

SCHEMATIC DIAGRAMS AND PARTS LIST

BK PRECISION 1590A

100 MHz QUAD-TRACE OSCILLOSCOPE

PARTS LIST

SCHEMATIC SYMBOL	DESCRIPTION	DYNASCAN PART NUMBER
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MAIN CHASSIS (Y70-1461-61)

RESISTORS

Unlisted resistors are $\pm 5\%$, 1/6 or 1/4 W. See schematic diagram for value.

VR1, 2	Dual 1 k Ω Potentiometer, CH 1/CH 3 or CH 2/CH 4 POSITION Control	008-482-9-001
VR3, 4	Part of VERTICAL ATTENUATOR UNIT, CH 1 or CH 2 VARIABLE Controls	
VR5	Dual 5 k Ω Potentiometer with rotary switch, TRACE SEP/HOLDOFF Control	008-406-9-003
VR6	Dual 5 k Ω Potentiometer with push/pull switch, HORIZONTAL POSITION Control	008-406-9-002
VR7	1 k Ω Potentiometer, DELAY TIME MULT Control	008-406-9-004

CAPACITORS

C1, 2	0.047 μ F $\pm 10\%$, 630 V, Metal Film	033-042-9-003
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INDICATORS

D1	LED, Red, CH 1 UNCAL Indicator	158-039-9-001
D2	LED, Green, CH 1 X5 GAIN Indicator	158-039-9-002
D3	LED, Red, CH 2 UNCAL Indicator	158-039-9-001
D4	LED, Green, CH 2 X5 GAIN Indicator	158-039-9-002
D5, 6	LED, Green, A TRIG'D, B TRIG'D Indicator	158-039-9-002
D7	LED, Red, A SWEEP UNCAL Indicator	158-039-9-001
D8	LED, Red, POWER Indicator	400-072-9-001

SWITCHES

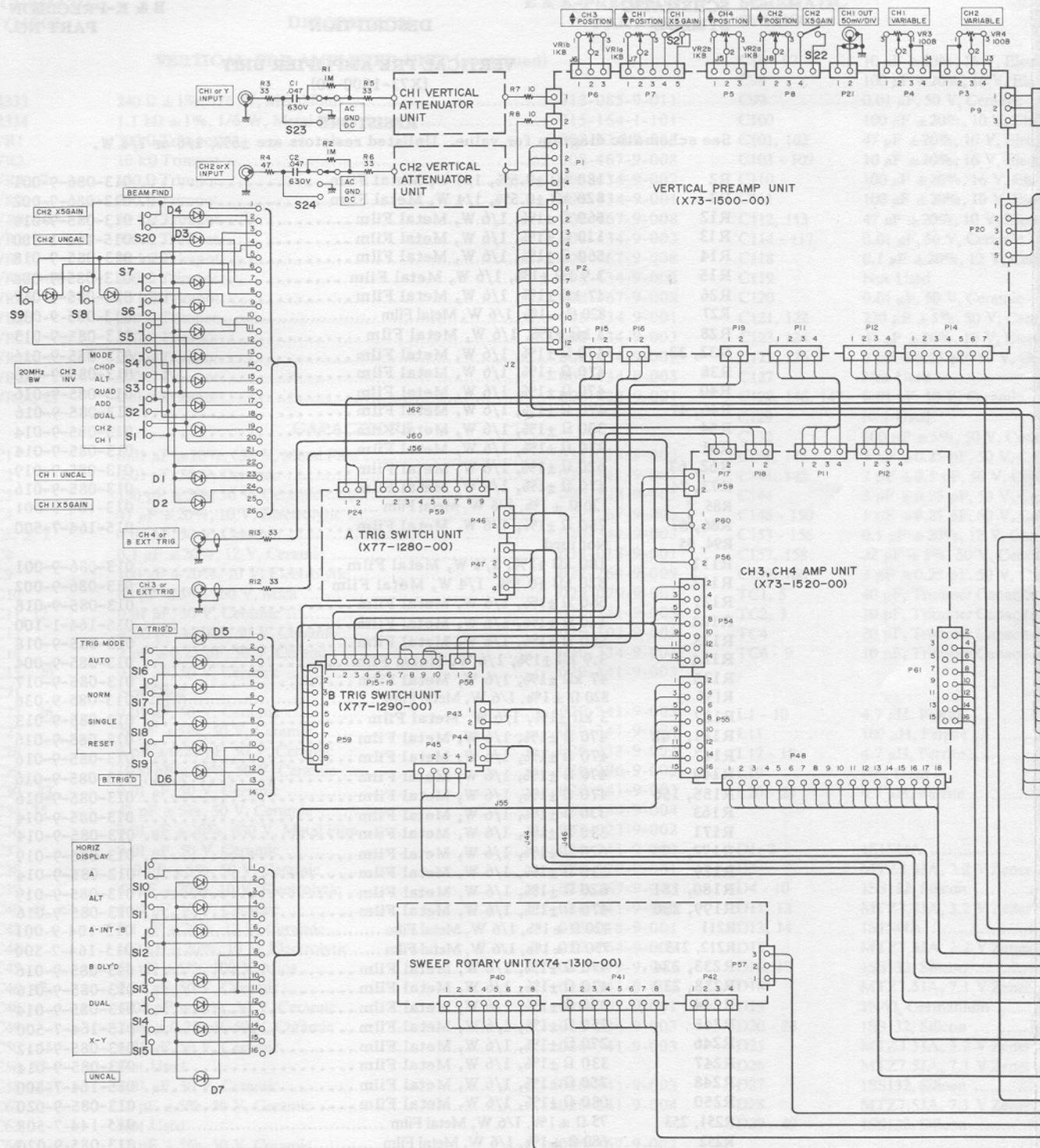
S1 - 19	Pushbutton Switch Vertical MODE, HORIZ MODE, TRIG MODE, 20 MHz BW, CH 2 INV (19 used)	088-069-9-002
S20	Pushbutton Switch BEAM FIND	088-069-9-003
S21, 22	Part of VERTICAL ATTENUATOR UNIT	
S23, 24	Lever Switch, CH 1 or CH 2 INPUT COUPLING SWITCH	080-015-9-001
S25	Rotary Switch, B ENDS A Control, Part of VR5	
S26	Push Switch, PULL X10 MAG Control, Part of VR6	
S27, 28	Rotary Switch, CAL Control, Part of VERTICAL ATTENUATOR UNIT	083-301-9-001

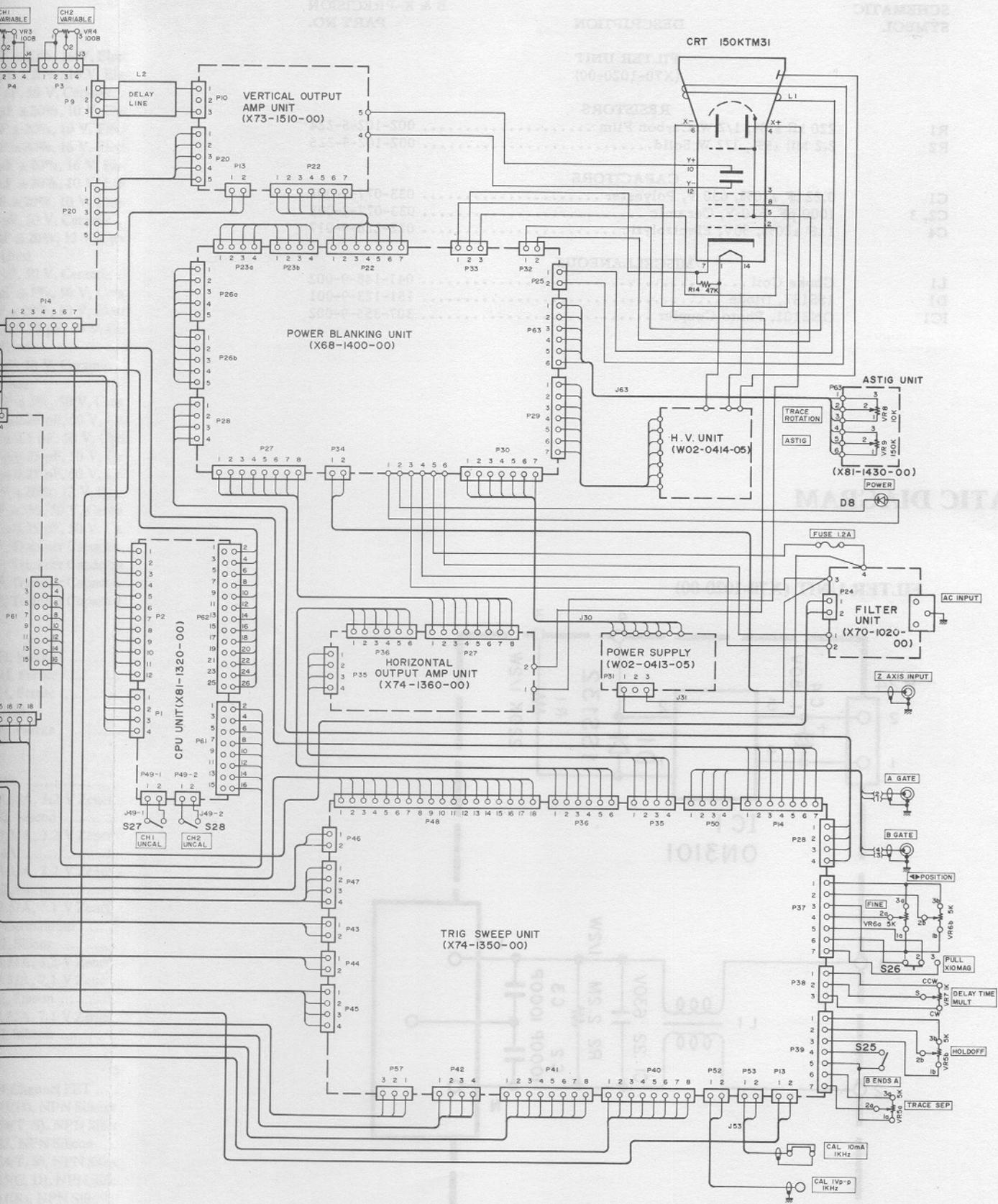
MISCELLANEOUS

ELECTRICAL PARTS		
CRT	150KTM31 Cathode Ray Tube	230-027-9-001
	CRT Socket	749-088-9-001

COMPOSITE
499-309-9-001

SCHMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
L1	Y Alignment Coil	041-148-9-001
L2	Delay Line	040-006-9-001
	BNC Receptacle, CH 1 OUT, SWEEP OUT, etc.	773-090-9-001
	Fuse, 1.2 A.....	191-017-9-001
	Fuse Holder	742-029-9-001
	CAL Terminal	345-059-9-001
	GND Terminal	345-065-9-001
	CURRENT Terminal.....	345-066-9-001
	UL-CSA Power Cord.....	420-030-9-001
	Insulator (for blanking).....	342-082-9-004
	Insulator (for battery).....	342-116-9-001
	Switching Power Supply (W02-0413-05), Field repair not recommended, return entire unit for exchange.....	157-028-9-001
	High Voltage Block (W02-0414-05)	157-028-9-002
	Lithium Battery, 3V, 0.2 AH	213-008-9-001
MECHANICAL PARTS		
	Case	272-170-9-001
	Rear Panel	262-054-9-001
	Sub Panel (Front Panel)	254-083-9-001
	Sub Panel (Front Panel)	254-084-9-001
	Decorative Panel (Front Panel Overlay)	260-374-9-001
	Decorative Panel (Front Panel Overlay)	260-375-9-001
	Decorative Panel (Front Panel Overlay)	260-376-9-001
	Filter, Blue (for CRT).....	380-493-9-001
	Scale for CRT	380-493-9-002
	Extension Shaft	763-194-9-001
	Rubber Foot	381-100-9-001
	Rubber Foot/Cord Wrap.....	380-338-9-006
	Handle.....	746-048-9-001
	Gear, for Handle	251-506-9-001
	Ring, for Handle	251-507-9-001
	Spring, for Handle	767-131-9-001
	Knob, POWER, FOCUS.....	751-288-9-001
	Knob, VARIABLE (3 used)	751-288-9-002
	Knob, VOLTS/DIV (3 used)	751-288-9-003
	Knob, B INTENSITY, LEVEL, etc. (7 used)	751-288-9-004
	Knob, A INTENSITY, SLOPE, etc. (7 used)	751-288-9-005
	Knob, A SWEEP TIME.....	751-288-9-006
	Knob, B SWEEP TIME.....	751-288-9-007
	Knob, Lever (6 used)	751-288-9-008
	Knob, Pushbutton	751-260-9-003
	Instruction Manual	480-420-9-001
ASTIG UNIT (X81-1430-00)		
VR8	10 k Ω Potentiometer, TRACE ROTATION Control	008-482-9-004
VR9	150 k Ω Potentiometer, ASTIG Control.....	008-482-9-005





SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.VERTICAL PRE AMPLIFIER UNIT
(X73-1500-00)

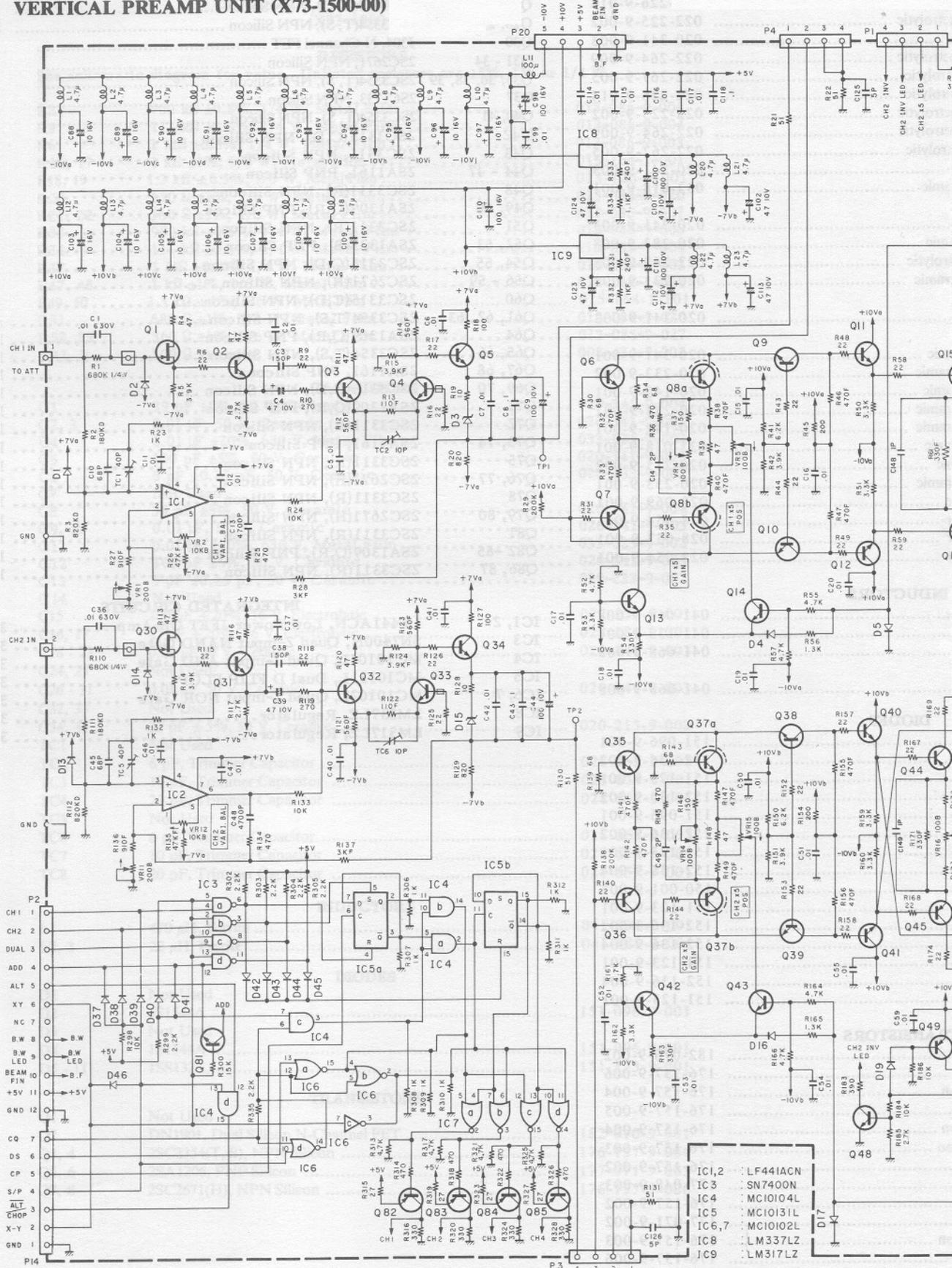
RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 or 1/4 W.

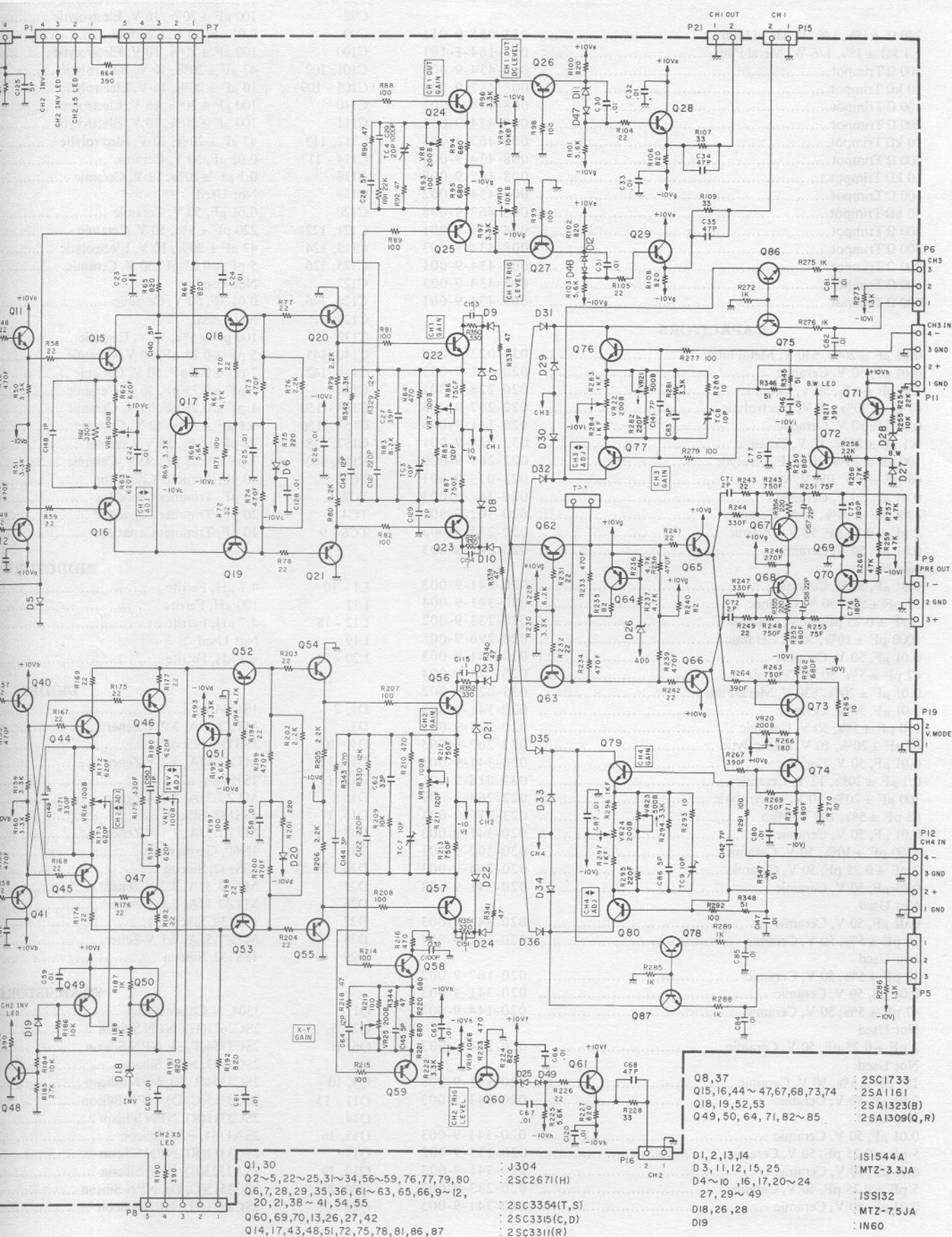
R2	180 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-001
R3	820 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-002
R12	560 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-018
R13	110 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-100
R14	560 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-018
R15	3.9 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-004
R26	47 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-017
R27	820 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-036
R28	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R32, 33	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R38	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R40	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R46, 47	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R54	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R61	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R62, 63	620 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-019
R73, 74	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R85	120 Ω $\pm 1\%$, 1/6 W, Metal Film	013-104-9-001
R86, 87	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R94, 95	Not used	
R111	180 k Ω $\pm 1\%$, 1/4 W, Metal Film	013-086-9-001
R112	820 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-002
R121	560 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-018
R122	110 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-100
R123	560 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-018
R124	3.9 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-004
R135	47 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-017
R136	820 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-036
R137	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R141, 142	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R147	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R149	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R155, 156	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R163	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R171	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R172, 173	620 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-019
R179	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R180, 181	620 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-019
R199, 200	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R211	120 Ω $\pm 1\%$, 1/6 W, Metal Film	013-104-9-001
R212, 213	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R233, 234	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R238, 239	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R244	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R245	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R246	270 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-012
R247	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R248	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R250	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R251, 253	75 Ω $\pm 1\%$, 1/6 W, Metal Film	015-144-7-508
R252	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R262	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R263	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R264	390 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-015
R267	390 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-015
R269	750 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-500
R271	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R282, 295	220 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-002
R283, 284	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
R296, 297	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
R331	240 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-011
R332	1.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-101

SCHEMATIC DIAGRAM

VERTICAL PREAMP UNIT (X73-1500-00)



- IC1,2 : LF441ACN
- IC3 : SN7400N
- IC4 : MC10104L
- IC5 : MC10131L
- IC6,7 : MC10102L
- IC8 : LM337LZ
- IC9 : LM317LZ



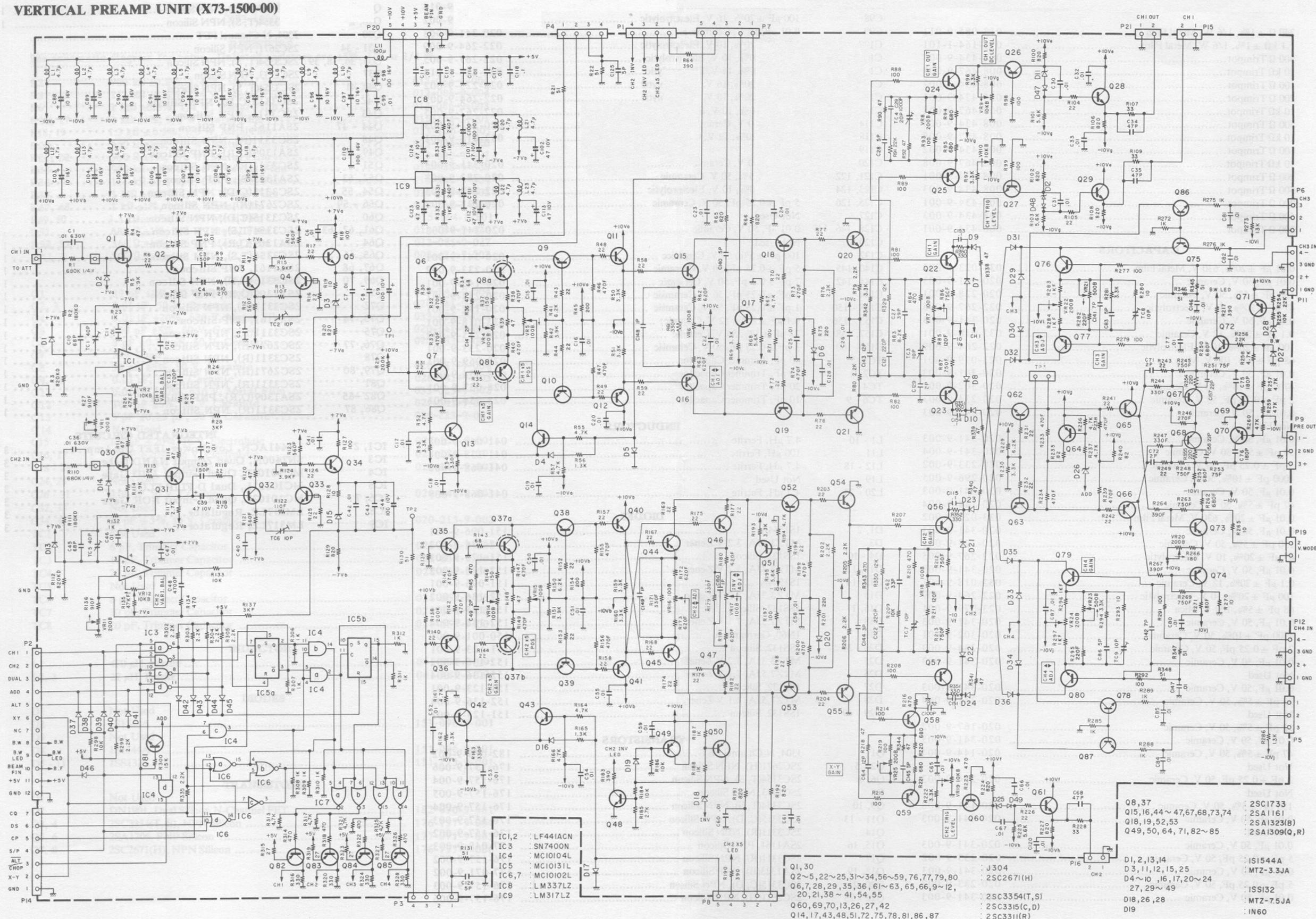
- Q1, 30 : J304
- Q2~5, 22~25, 31~34, 56~59, 76, 77, 79, 80 : 2SC2671(H)
- Q6, 7, 28, 29, 35, 36, 61~63, 65, 66, 9~12, 20, 21, 38~41, 54, 55 : 2SC354(T,S)
- Q60, 69, 70, 13, 26, 27, 42 : 2SC3315(C,D)
- Q14, 17, 43, 48, 51, 72, 75, 78, 81, 86, 87 : 2SC3311(R)

- Q8, 37 : 2SC1733
- Q15, 16, 44~47, 67, 68, 73, 74 : 2SA1161
- Q18, 19, 52, 53 : 2SA1323(B)
- Q49, 50, 64, 71, 82~85 : 2SA1309(Q,R)

- D1, 2, 13, 14 : 1S1544A
- D3, 11, 12, 15, 25 : MTZ-3.3JA
- D4~10, 16, 17, 20~24 : 1SS132
- 27, 29~49 : MTZ-7.5JA
- D18, 26, 28 : 1N60
- D19 : 1N60

SCHEMATIC DIAGRAM

VERTICAL PREAMP UNIT (X73-1500-00)



- | | | | | | |
|--------------------------------|--------------|---|--------------|---------------------------------|-----------|
| IC1,2 | LF441ACN | Q1, 30 | J304 | D1, 2, 13, 14 | IS1544A |
| IC3 | SN7400N | Q2~5, 22~25, 31~34, 56~59, 76, 77, 79, 80 | 2SC2671(H) | D3, 11, 12, 15, 25 | MTZ-3.3JA |
| IC4 | MC10104L | Q6, 7, 28, 29, 35, 36, 61~63, 65, 66, 9~12, 20, 21, 38~41, 54, 55 | 2SC3354(T,S) | D4~10, 16, 17, 20~24, 27, 29~49 | ISSI32 |
| IC5 | MC10131L | Q60, 69, 70, 13, 26, 27, 42 | 2SC3315(C,D) | D18, 26, 28 | MTZ-7.5JA |
| IC6, 7 | MC10102L | Q14, 17, 43, 48, 51, 72, 75, 78, 81, 86, 87 | 2SC3311(R) | D19 | IN60 |
| IC8 | LM337LZ | | | | |
| IC9 | LM317LZ | | | | |
| Q8, 37 | 2SC1733 | | | | |
| Q15, 16, 44~47, 67, 68, 73, 74 | 2SA1161 | | | | |
| Q18, 19, 52, 53 | 2SA1323(B) | | | | |
| Q49, 50, 64, 71, 82~85 | 2SA1309(Q,R) | | | | |

SCHEMATIC SYMBOL

SCHEMATIC SYMBOL

DESCRIPTION

B & K-PRECISION PART NO.

SCHEMATIC SYMBOL

DESCRIPTION

VERTICAL PRE AMPLIFIER UNIT (continued)

R333	240 Ω ± 1%, 1/6 W, Metal Film	013-085-9-011
R334	1.1 kΩ ± 1%, 1/6 W, Metal Film	015-164-1-101
VR1	500 Ω Trimpot	008-434-9-003
VR2	10 kΩ Trimpot	008-467-9-008
VR4 - 7	100 Ω Trimpot	008-434-9-002
VR8	200 Ω Trimpot	008-434-9-001
VR9, 10	10 kΩ Trimpot	008-467-9-008
VR11	500 Ω Trimpot	008-434-9-003
VR12	10 kΩ Trimpot	008-467-9-008
VR14 - 18	100 Ω Trimpot	008-434-9-002
VR19	10 kΩ Trimpot	008-467-9-008
VR20	200 Ω Trimpot	008-434-9-001
VR21	500 Ω Trimpot	008-434-9-003
VR22	200 Ω Trimpot	008-434-9-001
VR23	500 Ω Trimpot	008-434-9-003
VR24, 25	200 Ω Trimpot	008-434-9-001

CAPACITORS

C1	0.01 μF ± 20%, 630 V, Metal Film	033-023-9-002
C2	0.01 μF, 50 V, Ceramic	020-341-9-003
C3	150 pF ± 5%, 50 V, Ceramic	020-228-9-001
C4	47 μF ± 20%, 10 V, Electrolytic	022-267-9-005
C5, 6, 7	0.01 μF, 50 V, Ceramic	020-341-9-003
C8	0.1 μF ± 20%, 12 V, Ceramic	033-018-9-001
C9	100 μF ± 20%, 10 V, Electrolytic	022-264-9-009
C10	68 pF ± 5%, 100 V, Mica	023-079-9-001
C11, 12	0.01 μF, 50 V, Ceramic	020-341-9-003
C13	4700 pF ± 10%, 50 V, Ceramic	020-302-9-001
C14	2 pF ± 0.25 pF, 50 V, Ceramic	020-234-9-003
C15 - 20	0.01 μF, 50 V, Ceramic	020-341-9-003
C21	Not Used	
C22 - 26	0.01 μF, 50 V, Ceramic	020-341-9-003
C27	39 pF ± 5%, 50 V, Ceramic	020-341-9-004
C28	5 pF ± 0.25 pF, 50 V, Ceramic	020-233-9-002
C29	1000 pF ± 10%, 50 V, Ceramic	020-296-9-005
C30 - 33	0.01 μF, 50 V, Ceramic	020-341-9-003
C34, 35	47 pF ± 5%, 50 V, Ceramic	020-144-9-004
C36	0.01 μF ± 20%, 630 V, Metal Film	033-023-9-002
C37	0.01 μF, 50 V, Ceramic	020-341-9-003
C38	150 pF ± 5%, 50 V, Ceramic	020-228-9-001
C39	47 μF ± 20%, 10 V, Electrolytic	022-267-9-005
C40, 41, 42	0.01 μF, 50 V, Ceramic	020-341-9-003
C43	0.1 μF ± 20%, 12 V, Ceramic	033-018-9-001
C44	100 μF ± 20%, 10 V, Electrolytic	022-264-9-009
C45	68 pF ± 5%, 100 V, Mica	023-079-9-001
C46, 47	0.01 μF, 50 V, Ceramic	020-341-9-003
C48	4700 pF ± 10%, 50 V, Ceramic	020-302-9-001
C49	2 pF ± 0.25 pF, 50 V, Ceramic	020-234-9-003
C50 - 55	0.01 μF, 50 V, Ceramic	020-341-9-003
C56, 57	Not Used	
C58 - 61	0.01 μF, 50 V, Ceramic	020-341-9-003
C62	33 pF ± 5%, 50 V, Ceramic	020-341-9-004
C63	Not Used	
C64	12 pF ± 5%, 50 V, Ceramic	020-167-9-002
C65, 66, 67	0.01 μF, 50 V, Ceramic	020-341-9-003
C68	47 pF ± 5%, 50 V, Ceramic	020-144-9-004
C69, 70	Not Used	
C71, 72	2 pF ± 0.25 pF, 50 V, Ceramic	020-234-9-003
C73, 74	Not Used	
C75, 76	150 pF ± 5%, 50 V, Ceramic	020-171-9-008
C77	0.01 μF, 50 V, Ceramic	020-341-9-003
C78, 79	Not Used	
C80, 81, 82	0.01 μF, 50 V, Ceramic	020-341-9-003
C83	5 pF ± 0.25 pF, 50 V, Ceramic	020-233-9-002
C84, 85	0.01 μF, 50 V, Ceramic	020-341-9-003
C86	5 pF ± 0.25 pF, 50 V, Ceramic	020-233-9-002
C87	0.01 μF, 50 V, Ceramic	020-341-9-003

C88 - 97	10 μF ± 20%, 16 V, Electrolytic	
C98	100 μF ± 20%, 16 V, Electrolytic	
C99	0.01 μF, 50 V, Ceramic	
C100	100 μF ± 20%, 10 V, Electrolytic	
C101, 102	47 μF ± 20%, 10 V, Electrolytic	
C103 - 109	10 μF ± 20%, 16 V, Electrolytic	
C110	100 μF ± 20%, 16 V, Electrolytic	
C111	100 μF ± 20%, 10 V, Electrolytic	
C112, 113	47 μF ± 20%, 10 V, Electrolytic	
C114 - 117	0.01 μF, 50 V, Ceramic	
C118	0.1 μF ± 20%, 12 V, Ceramic	
C119	Not Used	
C120	0.01 μF, 50 V, Ceramic	
C121, 122	220 pF ± 5%, 50 V, Ceramic	
C123, 124	47 μF ± 20%, 10 V, Electrolytic	
C125, 126	5 pF ± 0.25 pF, 50 V, Ceramic	
C127	Not Used	
C128, 146, 147	0.01 μF, 50 V, Ceramic	
C129	Not Used	
C132	100 pF ± 5%, 50 V, Ceramic	
C140, 145	5 pF ± 0.25 pF, 50 V, Ceramic	
C141, 142	7 pF ± 0.5 pF, 50 V, Ceramic	
C144	3 pF ± 0.25 pF, 50 V, Ceramic	
C148 - 150	1 pF ± 0.25 pF, 50 V, Ceramic	
C153 - 156	0.1 μF ± 20%, 12 V, Ceramic	
C157, 158	22 pF ± 5%, 50 V, Ceramic	
C159, 160	3 pF ± 0.25 pF, 50 V, Ceramic	
TC1, 5	40 pF, Trimmer Capacitor	
TC2, 3	10 pF, Trimmer Capacitor	
TC4	20 pF, Trimmer Capacitor	
TC6 - 9	10 pF, Trimmer Capacitor	

INDUCTOR

L1 - 10	4.7 μH, Ferrite	
L11	100 μH, Ferrite	
L12 - 18	4.7 μH, Ferrite	
L19	Not Used	
L20 - 23	4.7 μH, Ferrite	

DIODES

D1, 2	1S1544A	
D3	MTZ3.3JA, 3.2 V Zener	
D4 - 10	1SS132, Silicon	
D11, 12	MTZ3.3JA, 3.2 V Zener	
D13, 14	1S1544A	
D15	MTZ3.3JA, 3.2 V Zener	
D16, 17	1SS132, Silicon	
D18	MTZ7.5JA, 7.1 V Zener	
D19	1N60, Germanium	
D20 - 24	1SS132, Silicon	
D25	MTZ3.3JA, 3.2 V Zener	
D26	MTZ7.5JA, 7.1 V Zener	
D27	1SS132, Silicon	
D28	MTZ7.5JA, 7.1 V Zener	
D29 - 49	1SS132, Silicon	

TRANSISTOR

Q1	J304, N-Channel FET	
Q2 - 5	2SC2671(H), NPN Silicon	
Q6, 7	2SC3354(T, S), NPN Silicon	
Q8	2SC1733, NPN Silicon	
Q9, 10	2SC3354(T, S), NPN Silicon	
Q11 - 13	2SC3315(C, D), NPN Silicon	
Q14	2SC3311(R), NPN Silicon	
Q15, 16	2SA1161, PNP Silicon	
Q17	2SC3311(R), NPN Silicon	
Q18, 19	2SA1323(B), PNP Silicon	
Q20, 21	2SC3315(C, D), NPN Silicon	
Q22 - 25	2SC2671(H), NPN Silicon	

DESCRIPTION	B & K-PRECISION PART NO.	SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
Electrolytic	022-226-9-014	Q26, 27	2SC3315(C, D), NPN Silicon	176-157-9-003
Electrolytic	022-225-9-002	Q28, 29	2SC3354(T, S), NPN Silicon	176-157-9-004
	020-341-9-003	Q30	J304, N-Channel FET	182-076-9-002
Electrolytic	022-264-9-009	Q31 - 34	2SC2671, NPN Silicon	176-157-9-006
Electrolytic	022-267-9-005	Q35, 36, 38, 39	2SC3354(T, S), NPN Silicon	176-157-9-004
Electrolytic	022-226-9-014	Q37	2SC1733, NPN Silicon	176-157-9-005
Electrolytic	022-225-9-002	Q40, 41	2SC3354(T, S), NPN Silicon	176-157-9-004
Electrolytic	022-264-9-009	Q42	2SC3315(C,D), NPN Silicon	176-157-9-003
Electrolytic	022-267-9-005	Q43	2SC3311, NPN Silicon	176-157-9-002
	020-341-9-003	Q44 - 47	2SA1161, PNP Silicon	177-048-9-003
Ceramic	033-018-9-001	Q48	2SC3311(R), NPN Silicon	176-157-9-002
		Q49, 50	2SA1309(Q,R), PNP Silicon	177-071-9-001
	020-341-9-003	Q51	2SC3311(R), NPN Silicon	176-157-9-002
Ceramic	020-283-9-008	Q52, 53	2SA1323(B), PNP Silicon	177-071-9-002
Electrolytic	022-267-9-005	Q54, 55	2SC3315(C,D), NPN Silicon	176-157-9-003
Ceramic	020-233-9-002	Q56 - 59	2SC2671(H), NPN Silicon	176-157-9-006
		Q60	2SC3315(C,D), NPN Silicon	176-157-9-003
	020-341-9-003	Q61, 62, 63	2SC3354(T,S), NPN Silicon	176-157-9-004
		Q64	2SA1309(Q,R), PNP Silicon	177-071-9-001
Ceramic	020-341-9-001	Q65, 66	2SC3354(T,S), NPN Silicon	176-157-9-004
Ceramic	020-233-9-002	Q67, 68	2SA1161, PNP Silicon	177-048-9-003
Ceramic	020-149-9-001	Q69, 70	2SC3315(C,D), NPN Silicon	176-157-9-003
Ceramic	020-233-9-001	Q71	2SA1309(Q,R), PNP Silicon	177-071-9-001
Ceramic	020-142-9-001	Q72	2SC3311(R), NPN Silicon	176-157-9-002
Ceramic	033-018-9-001	Q73, 74	2SA1161, PNP Silicon	177-048-9-003
Ceramic	020-215-9-002	Q75	2SC3311(R), NPN Silicon	176-157-9-002
Ceramic	020-233-9-001	Q76, 77	2SC2671(H), NPN Silicon	176-157-9-006
Resistor	028-069-9-001	Q78	2SC3311(R), NPN Silicon	176-157-9-002
Resistor	028-054-9-001	Q79, 80	2SC2671(H), NPN Silicon	176-157-9-006
Resistor	028-057-9-001	Q81	2SC3311(R), NPN Silicon	176-157-9-002
Resistor	028-054-9-001	Q82 -85	2SA1309(Q,R), PNP Silicon	177-071-9-001
		Q86, 87	2SC3311(R), NPN Silicon	176-157-9-002
INDUCTORS			INTEGRATED CIRCUITS	
	041-068-9-008	IC1, 2	LF441ACN, Low Power JFET Op-Amp	307-355-9-003
	041-133-9-004	IC3	SN7400N, Quad 2-input NAND Gate	307-106-9-004
	041-068-9-008	IC4	MC10104L, Quad 2-input AND Gate	307-309-9-004
		IC5	MC10131L, Dual D FLIP FLOP	307-309-9-005
	041-068-9-008	IC6, 7	MC10102L, Quad 2-input NOR Gate	307-301-9-001
		IC8	LM337LZ, Regulator	307-355-9-005
		IC9	LM317LZ, Regulator	307-355-9-004
DIODES				
	151-096-9-001			
	152-136-9-002			
	151-123-9-001			
	152-136-9-002			
	151-096-9-001			
	152-136-9-002			
	151-123-9-001			
	152-136-9-004			
	150-001-9-005			
	151-123-9-001			
	152-136-9-002			
	152-136-9-004			
	151-123-9-001			
	152-136-9-004			
	151-123-9-001			
TRANSISTORS				
	182-076-9-002			
	176-157-9-006			
Diode	176-157-9-004			
	176-157-9-005			
Diode	176-157-9-004			
Diode	176-157-9-003			
	176-157-9-002			
	177-048-9-003			
	176-157-9-002			
	177-071-9-002			
Diode	176-157-9-003			
	176-157-9-006			

SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.	SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.	SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
VERTICAL PRE AMPLIFIER UNIT (continued)			C88 - 97	10 μ F \pm 20%, 16 V, Electrolytic	022-226-9-014	Q26, 27	2SC3315(C, D), NPN Silicon	176-157-9-003
R333	240 Ω \pm 1%, 1/6 W, Metal Film	013-085-9-011	C98	100 μ F \pm 20%, 16 V, Electrolytic	022-225-9-002	Q28, 29	2SC3354(T, S), NPN Silicon	176-157-9-004
R334	1.1 k Ω \pm 1%, 1/6 W, Metal Film	015-164-1-101	C99	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q30	J304, N-Channel FET	182-076-9-002
VR1	500 Ω Trimpot	008-434-9-003	C100	100 μ F \pm 20%, 10 V, Electrolytic	022-264-9-009	Q31 - 34	2SC2671, NPN Silicon	176-157-9-006
VR2	10 k Ω Trimpot	008-467-9-008	C101, 102	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005	Q35, 36, 38, 39	2SC3354(T, S), NPN Silicon	176-157-9-004
VR4 - 7	100 Ω Trimpot	008-434-9-002	C103 - 109	10 μ F \pm 20%, 16 V, Electrolytic	022-226-9-014	Q37	2SC1733, NPN Silicon	176-157-9-005
VR8	200 Ω Trimpot	008-434-9-001	C110	100 μ F \pm 20%, 16 V, Electrolytic	022-225-9-002	Q40, 41	2SC3354(T, S), NPN Silicon	176-157-9-004
VR9, 10	10 k Ω Trimpot	008-467-9-008	C111	100 μ F \pm 20%, 10 V, Electrolytic	022-264-9-009	Q42	2SC3315(C, D), NPN Silicon	176-157-9-003
VR11	500 Ω Trimpot	008-434-9-003	C112, 113	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005	Q43	2SC3311, NPN Silicon	176-157-9-002
VR12	10 k Ω Trimpot	008-467-9-008	C114 - 117	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q44 - 47	2SA1161, PNP Silicon	177-048-9-003
VR14 - 18	100 Ω Trimpot	008-434-9-002	C118	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001	Q48	2SC3311(R), NPN Silicon	176-157-9-002
VR19	10 k Ω Trimpot	008-467-9-008	C119	Not Used		Q49, 50	2SA1309(Q,R), PNP Silicon	177-071-9-001
VR20	200 Ω Trimpot	008-434-9-001	C120	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q51	2SC3311(R), NPN Silicon	176-157-9-002
VR21	500 Ω Trimpot	008-434-9-003	C121, 122	220 pF \pm 5%, 50 V, Ceramic	020-283-9-008	Q52, 53	2SA1323(B), PNP Silicon	177-071-9-002
VR22	200 Ω Trimpot	008-434-9-001	C123, 124	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005	Q54, 55	2SC3315(C, D), NPN Silicon	176-157-9-003
VR23	500 Ω Trimpot	008-434-9-003	C125, 126	5 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-002	Q56 - 59	2SC2671(H), NPN Silicon	176-157-9-006
VR24, 25	200 Ω Trimpot	008-434-9-001	C127	Not Used		Q60	2SC3315(C, D), NPN Silicon	176-157-9-003
CAPACITORS			C128, 146, 147	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q61, 62, 63	2SC3354(T, S), NPN Silicon	176-157-9-004
C1	0.01 μ F \pm 20%, 630 V, Metal Film	033-023-9-002	C129	Not Used		Q64	2SA1309(Q,R), PNP Silicon	177-071-9-001
C2	0.01 μ F, 50 V, Ceramic	020-341-9-003	C132	100 pF \pm 5%, 50 V, Ceramic	020-341-9-001	Q65, 66	2SC3354(T, S), NPN Silicon	176-157-9-004
C3	150 pF \pm 5%, 50 V, Ceramic	020-228-9-001	C140, 145	5 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-002	Q67, 68	2SA1161, PNP Silicon	177-048-9-003
C4	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005	C141, 142	7 pF \pm 0.5 pF, 50 V, Ceramic	020-149-9-001	Q69, 70	2SC3315(C, D), NPN Silicon	176-157-9-003
C5, 6, 7	0.01 μ F, 50 V, Ceramic	020-341-9-003	C144	3 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-001	Q71	2SA1309(Q,R), PNP Silicon	177-071-9-001
C8	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001	C148 - 150	1 pF \pm 0.25 pF, 50 V, Ceramic	020-142-9-001	Q72	2SC3311(R), NPN Silicon	176-157-9-002
C9	100 μ F \pm 20%, 10 V, Electrolytic	022-264-9-009	C153 - 156	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001	Q73, 74	2SA1161, PNP Silicon	177-048-9-003
C10	68 pF \pm 5%, 100 V, Mica	023-079-9-001	C157, 158	22 pF \pm 5%, 50 V, Ceramic	020-215-9-002	Q75	2SC3311(R), NPN Silicon	176-157-9-002
C11, 12	0.01 μ F, 50 V, Ceramic	020-341-9-003	C159, 160	3 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-001	Q76, 77	2SC2671(H), NPN Silicon	176-157-9-006
C13	4700 pF \pm 10%, 50 V, Ceramic	020-302-9-001	TC1, 5	40 pF, Trimmer Capacitor	028-069-9-001	Q78	2SC3311(R), NPN Silicon	176-157-9-002
C14	2 pF \pm 0.25 pF, 50 V, Ceramic	020-234-9-003	TC2, 3	10 pF, Trimmer Capacitor	028-054-9-001	Q79, 80	2SC2671(H), NPN Silicon	176-157-9-006
C15 - 20	0.01 μ F, 50 V, Ceramic	020-341-9-003	TC4	20 pF, Trimmer Capacitor	028-057-9-001	Q81	2SC3311(R), NPN Silicon	176-157-9-002
C21	Not Used		TC6 - 9	10 pF, Trimmer Capacitor	028-054-9-001	Q82 - 85	2SA1309(Q,R), PNP Silicon	177-071-9-001
C22 - 26	0.01 μ F, 50 V, Ceramic	020-341-9-003	INDUCTORS			Q86, 87	2SC3311(R), NPN Silicon	176-157-9-002
C27	39 pF \pm 5%, 50 V, Ceramic	020-341-9-004	L1 - 10	4.7 μ H, Ferrite	041-068-9-008	INTEGRATED CIRCUITS		
C28	5 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-002	L11	100 μ H, Ferrite	041-133-9-004	IC1, 2	LF441ACN, Low Power JFET Op-Amp	307-355-9-003
C29	1000 pF \pm 10%, 50 V, Ceramic	020-296-9-005	L12 - 18	4.7 μ H, Ferrite	041-068-9-008	IC3	SN7400N, Quad 2-input NAND Gate	307-106-9-004
C30 - 33	0.01 μ F, 50 V, Ceramic	020-341-9-003	L19	Not Used		IC4	MC10104L, Quad 2-input AND Gate	307-309-9-004
C34, 35	47 pF \pm 5%, 50 V, Ceramic	020-144-9-004	L20 - 23	4.7 μ H, Ferrite	041-068-9-008	IC5	MC10131L, Dual D FLIP FLOP	307-309-9-005
C36	0.01 μ F \pm 20%, 630 V, Metal Film	033-023-9-002	DIODES			IC6, 7	MC10102L, Quad 2-input NOR Gate	307-301-9-001
C37	0.01 μ F, 50 V, Ceramic	020-341-9-003	D1, 2	1S1544A	151-096-9-001	IC8	LM337LZ, Regulator	307-355-9-005
C38	150 pF \pm 5%, 50 V, Ceramic	020-228-9-001	D3	MTZ3.3JA, 3.2 V Zener	152-136-9-002	IC9	LM317LZ, Regulator	307-355-9-004
C39	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005	D4 - 10	1SS132, Silicon	151-123-9-001			
C40, 41, 42	0.01 μ F, 50 V, Ceramic	020-341-9-003	D11, 12	MTZ3.3JA, 3.2 V Zener	152-136-9-002			
C43	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001	D13, 14	1S1544A	151-096-9-001			
C44	100 μ F \pm 20%, 10 V, Electrolytic	022-264-9-009	D15	MTZ3.3JA, 3.2 V Zener	152-136-9-002			
C45	68 pF \pm 5%, 100 V, Mica	023-079-9-001	D16, 17	1SS132, Silicon	151-123-9-001			
C46, 47	0.01 μ F, 50 V, Ceramic	020-341-9-003	D18	MTZ7.5JA, 7.1 V Zener	152-136-9-004			
C48	4700 pF \pm 10%, 50 V, Ceramic	020-302-9-001	D19	1N60, Germanium	150-001-9-005			
C49	2 pF \pm 0.25 pF, 50 V, Ceramic	020-234-9-003	D20 - 24	1SS132, Silicon	151-123-9-001			
C50 - 55	0.01 μ F, 50 V, Ceramic	020-341-9-003	D25	MTZ3.3JA, 3.2 V Zener	152-136-9-002			
C56, 57	Not Used		D26	MTZ7.5JA, 7.1 V Zener	152-136-9-004			
C58 - 61	0.01 μ F, 50 V, Ceramic	020-341-9-003	D27	1SS132, Silicon	151-123-9-001			
C62	33 pF \pm 5%, 50 V, Ceramic	020-341-9-004	D28	MTZ7.5JA, 7.1 V Zener	152-136-9-004			
C63	Not Used		D29 - 49	1SS132, Silicon	151-123-9-001			
C64	12 pF \pm 5%, 50 V, Ceramic	020-167-9-002	TRANSISTORS					
C65, 66, 67	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q1	J304, N-Channel FET	182-076-9-002			
C68	47 pF \pm 5%, 50 V, Ceramic	020-144-9-004	Q2 - 5	2SC2671(H), NPN Silicon	176-157-9-006			
C69, 70	Not Used		Q6, 7	2SC3354(T, S), NPN Silicon	176-157-9-004			
C71, 72	2 pF \pm 0.25 pF, 50 V, Ceramic	020-234-9-003	Q8	2SC1733, NPN Silicon	176-157-9-005			
C73, 74	Not Used		Q9, 10	2SC3354(T, S), NPN Silicon	176-157-9-004			
C75, 76	150 pF \pm 5%, 50 V, Ceramic	020-171-9-008	Q11 - 13	2SC3315(C, D), NPN Silicon	176-157-9-003			
C77	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q14	2SC3311(R), NPN Silicon	176-157-9-002			
C78, 79	Not Used		Q15, 16	2SA1161, PNP Silicon	177-048-9-003			
C80, 81, 82	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q17	2SC3311(R), NPN Silicon	176-157-9-002			
C83	5 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-002	Q18, 19	2SA1323(B), PNP Silicon	177-071-9-002			
C84, 85	0.01 μ F, 50 V, Ceramic	020-341-9-003	Q20, 21	2SC3315(C, D), NPN Silicon	176-157-9-003			
C86	5 pF \pm 0.25 pF, 50 V, Ceramic	020-233-9-002	Q22 - 25	2SC2671(H), NPN Silicon	176-157-9-006			
C87	0.01 μ F, 50 V, Ceramic	020-341-9-003						

CHANNEL 3 AND 4 AMPLIFIER UNIT
(X73-1520-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 or 1/4 W.

R2	900 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-005
R3	111 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-004
R6	1 M Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-003
R16, 17	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
R18, 19	1.3 k Ω $\pm 0.5\%$, 1/6 W, Metal Film	013-126-9-001
R20	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R21, 22	360 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-027
R33	900 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-005
R34	111 k Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-004
R37	1 M Ω $\pm 0.5\%$, 1/4 W, Metal Film	013-086-9-003
R47, 48	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
R49, 50	1.3 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-101
R51	680 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-020
R52, 53	360 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-027
VR1, 2	100 Ω Trimpot	008-434-9-002

CAPACITORS

C1	39 pF $\pm 5\%$, 50 V, Ceramic	020-341-9-004
C2, 3	0.01 μ F, 50 V, Ceramic	020-341-9-003
C4	0.01 μ F $\pm 20\%$, 630 V, Metal Film	033-023-9-002
C5	100 pF $\pm 5\%$, 50 V, Ceramic	020-341-9-005
C6	5 pF ± 0.25 pF, 50 V, Ceramic	020-233-9-002
C7	Not Used	
C8	39 pF $\pm 5\%$, 50 V, Ceramic	020-341-9-004
C9, 10	0.01 μ F, 50 V, Ceramic	020-341-9-003
C11	0.01 μ F $\pm 20\%$, 630 V, Metal Film	033-023-9-002
C12	100 pF $\pm 5\%$, 50 V, Ceramic	020-341-9-005
C13	5 pF ± 0.25 pF, 50 V, Ceramic	020-233-9-002
C14	Not Used	
C15	100 μ F $\pm 20\%$, 16 V, Electrolytic	022-225-9-001
C16, 17	47 μ F $\pm 20\%$, 16 V, Electrolytic	022-281-9-001
C18 - 23	0.01 μ F 50 V, Ceramic	020-341-9-003
C24, 25	Not Used	
C26 - 31	0.01 μ F, 50 V, Ceramic	020-341-9-003
C32, 33	Not Used	
C34, 35	22 pF $\pm 5\%$, 50 V, Ceramic	020-215-9-002
TC1	Not Used	
TC2	6 pF, Trimmer Capacitor	028-065-9-003
TC3	10 pF, Trimmer Capacitor	028-054-9-001
TC4	20 pF, Trimmer Capacitor	028-057-9-001
TC5	Not Used	
TC6	6 pF, Trimmer Capacitor	028-065-9-003
TC7	10 pF, Trimmer Capacitor	028-054-9-001
TC8	20 pF, Trimmer Capacitor	028-057-9-001

INDUCTORS

L1	470 μ H, Ferrite	041-071-9-001
L2, 3	22 μ H, Ferrite	041-089-9-001

DIODES

D1	Not Used	
D2	1S1544A	151-096-9-001
D3	Not Used	
D4	1S1544A	151-096-9-001
D5 - 11	1SS132	151-123-9-001

TRANSISTORS

Q1	Not Used	
Q2	DN1901, Dual Silicon N-Channel FET	182-070-9-001
Q3, 4	2SC3354(T, S), NPN Silicon	176-157-9-004
Q5, 6	2SA1206, PNP Silicon	177-071-9-003
Q7, 8	2SC2671(H), NPN Silicon	176-157-9-006

SCHMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
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CHANNEL 3 AND 4 AMPLIFIER UNIT (continued)

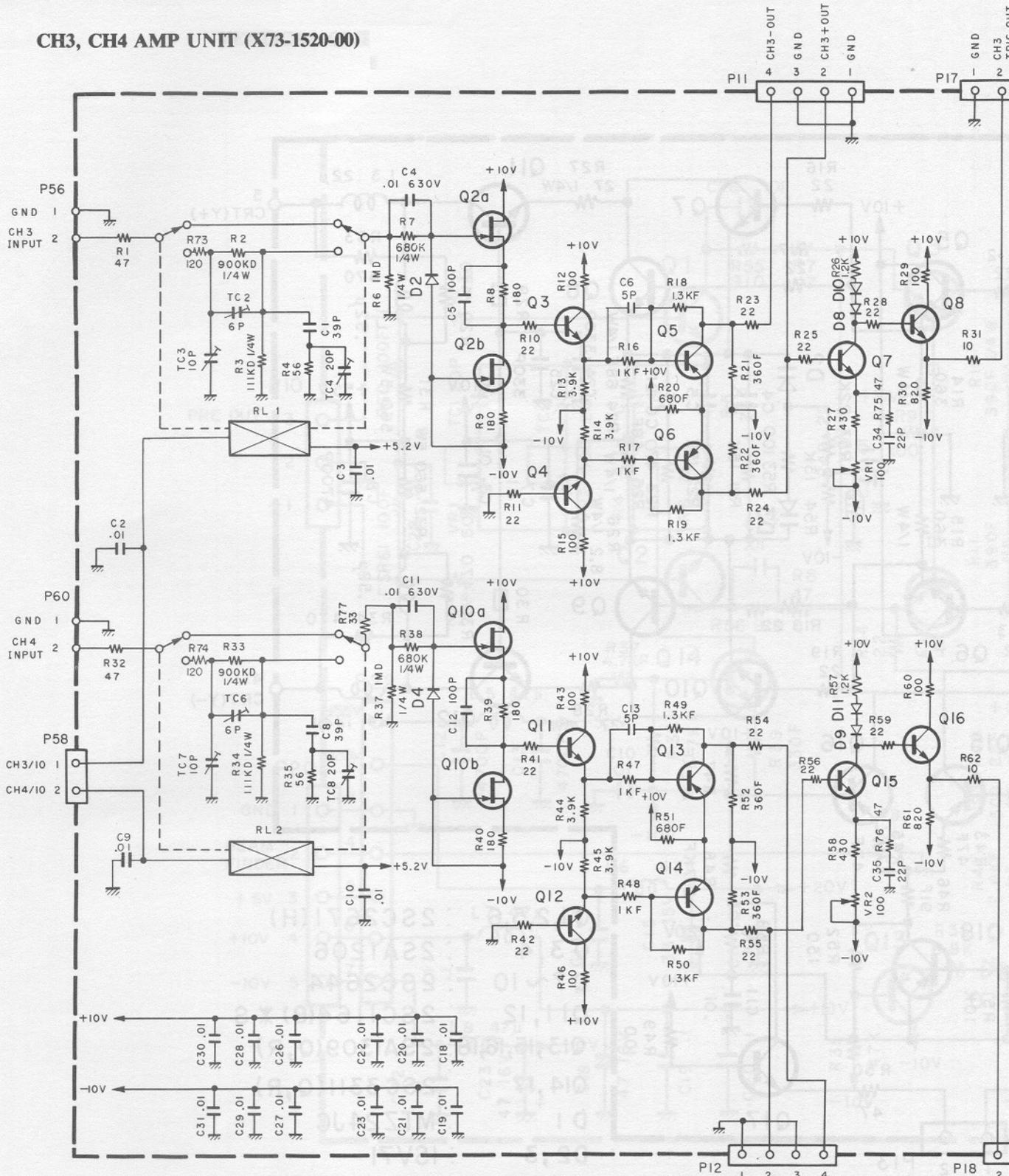
Q9	Not Used	
Q10	DN1901, Dual Silicon N-Channel FET	182-070-9-001
Q11, 12	2SC3354(T,S), NPN Silicon	176-157-9-004
Q13, 14	2SA1206, PNP Silicon	177-071-9-003
Q15, 16	2SC2671(H), NPN Silicon	176-157-9-006

RELAYS

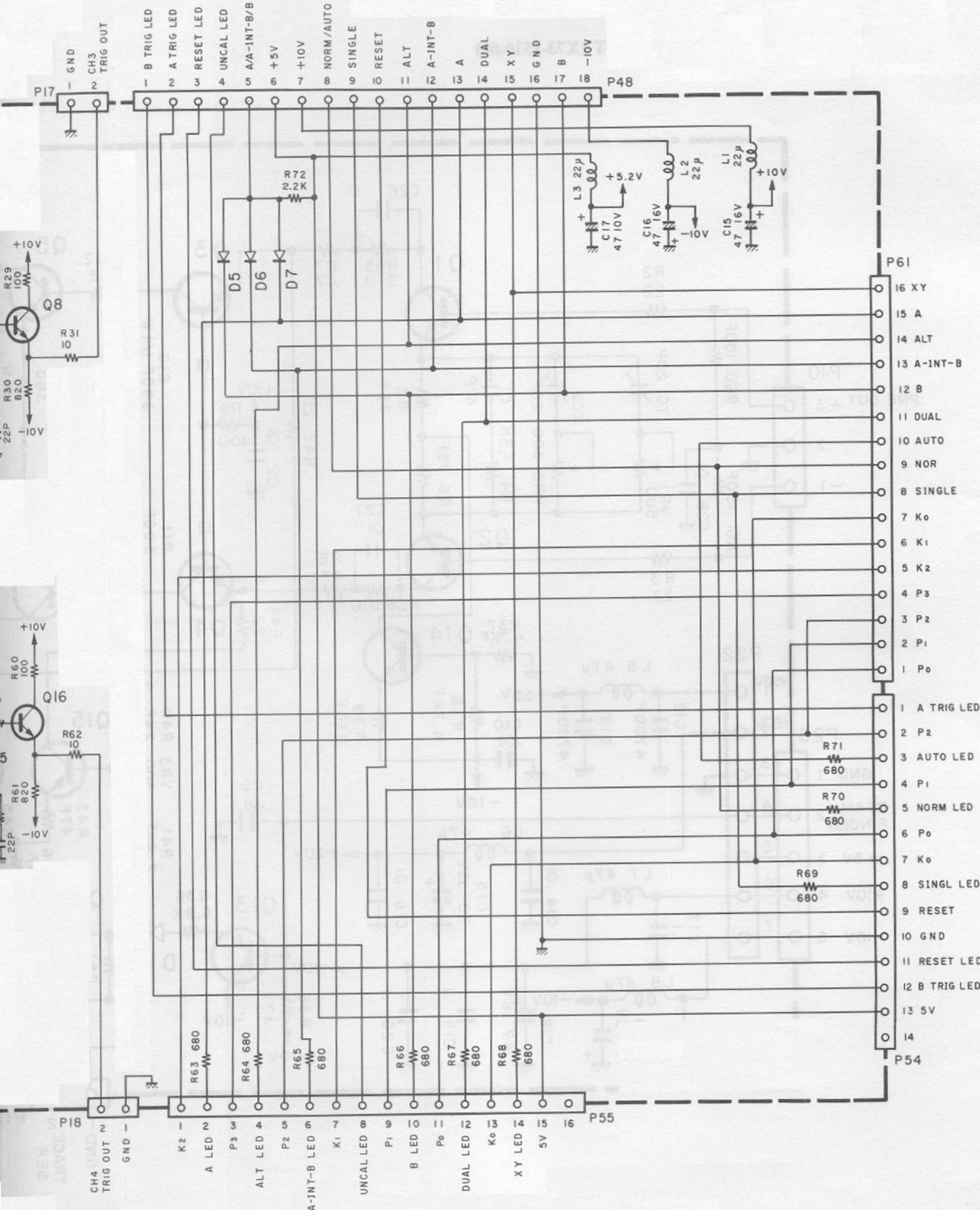
RL1, 2	DPDT Relay	441-041-9-001
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SCHEMATIC DIAGRAM

CH3, CH4 AMP UNIT (X73-1520-00)

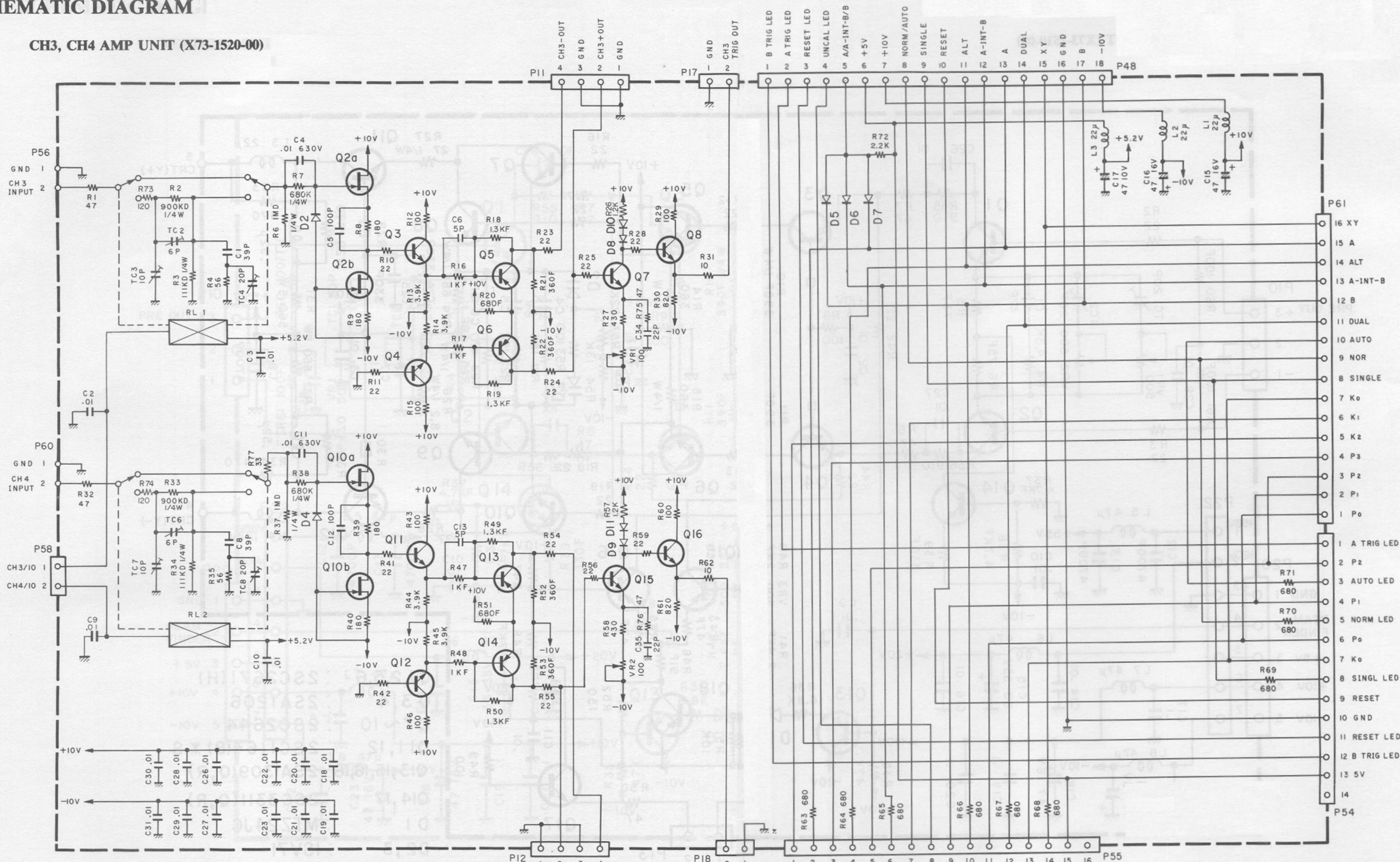


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|----------------|----------------|-------|-----------|
| Q 2, 10 | : DN1901 | D5~11 | : ISS132 |
| Q 3, 4, 11, 12 | : 2SC3354(T,S) | D2, 4 | : ISI544A |
| Q 5, 6, 13, 14 | : 2SA1206 | | |
| Q 7, 8, 15, 16 | : 2SC2671(H) | | |



SCHEMATIC DIAGRAM

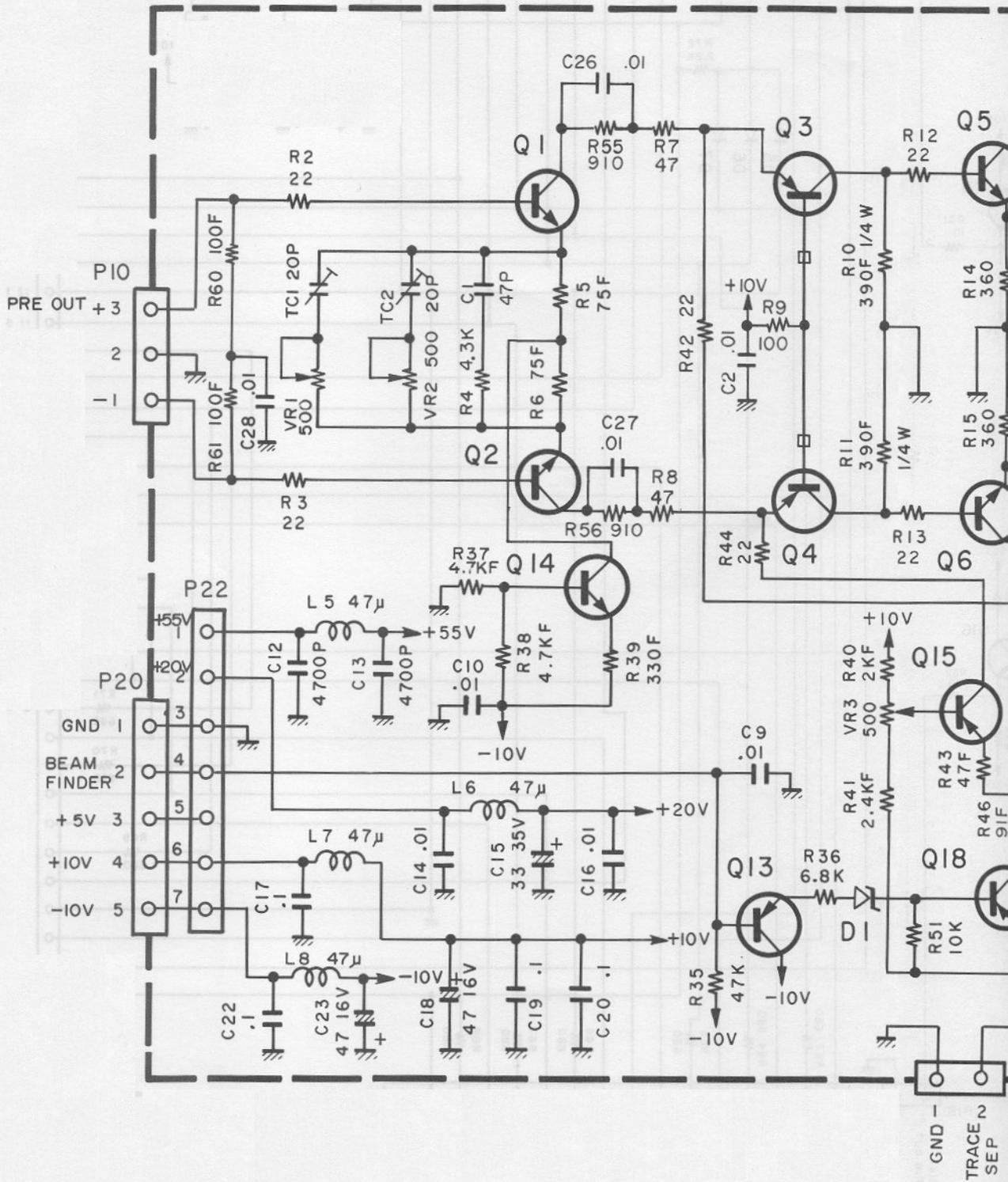
CH3, CH4 AMP UNIT (X73-1520-00)



- | | | | |
|----------------|----------------|-------|-----------|
| Q 2, 10 | : DNI901 | D5~11 | : ISS132 |
| Q 3, 4, 11, 12 | : 2SC3354(T,S) | D2, 4 | : ISI544A |
| Q 5, 6, 13, 14 | : 2SA1206 | | |
| Q 7, 8, 15, 16 | : 2SC2671(H) | | |

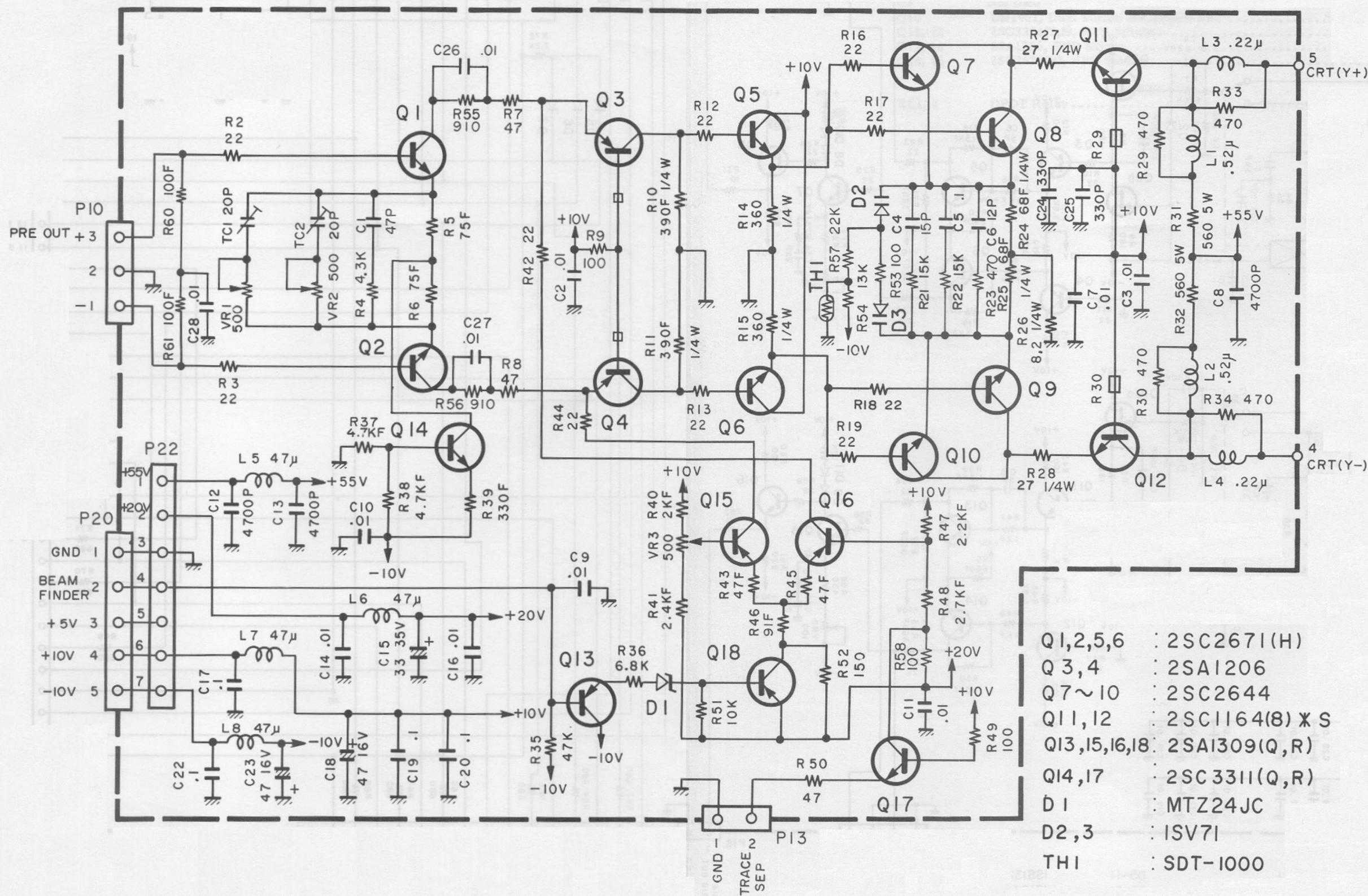
SCHEMATIC DIAGRAM

VERTICAL OUTPUT AMP UNIT (X73-1510-00)



SCHEMATIC DIAGRAM

VERTICAL OUTPUT AMP UNIT (X73-1510-00)



SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.VERTICAL OUTPUT AMPLIFIER UNIT
(X73-1510-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 or 1/4 W.

R5, 6	75.0 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-508
R10, 11	390 Ω $\pm 1\%$, 1/4 W, Metal Film	013-076-9-001
R24, 25	68.0 Ω $\pm 1\%$, 1/4 W, Metal Film	013-034-9-028
R31,32	560 Ω $\pm 5\%$, 5 W, Metal Film	011-005-5-561
R37, 38	4.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-025
R39	330 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-014
R40	2 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-2-001
R41	2.4 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-022
R43	47.0 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-024
R45	47.0 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-024
R46	91.0 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-026
R47	2.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-003
R48	2.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-023
VR1, 2, 3	500 Ω Trimpot	008-467-9-005

CAPACITORS

C1	47 pF $\pm 5\%$, 50 V, Ceramic	020-149-9-006
C2, 3	0.01 μ F, 50 V, Ceramic	020-341-9-003
C4	15 pF $\pm 5\%$, 50 V, Ceramic	020-171-9-002
C5	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C6	12 pF $\pm 5\%$, 50 V, Ceramic	020-167-9-002
C7	0.01 μ F, 50 V, Ceramic	020-341-9-003
C8	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C9, 10, 11	0.01 μ F, 50 V, Ceramic	020-341-9-003
C12, 13	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C14	0.01 μ F, 50 V, Ceramic	020-341-9-003
C15	33 μ F $\pm 20\%$, 35 V, Electrolytic	022-267-9-006
C16	0.01 μ F, 50 V, Ceramic	020-341-9-003
C17	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C18	47 μ F $\pm 20\%$, 16 V, Electrolytic	022-281-9-001
C19, 20	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C21	Not Used	
C22	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C23	47 μ F $\pm 20\%$, 16 V, Electrolytic	022-281-9-001
C24, 25	330 pF $\pm 5\%$, 50 V, Ceramic	020-158-9-004
C26, 27	0.01 μ F, 50 V, Ceramic	020-341-9-003
TC1, 2	20 pF, Trimmer Capacitor	028-065-9-004

INDUCTORS

L1, 2	Choke Coil	041-148-9-003
L3, 4	0.22 μ H, Ferrite	041-133-9-009
L5 - 8	47 μ H, Ferrite	041-143-9-002

DIODES

D1	MTZ24JC, 24 V Zener	152-136-9-005
D2, 3	1SV71	151-097-9-002

TRANSISTORS

Q1, 2	2SC2671(H), NPN Silicon	176-157-9-006
Q3, 4	2SA1206, PNP Silicon	177-071-9-003
Q5, 6	2SC2671(H), NPN Silicon	176-157-9-006
Q7 - 10	2SC2644, NPN Silicon	176-114-9-008
Q11, 12	2SC1164, NPN Silicon	176-114-9-007
Q13	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q14	2SC3311(Q,R), NPN Silicon	176-157-9-007
Q15, 16	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q17	2SC3311(Q,R), NPN Silicon	176-157-9-007
Q18	2SA1309(Q,R), PNP Silicon	177-071-9-001

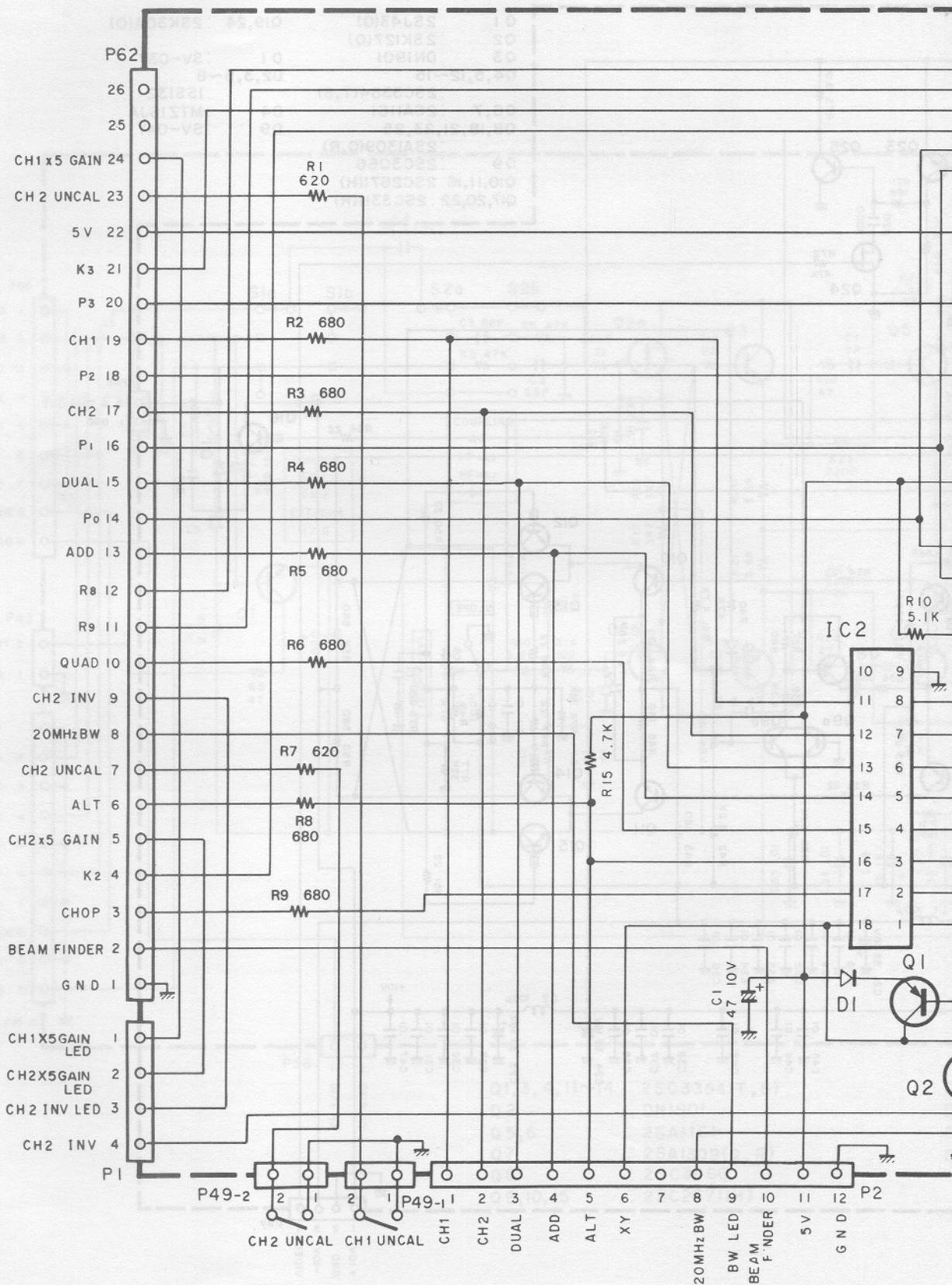
MISCELLANEOUS

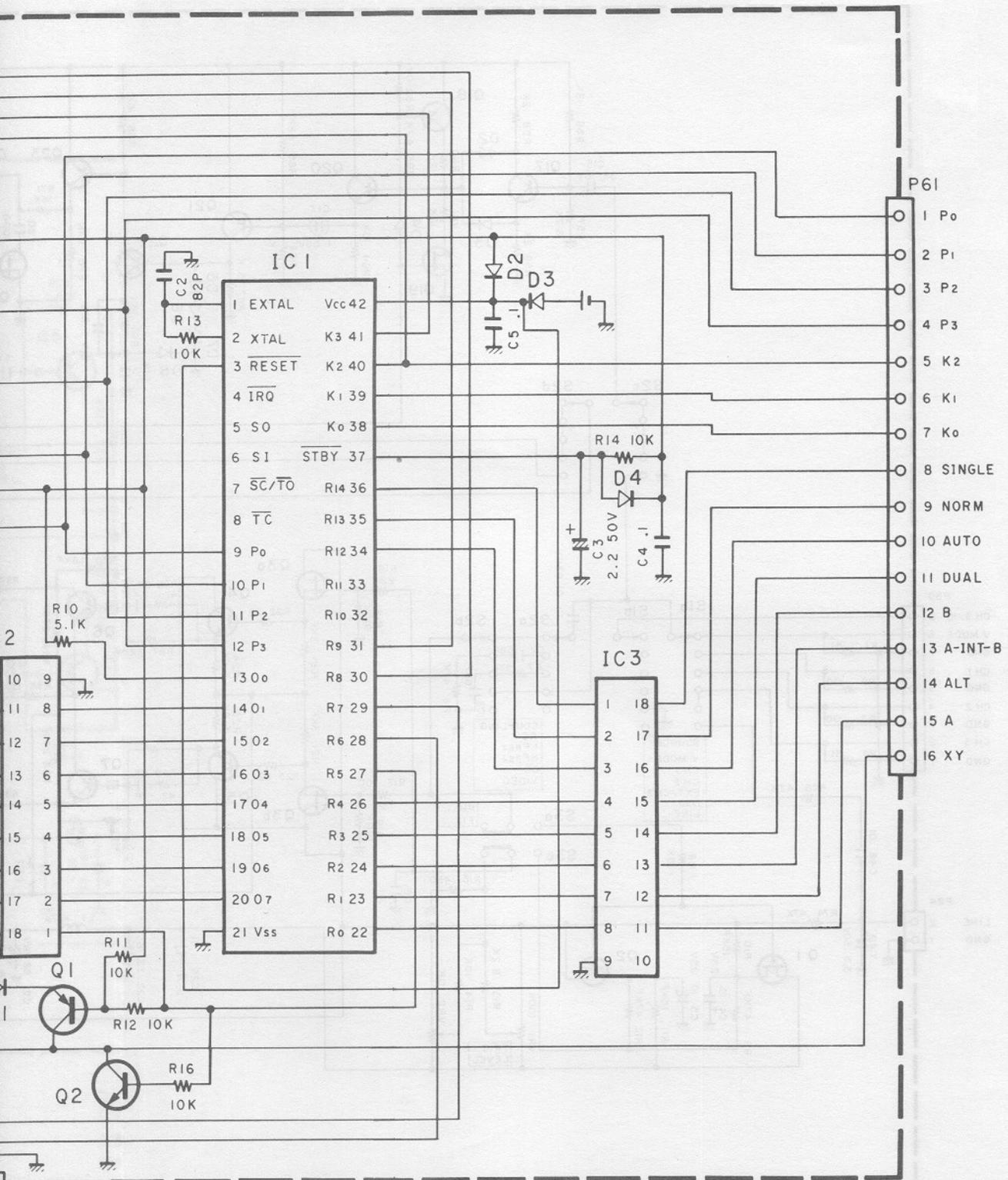
TH1	SDT1000, Thermistor	005-003-9-002
	Bead Core	040-004-9-002

SCHMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
	CPU UNIT (X81-1320-00)	
	RESISTORS See schematic diagram for value. Resistors are $\pm 5\%$, 1/6 W.	
	CAPACITORS	
C1	47 μF $\pm 20\%$, 10 V, Electrolytic	022-267-9-005
C2	82 pF $\pm 5\%$, 50 V, Ceramic	020-250-9-002
C3	2.2 μF $\pm 20\%$, 50 V, Electrolytic	022-281-9-004
C4, 5	0.1 μF $\pm 20\%$, 12 V, Ceramic	033-018-9-001
	DIODES	
D1, 2, 3, 4	1SS132	151-123-9-001
	TRANSISTORS	
Q1	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q2	2SC3311(R), NPN Silicon	176-157-9-002
	INTEGRATED CIRCUITS	
IC1	MTM5010, 4-Bit Microcomputer	307-355-9-013
IC2, 3	AN90B20, Transistor Array	307-355-9-012

SCHEMATIC DIAGRAM

CPU UNIT (X81-1320-00)





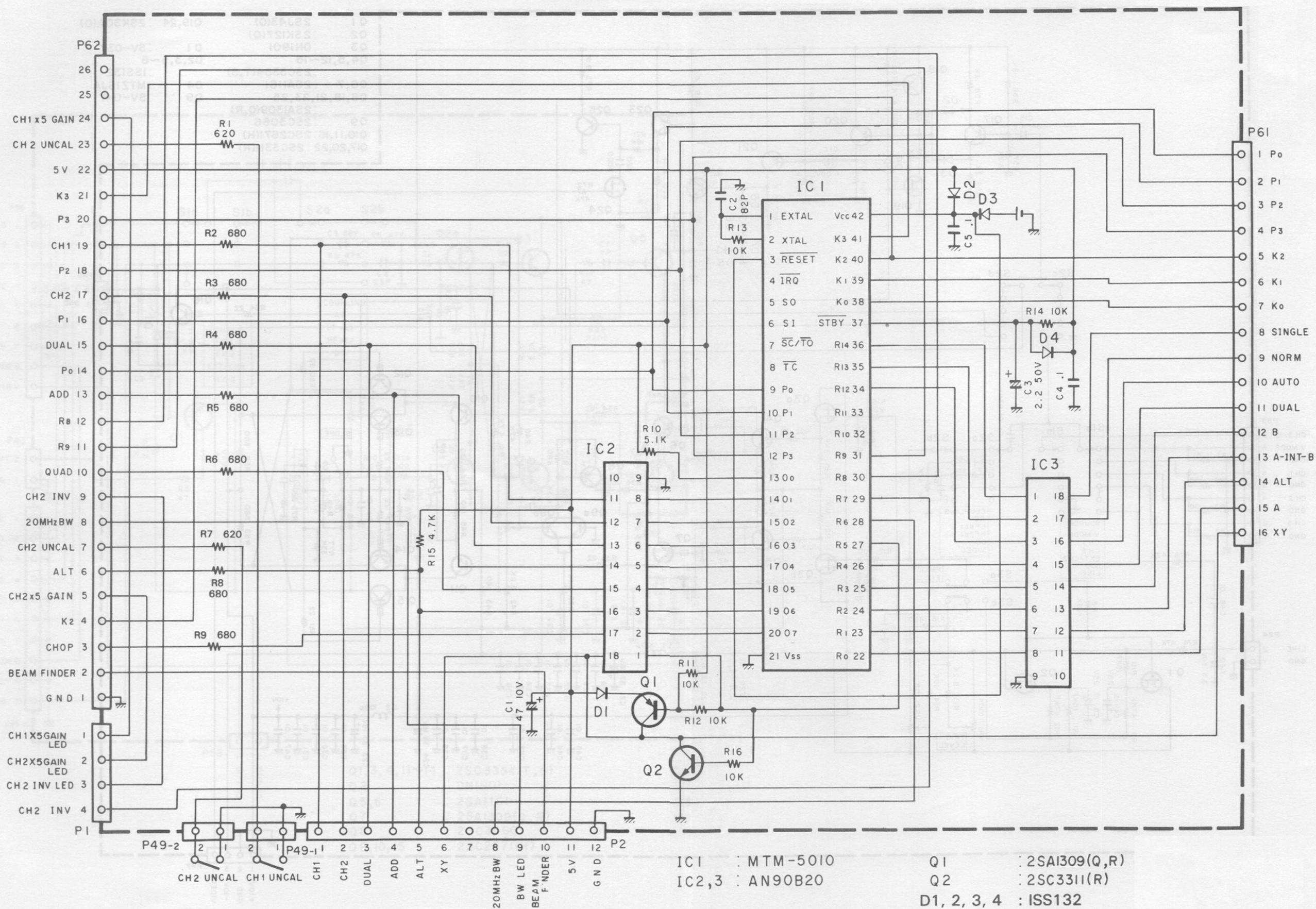
- P61
- 1 P₀
- 2 P₁
- 3 P₂
- 4 P₃
- 5 K₂
- 6 K₁
- 7 K₀
- 8 SINGLE
- 9 NORM
- 10 AUTO
- 11 DUAL
- 12 B
- 13 A-INT-B
- 14 ALT
- 15 A
- 16 XY

IC1 : MTM-5010
 IC2,3 : AN90B20

Q1 : 2SA1309(Q,R)
 Q2 : 2SC3311(R)
 D1, 2, 3, 4 : ISS132

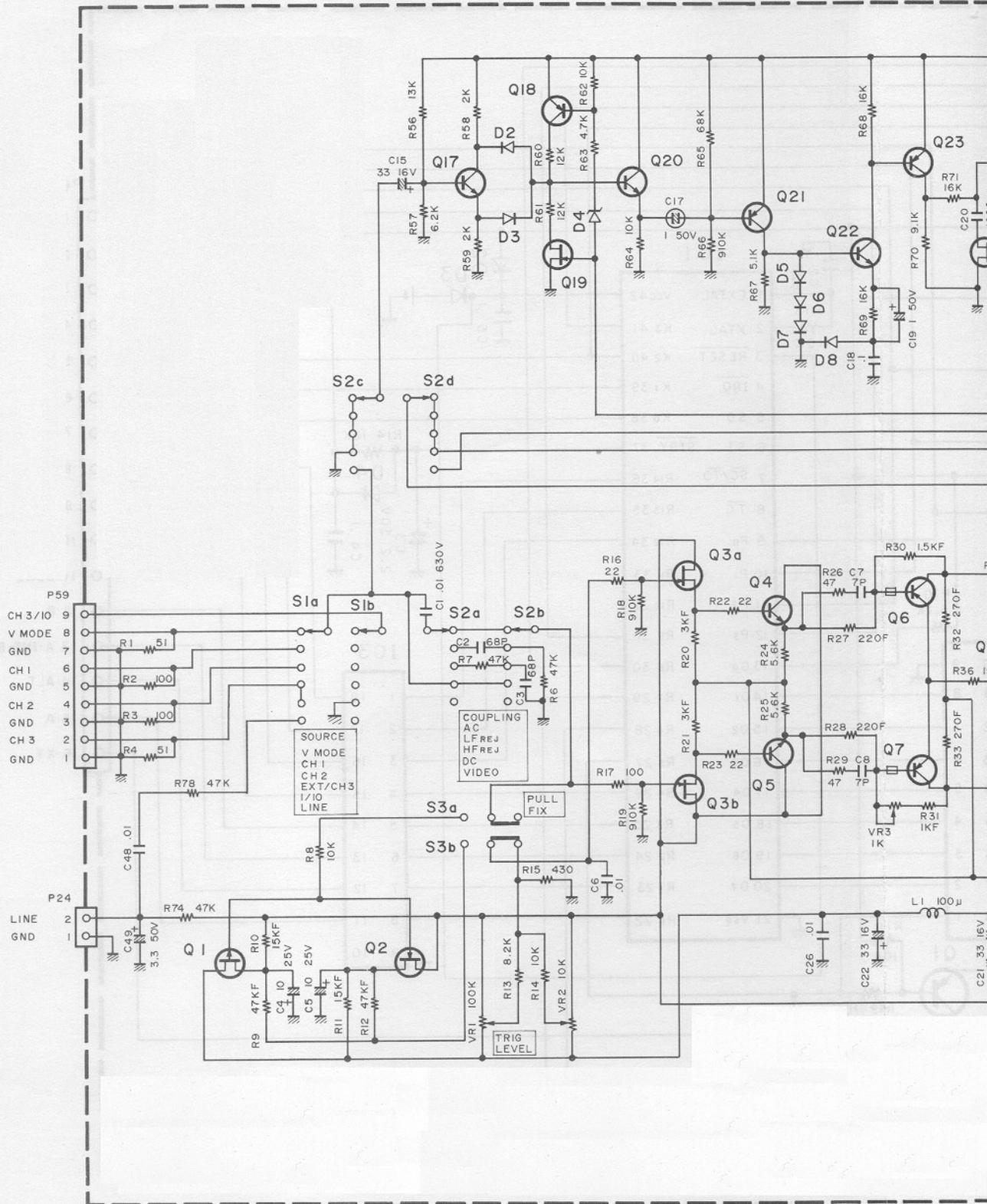
SCHEMATIC DIAGRAM

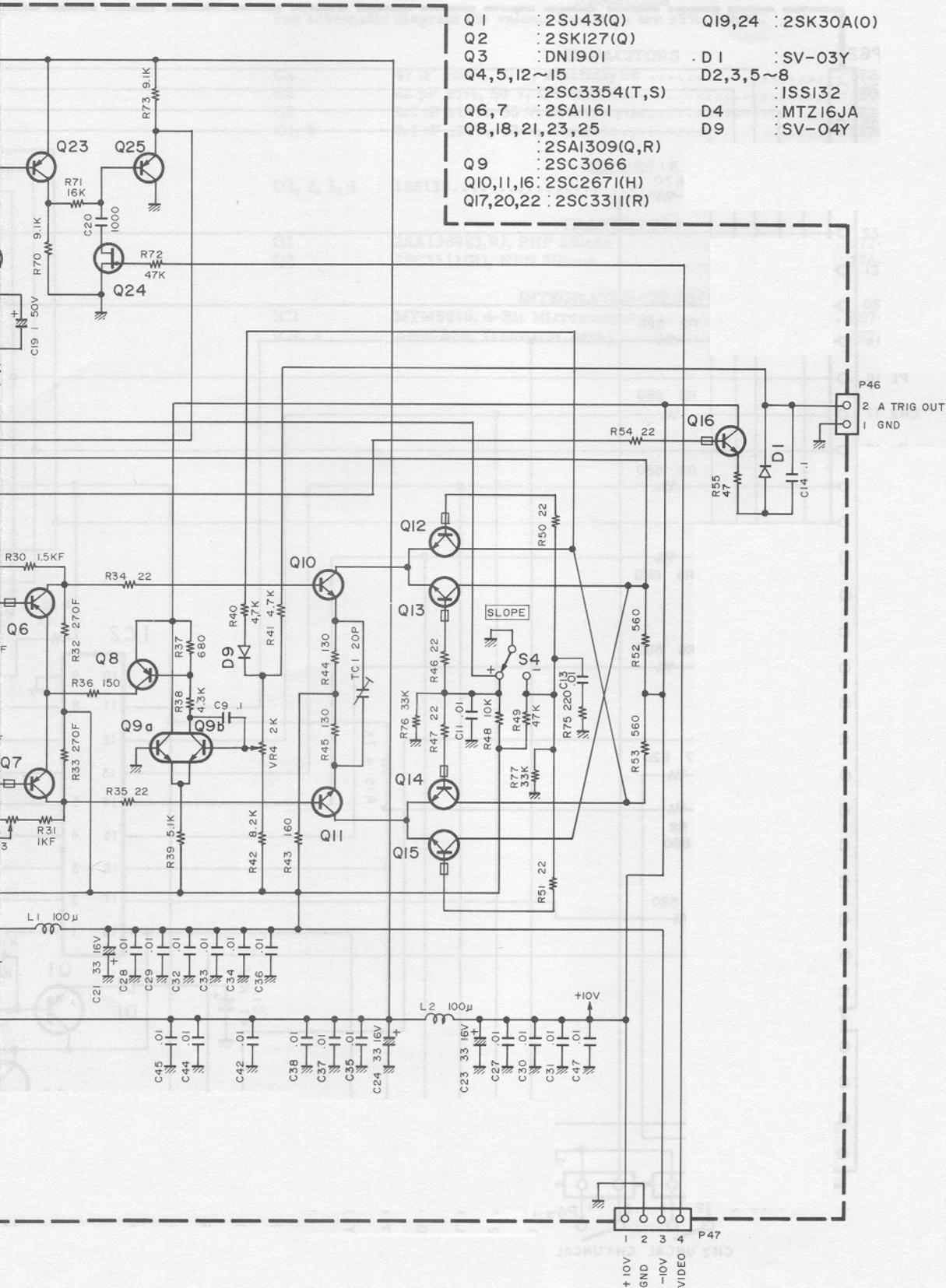
CPU UNIT (X81-1320-00)



SCHEMATIC DIAGRAM

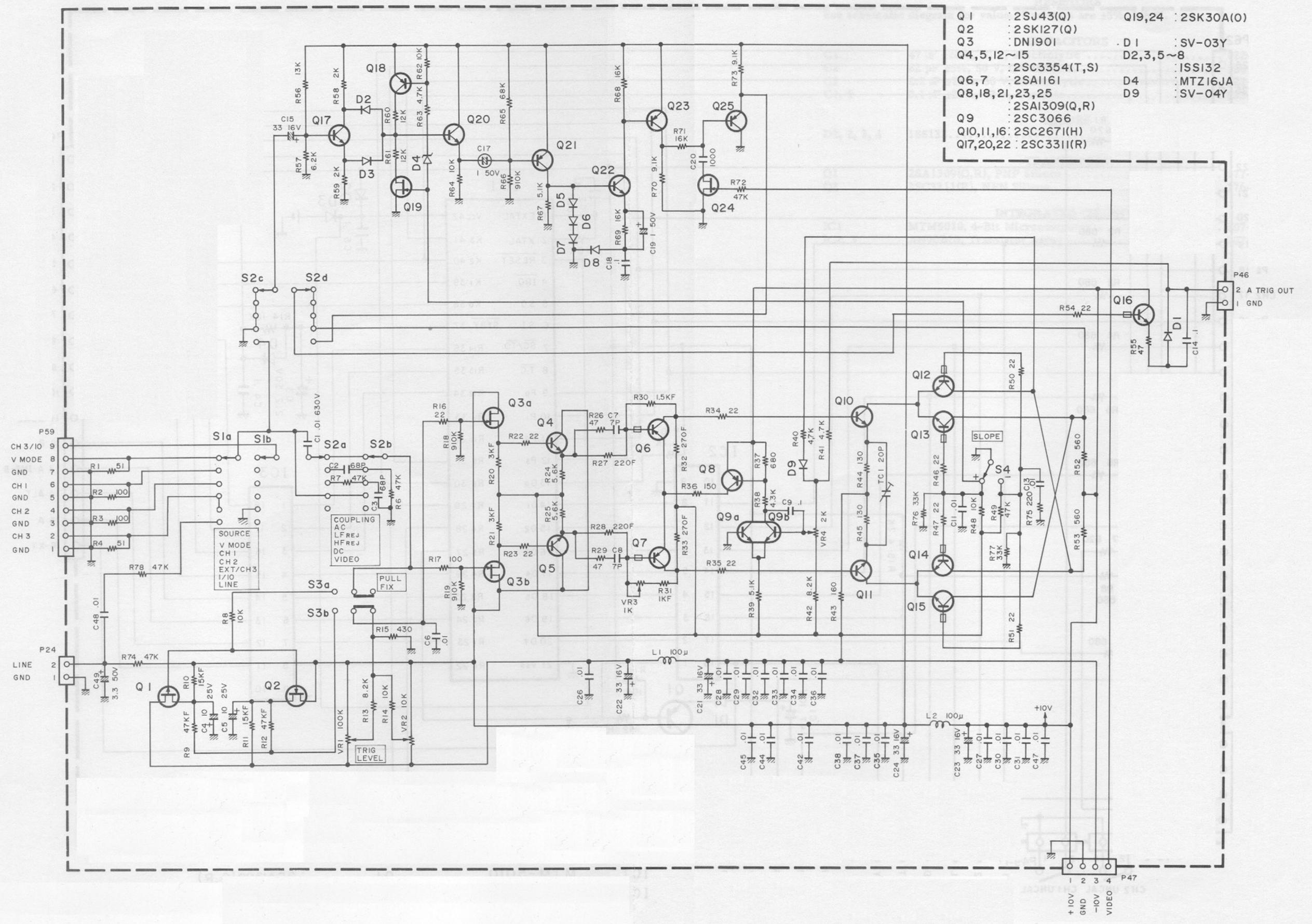
A TRIG SWITCH UNIT (X77-1280-00)





SCHEMATIC DIAGRAM

A TRIG SWITCH UNIT (X77-1280-00)



SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.A TRIGGER SWITCH UNIT
(X77-1280-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 W.

R9	47 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-017
R10, 11	15 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-502
R12	47 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-017
R20, 21	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R27, 28	220 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-002
R32, 33	270 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-012
R30	1.5 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-501
R31	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
VR1	100 k Ω Potentiometer, TRIG LEVEL Control	008-482-9-002
VR2	10 k Ω Trimpot	008-434-9-007
VR3	1 k Ω Trimpot	008-434-9-005
VR4	2 k Ω Trimpot	008-470-9-003

CAPACITORS

C1	0.01 μF $\pm 20\%$, 630 V, Metal Film	033-023-9-002
C2, 3	68 pF $\pm 5\%$, 50 V, Ceramic	020-215-9-008
C4, 5	10 μF $\pm 20\%$, 25 V, Electrolytic	022-281-9-003
C6	0.01 μF , 50 V, Ceramic	020-341-9-003
C7, 8	7 pF ± 0.5 pF, 50 V, Ceramic	020-149-9-001
C9	0.1 μF $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C10	Not Used	
C11	0.01 μF , 50 V, Ceramic	020-341-9-003
C12	Not Used	
C13	0.01 μF , 50 V, Ceramic	020-341-9-003
C14	0.1 μF $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C15	33 μF $\pm 20\%$, 16 V, Electrolytic	022-226-9-008
C16	Not Used	
C17	1 μF $\pm 20\%$, 50 V, Electrolytic	022-167-9-001
C18	0.1 μF $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C19	1 μF $\pm 20\%$, 50 V, Electrolytic	022-226-9-017
C20	1000 pF $\pm 10\%$, 50 V, Ceramic	020-249-9-001
C21 - 24	33 μF $\pm 20\%$, 16 V, Electrolytic	022-226-9-008
C25	Not Used	
C26 - 38	0.01 μF , 50 V, Ceramic	020-341-9-003
C39, 40, 41	Not Used	
C42	0.01 μF , 50 V, Ceramic	020-341-9-003
C43	Not Used	
C44, 45	0.01 μF , 50 V, Ceramic	020-341-9-003
C46	Not Used	
C47, 48	0.01 μF , 50 V, Ceramic	020-341-9-003
C49	3.3 μF $\pm 20\%$, 50 V, Electrolytic	022-226-9-009
TC1	20 pF Trimmer Capacitor	028-065-9-001

INDUCTORS

L1, 2	100 μH , Ferrite	041-124-9-001
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DIODES

D1	SV03Y	153-022-9-001
D2, 3	1SS132	151-123-9-001
D4	MTZ16JA, 15 V Zener	152-134-9-002
D5 - 8	1SS132	151-123-9-001
D9	SV04Y	153-026-9-001

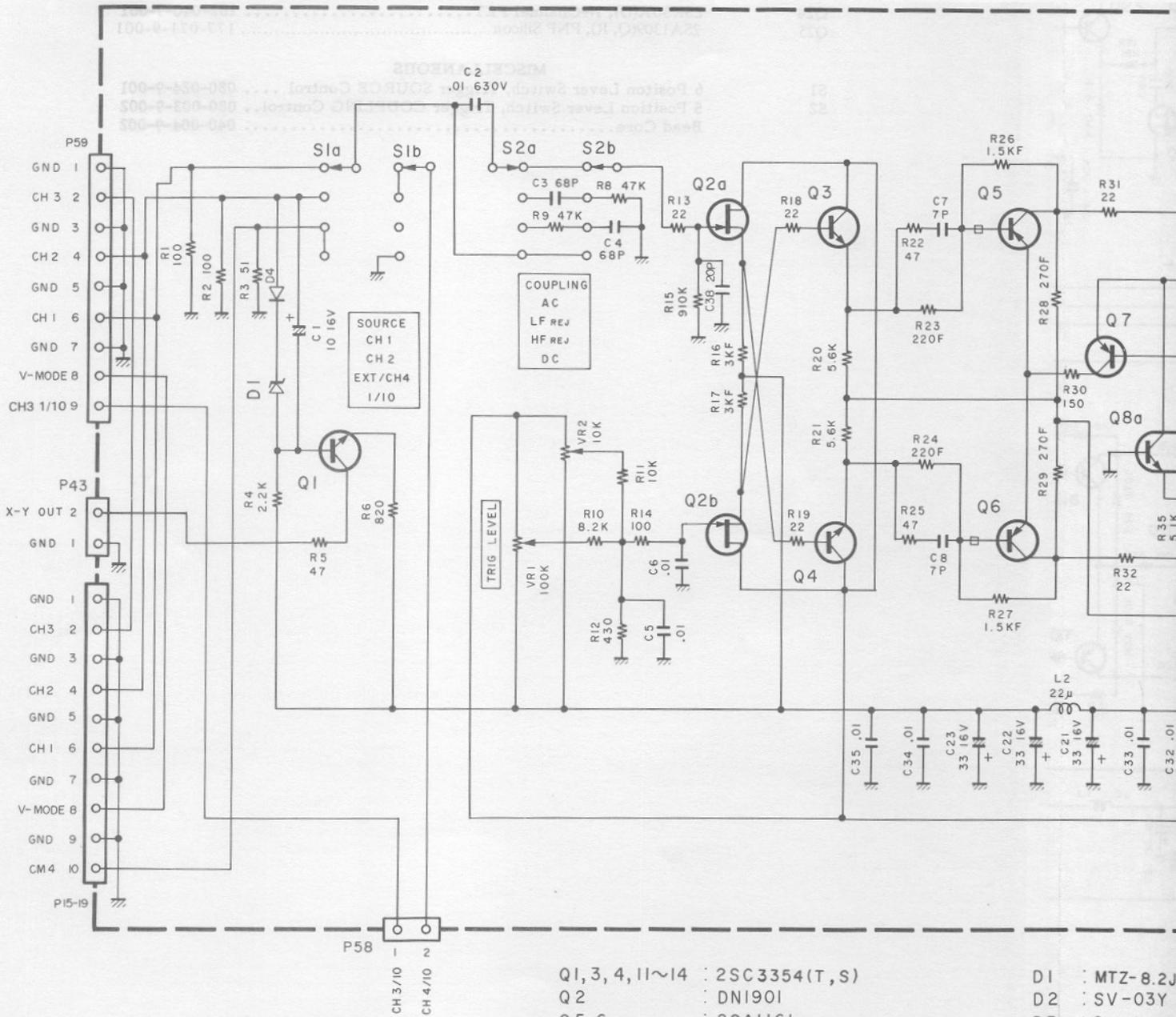
TRANSISTORS

Q1	2SJ43(Q), P-Channel FET	182-064-9-003
Q2	2SK301(Q), FET	182-092-9-001
Q3	DN1901, Dual Silicon N-Channel FET	182-070-9-001
Q4, 5	2SC3354(T,S), NPN Silicon	176-157-9-004
Q6, 7	2SA1161, PNP Silicon	177-048-9-003
Q8	2SA1309(Q,R), PNP Silicon	177-071-9-001

SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
Q9	2SC3066, NPN Silicon.....	176-157-9-008
Q10, 11	2SC2671(H), NPN Silicon	176-157-9-006
Q12 - 15	2SC3354(T,S), NPN Silicon.....	176-157-9-004
Q16	2SC2671(H), NPN Silicon	176-157-9-006
Q17	2SC3311(R), NPN Silicon	176-157-9-002
Q18	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q19	2SK30A(O), N-Channel FET.....	182-040-9-001
Q20	2SC3311(R), NPN Silicon	176-157-9-002
Q21	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q22	2SC3311(R), NPN Silicon	176-157-9-002
Q23	2SA1309(Q, R), PNP Silicon	177-071-9-001
Q24	2SK30A(O), N-Channel FET.....	182-040-9-001
Q25	2SA1309(Q, R), PNP Silicon	177-071-9-001
MISCELLANEOUS		
S1	6 Positon Lever Switch, Trigger SOURCE Control	080-024-9-001
S2	5 Position Lever Switch, Trigger COUPLING Control..	080-003-9-002
	Bead Core.....	040-004-9-002

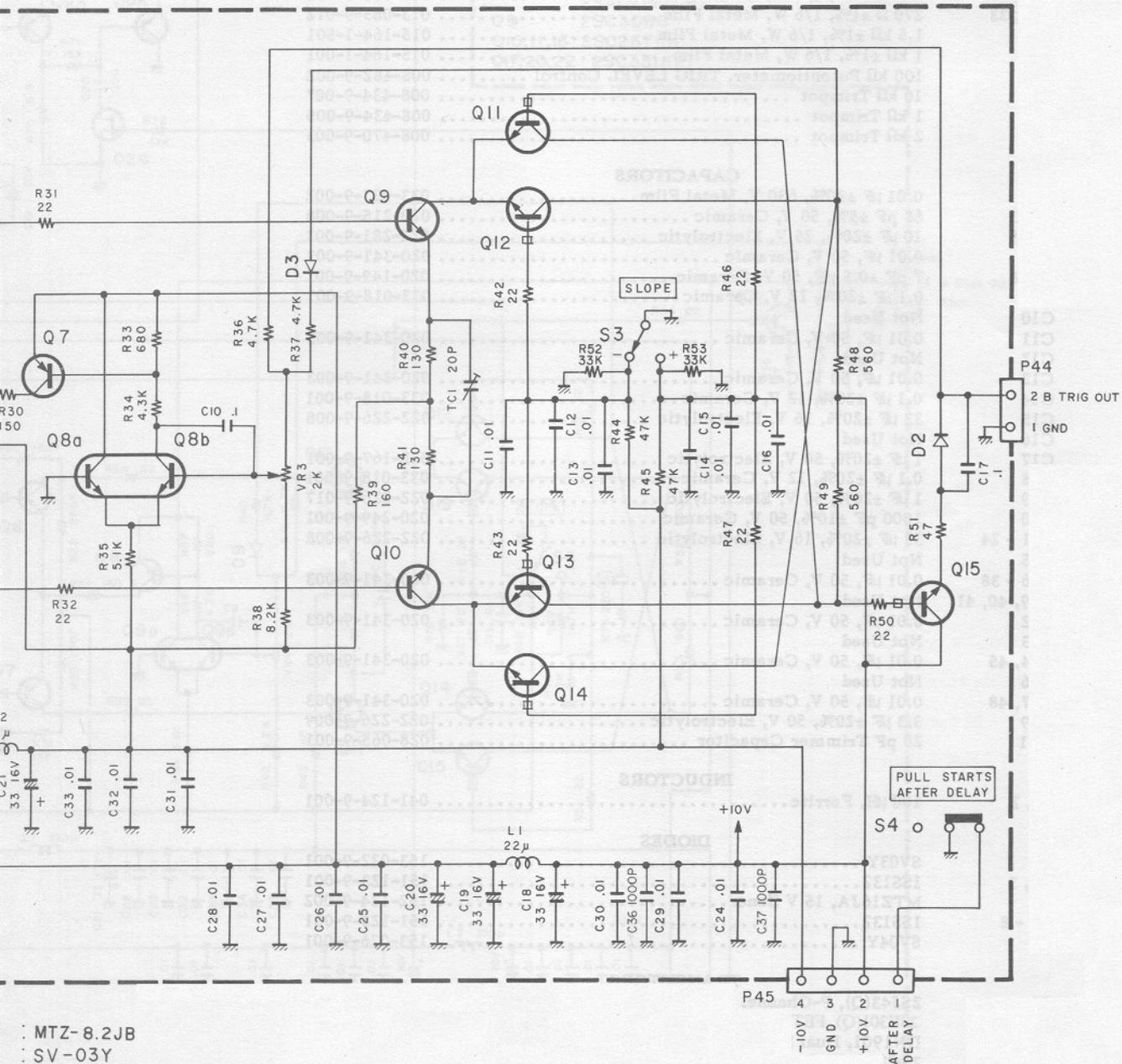
SCHEMATIC DIAGRAM

B TRIG SWITCH UNIT (X77-1290-00)



- Q1, 3, 4, 11~14 : 2SC3354(T, S)
- Q2 : DNI901
- Q5, 6 : 2SA1161
- Q7 : 2SA1309(Q, R)
- Q8 : 2SC3066
- Q9, 10, 15 : 2SC2671(H)

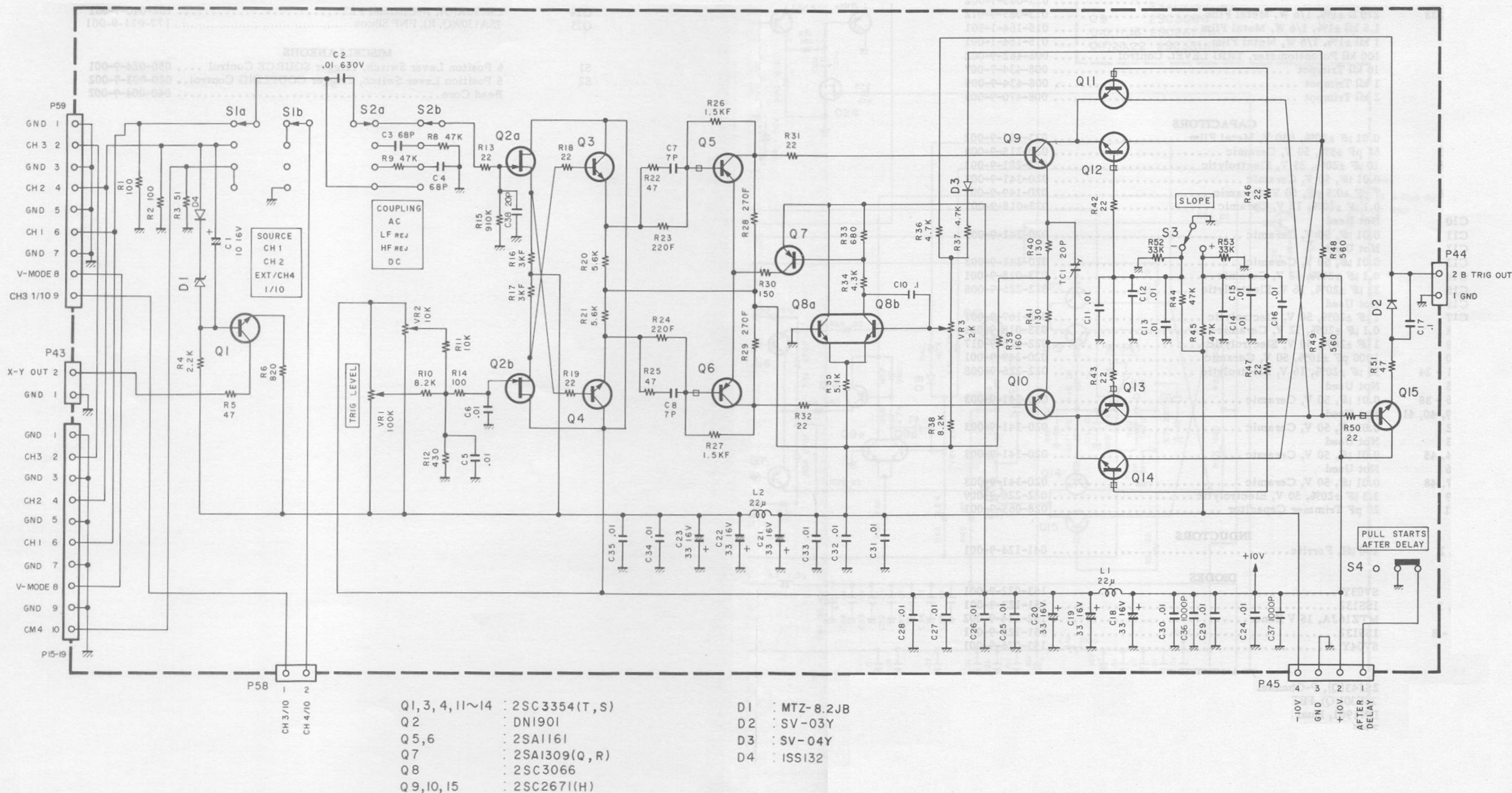
- D1 : MTZ-8.2V
- D2 : SV-03Y
- D3 : SV-04Y
- D4 : ISS132



- : MTZ-8.2JB
- : SV-03Y
- : SV-04Y
- : ISS132

SCHEMATIC DIAGRAM

B TRIG SWITCH UNIT (X77-1290-00)



SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.B TRIGGER SWITCH UNIT
(X77-1290-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 W.

R16, 17	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R23, 24	220 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-002
R26, 27	1.5 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-501
R28, 29	270 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-012
VR1	100 k Ω Potentiometer, TRIG LEVEL Control	008-482-9-003
VR2	10 k Ω Trimpot	008-434-9-007
VR3	2 k Ω Trimpot	008-470-9-003

CAPACITORS

C1	10 μ F $\pm 20\%$, 16 V, Electrolytic	022-226-9-014
C2	0.01 μ F $\pm 20\%$, 630 V, Metal Film	033-023-9-002
C3, 4	68 pF $\pm 5\%$, 50 V, Ceramic	020-215-9-008
C5, 6	0.01 μ F, 50 V, Ceramic	020-341-9-003
C7, 8	7 pF ± 0.5 pF, 50 V, Ceramic	020-337-9-004
C9	Not Used	
C10	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C11 - 16	0.01 μ F, 50 V, Ceramic	020-341-9-003
C17	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C18 - 23	33 μ F $\pm 20\%$, 16 V, Electrolytic	022-226-9-008
C24 - 35	0.01 μ F, 50 V, Ceramic	020-341-9-003
C36, 37	1000 pF $\pm 10\%$, 50 V, Ceramic	020-249-9-001
C38	20 pF $\pm 5\%$, 50 V, Ceramic	020-330-9-002
TC1	20 pF, Trimmer Capacitor	028-065-9-004

INDUCTORS

L1, 2	22 μ H, Ferrite	041-089-9-001
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DIODES

D1	MTZ7.5JC, 7.5 V Zener	152-134-9-001
D2	SV03Y	153-022-9-001
D3	SV04Y	153-026-9-001
D4	ISS132, Silicon	151-123-9-001

TRANSISTORS

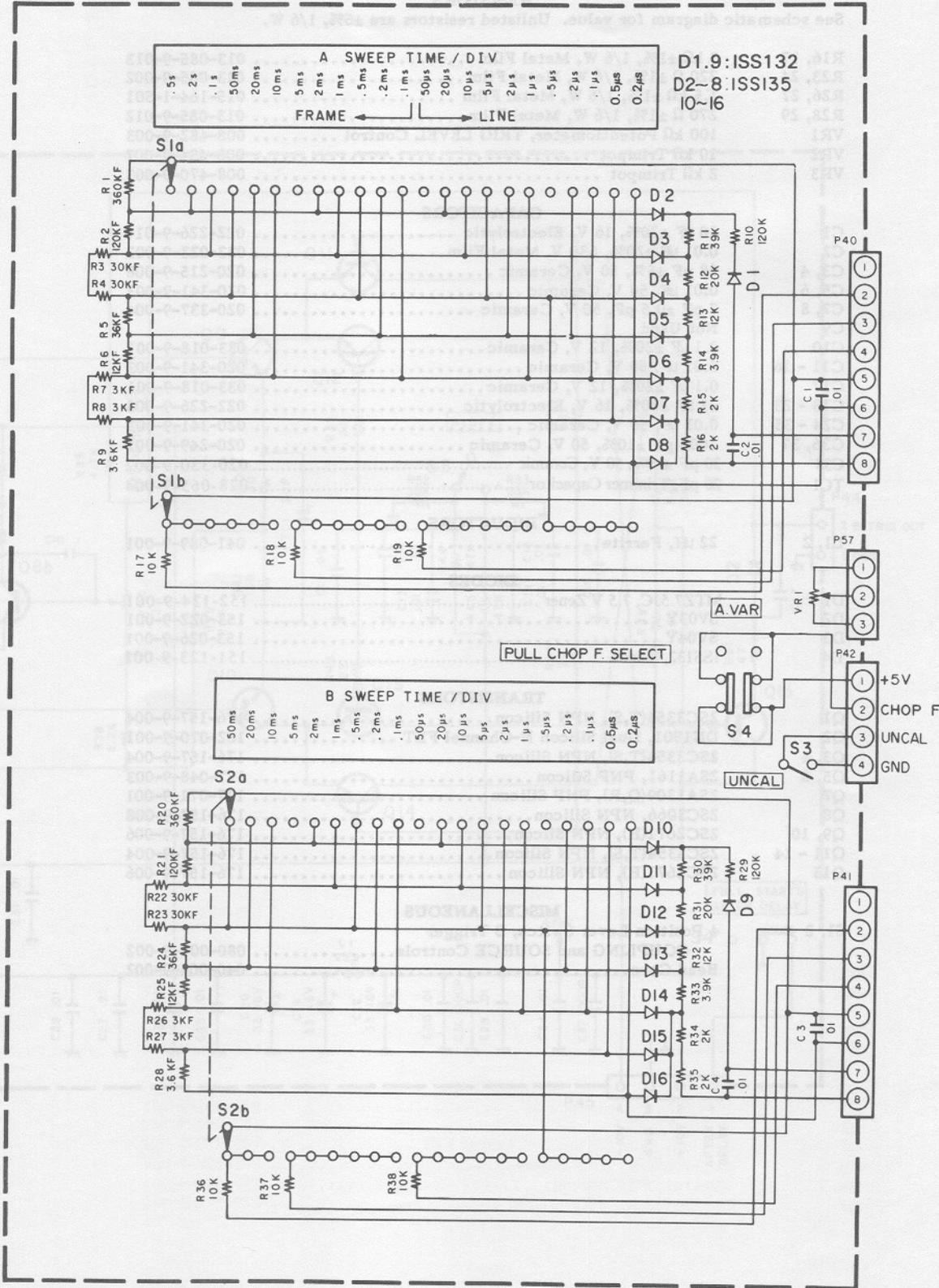
Q1	2SC3354(T,S), NPN Silicon	176-157-9-004
Q2	DN1901, Dual Silicon N-Channel FET	182-070-9-001
Q3, 4	2SC3354(T,S), NPN Silicon	176-157-9-004
Q5, 6	2SA1161, PNP Silicon	177-048-9-003
Q7	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q8	2SC3066, NPN Silicon	176-157-9-008
Q9, 10	2SC2671(H), NPN Silicon	176-157-9-006
Q11 - 14	2SC3354(T,S), NPN Silicon	176-157-9-004
Q15	2SC2671(H), NPN Silicon	176-157-9-006

MISCELLANEOUS

S1, 2	4 Position Lever Switch, B Trigger COUPLING and SOURCE Controls	080-004-9-002
	Bead Core	040-004-9-002

SCHEMATIC DIAGRAM

SWEEP ROTARY UNIT (X74-1310-00)



SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.SWEEP ROTARY UNIT
(X74-1310-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 W.

R1	360 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-113-9-003
R2	120 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-002
R3, 4	30 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-005
R5	36 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-006
R6	12 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-028
R7, 8	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R9	3.6 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-113-9-002
R20	360 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-113-9-003
R21	120 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-002
R22, 23	30 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-005
R24	36 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-103-9-006
R25	12 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-028
R26, 27	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R28	3.6 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-113-9-002

CAPACITORS

C1, 2, 3, 4	0.01 μF $\pm 10\%$, 50 V, Ceramic	020-296-9-001
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DIODES

D1	1SS132	151-123-9-001
D2 - 8	1SS135	151-118-9-001
D9	1SS132	151-123-9-001
D10 - 16	1SS135	151-118-9-001

SWITCHES

S1/2/3/4	Rotary Switch, SWEEP TIME/DIV control	083-289-9-001
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SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.TRIGGER SWEEP UNIT
(X74-1350-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 W.

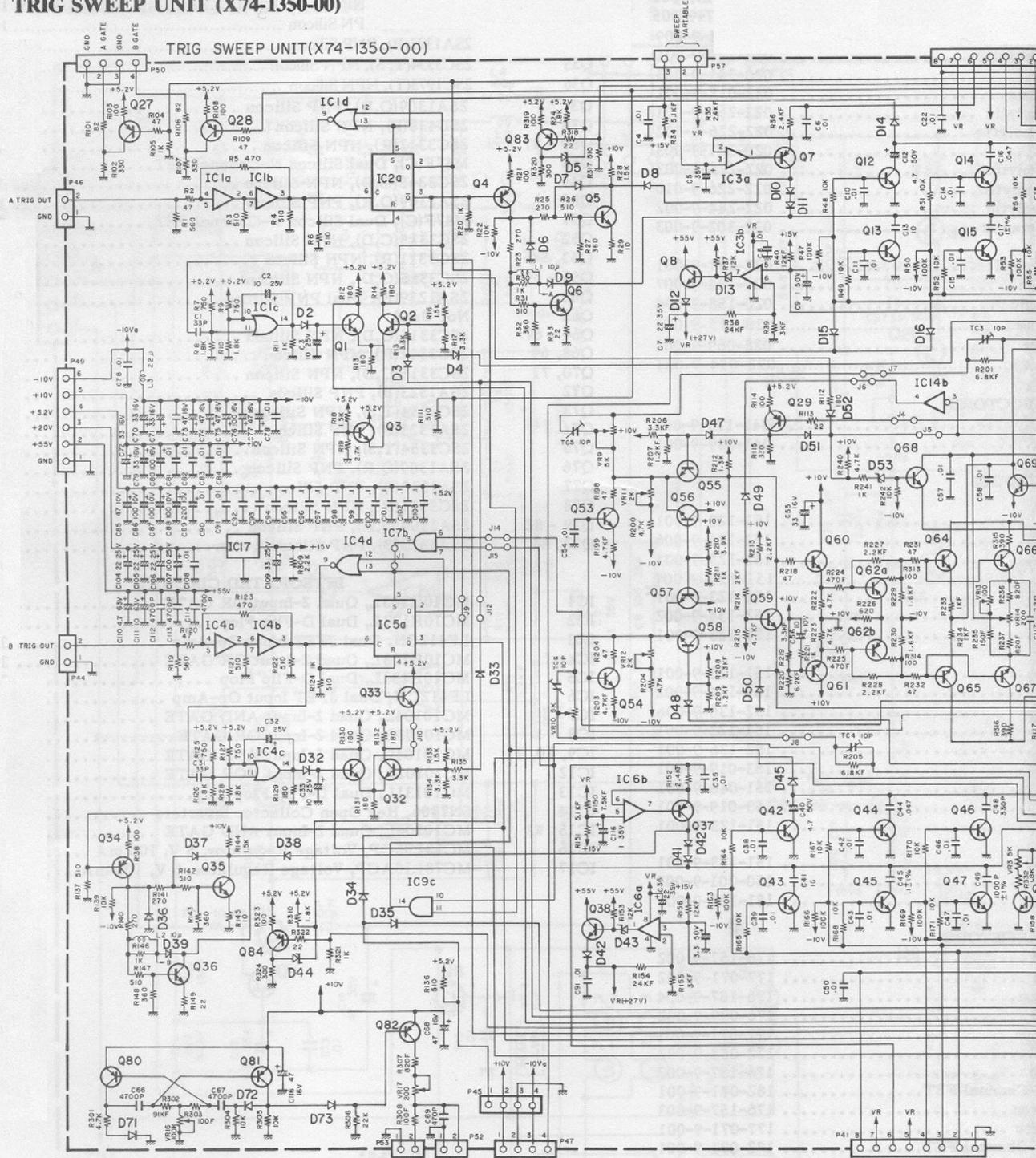
R34	5.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-005
R35, 36	2.4 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-022
R38	24 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-030
R39	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R40	12 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-028
R41	1.5 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-501
R43	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R45	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R91	510 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-033
R92, 93	4.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-025
R150	7.5 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-7-501
R151	5.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-005
R152	2.4 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-022
R154	24 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-030
R155	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R156	12 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-028
R157	1.5 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-501
R159	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R161	3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-013
R199	4.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-025
R201	6.8 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-035
R203	4.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-025
R205	6.8 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-035
R206	3.3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-032
R207	1.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-001
R208	3.3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-032
R209	1.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-001
R213	2.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-003
R214	2 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-2-001
R215	4.7 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-025
R219	3.3 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-032
R220	6.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-034
R224, 225	470 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-016
R227, 228	2.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-003
R229, 230	1.6 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-029
R233, 234	1 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-001
R235	150 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-500
R236, 237	820 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-036
R302	91 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-037
R303	100 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-003
R307	820 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-036
R308	100 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-9-000
VR1	5 k Ω Trimpot	008-467-9-013
VR2	2 k Ω Trimpot	008-434-9-011
VR3	5 k Ω Trimpot	008-434-9-013
VR4	2 k Ω Trimpot	008-434-9-011
VR5	200 Ω Trimpot	008-434-9-001
VR6	1 k Ω Trimpot	008-434-9-012
VR7, 8	1 k Ω Trimpot	008-434-9-012
VR9, 10	5 k Ω Trimpot	008-434-9-013
VR11, 12	2 k Ω Trimpot	008-434-9-011
VR13	100 Ω Trimpot	008-434-9-002
VR14	500 Ω Trimpot	008-434-9-003
VR15	10 k Ω Trimpot	008-467-9-008
VR16	100 k Ω Trimpot	008-467-9-006
VR17	200 Ω Trimpot	008-434-9-001

CAPACITORS

C1	33 pF $\pm 5\%$, 50 V, Ceramic	020-111-9-005
C2, 3	10 μ F $\pm 20\%$, 25 V, Electrolytic	022-281-9-003

SCHEMATIC DIAGRAM

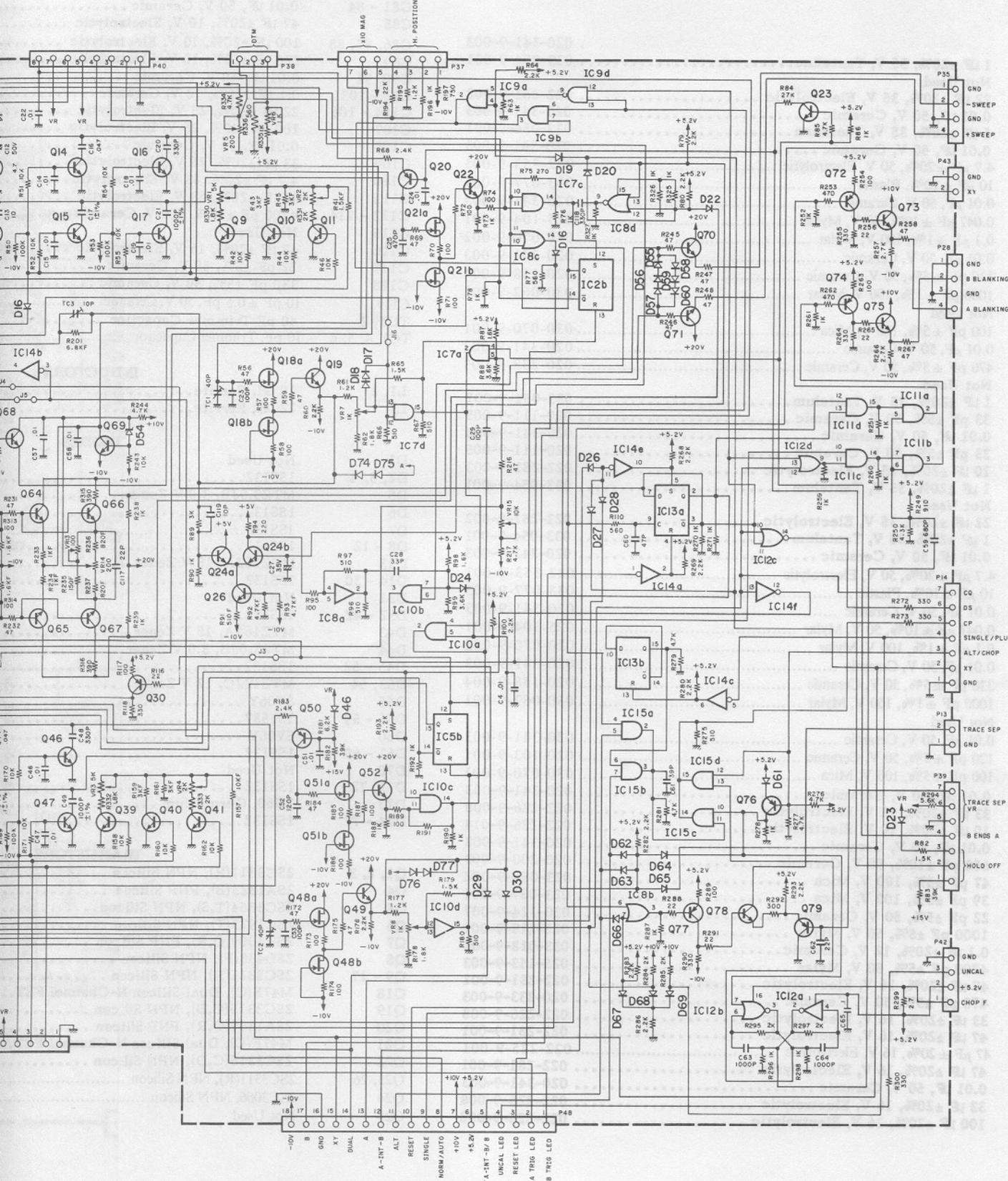
TRIG SWEEP UNIT (X74-1350-00)



- Q4, 27-30, 34, 72, 74, 77, 83, 84 : 2SA1323(B)
- Q7, 20, 37, 50, 76, 79-82 : 2SA1309(I, R)
- Q6, 36 : 2SC1973(T)
- Q9, 22, 49, 52, 55-61, 64-66, 70, 71 : 2SC3315(C, D)
- Q5, 35, 73, 75 : 2SC3354(T, S)
- Q8, 38 : 2SD438(F)
- Q1-3, 9-17, 23-26, 31-33, 39-47 : 2SC3311(R)
- 53, 54, 68, 69, 78 : M47F(C)
- Q62 : 2SA1239
- Q24 : 2SC3066

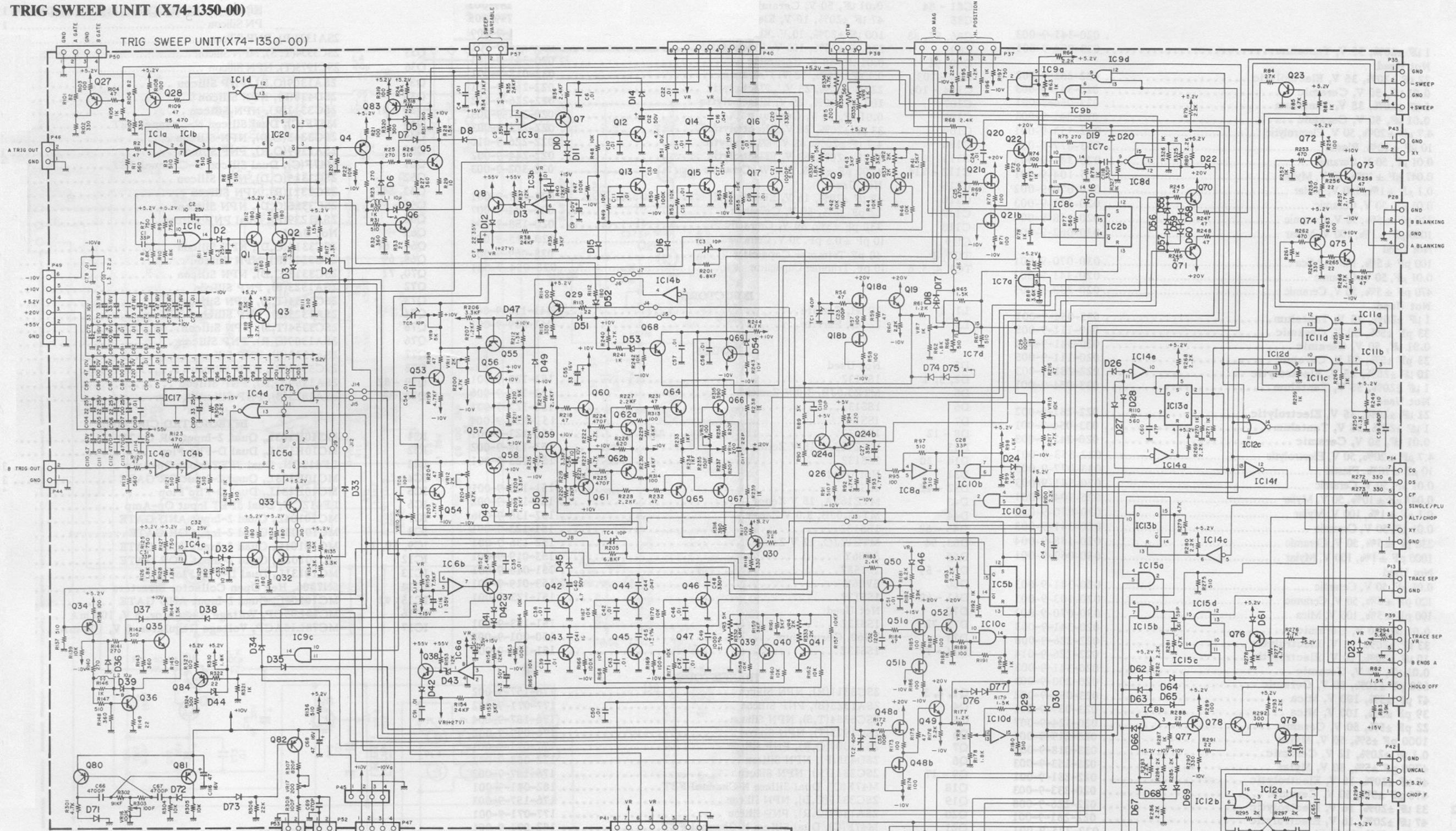
- IC17 : MC78L15ACP
- IC3, 6 : LF412CN
- IC12 : MC10102L
- IC8 : MC10103L
- IC7, 9-11, 15 : MC1014L
- IC13 : MC10131L
- IC14 : SN7405N
- IC1, 4 : MC101H03L
- IC2, 5 : MC101H31L

- D7, 9, 12, 37, 39, 42 : 1SS132
- D1-4, 6, 8, 10, 11, 14-22, 23-36, 38, 40, 41, 45-52, 61-69, 71, 72, 74-77
- D5, 44 : MTZ-3.0JB
- D70 : MTZ-10JC
- D53, 54 : MTZ-12JC
- D13, 43 : MTZ-15JC
- D55, 60 : SV06Y
- D73 : IN60
- D56-59 : IS1587



SCHEMATIC DIAGRAM

TRIG SWEEP UNIT (X74-1350-00)



- | | | | |
|---------------------------------------|-----------------|----------------------------|----------------------|
| Q4, 27-30, 34, 72, 74, 77, 83, 84 | : 2SA1323(B) | D7, 9, 12, 37, 39, 42 | : 1SS132 |
| Q7, 20, 37, 50, 76, 79-82 | : 2SA1309(Q, R) | D1-4, 6, 8, 10, 11, 14-22, | 23-36, 38, 40, 41, |
| Q6, 36 | : 2SC1973(T) | 45-52 | 61-69, 71, 72, 74-77 |
| Q19, 22, 49, 52, 55-61, 64-66, 70, 71 | : 2SC3315(C, D) | D5, 44 | : MTZ-3.0JB |
| Q5, 35, 73, 75 | : 2SC3354(T, S) | D70 | : MTZ-10JC |
| Q8, 38 | : 2SD438(F) | D53, 54 | : MTZ-12JC |
| Q1-3, 9-17, 23-26, 31-33, 39-47 | : 2SC3311(R) | D13, 43 | : MTZ-15JC |
| 53, 54, 68, 69, 78 | | D55, 60 | : SV06Y |
| Q18, 21, 48, 51 | : M47F(C) | D73 | : IN60 |
| Q62 | : 2SA1239 | D56-59 | : IS1587 |
| Q24 | : 2SC3066 | | |
| IC17 | : MC78L15ACP | | |
| IC3, 6 | : LF412CN | | |
| IC12 | : MC10102L | | |
| IC8 | : MC10103L | | |
| IC7, 9-11, 15 | : MC1014L | | |
| IC13 | : MC10131L | | |
| IC14 | : SN7405N | | |
| IC1, 4 | : MC10103L | | |
| IC2, 5 | : MC101031L | | |

SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
TRIGGER SWEEP UNIT (continued)		
C4	0.01 μ F, 50 V, Ceramic	020-341-9-003
C5	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C6	Not Used	
C7	22 μ F \pm 20%, 35 V, Electrolytic	022-281-9-002
C8	0.01 μ F, 50 V, Ceramic	020-341-9-003
C9	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C10, 11	0.01 μ F, 50 V, Ceramic	020-341-9-003
C12	4.7 μ F \pm 20%, 50 V, Electrolytic	022-353-9-001
C13	10 μ F \pm 10%, Plastic	033-077-9-005
C14, 15	0.01 μ F, 50 V, Ceramic	020-341-9-003
C16	0.047 μ F \pm 10%, 50 V, Mylar	025-104-9-001
C17	0.1 μ F \pm 1%, 100 V, Mylar	030-070-9-002
C18, 19	0.01 μ F, 50 V, Ceramic	020-341-9-003
C20	330 pF \pm 5%, 50 V, Ceramic	020-158-9-004
C21	1000 pF \pm 1%, 100 V, Mylar	030-062-9-001
C22	Not Used	
C23	100 pF \pm 5%, 100 V, Mica	030-070-9-001
C24	0.01 μ F, 50 V, Ceramic	020-341-9-003
C25	470 pF \pm 5%, 50 V, Ceramic	020-233-9-003
C26	Not Used	
C27	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C28, 29	33 pF \pm 5%, 50 V, Ceramic	020-111-9-005
C30	0.01 μ F, 50 V, Ceramic	020-341-9-003
C31	33 pF \pm 5%, 50 V, Ceramic	020-111-9-005
C32, 33	10 μ F \pm 20%, 25 V, Electrolytic	022-281-9-003
C34	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C35	Not Used	
C36	22 μ F \pm 20%, 35 V, Electrolytic	022-281-9-002
C37	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C38, 39	0.01 μ F, 50 V, Ceramic	020-341-9-003
C40	4.7 μ F \pm 20%, 50 V, Electrolytic	022-353-9-001
C41	10 μ F \pm 10%, Plastic	033-077-9-005
C42, 43	0.01 μ F, 50 V, Ceramic	020-341-9-003
C44	0.047 μ F \pm 10%, 50 V, Mylar	025-104-9-001
C45	0.1 μ F \pm 1%, 100 V, Mylar	030-070-9-002
C46, 47	0.01 μ F, 50 V, Ceramic	020-341-9-003
C48	330 pF \pm 5%, 50 V, Ceramic	020-158-9-004
C49	1000 pF \pm 1%, 100 V, Mylar	030-062-9-001
C50	Not Used	
C51	0.01 μ F, 50 V, Ceramic	020-341-9-003
C52	120 pF \pm 5%, 50 V, Ceramic	020-103-9-001
C53	100 pF \pm 5%, 100 V, Mica	030-070-9-001
C54	0.01 μ F, 50 V, Ceramic	020-341-9-003
C55	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C56	10 μ F \pm 20%, 16 V, Electrolytic	022-226-9-014
C57, 58	0.01 μ F, 50 V, Ceramic	020-341-9-003
C59	680 pF \pm 10%, 50 V, Ceramic	020-200-9-003
C60	47 pF \pm 5%, 100 V, Mica	023-056-9-002
C61	39 pF \pm 5%, 100 V, Mica	023-059-9-001
C62	22 pF \pm 5%, 50 V, Ceramic	020-124-9-007
C63, 64	1000 pF \pm 5%, 50 V, Mylar	025-219-9-001
C65	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001
C66, 67	4700 pF \pm 5%, 50 V, Mylar	025-153-9-003
C68	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C69	470 pF \pm 5%, 50 V, Ceramic	020-233-9-003
C70, 71, 72	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C73, 74, 75	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C76	47 μ F \pm 20%, 16 V, Electrolytic	022-225-9-001
C77	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C78	0.01 μ F, 50 V, Ceramic	020-341-9-003
C79	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C80	100 μ F \pm 20%, 16 V, Electrolytic	022-225-9-002

SCHEMATIC SYMBOL	DESCRIPTION
C81 - 84	0.01 μ F, 50 V, Ceramic
C85	47 μ F \pm 20%, 10 V, Electrolytic
C86, 87, 88	100 μ F \pm 20%, 10 V, Electrolytic
C89	220 μ F \pm 20%, 10 V, Electrolytic
C90, 91	0.01 μ F, 50 V, Ceramic
C92 - 103	0.1 μ F \pm 20%, 12 V, Ceramic
C104 - 106	22 μ F \pm 20%, 25 V, Electrolytic
C107	100 μ F \pm 20%, 25 V, Electrolytic
C108	0.01 μ F, 50 V, Ceramic
C109	33 μ F \pm 20%, 25 V, Electrolytic
C110	4.7 μ F \pm 20%, 63 V, Electrolytic
C111	10 μ F \pm 20%, 63 V, Electrolytic
C112 - 114	4700 pF \pm 10%, 500 V, Ceramic
C115	Not Used
C116	47 μ F \pm 20%, 16 V, Electrolytic
C117	22 pF \pm 5%, 50 V, Ceramic
C118	330 pF \pm 5%, 50 V, Ceramic
C119	10 pF \pm 0.5 pF, 50 V, Ceramic
TC1, 2	40 pF Trimmer Capacitor
TC3, 4, 5, 6	10 pF, Trimmer Capacitor

INDUCTORS

L1, 2	10 μ H, Ferrite
L3	22 μ H, Ferrite

DIODES

D1	Not Used
D2, 3, 4	1SS132
D5	MTZ3.0JB, 3.0 V Zener
D6	1SS132
D7	1SS132
D8 - 12	1SS132
D13	MTZ16JA, 15 V Zener
D14 - 30	1SS132
D31	Not Used
D32 - 42	1SS132
D43	MTZ16JA, 15 V Zener
D44	MTZ3.0JB, 3.0 V Zener
D45 - 52	1SS132
D53, 54	MTZ12JC, 12 V Zener
D55	SV06Y
D56 - 59	1S1587
D60	SV06Y
D61 - 69	1SS132
D70	Not Used
D71, 72	1SS132
D73	1N60, Germanium
D74 - 77	1SS132

TRANSISTORS

Q1, 2, 3	2SC3311(R), NPN Silicon
Q4	2SA1323(B), PNP Silicon
Q5	2SC3354(T,S), NPN Silicon
Q6	2SC1973(T), NPN Silicon
Q7	2SA1309(Q,R), PNP Silicon
Q8	2SD438(F), NPN Silicon
Q9 - 17	2SC3311(R), NPN Silicon
Q18	M47F(C), Dual Silicon N-Channel FET
Q19	2SC3315(C,D), NPN Silicon
Q20	2SA1309(Q,R), PNP Silicon
Q21	M47F(C), Dual Silicon N-Channel FET
Q22	2SC3315(C,D), NPN Silicon
Q23, 26	2SC3311(R), NPN Silicon
Q24	2SC3066, NPN Silicon
Q25	Not Used

DESCRIPTION	B & K-PRECISION PART NO.	SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
Capacitor	020-341-9-003	Q27 - 30	2SA1323(B), PNP Silicon	177-071-9-002
Electrolytic	022-267-9-005	Q31 - 33	2SC3311(R), NPN Silicon	176-157-9-002
Electrolytic	022-264-9-009	Q34	2SA1323(B), PNP Silicon	177-071-9-002
Electrolytic	022-225-9-001	Q35	2SC3354(T, S), NPN Silicon	176-157-9-004
Capacitor	020-341-9-003	Q36	2SC1973(T), NPN Silicon	176-099-9-002
Ceramic	033-018-9-001	Q37	2SA1309(Q,R), PNP Silicon	177-071-9-001
Electrolytic	022-264-9-001	Q38	2SD438(F), NPN Silicon	172-058-9-002
Electrolytic	022-226-9-002	Q39 - 47	2SC3311(R), NPN Silicon	176-157-9-002
Capacitor	020-341-9-003	Q48	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Electrolytic	022-276-9-003	Q49	2SC3315(C,D), NPN Silicon	176-157-9-003
Electrolytic	022-226-9-010	Q50	2SA1309(Q,R), PNP Silicon	177-071-9-001
Electrolytic	022-244-9-002	Q51	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Ceramic	020-302-9-003	Q52	2SC3315(C,D), NPN Silicon	176-157-9-003
Electrolytic	022-281-9-001	Q53, 54	2SC3311(R), NPN Silicon	176-157-9-002
Ceramic	020-124-9-007	Q55 - 61	2SC3315(C,D), NPN Silicon	176-157-9-003
Ceramic	020-158-9-004	Q62	2SA1239(F), Dual PNP Silicon	177-068-9-001
Ceramic	020-215-9-001	Q63	Not Used	
Resistor	028-069-9-001	Q64 - 67	2SC3315(C,D), NPN Silicon	176-157-9-003
Resistor	028-054-9-001	Q68, 69	2SC3311(R), NPN Silicon	176-157-9-002
		Q70, 71	2SC3315(C,D), NPN Silicon	176-157-9-003
		Q72	2SA1323(B), PNP Silicon	177-071-9-002
		Q73	2SC3354(T,S), NPN Silicon	176-157-9-004
		Q74	2SA1323(B), PNP Silicon	177-071-9-002
		Q75	2SC3354(T,S), NPN Silicon	176-157-9-004
		Q76	2SA1309(Q,R), PNP Silicon	177-071-9-001
		Q77	2SA1323(B), PNP Silicon	177-071-9-002
		Q78	2SC3311(R), NPN Silicon	176-157-9-002
		Q79 - 82	2SA1309(Q,R), PNP Silicon	177-071-9-001
		Q83, 84	2SA1323(B), PNP Silicon	177-071-9-002
INTEGRATED CIRCUITS				
		IC1	MC10H103L, Quad 2-Input OR GATE	307-355-9-007
		IC2	MC10H131L, Dual D-Flip Flop	307-355-9-008
		IC3	LF412CN, Dual JFET Input Op-Amp	307-355-9-006
		IC4	MC10H103L, Quad 2-Input OR GATE	307-355-9-007
		IC5	MC10H131L, Dual D-Flip Flop	307-355-9-008
		IC6	LF412CN, Dual JFET Input Op-Amp	307-355-9-006
		IC7	MC10104L, Quad 2-Input AND GATE	307-309-9-004
		IC8	MC10103L, Quad 2-Input OR GATE	307-309-9-003
		IC9, 10, 11	MC10104L, Quad 2-Input AND GATE	307-309-9-004
		IC12	MC10102L, Quad 2-Input NOR GATE	307-301-9-001
		IC13	MC10131L, Quad D-Flip Flop	307-309-9-005
		IC14	SN7406, Hex Open Collector Inverters	307-355-9-011
		IC15	MC10104L, Quad 2-Input AND GATE	307-309-9-004
		IC16	MC78L05CP, Voltage Regulator, 5 V, 100 mA	307-355-9-009
		IC17	MC78L15ACP, Voltage Regulator, 5 V, 100 mA	307-355-9-010
TRANSISTORS				
Capacitor	176-157-9-002			
Capacitor	177-071-9-002			
Capacitor	176-157-9-004			
Capacitor	176-099-9-002			
Capacitor	177-071-9-001			
Capacitor	172-058-9-002			
Capacitor	176-157-9-002			
N-Channel FET	182-071-9-001			
Capacitor	176-157-9-003			
Capacitor	177-071-9-001			
N-Channel FET	182-071-9-001			
Capacitor	176-157-9-003			
Capacitor	176-157-9-002			
Capacitor	176-157-9-008			

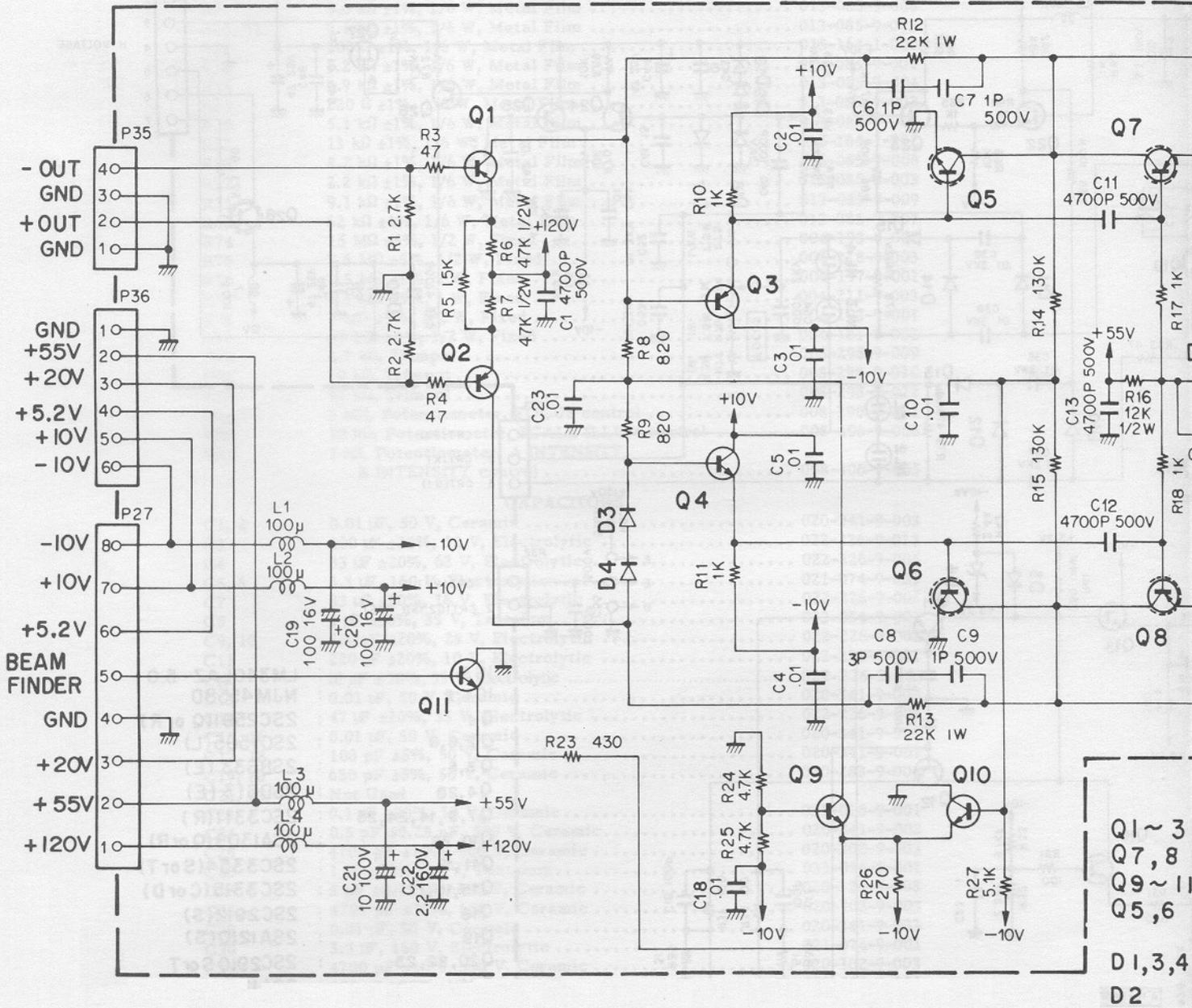
SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
TRIGGER SWEEP UNIT (continued)		
C4	0.01 μ F, 50 V, Ceramic	020-341-9-003
C5	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C6	Not Used	
C7	22 μ F \pm 20%, 35 V, Electrolytic	022-281-9-002
C8	0.01 μ F, 50 V, Ceramic	020-341-9-003
C9	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C10, 11	0.01 μ F, 50 V, Ceramic	020-341-9-003
C12	4.7 μ F \pm 20%, 50 V, Electrolytic	022-353-9-001
C13	10 μ F \pm 10%, Plastic	033-077-9-005
C14, 15	0.01 μ F, 50 V, Ceramic	020-341-9-003
C16	0.047 μ F \pm 10%, 50 V, Mylar	025-104-9-001
C17	0.1 μ F \pm 1%, 100 V, Mylar	030-070-9-002
C18, 19	0.01 μ F, 50 V, Ceramic	020-341-9-003
C20	330 pF \pm 5%, 50 V, Ceramic	020-158-9-004
C21	1000 pF \pm 1%, 100 V, Mylar	030-062-9-001
C22	Not Used	
C23	100 pF \pm 5%, 100 V, Mica	030-070-9-001
C24	0.01 μ F, 50 V, Ceramic	020-341-9-003
C25	470 pF \pm 5%, 50 V, Ceramic	020-233-9-003
C26	Not Used	
C27	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C28, 29	33 pF \pm 5%, 50 V, Ceramic	020-111-9-005
C30	0.01 μ F, 50 V, Ceramic	020-341-9-003
C31	33 pF \pm 5%, 50 V, Ceramic	020-111-9-005
C32, 33	10 μ F \pm 20%, 25 V, Electrolytic	022-281-9-003
C34	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C35	Not Used	
C36	22 μ F \pm 20%, 35 V, Electrolytic	022-281-9-002
C37	1 μ F \pm 20%, 35 V, Tantalum	033-054-9-001
C38, 39	0.01 μ F, 50 V, Ceramic	020-341-9-003
C40	4.7 μ F \pm 20%, 50 V, Electrolytic	022-353-9-001
C41	10 μ F \pm 10%, Plastic	033-077-9-005
C42, 43	0.01 μ F, 50 V, Ceramic	020-341-9-003
C44	0.047 μ F \pm 10%, 50 V, Mylar	025-104-9-001
C45	0.1 μ F \pm 1%, 100 V, Mylar	030-070-9-002
C46, 47	0.01 μ F, 50 V, Ceramic	020-341-9-003
C48	330 pF \pm 5%, 50 V, Ceramic	020-158-9-004
C49	1000 pF \pm 1%, 100 V, Mylar	030-062-9-001
C50	Not Used	
C51	0.01 μ F, 50 V, Ceramic	020-341-9-003
C52	120 pF \pm 5%, 50 V, Ceramic	020-103-9-001
C53	100 pF \pm 5%, 100 V, Mica	030-070-9-001
C54	0.01 μ F, 50 V, Ceramic	020-341-9-003
C55	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C56	10 μ F \pm 20%, 16 V, Electrolytic	022-226-9-014
C57, 58	0.01 μ F, 50 V, Ceramic	020-341-9-003
C59	680 pF \pm 10%, 50 V, Ceramic	020-200-9-003
C60	47 pF \pm 5%, 100 V, Mica	023-056-9-002
C61	39 pF \pm 5%, 100 V, Mica	023-059-9-001
C62	22 pF \pm 5%, 50 V, Ceramic	020-124-9-007
C63, 64	1000 pF \pm 5%, 50 V, Mylar	025-219-9-001
C65	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001
C66, 67	4700 pF \pm 5%, 50 V, Mylar	025-153-9-003
C68	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C69	470 pF \pm 5%, 50 V, Ceramic	020-233-9-003
C70, 71, 72	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C73, 74, 75	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C76	47 μ F \pm 20%, 16 V, Electrolytic	022-225-9-001
C77	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C78	0.01 μ F, 50 V, Ceramic	020-341-9-003
C79	33 μ F \pm 20%, 16 V, Electrolytic	022-226-9-008
C80	100 μ F \pm 20%, 16 V, Electrolytic	022-225-9-002

SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
C81 - 84	0.01 μ F, 50 V, Ceramic	020-341-9-003
C85	47 μ F \pm 20%, 10 V, Electrolytic	022-267-9-005
C86, 87, 88	100 μ F \pm 20%, 10 V, Electrolytic	022-264-9-009
C89	220 μ F \pm 20%, 10 V, Electrolytic	022-225-9-001
C90, 91	0.01 μ F, 50 V, Ceramic	020-341-9-003
C92 - 103	0.1 μ F \pm 20%, 12 V, Ceramic	033-018-9-001
C104 - 106	22 μ F \pm 20%, 25 V, Electrolytic	022-264-9-001
C107	100 μ F \pm 20%, 25 V, Electrolytic	022-226-9-002
C108	0.01 μ F, 50 V, Ceramic	020-341-9-003
C109	33 μ F \pm 20%, 25 V, Electrolytic	022-276-9-003
C110	4.7 μ F \pm 20%, 63 V, Electrolytic	022-226-9-010
C111	10 μ F \pm 20%, 63 V, Electrolytic	022-244-9-002
C112 - 114	4700 pF \pm 10%, 500 V, Ceramic	020-302-9-003
C115	Not Used	
C116	47 μ F \pm 20%, 16 V, Electrolytic	022-281-9-001
C117	22 pF \pm 5%, 50 V, Ceramic	020-124-9-007
C118	330 pF \pm 5%, 50 V, Ceramic	020-158-9-004
C119	10 pF \pm 0.5 pF, 50 V, Ceramic	020-215-9-001
TC1, 2	40 pF Trimmer Capacitor	028-069-9-001
TC3, 4, 5, 6	10 pF, Trimmer Capacitor	028-054-9-001
INDUCTORS		
L1, 2	10 μ H, Ferrite	041-133-9-003
L3	22 μ H, Ferrite	041-089-9-001
DIODES		
D1	Not Used	
D2, 3, 4	1SS132	151-123-9-001
D5	MTZ3.0JB, 3.0 V Zener	152-136-9-006
D6	1SS132	151-123-9-001
D7	1SS132	151-123-9-001
D8 - 12	1SS132	151-123-9-001
D13	MTZ16JA, 15 V Zener	152-134-9-002
D14 - 30	1SS132	151-123-9-001
D31	Not Used	
D32 - 42	1SS132	151-123-9-001
D43	MTZ16JA, 15 V Zener	152-134-9-002
D44	MTZ3.0JB, 3.0 V Zener	152-136-9-006
D45 - 52	1SS132	151-123-9-001
D53, 54	MTZ12JC, 12 V Zener	152-136-9-001
D55	SV06Y	153-019-9-001
D56 - 59	1S1587	151-048-9-001
D60	SV06Y	153-019-9-001
D61 - 69	1SS132	151-123-9-001
D70	Not Used	
D71, 72	1SS132	151-123-9-001
D73	1N60, Germanium	150-001-9-005
D74 - 77	1SS132	151-123-9-001
TRANSISTORS		
Q1, 2, 3	2SC3311(R), NPN Silicon	176-157-9-002
Q4	2SA1323(B), PNP Silicon	177-071-9-002
Q5	2SC3354(T,S), NPN Silicon	176-157-9-004
Q6	2SC1973(T), NPN Silicon	176-099-9-002
Q7	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q8	2SD438(F), NPN Silicon	172-058-9-002
Q9 - 17	2SC3311(R), NPN Silicon	176-157-9-002
Q18	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Q19	2SC3315(C,D), NPN Silicon	176-157-9-003
Q20	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q21	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Q22	2SC3315(C,D), NPN Silicon	176-157-9-003
Q23, 26	2SC3311(R), NPN Silicon	176-157-9-002
Q24	2SC3066, NPN Silicon	176-157-9-008
Q25	Not Used	

SCHEMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
Q27 - 30	2SA1323(B), PNP Silicon	177-071-9-002
Q31 - 33	2SC3311(R), NPN Silicon	176-157-9-002
Q34	2SA1323(B), PNP Silicon	177-071-9-002
Q35	2SC3354(T, S), NPN Silicon	176-157-9-004
Q36	2SC1973(T), NPN Silicon	176-099-9-002
Q37	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q38	2SD438(F), NPN Silicon	172-058-9-002
Q39 - 47	2SC3311(R), NPN Silicon	176-157-9-002
Q48	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Q49	2SC3315(C,D), NPN Silicon	176-157-9-003
Q50	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q51	M47F(C), Dual Silicon N-Channel FET	182-071-9-001
Q52	2SC3315(C,D), NPN Silicon	176-157-9-003
Q53, 54	2SC3311(R), NPN Silicon	176-157-9-002
Q55 - 61	2SC3315(C,D), NPN Silicon	176-157-9-003
Q62	2SA1239(F), Dual PNP Silicon	177-068-9-001
Q63	Not Used	
Q64 - 67	2SC3315(C,D), NPN Silicon	176-157-9-003
Q68, 69	2SC3311(R), NPN Silicon	176-157-9-002
Q70, 71	2SC3315(C,D), NPN Silicon	176-157-9-003
Q72	2SA1323(B), PNP Silicon	177-071-9-002
Q73	2SC3354(T,S), NPN Silicon	176-157-9-004
Q74	2SA1323(B), PNP Silicon	177-071-9-002
Q75	2SC3354(T,S), NPN Silicon	176-157-9-004
Q76	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q77	2SA1323(B), PNP Silicon	177-071-9-002
Q78	2SC3311(R), NPN Silicon	176-157-9-002
Q79 - 82	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q83, 84	2SA1323(B), PNP Silicon	177-071-9-002
INTEGRATED CIRCUITS		
IC1	MC10H103L, Quad 2-Input OR GATE	307-355-9-007
IC2	MC10H131L, Dual D-Flip Flop	307-355-9-008
IC3	LF412CN, Dual JFET Input Op-Amp	307-355-9-006
IC4	MC10H103L, Quad 2-Input OR GATE	307-355-9-007
IC5	MC10H131L, Dual D-Flip Flop	307-355-9-008
IC6	LF412CN, Dual JFET Input Op-Amp	307-355-9-006
IC7	MC10104L, Quad 2-Input AND GATE	307-309-9-004
IC8	MC10103L, Quad 2-Input OR GATE	307-309-9-003
IC9, 10, 11	MC10104L, Quad 2-Input AND GATE	307-309-9-004
IC12	MC10102L, Quad 2-Input NOR GATE	307-301-9-001
IC13	MC10131L, Dual D-Flip Flop	307-309-9-005
IC14	SN7406, Hex Open Collector Inverters	307-355-9-011
IC15	MC10104L, Quad 2-Input AND GATE	307-309-9-004
IC16	MC78L05CP, Voltage Regulator, 5 V, 100 mA	307-355-9-009
IC17	MC78L15ACP, Voltage Regulator, 5 V, 100 mA	307-355-9-010

SCHEMATIC DIAGRAM

HORIZONTAL OUTPUT AMP UNIT (X74-1360-00)



SCHEMATIC DIAGRAM

HORIZONTAL OUTPUT AMP UNIT (X74-1360-00)

SCHEMATIC SYMBOL

DESCRIPTION

B & K-PRECISION PART NO.

HORIZONTAL OUTPUT AMP UNIT (X74-1360-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 W.

R6, 7	47 k Ω $\pm 5\%$, 1/2 W, Carbon Film	002-102-5-473
R12, 13	22 k Ω $\pm 5\%$, 1 W, Metal Film	011-001-5-223
R16	12 k Ω $\pm 5\%$, 1/2 W, Carbon Film	002-102-5-123

CAPACITORS

C1	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C2 - 5	0.01 μ F, 50 V, Ceramic	020-341-9-003
C6, 7	1 pF ± 0.25 pF, 500 V, Ceramic	020-326-9-002
C8	3 pF ± 0.25 pF, 500 V, Ceramic	020-326-9-008
C9	1 pF ± 0.25 pF, 500 V, Ceramic	020-326-9-002
C10	0.01 μ F, 50 V, Ceramic	020-341-9-003
C11, 12, 13	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C14	1 μ F $\pm 20\%$, 35 V, Tantalum	033-054-9-001
C15	0.01 μ F, 50 V, Ceramic	020-341-9-003
C16	1 μ F $\pm 20\%$, 35 V, Tantalum	033-054-9-001
C17	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C18	0.01 μ F, 50 V, Ceramic	020-341-9-003
C19, 20	100 μ F $\pm 20\%$, 16 V, Electrolytic	022-222-9-014
C21	10 μ F $\pm 20\%$, 100 V, Electrolytic	021-069-9-002
C22	2.2 μ F, 160 V, Electrolytic	021-077-9-001
C23	0.01 μ F, 50 V, Ceramic	020-341-9-003
C24	Not Used	
C25	Not Used	

INDUCTORS

L1 - 4	100 μ H, Ferrite	041-133-9-004
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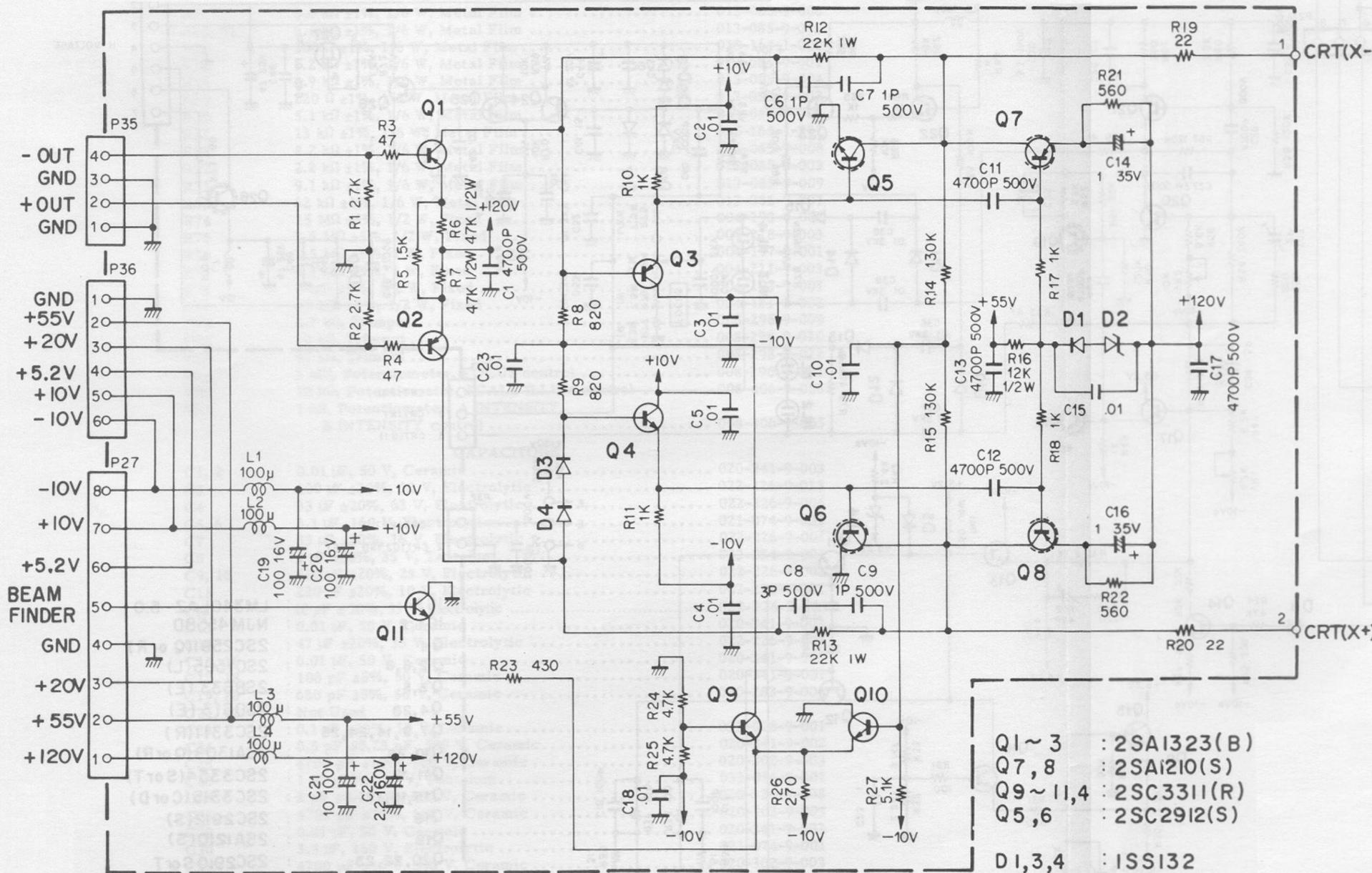
DIODES

D1	1SS132, Silicon	151-123-9-001
D2	MTZ5.1JB, 5 V Zener	152-134-9-003
D3, 4	1SS132, Silicon	151-123-9-001

TRANSISTORS

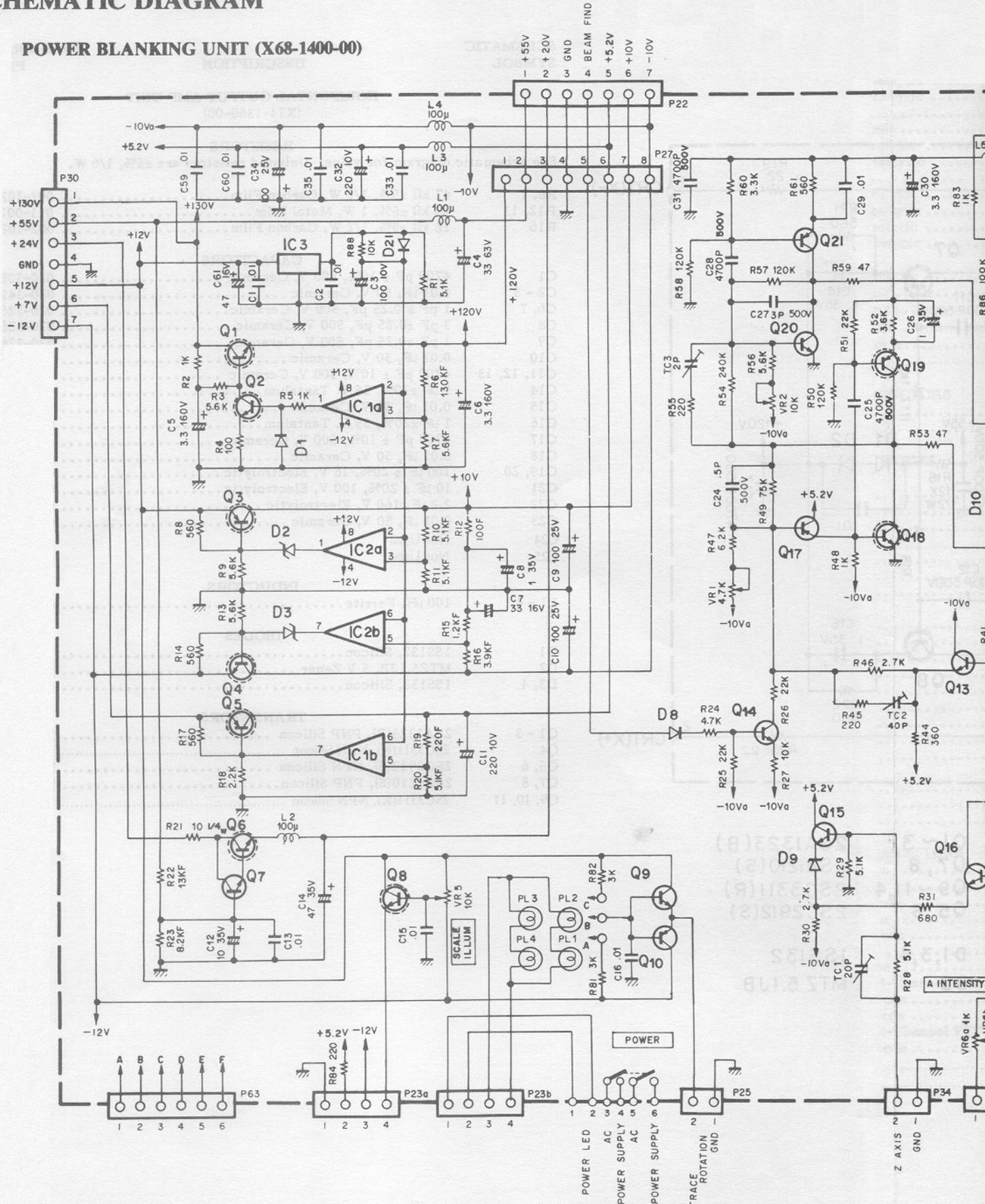
Q1 - 3	2SA1323(B), PNP Silicon	177-071-9-002
Q4	2SC3311(R), NPN Silicon	176-157-9-002
Q5, 6	2SC2912(S), NPN Silicon	176-066-9-002
Q7, 8	2SA1210(S), PNP Silicon	177-014-9-002
Q9, 10, 11	2SC3311(R), NPN Silicon	176-157-9-002

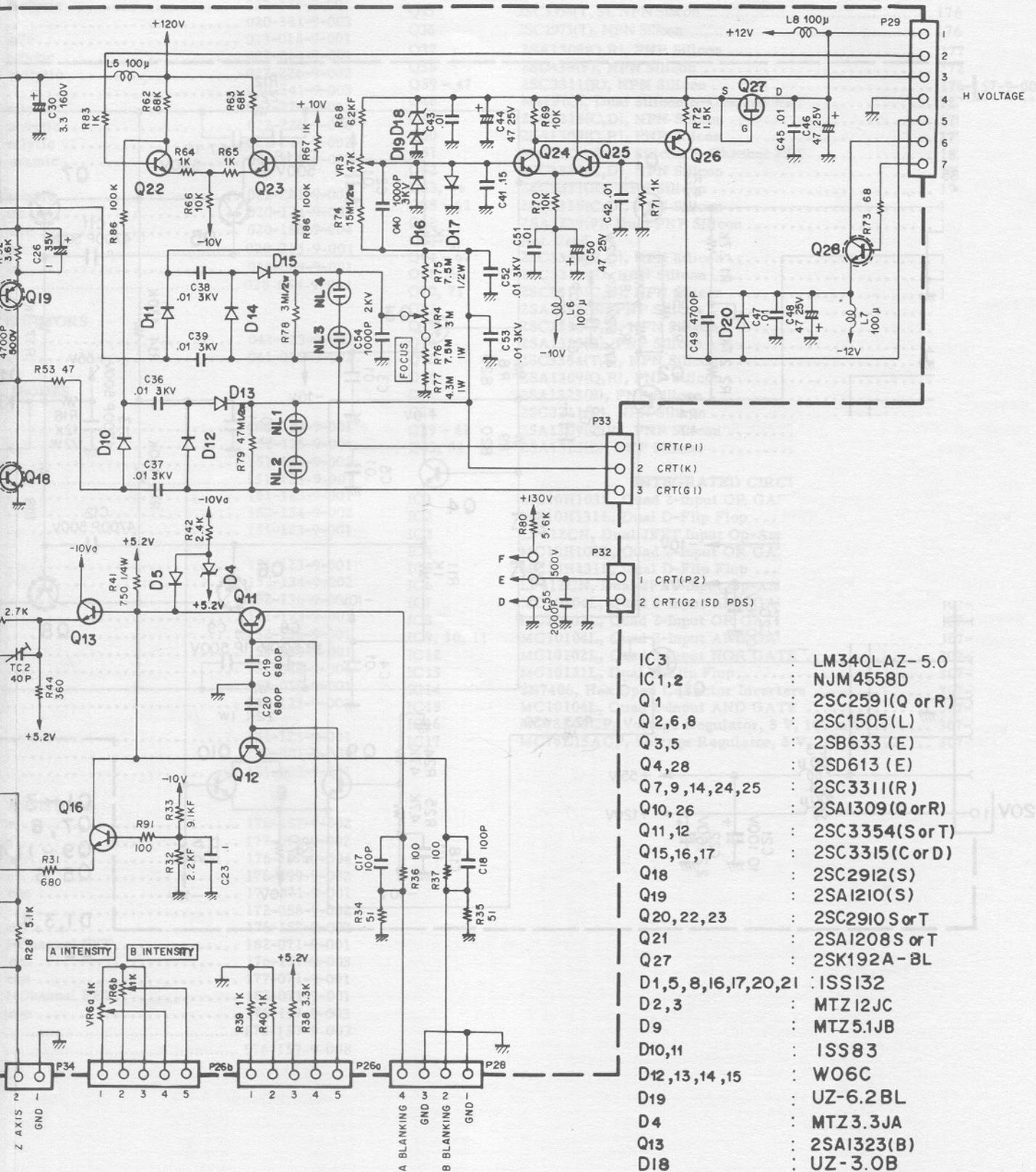
Q1 ~ 3	: 2SA1323(B)
Q7, 8	: 2SA1210(S)
Q9 ~ 11, 4	: 2SC3311(R)
Q5, 6	: 2SC2912(S)
D1, 3, 4	: 1SS132
D2	: MTZ 5.1JB



SCHEMATIC DIAGRAM

POWER BLANKING UNIT (X68-1400-00)

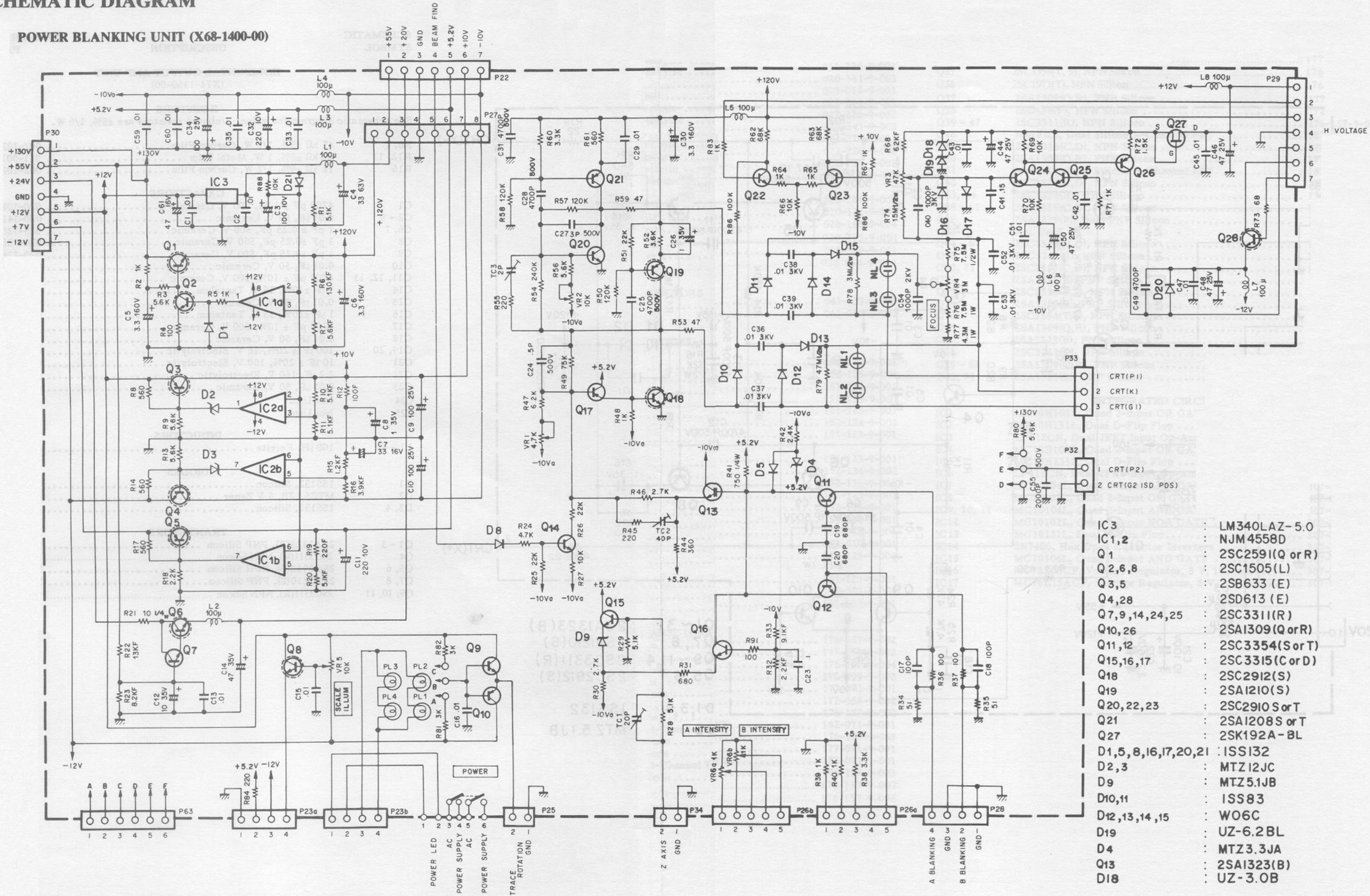




- IC 3 : LM340LAZ-5.0
- IC 1,2 : NJM 4558D
- Q 1 : 2SC2591(Q or R)
- Q 2,6,8 : 2SC1505(L)
- Q 3,5 : 2SB633 (E)
- Q 4,28 : 2SD613 (E)
- Q 7,9,14,24,25 : 2SC3311(R)
- Q 10,26 : 2SA1309(Q or R)
- Q 11,12 : 2SC3354(S or T)
- Q 15,16,17 : 2SC3315(C or D)
- Q 18 : 2SC2912(S)
- Q 19 : 2SA1210(S)
- Q 20,22,23 : 2SC2910 S or T
- Q 21 : 2SA1208 S or T
- Q 27 : 2SK192A - BL
- D 1,5,8,16,17,20,21 : ISS132
- D 2,3 : MTZ12JC
- D 9 : MTZ5.1JB
- D 10,11 : ISS83
- D 12,13,14,15 : WO6C
- D 19 : UZ-6.2BL
- D 4 : MTZ3.3JA
- Q 13 : 2SA1323(B)
- D 18 : UZ-3.0B

SCHEMATIC DIAGRAM

POWER BLANKING UNIT (X68-1400-00)



SCHEMATIC
SYMBOL

DESCRIPTION

B & K-PRECISION
PART NO.POWER BLANKING UNIT
(X68-1400-00)

RESISTORS

See schematic diagram for value. Unlisted resistors are $\pm 5\%$, 1/6 or 1/4 W.

R6	130 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-303
R7	5.6 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-006
R10, 11	5.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-005
R12	100 Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-000
R15	1.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-001
R16	3.9 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-004
R19	220 Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-002
R20	5.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-005
R22	13 k Ω $\pm 1\%$, 1/6 W, Metal Film	015-164-1-302
R23	8.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-008
R32	2.2 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-003
R33	9.1 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-009
R68	62 k Ω $\pm 1\%$, 1/6 W, Metal Film	013-085-9-007
R74	15 M Ω $\pm 5\%$, 1/2 W, Fixed	004-193-9-002
R75	7.5 M Ω $\pm 5\%$, 1/2 W, Fixed	004-218-9-003
R76	7.5 M Ω $\pm 5\%$, 1 W, Fixed	004-197-9-001
R77	4.3 M Ω $\pm 5\%$, 1 W, Fixed	004-211-9-003
R78	3 M Ω $\pm 5\%$, 1/2 W, Fixed	004-193-9-001
R79	47 M Ω $\pm 5\%$, 1/2 W, Fixed	004-181-9-002
VR1	4.7 k Ω , Trimpot	008-298-9-009
VR2	10 k Ω , Trimpot	008-298-9-010
VR3	47 k Ω , Trimpot	008-298-9-012
VR4	3 M Ω , Potentiometer, FOCUS control	008-390-9-001
VR5	10 k Ω , Potentiometer, SCALE ILLUM control	008-406-9-006
VR6	1 k Ω , Potentiometer, A INTENSITY, B INTENSITY control	008-406-9-005

CAPACITORS

C1, 2	0.01 μ F, 50 V, Ceramic	020-341-9-003
C3	100 μ F $\pm 20\%$, 10 V, Electrolytic	022-226-9-013
C4	33 μ F $\pm 20\%$, 63 V, Electrolytic	022-226-9-005
C5, 6	3.3 μ F, 160 V, Electrolytic	021-074-9-001
C7	33 μ F $\pm 20\%$, 16 V, Electrolytic	022-226-9-008
C8	1 μ F $\pm 20\%$, 35 V, Tantalum	033-054-9-001
C9, 10	100 μ F $\pm 20\%$, 25 V, Electrolytic	022-226-9-002
C11	220 μ F $\pm 20\%$, 10 V, Electrolytic	022-225-9-001
C12	10 μ F $\pm 20\%$, 35 V, Electrolytic	022-226-9-003
C13	0.01 μ F, 50 V, Ceramic	020-341-9-003
C14	47 μ F $\pm 20\%$, 35 V, Electrolytic	022-226-9-004
C15, 16	0.01 μ F, 50 V, Ceramic	020-341-9-003
C17, 18	100 pF $\pm 5\%$, 50 V, Ceramic	020-341-9-001
C19, 20	680 pF $\pm 5\%$, 50 V, Ceramic	020-283-9-004
C21, 22	Not Used	
C23	0.1 μ F $\pm 20\%$, 12 V, Ceramic	033-018-9-001
C24	0.5 pF ± 0.25 pF, 500 V, Ceramic	020-341-9-002
C25	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C26	1 μ F $\pm 20\%$, 35 V, Tantalum	033-054-9-001
C27	3 pF ± 0.25 pF, 500 V, Ceramic	020-326-9-008
C28	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C29	0.01 μ F, 50 V, Ceramic	020-341-9-003
C30	3.3 μ F, 160 V, Electrolytic	021-074-9-001
C31	4700 pF $\pm 10\%$, 500 V, Ceramic	020-302-9-003
C32	220 μ F $\pm 20\%$, 10 V, Electrolytic	022-225-9-001
C33	0.01 μ F, 50 V, Ceramic	020-341-9-003
C34	100 μ F $\pm 20\%$, 25 V, Electrolytic	022-226-9-002
C35	0.01 μ F, 50 V, Ceramic	020-341-9-003
C36 - 39	0.01 μ F ± 0.25 pF, 3 kV, Ceramic	033-077-9-001
C40	1000 pF, 3.1 kV, Ceramic	020-226-9-003
C41	0.15 μ F $\pm 10\%$, 50 V, Mylar	025-192-9-001
C42, 43	0.01 μ F, 50 V, Ceramic	020-341-9-003
C44	47 μ F $\pm 20\%$, 25 V, Electrolytic	022-226-9-001
C45	0.01 μ F, 50 V, Ceramic	020-341-9-003
C46	47 μ F $\pm 20\%$, 25 V, Electrolytic	022-226-9-001

SCHMATIC SYMBOL	DESCRIPTION	B & K-PRECISION PART NO.
POWER BLANKING UNIT (continued)		
C47	0.01 μ F, 50 V, Ceramic	020-341-9-003
C48	47 μ F \pm 20%, 25 V, Electrolytic	022-226-9-001
C49	4700 pF \pm 10%, 50 V, Mylar	025-107-9-007
C50	47 μ F \pm 20%, 25 V, Electrolytic	022-226-9-001
C51	0.01 μ F, 50 V, Ceramic	020-341-9-003
C52, 53	0.01 μ F \pm 0.25 pF, 3 kV, Ceramic	033-077-9-001
C54	1000 pF, 2 kV, Ceramic	020-226-9-002
C55	2200 pF \pm 10%, 500 V, Ceramic	020-302-9-004
C56 - 58	Not Used	
C59, 60	0.01 μ F, 50 V, Ceramic	020-341-9-003
C61	47 μ F \pm 20%, 16 V, Electrolytic	022-226-9-012
TC1	20 pF Trimmer Capacitor	028-050-9-002
TC2	40 pF Trimmer Capacitor	028-088-9-001
TC3	2 pF Trimmer Capacitor	028-079-9-001
INDUCTORS		
L1 - 5	100 μ H, Ferrite	041-133-9-004
L6	100 μ H, Ferrite	041-124-9-001
L7, 8	100 μ H, Ferrite	041-133-9-004
DIODES		
D1	1SS132, Silicon	151-123-9-001
D2, 3	MTZ12JC, 12 V Zener	152-136-9-001
D4	MTZ3.3JA, 3.2 V Zener	152-136-9-002
D5	1SS132, Silicon	151-123-9-001
D6, 7	Not Used	
D8	1SS132, Silicon	151-123-9-001
D9	MTZ5.1JB, 5 V Zener	152-134-9-003
D10, 11	1SS83, Silicon Switching	151-084-9-001
D12 - 15	W06C, Silicon Rectifier	151-052-9-002
D16, 17	1SS132, Silicon	151-123-9-001
D18	UZ3.0B, 3.0 V Zener	152-149-9-001
D19	UZ6.2BC, 6.2 V Zener	152-149-9-002
D20, 21	1SS132, Silicon	151-123-9-001
TRANSISTORS		
Q1	2SC2591(Q,R), NPN Silicon	176-157-9-001
Q2	2SC1505(L), NPN Silicon	172-058-9-001
Q3	2SB633(E), PNP Silicon	173-010-9-001
Q4	2SD613(E), NPN Silicon	176-104-9-002
Q5	2SB633(E), PNP Silicon	173-010-9-001
Q6	2SC1505(L), NPN Silicon	172-058-9-001
Q7	2SC3311(R), NPN Silicon	176-157-9-002
Q8	2SC1505(L), NPN Silicon	172-058-9-001
Q9	2SC3311(R), NPN Silicon	176-157-9-002
Q10	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q11, 12	2SC3354(T,S), NPN Silicon	176-157-9-004
Q13	2SA1323(B), PNP Silicon	177-071-9-002
Q14	2SC3311(R), NPN Silicon	176-157-9-002
Q15, 16, 17	2SC3315(C,D), NPN Silicon	176-157-9-003
Q18	2SC2912(S), NPN Silicon	172-066-9-002
Q19	2SA1210(S), PNP Silicon	173-014-9-002
Q20	2SC2910(S,T), NPN Silicon	176-126-9-001
Q21	2SA1208(S,T), PNP Silicon	177-053-9-001
Q22, 23	2SC2910(S,T), NPN Silicon	176-126-9-001
Q24, 25	2SC3311(R), NPN Silicon	176-157-9-002
Q26	2SA1309(Q,R), PNP Silicon	177-071-9-001
Q27	2SK192A-BL, N-Channel FET	182-076-9-001
Q28	2SD613(E), NPN Silicon	176-104-9-002
INTEGRATED CIRCUITS		
IC1, 2	NJM4558D, Dual Op-Amp	307-333-9-001
IC3	LM340LAZ5.0, Regulator	307-355-9-001
MISCELLANEOUS		
NL1 - 4	Neon Lamp	401-024-9-001
PL1 - 4	Lamp	400-082-9-001
	Neon Tube Holder	253-117-9-001

PARTS ORDERING INFORMATION

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