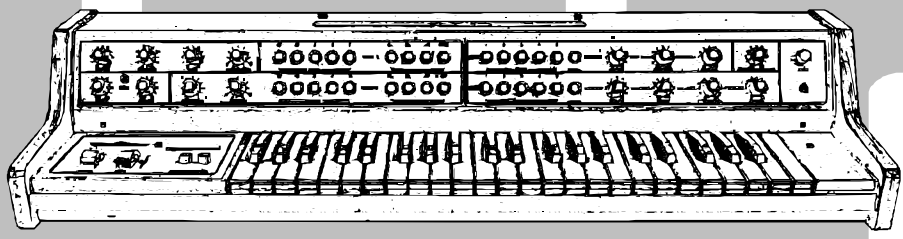
# VS-MIDI

## MIDI Interface for Vermona Synthesizer

**Model 8-434**
**Version 2.0**



## Installation Manual


**www.chd-el.cz**

**Contents** **Page**

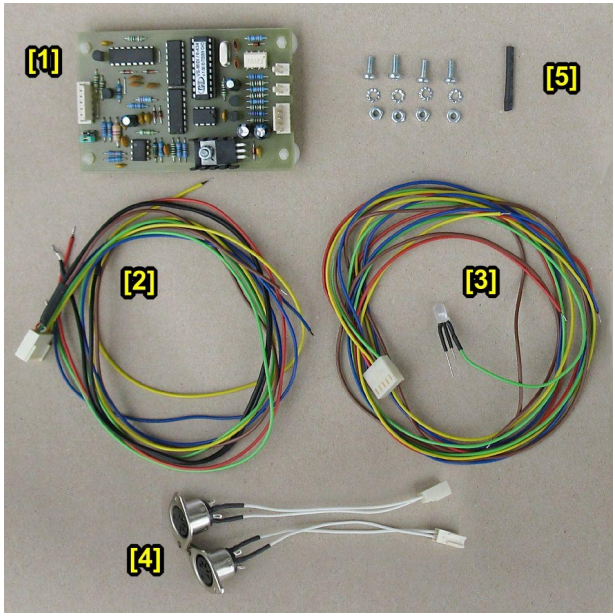
# 1 INTRODUCTION

## 1.1 MIDI INTERFACE KIT PARTS

The MIDI interface kit contents all necessary parts for installation incl. all support and coupling elements. The delivery also includes both installation and operation manuals in printed form. Please check if the delivery is complete before the installation (see fig. 1.1.1):

1. MIDI Interface board
2. Bunched cables with 7-pin connector
3. Bunched cables with 5-pin connector and LED
4. 2x DIN-5 socket with cable
5. Coupling elements (screws, tooth-lock washers, nuts and insulation tube)
6. Owner's and Installation manuals in printed form

**Fig. 1.1.1 - Parts of VS-MIDI interface kit**




## 1.2 GENERAL INFORMATION

Mounting the interface in the Vermona Synthesizer is very easy. If you follow the instructions from this manual, there should be no major problems during the installation. The interface installation procedure is thoroughly described in the following chapters. Please follow these instructions accurately to avoid any damage of the instrument.

**Attention! Disconnect the instrument form the mains prior to the installation. There is a risk of the electric shock!**

**Attention! Observe precautions for handling electrostatic discharge sensitive devices!**

**The producer is not responsible for any eventual mechanical or electrical damage of the instrument caused by the infringement of the described installation procedure or by careless manipulation during the installation of the MIDI interface!**

**It is recommended to calibrate the instrument accordingly to the instructions in service manual of the instrument prior the interface installation. This ensures trouble-free operation of the interface.**

The cover of the instrument will not be markedly damaged during the installation. The physical appearance of the vintage instrument remains nearly the same as before the installation. If necessary, the interface can be simply removed and the instrument restored back to original appearance.

All original circuits of the Vermona Synthesizer remain without any modification. The instrument can be used the same way as before the retrofitting.

## 1.3 INTERFACE CONNECTION

The interface is connected to the VCO, EG, VCF, VCA and power supply boards of the instrument. The following diagrams (figs. 1.3.1, 1.3.2) explain the electrical connection of the interface in the instrument.

**Fig. 1.3.1 – Connection to the instrument**

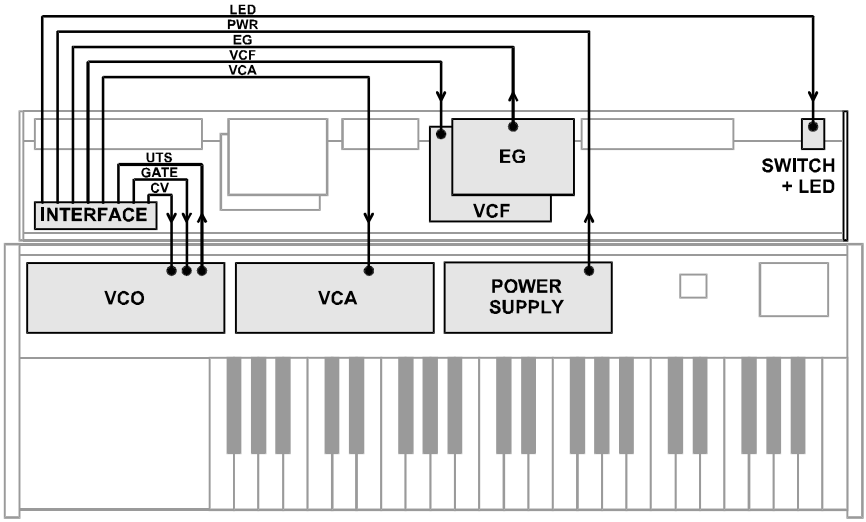
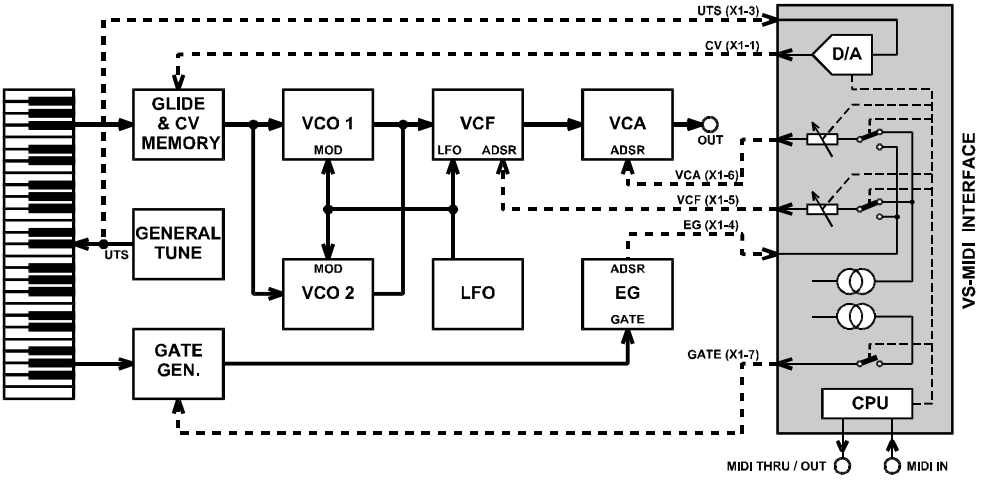



**Fig. 1.3.2 – Block diagram of the interface function**



# 2 INSTALLATION PROCEDURE

## 2.1 THE INSTRUMENT DISASSEMBLY

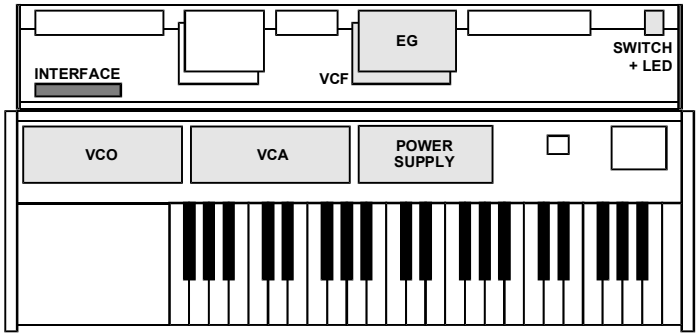
a) Unscrew the two screws on the top cover of the instrument (fig. 2.1.1). Keep the screws and washers. They will be used again after the MIDI kit installation is finished.

**Fig. 2.1.1**

**Fig. 2.1.2**

b) Carefully lift up the instrument's top cover and turn it back (fig. 2.1.2). All instrument's parts and boards needed for the interface installation are now accessible (fig. 2.1.3).

**Fig. 2.1.3**




## 2.2 MIDI DIN SOCKETS INSTALLATION

The interface has both MIDI input and output. However, only MIDI input is necessary for basic operation of the interface (i.e controlling the instrument by MIDI commands). The MIDI THRU/OUT output socket need not to be installed (see chapter 3.1) if you don't require transfer of MIDI data to another MIDI devices (THRU function) or reverse communication of the interface with MIDI host system (OUT function). Nevertheless, having both MIDI input and output is more convenient for an easy integration in a more advanced MIDI system.

There are more possible ways to install the MIDI socket(s) if you do not want to mechanically damage the panels of the instrument by drilling (see chapter 3.1).

Recommended method of the MIDI sockets montage is described below.

### 2.2.1 HOLES FOR MIDI SOCKETS DRILLING

a) The best solution is to mount the MIDI sockets to right side on the rear panel of the instrument.

b) Drill two holes with diameter 16 mm and four holes with diameter 3,2 mm to the panel of the instrument as shown on fig. 2.2.1. Use sharp drills and **work carefully** so that the panel is not scratched and other parts of the instrument are not damaged during the drilling (fig. 2.2.2)!

**Fig. 2.2.1**

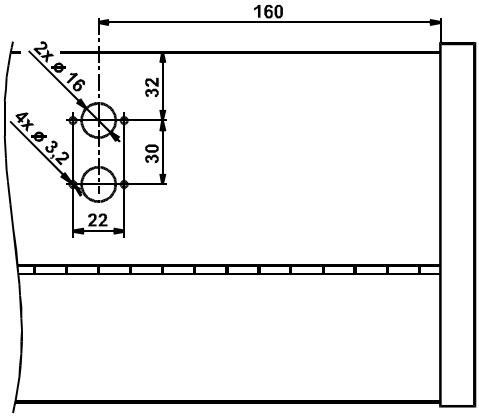
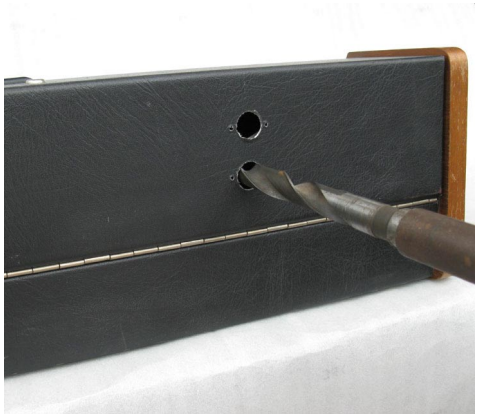



**Fig. 2.2.2**



c) Clean the edge of the holes with small rasp or tip of bigger drill from both sides of the panel after the holes are drilled.

d) **Clean all metal sawdust and raspings from the inside of the instruments**, they can cause short circuits or serious electrical damage if they are left inside the instrument. Please clean the instrument carefully!

### 2.2.2 MIDI SOCKETS MOUNTING

a) Pull flat connectors of MIDI cables through the 16 mm holes in the panel from outer side and insert the DIN sockets of the cables into the holes (fig. 2.2.3). Both MIDI cables are identical and can be swapped.

b) Fix the DIN sockets to the panel using four screws, tooth-lock washers and nuts from the interface accessory (fig. 2.2.4).

**Fig. 2.2.3**

**Fig. 2.2.4**

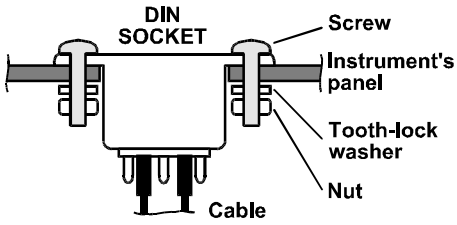


Fig. 2.2.5

c) It is recommended to label the DIN sockets ("MIDI IN", "MIDI THRU/OUT" for example) with self-adhesive foil glued near the sockets (fig. 2.2.5).

## 2.3 INSTALLATION OF BUNCHED CABLES WITH 5-PIN CONNECTOR AND LED

These cables (power supply voltages) will be connected to instrument's power supply board (fig. 2.3.1). Used solder lugs on the power supply board shows fig. 2.3.2.

Fig. 2.3.1

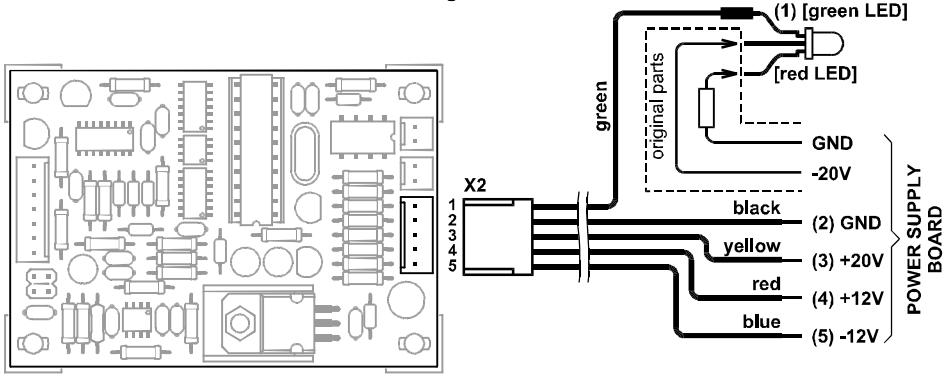
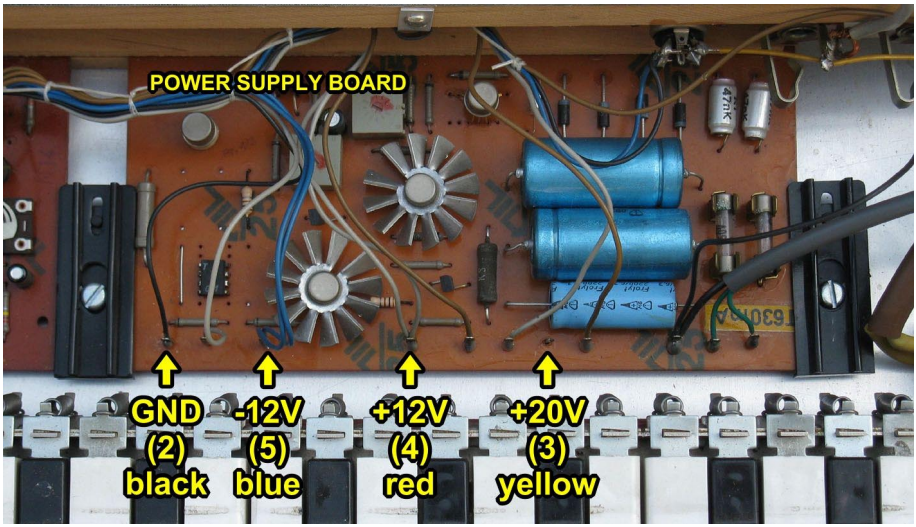


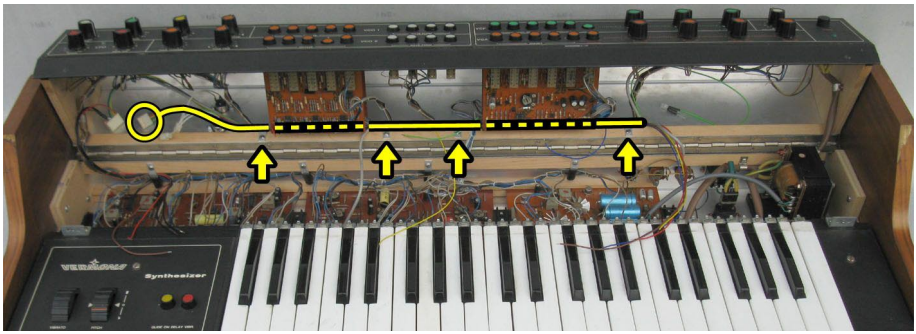

Fig. 2.3.2



### 2.3.1 CONNECTION TO POWER SUPPLY BOARD

a) Put the power supply bunched cables to instrument's cover – add them under glazing sprig to original cables (fig. 2.3.3).

**Fig. 2.3.3**



b) Solder the black wire Nr. 2 to ground potential – solder lug (2) GND (fig. 2.3.2).

c) Solder the yellow wire Nr. 3 to +20V supply voltage – solder lug (3) +20V. This lug is free by that time, no next cable is connected to it (fig. 2.3.2).

d) Solder the red wire Nr. 4 to +12V supply voltage – solder lug (4) +12V (fig. 2.3.2).

e) Solder the blue wire Nr. 5 to -12V supply voltage – solder lug (5) -12V (fig. 2.3.2).

### 2.3.2 LED INDICATOR REPLACEMENT

The original LED which indicates power-on status of the instrument has to be replaced with bi-color LED fixed to wire Nr. 1 of power supply bunched cables. Procedure is as follows:

a) Unsolder leads of original LED (fig. 2.3.4).

b) Eject lock ring of LED holder with help of a screwdriver for example (fig. 2.3.5).

**Fig. 2.3.4**

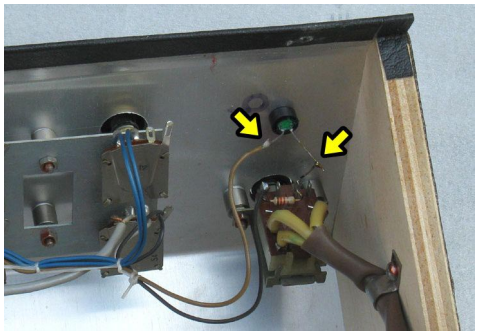
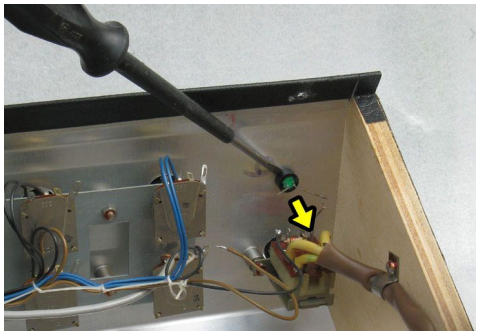


**Fig. 2.3.5**

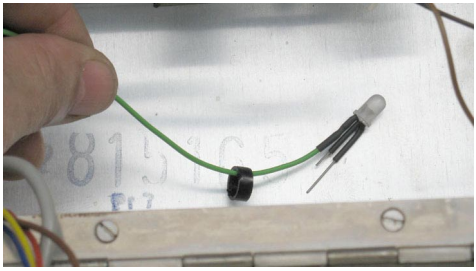


c) Remove the original LED from holder – push to its head from front side (fig. 2.3.6).

d) Pull the lock ring of the LED holder over the new bi-color LED (fig. 2.3.7).

**Fig. 2.3.6**


**Fig. 2.3.7**



e) Insert the new LED into the holder (from inner side of the instrument's panel) so that its two free leads will be to right (fig. 2.3.8).

f) Fix the new LED by the overthrust of the lock ring on the holder (fig. 2.3.9).

**Fig. 2.3.8**

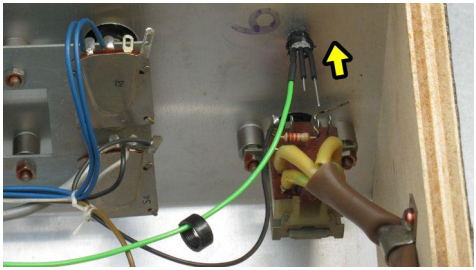
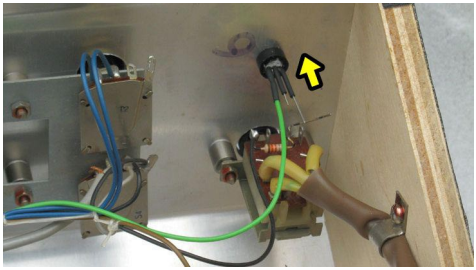


**Fig. 2.3.9**



g) Solder free outer lead of the new LED to jumper wire brought from resistor fixed on switch (fig. 2.3.10, 2.3.1).

h) Place heat-shrink insulation tube ϕ 2 mm (from the interface accessory) on brown cable (-20V from power supply) unsoldered from original LED and solder the cable to middle lead of new LED. Overlap the connection with the insulation tube and heat it (with a hot-flue pistol for example) until it shrinks tightly to the cable and the LED's lead (fig. 2.3.11, 2.3.1).

**Fig. 2.3.10**

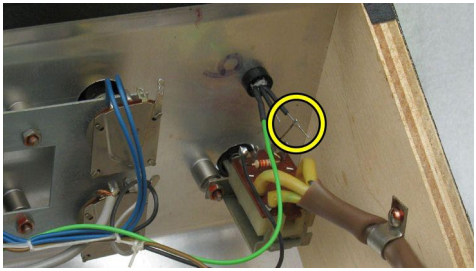
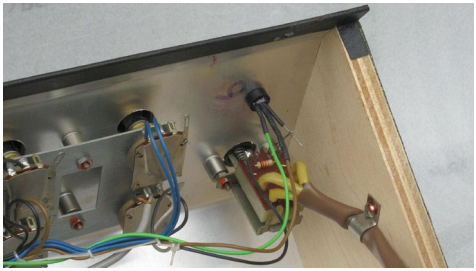


**Fig. 2.3.11**



## 2.4 INSTALLATION OF BUNCHED CABLES WITH 7-PIN CONNECTOR

These cables (control signals) will be connected to instrument's VCO, VCF, VCA and EG boards (fig. 2.4.1). Used solder lugs and pads on the boards shows figures 2.4.3 to 2.4.6.

Fig. 2.4.1

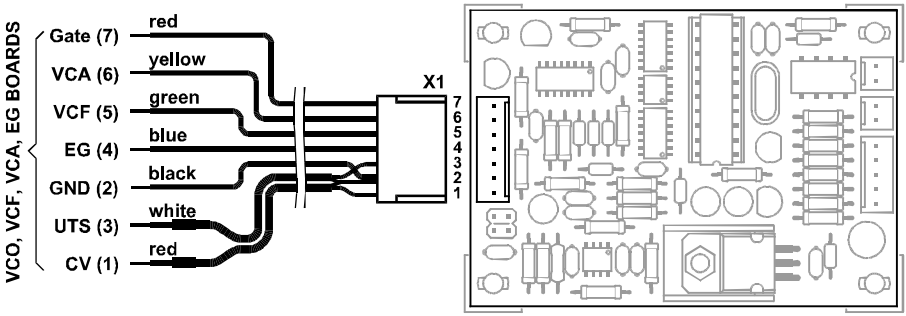



Fig. 2.4.2

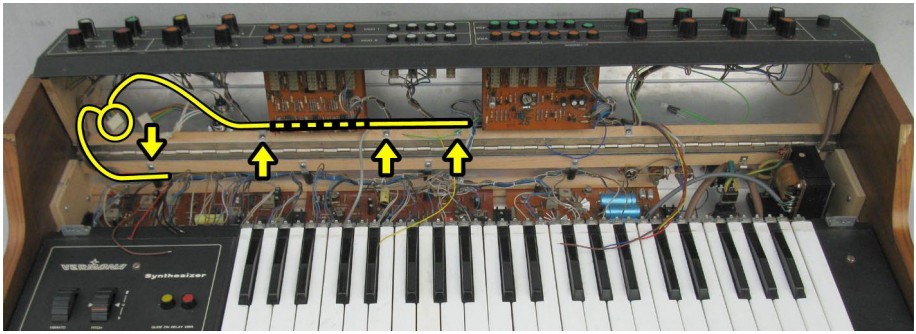
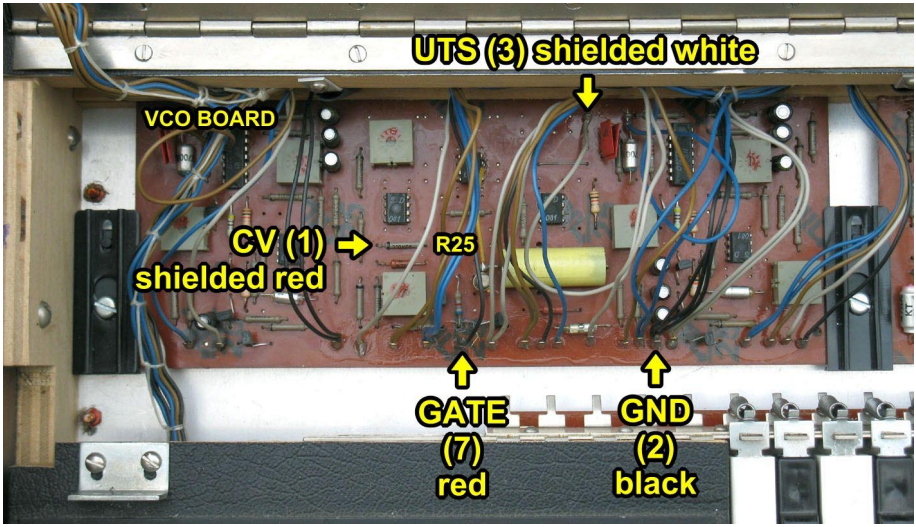


Fig. 2.4.3



a) Add bunched cables to original cables – use original glazing sprig. Blue, green and yellow wires are in instrument's cover; black, red, and shielded wires are directed to bottom basis part of the instrument (pic. 2.4.2).

b) Solder shielded wire Nr. 1 (red – one wire of shielded twin-lead) to left lead of R25 resistor (near operational amp IS1) on VCO board – pad (1) CV. Cleanse an oxyded layer on the resistor lead before soldering (fig. 2.4.3).

c) Solder shielded wire Nr. 3 (white – the other wire of shielded twin-lead) to UTS signal on VCO board – solder lug (3) UTS (fig. 2.4.3).

d) Solder the black wire Nr. 2 (ground) to ground potential on VCO board – solder lug (2) GND (fig. 2.4.3).

e) Solder the red wire Nr. 7 to signal GATE on VCO board – solder lug (7) Gate (fig. 2.4.3).

**Fig. 2.4.4**

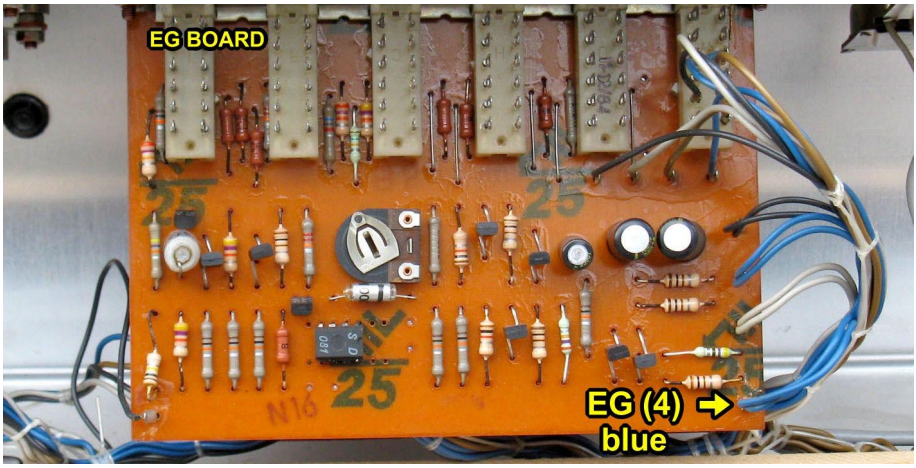
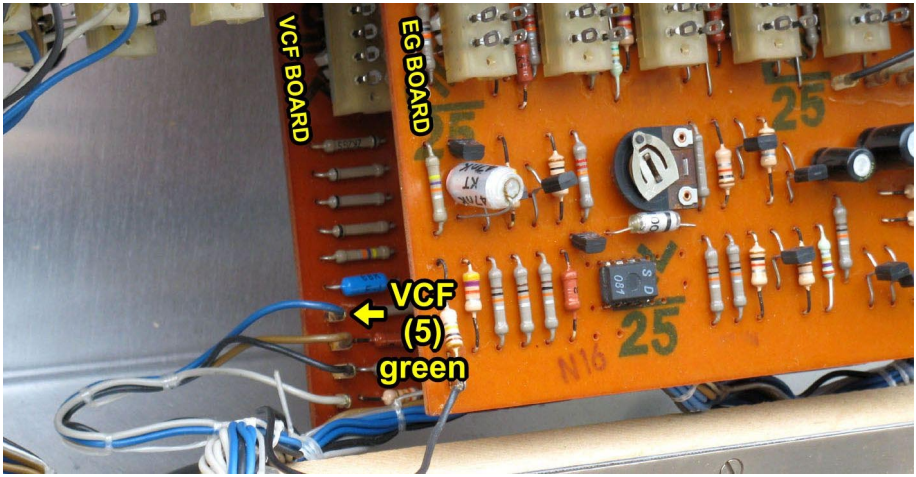



**Fig. 2.4.5**



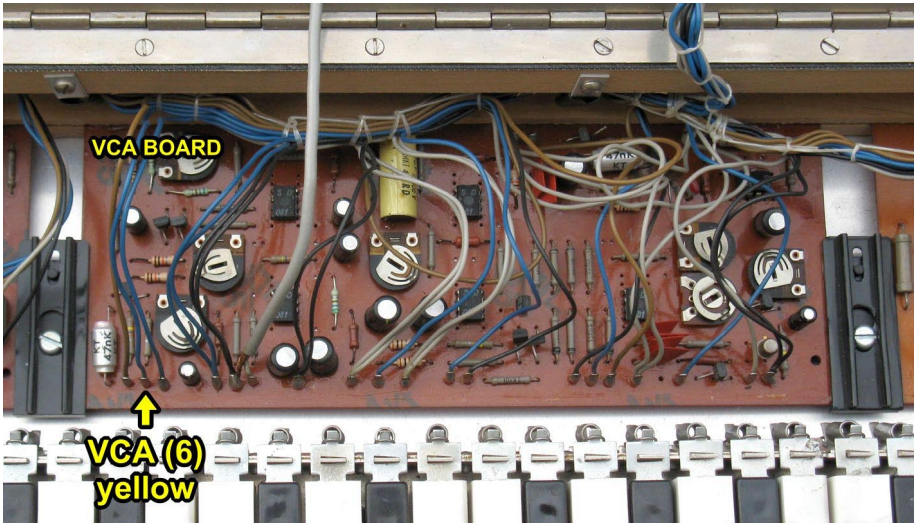
f) Unsolder two blue wires from solder lug on EG board (fig. 2.4.4) and solder blue wire Nr. 4 (EG) of the signal bunched cables to this lug.

g) Unsolder blue wire from solder lug on VCF board (fig. 2.4.5) and solder green wire Nr. 5 (VCF) of the signal bunched cables to this lug.

h) Unsolder blue wire from solder lug on VCA board (fig. 2.4.6) and solder yellow wire Nr. 6 (VCA) of the signal bunched cables to this lug.

i) The original blue wires (which related EG, VCF, VCA boards) can be fully removed. Or they can be retained in the instrument, but it is necessary to insulate them in this case so that no short occurs in the instrument.

**Fig. 2.4.6**




## 2.5 INTERFACE BOARD INSTALLATION

### 2.5.1 INTERFACE BOARD PLACEMENT

a) The interface board will be placed on left side of the rear panel of the instrument (fig. 2.5.1).

b) Cleanse the part of rear panel inside of the instrument for the interface board placement (fig. 2.5.1). Use a chemical cleaner to remove all dirt and grease.

**Fig. 2.5.1**

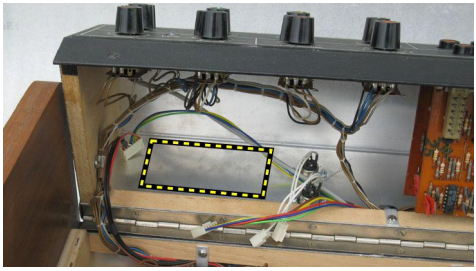


**Fig. 2.5.2**

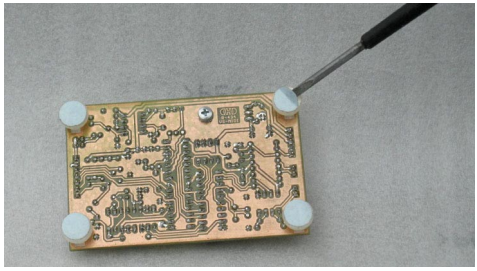
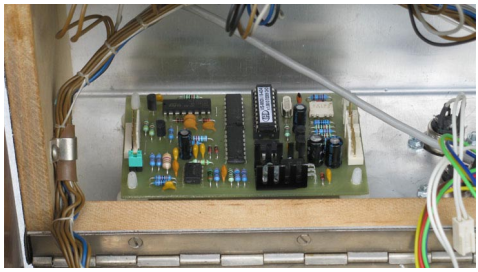


Fig. 2.5.3



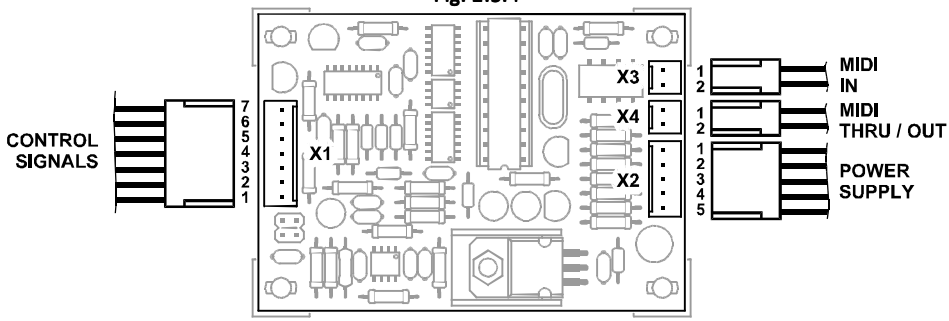
c) Remove the protective foil form the self-adhesive supports of the interface board (fig. 2.5.2).

d) Attach the interface board to the instrument's cover so that the side with two 2-pin connector headers and 7-pin connector header points to right as shown on the figure 2.5.3. Than fix the self-adhesive supports by pressing down to the panel.

### 2.5.2 CONNECTION OF CABLES

The newly installed interface bunched cables will be plugged to the interface board as shown on figures 2.5.4 to 2.5.6.

Fig. 2.5.4




a) Plug two 2-pin connectors of the MIDI cables to X3 ("IN") and X4 ("THRU / OUT") plug heads. Orientation of the connectors is given by the connector lock so they cannot be plugged reversely but be sure that the connectors are not exchanged: MIDI input must be plugged to X3 head and MIDI output to X4 head (fig. 2.5.5).

b) Plug the 5-pin connector of the power supply cable to X2 plug head. Orientation of the connector is given by the connector lock again (fig. 2.6.6).

c) Plug the 7-pin connector of the control signals cable to X1 plug head. Orientation of the connector is given by the connector lock again (fig. 2.6.6).

Fig. 2.5.5

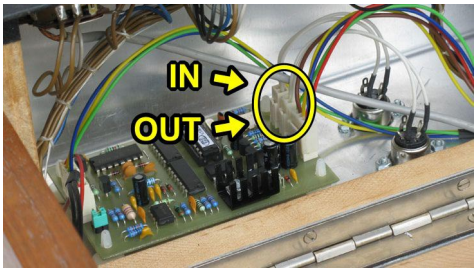
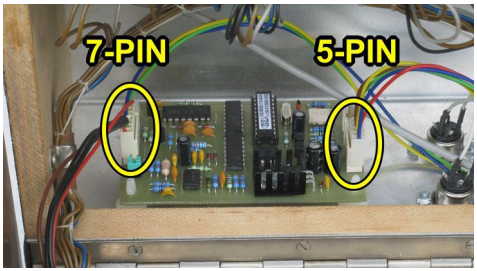


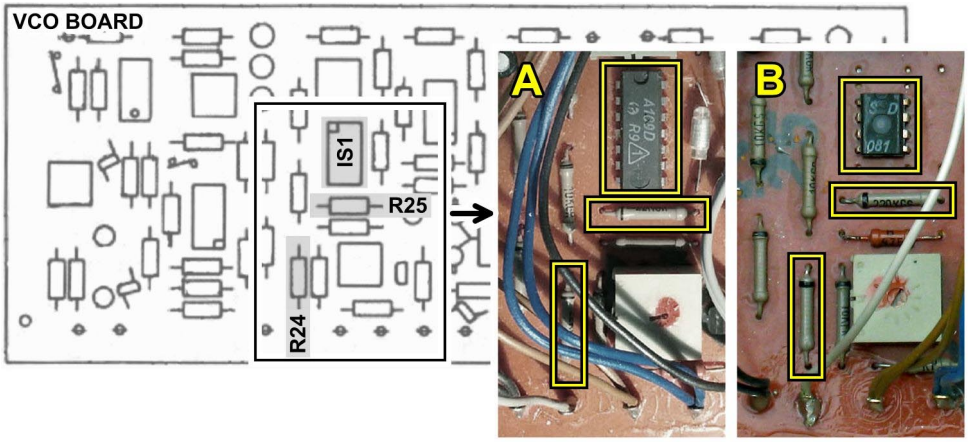

Fig. 2.5.6



### 2.5.3 SELECTION OF THE INSTRUMENT VERSION

There is a jumper header on the interface board. Jumper (fom the interface accessory) must pe plugged on the header in dependence on the instrument's VCO board version. The version of VCO board can be easily discovered pursuant type of operational amp on IS1 position and pursuant values of resistors R24 and R25 (fig. 2.5.7).

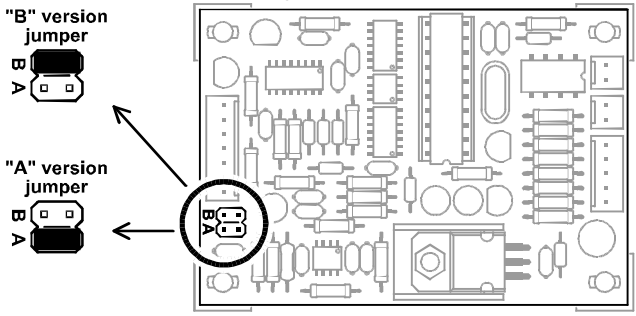
**Fig. 2.5.7**




The "A" version of VCO board is equipped by A109[1] type of operational amp (it has 14 pins) on position IS1 and value of R24 and R25 resistors is 22 kΩ. The "B" version of VCO board is equipped by B081[2] type of operational amp (it has 8 pins) on position IS1 and value of R24 and R25 resistors is 220 kΩ. Type of operational amp is printed directly on its top side and values of the resistors can be measured with a multimeter for example.

**Fig. 2.5.8**

For the "A" version (IS1 = A109; R24, R25 = 22kΩ), plug the jumper on interface board to position "A" (fig. 2.5.8).
For the "B" version (IS1 = B081; R24, R25 = 220kΩ), plug the jumper on interface board to position "B" (fig. 2.5.8).




[1] This is equivalent of more known µA709 type.
[2] This is equivalent of more known TL081 type.

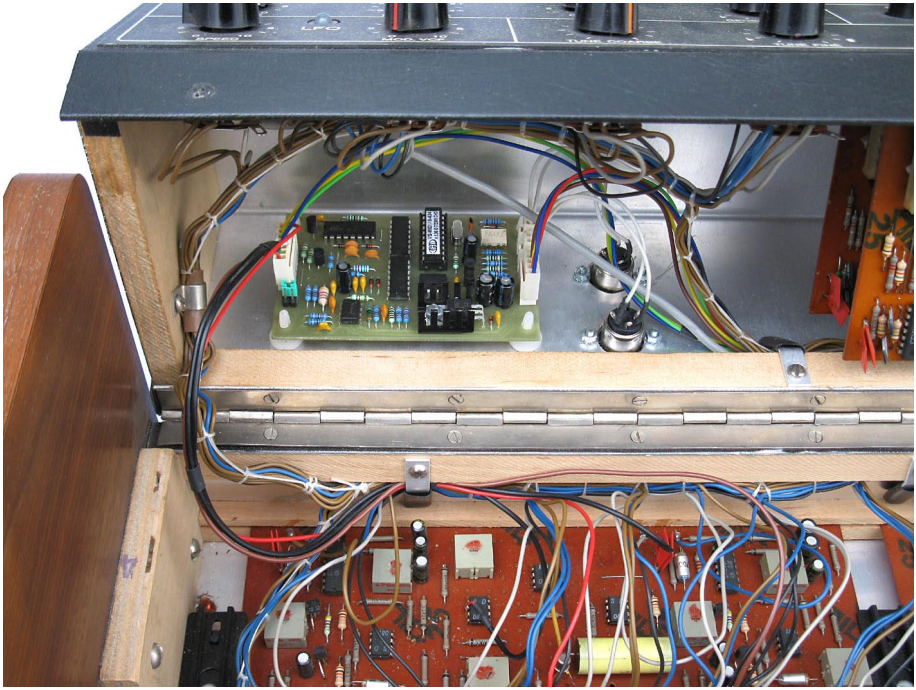
## 2.6 INSTRUMENT RE-ASSEMBLY

a) Turn the top cover back to its original position on the instrument and fix it two original screws and washers (fig. 2.6.1). This is the reverse procedure of that described in the chapter 2.1.

**Fig. 2.6.1**

b) The installation of the VC-MIDI kit is now finished, the instrument is ready for use with MIDI control (fig. 2.6.2).

**Fig. 2.6.2**



**Please read the user's manual carefully before the MIDI interface usage so you understand all interface functions!**

# 3 INSTALLATION TIPS

## 3.1 MIDI INPUT AND OUTPUT

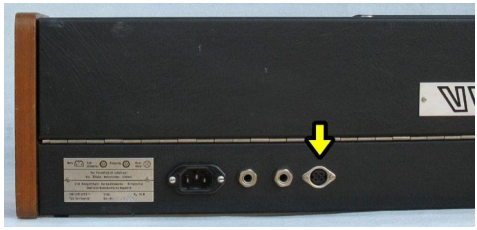
If you do not want to mechanically damage the panels of the instrument by drilling, you can use alternative metod of the MIDI – IN / OUT sockets montage. You can lead out the MIDI cables through a slot on the instrument cover (fig. 3.1.1). In that case, you will have to replace the delivered MIDI cables with another ones equipped with cable type of the DIN sockets or plugs.

If you decide to install only MIDI-IN socket, the X4 connector (MIDI-THRU/OUT) on the interface board will remain unused (see fig. 2.5.4).

In this case, you can replace the original headphones socket (on rear panel – fig. 3.1.2) with the MIDI-IN socket so that a drilling to the instarument is not necessary.

**Fig. 3.1.1**


**Fig. 3.1.2**



**All documents and support software are available at manufacturer's web pages.**

Vermona Synthesizer MIDI Interface
Model VS-MIDI, Nr. 8-434, ver. 2.00
Document: 843420_manual, rev. 1

Manufacturer: CHD Elektroservis, Czech Republic

www.chd-el.cz info@chd-el.cz