RS 09 SERVICE NOTES

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DISASSEMBLY & PARTS LAYOUT

TOPCOVER REMOVAL SCREWS:
1 through 6 3 x 10mm Tap-tight Binding Head Br
2 through 9 3 x 8mm Self-tapping Binding Head Br

Knob no.57
Pot. GM10X1/20AT6 (016-006)

Panel H43 (072H043)

Switches/Tablets
Add legend when ordering

LED LR0801R
(016-008)

Knob no.33
Electronic
Add legend when ordering

Knob no.56
Pot. EWHQ09K15815
10K x 2 (026-006)

Nylon Rivet
(121-001)

Button no.8
(016-008)

Sideblocks L/R set
(006H021)

Roland corporation

Printed in Japan
BLOCK DIAGRAM & SPECIFICATIONS

ENVELOPE RELEASE TIME
3.5 sec max.

TUNABLE RANGE
±50-cent

POWER CONSUMPTION
15W

DIMENSIONS
676(W)x102(H)x306(D)mm

WEIGHT
7.3kg

* Refer to the Block Diagram for other specifications.
PCB & CIRCUIT DESCRIPTION

1  GATE PCB: G0317

The PCB consists of the following: Master Oscillator (Q02), Top Octave Generator (IC207), Flip-Flop (IC204), Divider-Keyer (IC201 IC202), and Gate Circuits corresponding to 44 keys.

1-1  MASTER OSCILLATOR: Q02 IC01

This is a Colpitts type oscillator, the frequency of which is controlled within a range of ±50 cents with a change in bias using the TUNE/B Control on the Control Panel.

1-2  FLIP-FLOP: IC204

Flip-Flop here serves as a frequency divider. When TRANSPOSE (SW301 - OUT DOWNS) is ON, the signal coming from the Master Oscillator will pass through unchanged and is divided into half when the TRANSPOSE is in ON position.

1-3  TOP OCTAVE GENERATOR: IC203

The signal coming from Flip-Flop is divided here to provide 12 Top Octave tones of temperament.

1-4  GATE CIRCUIT

Forty-four of each independent gate circuits comprise this section. Each release time can be varied with the change of time constant on its RC Network. Attack time is held constant, for no such variation.

1-5  DIVIDER-KEYER: IC201 IC202

Each incorporates 23 Key Inputs, 68 DC Keyer Circuits, 34 Binary Dividers and provides four Pitch Outputs. (0, 4, 2, 1 foot)

Thus making a sum of 44 key inputs and 176 tone outputs on 2 I/Os.

When any one of the 44 keys is played, the gate circuit corresponding to the key generates a signal of particular envelope to be sent to the Divider-Keyer through its key-input terminal. As a result, four outputs of the Divider-Keyer are to have the signals of 0, 4, 2, 1 foot corresponding to the key played and to the envelope generated.

2  CONTROL PCB: GM64-1 GM64-2

These are comprised of: Gate Signal Generator (Q09, Q10), release Control (Q14), Mixing Networks, Strings & Organ Filters, String Attack Control, and Modulator.

2-1  RELEASE CONTROL: Q14 GM64-2

The release time can be varied with the change of time constant on its RC Network. Attack time is held constant, for no such variation.

2-2  GATE SIGNAL GENERATOR: Q09 Q10 GM64-2

The keyboard bass bar is connected to series, when a key is depressed, a voltage drop of 1.2V develops across the two diodes. The gate signal voltage drop, Q09, Q10. They are the Delay Attack or Strings Attack to the GATE OUTPUT jack via Q13 (buffer) for a synthesizer control.

2-3  MIXING NETWORK: R395 - R205 GM64-2

Square waves (0, 4, 2, 1 foot) generated at the Divider-Keyer are sent to the Resistor Ladder Networks in order to get through mixing and be shaped to the stair-stepped waveforms for strings. (R395 thru R395 for Strings 8 foot, R396 thru R205 for 4 foot)

2-4  FILTER CIRCUIT: GM64-1

The high pass filter for Strings. (Q016 - Q019 and R348 - R353)

The low pass filter for Organ. (R324 - R331 and Q070 - Q071)

2-5  STRING ATTACK CONTROL: Q001 Q002 Q003 GM64-1

When a key is depressed, Q002 will discharge rapidly through R305, Q003 and then to Q001. It is then exchanged by constant current through Q001. The value of this current can be determined by the ATTACK time (R301).

Since C502 voltage is applied to the control input of IC202 (B441 VOA) via pin 20, if the same is used, it can be shown that the rise time of the strings is determined by VR03, ATTACK.

2-6  MODULATOR: IC310 x 4 GM64-2

With KNOBS on, signals passing through the filters are fed to the Modulator Circuits having BBs. In order to provide stereo outputs, four BBs are used. (IC310 - two each for one channel)

To the Clock input (pin no.1) of the BB, a 200Hz signal is connected which is to serve as a 7.5 converters to make period 7 in proportion to the control voltage V.

Delay time of each BB is determined by the frequency of the VCO, which is in turn frequency modulated by the LFO output voltage. Two VCO are provided against each of the stereo channels, of which one is for modulation by a triangle waveform while the other is by a mixed waveform of opposite-phase triangle and lower level sine.
BBD BIAS ADJUSTMENT

The purpose of this adjustment is to set the operating points of BBDs (IC310) to their center.

1. Feed a 1kHz sine wave through EXT IN jack.
2. Connect an oscilloscope vertical input lead to an IC310 pin no.4.

3. If the peak of half wave is only clipped with the input signal level adjusted, turn trimmer PM301 so that both positive and negative peaks are symmetrically distorted. Make sure that both tops become distortion free simultaneously as the signal being decreased.

CONTROL OPH44B-2 (149HO44B-2)

VIEW FROM PATTERN SIDE

CONTROL OPH44B-1 (149HO44B-1)
**PARTS LIST**

**SEMICONDUCTORS**

- 017-097: 2SA826-Q transistor
- 017-118: 2SK1740-Q transistor
- 017-022: 2SB343-0 transistor
- 017-010: 2SD324-0 transistor
- 017-016: 2SK50A-GR or Y FET
- 038-095: 052 5.6A 6V diode
- 038-014: 12A477 diode
- 038-094: 12A477FY diode
- 038-099: 1A8481 diode stack

**SWITCHES**

- 001-215: SDG 5P 001-1 power 100V
- 001-216: SDG 5P 001-2 power 117V
- 001-217: SDG 5P 002 power 220/240V

**WAFER TERMINAL, WIRING ASSY**

- 010-183: Wafer terminal 5045-03A
- 010-187: Wafer terminal 5045-04A
- 010-186: Wafer terminal 5045-05A
- 010-189: Wafer terminal 5045-07A
- 010-195: Wafer terminal 5045-07A

**OTHERS**

- 065-950: Dust cover H50 slide pots/sw. jacks (set)
- 068-005: Bushing no.5 jack
- 121-005: Washer no.5 jack
- 048-001: Heat sink no.13
- 048-018: Heat sink no.18 SK-7
- 012-007: Fuseholder TG75 or I-6
- 055-930: Flat cable H30 PBC-PCS
- 055-931: Flat cable H31
- 120-014: Long nut(stand-off) no.24 6mm
- 120-009: Long nut(stand-off) no.9 13mm
- 064-072A: Holder H72A bracket H64
- 064-076: Holder B76 32B
- 064-244: Holder DLEG-4H PBC
- 011-001: Nylon rivet

**INSTRUMENT MODEL**

- SH-1: 32
- SH-3A: 44
- SH-5: 44
- SH-7: 44
- SH-1000: 37
- SH-2000: 37
- STSDM-100: 37
- STSDM-700: 44
- RS-9: 44
- RS-101: 61
- RS-202: 61
- RS-905: 49
- EP-10: 61
- EP-20: 61
- EP-30: 61

**INSTRUMENT MODEL**

- No. of Keys:
- Keyboard Model:
- Key Spring:
- BUS BAR:
- PCB:
- RESISTOR:

**CAPACITORS**

- 035-320: ECQS1101X 1000uF 125V polystyrene
- 035-299: ECQS1201X 1000uF 125V polystyrene
- 035-270: 1uF 50V electro, K type
- 035-279: 0.47uF 50V electro, K type
- 035-190: 1uF 50V Bi-polar
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SEMKO規格要の為

映像1変圧器及LED 電源基板も変更

ブラス変更
022H021/C-A → 022H021/C-B CSA認証
022H021/C-A → 022H021/C-B UL認証

Bush #20 2個使用

(40×20)