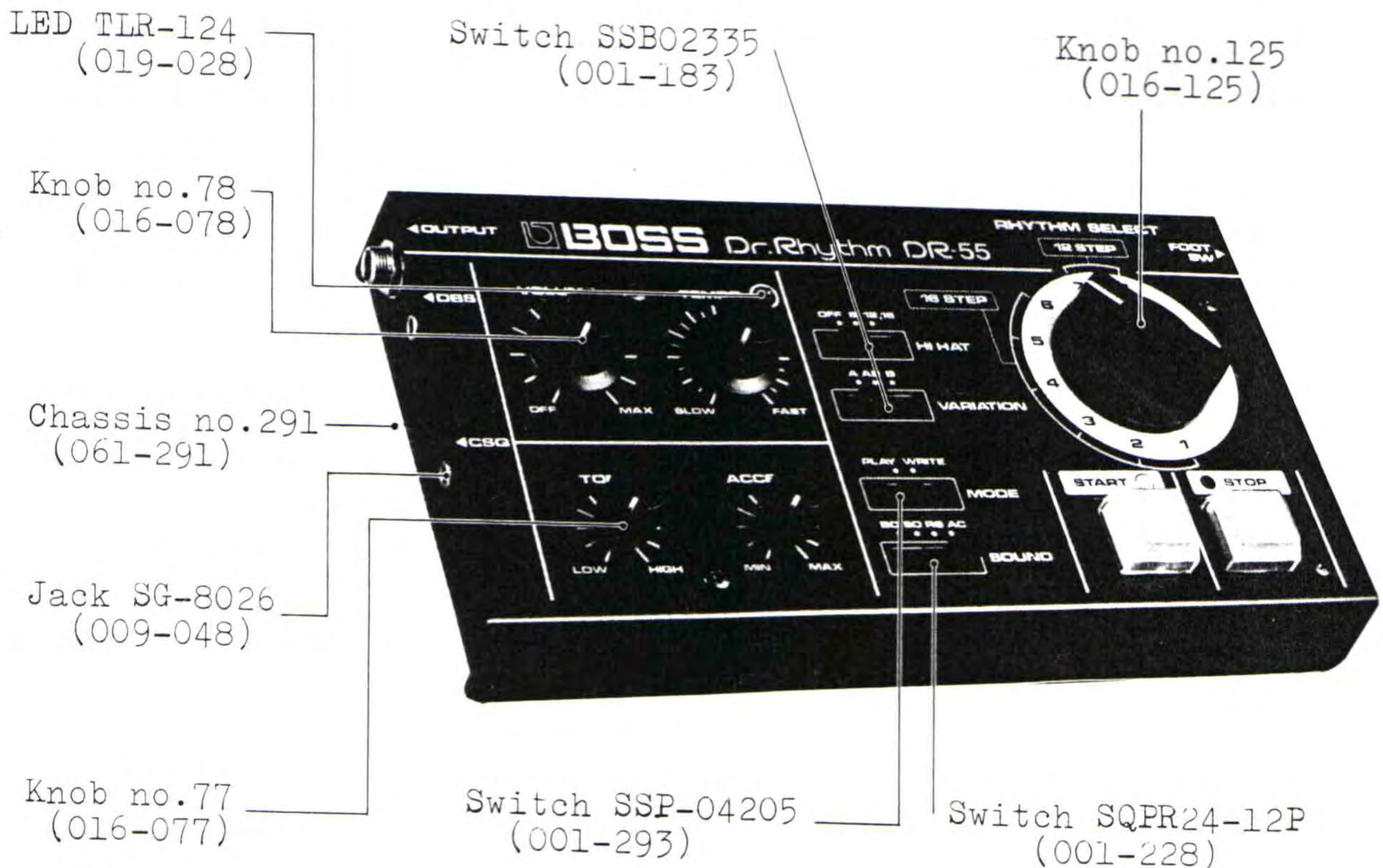# DR-55 SERVICE NOTES

SPECIFICATIONS

OUTPUT   DBS : +5 V (8 ms)   CSQ : +4 V (10 ms)

VOICE : (at OUTPUT Jack, Power source 6 V)
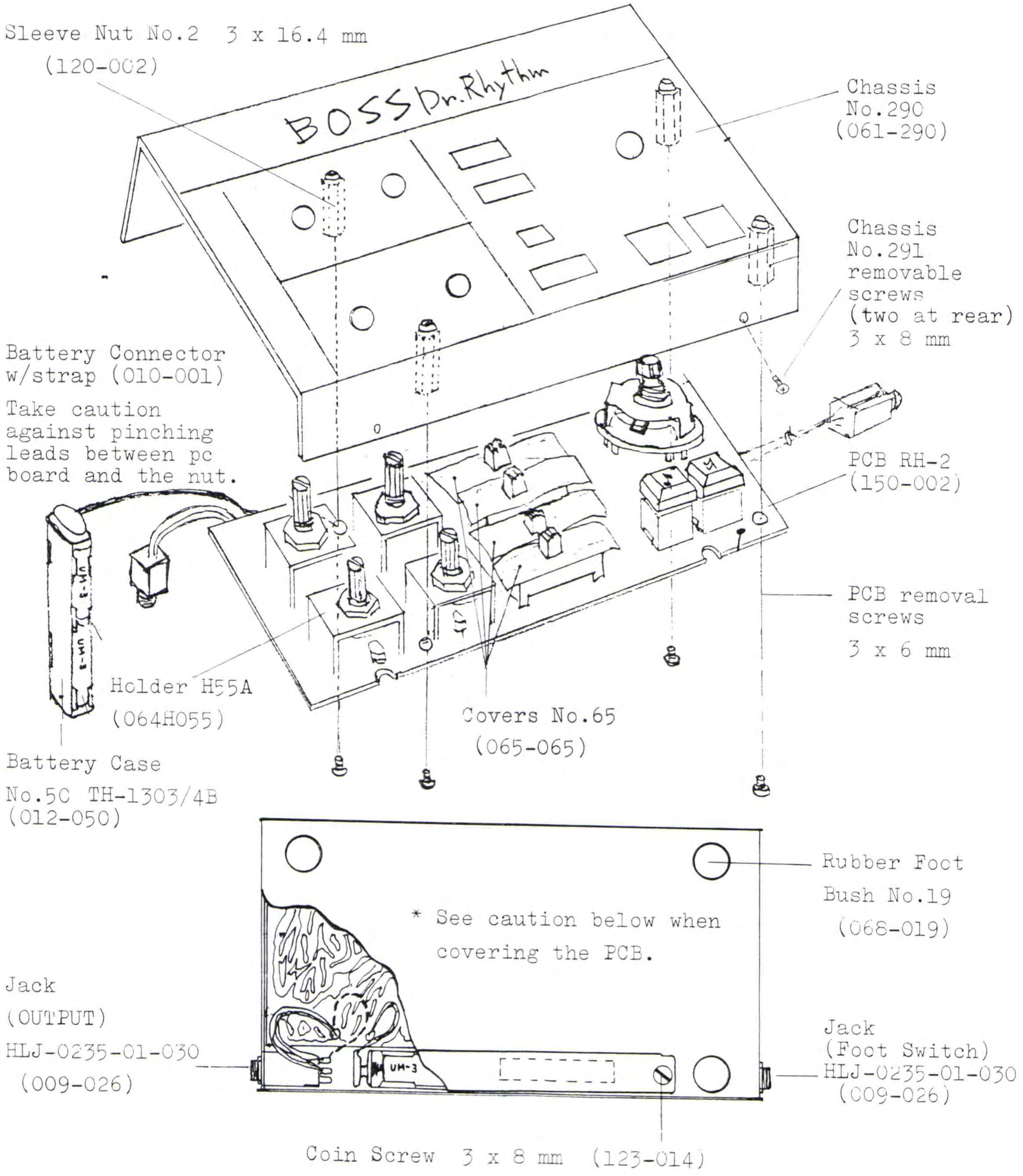
VOLUME, TONE : at max.   ACCENT : at min.

	Amplitude (Vpp)			Frequency (Hz)			Decay (ms)		
	min.	avr.	max.	min.	avr.	max.	min.	avr.	max.
BD	1.0	1.3	1.6	14	62 (16 ms)	18			
RS	0.7	0.9	1.2	0.65	0.75 (1330 ms)	0.85	5	7	10
SD (noise)	0.3	0.4 1.2	0.6	2.7	3.1 (320 ms)	3.5	55	75	100
HH		1.2					35	50	70

POWER REQUIREMENTS -- 4.5 V-6.5 V. (Current draw 5.5 mA @6 V)
DIMENSIONS -------- 211 (W) x 116 (D) x 53 (H) mm
WEIGHT ------------- 850 g
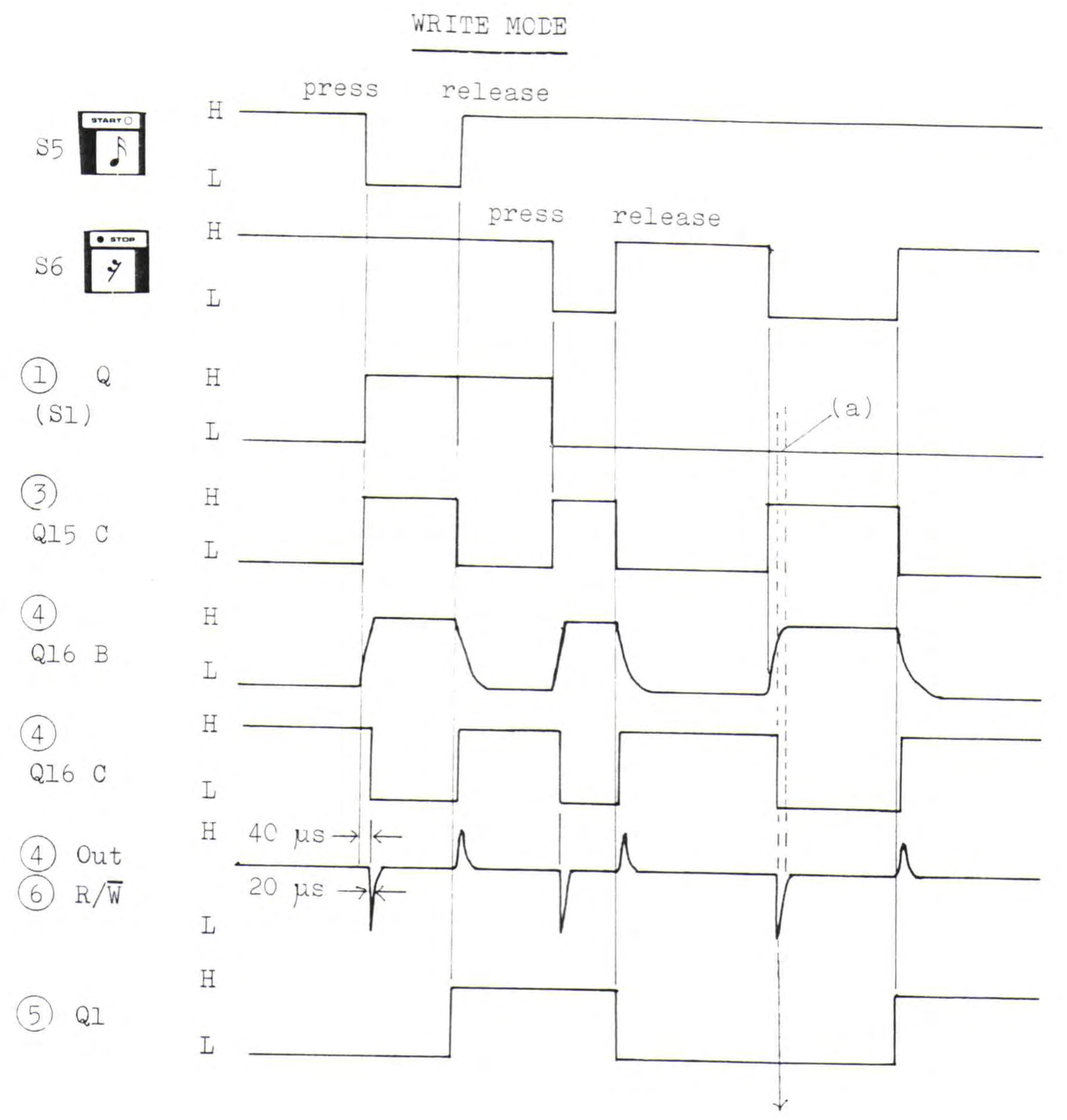
LED TLR-124
(019-028)

Switch SSB02335
(001-183)

Knob no.125
(016-125)

Knob no.78
(016-078)

Chassis no.291
(061-291)

Jack SG-8026
(009-048)

Knob no.77
(016-077)

Switch SSP-04205
(001-293)

Switch SQPR24-12P
(001-228)

* For the START and STOP switches, refer to the Parts List

Roland

Sleeve Nut No.2   3 x 16.4 mm
   (120-002)

BOSS Dr.Rhythm

Chassis
No.290
(061-290)

Chassis
No.291
removable
screws
(two at rear)
3 x 8 mm

Battery Connector
w/strap (010-001)

Take caution
against pinching
leads between pc
board and the nut.

PCB RH-2
(150-002)

PCB removal
screws
3 x 6 mm

Holder H55A
(064H055)

Covers No.65
(065-065)

Battery Case
No.5C TH-1303/4B
(012-050)

Rubber Foot
Bush No.19
(068-019)

* See caution below when
  covering the PCB.

Jack
(OUTPUT)
HLJ-0235-01-030
(009-026)

Jack
(Foot Switch)
HLJ-0235-01-030
(009-026)

Coin Screw 3 x 8 mm (123-014)

* CAUTION: Do not lay jack leads over the PCB as shown in dotted line.
           Since high gain stage is located on that area, the leads will
           provide feedback loop.

SOUND
S1

DI 4
3
2
DI 1

⑥ IC1 CMOS MEMORY (256 x 4 bit)
TC5501P-1
ADDRESS
DO {

A6 5 0 1 A7   A2 3 4 CE R/W VCC +B
6 5 4 3 7   2 1 21 17 20 22
A
VARI.
B
⑤
Q1 2 3 4 Q5
DUAL BINARY
COUNTER
IC2 MC14520B
E   R
6V

ENCODER
D6-D13
1   8
S7
RHYTHM SELECT

LED
DRIVE
Q13.14

BD
Q1. Q2

SD
Q10. Q11

⑦

RS
Q6

ACCENT
Q3   ⑧

AF AMP
Q4

NOISE
GENERATOR
Q8. Q9

OUTPUT

① S RS Q
F/F IC3
R 2/4 Q̄

CLOCK
GENERATOR Q
② 2/4
4011UB

10

DBS

MODE
S2
P L A Y
W R I T E

S5
START

S6
STOP

SCHMITT
TRIGGER ③
Q18.17.15

DELAY ④
Q16

S4
OFF
IC2 ← 8
IC3 ← 16

HI HAT
Q7. Q12

HI HAT

WRITE MODE

S5 press release H / L

S6 press release H / L

① Q (S1)   H / L

③ Q15 C   H / L

④ Q16 B   H / L

④ Q16 C   H / L

④ Out   40 μs   20 μs   H / L
⑥ R/W

⑤ Q1   H / L

(a)

Data (a) is written during this time.

PLAY MODE

START (S5)   ON

STOP (S6)   ON

① Q   H / L

$t_H \doteq 10$ ms
t_T $t_T = 45$ m-900 ms
t_H

② Q
⑤ E
⑥ CE   H / L

⑥ DO 1-4   H / L

⑤ Q1   H / L

⑤ Q2   H / L

CIRCUIT DESCRIPTION

The heading numbers of this circuit description
correspond to those in the block diagram above.

FEB. 21,1980

    1   RS FLIP FLOP (2/4 IC3)

(a) PLAY Mode
When the START switch S5 is turned ON, the Q cutput goes to H and trig-
gers the Clock Generator (2). Mhen the STOP switch S6 is turned ON, the
Q output goes to L and the Clock Generator stops oscillation. At   this
time, the Q output goes to H and resets the Binary Counter (5)

(b) WRITE Mode
The Q output goes to H when S5 is turned ON, and goes to L when S6   is
turned ON. This condition is written in the Memory IC1 as a data.

    2   CLOCK GENERATOR (2/4 IC3)

The frequency of this oscillator is controlled with TEMPO VR-5.   This
oscillator functions in PLAY mode only, and feeds clock pulses to   the
Counter (5)

    3   SCHIMITT TRIGGER (Q15, 17, 18)

This circuit functions in WRITE mode only. The collector of Ql5 goes
H when either the START switch S5 or the STOP switch S6 is turned   ON,
and goes to L when the switch set to ON is turned OFF.

    4   DELAY CIRCUIT (Q16)

The output from the Schmitt circuit (3) is intergrated, and fed to the
base of Q16. Then the signal is trimmed to square wave at collector of
Ql6. This output signal is differentiated and becomes pulses, and then
is applied to the R/~W terminal of IC1.
The two pulses lag a little behind edges of Scmitt (3) output pulse.

    5   DUAL BINARY COUNTER (IC2)

This circuit counts pulses from the clock generator (2)   in PLAY mode,
and counts pulses from the Schmitt trigger (3) in WRITE mode, and then
outputs binary-coded signals from the terminals Ql-Q5; Ql-Q4 denote 16
steps composing each rhythm. Signal from Q5 is applied to A7 only when
the VARIATION switch is set to AB.
To the terminal A7, the L level voltage is given when the switch is set
to A and H when switch is set to B.

6   256 x 4 BIT CMOS MEMORY (IC1)

Reading/writing from/to this memory is as described below.
The upper 3 bits designate rhythms 1-8, the next one bit
designates
VARIATION A and B, and. the lower 4 bits 16 steps in one rhythm.
In PLAY mode, the terminal CE2 is connected. to the Clock
generator
output. The memory functions only when the clock is H, and
outputs
H's or L's from DO 1-4.
(When the clock is L, DO 1-4 becomes high impedance.)

In WRITE mode, when the terminal R/~W becomes L,a data from the
flip
flop is written in one of DI 1-4 via Sl.A previously stored data
is
rewritten from DO via R61-R64 to the remaining three DI's.

The Vcc of this rnemory chip is directly connected to the dry
cells
regardless of power switch positions, since the chip draws only
a
very slight idling current during stand-by. As a result, the
data
is guaranteed to be stored as long as the dry cells maintain
voltage
value higher than a specified. level.
The capacitor C39 (22 mfd.) connected to the terminal Vcc can
substi-
tute for the dry cells by its charge for several minutes when
the
cells are absent during replacement.

7   VOlCE GENERATOR (Ql, 2, 3, 7, 8, 9, 10, ll)

BD, SD and RS are triggered by pulses from the respective DO's. HI
HAT is triggered by pulses from the counter IC2 or the Clock gen-
erator IC3 by every step or every other step.

8   ACCENT (Q3)

Each sound source output is mixed and outputted through the resis-
tor network in which Q3 is connected in parallel.When ACCENT pulse
is outputted from DO l, Q3 turned ON, and in this ON period the
signal amplitude increases. The DO l pulse can be externally out-
putted through the CSQ jack.When this jack is enga.ged,

however,the
ACCENT function of the DR-55 proper becomes invalid.

VR5, VR6, 2SK30A-Y
Serial number up to
912800.

Memory
TC5501P-1 IC1

SOUND
BD
SD
RS
AC

MC14520B IC2
Counter

R77, R100:
on foil side

VARIATION

RHYTHM SELECT

Clock

4011UB IC3

F/F

Schmitt Trigger   Delay

TEMPO VR-3

HI HAT

START
S5

STOP
S6

FOOT SW

MODE
PLAY
WRITE

BD

SD

VR-4
ACCENT

RS

NOISE

VR-2
VOLUME

TONE

OUTPUT

VR-2

S8 (VR2)

6V (1.5V x 4)

HI HAT

DBS

Q13-17 : 2SC945- P or Q

Serial number up to 923500   with 923600
IC3 -- CD4011UB only   IC3 -- TC4011UBP or CD4011UB
VR-3 -- 500KC   VR-3 -- 1MC
C42 -- 1mfd N.P.   C42 -- 0.47mfd N.P.
R79 -- 6.8K   R79 -- 15K
R81 -- 22K   R81 -- 47K

PARTS LIST

```
061-290  Chassis   no.290  (panel)
061-291  Chassis   no.291
061-292  Chassis   no.292(battery compartment lid)
111-019  Bush   no.19 (rubber foot)

016-077  Knob   no.77      TONE, ACCENT
016-078  Knob   no.78      VOLUME, TEMPO
016-125  Knob   no.125     RHYTHM SELECT

009-026  Jack  HLJ-0235-01-030 ¼"
009-048  Jack  SG-8026  mini.    DBS, CSQ
```

PCB

```
150-002  RH-2   (PCB 052-537)
```

SWITCH

```
001-183  SSB02335   slide  HI HAT, VARIATION
001-228  SQPR24-12P slide         SOUND
001-293  SSP-04205  rotary  RHYTHM SELECT
001-299-1 KED-10903-1 START
                          assy w/key top,
001-299-2 KED-10903-2 STOP   cap and mark
   *Cap and mark are available separately.
```

POTENTIOMETER

```
028-755  VM10RC38C  1MA  VR1          TONE
028-372  VM11R5M1411 10KA w/sw VR2  VOLUME
028-776  VM10RC38C  500KC  VR4      ACCENT
         VR3 TEMPO--S/N up to 923500
028-777  VM10RC38C  1MC VR3 with S/N 923600
030-519  EVNK4AA00B13  1K  trimmer
030-522  EVNK4AA00B54  50K  S/N up to 912800
030-521  EVNK4AA00B14  10K
```

SEMICONDUCTOR

```
017-023  2SC945-P              transistor
017-091  2SK30A -O or -Y see circuit dia.FET
017-024  2SA733-P              transistor
018-014  1S2473  or equiv.     diode
019-028  TLR-124 red           LED
020-030  TC-5501P-1  1024-bit  CMOS RAM
020-081  CD-4011UBE  or  TC4011UBP
         refer to circuit diagram
020-166  MC-14520P  dual binary up counter
```

OTHERS

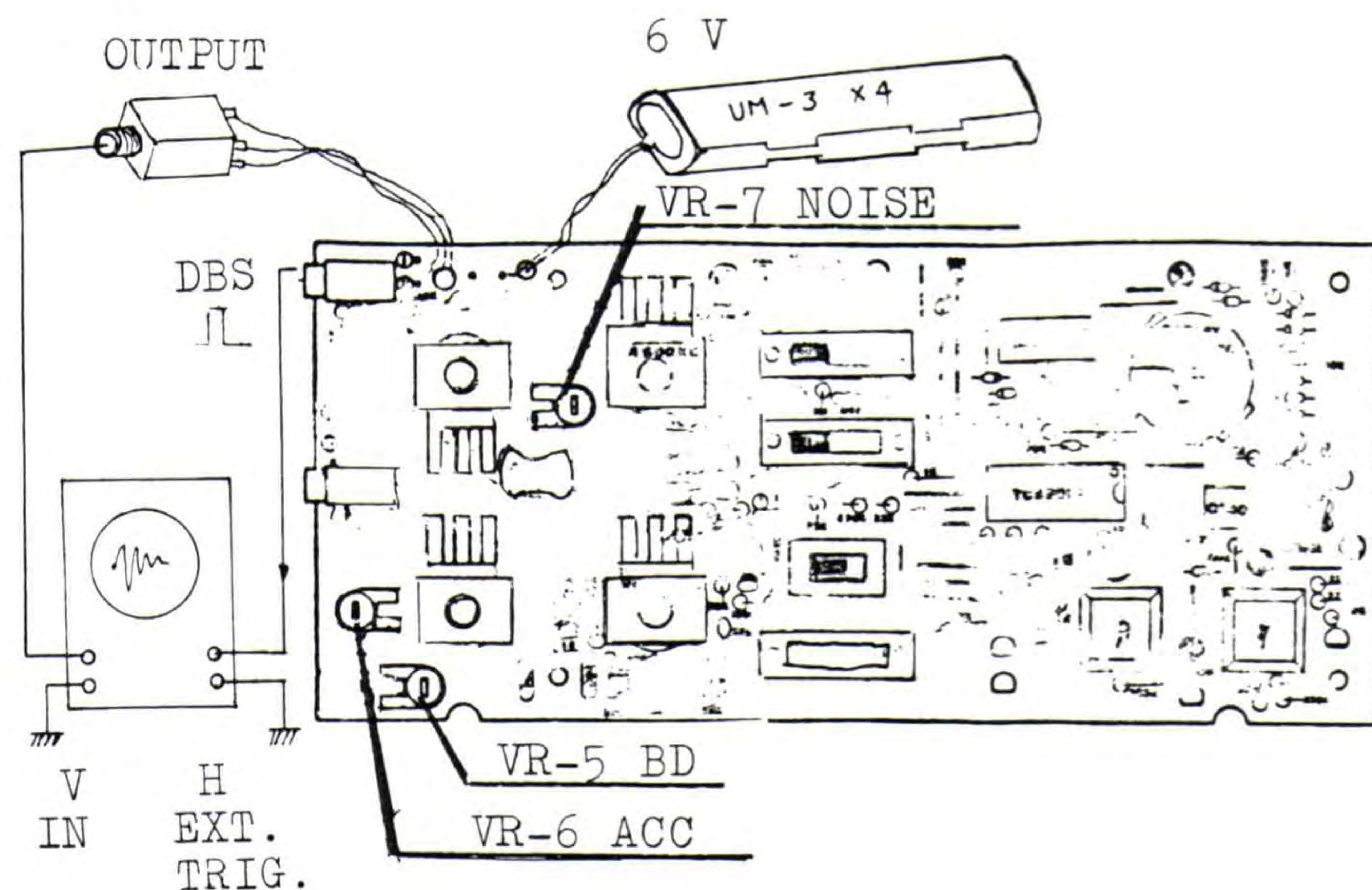```
022-030 Choke coil no.30   45mH
120-002 Sleeve nut no.2   3 x 16.4 mm
064H55A Holder H55A   potentiometer
012-050 Battery case TH-1303/4B
010-001 Battery connector w/strap
123-014 Screw 3x8mm battery compartment lid
107-059 Cushion no.59 battery
         Cover (felt strip) slide switch
```

## RH-2 (150-002) (PCB 052-537)

## ADJUSTMENT & CHECKING
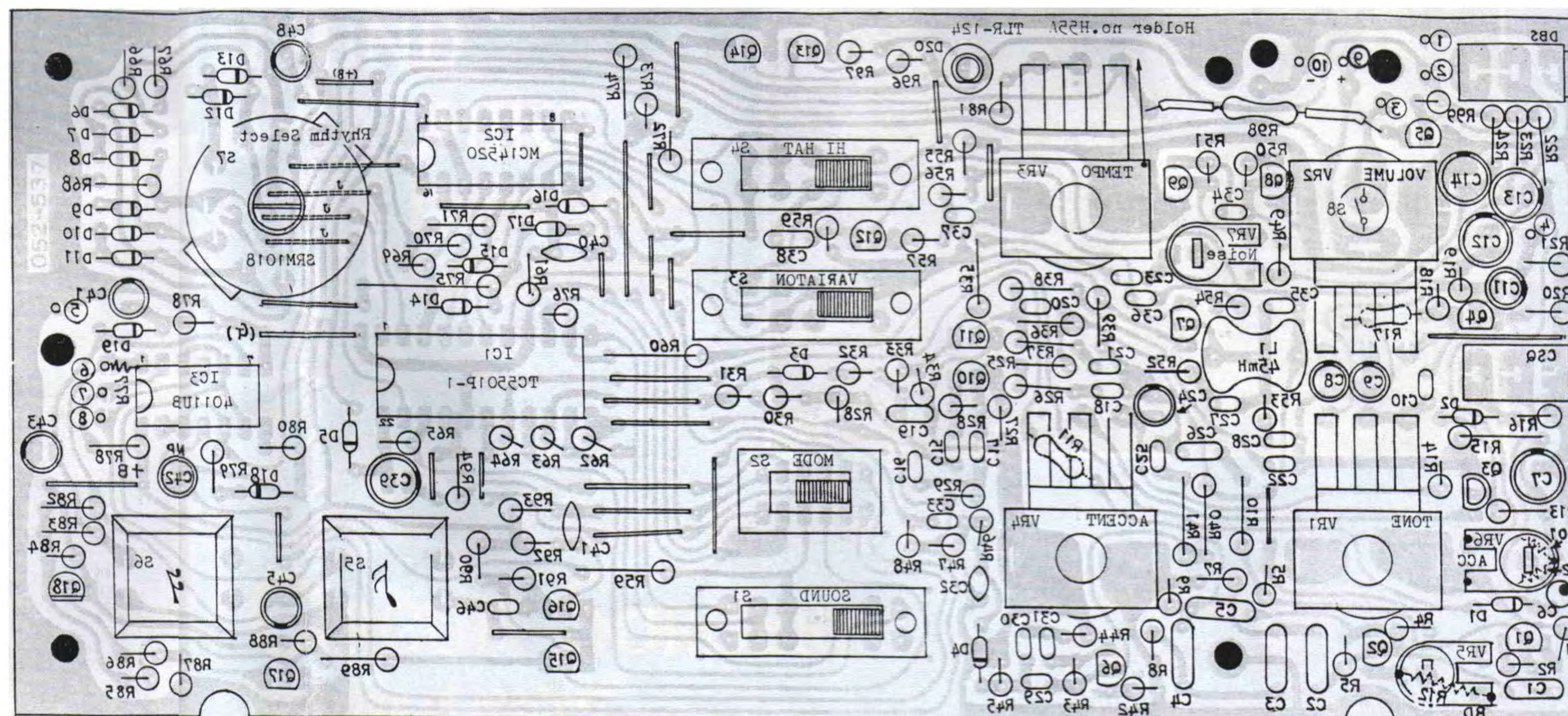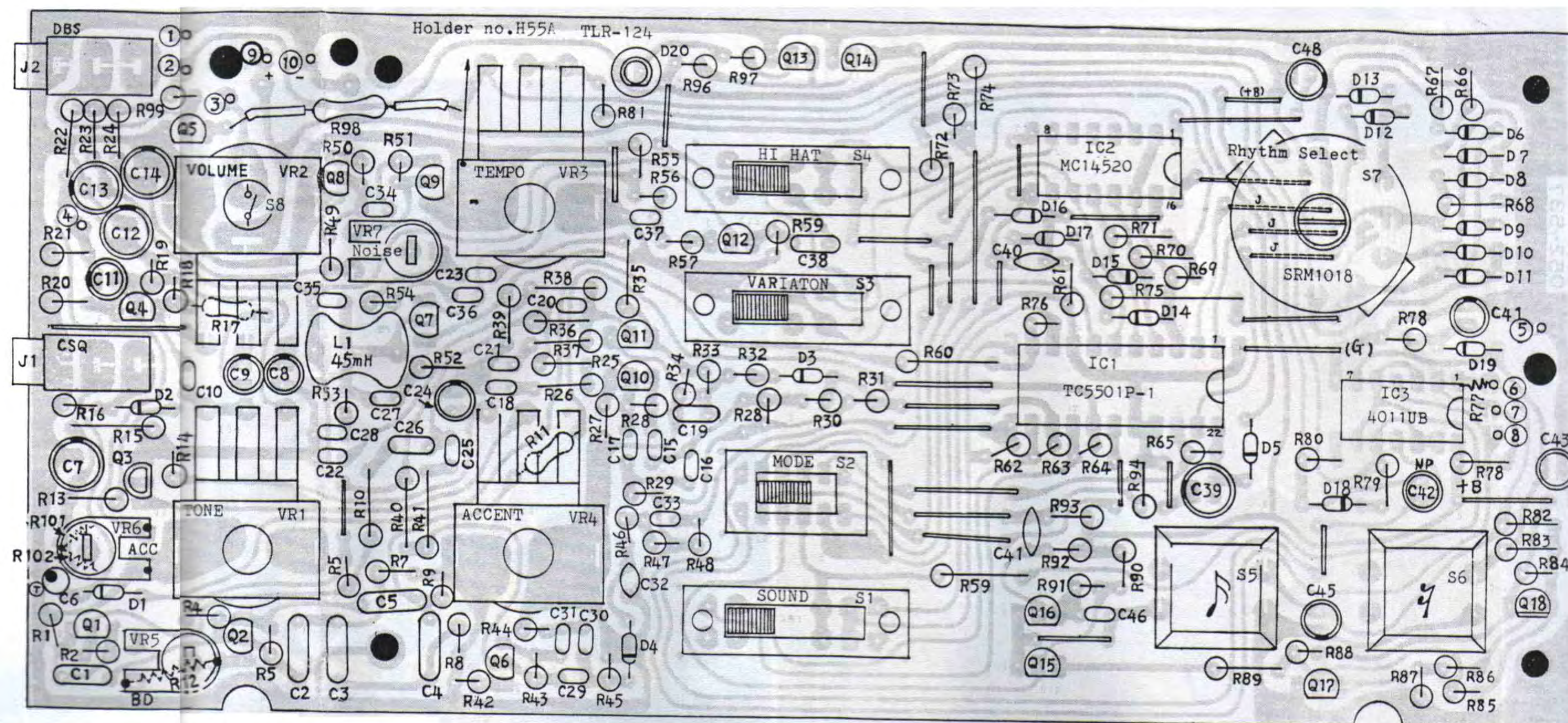
(For writting rhythm patterns, refer to page 4 of the DR-55 OWNER's Manual.)



OUTPUT

6 V

UM-3 X 4

VR-7 NOISE

DBS

V IN   H EXT. TRIG.
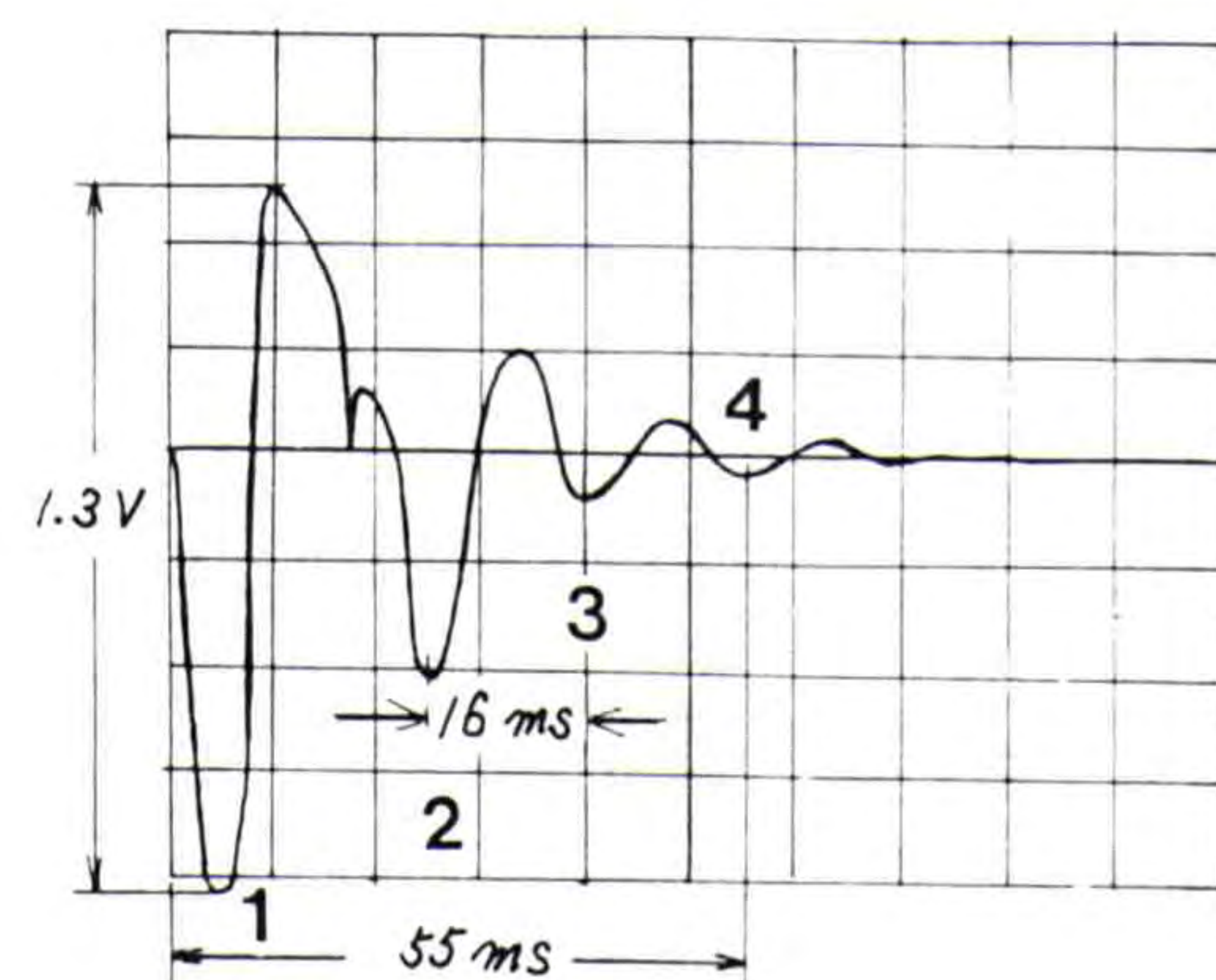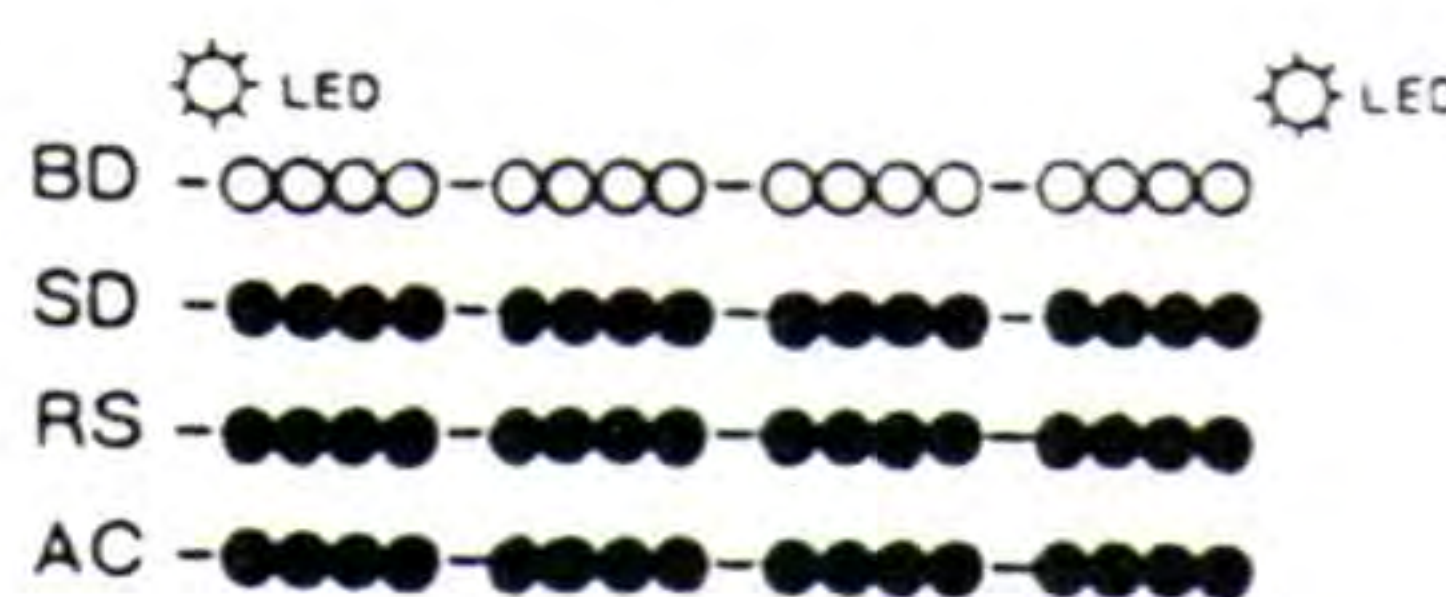
VR-5 BD

VR-6 ACC

### BD (Bass Drum)

No adjustment is needed for the units with serial numbers 912900 and subsequent, -just check.

With following settings, write pattern into DB channel.



| RHYTHM SELECT: | 1 | VOLUME: | MAX |
|---|---|---|---|
| VARIATION: | A | MODE: | WRITE |
| HI HAT: | OFF | SOUND: | BD |



Set MODE to PLAY.
Press START.
Set TEMPO for 100 ms DBS pulse interval.
Adjust VR-5 for 55 ms decay time.

---

The waveforms in this page will be obseved when DR-55 operates from 6 V dc and will vary with different supply voltages.

### RS (Rim Shot) Check only

With panel controls set as below, write and reproduce RS sound.



| RHYTHM SELECT: | 1 |
|---|---|
| HI HAT: | OFF |
| VOLUME: | MAX |
| TONE: | MAX |
| ACCENT: | MIN |
| SOUND: | RS |
| | AC |
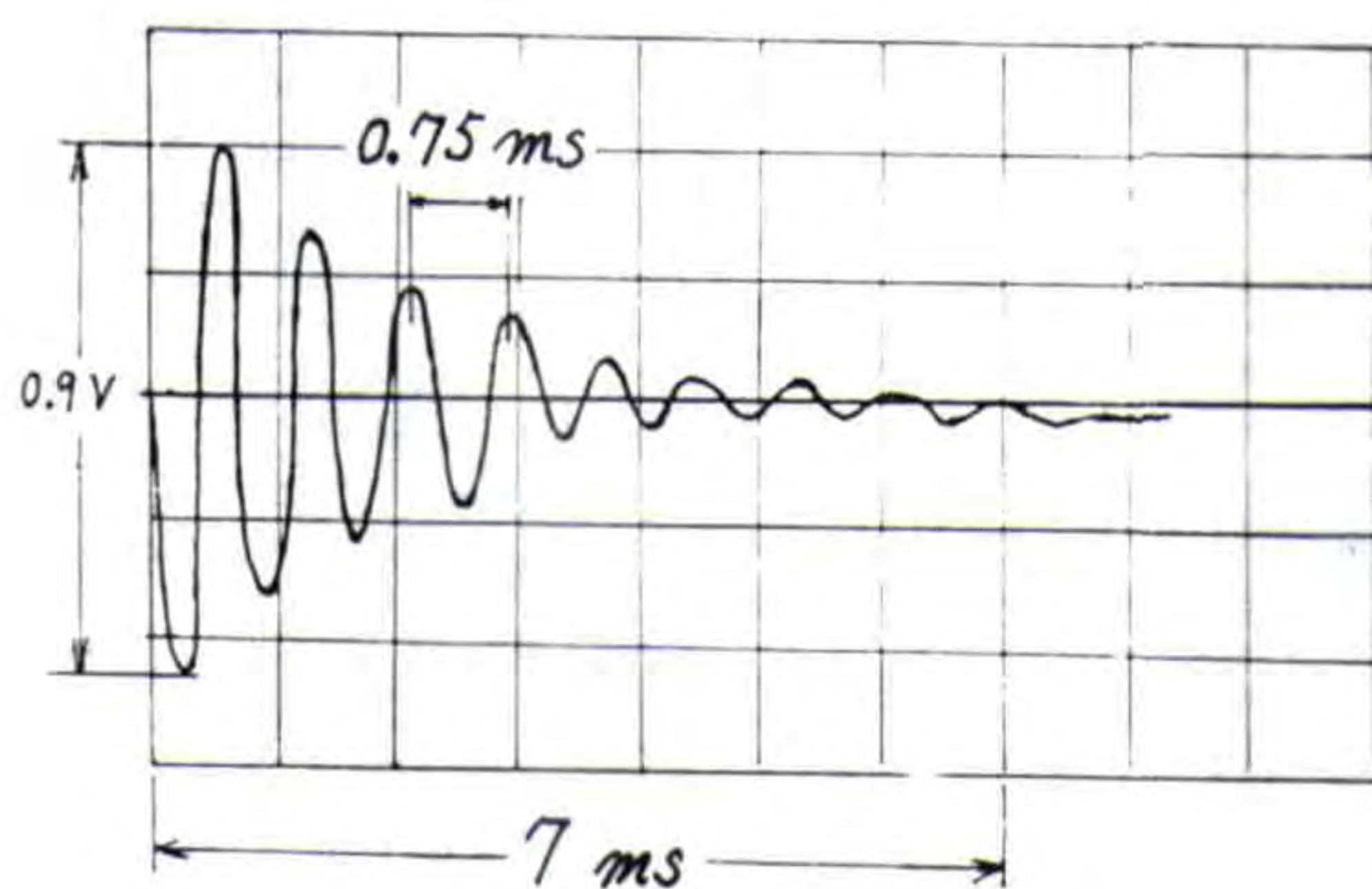


### AC (Accent)

(No need for the units with serial numbers 912900 and subsequent.)

While sounding RS in the same manner as above, set controls:

ACCENT: MAX    VARIATION: A
TEMPO: MAX    SCOPE's Time Base: 0.5 ms
HI HAT: OFF

Turn VR-6 slowly -- in the direction AC increases-- until accenturated RS becomes double normal RS amplitude.
Note: Turning effect of VR-6 is delayed because of time constant in that circuit.

---

### SD (Snare Drum) check only

With the following settings, write into SD channel.

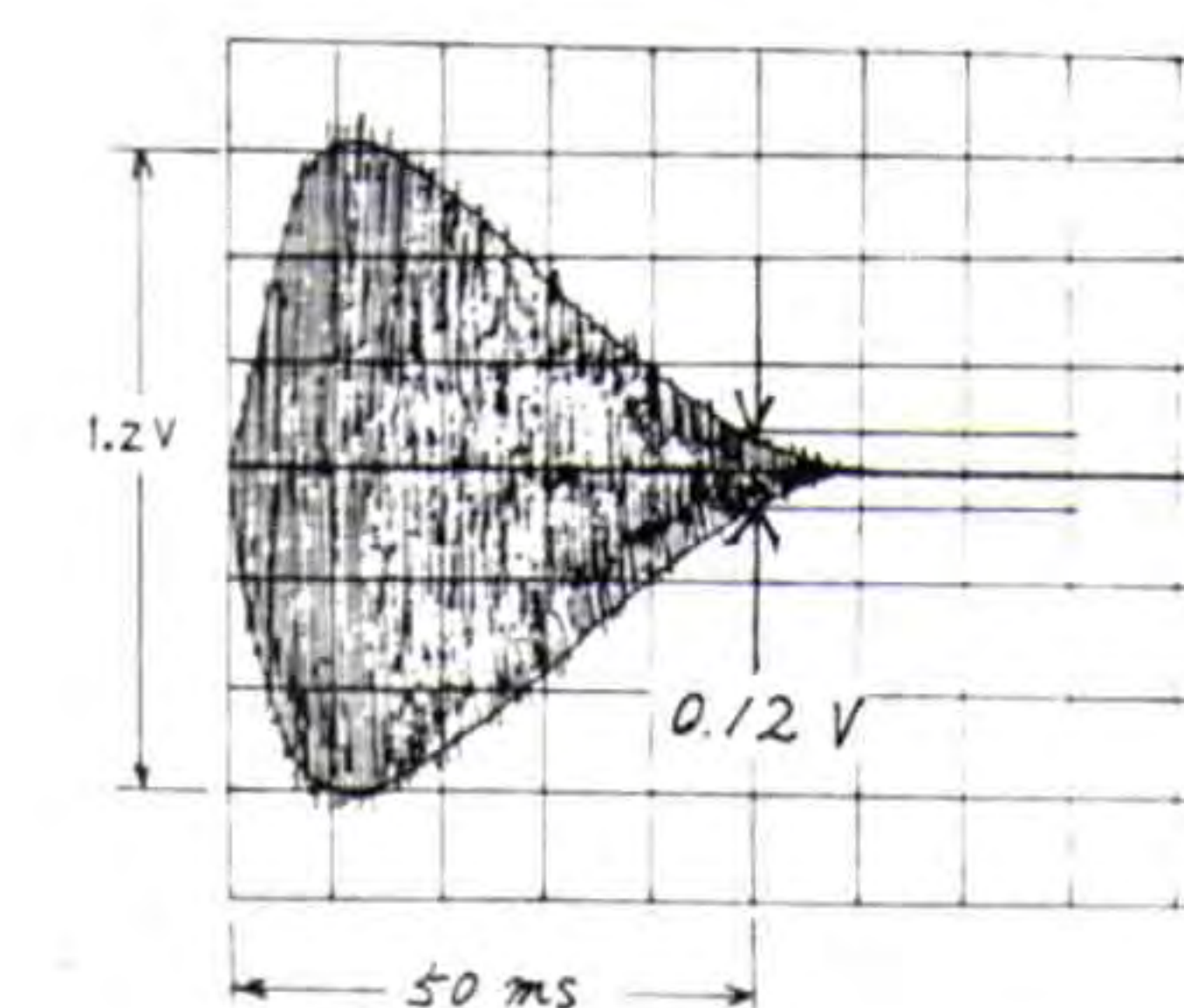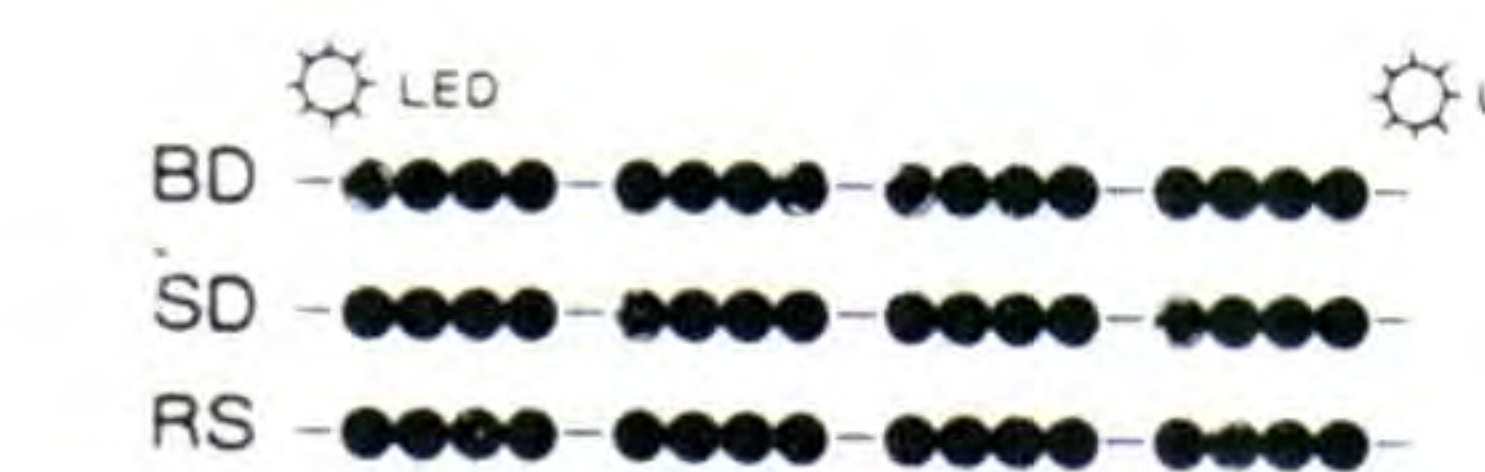| RHYTHM SELECT: | 1 |
|---|---|
| VARIATION: | A |
| HI HAT: | OFF |
| VOLUME: | MAX |
| ACCENT: | MIN |
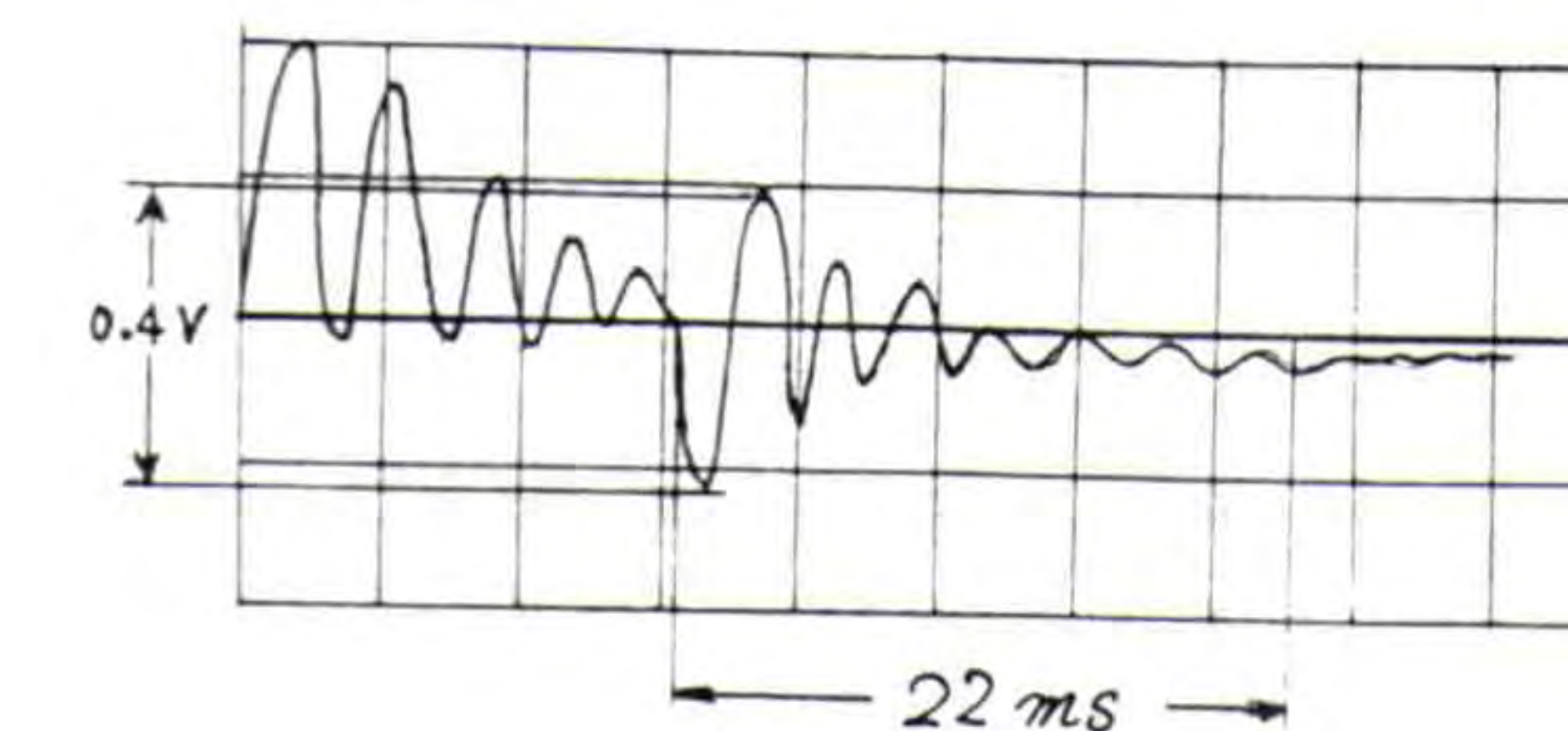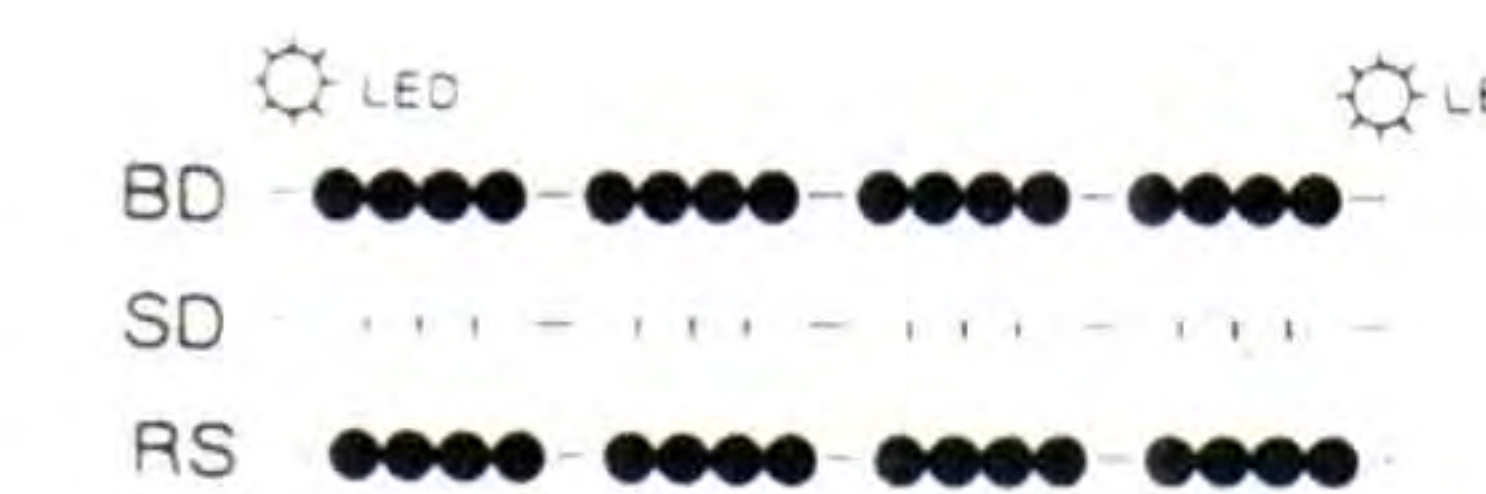


Set MODE to PLAY.
Press START.
Minimize NOISE by turning VR-7.

Adjust TEMPO for 100 ms DBS pulse interval.
Check displayed waveform for the figure above.

### HI HAT

Clear all the memories in BD, SD, and RS channels.

Set panel controls:

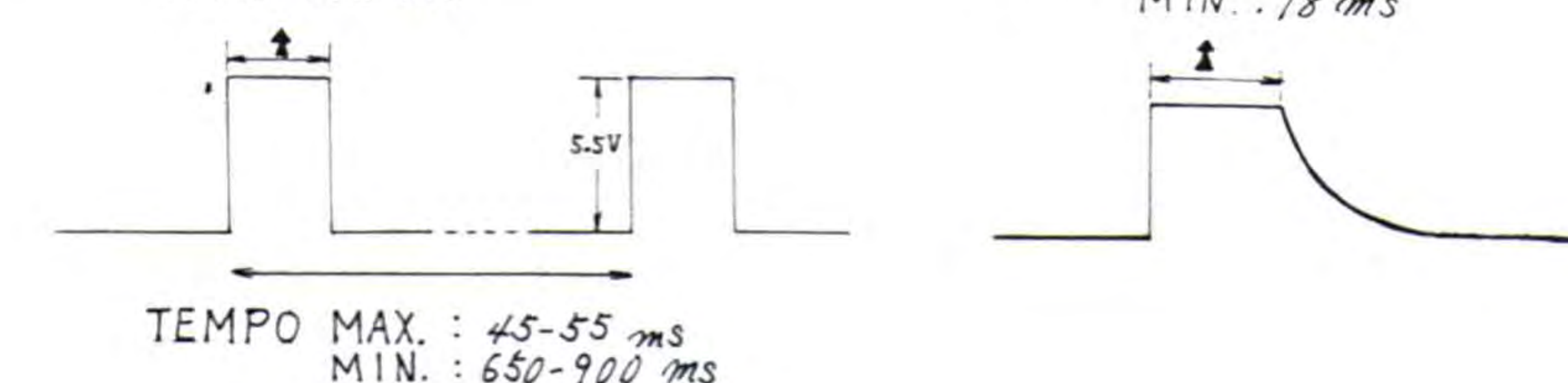| RHYTHM SELECT: | 1 |
|---|---|
| VARIATION: | A |
| HI HAT: | 12-16 |
| VOLUME: | MAX |
| ACCENT: | MIN |



Press START.
Adjust VR-7 for 1.2 Vpp.

### CSQ and DBS (observed at jacks)



TEMPO MAX. : 9 ms
MIN. : 12 ms

TEMPO MAX. : 12 ms
MIN. : 18 ms

TEMPO MAX. : 45-55 ms
MIN. : 650-900 ms

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