WK40／WK50
PH50
SERVICE MANUAL

KAWAI
Kawai Musical Instrument
Manufacturing Co., Ltd.

CONTENTS

1. PARTS LIST

Parts Name	Code No.		
	WK40	WK50	PH50
Push Knob	003719	003719	003794
Slide Knob	003778	003778	003824
Panel Sheet	003859	(1) 003867 (2) 003875	003883
Foot Rubber	009512	009512	009512
Slide Switch	010367	010367	010367
Power Switch	010383	010383	010383
Upper Case	003573	003590	003611
Lower Case	003620	003646	003662
EK-058/060	00980690		
EK-059	009822		
EK-056		009873	
EK-057		009881	
MI-036/037			009890
MI-038/039			009920

2. P.W.B. PARTS LIST

WK50

EK-056

Name	Pieces
IC DAC PCM60P	1
IC OP AMP BA728	2
Power AMP LA4558	1
Power Transistor 2SD1666R	1
Diode DSK10B	2
Zenor Diode MA1056M	1
Diode ISS133/1SS270TA	1
LED Red SEL4117R	8
Slide Switch	6
Headphone Jack YKB21-5101A	1
DC Jack HEC0470-01-230	1
Power Switch	1
DIN Connector CSK150-05-30-344	2
Slide Volume F85395100	1
Stick Controller EVX-QSA018B14	1
Rubber Switch 25Key EKFD1028	2.5

EK-057

Name	Pieces
CPU M37450S2-FP	1
LSI KTG-101	1
LSI K001-FP	1
Mask ROM P151-M8DW	1
Mask ROM P152-M6DP	1
HCMOS TC74HC00F	1
RAM HM62256LP-12SL	1
RESET IC PST520D	1
Diode MA700	2
Diode 1SS133/1SS270TA	40
LED Red SEL4117R	5
LED Green SEL4417G	1
Tact Switch SOA-133HS	13

WK40

EK-058

Name	Pieces
Power AMP LA4558	1
Power Transistor 2SD1666R	1
Diode DSK10B	2
Zenor Diode MA1056M	1
Switching Diode 1SS133/1SS270TA	99
LED Red SEL4117R	5
LED Green SEL4417G	1
Tact Switch SOA-133HS	36
Slide Switch	6
Headphone Jack YKB21-5101A	1
DC Jack HEC0470-01-230	1
Power Switch	1
DIN Connector CSK150-05-30-344	2
Slide Volume F85395100	1
Stick Controller EVX-QSA018B14	1
Rubber Switch 25Key EKFD1028	2

EK-059

Name	Pieces
CPU M37450M2-FP	1
LSI KTG-101	1
LSI K001-FP	1
Mask ROM P151-M8DW	1
Mask ROM P153-M6DP	1
HCMOS TC74C00F	1
RAM HM62256LP-12SL	1
RESET IC PST520D	1
DIODE MA700	2
DIODE 1SS133/1SS270TA	15

EK-060

Name	Pieces
IC DAC PCM60P	1
IC OP AMP BA728	2

PH 50

MI-036

Name	Pieces
IC KTG-001	1
IC KTG-002	1
IC KTG-003	1
IC P106-M8DW	1
IC P163-M5DP	1
IC UPD78310 G-36	1
IC LC3564 PL-15	1
IC TC74HC 00P	1
IC TC74HC 107P	1
IC TC74HC 139P	1
IC TC74HC 373P	1
IC TLP552	1
IC MB3771	1
IC UPD6355G	1
IC TA78DL 05P	1
IC AN8005	1
Transistor 2SA1591	4
Diode DSK10B	1
Diode ISS133	38
Crystal AT-51 (12.0MHz)	1
Crystal AT-51 (12.8MHz)	1
Joystick EVX-QSA018B14	1
Slide Volume F85395100	1
Power Switch	1
DC Jack HEC0470-01-230	1
Phone Jack HLJ4308-01-3040	3
Phone Jack HLJ0541-01-110	1
DIN Connector CSK150-05-30-344	2

MI-037

Name	Pieces
IC LA4558	1

MI-038

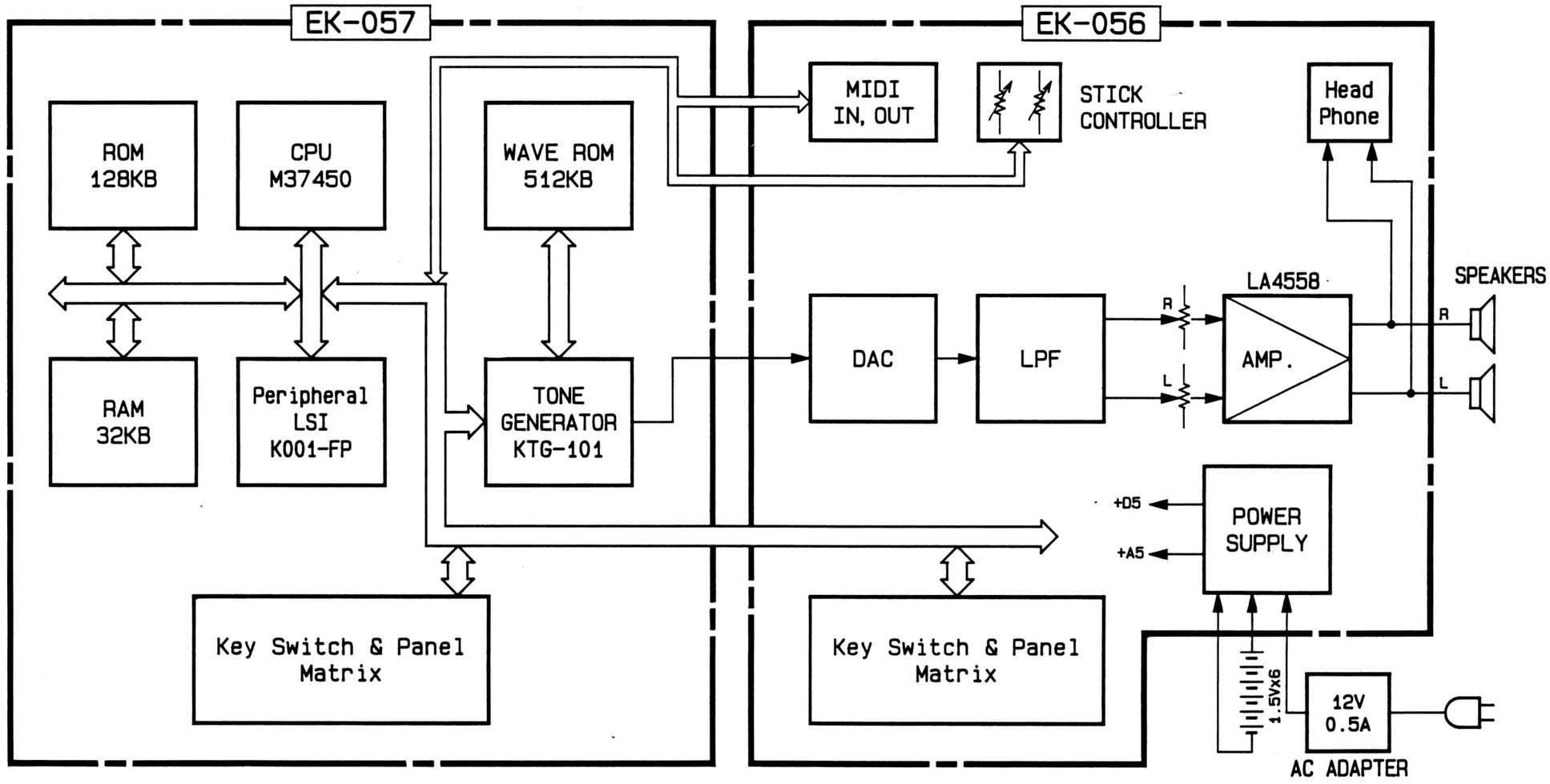
Name	Pieces
Diode ISS133	27
LED SEL4117R (Red)	5
Tact Switch SOA-13311S	12

MI-039

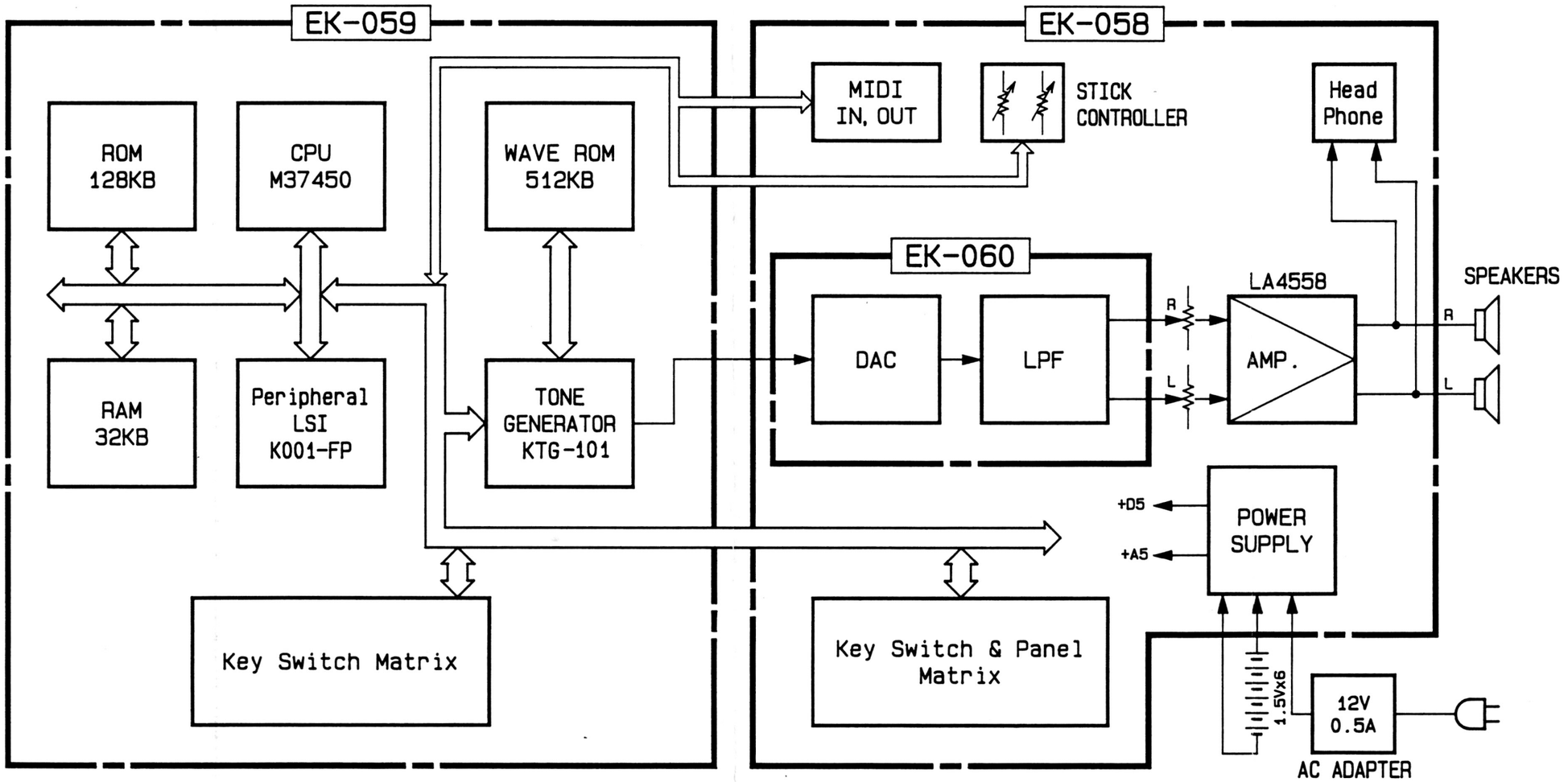
Name	Pieces
7 Segment LED SL-1179	3

3. BLOCK DIAGRAM For WK50

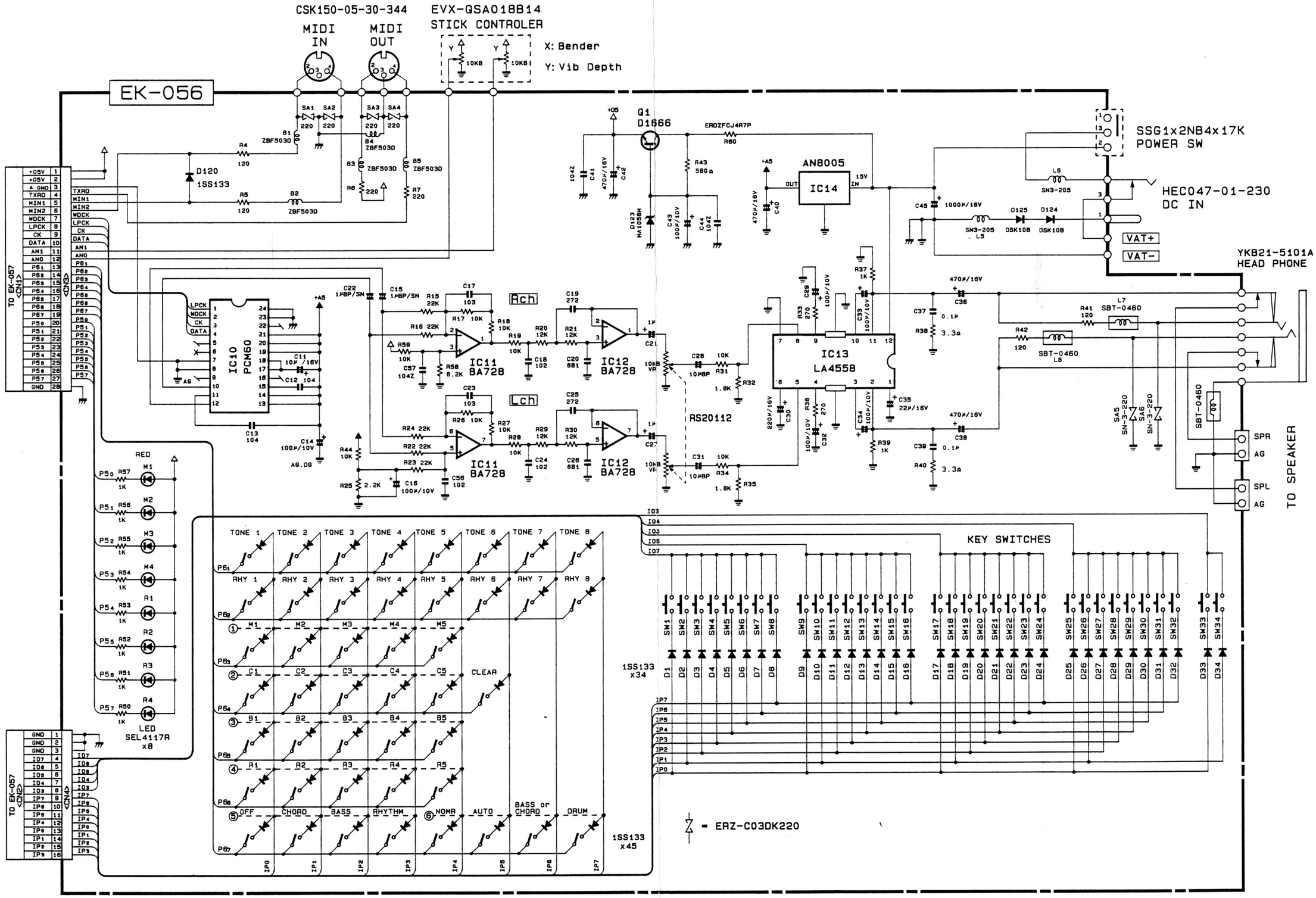
WK50 BLOCK DIAGRAM



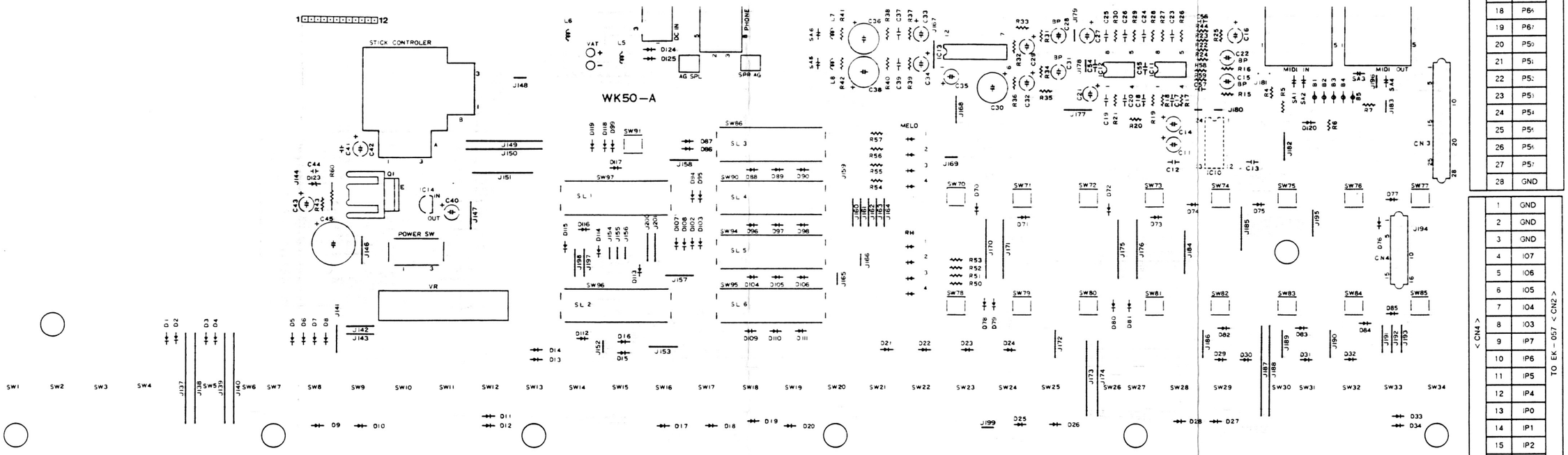
WK40 BLOCK DIAGRAM



5. EK-056 CIRCUIT For WK50

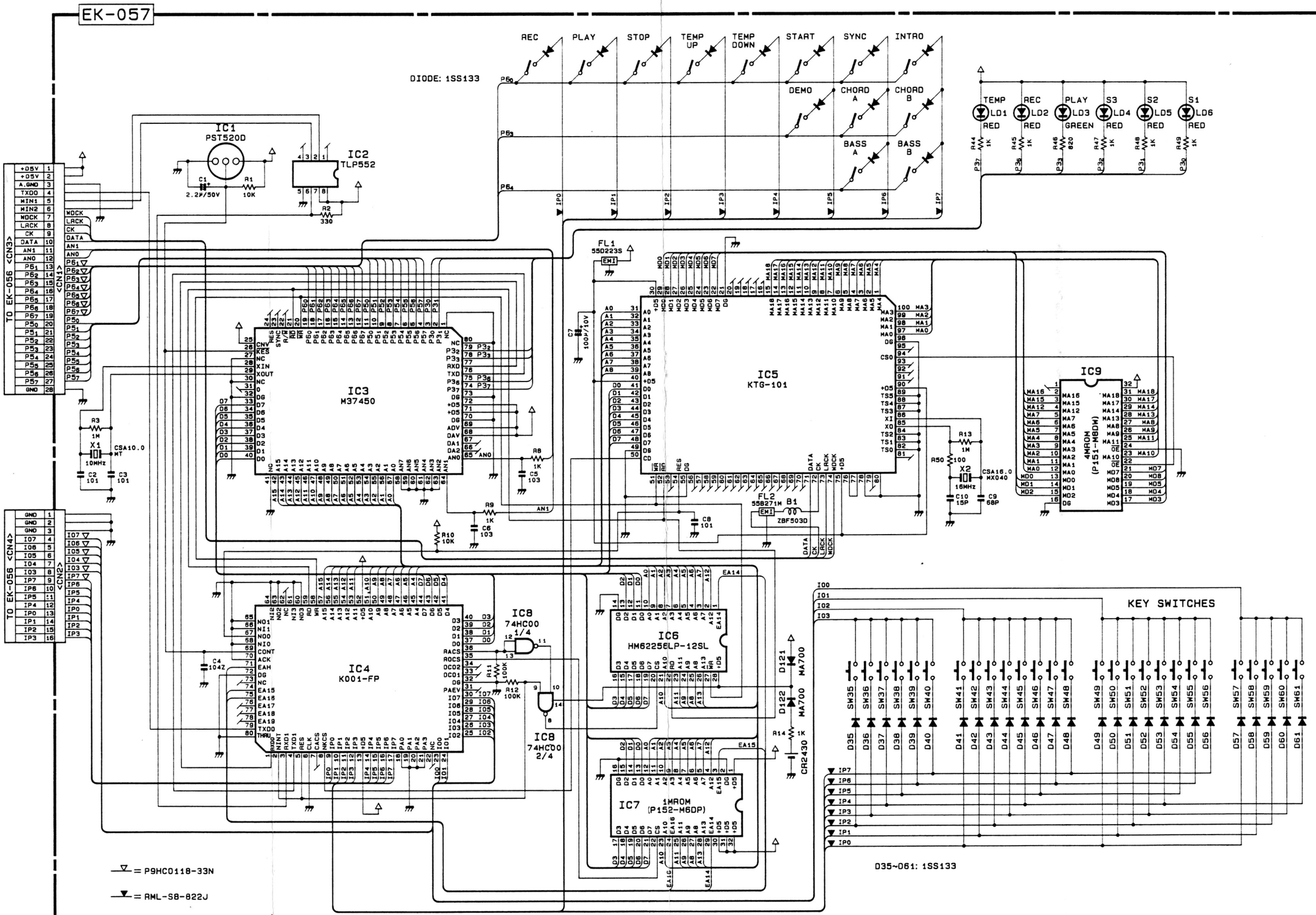


6. EK-056 PRINTED WIRING BOARD For WK50



7. EK-057 CIRCUIT For WK50

EK-057



8. EK-057 PRINTED WIRING BOARD For WK50

TO EK-056 < CN3 >

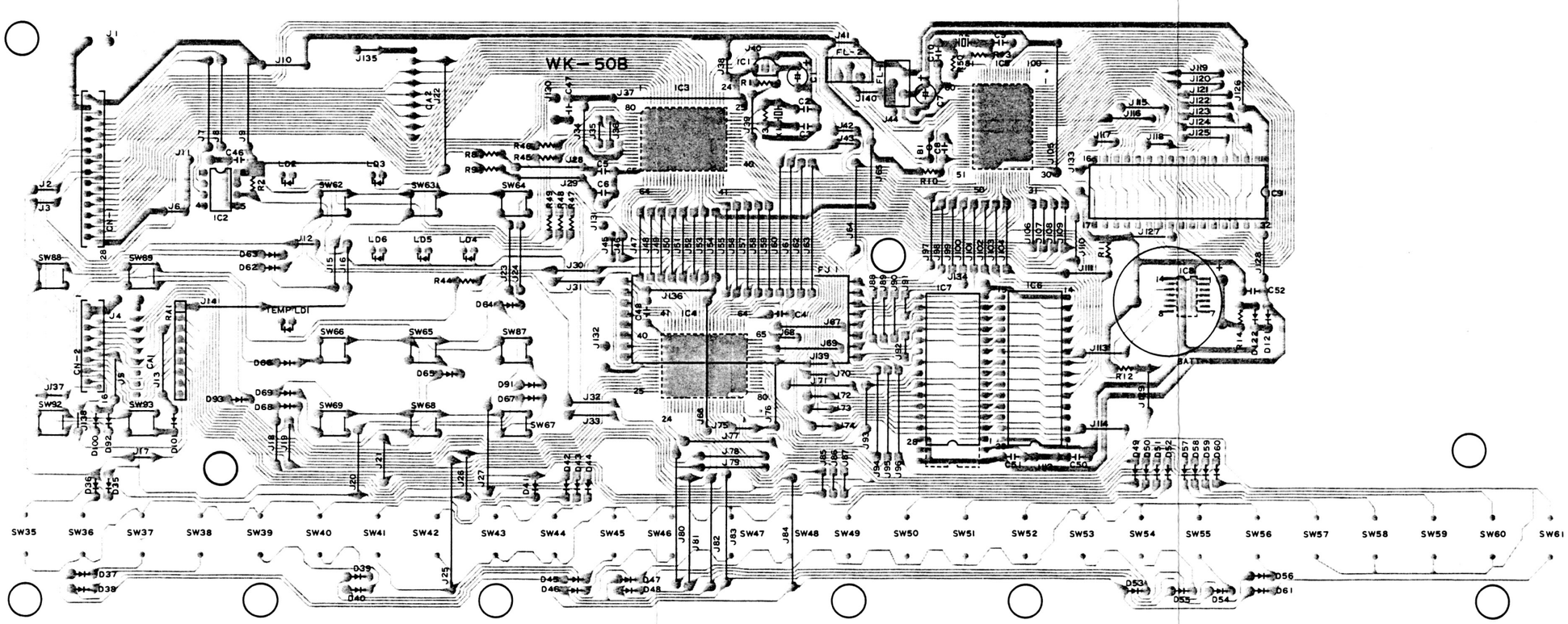
+ D5V	1
+ D5V	2
A.GND	3
TXD0	4
MIN1	5
MIN2	6
WDCK	7
LRCK	8
CK	9
DATA	10
AN1	11
AN0	12
$P6_1$	13
$P6_2$	14
$P6_3$	15
$P6_4$	16
$P6_5$	17
$P6_6$	18
$P6_7$	19
$P5_0$	20
$P5_1$	21
$P5_2$	22
$P5_3$	23
$P5_4$	24
$P5_5$	25
$P5_6$	26
$P5_7$	27
GND	28

< CN1 >

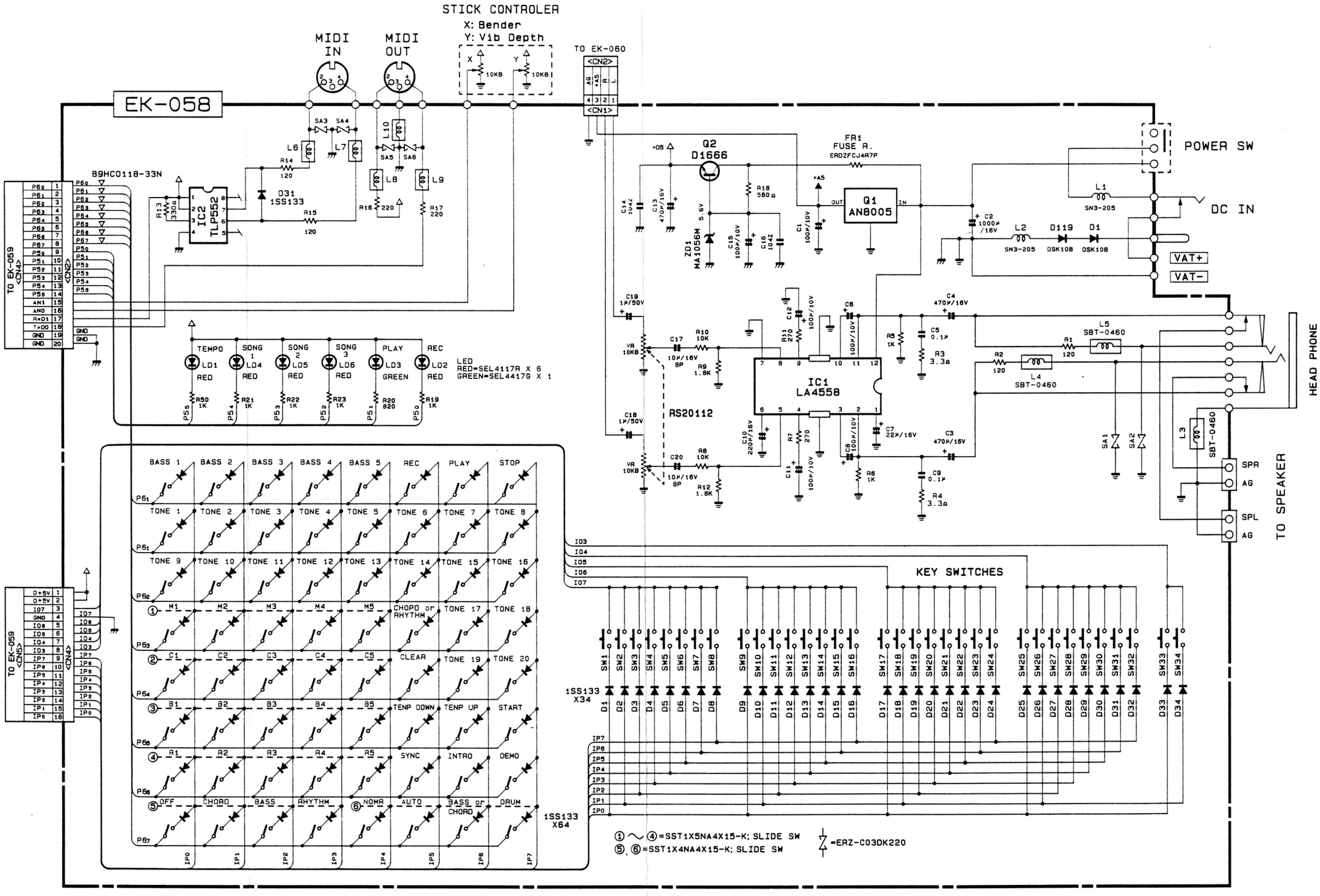
TO EK-056 < CN4 >

GND	1
GND	2
GND	3
IO7	4
IO6	5
IO5	6
IO4	7
IO3	8
IP7	9
IP6	10
IP5	11
IP4	12
IP0	13
IP1	14
IP2	15
IP3	16

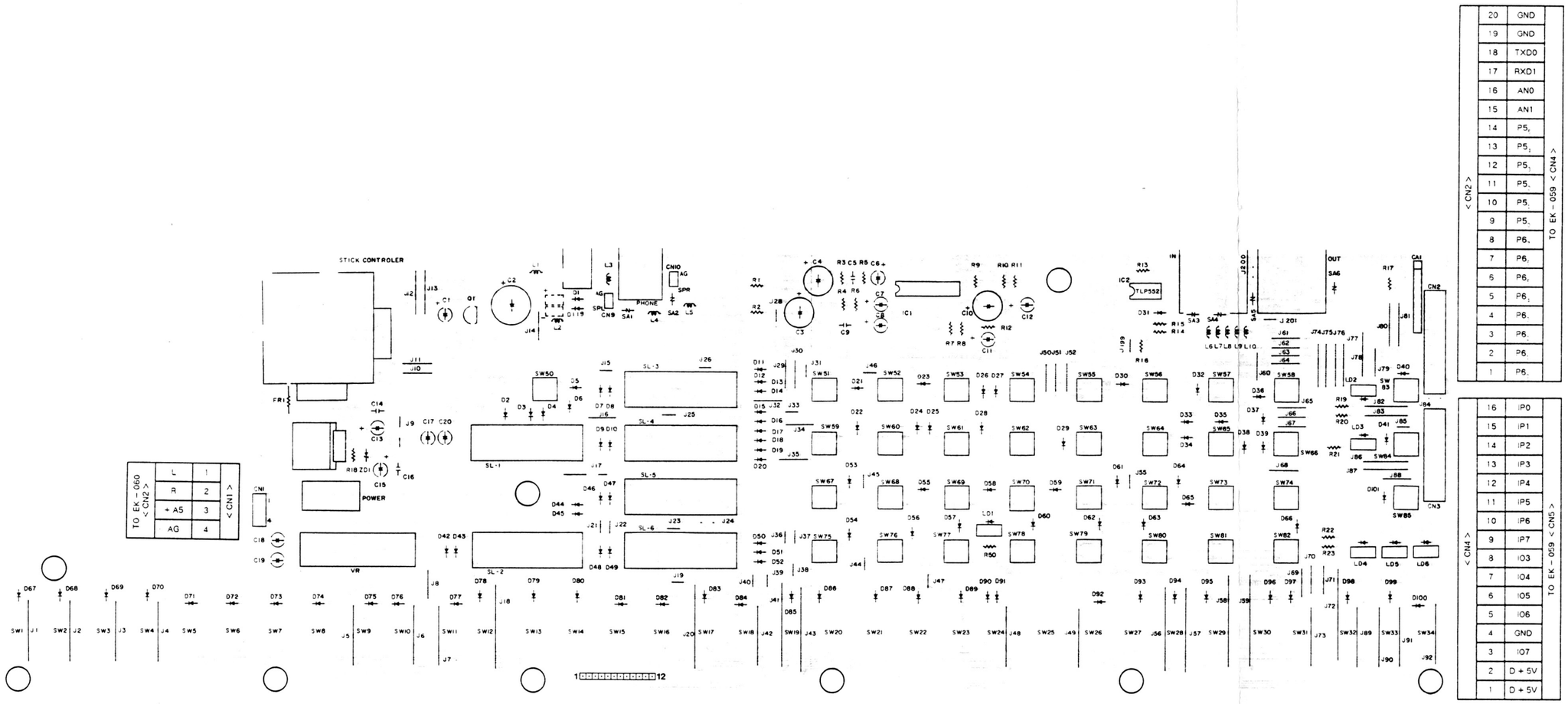
< CN2 >



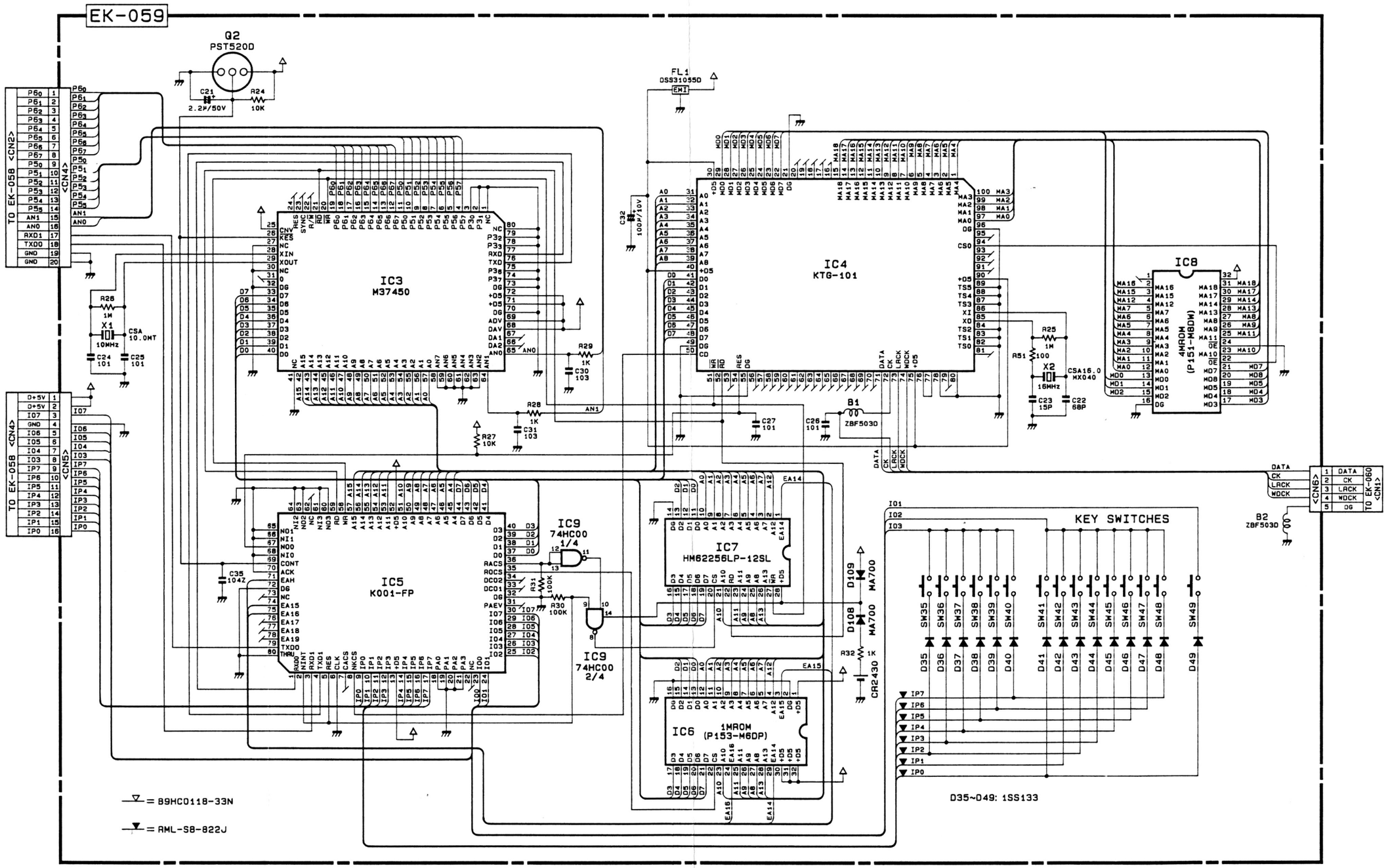
9. EK-058 CIRCUIT For WK40



10. EK-058 PRINTED WIRING BOARD For WK40



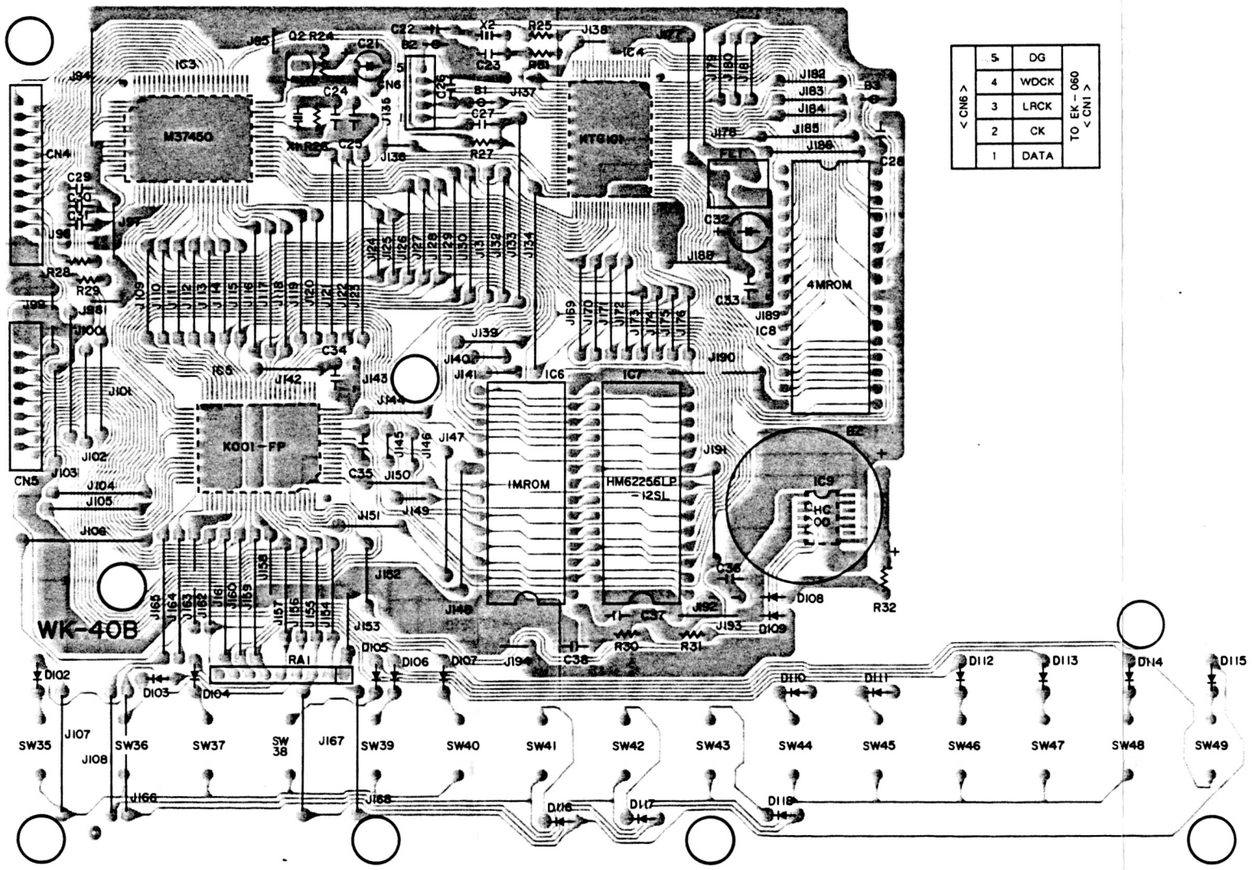
11. EK-059 CIRCUIT For WK40



12. EK-059 PRINTED WIRING BOARD For WK40

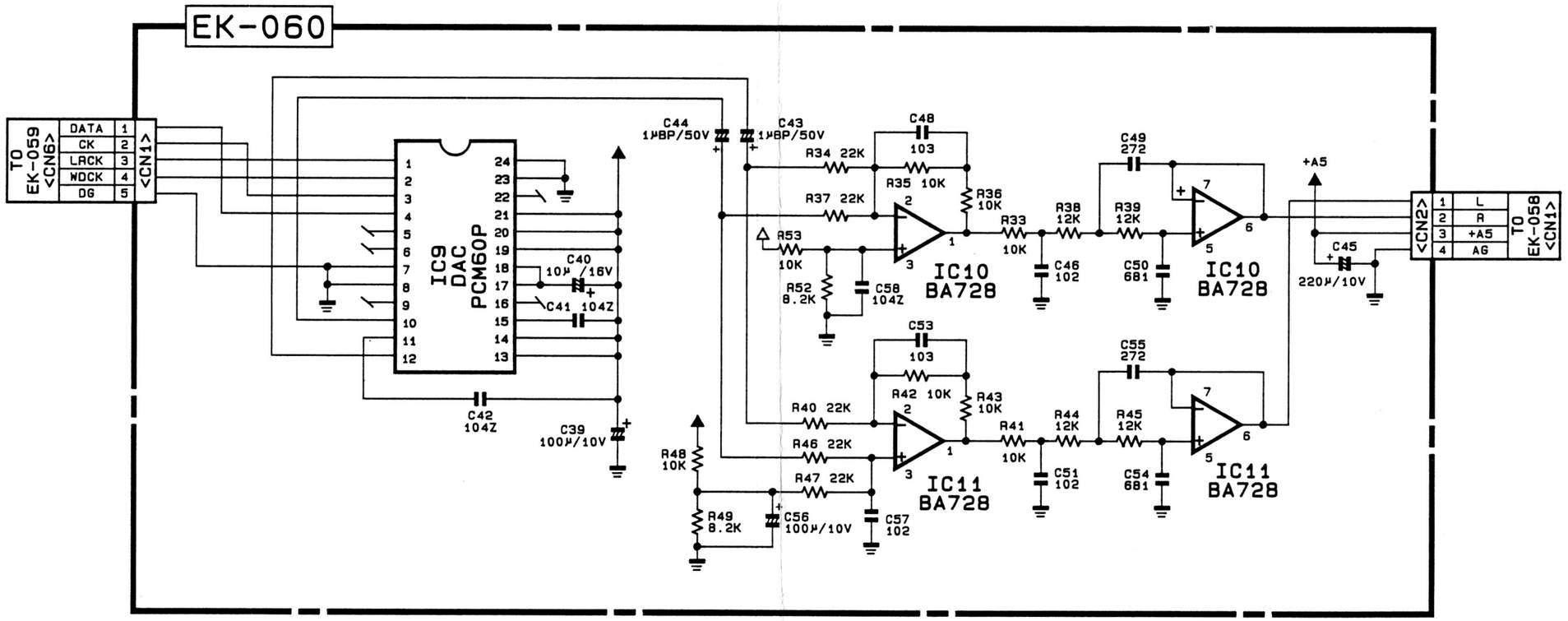
TO EK-058 <CN2>			<CN4>
	$P6_0$	1	
	$P6_1$	2	
	$P6_2$	3	
	$P6_3$	4	
	$P6_4$	5	
	$P6_5$	6	
	$P6_6$	7	
	$P6_7$	8	
	$P5_0$	9	
	$P5_1$	10	
	$P5_2$	11	
	$P5_3$	12	
	$P5_4$	13	
	$P5_5$	14	
	AN1	15	
	AN0	16	
	RXD1	17	
	TXD0	18	
	GND	19	
	GND	20	

TO EK-058 <CN4>			<CN5>
	D+5V	1	
	D+5V	2	
	IO7	3	
	GND	4	
	IO6	5	
	IO5	6	
	IO4	7	
	IO3	8	
	IP7	9	
	IP6	10	
	IP5	11	
	IP4	12	
	IP3	13	
	IP2	14	
	IP1	15	
	IP0	16	

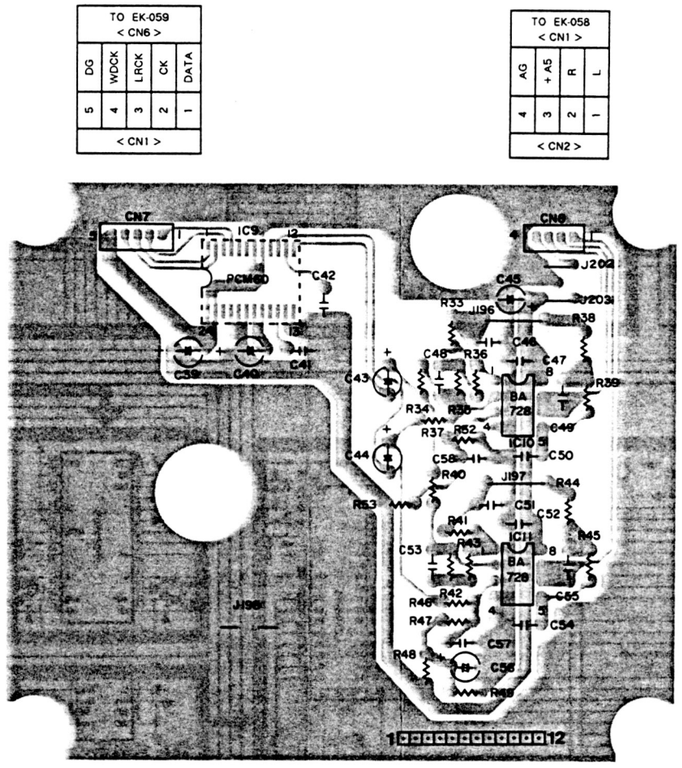


<CN6>			TO EK-060 <CN1>
	5	DG	
	4	WDCK	
	3	LRCK	
	2	CK	
	1	DATA	

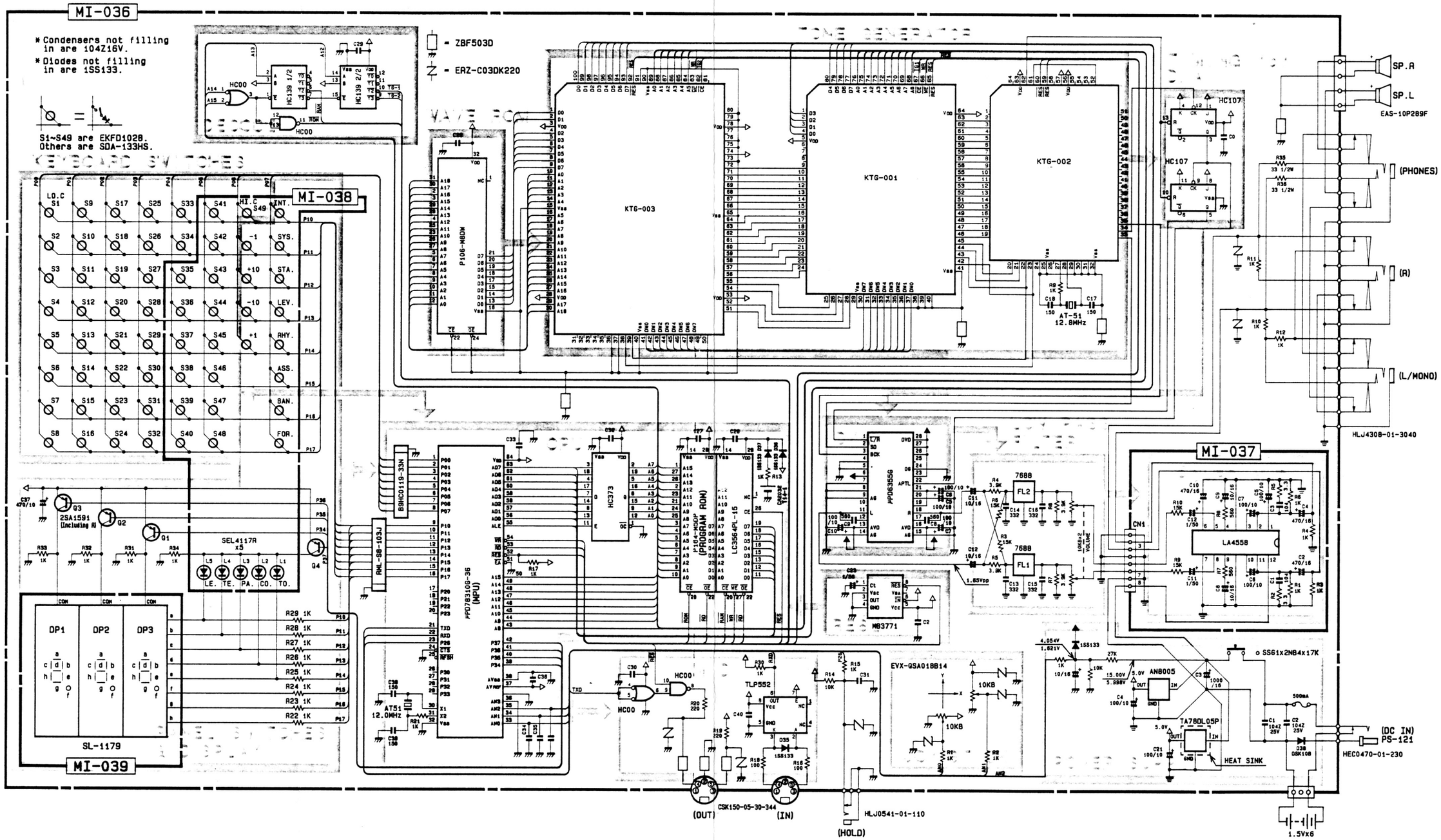
13. EK-060 CIRCUIT For WK40



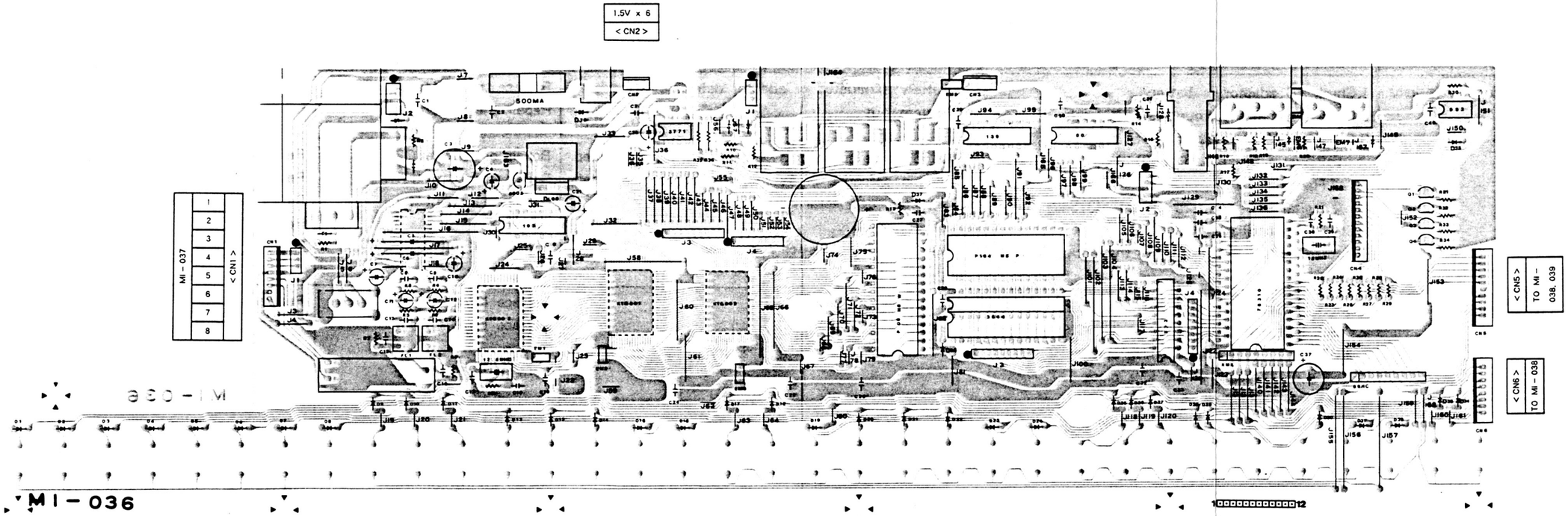
14. EK-060 PRINTED WIRING BOARD For WK40

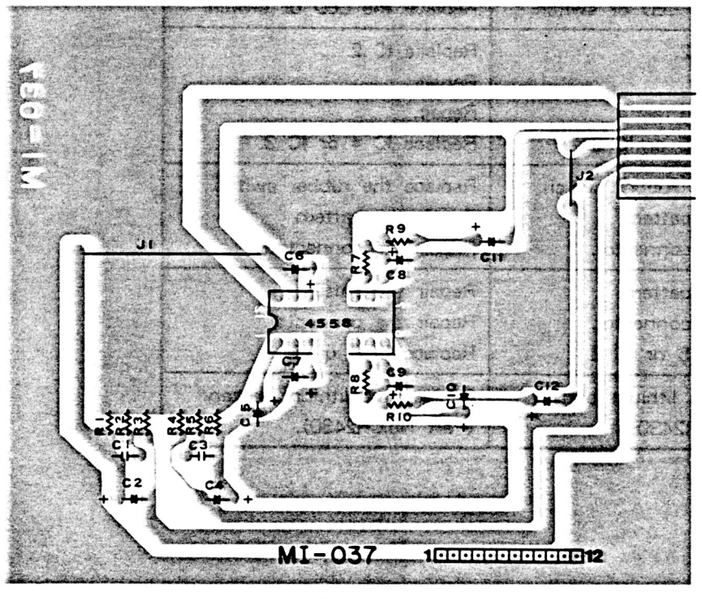


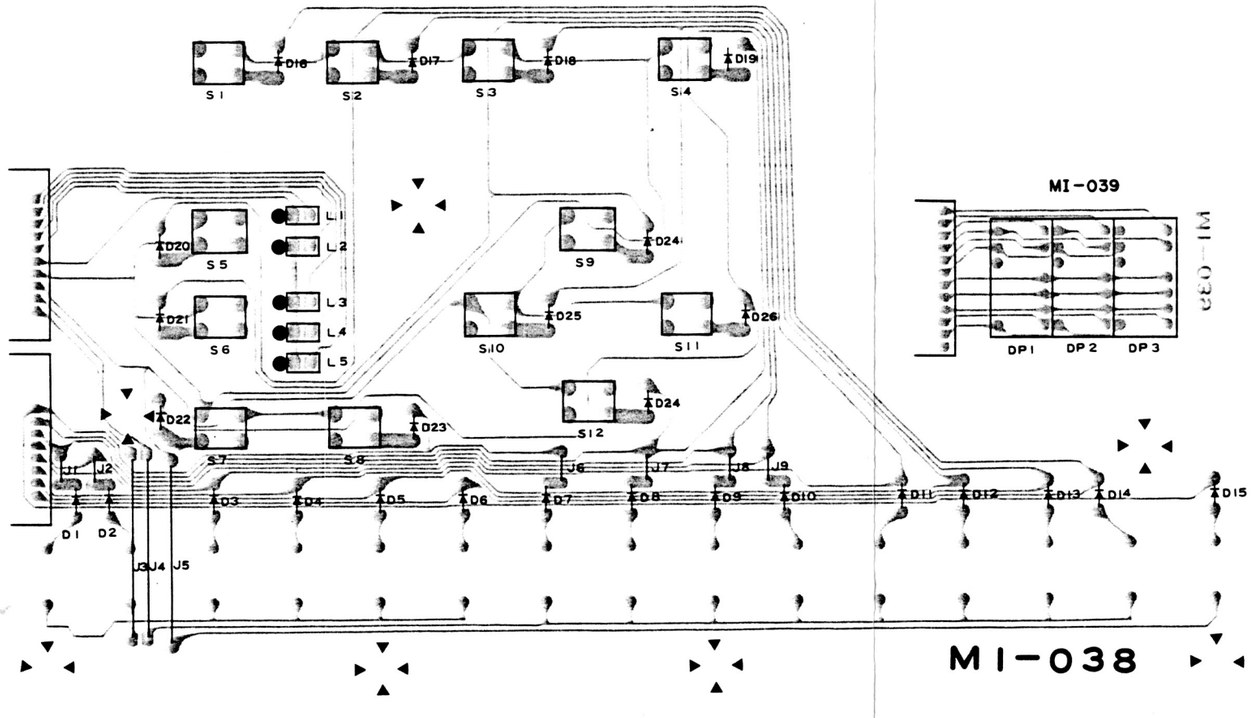
15. MI-036, MI-037, MI-038, MI-039 CIRCUITS For PH50



16. MI-036, MI-037, MI-038, MI-039 PRINTED WIRING BOARDS For PH50





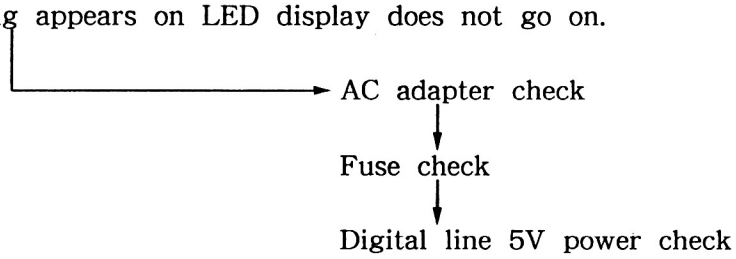


17. TROUBLESHOOTING For WK40/WK50

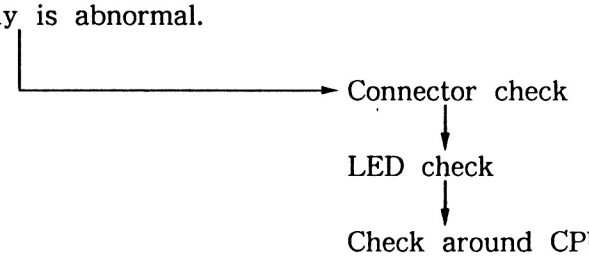
Malfunction	Check item	Cause	Repair location and replacement PCB (parts)	
			WK40	WK50
Panel LED does not light normally.	1. Check AC adaptor or battery. 2. Check the pattern around the DC jack. 3. Check if 5V is output or not. ①Power transistor (D1666) legs ②Fuse resistance ③Digital side (Q1 : 25 pin of M37540) 4. Check the oscillator (X1). 5. If there is no abnormality in the above,	Battery exhausted or adaptor defective Pattern out D1666 is defective or 5V and ground are connected. R60 is defective or 5V and ground are connected. Defective connector X1 abnormality then the digital device has failed.	Replace the battery or adaptor. Repair the pattern. Repair or replace Q2. Repair or replace FR1. Repair the connector. Repair X1. Replace EK – 059.	(Same as left.) Repair the pattern. Repair or replace Q1. Repair or replace R60. Repair the connector. Repair X1. Replace EK – 057.
Sound is abnormal.	1. Check IN and OUT on power amplifier (IC 13). 2. Check IN * and OUT of DAC (IC 10 : LA4558). * PCM60 PIN1 → 125 kHz clock PIN2 → 250 kHz clock PIN3 → 4 kHz clock PIN4 → 4 kHz clock (Only when sounding) PIN10 & 12 → Analog wave form 3. Check the connectors between the circuit boards. 4. Check the speaker.	Defective power amplifier Defective DAC Defective T.G (IC 5 : KTG101) Defective connection Defective speaker	Replace IC 1. Replace IC 9. Replace IC 4. Repair connector. Replace the speaker.	Replace IC 13. Replace IC 10. Replace IC 5. Repair connector. Replace the speaker.
LED or switch does not work.	1. Check the pattern. 2. Check the connector. 3. Check every part.	Pattern out Defective connection Defective LED or switch	Repair the pattern. Repair the connector. Replace the LED or switch.	Repair the pattern. Repair the connector. Replace the LED or switch.
Defect in MIDI	1. Check the photo coupler. (TLP552). 2. Check the DIN connector. 3. Check the connector. 4. If there is no abnormality in the above,	Defective photo coupler Defective connection Defective connection Then LSI or CPU is defective.	Replace IC 2. Repair. Repair. Replace IC 5 or IC 3.	Replace IC 2. Repair. Repair. Replace IC 4 or IC 3.
Defect in keyboard	1. Check the rubber contact point. 2. Check the pattern. 3. Check the connector.	Deterioration of rubber or dust in rubber switch Pattern out Defective connection	Replace the rubber switch. Repair the pattern. Repair the connector.	Replace the rubber switch. Repair the pattern. Repair the connector.
Joystick does not move.	1. Check the joystick pattern. 2. Check the connector. 3. If there is no abnormality in the above,	Pattern out Defective connection then LSI or CPU is defective.	Repair the pattern. Repair the connector. Replace IC 5 or IC 3.	Repair the pattern. Repair the connector. Replace IC 4 or IC 3.
Recorder does not back up.	1. When the power is off, is the RAM Vcc voltage 2V or more ?	Lithium battery low	Replace the lithium battery (Part No.CR2430).	Replace the lithium battery (Part No.CR2430).

18. TROUBLESHOOTING For PH50

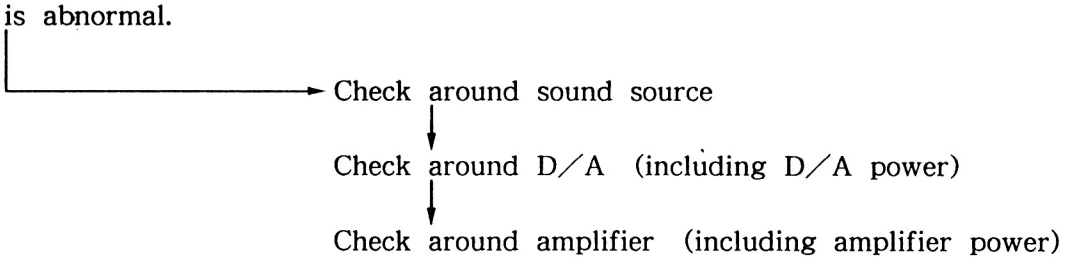
① Nothing appears on LED display does not go on.



② Display is abnormal.



③ Sound is abnormal.



④ No sound produced.