

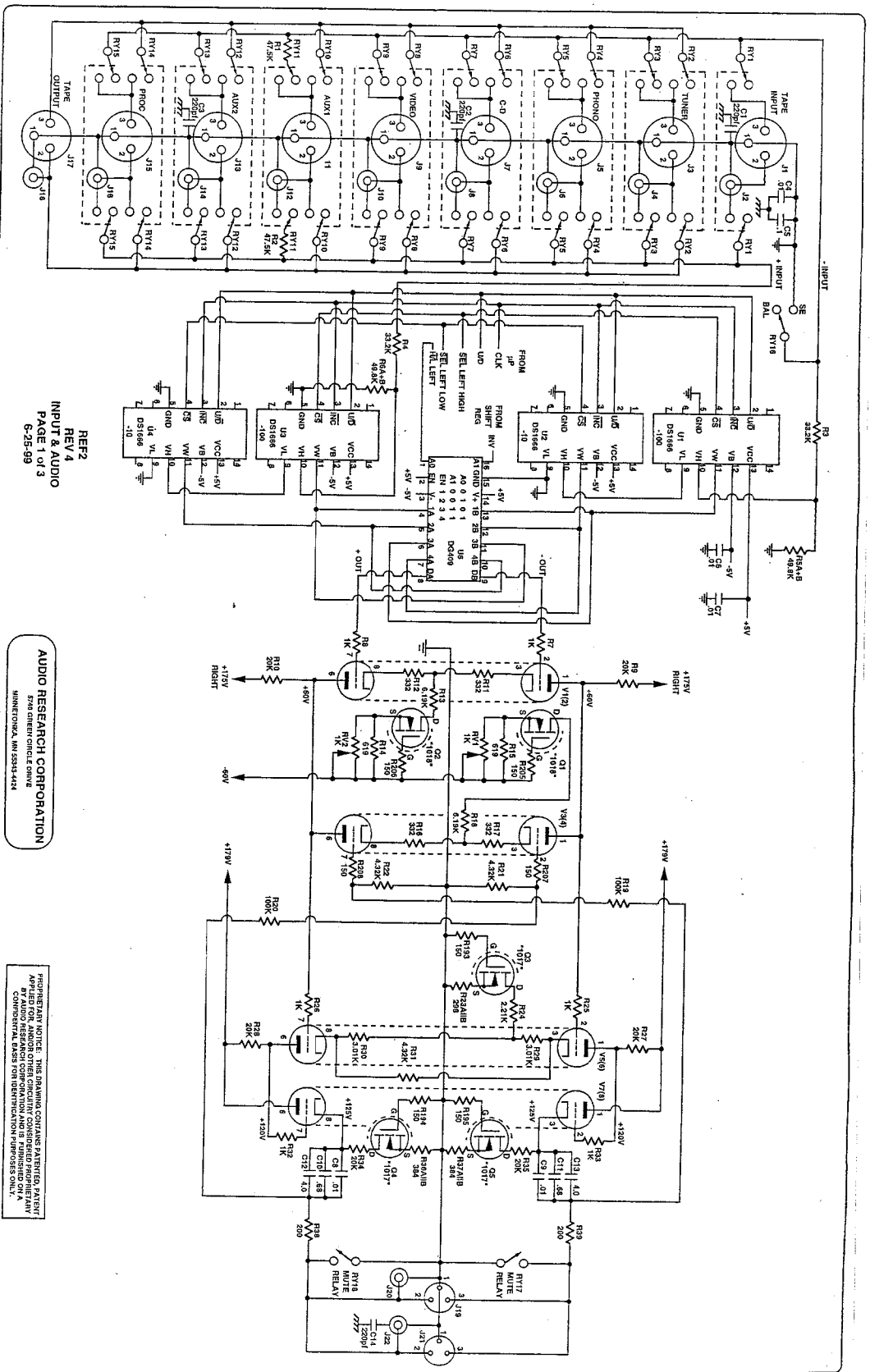
audio research

HIGH DEFINITION®

5740 GREEN CIRCLE DRIVE / MINNETONKA, MINNESOTA 55343-4424 / PHONE 612/939-0600 FAX 612/939-0604

REF2 SCHEMATIC

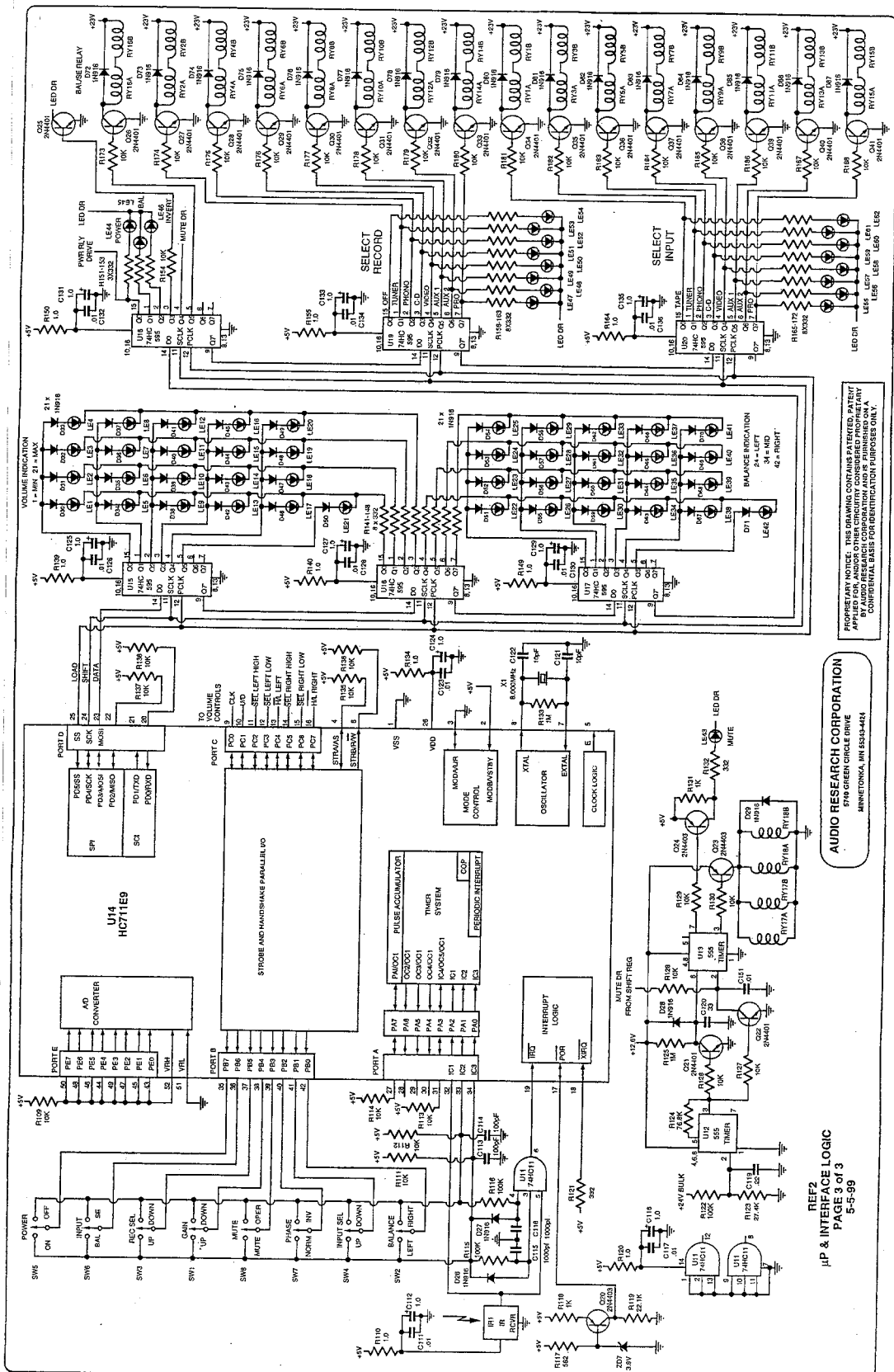
AND PARTS LIST



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AUDIO RESEARCH CORPORATION
5745 CENTER CIRCLE DRIVE
MINNETONKA, MN 55345-4244

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AUDIO RESEARCH CORPORATION
 5710 GREEN CIRCLE DRIVE
 AMHURST, MA 01931-4424

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PARTS LIST

AS of DEC 29 99

PRODUCT: REF2

Schematic Symbol	Quantity	ARC Part #	Description
C CAPACITORS			
C1,2,3,14	8	52220200	CAP., 220pf 200V ±10%
C4,6,7,61,89-96,102,111,117,123,126	25	52100400	CAP., .01µf 200V ±10%
C 128,130,132,134,136,151			
C5,62,103	4	52100500	CAP., 0.1µf 100V ±20%
C8,9	4	53100415	CAP., .01µF 630V (M) INFINI
C10,11	4	53680507	CAP., .68µF 425V (M2A) INFINI
C12,13	4	53400604	CAP., 4.0µF 20% 425V Mag
C15,16	2	53470305	CAP., 4700pF ±20% 250V or 275V
C17	1	52200400	CAP., .02µF 300VAC/2000VD 20%
C18,25	8	53100407	CAP., .01µf ±20% 250V
C26	1	50470703	CAP., 47µF 250V
C27,28,29	3	50470807	CAP., 470µF 450V "LYTIC"
C30,31,84	3	50120801	CAP., 120µF 450V "LYTIC"
C32-36	5	53200602	CAP., 2µF ±10% 450V
C37-41,87,88,104	9	53100412	CAP., .01µF ±10% 600V RTX
C42,53,54,63	4	50470901	CAP., 4700µF 35V
C43,55,64,99,145	4	50220702	CAP., 22µF 50V "LYTIC"
C44,47,52,56,59,65,68,71,73,100,105	17	53220507	CAP., .22µf ±10% 160V
C 107,108,110,119,138,141			
C45,48,57,60,66,69,74,101,106,139,143	15	53100410	CAP., .01uf ±10% 400V
C 144,148,149			
C46,47,72,109,137,154	6	53100606	CAP., 1.0µf ±10% 250V
C49	1	50470704	CAP., 47µF "MUSE"
C50	1	53100610	CAP., 1.0µF ±10% 400V PPMF
C51	1	53560201	CAP., 560pF ±2.5% 630V
C67,112,118,124,125,127,129,131,133	10	50100601	CAP., 1µF 50V "LYTIC"
C 135			
C70	1	50220701	CAP., 22µF 100V
C75	1	53270101	CAP., 27pf ±1pf 630V PNP
C76,78,79,81	4	53100508	CAP., .1µF 250V WIMA
C82,83	2	50470809	CAP., 470µF 250V
C85,86	3	53200603	CAP., 2µF ±10% 250V
C97	1	50100913	CAP., 1000µF 16V "LYTIC"
C98	1	50330801	CAP., 330µF 16V "LYTIC"
C113,114	2	52100200	CAP., 100pf 200V ±10%
C115,116	2	52100301	CAP., 1000pf 200V ±10% CER RAD
C120	1	51330702	CAP., 33µf 16V ±10%
C121,122	2	52100100	CAP., 10pf 200V ±10% CER. RAD.
C140	1	53470509	CAP., .47µf ±10% 450V
C142,146,147,149,157,158	6	53220507	CAP., .22µf ±10% 160V
D DIODES			
D1-12	12	30501500	IN5400
D13-16	4	30502200	IN4006
D17-24	8	30500400	IN4005
D25-88	64	30500910	1N916B
F FUSES			
F1	1	34500404	(B)FUSE, 3 AMP MDQ BUSSMAN
F2	1	34500102	(B)FUSE, 1/4 AMP 250V

PARTS LIST

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Schematic Symbol	Quantity	ARC Part #	Description
IR			IR RECEIVERS
IR1	1	34100100	MODULE, IR RECEIVER
J			CONNECTORS
J1,3,5,7,9,11,13,15	16	23201960	CONNECTOR, XLR FEM. #NC3FD-V-B
J2,4,6,8,10,12,14,16,18,20,22	11	23201509	JACK, CHASSIS RED
J2,4,6,8,10,12,14,16,18,20,22	11	23201510	JACK, CHASSIS WHITE
J17,19,21	6	23201965	CONNECTOR, XLR MALE #NC3MD-V-B
L			INDUCTORS
L1-9	9	61000160	CHOKE, 2.7 μ H \pm 10%
LE			PANEL INDICATOR
LE1-62	62	34300300	L.E.D., GREEN SPOT LTL-1234A
Q			TRANSISTORS
Q1,2	4	30011019	FET, GREEN WHITE WHITE
Q3,4,5	8	30011017	FET, GREEN/WHITE/VIOLET
Q6	1	30006761	FET, ORANGE YELLOW BROWN
Q7	1	30006407	FET, BLUE VIOLET
Q10,19,21,22,25-42	22	30002800	TRANSISTOR, 2N4401
Q11,20,23,24,43	5	30002900	TRANSISTOR, 2N4403
Q12,18	2	30008011	FET, GREEN GREEN
Q13,15	2	30011021	FET, GREEN GREEN BROWN
Q14,17	2	30006428	FET, GRAY GRAY
Q16	1	30011022	FET, GREEN GREEN RED
R			RESISTORS
R1,2	4	42475402	RES., 47.5K Ω MK-2 1% 50 PPM
R3,4	4	49332413	RES., 33.2K Caddock
R5A,5B,6A,6B	8	49249413	RES., 24.9K Caddock
R7,8,25,26,32,33,78	13	42100314	RES., 1K Ω MK-5 1% 50PPM
R9,10,27,28,34,35	12	42200414	RES., 20K Ω MK-5 1% 50PPM
R11,12,16,17,121,132,141-148,151-153	37	42332202	RES., 332 Ω MK-2 1% 50PPM
R 156-163,165-172			
R13,18	4	42619314	RES., 6.19K Ω MK-5 1% 50PPM
R14,15	4	42750202	RES., 750 Ω MK-2
R19,20	5	42100503	RES., 100K Ω MK-3 1% 50PPM
R21,22,31	6	42432302	RES., 4.32K MK-2
R23A	2	42357203	RES., 357 Ω MK-3 1% 50PPM
R23B	2	42182303	RES., 1.82K Ω MK-3 1% 50PPM
R24	2	42221302	RES., 2.21K Ω MK-2 1% 50 PPM
R29,30	4	49301303	RES., 3.01K 1% HOLCO H4
R36A,37A	4	42392202	RES., 392 Ω MK-2 1% 50PPM
R36B,37B,105	5	42187402	RES., 18.7K Ω MK2 1% 50PPM
R38,39,95A,95B	6	42200205	RES., 200 Ω MK8 1% 50PPM
R40,41,190	3	42100203	RES., 100 Ω MK-3 1% 50PPM
R42,46,86-88	8	42549103	RES., 54.9 Ω MK-3 1% 50PPM
R47,79	2	42100505	RES., 100K Ω MK-8 1% 50PPM
R48	1	42825405	RES., 82.5K Ω MK-8 1% 50PPM
R49,65,106	3	43100006	RES., 1.0 Ω 3W PRC
R51	1	42681303	RES., 6.81K Ω MK-3 1% 50PPM
R52,68,70	3	42237303	RES., 2.37K Ω MK-3 1% 50PPM

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Schematic Symbol	Quantity	ARC Part #	Description
R53,69,71	3	42261203	RES., 261Ω MK3 1% 50 PPM
R54A,54B	2	43100103	RES., 10Ω 3W 5%
R55,118,131	3	42100302	RES., 1KΩ MK-2 1% 50 PPM
R56	1	42475502	RES., 475KΩ MK-2 1% 50PPM
R57,60	2	42475203	RES., 475Ω MK-3 1% 50PPM
R58,59	2	42499102	RES., 49.9Ω MK-2 1% 50PPM
R61	1	43300001	RES., 3Ω 6.5W ±5% W.W.
R62	1	42182503	RES., 182KΩ MK-3 1% 50PPM
R63	1	42681203	RES., 681Ω MK-3 1% 50PPM
R64A,64B	2	42130503	RES., 130KΩ MK-3 1% 50PPM
R66,107	2	42301303	RES., 3.01KΩ MK-3 1% 50PPM
R67,73,94,108	4	42205203	RES., 205Ω MK-3 1% 50PPM
R72	1	42750405	RES., 75KΩ MK-8 1% 50PPM
R74,82,85	3	42100603	RES., 1 MEG MK-3 1% 50PPM
R75,91,92,99,100,104	6	42100403	RES., 10KΩ MK-3 1% 50PPM
R76	1	42698303	RES., 6.98KΩ MK-3 1% PPM
R77A	1	42332203	RES., 332Ω MK-3 1% 50PPM
R77B,191,192	3	42100303	RES., 1KΩ MK-3 1% 50PPM
R80,83	2	42392403	RES., 39.2KΩ MK-3 1% 50PPM
R89,90	2	42511203	RES., 511Ω MK-3 1% 50PPM
R93	1	42619203	RES., 619Ω MK-3 1% 50PPM
R96	1	42392302	RES., 3.92KΩ MK-2 1% 50 PPM
R97	1	42499303	RES., 4.99KΩ MK-3 1% 50PPM
R98	1	42127302	RES., 1.27KΩ MK-2 1% 50PPM
R101	1	42237302	RES., 2.37KΩ MK-2 1% 50PPM
R102	1	42130403	RES., 13KΩ MK-3 1% 50PPM
R103A	1	42619403	RES., 61.9KΩ MK-3 1% 50 PPM
R103B	1	42143503	RES., 143KΩ MK-3 1% 50PPM
R109-114,126-130,135-138,154,173-188	32	42100402	RES., 10KΩ MK-2 1% 50 PPM
R110,120,134,139,140,149,150,155,164	10	42100002	RES., 1Ω MK-2 1% 50 PPM
R119	1	42221402	RES., 22.1KΩ MK-2 1% 50 PPM
R123	1	42274403	RES., 27.4KΩ MK-3 1% 50PPM
R124	1	42768403	RES., 76.8KΩ MK-3 1% 50PPM
R125,133	2	42100602	RES., 1 MEG MK2 1% 50PPM
R189	1	42511303	RES., 5.11KΩ MK-3 1% 50PPM
R193-208	25	42150203	RES., 150Ω MK-3 1% 50PPM
		RV	CONTROLS
RV1,2	4	45100302	POT., TRIM 1KΩ #POT2103P-1-102
		RY	RELAYS
RY1-16	32	64101600	RELAY, 12VDC
RY17,18	4	64101000	RELAY, 12V REED S1P 1200Ω
RY19	1	64101200	RELAY, 24V POWER ON
		SW	SWITCHES
SW1-4	4	24003300	SWITCH, UP-DOWN REF1-2
SW5-8	4	24102600	SWITCH, MOMENTARY REF1/2/LS25

PARTS LIST

As of DEC 29 99

PRODUCT: REF2

Schematic Symbol	Quantity	ARC Part #	Description
T TRANSFORMERS			
T1	1	60016314	XFR., HV POWER REFFPHONO/2
T2	1	60009400	(B)XFR., 5 VOLT 120V.
U INTEGRATED CIRCUITS			
U1,3	4	31008101	POT., DIGITAL 100KΩ DS1666-100
U2,4	4	31008111	POT., DIGITAL 10KΩ DS1666-10
U5	2	31003820	DUAL ANALOG SWITCH DG409DJ
U6,8,10	3	31004000	REGULATOR, VOLTAGE ADJ POS.
U7	1	31004700	REGULATOR, VOLTAGE ADJ. NEG.
U9	1	31002210	OP-AMP, OP176GP
U11	1	31007400	TRIPLE 3-INPUT & GATE, 74HC11N
U12,13	2	31000800	TIMER, NE555N
U14	1	31006900	(Q)MICROCONTROLLER
U15-20	6	31006800	REGISTER, LATCH
V VACUUM TUBES			
V1-8,11	9	32001162	(B)TUBE, 6922 SILVER TESTED
V9	1	32001800	(B)TUBE, 5AR4-C
V10	1	32000420	(B)TUBE, SV6L6GC
X CRYSTALS			
X1	1	27000060	CRYSTAL, 8MHZ #CTX082ND
ZD ZENER DIODES			
ZD1,3,4	3	31000705	FET, GREEN
ZD2,5,6	3	30504400	IN5240B
ZD7	1	30505300	ZENER, 3.9V BZX79-C3V9RL
ZD8	1	30503800	DIODE, ZENER IN5274B
ZD9	1	30505200	(B)ZENER, 5.1V BZX79-C5V1RL