

RS505-KBD

MIDI Interface for Roland RS-505

Model 8-441
ver. 1.0



INSTALLATION MANUAL



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This manual in PDF form is available on supplemental CD-ROM or on manufacturer's web-pages.

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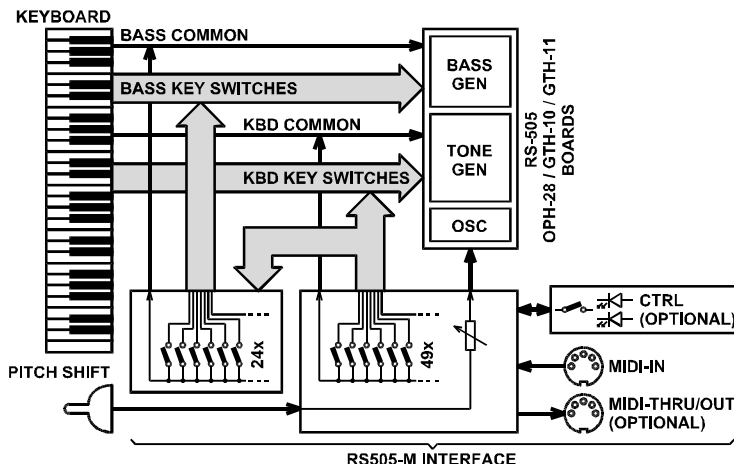
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1. GENERAL INFORMATION

RS505-KBD MIDI interface allows full integration of Roland RS-505 instrument to MIDI system. Interface affects instrument's keyboard (including bass section) and pitch shift function. All original features of RS-505 instrument remain unchanged after the interface installation and the instrument can be used the same way as without interface installed. Simplified block functional schematic of the instrument after the interface installation is shown on pic. 1.

Pic. 1 – Connection to instrument

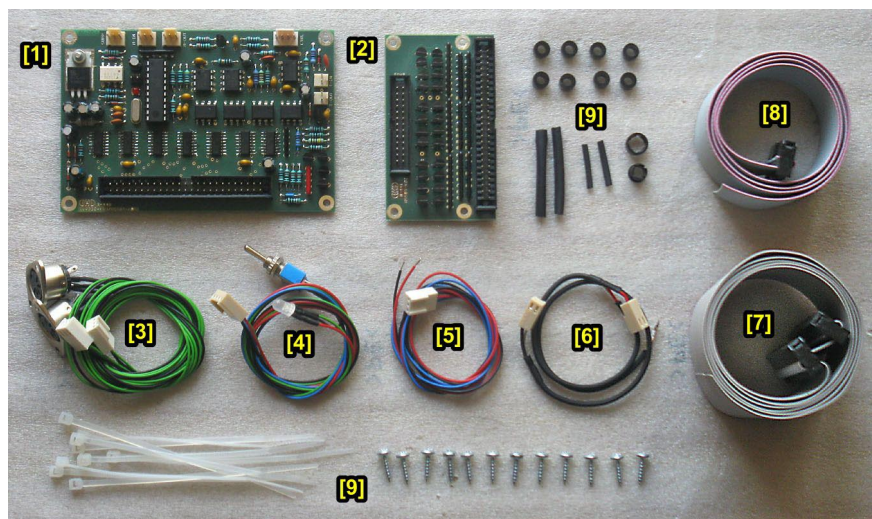


1.1. PARTS OF MIDI INTERFACE KIT

MIDI interface kit includes all parts necessary for installation incl. all support and coupling elements. Installation manual, user manual, description of interface's SysEx communication and CD-ROM with support software is also included. Please check the part list whether the delivery is complete before installation (see pic. 1.1).

The RS505-KBD interface kit delivery contains :

1. MIDI Interface board
2. Auxiliary bass switches board
3. 2x Bundled cables with DIN-5 socket
4. Bundled cables with switch and LED
5. Power supply bundled cables
6. 2x Shielded cable with connector (IN, OUT)
7. Flat control signals cable (50-wire) with two connectors
8. Flat control signals cable (26-wire) with connector
9. Accessory (1x LED holder, 12x self tapping screws, 8x plastic supports, 2x heat-shrink tube ϕ 2 mm, 2x heat-shrink tube ϕ 4 mm, 8x tightening strips)
10. CD-ROM with support software and manuals in PDF form
11. 3x Manual in printed form

Pic. 1.1 – Parts of interface kit

2. MIDI INTERFACE INSTALLATION

Installation of the interface into Roland RS-505 instrument is very easy. If you follow the instruction from this manual carefully, there should be no major problems during the installation procedure. Detailed steps of interface's parts installation is described in chapters below. Please keep these instructions accurately to not damage the instrument.



Attention! Disconnect the instrument from the mains prior to the installation. Otherwise, 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 RS-505 instrument caused by the infringement of the described installation procedure or by careless manipulation during the installation of the MIDI interface!

2.1. OPENING THE INSTRUMENT

a) Unscrew six screws on bottom side of the instrument (pic. 2.1.1). Keep the screws. They will be used again after the MIDI kit installation is finished. Remark: These screws hold instrument's keyboard to bottom plate of instrument's cover.

b) Unscrew six screws on top panel of the instrument (pic. 2.1.2). Keep the screws. They will be used again after the MIDI kit installation is finished. Remark: These screws hold instrument's top panel.

c) Carefully open the instrument - lift off the instrument's panel. Now, all instrument's parts and boards needed for the interface installation are accessible (pic. 2.1.3).

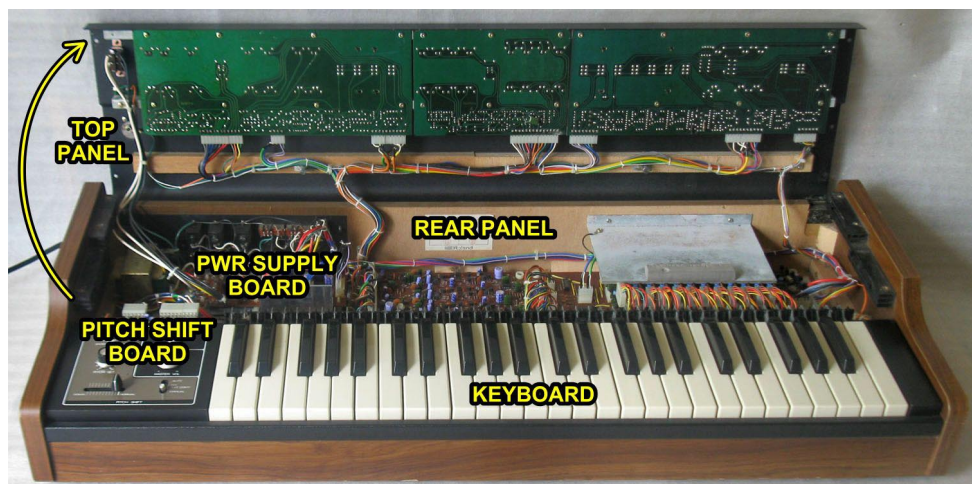
Pic. 2.1.1



Pic. 2.1.2



Pic. 2.1.3



2.2. MIDI SOCKETS MONTAGE

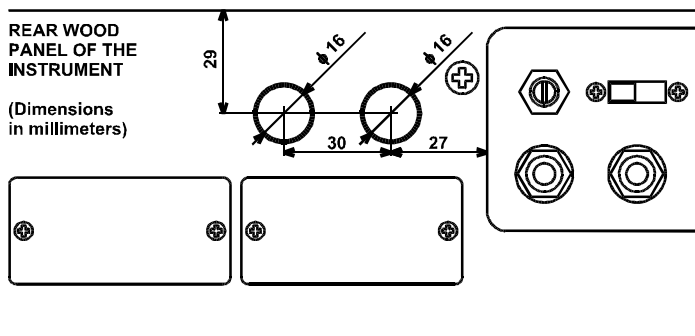
The interface has both MIDI input and output. Only MIDI input is necessary for the interface operation. MIDI output need not to be installed – see chapter 5. However, both MIDI input and output (MIDI-IN and MIDI-THRU/OUT sockets) utilization is more convenient for full interconnection to MIDI system. Suitable place for MIDI sockets is on rear panel of the instrument (see pic. 2.2.1).

Pic. 2.2.1



a) Drill two holes with diameter 16 mm for MIDI sockets to the wood rear panel of the instrument – see pic. 2.2.2. Use sharp drill and **work carefully** so that the panel and a components inside the instrument are not damaged during drilling!

Pic. 2.2.2



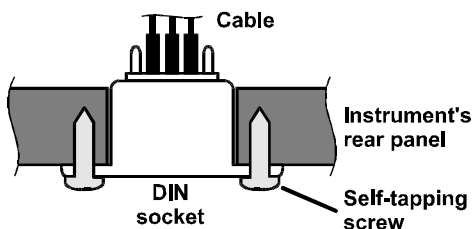
b) Clean the edge of both holes with small rasp after drilling. **Clean all sawdust and rasping from the inside of the instrument**, they can cause malfunction of some electro-mechanical components of the instrument. Please clean the instrument carefully!

c) Get flat connectors of MIDI cables through the holes in the panel (pic. 2.2.3). Both MIDI cables are identical and they can be swapped.

Pic. 2.2.3



Pic. 2.2.4



d) Insert DIN sockets of the cables into the drilled holes and fix them to the panel using four self tapping screws from the interface accessory (pic. 2.2.4). Make small holes for the screws with small drill or a peak before (pic. 2.2.5).

e) It is recommended to label the DIN sockets ("MIDI IN", "MIDI THRU/OUT" – for example) with self-adhesive foil glued near to the sockets on the instrument's panel (pic. 2.2.6).

Pic. 2.2.5



Pic. 2.2.6



2.3. SWITCH AND INDICATION LED MONTAGE

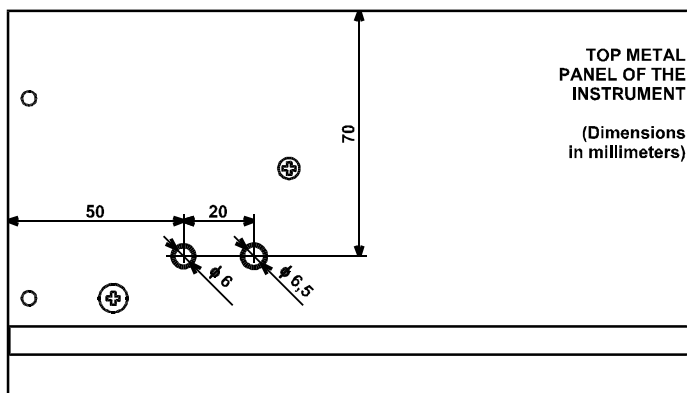
There are two elements for the interface control - tumbler switch and bi-color LED. They are not necessary unconditionally for the interface operation. They need not to be installed – see chapter 3. However it is more convenient for easier device control to use them. Suitable place for control elements is on left side of the top panel of the instrument (see pic. 2.3.1).

Pic. 2.3.1



a) Drill one hole with diameter 6,5 mm and one hole with diameter 6 mm to top panel of the instrument - see pic. 2.3.2. **Work carefully**, so that the panel and components inside the instrument are not damaged during drilling!

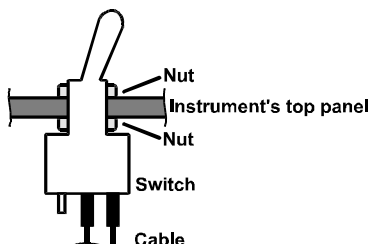
Pic. 2.3.2



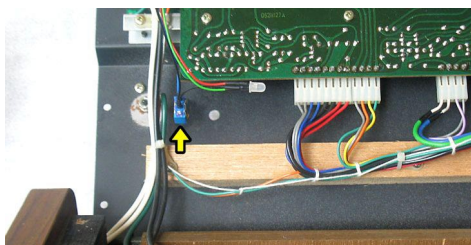
b) Clean the edge of both holes with small rasp or with point of bigger drill after drilling. **Clean all iron sawdust and rasping from the inside of the instruments**, they can cause short circuits or serious electrical damage if left in the instrument. Please clean the instrument carefully!

c) Insert tumbler switch into the 6 mm hole on the panel (from inner side) and fix the switch to the panel with two nuts (pic. 2.3.3). The switch must be positioned so that the not-connected lead of the switch is near the instrument's rear panel (pic. 2.3.4).

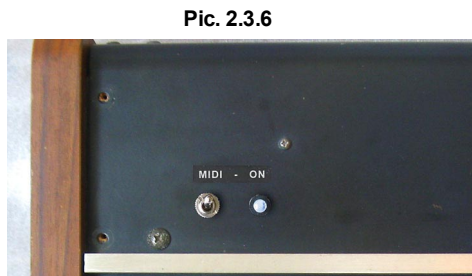
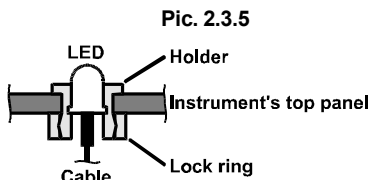
Pic. 2.3.3



Pic. 2.3.4



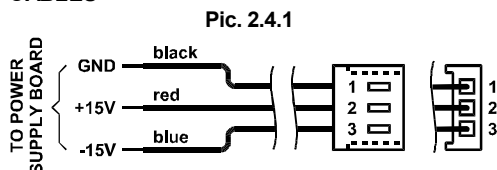
d) Insert LED holder into 6,5 mm hole on the panel. Plant lock ring of LED holder to bi-color LED on bunched cables. Then insert two-color LED into holder (from inner side) and fix it by over-thrusting of the ring on the holder (pic. 2.3.5).



e) It is suitable to label the LED and the switch ("MIDI - ON" for example) with self-adhesive foil glued near to the sockets on the instrument's panel (pic. 2.3.6).

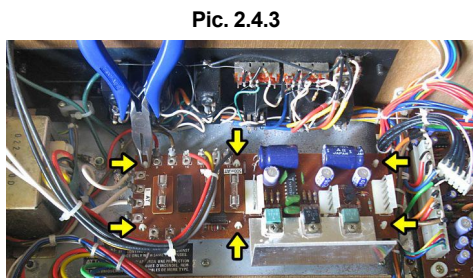
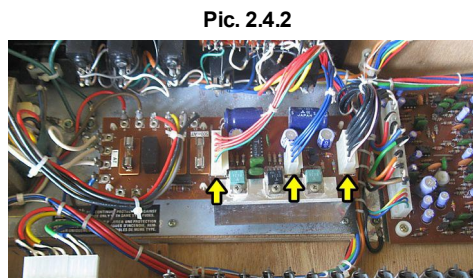
2.4. MONTAGE OF POWER SUPPLY BUNCHED CABLES

Power supply bunched cables are equipped with flat 3-pin connector on one end (pic. 2.4.1). All wires must be connected to instrument's power supply board (labeled PSH-28C, PSH-29C or PSH-30C in dependence on mains supply voltage of the instrument) as shown on pic. 2.1.3.



a) Unplug three connectors of bunched cables from the board (pic. 2.4.2).

b) Use flat-nose pliers or tweezers to gradually release the latches of six plastic board holders, while the board gently pull upwards to release it from the holders (pic. 2.4.3). Then lift the board and overturn it soldering side up.



c) Solder the black wire Nr. 1 (GND) to ground potential – to one of solder pads from 25 to 29 of J3 plug on the power supply board (pic. 2.4.4). **Do not use pad Nr. 24** – there is different potential!

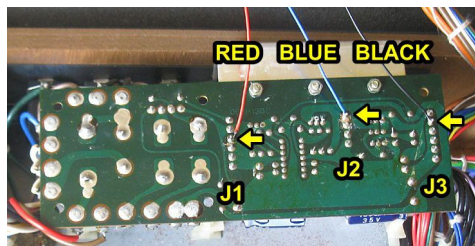
d) Solder the red wire Nr. 2 (+15V) to stabilized supply voltage +15V – to one of solder pads from 16 to 19 of J1 plug on the power supply board (pic. 2.4.4). **Do not use pads Nr. 14 and 15** – there are different potentials!

e) Solder the blue wire Nr. 3 (-15V) to stabilized supply voltage -15V – to one of solder pads from 20 to 23 of J2 plug on the power supply board (pic. 2.4.4).

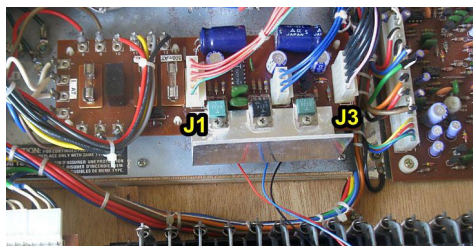
f) Return the power supply board to the original position and fix it back to six plastic holders / supports (pic. 2.4.5).

g) Plug three connectors of bunched cables back to the board (pic. 2.4.5). Be sure that J1 and J3 are not swapped (J1 has red wires, J3 has black wires).

Pic. 2.4.4



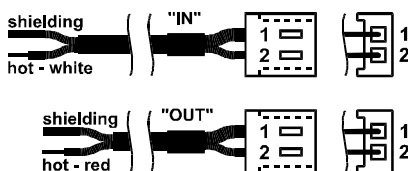
Pic. 2.4.5



2.5. MONTAGE OF SHIELDED CABLES

Both shielded cables from the interface accessory are equipped with flat 2-pin connector on one end (pic. 2.5.1). Free ends of the cables must be connected to tuning voltage outgoing from pitch shift board (labeled OPH-29) as shown on pic. 2.1.3. Note that the cables from the interface accessory are not identical and they can't be swapped! One of them ("IN") has length 250 mm and its hot wire has white color. The other one ("OUT") has length 150 mm and its hot wire has red color.

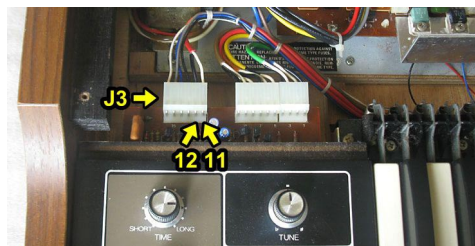
Pic. 2.5.1



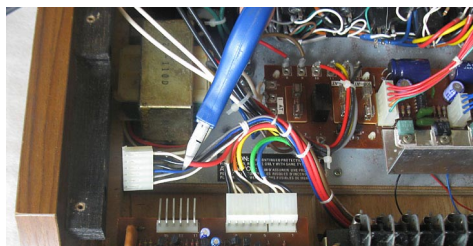
a) Unplug J3 connector from the OPH-29 pitch shift board (pic. 2.5.2).

b) Cut red shielded cable (leaded from pins Nr. 11 and 12 of J3) as near to insulating tube as possible (pic. 2.5.3).

Pic. 2.5.2



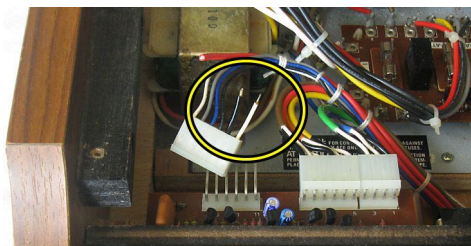
Pic. 2.5.3



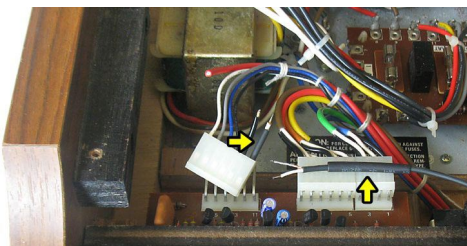
c) Stripe end of wires leaded from J3 connector in length about 2 mm and tin them (pic. 2.5.4).

d) Place a heat-shrink insulation tube ϕ 4 mm on shielded cable from the interface accessory – use "IN" cable with white hot wire (length 250 mm). Place heat-shrink insulation tube ϕ 2 mm on the hot wire leaded from pin Nr. 11 of the J3 connector of OPH-29 board (pic. 2.5.5). The insulation tubes are the interface accessory.

Pic. 2.5.4



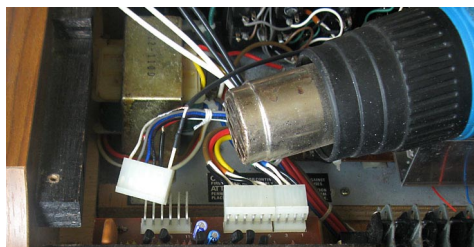
Pic. 2.5.5



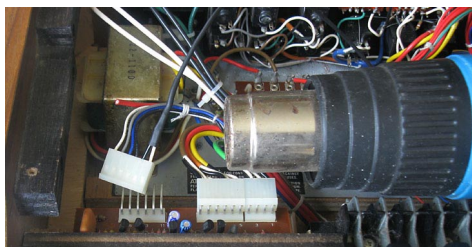
e) Solder hot wire (white) of the “IN” shielded cable to hot wire lead from pin Nr. 11 of the J3 connector. Then isolate the soldered connection with the insulation tube ϕ 2 mm and heat it (with a hot-flue pistol for example) until it shrinks tightly to the wires (pic. 2.5.6).

f) Solder together shielding of the shielded cable and ground wire lead from pin Nr. 12 of the J3 connector. Isolate the whole connection with previously placed insulation tube ϕ 4 mm and heat it (with a hot-flue pistol for example) until it shrinks tightly to both shielded cables (pic. 2.5.7).

Pic. 2.5.6



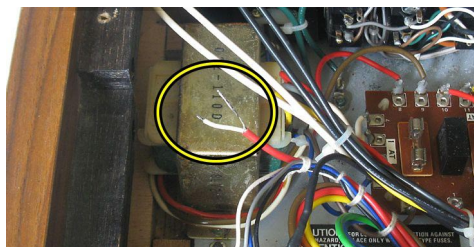
Pic. 2.5.7



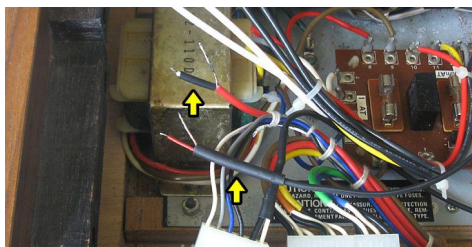
g) Stripe end of the cutted red shielded cable in length about 20 mm and tin ends of both hot and cold (shielding) wires (pic. 2.5.8).

h) Place a heat-shrink insulation tube ϕ 4 mm on the other shielded cable from the interface accessory (“OUT” cable with red hot wire and length 150 mm). Place heat-shrink insulation tube ϕ 2 mm on hot wire of the red shielded cable (pic. 2.5.9). The insulation tubes are the interface accessory.

Pic. 2.5.8



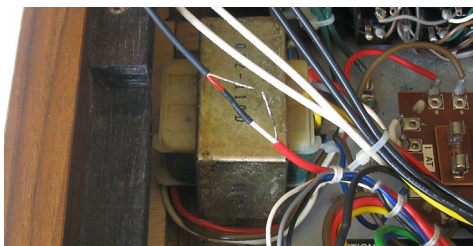
Pic. 2.5.9



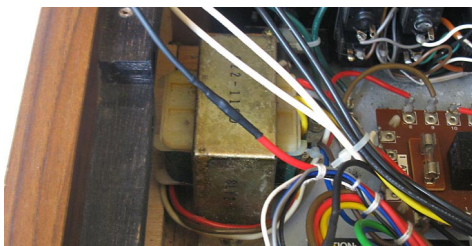
i) Solder hot wire (red) of the “OUT” shielded cable to hot wire of the red shielded cable. Then isolate the soldered connection with the insulation tube ϕ 2 mm and heat it (with a hot-flue pistol for example) until it shrinks tightly to the wires (pic. 2.5.10).

j) Solder together shielding of both shielded cables. Isolate the whole connection with previously placed insulation tube ϕ 4 mm and heat it (with a hot-flue pistol for example) until it shrinks tightly to both shielded cables (pic. 2.5.11).

Pic. 2.5.10



Pic. 2.5.11



k) Plug the J3 connector back to its original position on the OPH-29 board – do not turn it, lock on the connector body must be on upper side (pic. 2.5.12).

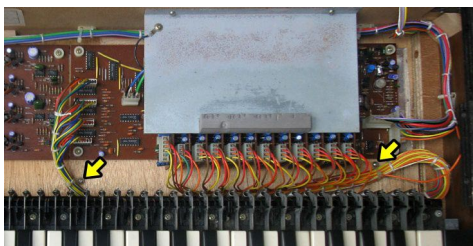
Pic. 2.5.12

2.6. MONTAGE OF THE INTERFACE BOARDS

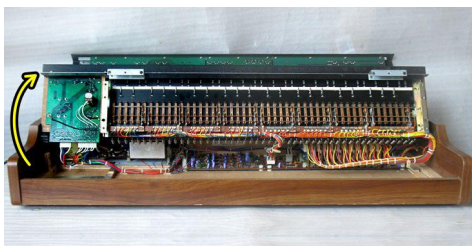
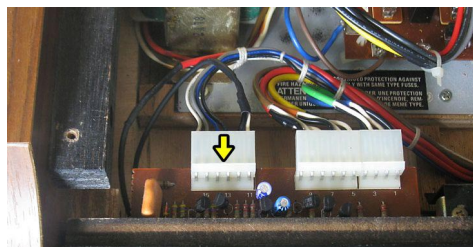
a) Unscrew two self tapping screws of cable holders from bottom plate of the instrument (pic. 2.6.1). Keep the screws. They will be used again after the MIDI kit installation is finished.

b) Lift the keyboard and turn it over backwards - the keyboard is unfixed already (pic. 2.6.2). Now, area for the interface boards placement is accessible.

Pic. 2.6.1



Pic. 2.6.2

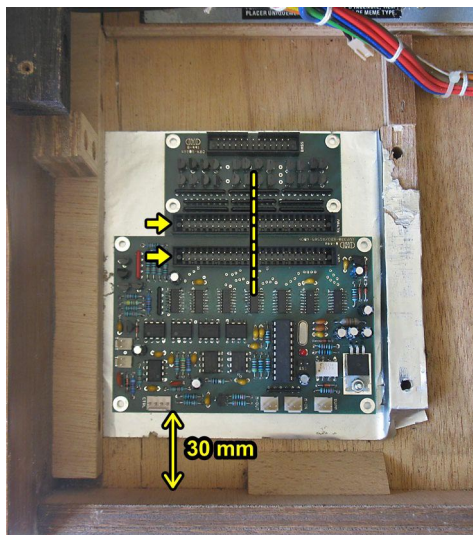


c) The interface boards will be placed on left side on bottom plate of the instrument – under the pitch shift board. Put both interface boards to bottom plate of the instrument as shown on pic. 2.6.3. Note that the boards must be close together and 50-pin connectors on both boards must be in one axis!

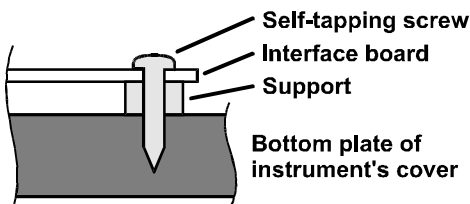
d) Insert eight plastic supports from the interface accessory under the boards (pic. 2.6.4).

e) Fix the both interface boards in the bottom plate of the instrument using eight self tapping screws from the interface accessory. Make small holes for the screws with small drill or a peak before (pic. 2.6.5).

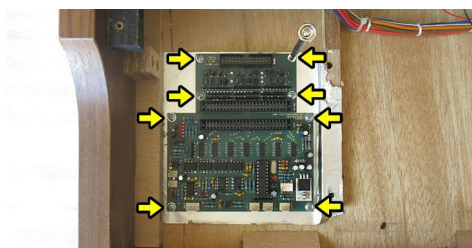
Pic. 2.6.3



Pic. 2.6.4



Pic. 2.6.5



f) Plug 2-pin connector of “OUT” shielded cable (red hot wire) to T-OUT plug on the interface board (pic. 2.6.6).

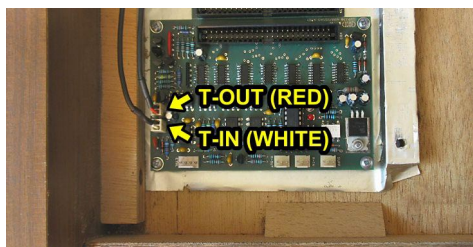
g) Plug 2-pin connector of “IN” shielded cable (white hot wire) to T-IN plug on the interface board (pic. 2.6.6).

h) Plug 4-pin connector of switch / LED bunched cables to the interface board (CTRL). The right orientation of the connector is given by lock on the connector body (pic. 2.6.7). If control switch and indication LED had not been installed, see chapter 3.

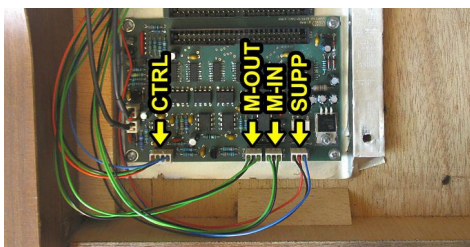
i) Plug two 3-pin connectors of MIDI sockets to the interface board (M-OUT, M-IN). The right orientation of the connectors is given by lock on the connector body (pic. 2.6.7). Be sure that MIDI input and output sockets are not exchanged! If MIDI out socket had not been installed, see chapter 3.

j) Plug 3-pin connector of power supply bunched cables to the interface board (SUPP). The right orientation of the connector is given by lock on the connector body (pic. 2.6.7).

Pic. 2.6.6



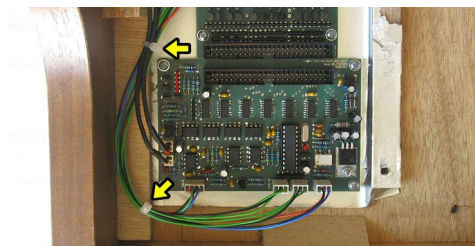
Pic. 2.6.7



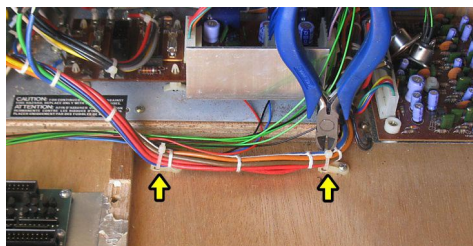
k) Fix together newly installed bunched cables (T-OUT, T-IN, CTRL, M-OUT, M-IN, SUPP) using two tightening plastic strips from the interface accessory (pic. 2.6.8).

l) Cut two tightening plastic strips holding original bunched cables to the bottom of the instrument and remove them (pic. 2.6.9).

Pic. 2.6.8

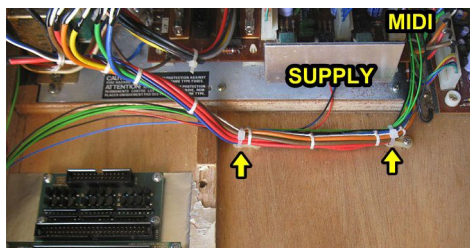


Pic. 2.6.9



m) Add newly installed cables (both MIDI - M-OUT, M-IN and power supply - SUPP) to original bunched cables and fix all cables back to original holders (pic. 2.6.10). Use two tightening plastic strips from the interface accessory.

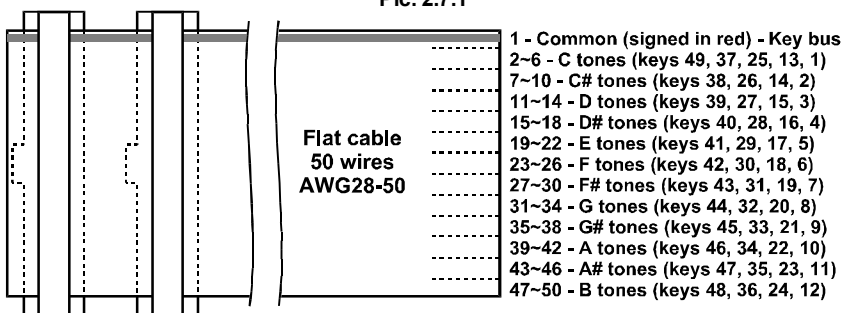
Pic. 2.6.10



2.7. MONTAGE OF 50-WIRE FLAT CONTROL SIGNALS CABLE (KEYBOARD)

The 50-wire control signals cable is equipped with flat 50-pin connector on one end (pic. 2.7.1). Wires outgoing from this connector must be connected to soldering pads (lower row of pads) on bottom side of the keyboard. Individual wires of the cable will be connected in accordance with table 1 and pic. 2.7.2.

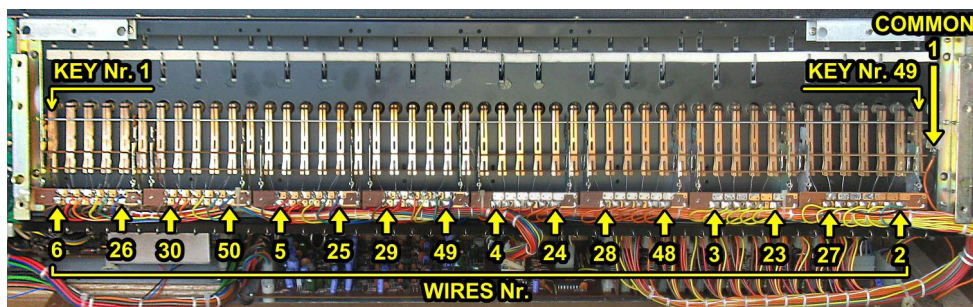
Pic. 2.7.1



Split up free end of the cable (by ripping or cutting) to individual groups and wires and adjust lengths of the wires as necessary during the cable installation. Then stripe ends of the wires in length about 2 mm and tin them.

**Table 1 – Wires of 50-wire flat cable of control signals connection**

Wire Nr.	Tone	Key Nr.	Remark	Wire Nr.	Tone	Key Nr.	Remark
1	---	Common bus	Signed in red	26	F16	6	
2	C1	49	To highest tone	27	F#2	43	
3	C2	37		28	F#4	31	
4	C4	25		29	F#8	19	
5	C8	13		30	F#16	7	
6	C16	1	To lowest tone	31	G2	44	
7	C#2	38		32	G4	32	
8	C#4	26		33	G8	20	
9	C#8	14		34	G16	8	
10	C#16	2		35	G#2	45	
11	D2	39		36	G#4	33	
12	D4	27		37	G#8	21	
13	D8	15		38	G#16	9	
14	D16	3		39	A2	46	
15	D#2	40		40	A4	34	
16	D#4	28		41	A8	22	
17	D#8	16		42	A16	10	
18	D#16	4		43	A#2	47	
19	E2	41		44	A#4	35	
20	E4	29		45	A#8	23	
21	E8	17		46	A#16	11	
22	E16	5		47	B2	48	
23	F2	42		48	B4	36	
24	F4	30		49	B8	24	
25	F8	18		50	B16	12	

Pic. 2.7.2

a) Now it is necessary to solder particular wires Nr. 2 to Nr. 50 of the flat control signals cable to certain pads on board on bottom side of the keyboard (table 1, pic. 2.7.2). We recommend to start with wire Nr. 6 (key Nr. 1 – C16) and continue in order of keys from Nr. 2 to Nr. 49.

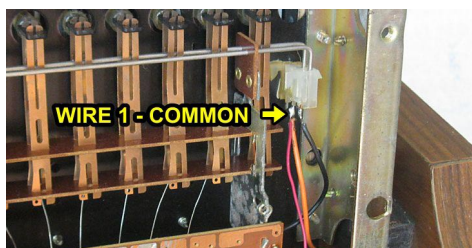
b) As mentioned above, length of particular wires of flat cable should be adjusted as required (pic. 2.7.3).

c) Solder wire Nr. 1 (terminal, marked with red color) to common bus of the keyboard switches – the bottom bus (pic. 2.7.4). Solder it together with original orange wire.

Pic. 2.7.3

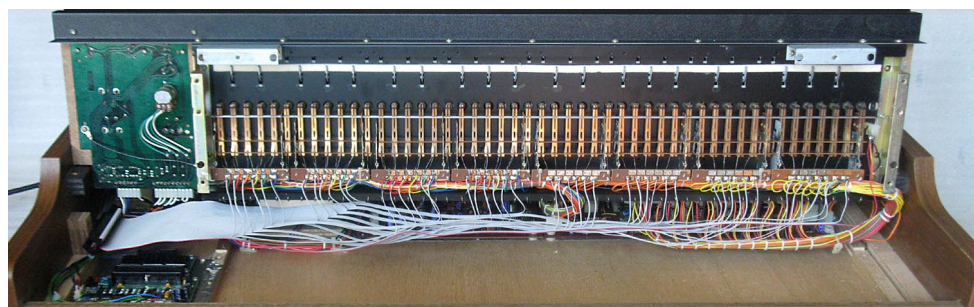


Pic. 2.7.4



c) After all 50 wires are soldered, the cable should look as shown on pic. 2.7.5.

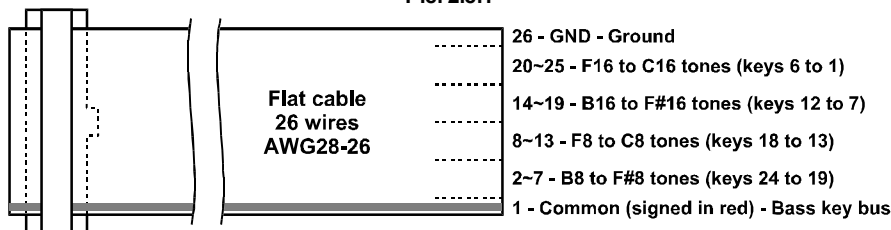
Pic. 2.7.5



2.8. MONTAGE OF 26-WIRE FLAT CONTROL SIGNALS CABLE (BASS)

The 26-wire control signals cable is equipped with flat 26-pin connector on one end (pic. 2.8.1). Wires outgoing from this connector must be connected to soldering pads (upper row of pads) on bottom side of the keyboard. Individual wires of the cable will be connected in accordance with table 2 and pic. 2.8.2.

Pic. 2.8.1

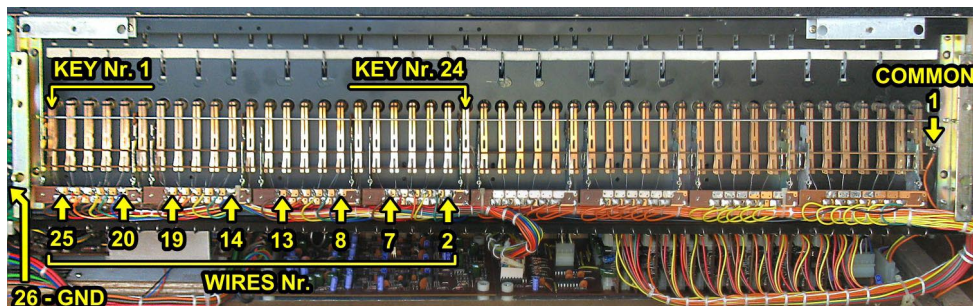


Split up free end of the cable (by ripping or cutting) to individual groups and wires and adjust lengths of the wires as necessary during the cable installation. Then stripe ends of the wires in length about 2 mm and tin them.

Table 2 – Wires of 26-wire flat cable of control signals connection

Wire Nr.	Tone	Key Nr.	Remark	Wire	Tone	Key Nr.	Remark
1	---	Common bus	Signed in red	14	B16	12	
2	B8	24	To highest tone	15	A#16	11	
3	A#8	23		16	A16	10	
4	A8	22		17	G#16	9	
5	G#8	21		18	G16	8	
6	G8	20		19	F#16	7	
7	F#8	19		20	F16	6	
8	F8	18		21	E16	5	
9	E8	17		22	D#16	4	
10	D#8	16		23	D16	3	
11	D8	15		24	C#16	2	
12	C#8	14		25	C16	1	To lowest tone
13	C8	13		26	---	Ground	

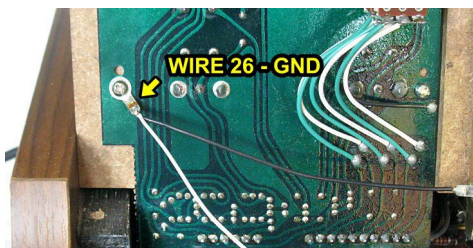
Pic. 2.8.2



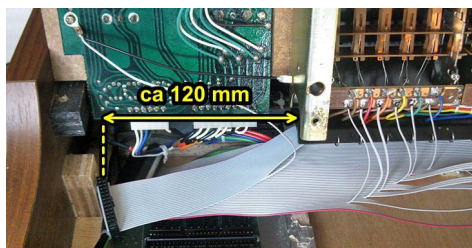
a) Solder wire Nr. 26 to soldering lug (ground potential) on the OPH-29 pitch shift board. Solder it together with original black wire (pic. 2.8.3).

b) As mentioned above, length of particular wires of flat cable should be adjusted as required (pic. 2.8.4).

Pic. 2.8.3



Pic. 2.8.4

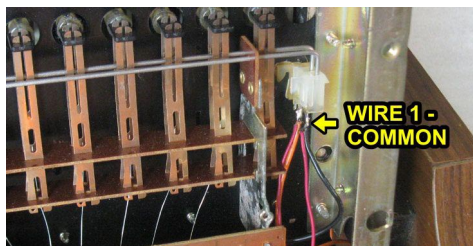


c) Now it is necessary to solder particular wires Nr. 2 to Nr. 25 of the flat control signals cable to certain pads on board on bottom side of the keyboard (table 2, pic. 2.8.2). We recommend to start with wire Nr. 25 (key Nr. 1 – C16) and continue in order of keys from Nr. 2 to Nr. 24.

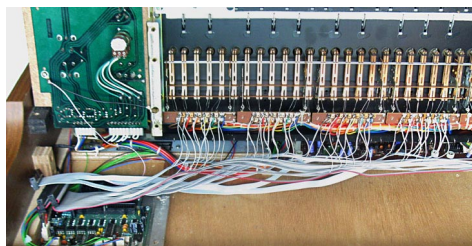
d) Solder wire Nr. 1 (terminal, marked with red color) to common bus of the bass keyboard switches – the upper bus (pic. 2.8.5). Solder it together with original black wire.

e) After all 26 wires are soldered, the cable should look as shown on pic. 2.8.6.

Pic. 2.8.5

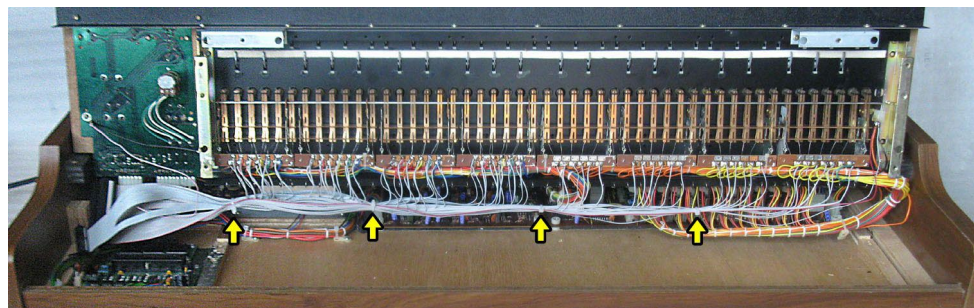


Pic. 2.8.6



f) Now, fix newly installed flat cables together using four tightening plastic strips from the interface accessory (pic. 2.8.7).

Pic. 2.8.7

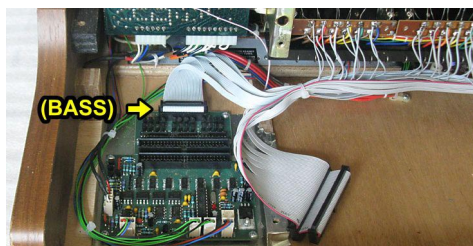


2.9. FINISHING OF THE INSTALLATION

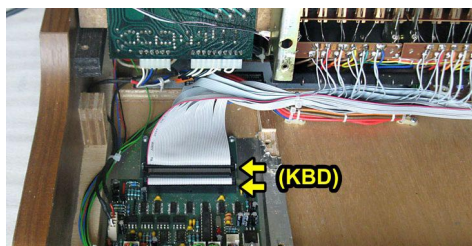
a) Plug 26-pin connector of flat control signals cable to the auxiliary interface board (BASS). The right orientation of the connector is given by lock on the connector body (pic. 2.9.1).

b) Plug two 50-pin connectors of flat control signals cable to both interface boards (KBD). The right orientation of the connectors is given by locks on bodies of the connectors (pic. 2.9.2).

Pic. 2.9.1



Pic. 2.9.2

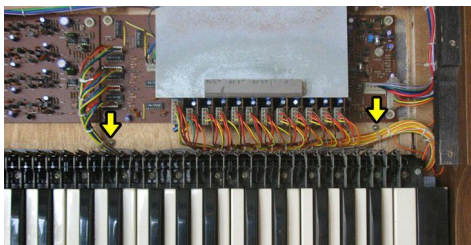


- c) Put keyboard of the instrument back to its original position in the instrument (pic. 2.9.3).
- d) Fix two cable holders of original keyboard bunched cables back to bottom plate of the instrument (pic. 2.9.4). Use original self tapping screws.

Pic. 2.9.3



Pic. 2.9.4



- e) Turn over the top panel of the instrument (close the instrument) and fix it with original six screws to side plates (pic. 2.9.5). Fix the keyboard of the instrument to bottom plate of instrument's cover with six original screws (pic. 2.9.6). This is the reverse procedure of that described in the chapter 2.1.

Pic. 2.9.5



Pic. 2.9.6



Installation of the MIDI interface kit is now finished and the instrument is prepared for communication via MIDI bus. After the interface activation, it controls keyboard and pitch shift circuits of the instrument via MIDI commands accordingly to interface parameters settings. Enhanced functions for control of the instrument via MIDI communication are described in detail in user manual of the interface. So please **read carefully user manual** of the interface before use of the retrofitted instrument to utilize the interface fully.

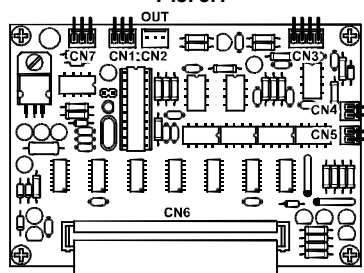
Note that there is a limitation for RS-505 instrument - function "Second Touch" of the instrument is not available if the keyboard is controlled via MIDI. If any (at least one) key is pressed by a MIDI Note command, the function is disabled and it is not working!. When all MIDI notes are "Off" and own instrument's keyboard is used, the "Second Touch" function works normally.

3. TIPS FOR INSTALLATION

a) Output MIDI – THRU/OUT

The VP330-KBD Interface has both MIDI input and output. However, only MIDI input is necessary unconditionally for basic operation of the interface (i.e. controlling the instrument via MIDI commands). MIDI THRU/OUT output socket need not to be installed if you don't require transfer of MIDI data to another MIDI devices (THRU function) or reverse communication of the interface with host system (OUT function). In this case, connector CN2 (M-OUT) on the interface board will remain unconnected (see pic. 3.1).

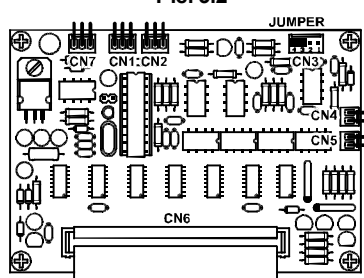
Pic. 3.1



b) Switch and indication LED

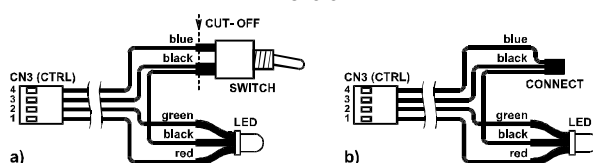
Installation of bunched cables of switch and indication LED isn't also necessary unconditionally. It is not needed to install the bunched cables if you don't want to affect the instrument's panel by drilling. However, jumper must be plugged on pins Nr. 3 and 4 of CN3 (CTRL) connector on the interface board in this case (see pic. 3.2).

Pic. 3.2



It is also possible to install only indication LED on instrument's panel. In this case, remove (cut-off) switch from bunched cables and connect (solder) together two black and one blue wires leading to the switch originally and insulate the connection of the wires (see pic. 3.3).

Pic. 3.3



In such "non-invasive" implementation the interface works following way: Immediately after the instrument is switched on, the interface is activated but it still doesn't affect the instrument – the instrument can be used like without the interface. As soon as the first MIDI command is received at interface's MIDI input, the indication LED lights red and the interface starts to control the instrument's keyboard and pitch shift circuits. If you want to switch the interface off, so that it had no affect on the instrument, the interface must be reset. It can be done by turning off and on the instrument or by MIDI command "HW Reset" sent to the interface (see user manual of the interface).



