ROLAND SYNTHESIZER
SYSTEM 700

The complete system consists of the MAIN CONSOLE, the KEYBOARD CONTROLLER, and five optional blocks for a total of 47 modules.

MAIN CONSOLE:
The MAIN CONSOLE contains all the basic modules necessary in a professional system for the synthesizing of sound and can be used alone with the KEYBOARD CONTROLLER as a complete synthesizer in itself. Modules included are: VCO (3), VCF (2), VCA (2), LFO (2), S/H, ADSR (2 x 1), OUTPUT MODULE (which includes PANNING controls, REVERBERATION, and a PHASE SHIFTER), and others.

KEYBOARD CONTROLLER:
The 61 key (5 octave) two voice KEYBOARD CONTROLLER has PORTAMENTO and PITCH BEND controls.

OPTIONS:
Optional blocks can be chosen and arranged according to the particular needs of each studio. All of the modules in the optional blocks are interchangeable, thus the numbers and types of modules can also be changed to suit the studio. The main modules of the optional blocks are: BLOCK 3 ≪Sequencer≫: 3 channel, 12 step sequencer; BLOCK 4 ≪VCO bank≫: VCO (6), ADSR (2 x 1); BLOCK 5 ≪VCF/VCA bank≫: VCF (2), VCA (3), ADSR (2 x 2); BLOCK 6 ≪Interface/Mixer≫: frequency-to-voltage converter interface, 9 channel audio mixer, fixed filter bank, VCA; BLOCK 7 ≪Phase Shifter/ Audio Delay≫: 2 channel phase shifter, 2 channel audio delay.

MAIN FEATURES:
All modules are made from high quality parts to ensure high reliability and durability with circuit designs which give high stability for ease in recording perfect sounds.

All major modules contain both audio signal input and control voltage input mixers for better signal-to-noise ratios and ease in synthesizing sounds.

Inputs and outputs are designed for matching with other professional audio equipment for ease of use in the studio.

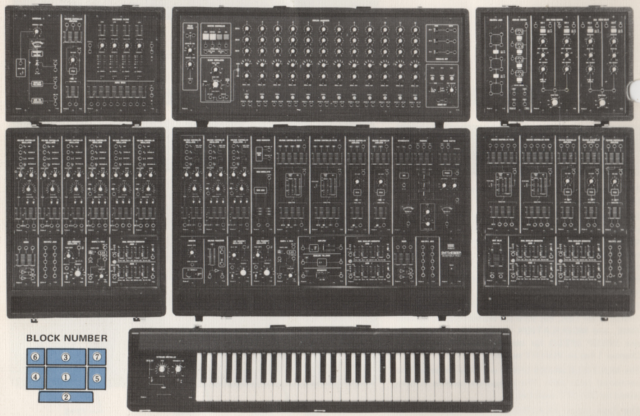
On the MAIN CONSOLE, most common connections are made internally without the use of patch cords. All modules have provisions for external patch cord connections for greater freedom in patching.

External sound sources (such as other musical instruments) can be used as a source of control.

The PULSE SHAPER and the sequencer's MASTER CONTROLLER input and output jacks allow the recording of consecutive sequences on tape without a break in rhythm.

Except for the MAIN CONSOLE, all modules are completely interchangeable and can be arranged to suit individual tastes. (The MAIN CONSOLE can be special ordered direct from the factory in other arrangements).

A complete system, the System 700 contains all the elements necessary for the synthesis of sound.



BLOCK NUMBER

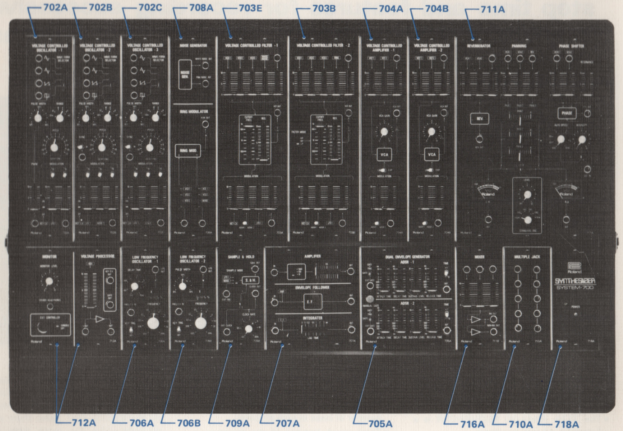
ROLAND'S FINEST CREATIVE ANSWER

SYNTHESIZER SYSTEM 700

Roland's 'System' Synthesizer Series are specifically engineered for professional recording studios. The top-of-the-line 700 provides full control over all synthesizer functions, extremely stable output and a frequency range from 0.1 to 100kHz. And this revolutionary new product is one of the most competitively priced, full-feature units on the market today.

ROLAND SYNTHESIZER
SYSTEM 700

A basic unit for sound synthesis with full features in itself.



The MAIN CONSOLE

702A | 702B | 702C

VCO-1/VCO-2/VCO-3

- All VCO's are extremely stable and have a frequency range of 0.1Hz. – 100kHz.
- The VCO's generate four basic wave forms with manual control of the pulse wave (10% – 90%). VCO-1 also allows for modulation of the pulse wave by an external control voltage.
- The inputs of the control voltage input mixer are: LFO-1, external, ADSR-1 (VCO-2 only), and S&H (VCO-3 only). The MODULATION ATTENUATOR switches (1, 1/10) make precise low settings easy.
- Simultaneous use of all wave forms is possible through external patch cords.
- All VCO's feature keyboard control voltage ON/OFF switches.
- VCO-2 and VCO-3 are equipped for synchronization for additive synthesis or special tone coloring, etc.

708A

NOISE GENERATOR

- Generates white and pink noise; white noise is internally connected to the VCF-1 input mixer.

RING MODULATOR

- "X" inputs are: VCO-1, VCO-2, VCO-3, and external; "Y" inputs are: VCO-1, VCO-2, noise, and external. Green LED indicates existence of signal at the RING MODULATOR output.

703E | 703B

VCF-1/VCF-2

- The inputs of the five channel audio signal mixer are: VCO-1, VCO-2, VCO-3, white noise (VCF-1 only), ring modulator (VCF-2 only), and external.
- FILTER MODE switches allow for high pass, band pass, and low pass filtering with the RESONANCE control effective in all three modes.
- VCF-1 has a slope of –24dB/octave and VCF-2 a slope of –12dB/octave to permit greater variety in tone color control. VCF-1 also offers voltage controlled resonance.
- The four channel control voltage input mixer allows control of the filter cutoff point by: keyboard control voltage, ADSR-1 or ADSR-2 (selected by switch), LFO-1, and external sources.
- The green LED indicates a normal signal at the VCF output; red LED indicates overload (distort) signal.

704A | 704B

VCA-1/VCA-2

- The inputs of the three channel audio signal input mixer are: VCF-1, VCF-2, and external.
- The inputs of the two channel control voltage mixer are: ADSR-1 or ADSR-2 (selected by switch) and external.
- The LIN/EXP switch allows for exponential control of VCA for percussive sounds.
- The green LED indicates a normal signal at the output; red LED indicates an overload.

711A OUTPUT MODULE

REVERBERATOR

- The inputs of the three channel audio signal input mixer are: VCA-1, VCA-2, and external.
- Outputs are: to external and to PANNING.

PANNING

- The inputs of the three channel audio signal input mixer are: VCA-1, VCA-2, and REVERB; each input is supplied with switching type jacks for option of three external inputs.
- Each of the three channels has its own PAN control.
- Two channel stereo output: left and right, with VU meters.

STANDARD OSCILLATOR

- Frequencies: 110, 220, 440, 880, 1760Hz, and 1kHz.
- LEVEL control and CHANNEL SELECTOR (left, left + right, right) allows for free calibration of equipment.

PHASE SHIFTER

- The inputs of the two channel audio signal input mixer are: VCA-1, VCA-2; each has a switching type jack for an option of two external inputs.
- RESONANCE, AUTO SPEED, and INTENSITY controls allow for versatile control of phase effects.
- Selector switch allows for external control of sweep speed.

712A

MONITOR

- Allows stereo monitoring through headphones with separate MONITOR LEVEL control.

EXTERNAL KEYBOARD CONTROLLER

- When using other blocks, this section allows division of control: One keyboard controller for the MAIN CONSOLE, a second keyboard controller for the other blocks.
- The CONSOLE/OFF switch allows for instant change between one and two keyboard control.

VOLTAGE PROCESSOR

- Generates a fixed control voltage variable from 0 to +10 volts. Inverted output is: 0 to –10 volts.

KEYBOARD CV OUTPUT/GATE OUTPUT

- These jacks allow convenient access to keyboard control voltage and gate pulse.

706A | 706B

LFO-1/LFO-2

- Low frequency oscillators with four output wave forms.
- Provision is made for control of frequency by external control voltage.
- KEY TRIG ON/OFF switches allow phase locking of wave forms to keyboard gate pulse.
- LFO-1 has a DELAY TIME control (2ms to 10 sec) for delayed vibrato effects.
- LFO-2 has manual control of pulse width (10% – 90%).

709A

SAMPLE & HOLD

- Three sample modes: LFO-1, noise, and external.
- Sample rate controlled by internal or external clock.
- CLOCK OUT for ADSR control.

707A

AMPLIFIER

- A high gain amplifier. GAIN control: 0 to 1; RANGE switch: X10, X100, X1000.

ENVELOPE FOLLOWER

- Generates a control voltage which is a function of the level of the input signal. Plugging an external source into the IN jack cuts off the internal connection to the OUT of the AMPLIFIER above.

INTEGRATOR

- Adds a lag time (0 to 3 sec) to changing control voltages (similar to the portamento effect with keyboard control voltages). Plugging an input into the IN jack cuts off the internal connection to the OUT of the ENVELOPE FOLLOWER.

705A

DUAL ENVELOPE GENERATOR

- Separate GATE INPUT selector switches allow for triggering of each ADSR from GATE + TRIGGER, GATE only, or an external gate/trigger.
- MANUAL GATE button allows for manual triggering.
- TIME attenuator switches (X1, X1/10) allows for ease and precision in setting short attack, decay, and release times.

716A

MIXER

- A three channel audio/control voltage mixer with INVERT and NON-INVERT outputs.

710A

MULTIPLE JACKS

- Two rows of five jacks connected together for external division of different signals or control voltages.

KEYBOARD CONTROLLER

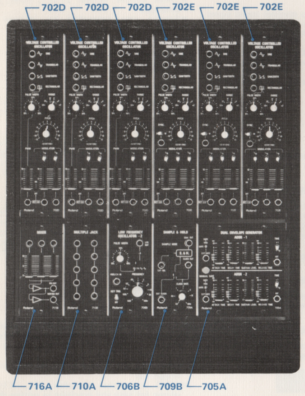
701A

- 61 key (5 octave) two voice keyboard controller.
- Controller section has: PITCH (tuning) control, PORTAMENTO TIME (0-10 sec) with separate ON/OFF switch, PITCH BENDER (–, +) with center off click stop, and a PITCH BEND RANGE switch (OFF, 0.1v, 1v, 5v).
- All connections for single voice operation are made through one DIN patch cord. Rear panel also contains additional output jacks for: KEYBOARD CONTROL VOLTAGE 1, KEYBOARD CONTROL VOLTAGE 2 (second voice), GATE OUT, KEY TRIGGER out, and BEND CONTROL VOLTAGE out.



ROLAND SYNTHESIZER SYSTEM 700

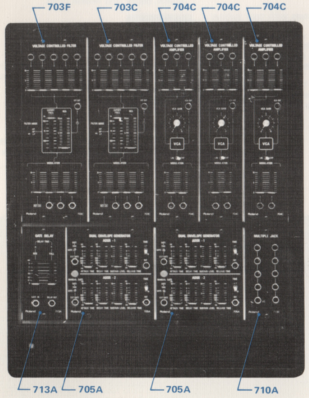
Optional blocks for greatly expanding the synthesizer functions.



BLOCK 4

VCO bank

- Six VCO's arranged in two groups of three: 3 702D's (same as 702A on MAIN CONSOLE; features voltage control of pulse width) and 3 702E's (same as 702B and 702C; features SYNC input for phase locking of frequency to external square wave). All connections (except keyboard control voltage) are made externally.
- Also included are: LFO-2 (706B), SAMPLE & HOLD (709B), DUAL ENVELOPE GENERATOR (705A), MIXER (716A), and MULTIPLE JACKS (710A). All are the same as on the MAIN CONSOLE.

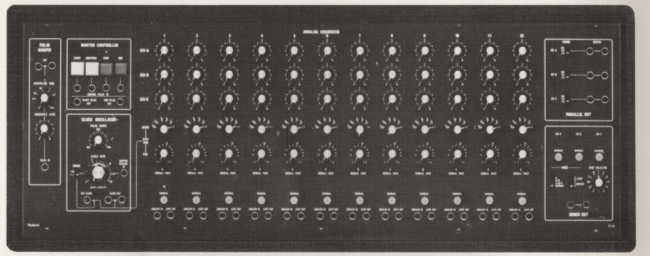


BLOCK 5

VCF/VCA bank

- Cabinet is exactly the same as the VCO bank.
- The two VCF's (703F and 703C) are the same as the VCF pair (703E, 703B) on the MAIN CONSOLE but all connections (except for keyboard control voltage) are made externally.
- The three VCA's (704C) are the same as the VCA's (704A, 704B) on the MAIN CONSOLE except that all connections are made externally.
- The two DUAL ENVELOPE GENERATORs (705A) are exactly the same as on the MAIN CONSOLE, with internal connections for the keyboard gate and trigger.
- The GATE DELAY (713A) is capable of delaying (0-3 sec) the rise and falls points of the keyboard gate or trigger pulses.
- The MULTIPLE JACKS (710A) are exactly the same as on the MAIN CONSOLE.

An ANALOG SEQUENCER with easy control of step time and features for recording successive sequences without breaks in rhythm, as well as analog switching.



ANALOG SEQUENCER

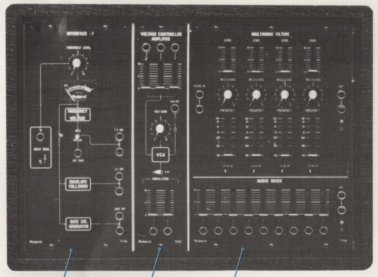
- The 717A ANALOG SEQUENCER is a 3 channel, 12 step sequencer.
- In series mode, control voltage sequences of up to 36 steps can be programmed by means of the VOLTAGE REGISTERS.
- In parallel mode, the 3 channel feature permits three voice sequences, or simultaneous control of the three qualities of sound: pitch (VCO frequency), tone color (VCF cutoff point), and loudness (VCA gain).
- Each channel has a three position (2V, 4V, 10V) RANGE SWITCH for control of VOLTAGE REGISTER sensitivity.
- The divisions (1, 1/2, 1/4, 1/8, 1/16, 1/32) of the STEP TIME DIVIDE controls make assignment of time values for each note in a sequence very simple, saving much time in programming a sequence.
- The STEP TIME, FINE controls allow the setting of the timing of each step at any point between the STEP TIME DIVIDE control settings for programming dotted notes as well as for programming accelerando, rubato, etc.
- The MODE switches and STEP SELECTOR control in the SERIES OUT section allow for extremely versatile control of the number of steps in each sequence.
- Total speed (tempo) of the sequence is controlled by the CLOCK OSCILLATOR. The CLOCK can also be controlled externally either by a control voltage or pulses (recorded on tape, for example). The PULSE WIDTH knob controls the width of the gate pulse output.
- The MASTER CONTROLLER allows for either manual or external control of the sequencer run functions. With START, the sequence will always start with Step 1 (Channel A in series mode). Pressing END, the sequence will continue to run until it reaches the END STEP (selected by the STEP SELECTOR in the SERIES OUT section), then stop automatically. The output of the END PULSE OUT jack can be recorded on tape. After setting up a new sequence, this recorded pulse can be used for triggering the START function for recording the new sequence immediately after the previous sequence without any break in rhythm.
- The NORMAL/HOLD switches allow for holding of a VOLTAGE REGISTER setting over into the next step (or beyond). At the CLOCK OUT jacks, there will be no gate pulse for those steps whose NORMAL/HOLD switch is in the HOLD position, thus allowing for the programming of rests in a sequence.
- The MANUAL buttons allow manual selection of any step in the sequence for setting, changing, or checking the VOLTAGE REGISTERS.
- The GATE OUT jacks allow individual gate pulses from each of the steps to be used for separate functions.
- The ANALOG IN jacks allow the sequencer to be used as an analog switching device. These jacks will accept control voltages or audio signals. With audio signal inputs, the VOLTAGE REGISTERS act as output sound level controls.
- The PULSE SHAPER section reshapes pulses (as recorded on tape, for example) so they can be used for triggering or controlling the sequencer.

OPTION for application of external sources for sound control.

BLOCK 6

INTERFACE/MIXER

- INTERFACE (714A) extracts from the input signal (electric guitar, electronic organ, microphone, etc.) a control voltage proportional to the input frequency and extracts the envelope, and generates gate pulses, all of which can be used to control the synthesizer.
- The MULTI-MODE FILTER (part of the 715A module) consists of four fixed filters in parallel, each with LP/BP/HP mode switches, CUTOFF FREQUENCY, RESONANCE, and LEVEL controls.
- The 9 channel AUDIO MIXER (part of the 715A module) allows incomparable mixing possibilities not found elsewhere.
- The VCA (704C) is exactly the same as in the VCF/VCA bank.

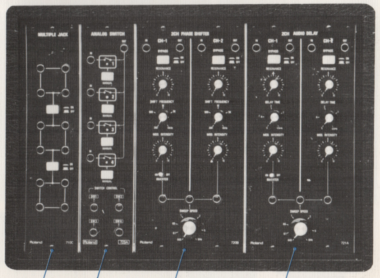


OPTION for acoustical inovation

BLOCK 7

PHASE SHIFTER/ AUDIO DELAY

- The cabinet is exactly the same as the INTERFACE/MIXER cabinet.
- The TWO CHANNEL PHASE SHIFTER (720B) has separate RESONANCE, SHIFT FREQUENCY, and MODULATION INTENSITY controls for each channel with one SWEEP SPEED controlling both channels for creating dynamic acoustical effects with subtle or deep feelings of movement. Channel 1 has an INVERT switch for greater variety of effects.
- The TWO CHANNEL AUDIO DELAY (721B), like the PHASE SHIFTER, has separate RESONANCE, DELAY TIME, and MODULATION INTENSITY controls with one SWEEP SPEED for special tone coloring effects. Channel 1 has an INVERT switch.
- The MULTIPLE JACKS (710B) are three groups of four connected jacks each. The groups are capable of being joined by ON/OFF switches.
- The four input ANALOG SWITCH (723A) can be operated manually by the ON/OFF switches or by means of external control voltages. Inputs can be either audio signals or control voltages. Green LED's light when switches are operating.



Printed in Japan May '78 A-4