OWNER'S MANUAL

SYRINX

CONTENTS

I. INTRODUCTION

II. VCO section

1) Wave shapes

2) Tuning

3) Pulse Width Modulation

4) Pitch Modulation

5) Synchronisation

III. VCF section

1) Basic design, routing, mixer

2) Peak filters

3) Low pass filter

4) Filter control

IV. KEYBOARD

V. VCA section

VI. Control & modulation

1) LFOs

2) ADSRs

3) Touch 'N Bend Pad

VII. Inputs & Outputs

VIII. Calibration

IX. Sound samples

X. Sound sheets

Copyright Synton Electronics B.V. Holland
Subject to change without notice. 8212/E

Another interesting PWM effect can be obtained by using LFO 2 in the ONE SHOT mode (toggle switch) and setting a ramping down sawtooth with the LFO 2 SHAPE control. Now each time a key is depressed an Attack/Release envelope will control the pulse width causing a shifting spectrum at each different note. (VI).

4) *Pitch Modulation*

The pitch of the VCOs can be controlled in different ways. The most obvious and also most subtle way to bend pitch is offered by the pad (VI-3).
The bend range can be set with the VCO control in the bend assign section (BND ASN). The more this knob is turned clockwise, the more sensitive the pad will be, and only a light tapping with the fingers will cause the pitch to go up or down.
Note that both VCOs are controlled simultaneously by the pad.

Vibrato can be applied by turning up the knobs labeled LFO 2, triangle wave. This will cause a smoothly changing pitch, up and down, while the LFO 2 square wave control will switch the VCOs between two different pitches, of which the interval can be set with this control.
With LFO 2 in the ONE SHOT mode each note can have a fixed bend, up or down, by setting the LFO 2 SHAPE knob to the desired function. The speed of this pitch change can be set with the LFO 2 RATE control (VI-1).

5) *Synchronisation*

Also with respect to VCO synchronisation the Syrinx offers more than the average mono synth.
Synchronisation is applied when two or more VCOs have to produce exactly the same pitches, without phase shift or beat effects.
To obtain this both VCOs are tuned accurately and the SYNC mode switch is set to one of the synchronisation possibilities (SOFT, HARD/Pulse and HARD/sawtooth.
When VCO 2 is detuned from VCO 1, however, another effect occurs, which will result in quite dramatic tone colors. In this mode the effect of the three different syncing possibilities will be very noticeable. An important feature is that in either HARD SYNC mode only one VCO is detuned by the bend pad, thus creating interesting timbre variations. (VI-3).

III. VCF SECTION

1) *Basic design, routing, mixer*

One of the most important sections in a synthesizer is the filter. The Syrinx features a very extensive filtering system, which consists of the standard 24 dB/octave low pass filter and two independent band filters, which together form the Voltage Controlled Formant filter.
Both band filters 1 and 2 each have a frequency control (PEAK 1 & 2) and a RESONANCE control for setting the selective amplification in the pass band.
The knob KBD TRK (Keyboard Tracking) controls the ratio to which the filters track the intervals of the keyboard, and it can be set between zero (no tracking) and two octaves per Volt.
The low pass filter also contains a resonance control and a control section, similar to the peak filter section.

Below the MIXER is a 4-way rotary switch providing different filter routings (VCF RTNG). In the first mode (switch turned anti-clockwise) both peak filters and the low pass filter are in series, which means that all signals from the mixer will be processed consecutively by these filters.
The second mode switches both filter sections in parallel. The third mode will have the signals of the Ring Modulator (RM) and the Noise Generator (NOISE or NSE) processed through the peak filter and the low pass filter, while the signals from VCO 1, VCO 2 and SUB 1 only will be treated by the low pass filter.
The fourth mode features both filters in parallel again, but in this case the signals from ring modulator and noise generator will be processed by the peak filters and the VCOs exclusively by the low pass filter.

2) *Peak Filters*

Since peak filters only allow a small portion of the frequency spectrum to pass through, a sound tends to become "thin" when the resonance knobs are turned up. In view of this it is very important to use these controls carefully, and mostly it is necessary to adjust the output level when the filters are set to high resonance values. Although the peak filters can be tricky to work with, it will be clear after some practice that many new sound effects can be obtained with proper settings.

3) *Low Pass Filter*

The function of the low pass filter is self-explanatory. It features a 24 dB/octave roll-off, which more or less has become a standard in analog synthesizers.
The filter is tuned with the control FREQUENCY/LPF and depending of the setting of the modulation controls the cut-off effect will move around the preset frequency.
Also on the low pass filter there is a RESONANCE control, and here the same rules apply as with the peak filters. High resonance values may result in nasal sound effects, on the other hand they can be in-

dispensable when percussion or pluck effects have to be obtained.

4) *Filter control*

Both filter sections have a complete control voltage mixer for keyboard tracking (KBD TRK), LFO and ADSR modulation.
Keyboard tracking can be adjusted between zero (no tracking) and 2, in which case for every octave on the keyboard the filter is shifted over two octaves. A common situation is that this control is on 1, which means that the filter frequency will track the VCO frequencies. This is also convenient when resonant peaks have to track fundamentals.
Since both peak filters are controlled simultaneously, there is only one modulation section. Modulation by LFO 2, for instance, is controlled for both peak filters with one knob, which means that both peak frequencies always will move in the same direction, according to the interval which is set by the two PEAK FREQUENCY controls.
This also applies to ADSR 1 control. In the center position (0) there will be no modulation. Turning the knob clockwise will result in "positive" modulation. The filter frequencies will first be shifted up during the Attack status, then it will return to the preset frequencies in the Decay and Release modes.
Turning the knob anti-clockwise will result in "negative" modulation, which means that the frequency will be shifted down first, and after that will go up and return to the preset value.

For the low pass filter LPF an identical set of modulation controls is available, however, the LFO 2 control shows a slight difference. Here also positive and negative modulation can be obtained by turning the knob right or left from its center zero position. This has been supplied in order to create the possibility to modulate PEAK 1 & 2 and the LPF in opposite directions.

IV. KEYBOARD

The Syrinx keyboard comprises 3½ octaves from F to C. When both OCTAVE switches of VCO 1 and 2 are in their zero position, the highest A on the keyboard can be tuned to 440 Hz.
Trigger and gate signals will start the ADSRs and reset the LFOs. With LFO 2 in the ONE SHOT mode it will be started each time a key is depressed.
The keyboard features low note priority, which means that when more than one key is depressed the lower one will be played.

The keyboard also contains a sample and hold system which remembers the last key played. With the PORTAMENTO control it is possible to glide from one tone to the next tone, at a speed which depends on the setting of this control. At maximum the glide will travel one octave in one second.
The Syrinx is the first synthesizer where the portamento automatically can be adjusted to the playing technique. (Switch on AUTO).
Independent of the portamento control setting, the pitch will always be at its nominal value instantaneously when the keys are played with a slight pause, The portamento effect will only occur when the keys are played legato.

V. VCA SECTION

The internal VCA (Voltage Controlled Amplifier) is hard-wired to ADSR 2, a combination which also is called Envelope Shaper.
In the left hand section of the front panel the VCA INITIAL GAIN control is located. This control allows for listening to the synthesizer without any key being depressed, which can be convenient when a routing or filter setting has to be made.
The VCA can also be controlled with the bend pad, in which case the knob VCA - BND ASN controls the amount of amplitude sensitivity to the pressure of the fingers.(VI-3).

VI. CONTROL & MODULATION

1) *LFOs*

The Syrinx has two independent LFOs (low frequency oscillators) of which the rate can be controlled, and for LFO 2 also the wave shape.
LFO 1 generates a triangle wave which exclusively is routed to the pulse width modulation control input of VCO 2.
LFO 2 is more versatile and can be used for the modulation of the VCOs and the filters. Moreover LFO 2 can be used as a one shot generator (toggle switch ONE SHOT) which means that a signal is generated much alike an Attack/Release generated function. Each time a key is depressed the LFO will start, finish one cycle and then stop. With the SHAPE control of LFO 2 the ratio between rise time and decay time can be set, while the RATE control will determine the actual speed. With the knob fully anti-clockwise the LFO will generate a signal with a very long decay time and a much shorter rise time.

Each time a key is depressed both LFO 1 and 2 will be reset, and start their cycles at the same point. In case this action is not wanted it is possible to overrule it with a simple means (See VII).

Except for the LFO 2 rate control with the preset knob, it also can be controlled dynamically with the pad (switch on LFO 2 RATE CNTRL. This routing also creates the possibility to vary the rise/decay speed when LFO 2 is in the one shot mode, by pressing the bend pad.

2) *ADSRs*

The Syrinx has two ADSR generators, of which one is used to control the internal VCA, and the other one to control the filter section. The control signal can be inverted by means of the ADSR controls in the filter section, so that the filters can be swept in opposite directions.
Both ADSRs are triggered/gated by the keyboard. When a key is hit only very shortly the ADSRs will finish their cycles, according to the preset values. When a key is kept depressed the ADSRs will fall back to their sustain levels after having completed the attack and decay status. This sustain level is maintained until the key is released, in which case the ADSR will finish its cycle with the release mode.
Triggering/gating can also be achieved with external devices (VII).
For legato playing the toggle switch MULTI TRIG has to be off, since otherwise a triggerpulse will be delivered each time a key is depressed, regardless if other keys are still depressed.

VIII. CALIBRATION

The Syrinx has 13 calibration points which can be reached through the front panel, without opening the unit, however, it is to be advised to refer this only to qualified technical personel.

SYM:
This is for adjusting the shape of the triangle wave of LFO 2, when the SHAPE control is in its center position.

BND NULL:
In case of a small offset of the bend pad (when the BND ASN VCO knob is turned up there should be no considerable pitch shift) this can be trimmed to zero with at calibration point.

FP1 and FP2:
Frequency preset. Should only be re-calibrated when synthesizer can not be tuned anymore to A=440 Hz.

CV EXT:
Can be used to trim and adjust external control voltages.

HF1 and HF2:
These calibration pointsare for optimizing high frequency tracking of the VCOs.

SP1 and SP2:
For scale adjustment to 1V/octave.

KBV:
Adjusts voltage over keyboard ladder.

VRF:
Reference voltage for VCOs.

SYM/VCO1 and VCO2:
These trimmers are for setting the duty cycle of the square wave. Should be trimmed with the SHAPE selector in the square wave position.

3) *Touch 'N Bend Pad*

Several sections in the Syrinx can be controlled with the bend pad, by pressing it with the left hand index and middle finger.
The pressure sensitivity for the VCO, VCF and VCA can be adjusted with the corresponding controls, labeled VCO, VCF, VCA, which are located in the bend assign section (BND ASN).
Pitch bend can be achieved when the VCOs are not in sync or when in soft sync. Pressing the UP pad will cause the pitch to go up and pressing the DN (down) pad will bend the pitch down.
With both VCOs in the hard sync modes only one VCO will be detuned, which can create fuzz-like timbre variations.
The pad can be made so sensitive that only a light tapping with the fingers will be sufficient to control the bend action, making the pad more versatile than wheels or joy sticks.
Also the speed of the rise/decay mode of the LFO 2 is possible. Pressing the UP pad will result in a shorter cycle, and pressing the DN pad in a longer cycle.
The slant position of the pad has been designed in order to allow the right hand thumb to control simultaneously several other parameters with the knobs and toggle switches within reach.

VII. INPUTS & OUTPUTS

The output level of the Syrinx can be adjusted with the OUT control, and the signal is available at the OUT jack, and can be fed to any amplifier system. It is also possible to drive headphones with the same output, provided that the impedance is not less than about 125 Ohms.

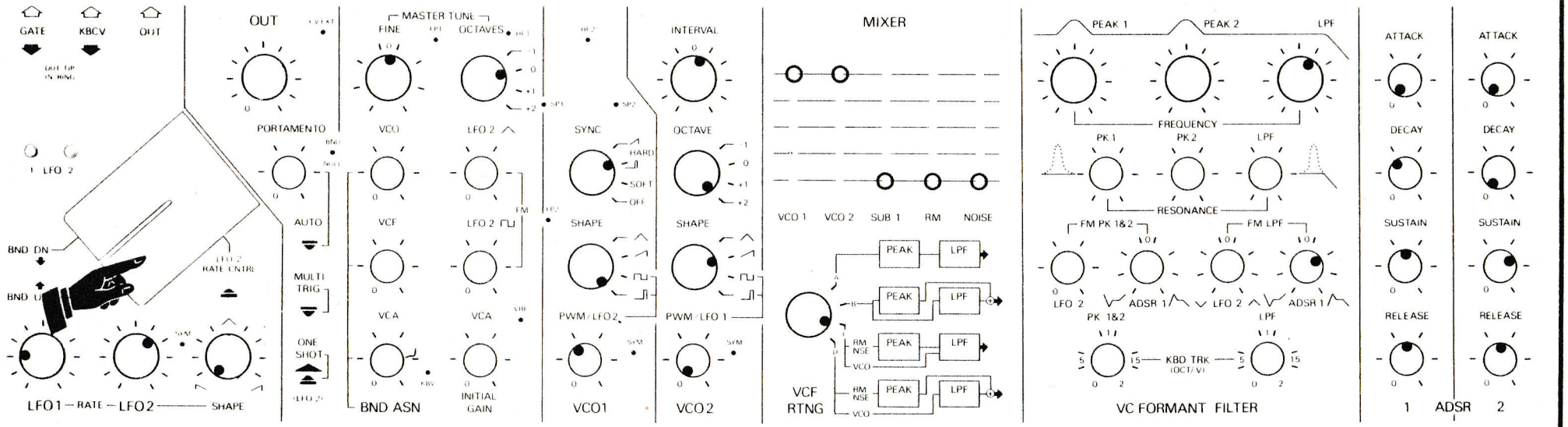
For external control equipment, like sequencers, etc. several inputs and outputs have been provided. The CV output of a sequencer can be connected to the RING of a stereo jack plug, which can be plugged in the KBCV IN. Ground has to be connected to the sleeve of the jack, as usual. For the gate/trigger output of the sequencer the same rule applies. This has to be connected to the RING of a jack which can be plugged in the GATE IN.
At the same jack sockets the gate/trigger output and keyboard control voltage output can be found at the TIP of the jack.

The gate/trigger input of the Syrinx has two different sensitivities, which enable selection of several trigger modes.
The ADSRs require a 5 Volt trigger/gate signal with triggering edges preferably shorter than 0.5 msec. The LFOs, however, require a pulse signal of 10 Volt, so in case only a 5 Volt pulse is applied, the LFOs will not be reset. When a 10 Volt pulse is applied, both ADSRs will be triggered and both LFOs will be reset.

The internal keyboard triggering/resetting can be changed simply by plugging in a mono jack into the GATE IN/OUT, which will block the LFO reset pulse.
This action can also be made selectable by wiring a stereo jack to a foot switch, using the sleeve and ring connections.

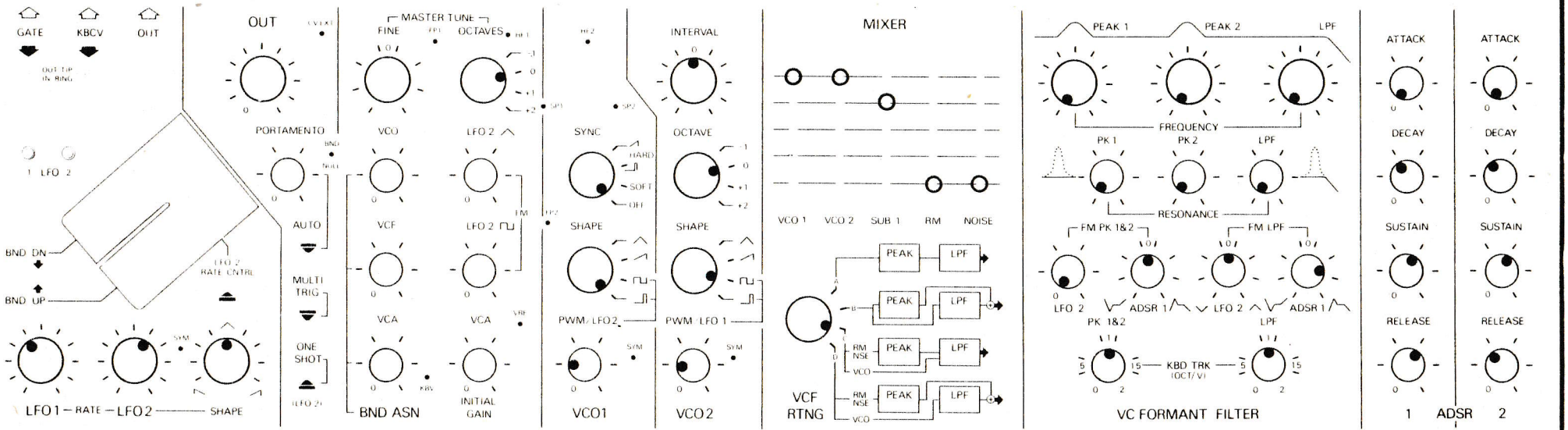
SYRINX SOUND SHEET

NAME	DATE	NO.
FUZZ BASS		1



SYRINX SOUND SHEET

NAME	DATE	NO.
PHASE BASS		2



effet intéressant avec SHAPE 2 = ⎍