HOW TO RECALIBRATE ELKA SYNTHEX' OSCILLATORS.
The board you have to look at is n° 5840, which is at the bottom of the 4-board-group on the left side.

SOUND GENERATOR (OSCILLATOR) CALIBRATION.
The 16 oscillators of Synthex' voices are digital, their tuning is controlled only by number codes that cannot change as time passes by, so the tuning is stable and reliable. Since the voice - oscillators must be frequency-controlled by means of the LFO and the pitch bend, 4 reference frequency generators are used to which the voice-oscillators link; they can be imagined as 4 electronic diapason that can be modulated by the LFO and by the bend. We can refer to these 4 generators as: Gen A, Gen B, Gen C, Gen D.

In SPLIT and DOUBLE mode the assignment is as follows:

Gen A: OSC-1  upper  ( 4 voices )
Gen B: OSC-2  upper  ( 4 voices )
Gen C: OSC-1  lower  ( 4 voices )
Gen D: OSC-2  lower  ( 4 voices )

In NORMAL mode the assignment ia as follows:

Gen A: OSC-1  upper  ( 8 voices )
Gen B: OSC-2  upper  ( 8 voices )

board  |--------------------------------------------------------
--------| 5840
|_________T10____T9____T8____T7____T6____T5____T4____T3____T2____T1_________
|
      -     +     -     +     -     +     -     +

Gen D  Gen C  Gen B  Gen A
OSC-2L  OSC-1L  OSC-2U  OSC-1U

The generators calibration is divided into 4 steps:

step-1: starting settings
step-2: calibration of Gen B: OSC-2 referring to Gen A: OSC-1
step-3: calibration of Gen C: OSC-1L referring to Gen A: OSC-1U
step-4: calibration of Gen D: OSC-2L referring to Gen A: OSC-1U

If for some of these steps you reach the limit of one trimmer, you can solve the problem by using the corresponding Gen A trimmers 1or 2, repeating of the three steps;
if the problem is on T4, T6, T8 then you can use the trimmer T1 which is situated on the board n° 5801 which is on the small panel close to the joystick.

The trimmer T1 sets the centering of DETUNE.
The trimmer T2 sets the centering of MASTER TUNE.
The trimmer T3 sets the end value tune of BEND +
The trimmer T5 sets the end value tune of BEND -

STEP-1 STARTING SETTINGS

joystick panel:

  sliders BEND to osc = 10
  all the other sliders = 0
  upper/lower/both selector = BOTH

panel settings:

  DOUBLE = OFF
  SPLIT = OFF
  PANEL = ON

  TUNING
  MASTER TUNE = 0
  DETUNE = 0
  OSC 2 SYNC = OFF

  OSCILLATOR 1
  OCTAVE = 4
  TRANSPOSE = 0
  WAVEFORM = ramp (sawtooth)
  VOLUME = 10

  OSCILLATOR 2
  OCTAVE = 4
  TRANSPOSE = 0
  WAVEFORM = ramp
  VOLUME = 10

  FILTER
  FREQUENCY = 10
  ENVELOPE = 0
  RESONANCE = 0
  KEYBOARD = 0
  Filter Modes = LP

  CHORUS
  OFF

  GLIDE / PORTAMENTO
  all OFF
STEP - 2: CALIBRATION OF GEN B: OSC-2 REFERRING TO GEN A: OSC-1

1) Enable HOLD
2) Press the C4 key (you could use any other key, but it's necessary that the frequency is high in order to better hear to the beats)
3) Bring and hold the joystick to the maximum BEND + value
4) Reduce the beats as much as you can by means of trimmer T3
5) Bring and hold the joystick to the maximum BEND - value
6) Reduce the beats as much as possible by means of trimmer T4
7) Repeat from instruction 3) to instruction 6) till the beat is the least through all the joystick range
8) Disable HOLD

STEP - 3: CALIBRATION OF GEN C: OSC-1L REFERRING TO GEN A: OSC-1U

1) Set OSC 2 VOLUME = 0
2) Enable HOLD
3) Enable DOUBLE
4) Enable LOWER
5) Select PANEL (make sure that HOLD is enabled)
6) Press the C4 key
7) Bring and hold the joystick to the maximum BEND + value
8) Reduce the beats as much as you can by means of trimmer T5
9) Bring and hold the joystick to the maximum BEND - value
10) Reduce the beats as much as possible by means of trimmer T6
11) Repeat from instruction 7) to instruction 10) until the beat is the least through all the joystick range

STEP - 4: CALIBRATION OF GEN D: OSC-2L REFERRING TO GEN A: OSC-1U

LOWER is enabled since STEP-2
1) Set the OSC-1 VOLUME to 0
2) Set the OSC-2 VOLUME to 10
3) Bring and hold the joystick to the maximum BEND + value
4) Reduce the beats as much as you can by means of trimmer T5
5) Bring and hold the joystick to the maximum BEND - value
6) Reduce the beats as much as possible by means of trimmer T6
7) Repeat from instruction 3) to instruction 6) until the beat is the least through all the joystick range

(Now see the BMP file we're enclosing)
1/2 410CST5800 x 4 VOX
Sheet No. 4-10

1/2 410CST5800 x 4 VOX
Sheet No. 4-10

POWER SUPPLY
+5V +12V -12V +2.5V +6.8V

MONO/Stereo Volume Balance

PREAMP

CHORUS

OUT U
OUT L

FILTER

410CST5850
Sheet No. 6-10

410CST5840
Sheet No. 5-10

410CST5860
Sheet No. 7-10

410CST5801
Sheet No. 3-10

ALL diodes are:
FOX 9439 Fairchild
or 125 ITT
or BA 130
or 2pF

1) ALL resistors - □ - are carbon film 1/4w 5%
2) ALL resistors marked by point - □ -
   must be metal film 2%
3) ALL capacitors marked by a point =
   must be plastic film 2%
4) All resistors marked by asterisks - ★ -
   must be metal film 1%
5) All capacitors marked by asterisks ★
   must be ceramic

The tensions are measured when
the instrument is turned on but
not played.

The firm reserves the right to make
changes without any warning and
to their own discretion.

DESIGNED BY
MARIO MARE

DRAWN BY
ANTONIO RICO

CHECKED BY
JUAN PABLOS

SYNTHEX
BLOCK DIAGRAM

Model: SYNTH

Object: BLOCK DIAGRAM

Sheet No. 1-10

Date: 1-6-83