16	16					23201000

SP-8 (Rev D-E) MKII Tube Diagram



SP-8 Rev 1-3 (Early Version)

TUBE LOCATIONS:

(Low Noise 12AX7 Tubes go in V1 & V4 locations)

