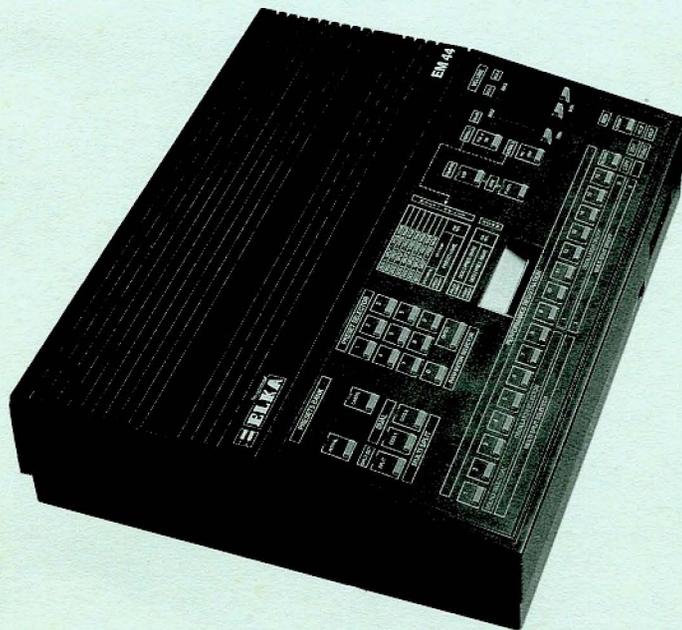




EM 44

MASTER MODULE
DIGITAL PROGRAMMABLE
SYNTHESIZER



schematic diagrams

PLEASE NOTE

EK22/44 - EM22/44 MODIFICATIONS

IN ORDER TO AVOID:

- A) DISMEMORIZATION OF RAM AT THE MOMENT OF SWITCHING ON OF AN INSTRUMENT CONNECTED WITH OTHERS DUE TO PARASITIC CURRENTS
- B) FUSE'S BREAK OF + 5

WE SUGGEST YOU TO CONNECT WITH WIRE 0,50 OR 0,75 MASS TO EARTH ANCHORAGE.

BESIDES, TO AVOID THE CASUAL READING OF "CONSTRUCTOR'S CODE" ON EPROM OF BOARD 1708, WHICH COULD PROVOKE THE BAD FUNCTIONING OF DCG 1 AND/OR 2, CONNECT A DIODE WITH SIGNAL BA 130 OR EQUIVALENT BETWEEN PIN 24 AND PIN 28 (CATHODE ON 28) OF IC 1.

WIRING CONNECTION DIAGRAM

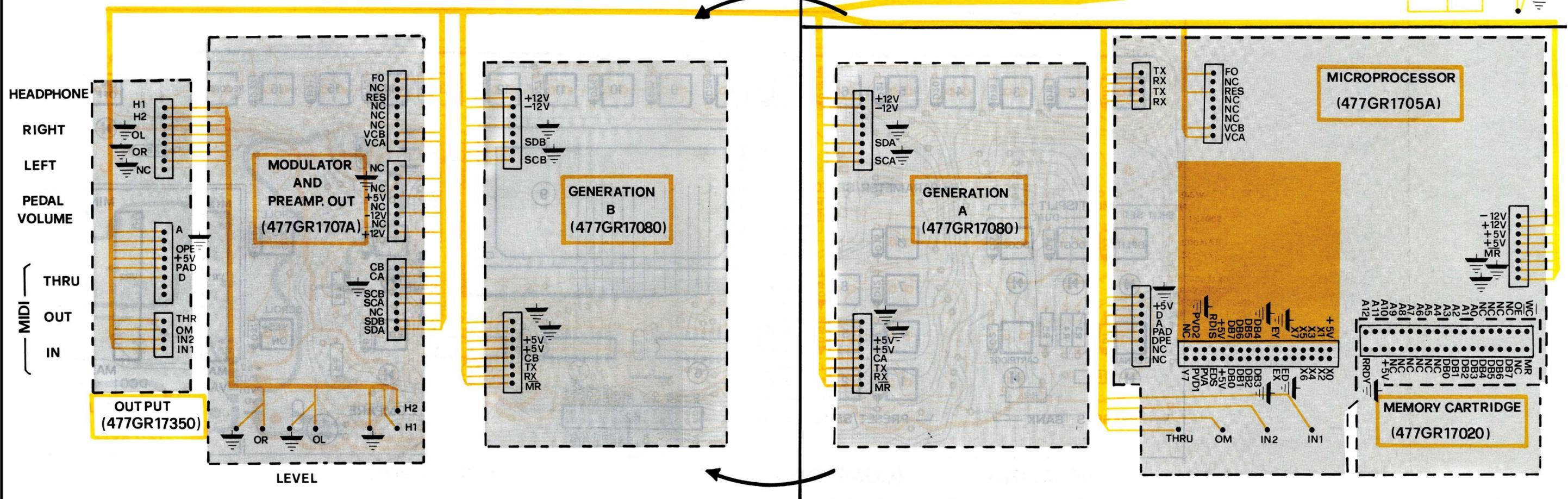
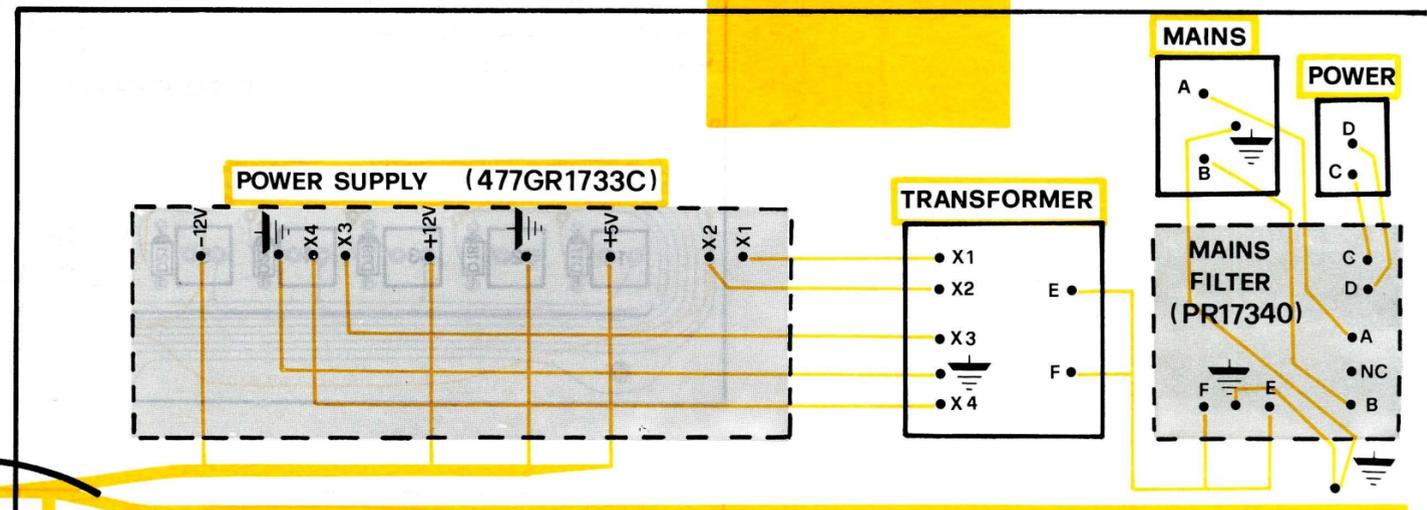
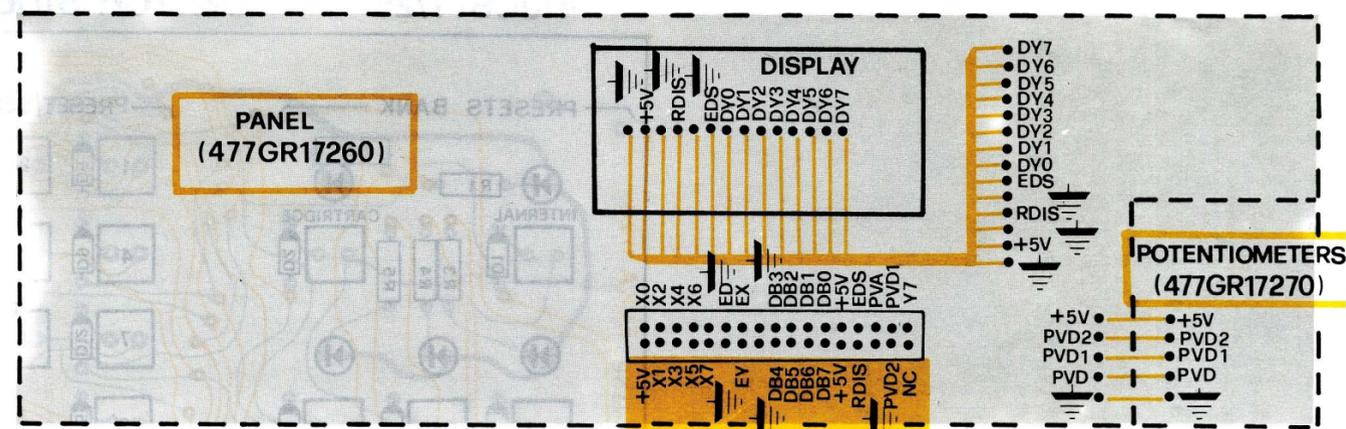
- 1) ALL resistors are carbon film 1/4w 5%
- 2) ALL resistors marked by a point must be metal film 2%
- 3) ALL capacitors marked by a point must be plastic film 2%
- 4) ALL resistors must be mounted 10mm above board
- 5) ALL resistors must be mounted 10mm above board and non-flammable
- 6) All capacitors marked by asterisks * must be ceramic
- 7) ALL capacitors marked by a square must be tantalium
- 8) All capacitors marked by a square must be electrolytic no polarized
- 9) GND analogic
 GND logic

ALL diodes are:
 FDH 9439 Fairchild
 or 125 ITT
 or BA 130
 or 2pF

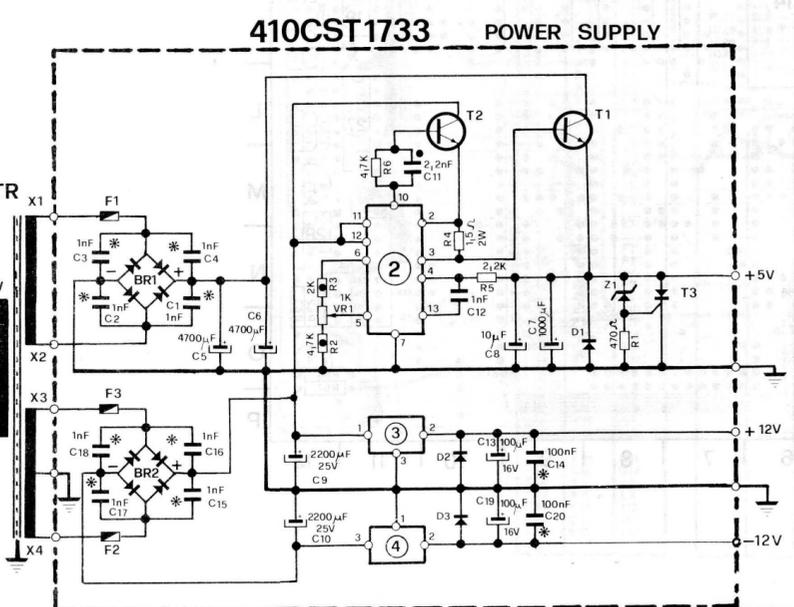
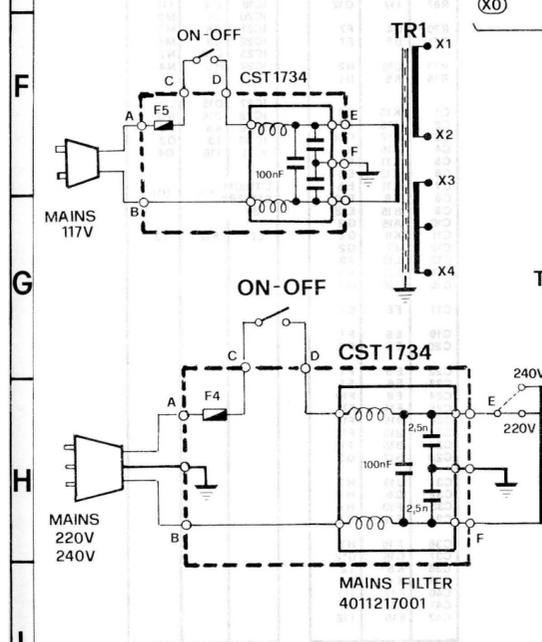
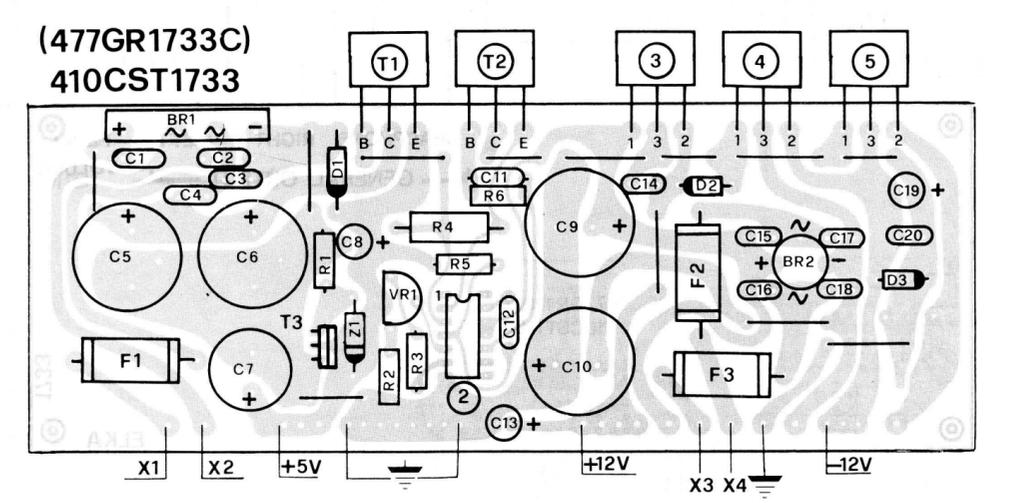
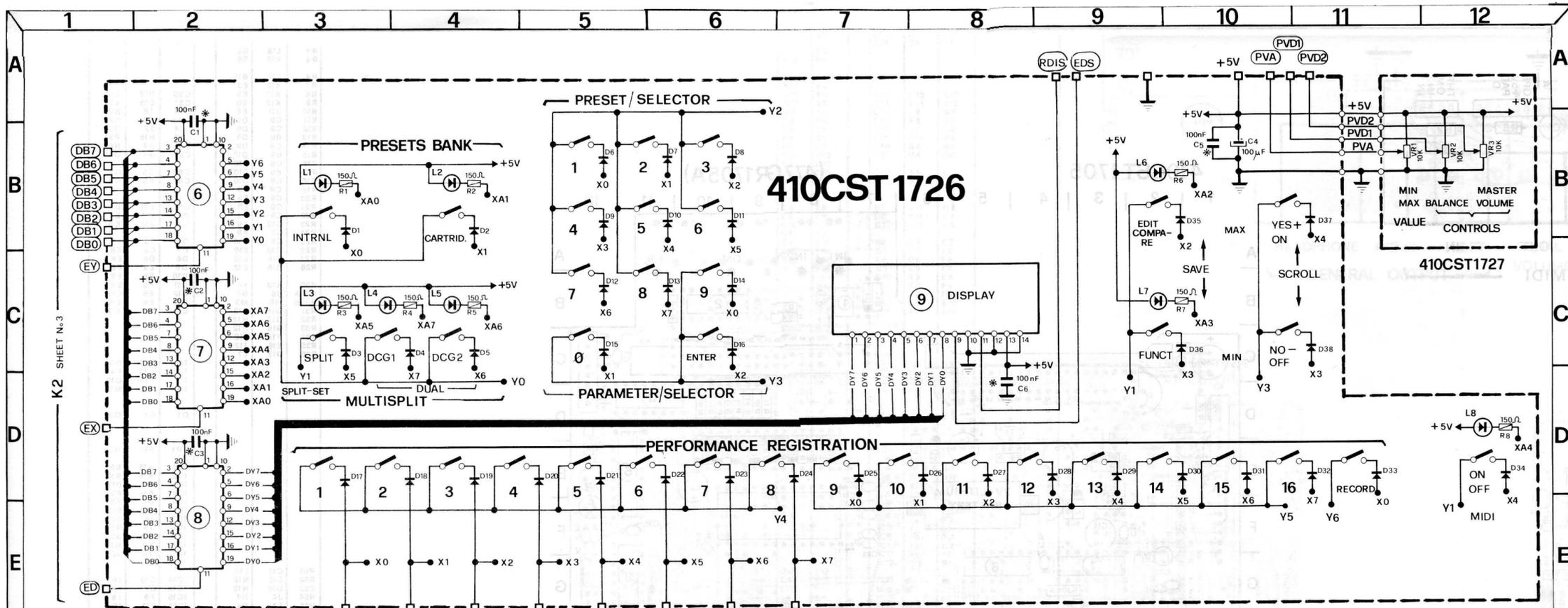
The numbers in brackets (477GR) represent the ELKA codes of the assembled boards whilst the others represent the ELKA codes of the non-assembled boards

The tensions are measured when the instrument is turned on but not played

The firm reserves the right to make changes without any warning and to their own discretion



WIRING

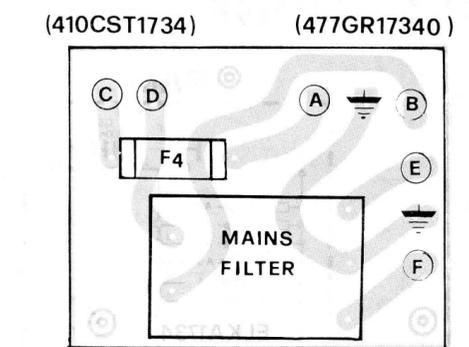


I.C.		
CODE	TYPE	MANUF.
2	LM723	
3	78M12	
4	79M12	
6	74LS377	
7	74AS374	
8	74LS377	
9	LCDLM016L	

CODE	TYPE	TRANS.
T1	TIP3055	
T2	TIP121	
T3	TIC116D	

LED = 935 B55

- Z1 = 5,6V 0,5W
- D1 = 1N5404
- D2-D4 = 10D2 - 1N4002
- F1 = Fuse 5AT
- F2-F3 = » 500mA
- F4 = » 500mA
- F5 = » 1AT
- BR1 = B80 C5000/3300
- BR2 = W02-BS2-PG120
- TR = TRANSFORMER T146N
- TR1 = » T146K



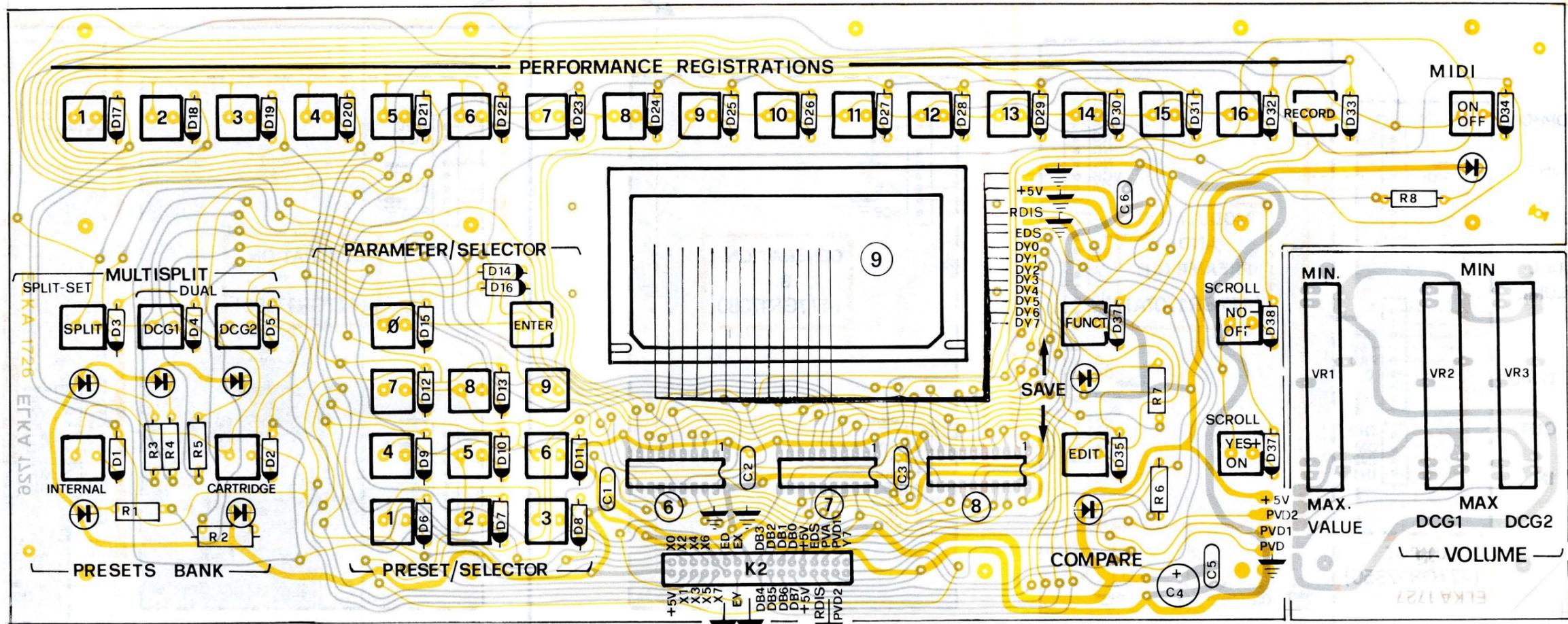
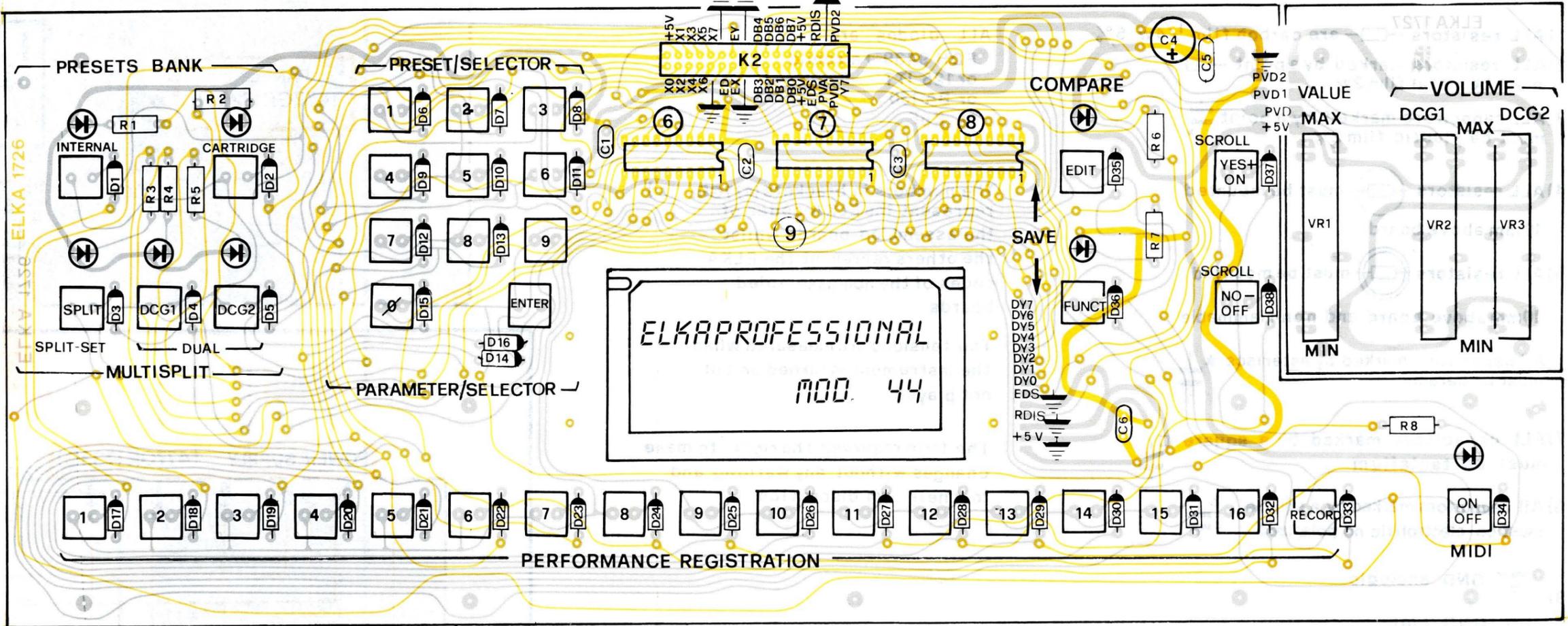
410CST1726

SWITCH SIDE

(477GR17260)

410CST1727

(477GR17270)



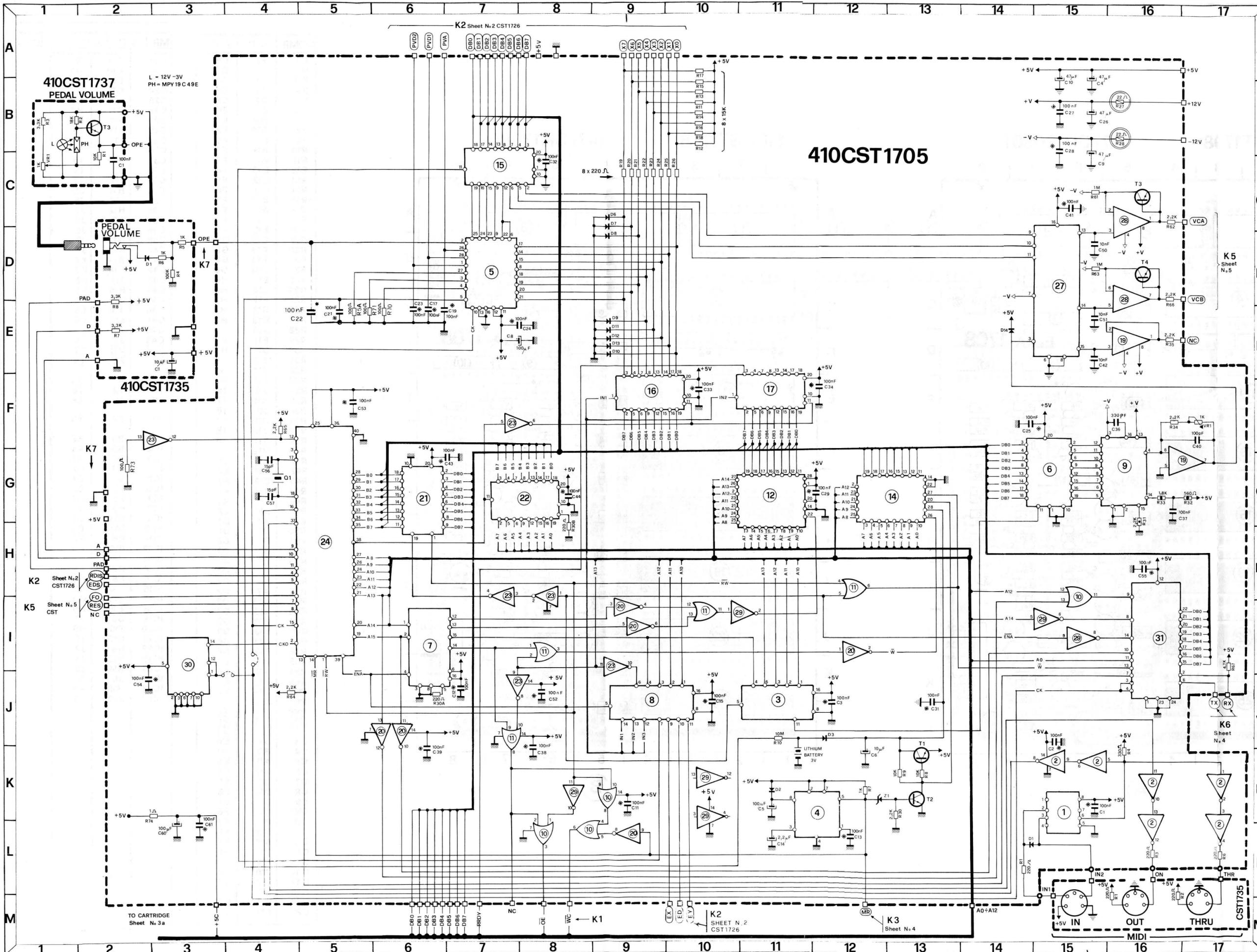
410CST1726

(COMPONENTS SIDE)

(477GR17260)

410CST1727

(477GR17270)

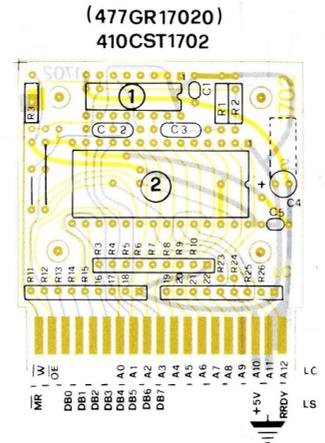
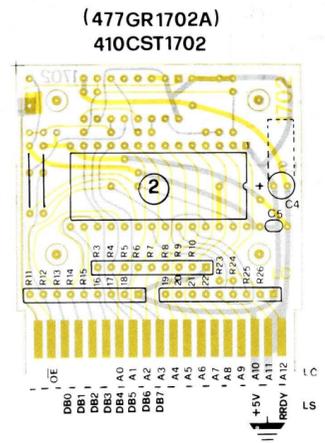
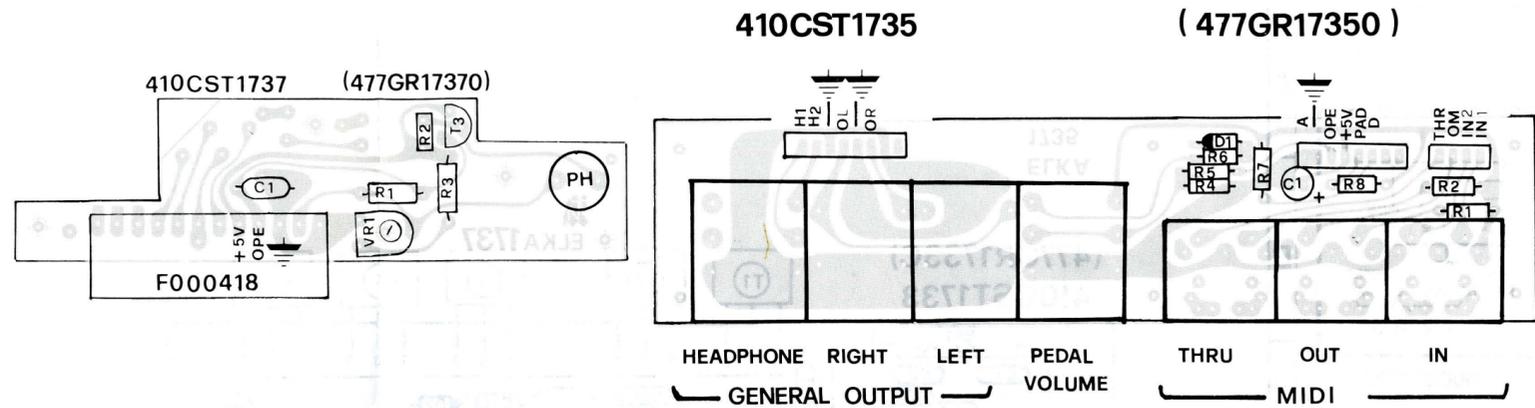


I. C. 1705

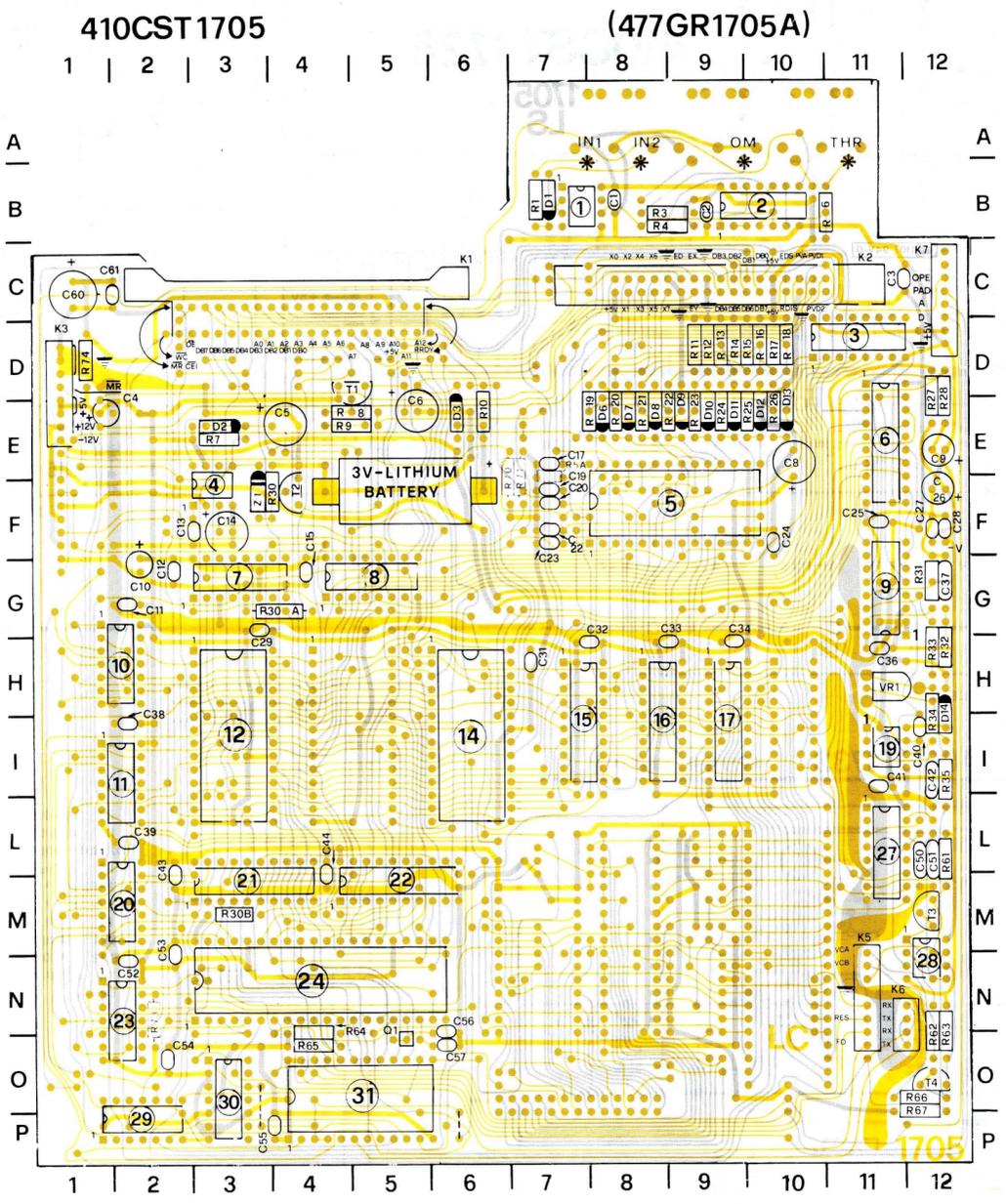
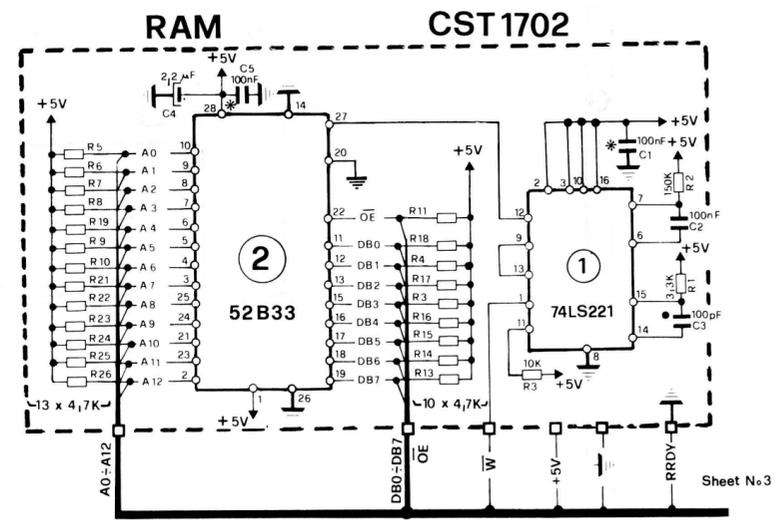
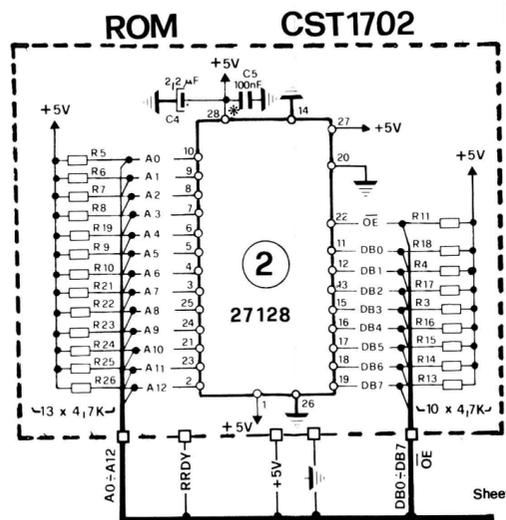
CODE	TYPE	MANUF.
1	6N138	
2	7404	
20	74S04	
3-7-8	74S138	
4	7705	
5	ADC809	
6-15	74LS377	
10-11	74S32	
12	TMS2756	
14	6264-5565	
16-17	74LS374	
19-28	TL082	
21	74LS245	
22	74LS373	
24	TMS7001	
27	4051	
30	74LS90	
31	88B50	
9	DAC0808	
23-29	74LS04	

CODE	TYPE	TRANS.
T1	PNP	BC415C
T2-T4	NPN	BC173C

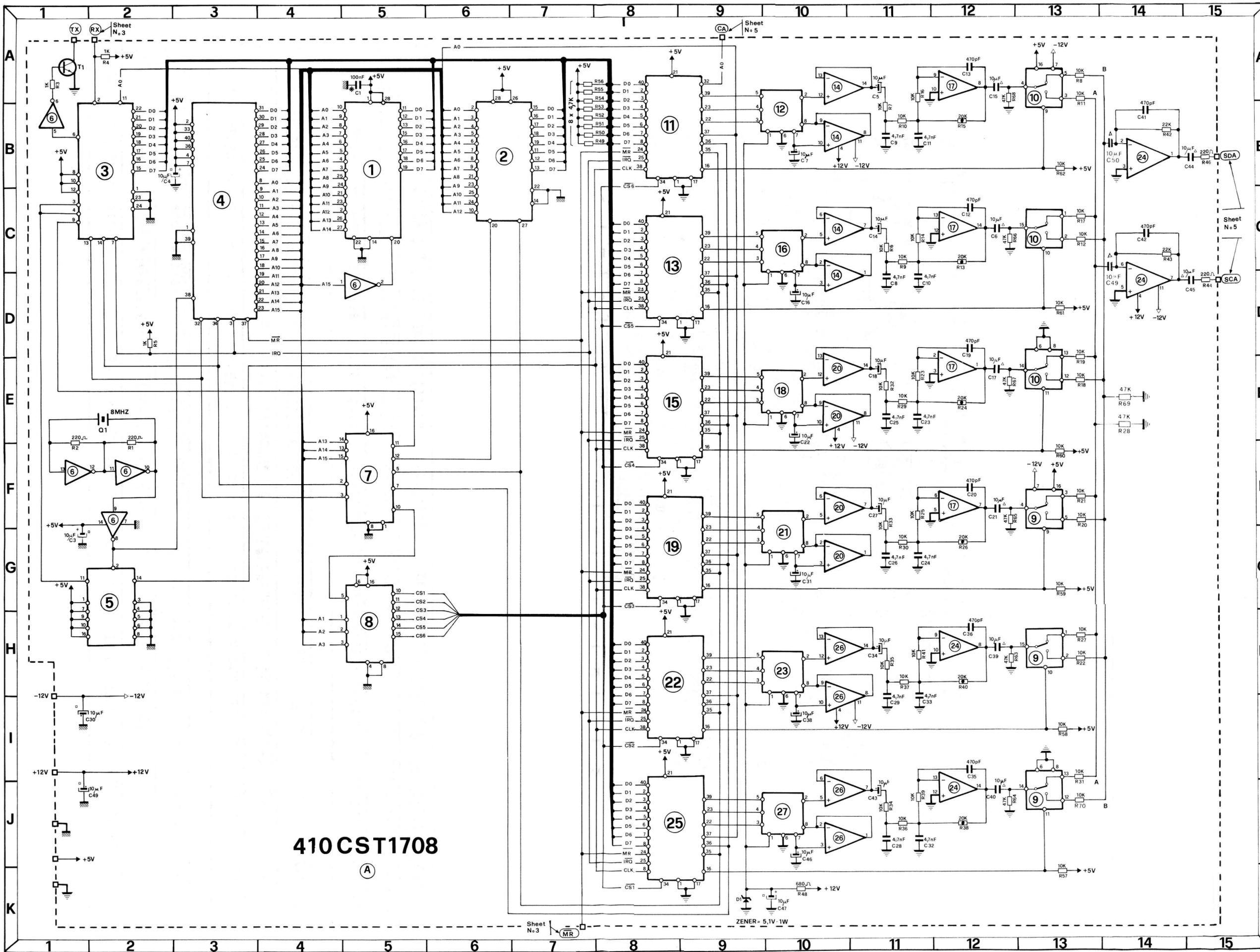
Q1 = QUARTZ 4MHZ
Z1 = ZENER 3.9VZ



CARTRIDGE

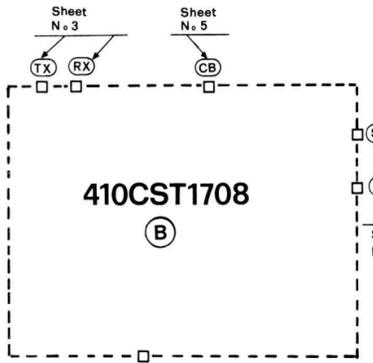


COMP	S. D.	P. B.
R1	L15	B7
R3	L16	B9
R4	K16	B9
R6	L17	B11
R7	K12	E3
R8	K13	E5
R9	K13	E5
R10	J11	E6
R11	C9	D9
R12	C9	D9
R13	B9	D9
R14	C9	D9
R15	B9	D10
R16	C9	D10
R17	B9	D10
R18	C9	D10
R19	C9	E8
R20	C9	E8
R21	C9	E8
R22	C9	E8
R23	C10	E9
R24	C9	E9
R25	C9	E10
R26	C10	E10
R27	B16	E12
R28	B16	E12
R30	K13	F4
R30A	J6	G4
R30B	H8	M3
R31	G16	G12
R32	G17	H12
R33	G16	H12
R34	F16	I12
R35	E16	I12
R36	D13	L7
C1	K15	B8
C2	J15	B9
C3	J12	C12
C4	A15	E2
C5	K11	E4
C6	K12	E5
C7	K11	E6
C8	E8	E10
C9	B15	E12
C10	A15	G2
C11	K9	G2
C12	J7	G2
C13	L12	F3
C14	L11	F3
C15	J10	G4
C17	E6	E7
C19	E6	F7
C20	E5	F7
C22	E5	F7
C23	E6	F7
C24	E8	F10
C25	F14	F11
C26	B15	F12
C27	B15	F12
C28	B15	F12
C29	G12	G3
C31	J13	H7
C32	C8	H8
C33	F10	H9
C34	F12	H9
C36	F16	H11
C37	G16	G12
C38	K8	L2
C39	K6	L2
C40	F17	I12
C41	C15	I11
C42	E15	I12
D1	L14	B7
D2	K11	E3
D3	J12	E6
D6	C9	E8
D7	C9	E8
D8	D9	E8
D9	E9	E9
D10	E9	E9
D11	E9	E9
D12	E9	E10
D13	E9	E10
D14	E14	K12
T1	K13	D5
T2	K13	F4
T3	C16	O12
T4	D16	M12
Q1	G4	O5
VR1	F17	H11
IC1	K15	B8
IC2	K16	B10
IC3	J11	D11
IC4	K12	F3
IC5	D7	E1
IC6	G15	F9
IC7	I6	G3
IC8	J9	G5
IC9	G16	G11
IC10	K9	H2
IC11	G8	I2
IC12	G11	I3
IC14	G13	I6
IC15	C7	I7
IC16	F9	I8
IC17	F11	I9
IC19	E16	I11
IC20	E6	M2
IC21	G6	M3
IC22	G8	M5
IC23	H5	N2
IC24	C10	N4
IC27	D15	L11
IC28	D16	N2
IC29	K8	P2
IC30	I3	O3
IC31	I16	O4
LITHIUM BATTERY	K17	H11
Z1	K12	F3



410CST1708

(A)



I. C.		
CODE	TYPE	MANUF.
1	27128	
2	5565-6264	
3	68B50	
4	68B09	
5	74LS161	
6	74S04	
7	74LS139	
8	74LS138	
9-10	4053	
11-13-15	G1	
19-22-25		
14-17-20		
24-26	TL084	
12-16-18	D1	
21-23-27		

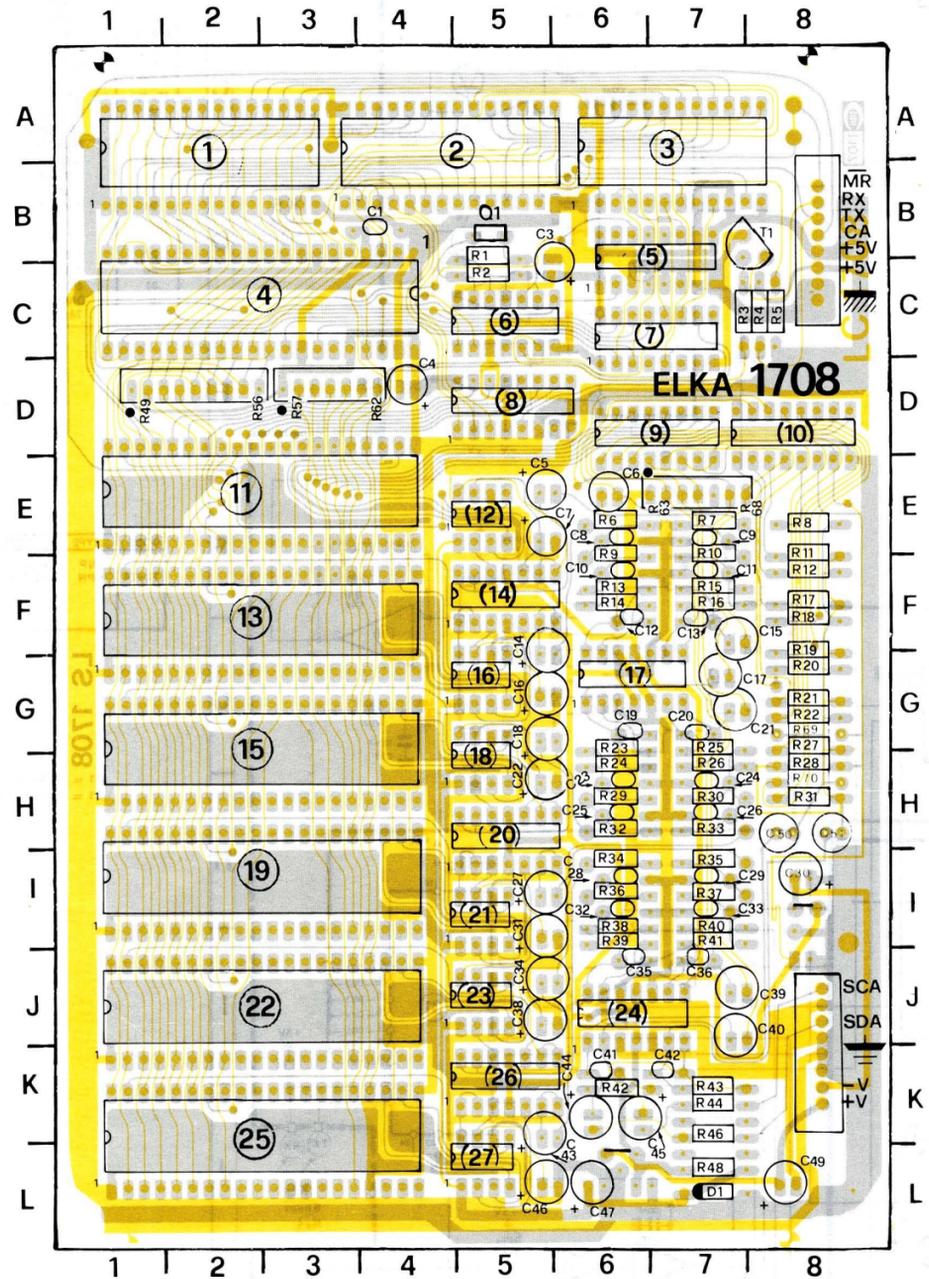
CODE	TYPE	TRANS.
T1	NPN	BC173C

Model EM 44

Sheet No. 4

410CST1708

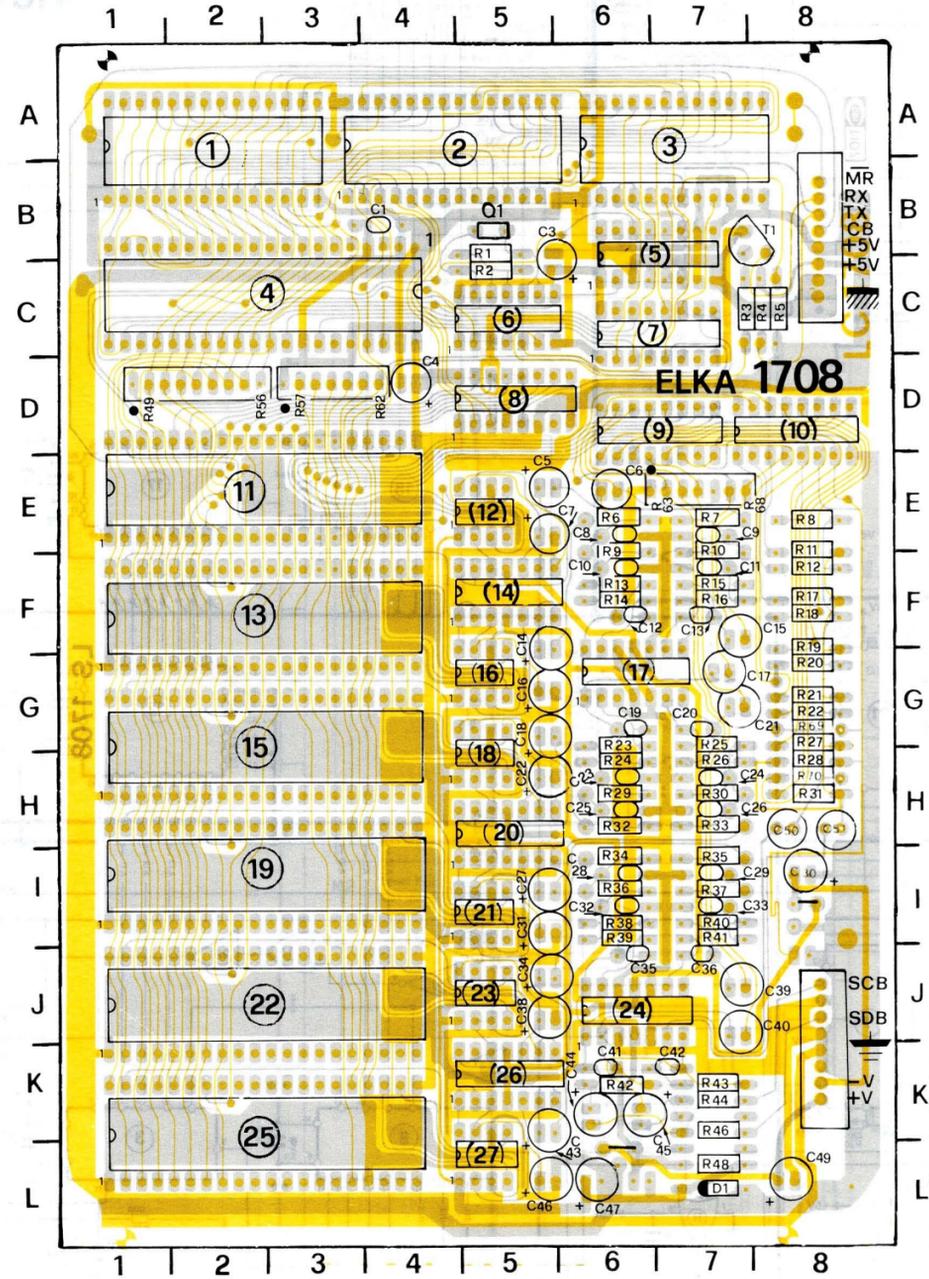
(477GR17080)



A

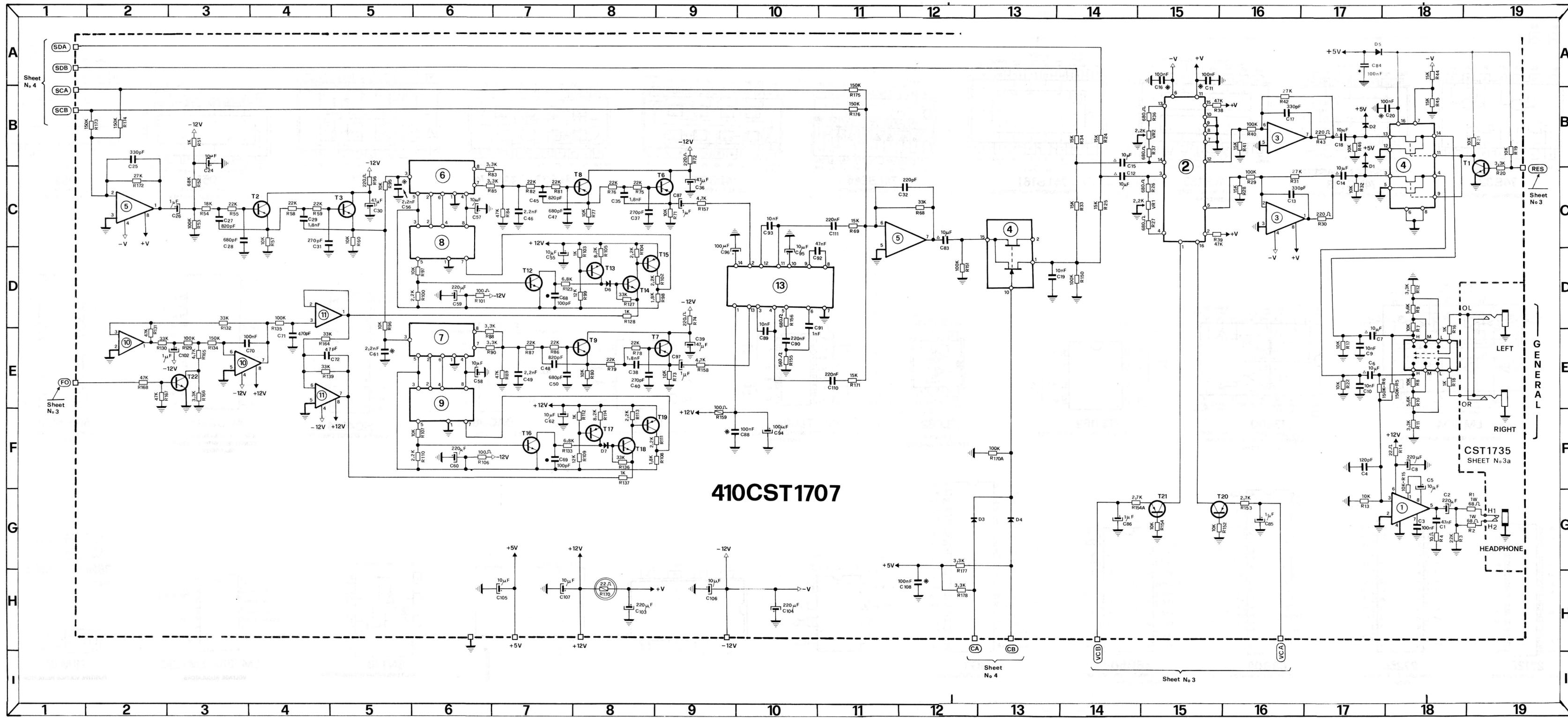
410CST1708

(477GR17080)



B

COMP.	S. D.	S. C.	COMP.	S. D.	S. C.
R1	F2	C5	C21	F12	G7
R2	F1	C5	C22	E10	H5
R3	A1	C8	C23	E11	H6
R4	A2	C8	C24	G11	H7
R5	D2	C8	C25	E11	H6
R6	C11	E6	C26	G11	H7
R7	B11	E7	C27	F11	I5
R8	A13	E8	C28	J11	I6
R9	C11	F6	C29	I11	I7
R10	B11	F7	C30	I1	I8
R11	A13	F8	C31	G10	I5
R12	C13	F8	C32	J11	I6
R13	C12	F6	C33	I11	I7
R14	C11	F6	C34	H11	J5
R15	B12	F7	C35	I12	J6
R16	A11	F7	C36	H12	J7
R17	C13	F8	C37	I3	J8
R18	E13	F8	C38	I10	J5
R19	E13	G8	C39	H12	J7
R20	F13	G8	C40	J12	J7
R21	F13	G8	C41	B14	K6
R22	H13	G8	C42	C14	K7
R23	E11	H6	C43	J11	K5
R24	E12	H6	C44	B15	K6
R25	F11	H7	C45	D15	K6
R26	G12	H7	C46	J10	L5
R27	H13	H8	C47	K10	L6
R28	J13	H8	C48	J3	L6
R29	E11	H6	C49	J1	L8
R30	G11	H7	C50	B14	H8
R31	I13	H8	C51	C14	H8
R32	E11	H6	D1	K9	L7
R33	F11	H7	T1	A1	B8
R34	J11	I6	T2	I2	I8
R35	H11	I7	T3	I2	L6
R36	J11	I6	Q1	E2	B5
R37	H11	I7	IC1	B5	A2
R38	J12	I6	IC2	B6	A4
R39	J11	J6	IC3	B2	A7
R40	H12	I7	IC4	C3	C2
R41	H11	J7	IC5	G2	C7
R42	B14	K6	IC6	F2	C5
R43	C14	K7	IC7	F5	C7
R44	D15	K7	IC8	H5	D5
R46	B15	K7	IC9	H13	D7
R48	K10	L7	IC10	C13	D8
R49	B7	D1	IC11	B8	E2
R50	B7	D1	IC12	B10	E5
R51	B7	D2	IC13	C8	F2
R52	B7	D2	IC14	C10	F5
R53	B7	D2	IC15	E8	G2
R54	A7	D2	IC16	C10	G5
R55	A7	D2	IC17	E12	G6
R56	A7	D2	IC18	E10	H5
R57	K13	D3	IC19	G8	I2
R58	I13	D3	IC20	F10	H5
R59	G13	D3	IC21	G10	I5
R60	F13	D3	IC22	H8	J2
R61	D13	D4	IC23	H10	J5
R62	B13	D4	IC24	B14	J6
R63	H12	E7	IC25	J8	K2
R64	J12	E7	IC26	H10	K5
R65	F12	E7	IC27	J10	L5
R66	C12	E7			
R67	E12	E7			
R68	A12	E8			
R69	E14	G8			
R70	E14	H8			
C1	A5	B4			
C3	G1	C6			
C4	B3	D4			
C5	A11	E5			
C6	C12	E6			
C7	B2	E5			
C8	D11	E6			
C9	B11	E7			
C10	D11	F6			
C11	B11	F7			
C12	C12	F6			
C13	A12	F7			
C14	C11	G5			
C15	A12	G7			
C16	D10	G5			
C17	E12	G7			
C18	E11	G5			
C19	D12	G6			
C20	F12	G7			

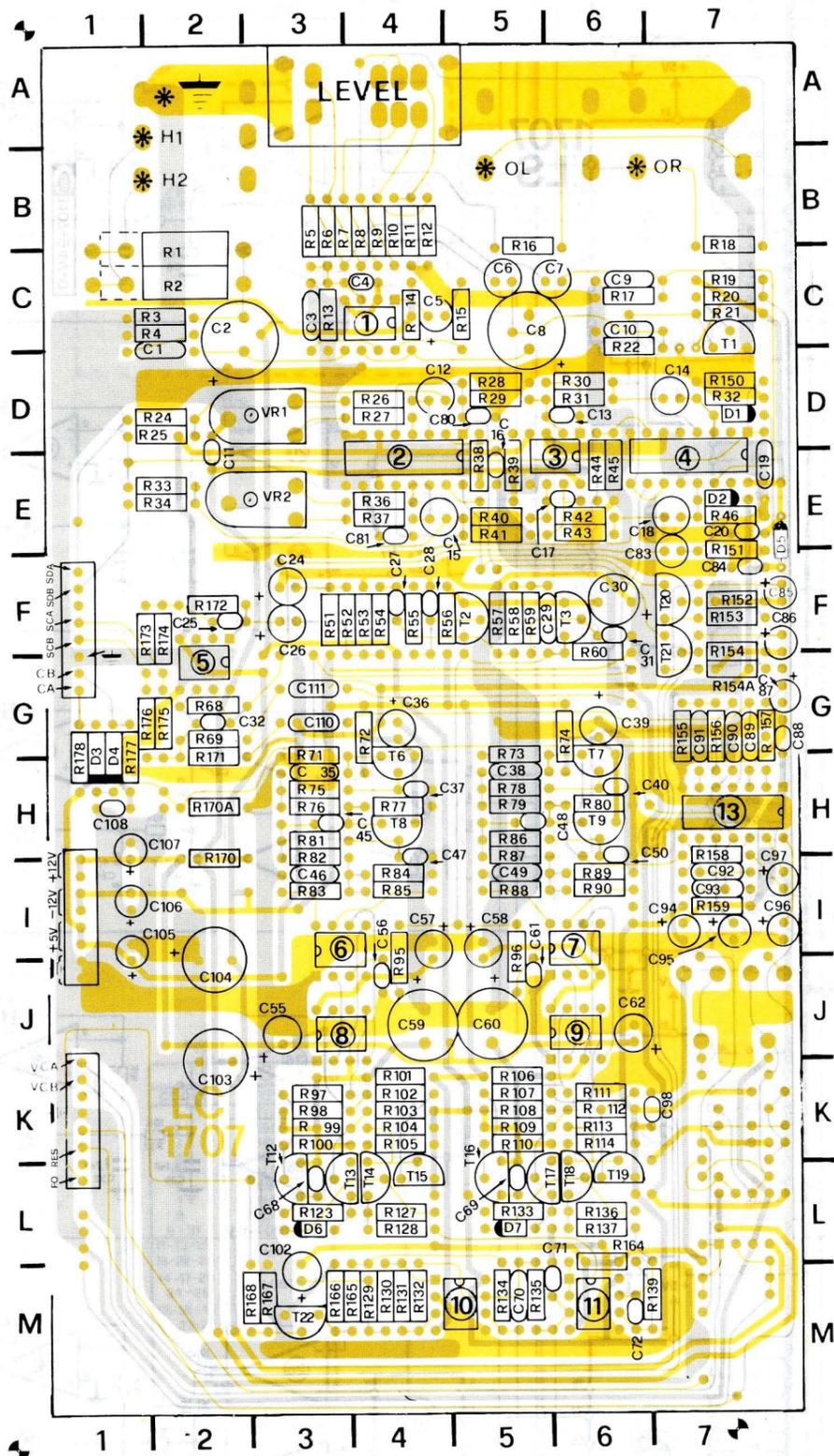


410CST1707

I.C.		
CODE	TYPE	MANUF.
1	LM386	
2	LM13600	
3-5-10	TL082	
11		
4	4053	
6-7	MN 3009	
8-9	MN 3101	
13	LM1894	

CODE	TYPE	TRANS.
T2-T3-T6-T9	PNP	BC415C
T13-T15-T17		
T19-T21		
T1-T12-T14	NPN	BC239B-BC173B
T16-T18-T22		

410CST1707 (477GR1707A)



COMP.	S. D.	P. B.
R1	G19	C2
R2	G19	C2
R3	G18	C2
R4	G18	C2
R5	E18	B3
R6	E17	B3
R7	D18	B4
R8	E18	B4
R9	D18	B4
R10	E18	B4
R11	F18	B4
R12	D18	B4
R13	G17	C3
R14	F18	C4
R15	F18	C5
R16	E18	B5
R17	E17	C6
R18	F18	B7
R19	B19	C7
R20	C19	C7
R21	B19	C7
R22	E17	C6
R24	B14	D2
R25	C14	D2
R26	C15	D4
R27	C15	D4
R28	C16	D5
R29	C16	D5
R30	C17	D6
R31	C16	D6
R32	C17	D7
R33	C14	E2
R34	B14	E2
R36	B15	E4
R37	B15	E4
R38	B15	E5
R39	C15	E5
R40	B16	E5
R41	B16	E5
R42	B16	E6
R43	B17	E6
R44	A18	E6
R45	B18	E6
R46	B17	E7
R51	B3	F3
R52	C3	F4
R53	C3	F4
R54	C3	F4
R55	C3	F4
R56	C5	F4
R57	C4	F5
R58	C4	F5
R59	C4	F5
R60	C5	F6
R68	C12	G2
R69	C11	G2
R71	C9	G3
R72	B9	G4
R73	E9	G5
R74	D9	G6
R75	C8	H3
R76	C8	H3
R77	C8	H4
R78	E8	H5
R79	E8	H5
R80	E8	H6
R81	C7	H3
R82	C7	H3
R83	C6	I3
R84	C7	I4
R85	C6	I4
R86	E7	H5
R87	E7	H5
R88	E6	I5
R89	E7	I6
R90	E6	I6
R95	C5	I4
R96	D5	I5
R97	D6	K3
R98	D9	K3
R99	D8	K3
R100	D6	K3
R101	D6	K4
R102	D8	K4
R103	D8	K4
R104	D8	K4
R105	D8	K4
R106	F6	K5
R107	F6	K5
R108	F9	K5
R109	F8	K5
R110	F6	K5
R111	F9	K6
R112	F8	K6
R113	F8	K6

COMP.	S. D.	P. B.
R114	F8	K6
R123	D3	L3
R127	D8	L4
R128	D8	L4
R129	E3	M4
R130	E2	M4
R131	E2	M4
R132	D3	M4
R133	F7	L5
R134	E3	M5
R135	D4	M5
R136	F8	L6
R137	F8	L6
R139	E4	M7
R150	D14	D7
R151	D12	E7
R152	G15	F7
R153	G16	F7
R154	G15	F7
R154A	G14	G4
R155	E10	G7
R156	D10	G7
R157	C9	G7
R158	E9	H7
R159	F9	I7
R163	G5	M7
R164	E4	L6
R165	E3	M3
R166	E3	M3
R167	E2	M3
R168	E2	M3
R169	H10	I3
R170	H8	H2
R170A	F13	H2
R171	E11	G2
R172	C2	F2
R173	B2	F2
R174	B2	F2
R175	B11	G2
R176	B11	G2
R177	G12	G1
R178	H12	G1
C1	G18	D2
C2	G18	C3
C3	G18	C3
C4	F17	C4
C5	F18	C4
C6	E17	C5
C7	E17	C5
C8	F18	C5
C9	E17	C6
C10	E17	C6
C11	A15	E2
C12	C14	D4
C13	C16	D6
C14	C17	D7
C15	B14	E4
C16	A15	E5
C17	B16	E6
C18	B17	E7
C19	D13	E7
C20	B18	E7
C24	B3	F3
C25	B2	F2
C26	C3	F3
C27	C3	F4
C28	C3	F4
C29	C4	F6
C30	C5	F6
C31	C4	F6
C32	C12	G2
C35	C8	H3
C36	C9	G4
C37	C8	H4
C38	E8	H5
C39	E9	G6
C40	E8	H6
C45	C7	H3
C46	C7	I3
C47	C7	H4
C48	E7	H5
C49	E7	E5
C50	E7	H6
C55	D7	J3
C56	C5	J4
C57	C6	I4

COMP.	S. D.	P. B.
C58	E6	I5
C59	D6	J4
C60	F6	J5
C61	E5	J5
C62	F7	J6
C63	G3	J7
C68	D7	L3
C69	F7	L5
C70	E3	M5
C71	E4	M5
C72	E4	M6
C80	C15	D5
C81	C15	E4
C83	C12	E7
C84	B18	F7
C85	G16	F7
C86	G14	F7
C87	C9	G7
C88	F9	G7
C89	E10	G7
C90	E10	G7
C91	D10	G7
C92	D10	I7
C93	C10	I7
C94	F10	I7
C95	D10	I7
C96	D10	I7
C97	E9	I7
C98	H5	K7
C99	H4	L7
C101	G4	K7
C102	E3	L3
C103	H8	J2
C104	H10	J2
C105	H7	I1
C106	H9	I1
C107	H7	H1
C108	H12	H1
C109	F13	H2
C110	E11	G3
C111	C11	G3
D1	B17	D7
D2	B17	E7
D3	G12	G1
D4	G13	G1
D5	A18	E7
D6	D8	L3
D7	F8	L5
VR1	C15	D3
VR2	B15	E3
T1	B19	C7
T2	C4	F5
T3	C5	F6
T6	C9	H4
T7	E9	G6
T8	C8	H4
T9	E8	H6
T12	D7	L3
T13	D8	L3
T14	D8	L4
T15	F8	L4
T16	F7	L5
T17	F8	L5
T18	F8	L6
T19	F8	L6
T20	G15	F7
T21	G15	F7
T22	E3	M3
IC1	G18	C4
IC2	B15	E4
IC3	C16	E6
IC4	C13	E7
IC5	C2	G2
IC6	C6	I3
IC7	E6	I6
IC8	C6	J3
IC9	E6	J6
IC10	E2	M5
IC11	E4	M6
IC13	D10	H7

Manufactured by **ELKA**