



TOTTERmidi

July 2009



Totter midi d.o.o.

Muljava 6

SI-1234 Mengeš

Slovenia

T +386 1 729 1350

F +386 1 729 1351

info@totter-midi.si

www.totter-midi.si

Installation manual

ver. 1.01 - 19.8.2009

Electrical scheme

Connection

All PCBs are connected with flaat cable together. On places where accordion can be opened, must be connectors, so cable can be taken off at opening.

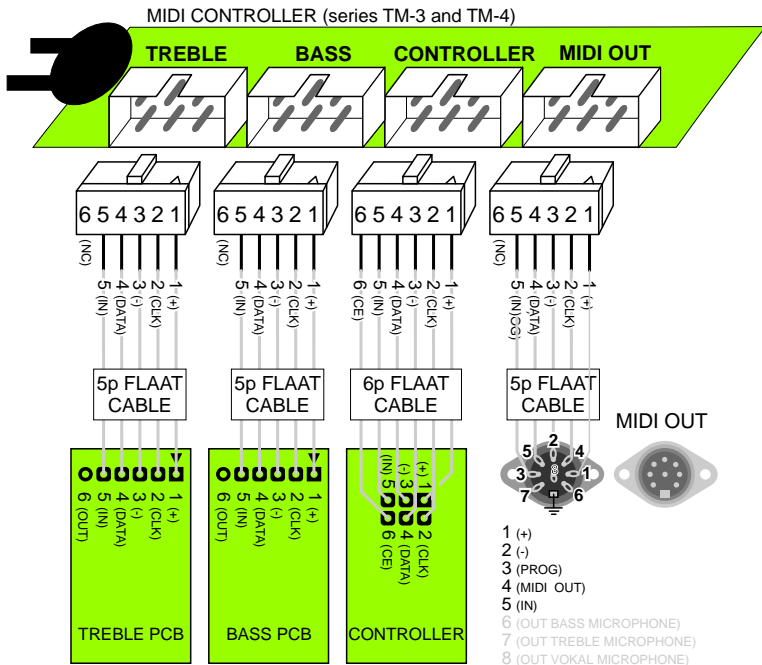
Electronic components are sensitive per static discharges. Use of antistatic protective equipment is necessary.



ATTENTION! IN CASE OF WRONG CONNECTION OF ELECTRONICS PARTS
PERMANENT INJURIES OF COMPONENTS CAN BE DONE!

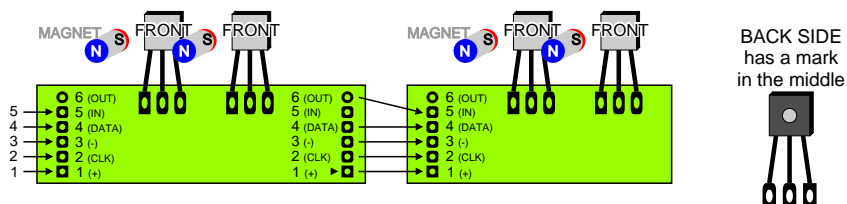
Advices

- At pressing the cable in connector be very carefull, that cable is put perpendicular in connector and exactly in its seat. If not, contact between two wires can be done.
- In 10 or 14 pole connector you can combine more different pole flaat wires. For example bas-midi (5-pol wire) and bas-microphone (3-pol wire) on left side of below or midi-exit (5-pol) and controller (6-pol) under right cover.
- If it is possible microphone line must be far away from other digital lines. With that we reduce possibility of interferences.
- At guiding cable through ALU plate, borehole must be without sharp edge and enough big. If not, sharp edge can cut isolation and make a contact.



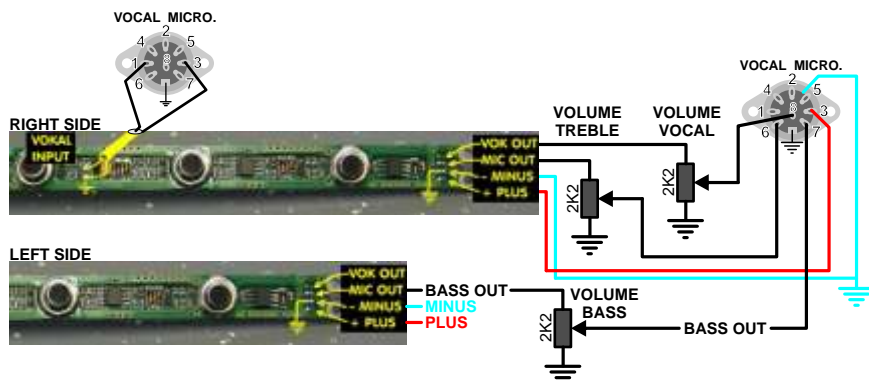
Connecting more PCBs together

If longer PCB is needed, it is possible to put two or more PCBs together. This can be used also at accordions which have mechanism for registers on right side at the middle. (for example: Hohner Atlantic accordion) PCBs on both side of mechanism are connected like showing picture.

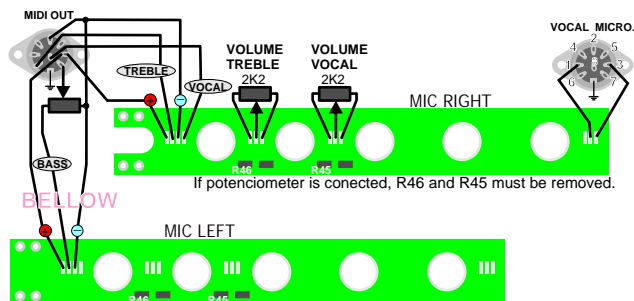


Microphone system TM-4

Microphone PCBs are normally connected directly to output plug. If customer need volume control on accordion, is easy to implement it. Microphones and MIDI are connected on the same 8 pol metal DIN plug.



Microphone system TM-3 (old system - not more in production)



Connection cable

Connection cable connects instrument with build TOTTER MIDI and/or microphone system with other devices.

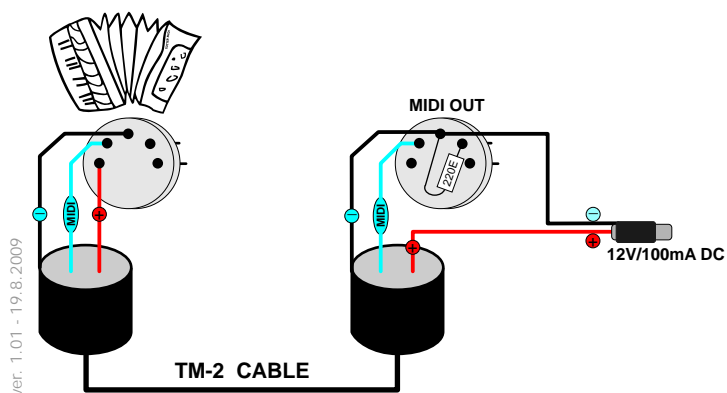
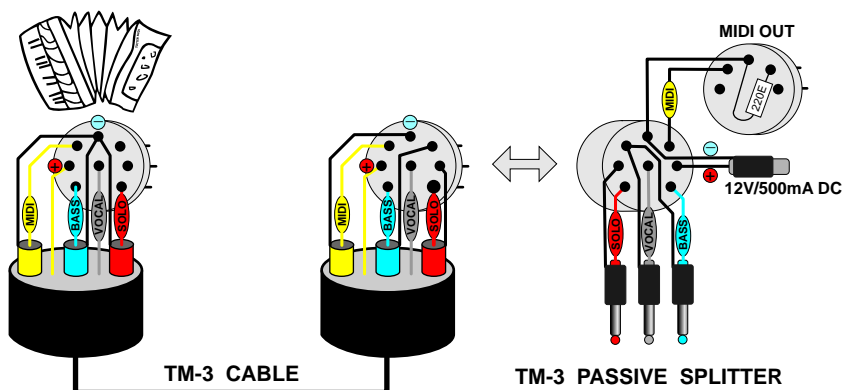
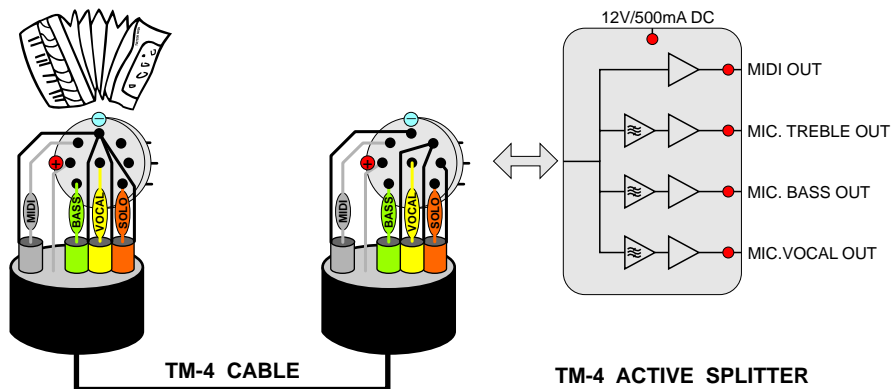
All three types of cables are compatible each with other. Cables TM-2 and TM-3 are older and are no more in production.

Cable TM-2 does not allow connection of microphones (only MIDI). On output side of TM-2 cable is 5pole DIN connector- directly MIDI OUT with additional connector for power. Cable TM-2 is made from any kind of stereo audio cable.

Cable TM-3 is made from standard TASKER wire C125. It has no carrying string in its construction. Cable is sensitive on pulling. Stronger pulling can damage wires in cable.

Cable TM-4 is custom made exclusive for TOTTER MIDI. It is stronger and constructed with temperatur resistant materials. It is durably and refrain greater force of pulling. Because of compact cable construction making and repairing is a bit difficult. Cable TM-4 is upgraded version of cable TM-3. They are 100% functionaliy comparable. For the difference of TM-3 all wires are coaxial, except power wires.

FOTO OF CABLES AND PLUGS



ver. 1.01 - 19.8.2009

Mechanical construction

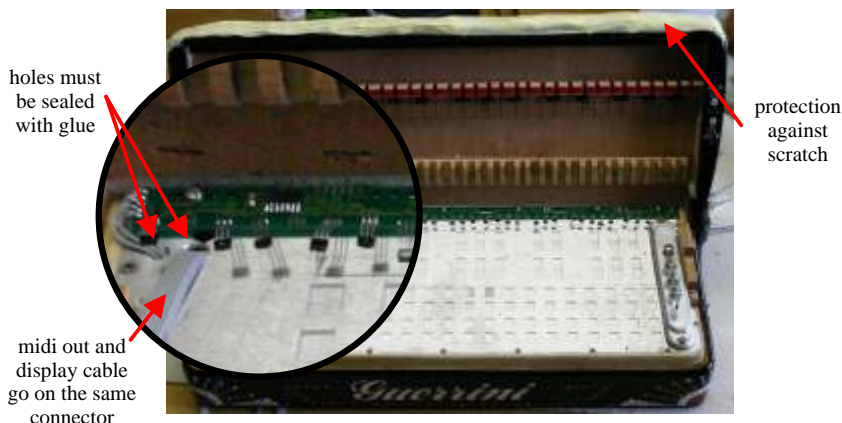
Installation

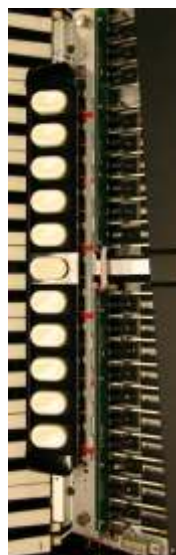
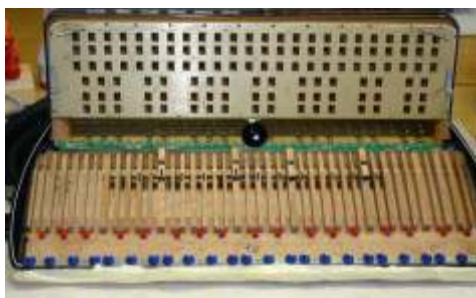
For stable and reliable working of MIDI system the quality and way of building PCBs with sensors is very important.

- The most important is to find the right place and way of fixation PCBs.
- The best way to fix PCBs with sensors is to fix them on unmovable construction of accordion. It is not recommended to fix it on registers, cover of accordion,...
- All screws must be good fixed. It can be sealed with unscrewing paint. During playing screws can be unscrewed very easily because of vibrations.
- For greater mechanical stability of PCB and security it is recommendable to paste a connections with base. This is possible to make with some points of two component epoxy glue. That prevent any kind of movement or vibration of supported PCBs for sensors.
- If PCB is screwed on metal base, it is needed to place under PCB some plastic or paper insulator washers. Sometimes is recommendable to protect PCB with insulating scotch tape along whole length.
- If PCB is fixed allong whole length on flat base, you can glue it along whole length with double side scotch tape and then fix it with screws, or/and with points of epoxi glue at edges.
- All boreholes (with cables and pipe for pressure sensor) must be good sealed with liquid glue.
- We build output connector usually at the bottom on right cover of accordion. We make a hole easy with a custom press.



Press for making a holes for output connector





ver. 1.01 - 19.8.2009

Cable through bellow

- Cable must be paste on every fold. With that you reduce amplitude of movement and you extend lifetime of cable more as twice.
- Pay attention that cable does not come in to a fold of bellow. In this case it will soon break off.
- Paste beginning and end of flat cable, if it is possible, on unmovable fold or below frame. With that you prevent movement of cable on connector and also 100% protection to switch off the connector.
- Cable must be always paste with original scotch tape which is recommended by TOTTER MIDI.
- If is possible, at diatonic accordion cable should be paste on side without bass reed on bass side. (on side where valve is).



Diatonic accordion left side (MIDI and microphone system)



Accordion left side without microphone - only 5 pin bass MIDI cable

- Cable on both side of below must have connectors.
- Connectors should be oriented in a direction of disconnection. If someone, who don't know about cable in a bellow, open an accordion and accidentally pull the cable, it will be unplugged without it to tear.
- Connector can be mounted separately in accordion or used this on MIDI processor. It depends on position of MIDI processor and how many cable come from below. (if on left side is microphone or not)



Diatonic accordion right side (without microphone system)
Cable through bellow go directly on MIDI processor.



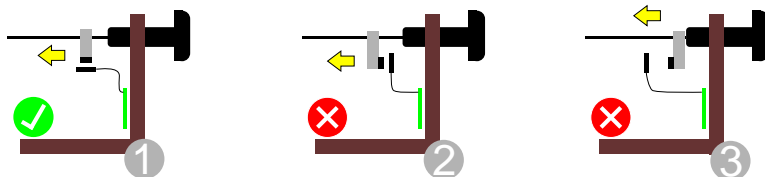
cable position
through bellow
above valve

Diatonic accordion left side (without microphone system).
The first two reeds are under below fold and cable is over a valve.

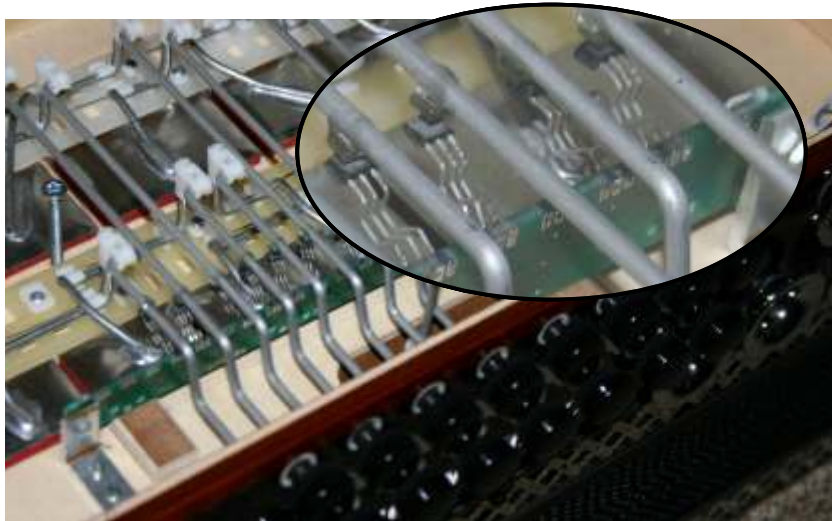
Bass mechanics - diatonic accordions

Move a bass and chord buttons by diatonic accordions are normally big. They are almost always not exact.

- The first picture shows the best position of the sensor and magnet. We recommended this version always if it is possible.
- Principle displayed on second picture operates well, but if someone pull the button a little more out, sensor can be removed for allways. Sometimes lever vague and fast releasing a button can make the same effect as pulling the button out.
- Principle from third picture need stronger magnet. With too weak magnet or too big movement, it is sometimes impossible to find a right position at the beginning of move. Sound plaies later. Accordionist can become a feeling of delay.



Pictures show a three principle of mounting an sensors and magnets. The first and second pictures show working on DEVIATE principle and third show working on APPROACH principle. All sensors of one side (left or right) must operate at the same principle. It must be set in a software.



Diatonic accordion left side (magnets are pasted direct to the button holders).

Bass mechanics - chromatoc accordion

Chromatic accordions normally have a two types of bass mechanics - standard and compact (like by Hohner Atlantic).

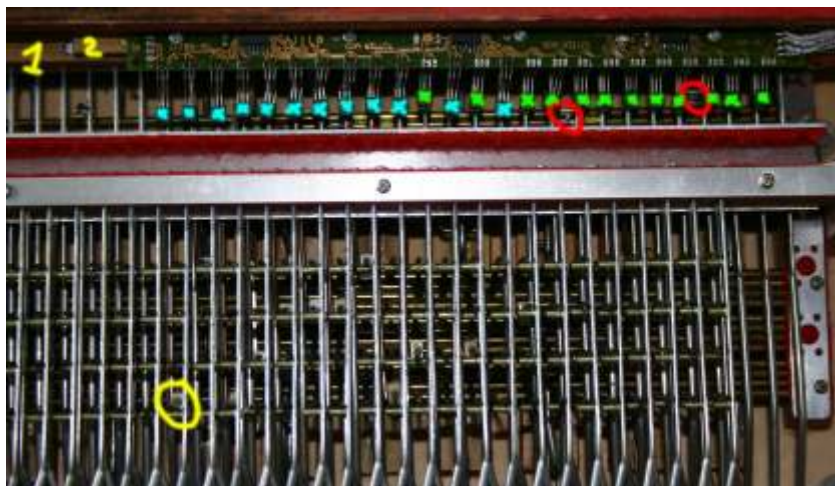
Standard bass mechanics

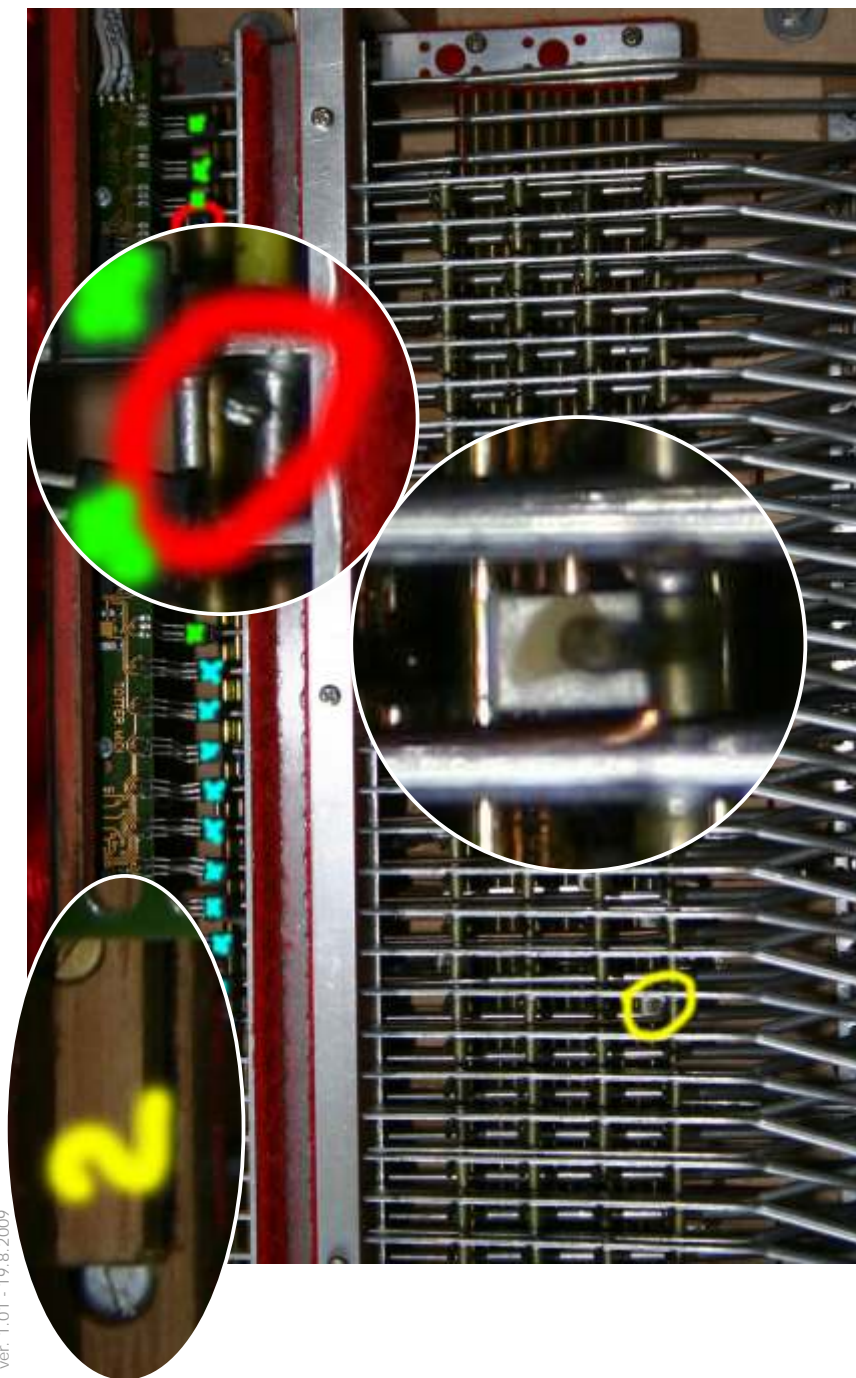
It is more possibilities how to install MIDI in standard bass mechanics. We make allways on bottom described principle. It is allways possible to realise and work stable. But it is a little more work.

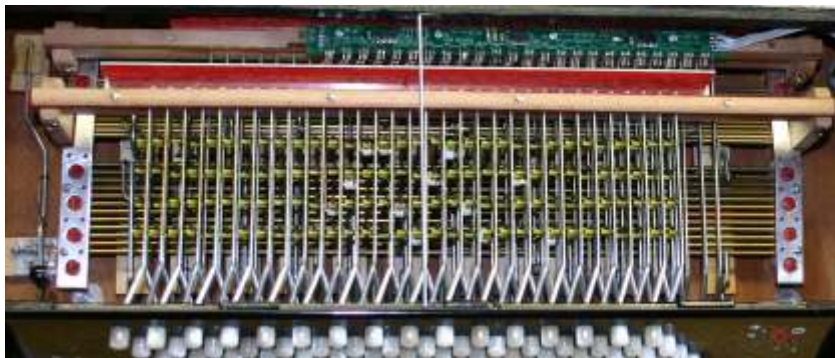
- Remove all chord holders from bass mechanics. (The top part of the mechanics.)
- On all 12 bass holders, which are under bass sensors (marked green), must be rivetting a second original rivet. (On picture marked red.)
- Replace cover of bass holders with rectangular wooden cover. (On picture marked with yellow number 1.)
- Make small rectangular wooden cover which will hold 12 new chord holders for MIDI. On bottom side of this wood (or top side of wood numbered with 1) make 12 groves with small round file. Places are paralel with blue marked sensors.
- Each chord tone must become only one new holder. On each of 12 chord axle impale on a propriate position a tube and midi chord holder. On picture yellow circle. Tube is only for hold a distance.
- Over the top wooden cover screw bass PCB.
- Paste magnets with fast glue direct on new midi chord holders and direct on bass holders. Paste all magnets again with two component glue around holder for best mechanical strength. All magnets must be right oriented!
- Solder sensors on a propriate position. They must be right oriented!

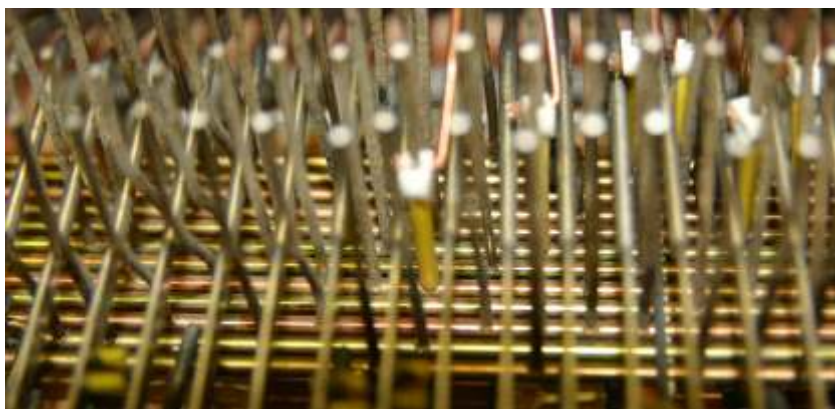
Recommendations

- Magnets should have enough space back from wooden covers. If someone full press bass or chord button it is possible that magnets crash with wooden cover. Magnet can fall out or holder can stay pressed.
- By rivetting make enough space between two rivets. If there is to much space, implate a tube on a rivet. If there is to few space you must repair. We recommended you make himself a small device which you can implate on existent rivet and then mark a position for drilling a second borehole.



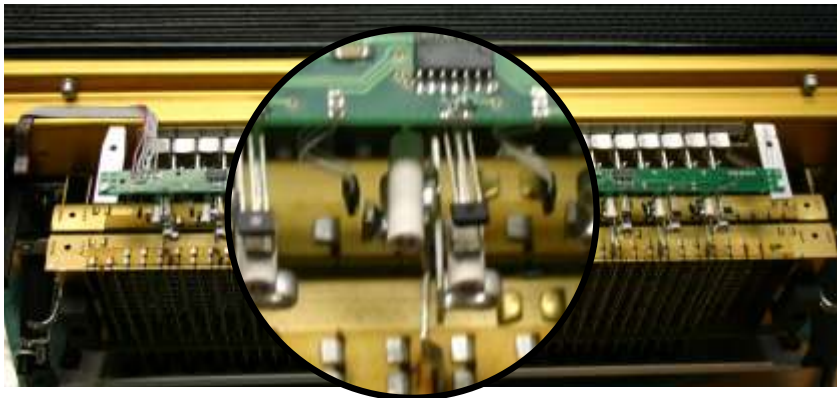
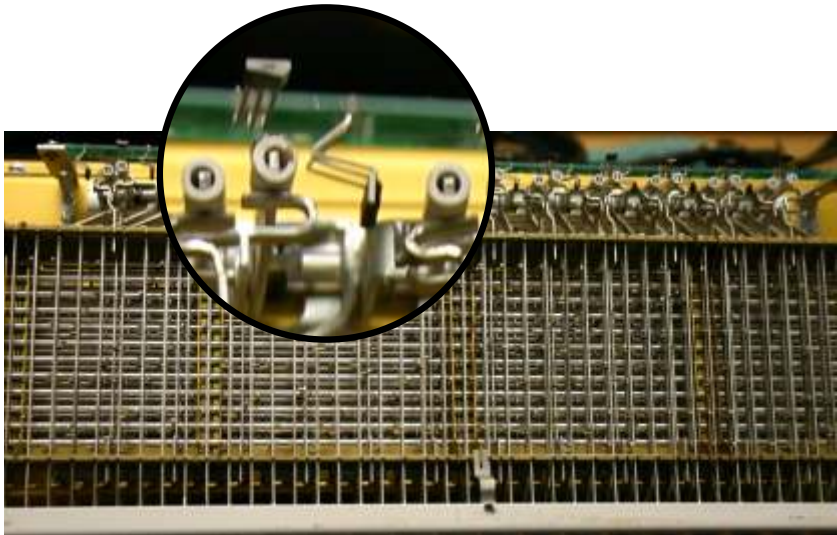






Compact bass mechanics

- Affix a bass PCB minimal three or better four times. On both sides and twice beside.
- Bass PCB should be mounted as close as possible with bass mechanics and not too high. Otherwise you can not close cover on the bass side.

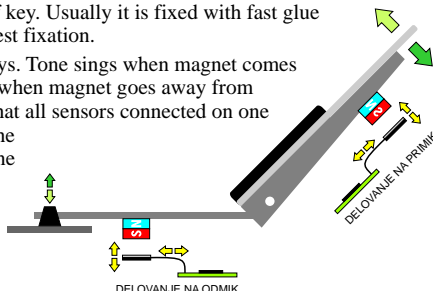


Sensors' installation

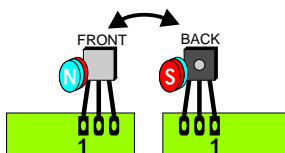
Positions of keys and buttons are measured with hall sensors. They are soldered each time depends on type of accordion and on carrier PCB. Not all places on PCB have sensors. Some can be empty - without sensor. It depends on mechanical construction.

Sensor can work on two manner. It can activates with approach or with deviate a magnet. Magnet is attached on movable part of key. Usually it is fixed with fast glue and later with two component epoxi glue for best fixation.

- System can be configured on two ways. Tone sings when magnet comes closer to sensor (approach) or reverse, when magnet goes away from sensor (deviate). It is very important that all sensors connected on one port (treble or bass), are configured the same. Mixing of working manner on one port is not allowed. It is possible that PCB on right side works differently that PCB on left side. For example on right side on approach and on left side on deviate manner.

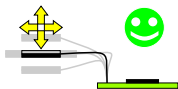


- It is very important how sensors are turned. The rectangular pin on PCB is pin 1. Pin 1 is connected on IC. Pin 2 in the middle is mass and third is output. If pins will be soldered wrong, sensor will not work! The same is with magnet. If magnet is turned around, sensor will not work.

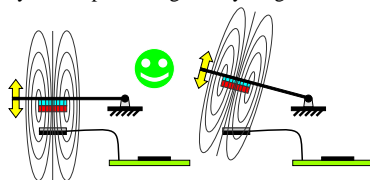
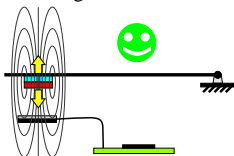


Definition of magnet orientation in compliance with reference magnet.

- For stabile working you must assure big enough move of magnet.
- You addapt legs of sensor in a way that they are allowing positioning in all directions.



- Sensor's position must be under magnet in a way that at pressuring on key magnetic field is changed. Just this assures stable working.



- On picture we see example when denseness of magnetic field on a sensor with pressuring on key is practicaly not changed. When key is pressed magnet is nearer to a sensor but it is under angle. When key is released magnet goes away and changes position (right-angled on a sensor).

