

Service
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44 327 A11

Service Manual

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SPECIFICATIONS**Synthesizer:**

Synthesizer chip : 6 melody and 5 rhythm tracks
 Microprocessor/controller : type 6803
 ROM : 32 Kbytes
 RAM : 8 Kbytes
 Upper frequency : 16KHz +/-3dB
 S/N ratio : 50dB

Tape section:

PLAY : bandwidth 60Hz-10KHz +/-3dB
 distortion 2%
 S/N ratio 50dB

RECORD : bandwidth 60Hz-8KHz +3dB -8dB
 distortion 5%
 S/N ratio -39dB

Connections:

3.5mm mini-jack stereo output socket,
 100mW RMS into 32Ω;
 3.5mm mini-jack stereo microphone socket,
 sensitivity 60dB, impedance 600Ω,
 bandwidth 20Hz-10KHz;
 9V DC input for centre negative plug.

Rated**Voltage:**

9V DC nominal, 6 * 1.5V R6 batteries (penlight);
 AC Adaptor ACC01/02/03 9V 500mA regulated
 - nominal continuous rating.

Power Consumption:

Synthesizer: 2.25W
 Tape section: 0.63W
 Peak load: 7.20W

Battery life (with LR6, size AA):

Synthesizer: 4.5 hours
 Tape record: 18.0 hours
 Tape play: 25.0 hours

Dimensions (W/D/H):

220mm x 190mm x 40mm

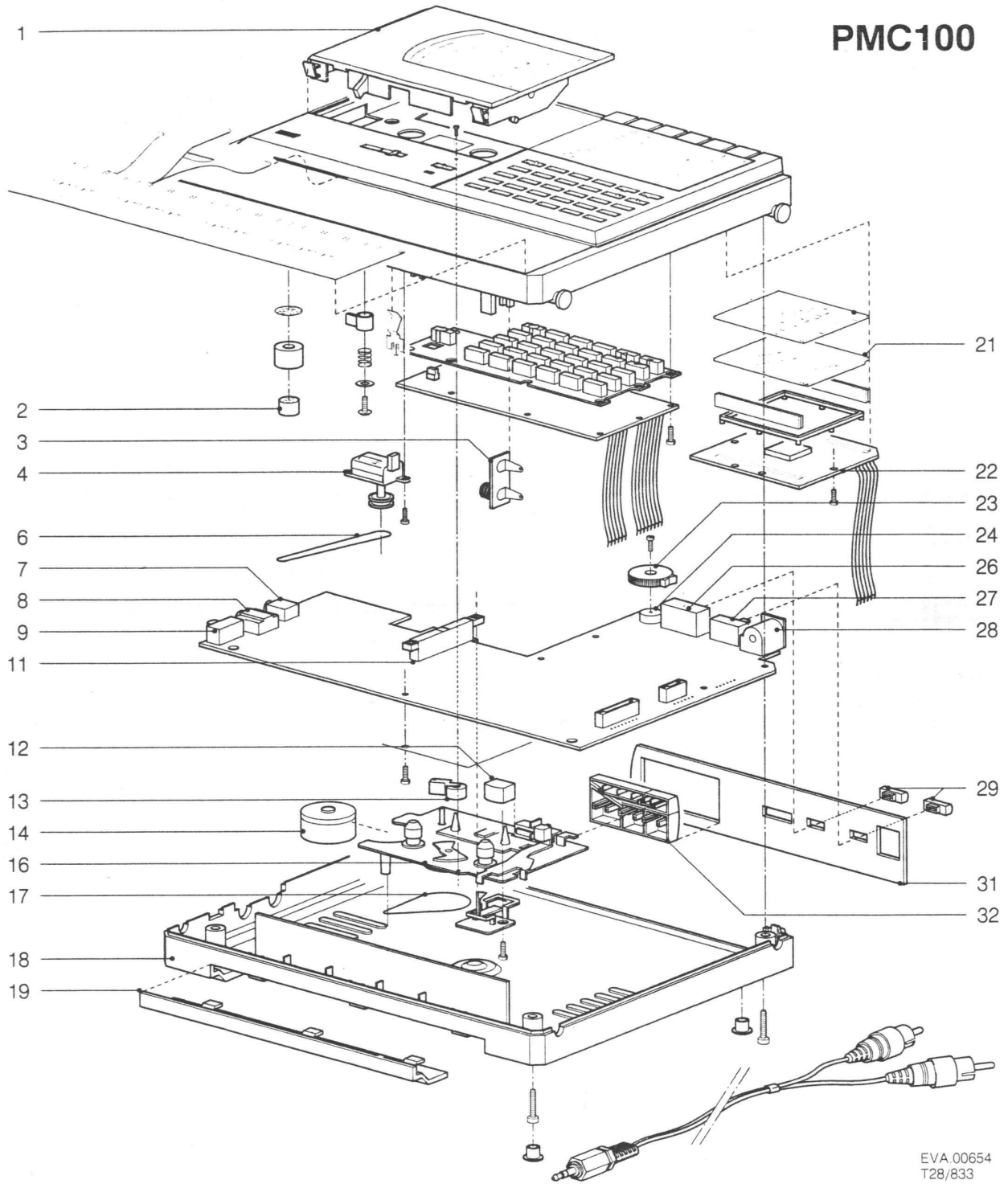
Weight:

715g excluding batteries

PARTS LIST EXPLODED VIEW

1	4822 443 62633	Cassette door
2	4822 242 30166	Microphone
3	4822 290 30298	Battery contact
4	4822 349 50328	Tape counter
6	4822 358 30887	Counter drive belt
7	4822 267 30997	Headphones socket
8	4822 267 30998	Microphone socket
9	4822 277 21272	Microphone on/off switch
11	4822 277 30896	Record/Playback switch
12	4822 249 10375	Record/Playback head
13	4822 528 70553	Pinch roller with holder
14	4822 361 21175	Motor
16	4822 691 20488	Cassette mechanism
17	4822 358 30888	Cassette drive belt
18	4822 443 51145	Bottom housing
19	4822 443 62632	Battery door
21	4822 130 90608	LCD display
22	4822 218 30456	LCD driver panel
23	4822 413 41482	Volume knob
24	4822 101 20995	Volume potentiometer
26	4822 277 21271	Audio/Data switch
27	4822 277 21269	On/Off switch
28	4822 267 30996	Power supply socket
29	4822 410 26812	Actuator for pos. 26 and 27
31	4822 454 20886	Ornamental plate
32	4822 410 26813	Cassette keys

PMC100



PMC100 SELFTEST PROCEDURE

The PMC100 has a built in selftest program, to check memory, keyboard, switches, display, synthesizer and cassette recorder.

The test procedure is started by keeping both the bottom left and bottom right keys on the control keypad pressed (pos. 45 in Fig 1: NOTE/REST VALUE KEYS) and then switching on the synthesizer (pos. 8 in Fig 1: SYNTH ON/OFF).

Any running test is stopped when the START/STOP key (pos. 20 in Fig 1) is pressed, and the next test is started immediately.

The test procedure consists of the following steps:

RAM test:

1. First, a RAM test is performed. This takes about 1s. If the RAM test is unsuccessful, the message "Err" is displayed in the numeric segment area (pos. 19A in Fig 1).

LCD test:

2. If the RAM test is successful, all the LCD segments are switched on, see Fig 2. Then any key should be pressed.

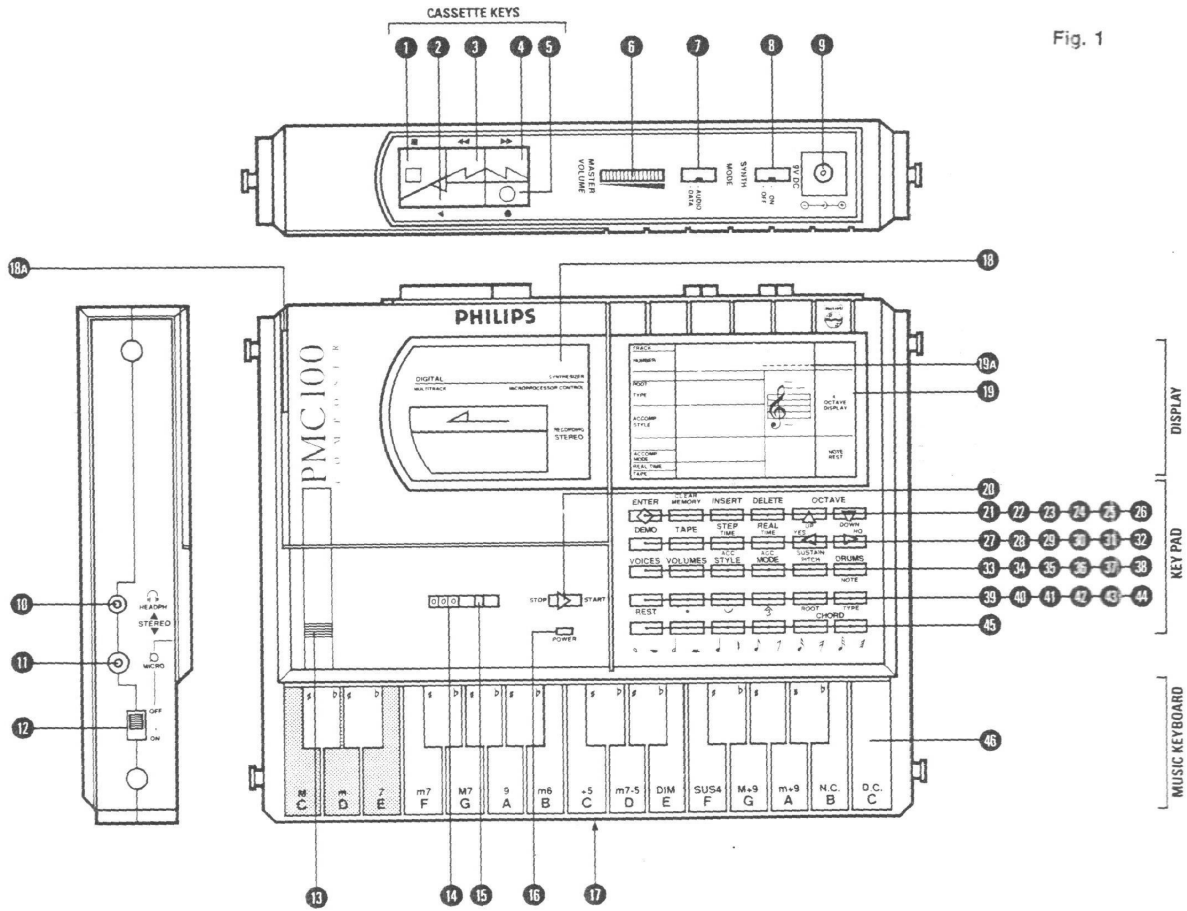


Fig. 1

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> 1 STOP 2 PLAY 3 FAST FORWARD 4 REWIND 5 RECORD 6 MASTER VOLUME CONTROL 7 AUDIO/DATA SWITCH 8 SYNTH ON/OFF SWITCH 9 DC SOCKET 10 STEREO OUTPUT SOCKET 11 STEREO MICROPHONE SOCKET 12 MICROPHONE ON/OFF SWITCH 13 MICROPHONE 14 TAPE COUNTER 15 COUNTER RESET BUTTON 16 POWER - POWER LOW INDICATOR 17 BATTERY COMPARTMENT | <p>CASSETTE KEYS</p> <ul style="list-style-type: none"> 1 CASSETTE KEYS 2 CASSETTE DOOR 3 CASSETTE DOOR SIDE LIP 4 LCD DISPLAY 5 DIGITAL DISPLAY SECTION 6 STOP/START KEY 7 ENTER 8 CLEAR MEMORY 9 INSERT 10 DELETE 11 UP SCROLLING / OCTAVE SHIFT UP 12 DOWN SCROLLING / OCTAVE SHIFT DOWN 13 LEFT SCROLLING / YES (CONFIRM) 14 RIGHT SCROLLING / NO (CONFIRM) 15 DEMO 16 TAPE 17 STEPTIME 18 REALTIME | <ul style="list-style-type: none"> 19 VOICES 20 VOLUMES 21 ACCOMPANIMENT STYLE 22 ACCOMPANIMENT MODE 23 SUSTAIN/PITCH 24 DRUMS 25 NOTE 26 ROOT 27 TYPE 28 REST SELECT 29 DOT 30 TIE 31 TRIPLET 32 NOTE/REST VALUE 33 MUSIC KEYBOARD |
| | <p>COMMAND KEYS</p> <p>CONTROL KEYS</p> <p>MODE KEYS</p> | <p>PERFORMANCE KEYS</p> <p>CHORD KEYS</p> <p>NOTE/REST KEYS</p> |

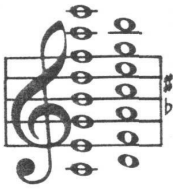

TRACK NUMBER	MEL ACC1 ACC2 ACC3 ACC4 BASS STEP VOLUME VOICE TEMPO DEMO TRANPOSE TUNE + -	1288	
ROOT TYPE	SUSTAIN C D E F G A B # b M m 7 m7 M7 6 m6 +5 m7-5 DIM SUS4 M+9 m+9 N.C.		4 OCTAVE DISPLAY
ACCOMP STYLE	SLOW ROCK BALLAD SWING MARCH COUNTRY WALTZ DISCO FUNK ROCK 'N' ROLL POP REGGAE LATIN USER		
ACCOMP MODE	STEPTIME INSERT ARRANGED VARISTRUM SUSTAINED OFF		NOTE REST
REAL TIME TAPE	GLING SUPERGLING PROMODE LOAD SAVE VERIFY CONFIRM		

Fig. 2

1. All the LCD segments start blinking. Any key should be pressed.
2. All the LCD segments stop blinking, but remain on. Any key should be pressed.
3. All the LCD segments are switched off, and then each segment is sequentially switched on and off, one at a time. The time for this test is approx. 41s. If the START/STOP key (pos. 20 Fig 1) is pressed this test sequence is stopped.

Keyboard test:

3. The number "56" is displayed on the LCD (pos 19A in Fig 1). This indicates the number of keys that remain to be pressed to complete the keyboard test. Each time a key is pressed, the number is decremented by 1. The keys do not have to be pressed in a specific order. The only rule is that the START/STOP key is pressed **last**. Pressing the START/STOP key at any time during the keyboard test terminates the keyboard test, and continues with the sound test.

Sound test:

7. When all the keys have been pressed or START/STOP has been used to terminate the keyboard test, the sound test is performed. All five drum sounds are played in order (Bass Drum, Snare Drum, Tom Drum, Ride Cymbal, Closed Hi-hat). The drums continue to play in this order until any key is pressed.
8. A 1KHz sinewave is played. The amplitude is about $2V_{pp}$ at the headphones output (ref. left channel; the right channel has lower volume for synthesizer voices, but higher volume for drums). This signal is also used as reference signal for the measuring of oscillograms. Any key should be pressed.
9. Six tones of ascending frequency are played. Each tone uses a different sound channel on the music IC. Only one tone is played at one time. If six tones do not sound, the sound chip (IC7 = YM1823B) is defective. Any key should be pressed.

Cassette recorder test:

10. A tape out signal is generated. This is a 2KHz square wave. The AUDIO/DATA switch (pos. 7 in Fig 1) must be in the DATA position. The signal is not sent to the headphones output. Any key should be pressed.
11. The normal PMC100 software is executed allowing the digital (DATA) tape functions to be tested. The bypacked data cassette (or any other cassette containing digital data for the PMC100) should be inserted and rewound. The AUDIO/DATA switch should be in the DATA position.
 - Press the "TAPE" key (pos. 28). The "LOAD" segment starts blinking, and the "SAVE" and "VERIFY" segments are switched on.
 - Press the "ENTER" key (pos. 21). The "LOAD" segment stops blinking, but remains on, and the "SAVE" and "VERIFY" segments are switched off. The "CONFIRM" segment starts blinking.
 - Press the "YES/CURSOR LEFT" key (pos. 31).
 - Press the "PLAY" key (pos. 2) on the cassette unit. After a few seconds, a number is displayed on the LCD. The first one or two digit positions are blinking. The last two digits (the number of data blocks on tape) count down to 0. If the message "Err" is displayed on the LCD, the load was not successful.

PMC100 CASSETTE ADJUSTMENTS

Adjustment	Cassette	Recorder position	Measure on	Read on	Adjust with	Adjust to
Tape speed	3150 Hz of SBC420**	PLAY	Headph. output socket	Wow and flutter meter	VR1 on main panel	*
Azimuth R/PB head	8 KHz of SBC420**	PLAY	Headph. output socket	mV-meter	R. screw P/PB head eras. side***	Maximum output
Bias frequency	-	RECORD	R/PB head	osc.-scope	L4	85 KHz +/-5%
Bias amplitude	-	RECORD	C53/C54	osc.-scope	L4	68V _{pp}

* The maximum permissible speed deviation is 2%. Moreover the wow and flutter can be read, this value should not exceed 0.3%.

** SBC420: 4822 397 30071

*** Azimuth to be adjusted with cassette door removed. Open door, press left and right sides to unlock and pull out door, see Fig 3.

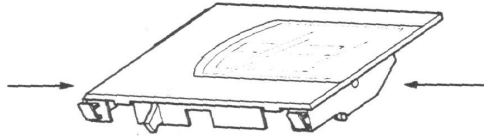
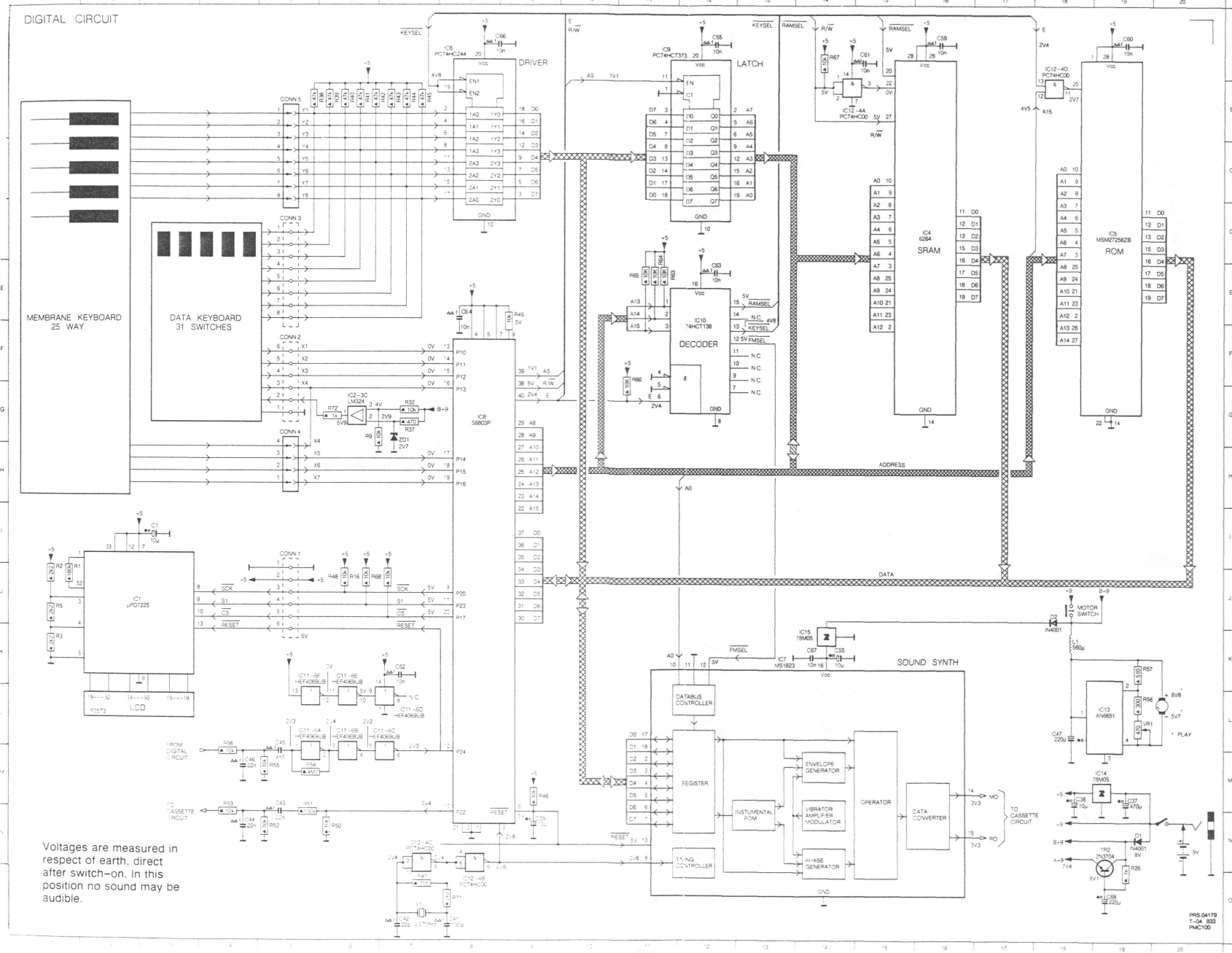


Fig. 3

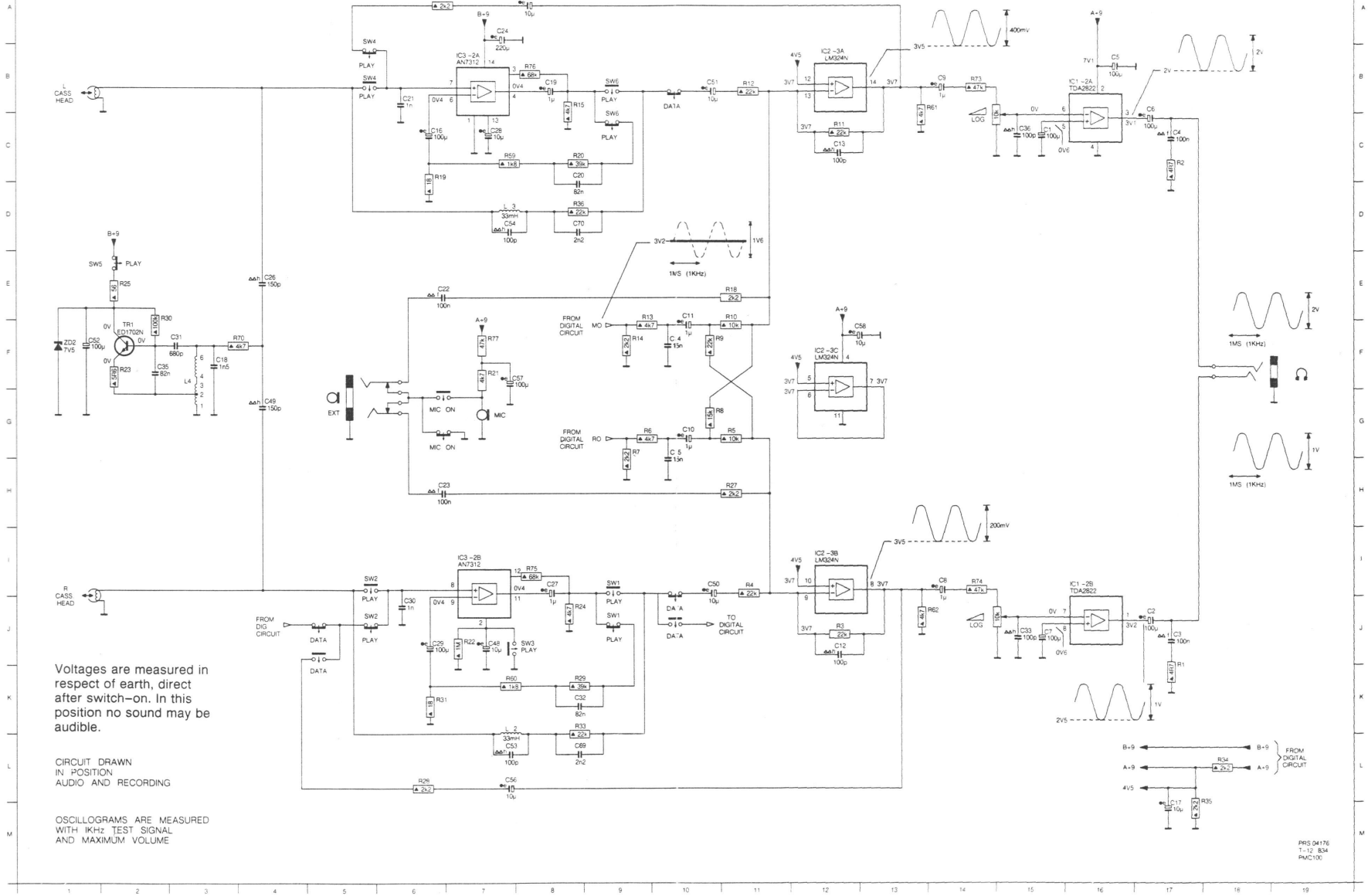


C1	I 3
C2	M18
C3	N 9
C4	O 7
C5	M 5
C6	N 4
C7	L 5
C8	M 4
C9	L18
C10	K14
C11	A16
C12	A19
C13	A15
C14	K 7
C15	A 8
C16	A 9
C17	K12
C18	O19
C19	N19
C20	J18
C21	J 3
C22	A18
C23	B14
C24	L19
C25	K14
C26	G 6
C27	A 6
C28	K13
C29	G 9
C30	A11
C31	L1
C32	E12
C33	J 2
C34	R16
C35	J 1
C36	R2
C37	N19
C38	G 7
C39	R27
C40	B 6
C41	R29
C42	B 6
C43	R40
C44	B 6
C45	R41
C46	B 7
C47	R42
C48	B 7
C49	R43
C50	B 7
C51	R44
C52	B 7
C53	R45
C54	M 9
C55	O 2
C56	E 9
C57	E 9
C58	N 6
C59	M 5
C60	N 5
C61	M 4
C62	M 4
C63	L 4
C64	R27
C65	K20
C66	L25
C67	E11
C68	E11
C69	E11
C70	E11
C71	E11
C72	E11
C73	E11
C74	E11
C75	E11
C76	E11
C77	E11
C78	E11
C79	E11
C80	E11
C81	E11
C82	E11
C83	E11
C84	E11
C85	E11
C86	E11
C87	E11
C88	E11
C89	E11
C90	E11
C91	E11
C92	E11
C93	E11
C94	E11
C95	E11
C96	E11
C97	E11
C98	E11
C99	E11
C100	E11

Volages are measured in respect of earth, direct after switch-on. In this position no sound may be audible.

C1 C15 C14 F10 C19 B 8 C23 H 6 C26 J 6 C33 J15 C48 J 7 C53 L 7 C6 C8 B17 C9 B14 IC2 F12 L4 F 3 R13 E 9 R19 C 7 R23 E 2 R26 K 8 R35 L18 R59 C 7 R7 G 9 R78 F 7 SW1 I 9 SW4 B 5 TR1 F 2
 C10 G10 C15 G10 C2 J17 C24 A 7 C3 C33 F 2 C49 G 4 C54 D 7 C69 L 8 C71 J15 IC1 B10 IC3 B 7 R1 K17 R14 F 9 R2 R24 J 9 R3 R33 K 7 R36 E 3 R60 K 7 R14 J14 R79 A16 SW2 I 5 SW5 E 1
 C11 E10 C 6 C20 C 8 C26 F 4 C30 J 6 C36 C15 C3 C17 C50 F 8 C27 F 8 C2 IC2 B12 L 2 K 7 R11 C12 R17 A 6 R27 F 7 R27 H11 R33 K 8 R4 I11 R51 B14 R15 I 8 R8 G11 SW2 J 5 SW6 B 9
 C12 J12 C17 M17 C21 F 6 C27 I 8 C32 K 8 C4 C4C C32 K 8 C4C C51 C56 B10 C56 F13 C7 C70 D 8 IC2 B12 L 3 D 7 R12 B11 R18 E11 R22 J 7 R26 L 6 R34 L18 R5 G11 R62 J14 R6 B 8 R9 F11 SW3 J 8 SW6 C 9
 C13 C12 C16 F 3 C22 C 7

CASSETTE CIRCUIT

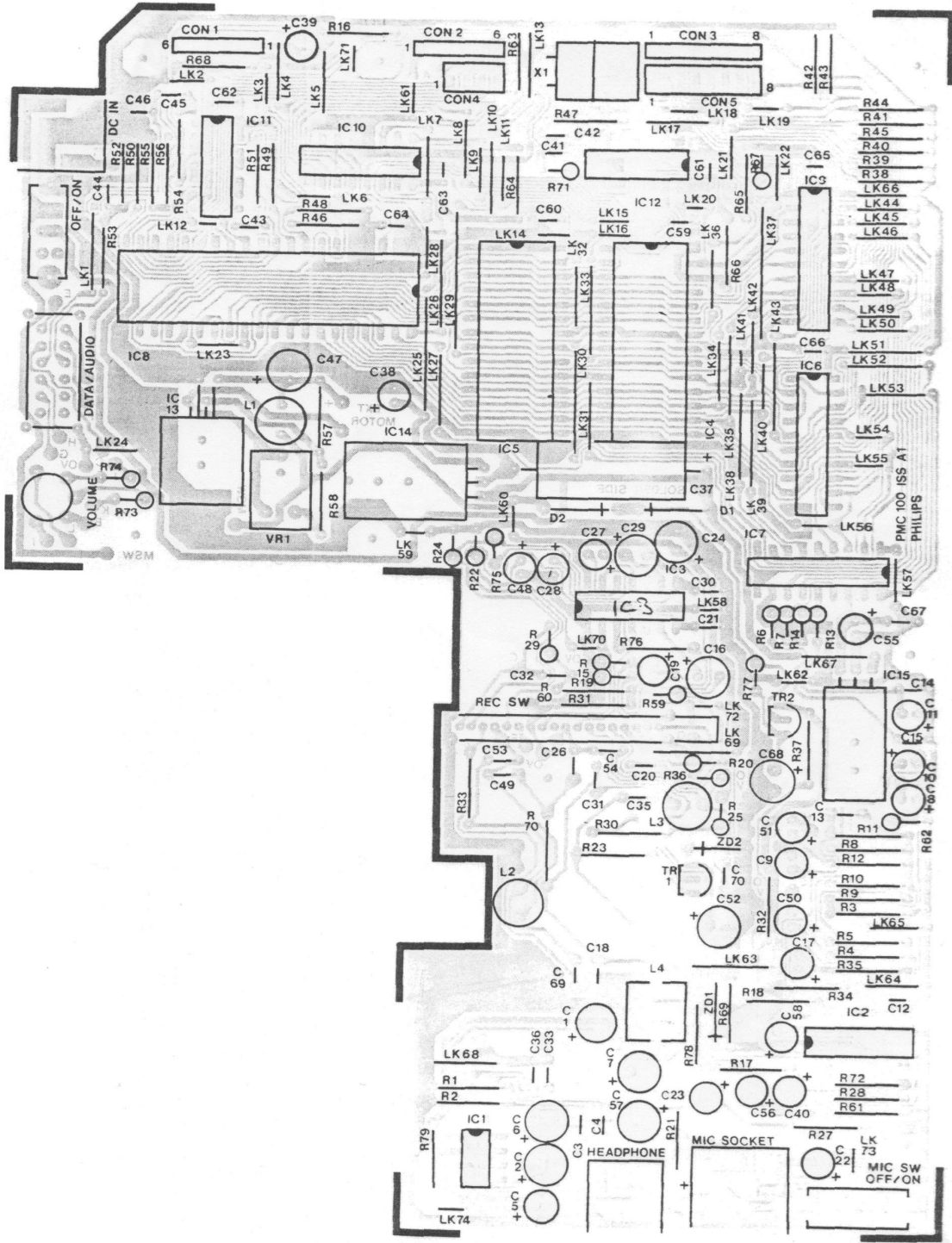


Voltages are measured in respect of earth, direct after switch-on. In this position no sound may be audible.

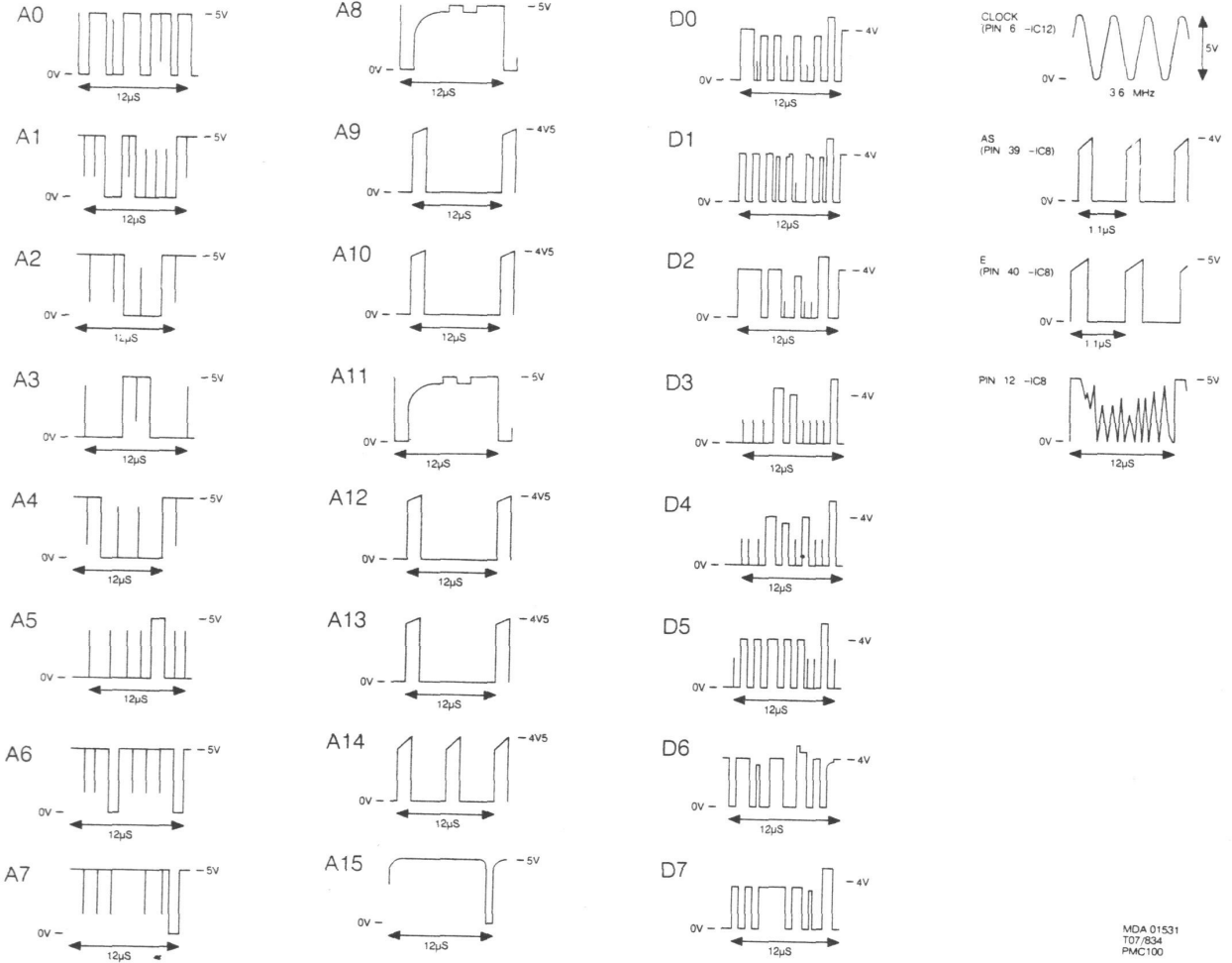
CIRCUIT DRAWN IN POSITION AUDIO AND RECORDING

OSCILLOGRAMS ARE MEASURED WITH 1KHz TEST SIGNAL AND MAXIMUM VOLUME

PRS 04176
 T-12 B34
 PNC100



9



MDA 01531
T07/834
PMC100

For measuring oscillograms, reference is made to the SELFTEST PROCEDURE text, point 8 (1KHz sinewave).

ELECTRICAL PARTS LIST

D 1	4822 130 80847	1N4001
D 2	4822 130 80847	1N4001
IC 1	5322 209 83002	TDA2822M
IC 2	4822 209 80587	LM324N
IC 3	4822 209 70997	AN7312
IC 7	4822 209 73759	MS1823
IC13	4822 209 73723	AN6651
TR 1	4822 130 41729	ED1702N
TR 2	5322 130 40418	2N3704
ZD 1	4822 130 81107	ZENER DIODE 7V5