My Main Pedalboard

Andreas Fischlin, last modification 18.Oct.2021

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Overview

This is a heavily custom built pedalboard based on the PedalTrain Classic 1 pedalboard. The pedalboard fits still easily into the Pedaltrain tour case.

The pedalboard centres on the Line 6 HX Effects and is complemented for bass amp and cab simulations by a Zoom MS-60B MultiStomp Bass Pedal. This pedalboard features the use of two instruments, my e-cello (connected via cable to the red jack in the top right corner) and my bass (connected wirelessly via the Line 6 G30 Relay system). The board offers to control my Trace Elliot bass amp AH1000-12 with the BFC-6 foot controller. Finally the board has an expression pedal connected to the HX Effects and the board supports the 4-cable method (e.g. How to Use the Four Cable Method - Guitar Gear Finder).

From top left to bottom right:

- (0) AC power cable (accepts any voltage, ≤ 6A);
- (1) 8-pin cable for the BFC-6 footswitch Trace Elliot (AH1000-12) pre-amp foot controller;
- (2) BFC-6 footswitch Trace Elliot (AH1000-12) pre-amp foot controller;
- (3) Input for the e-cello coming from the tripod (red Neutrik jack);
- (4) 4-cable method cables (very right, side panel, see also below);
- (5) power cable for the Line6 HX Effects;
- (6) USB cable (green-blueish) for the Line6 HX Effects;
- (7) audio cables of the Line6 HX Effects (see below);

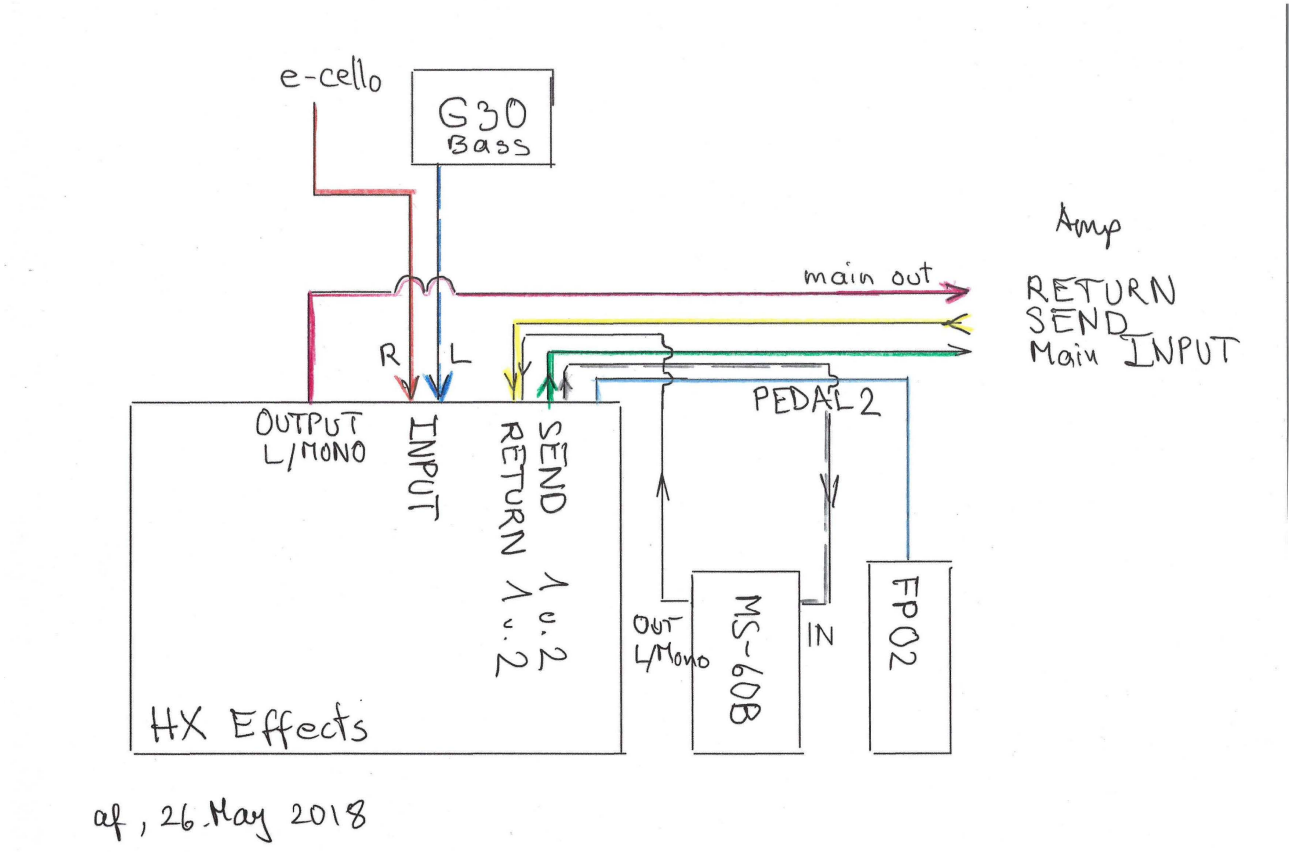
(8) Power cable (9V DC) for the Line6 G30 receiver (for the bass);
(9) Line6 G30 receiver (to receive the bass signal);
(10) Zoom FP02 expression pedal with white TS cable (not TRS);
(11) Line 6 HX Effects;
(12) Power cable of Zoom MS-60B;
(13) USB cable (black) of Zoom MS-60B;
(14) Output of Line6 G30 receiver (sending bass signal to HX Effects' INPUT L/MONO;
(15) Output (black-gold cable) connecting to RETURN 2 of HX Effects;
(16) Zoom MS-60B multistomp;
(17) Input (black-white-gold cable) connecting from SEND 2 of HX Effects;

(18) A dangling AC power cable with a female jack that offers unswitched power (not shown on the photo as added only in fall 2021);

Note, the Zoom FP02 expression pedal connects to PEDAL/EXT AMP 2 jack of the Line6 HX Effects (polarity reversed, HX Effects Global Settings > Pedals).

Signal flow

The pedalboard supports the so-called 4-cable method (but using only for the e-cello 4 cables, since the bass is connected wirelessly the bass signal uses only 3 cables out of the 4):



The audio cables of the Line6 HX Effects (from right to left, the sequence seen by the player (connections on the left of MIDI sockets in above picture), from top to bottom):

- RETURN 1 (yellow cable of 4-cable method);
- SEND 1 (green cable of 4-cable method);

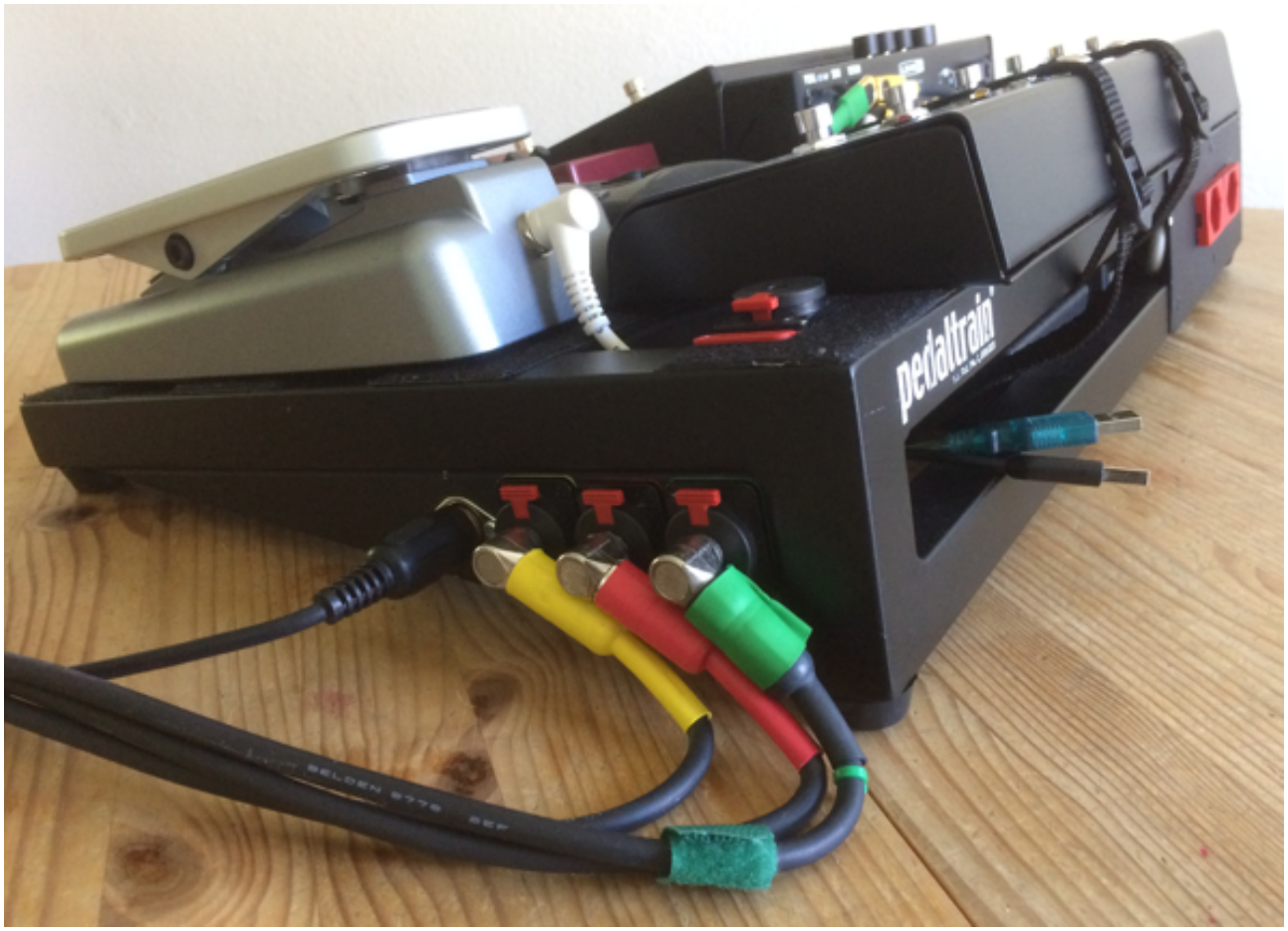
- OUTPUT L/MONO (red cable of 4-cable method, in diagram shown below the blue CABLE 4);
- INPUT RIGHT (red black cable going to the jack in the top right corner of the board carrying the e-cello signal);
- INPUT L/MONO (blue-black-gold) coming from the Line6 G30 receiver carrying the bass signal);
- RETURN 2 (black cable) coming from the mono output of the Zoom MS-60B
- SEND 2 (black-white cable) going to the input of the Zoom MS-60B

Diagram from Roland's [The 4 Cable Method (4CM) - What It Is and How To Use It Correctly - Roland Australia | Roland Australia] explaining the 4-cable method:

Custom built right side panel offers jacks for the yellow, red (in above scheme blue), and the green cable as needed for the 4-cable method. The jack on the top is for the e-cello.

The board supports the four cable method fully. Note, audio cables are as far away as possible from AC power to avoid hum and all audio connectors are placed in the opposite top right corner.

I used Neutrik DSS lettering plates to color the black locking Neutrik jacks.



The cables used for the 4 cable method: green goes to the main input of the amp; red goes to the return of the amp's effect loop; and yellow comes from the send of the amp's effect loop. An instrument cable can be connected on the top of the board in the top right corner (e-cello).

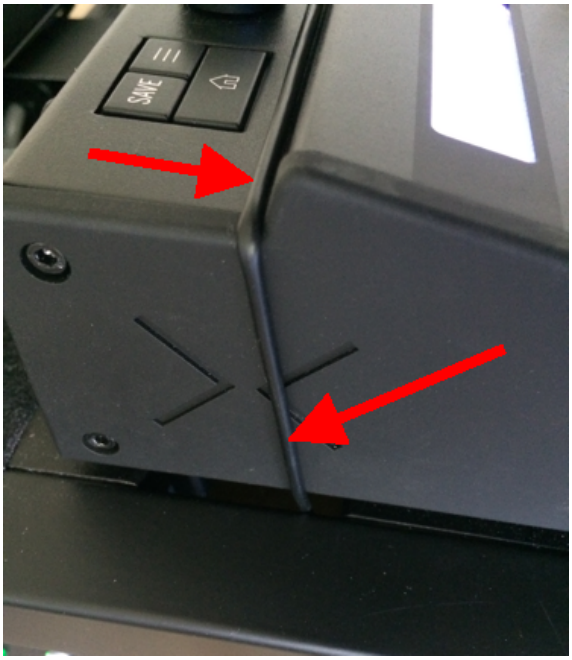
The black 8-pin cable (very left) connects the BFC-6 footswitch to the Trace Elliot amp Amp AH1000-12.

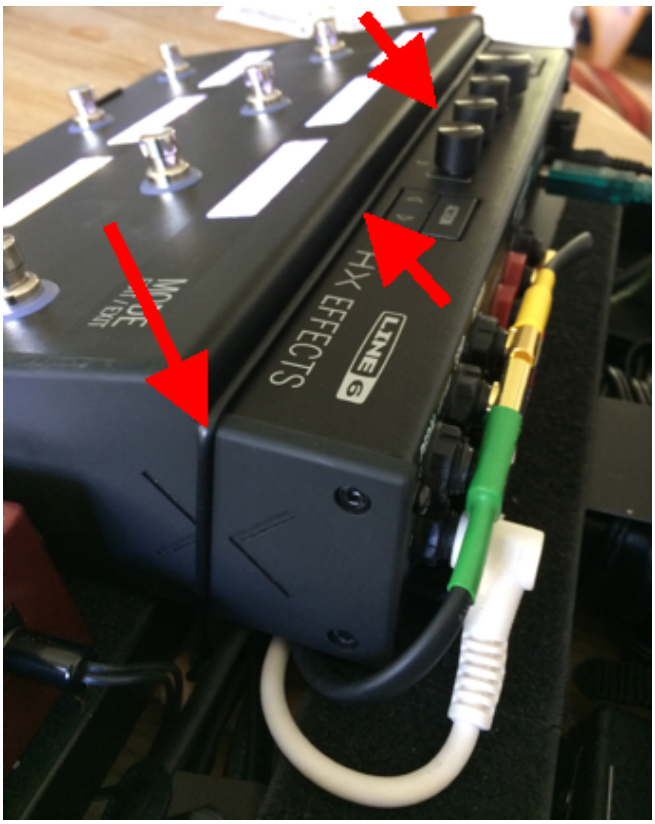
Dangling USB cables (front, right) connect to the Line 6 HX Effects (blue-greenish) and the Zoom MS-60B (black). They are offered for editing and managing those two devices from a Mac or PC using a USB extension cable.

Device mounting

Except for the Line 6 G30 receiver all devices can be easily detached from the board without getting the velcro tape on the bottom of the devices loose.

The Line 6 HX Effects is hold to the board via the two brackets (shown above) that are screwed to the very front rail of the pedallboard and a black wire (not visible in above picture).





The wire goes horizontally just below the top row of the HX Effects' buttons and device label (see view from the top). In above pictures the red arrows point at the wire (left picture shows the left side of the HX Effects, the right picture the top and right side of the HX Effects).

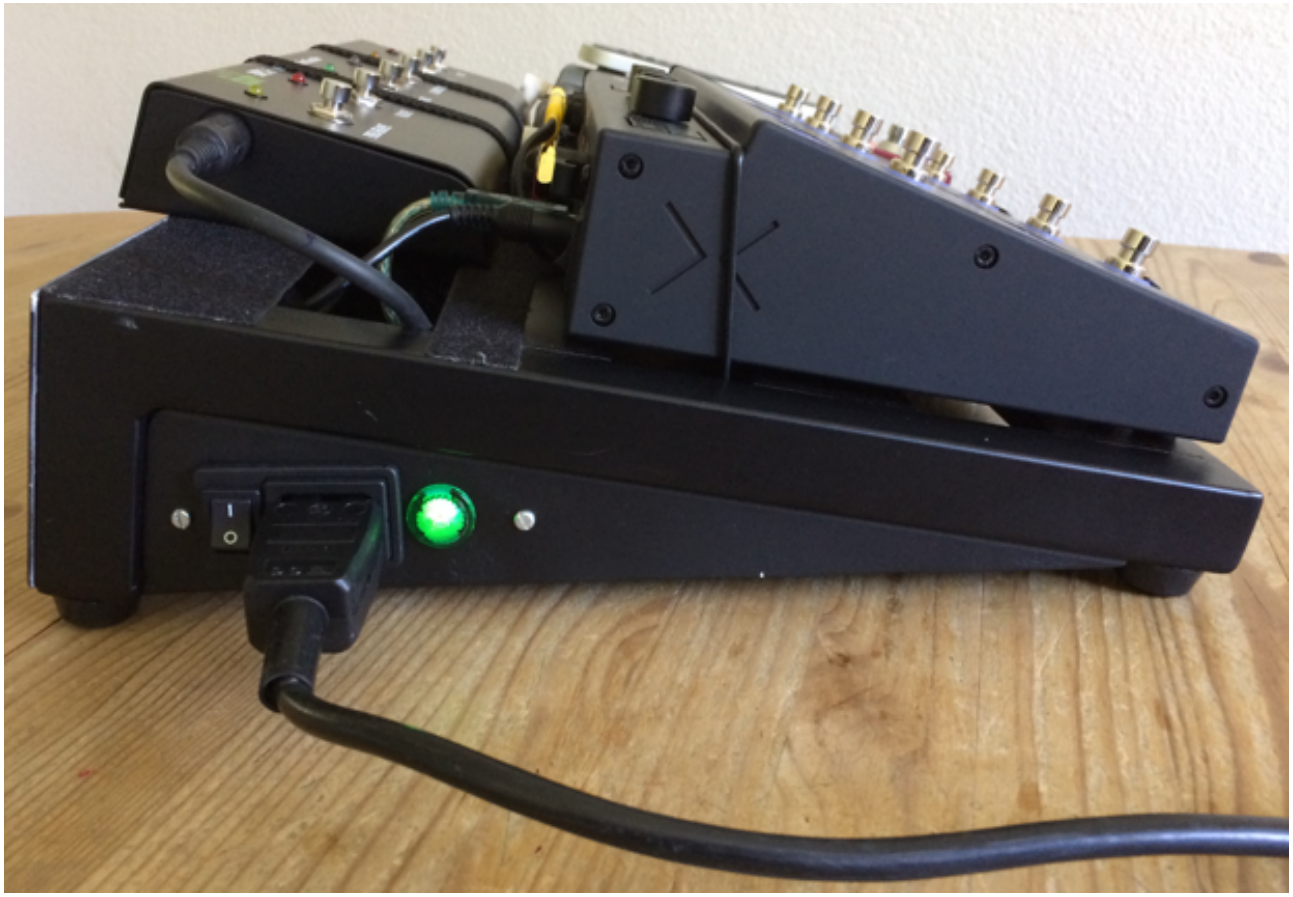
The Zoom MS-60B and the Zoom FP02 expression pedal are mounted using customized Temple Audio Design Medium Pedal Plates, one each (Quick Release Mounting System). The pedal plates need to be slightly customized in terms of filing off the little feets in the corners on the bottom side of the plates, since the Pedaltrain rails have no holes in contrast to the Temple Audio Design boards.

To mount these pedals I needed also to build little metal plates that fit exactly between two rails of the Pedaltrain board offering 3 holes to accept the main screw of the pedal plate:

See also below section «View from underneath»

Two simple straps going around the BFC-6 foot controller and the top two rails of the pedalboard hold the foot controller in place without needing the velcro easily coming lose at each detach if merely glued to the bottom of the pedal. Alternatively I could also use two Temple Audio Design Large Pedal Plates for easy detachment, yet holding firmer to the board.

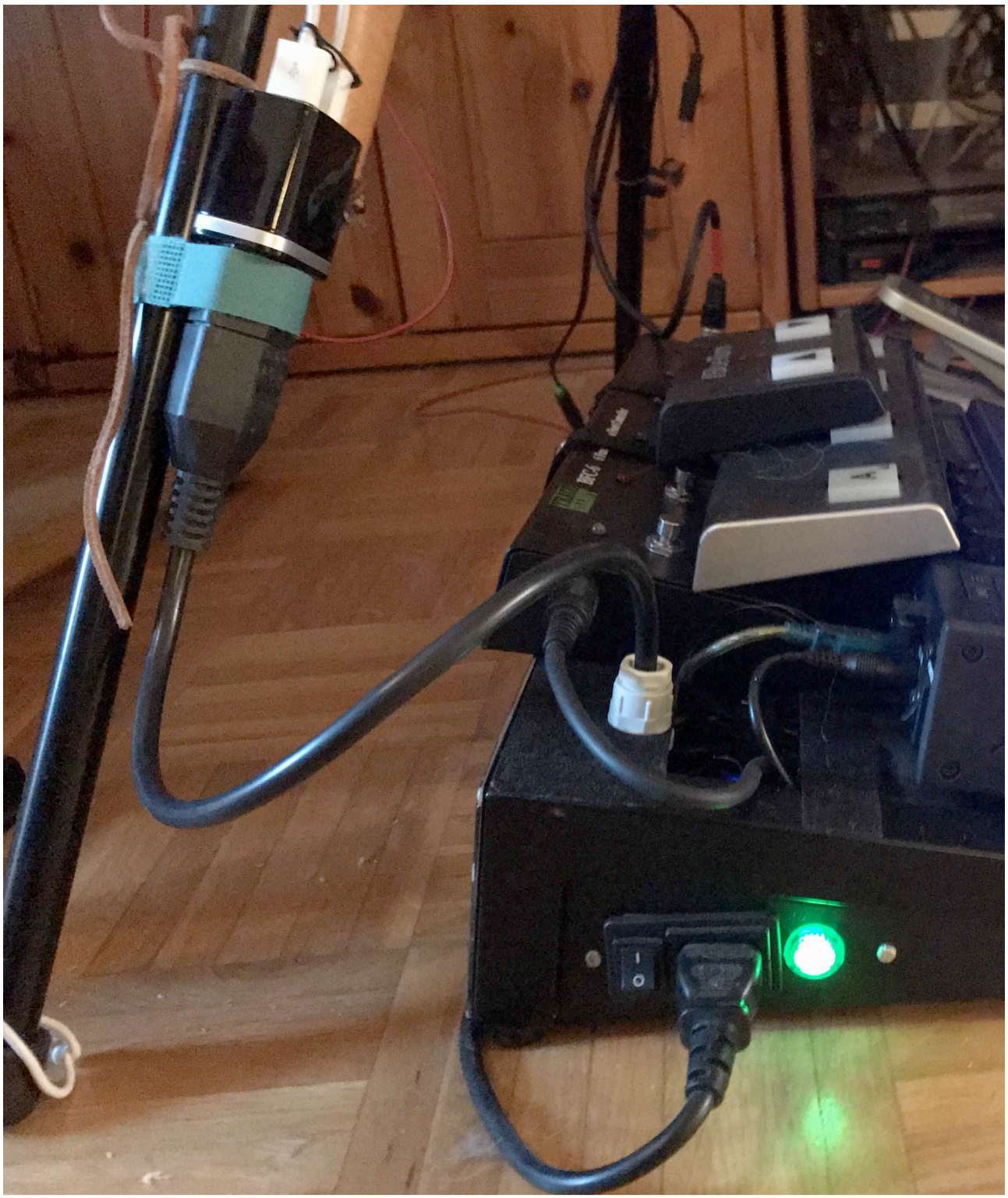
Main AC Power



The pedalboard accepts any voltage (110, 220 or 240 V AC) and is designed to work with a current up to 6 A (no fuse). The custom side panels offers also a switch and a green control light signalling power on/off state.

Note, above pictures were made before I mounted a dangling power cable permanently providing power as shown below:

The dangling power cable with a female jack provides permanently power (with ground) and is not switched. It can serve to power e.g. iPads as shown below using a USB charger with two USB-A outlets regardless of the switch's position.

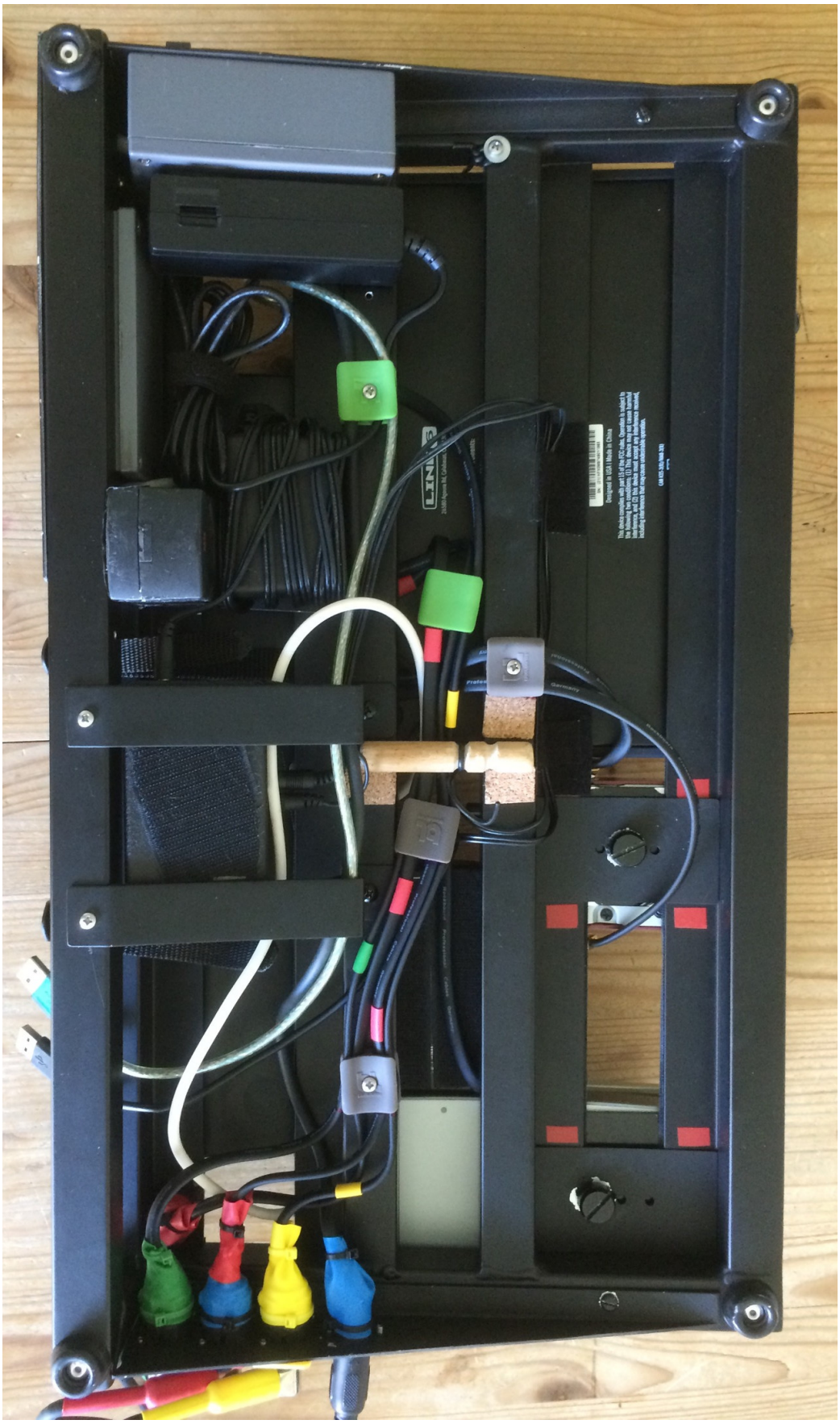


Two red Swiss SEV 1011 sockets (with ground) are offered for extra power needs at the front. On stage I typically use one of these sockets to connect the USB power supply for the light of my e-cello, essential on a stage with little light.

The HX Effects needs its own power supply to avoid any hiss. But all other devices can easily get their DC power from the Dunlop DC Brick mounted underneath

using the Pedaltrain Universal Mounting Kit:

View from underneath



(1) AC power distributor case. The case holds the Inlet Module Connector Male Power Socket with Switch to accept AC power from the outside of the board. This case offers a NEMA 1-15 ungrounded (Type A) North American switched power socket in its lid. Note, there are two cables providing power to the outside of the case (not visible in above photo): The first provides switched power to case (3) (see below) and the second provides grounded unswitched power to the cable with a Swiss SEV 1011 type female jack dangling from the top of the board, e.g. for charging devices also while the board itself is switched off (see photos above);

(2) Power supply of the Line 6 HX Effects (plugged into the power socket in the lid of (1));

(3) Lid of the case that contains two extra Swiss SEV 1011 type red power sockets (with ground, switched) mounted to the front panel (see above view from front);

(4) Power distributor custom transmogrified from an ordinary power strip providing two Swiss SEV 1011 type power sockets (with ground, switched, gets power in series from case (3), only bottom socket in use as (5) covers the other socket);

(5) Power supply (wall-wart type) of the Dunlop DC Brick (having its extra cable wrapped around it and plugged into the bottom socket of (4));

(6) Dunlop DC Brick (provides standard 9V DC power for the Zoom MS-60B and the Line 6 G-30 Relay receiver);

(7) Pedaltrain PT-UNI-MK Universal mounting kit used to hold the Dunlop DC Brick (6);

(8) A small wooden stick with a wire around it. The wire holds the Line6 HX Effects device to the pedalboard (see above). Turning the wooden stick by 90 ° sidewise (horizontal) allows to free the HX Effects and to easily remove it from the pedalboard. When mounted, the wooden stick is hold in place by three cork plates stuck to the pedalboard rails plus the left bracket of the Pedaltrain Universal mounting kit. Note, in addition to the wire there are also two brackets at the bottom

of the HX Effects that hold it to the pedalboard (see above picture from the pedalboard front facing the player);

(9) Cable holder ensuring that cables do not disconnect from the jacks they are soldered to. Note, the 4 cable method cables and the amp footswitch cable are merely soldered to the Neutrik jacks mounted to the right side panel. Shrink tubes help to protect those connections, but without the cable holder cables could possibly too easily break off;

(10) Simple metal plates with holes to mount the Zoom MS-60B and Zoom FP02 expression pedals to the board. The screws are from Temple Audio Design medium pedal plates having the 4 corner feets filed off.

Note, audio cables are kept away from the AC power as much as possible. AC power is constrained to very left bottom corner and is only in (1), (3) and (4).

Appendix - Design details

Basic arrangement

I decided for following design:

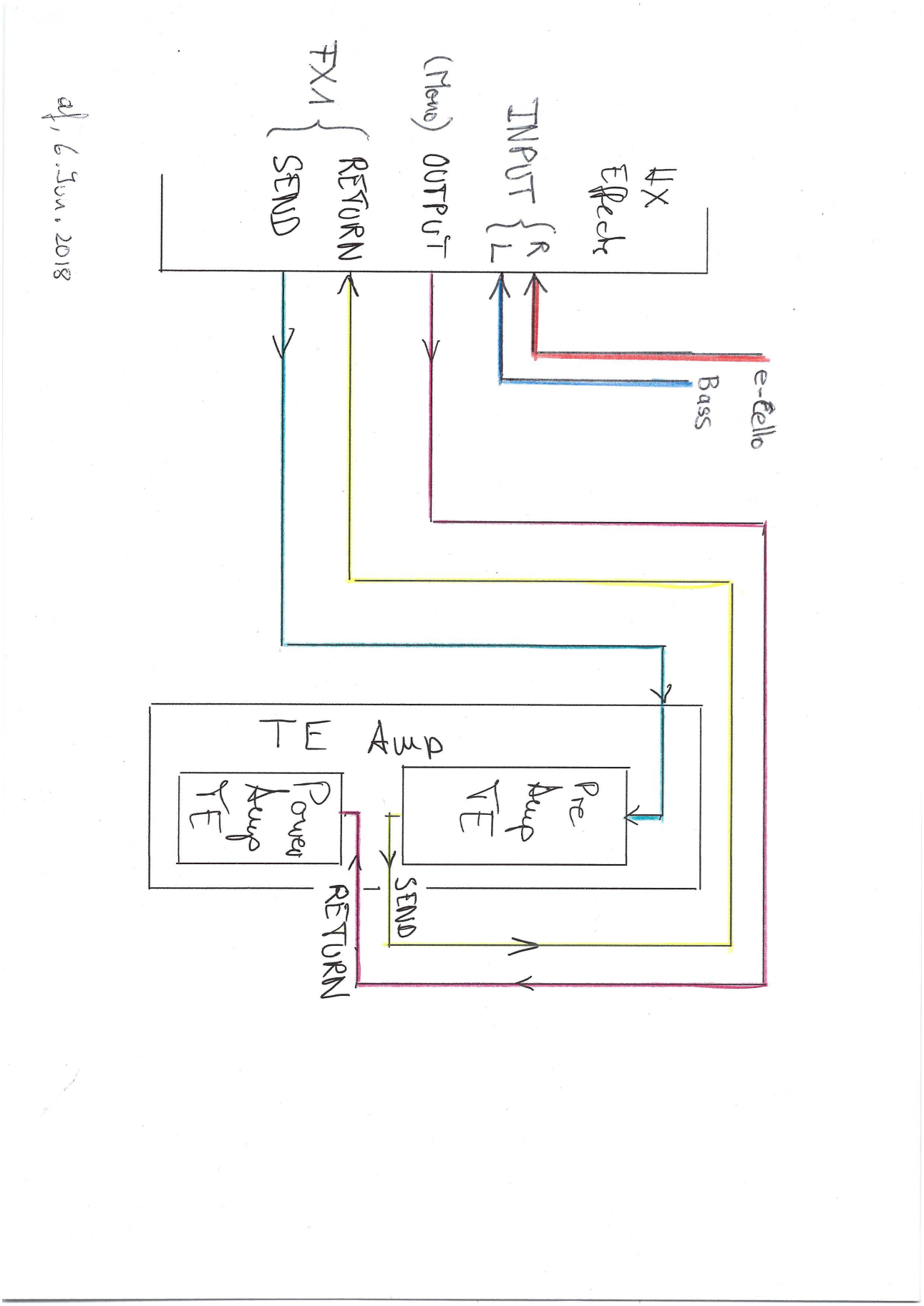
where at least the HX Effects and the MS-60B are to be mounted in a removable manner. From the existing main pedalboard (‘ROCKCase RC23020A 80x50x12’) I would scavenge:

- Dunlop DC brick
- Expression pedal Zoom FP02
- Zoom MS-60B
- Line 6 G-30 Relay receiver
- 1 long instrument cable with right angle on one end for 4-cable method

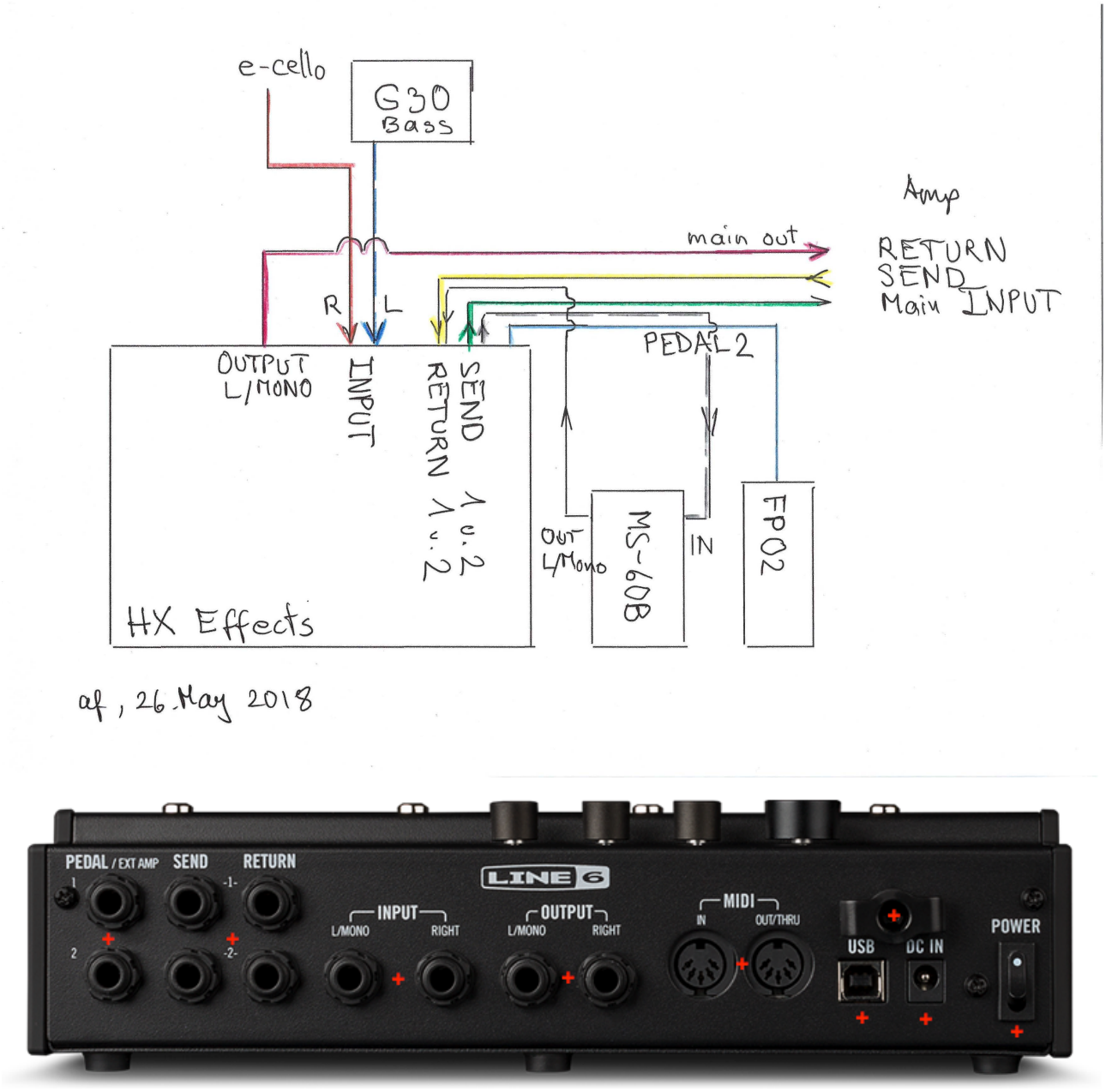
I purchased in addition:

- Trace Elliot BFC-6 foot switch (w. cable)
- Line 6 HX Effects

4-cable method



with following signal flow

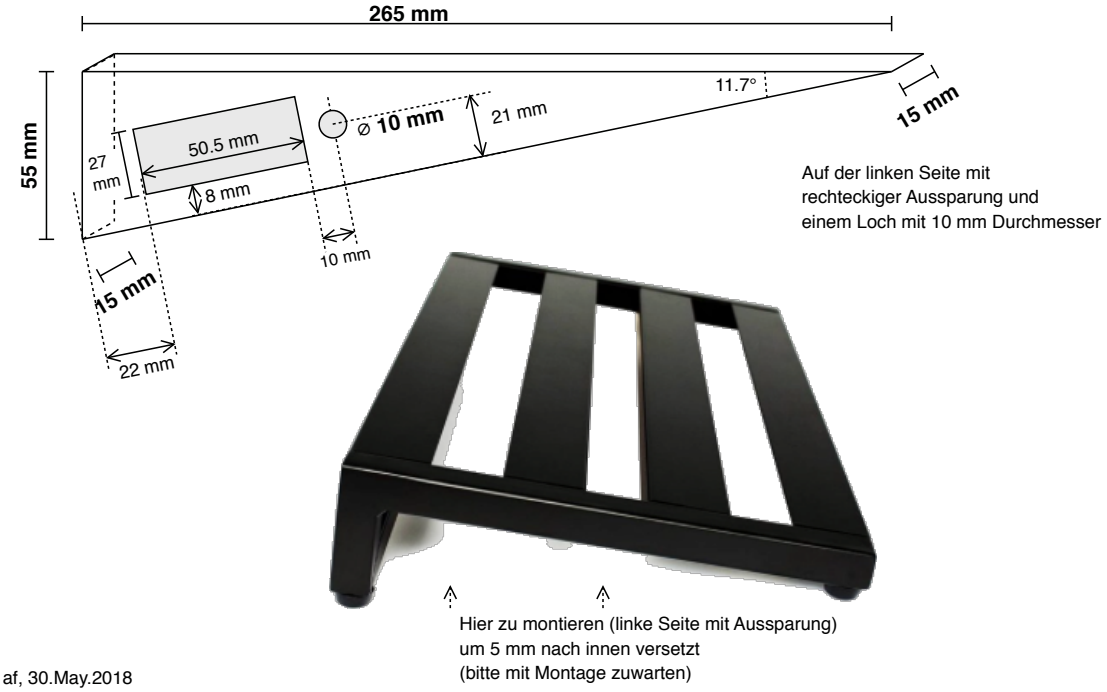


Using FX LOOP 1 for the preampt of the Trace Elliot 1000-12 and FX LOOP 2 for the Zoom MS-60B. See also [The 4 Cable Method (4CM) - What It Is and How To Use It Correctly - Roland Australia | Roland Australia]

Side and front panels

I have designed the two side panels and the front panel and had it custom built by Albis Metallbau GmbH, [Albis Metallbau GmbH - Metallbearbeitung]. I provided to that firm following specs:

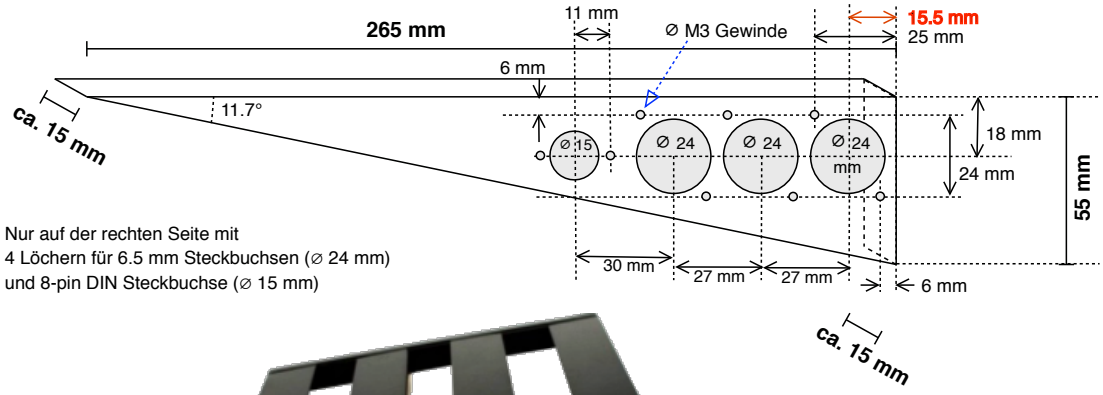
Seitenwände für pedaltrain board Classic 1 (linke Seite)



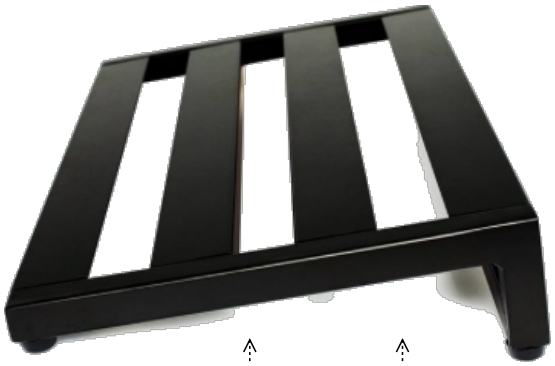
af, 30.May.2018

The round hole was too small to fit the final indicator light, requiring a hole with 16.5 mm diameter instead of the one shown above of only 10 mm diameter.

Seitenwände für pedaltrain board Classic 1 (rechte Seite)



Nur auf der rechten Seite mit
4 Löchern für 6.5 mm Steckbuchsen (⌀ 24 mm)
und 8-pin DIN Steckbuchse (⌀ 15 mm)



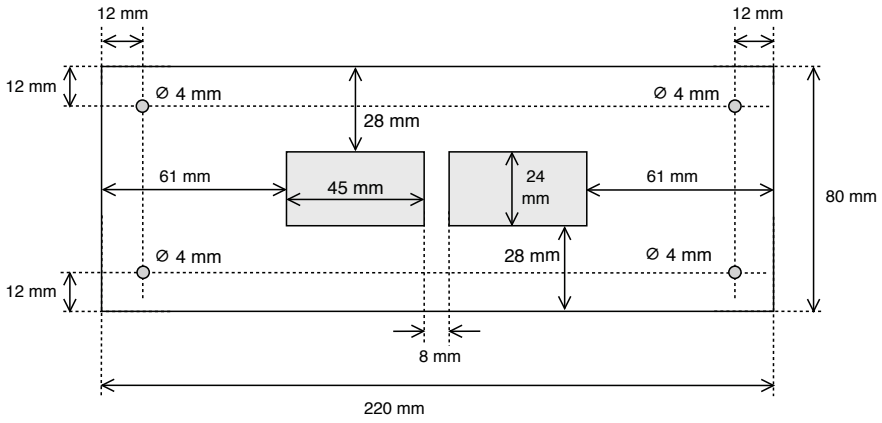
Es ist leider unvermeidlich gewisse Masse auf einen halben mm genau anzugeben, da die kleinen Montagelöcher der Neutriksteckbuchse einen Eckabstand von 3.5 mm haben.

Hier zu montieren (rechte Seite mit 4 Löchern)
um 5 (noch lieber um 7) mm nach innen versetzt
(bitte mit Montage zuwarten)

af, 1.Jun.2018

Frontblech

ca. 1 mm dick

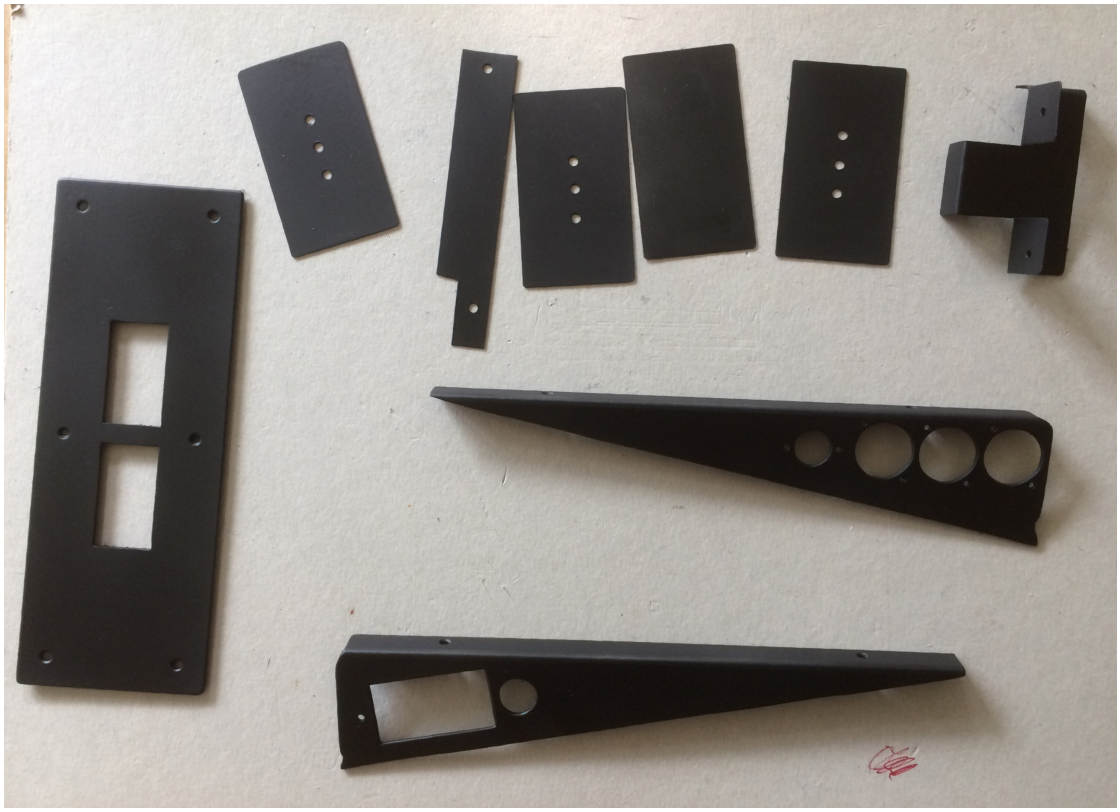


4 Löcher je 4 mm Durchmesser (je 12 mm Eckenabstand)
2 rechteckige Aussparungen 45 x 24 mm (zentriert, wichtig nur 8 mm Zwischenraum)

af, 31.May.2018

Painting the side and front panels was time consuming, since I first did not use any primer. I had to remove all paint directly applied to the metal parts. Using a special primer paint for aluminium did help greatly. The black paint sticks now much better to the panels and plates.

All the metal parts that I used and have mounted onto the pedaltrain pedalboard:



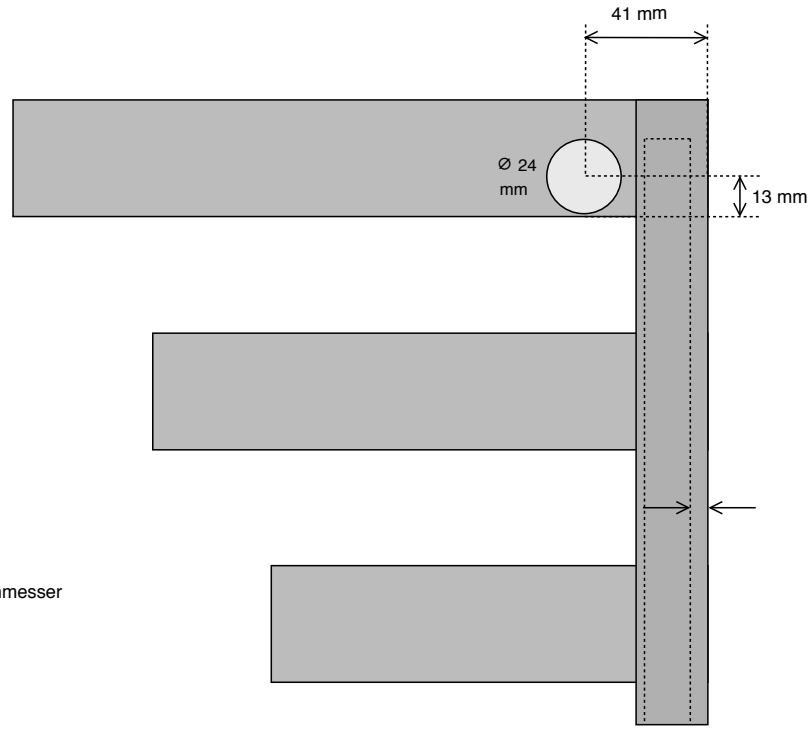
Except for the plates with three holes in the middle all parts are mounted permanently (left: front panel; bottom: left side panel (AC power corner); middle: right side panel (audio corner, 4-cable method outlets, Trace Elliot footswitch cable); for details of these plates see above).

Top: The plates with the three holes in the middle are used to mount devices onto the pedalboard, using the Quick Release device mounting technique from Audio Temple design (MS-60B, Zoom FP02). These plates were necessary to use underneath, since the pedaltrain does not provide the holes needed to screw a device onto the board. The plates fit exactly between two pedaltrain rails and offer in their middle holes through which a device on a Quick Release plate can be mounted in the same way as Audio Temple design mounts its devices onto its boards.

The remaining small parts in the top right corner are used to protect the high voltage power chords from any access (2nd longer plate from left, rectangular plate without holes in middle) and/or hold the small black power strip in place (as described below, top right corner).

A hole (“Loch rechts oben im Pedalbrett) was drilled directly into the pedaltrain board to accept the Neutrik locking chassis jack to receive the e-cello signal:

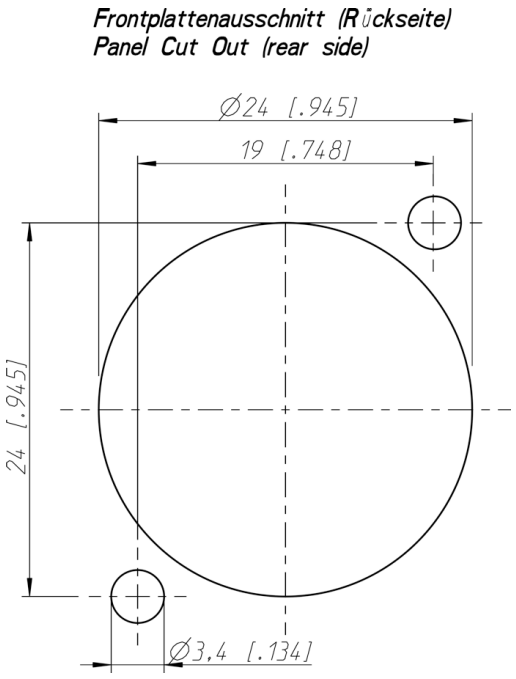
Loch rechts oben im Pedalbrett

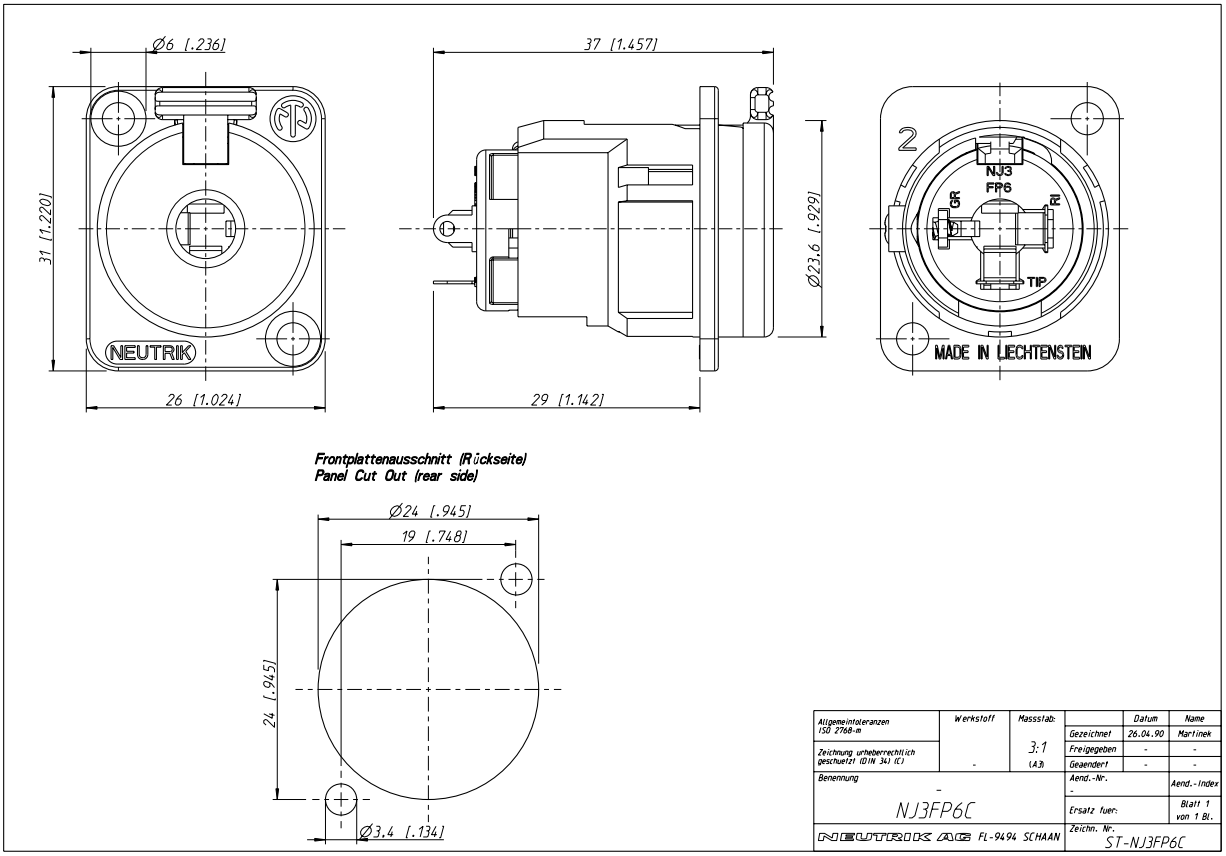


1 Loch mit 24 mm Durchmesser

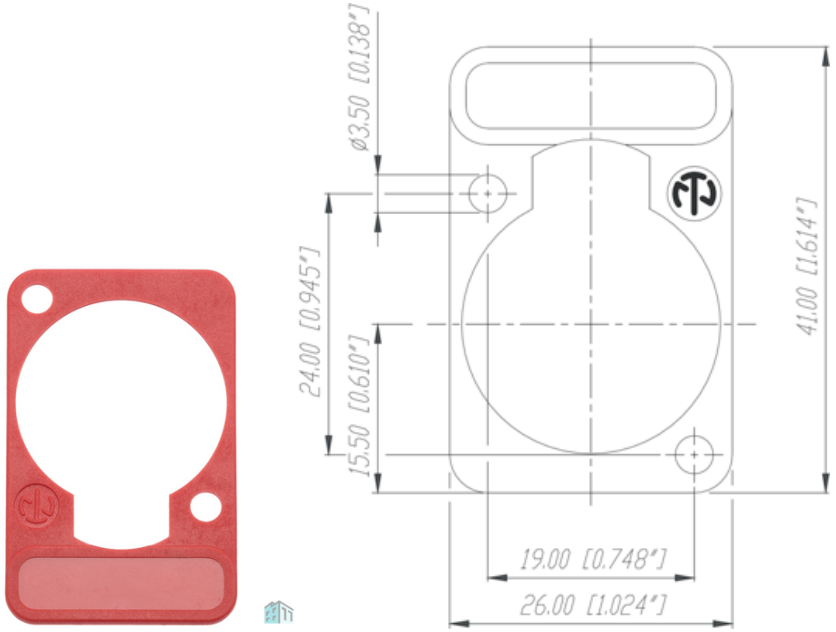
af, 1.Jun.2018

Locking chassis jack:





Neutrik DSS lettering plates

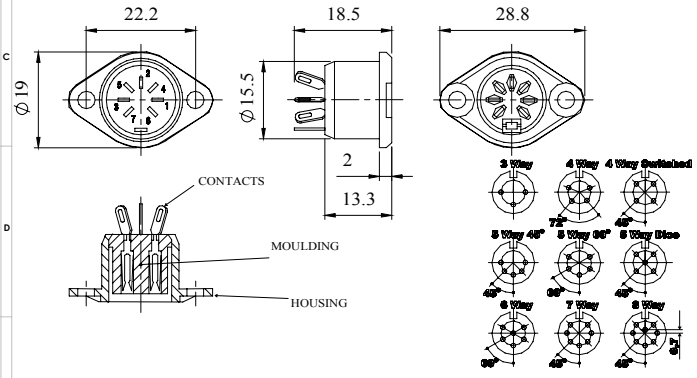


Bass amp foot controller BFC-6

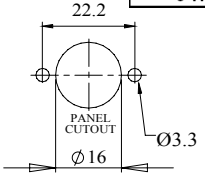
Materials	
Housing	Mazak
	Black Chrome Plated
Moulding	Lexan 500R
Contacts	Brass Silver Plated
Electrical	
Rated Voltage	34 V a.c. or d.c.
Current Rating	2A
Test Voltage	500 V r.m.s.
Insulation Resistance	103 MΩ min at 100 V d.c
Contact Resistance	10 mΩ max
Capacitance (mated)	3pF
Climatic	
Climatic category	25/070/21
Temperature Range	-25°C to +70°C
Damp heat, steady state	21 days

A range of professional chassis mounting sockets, designed for panel mounting via two flange fixing M3 screws. These sockets mate with all standard lockable plugs.

Dimensions



Type	Deltron No
3 Way	631-0300
4 Way	631-0400
4 Way switched	631-0410
5 Way 45°	631-0500
5 Way 60°	631-0510
5 Way Dice	631-0520
6 Way	631-0600
7 Way	631-0700
8 Way	631-0800



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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETRES
LINEAR TOLERANCE:
NO DECIMAL PLACES ±0.5mm
1 DECIMAL PLACE ±0.25mm
2 DECIMAL PLACES ±0.125mm
ANGULAR TOLERANCE: ±1°

FINISH: PROFESSIONAL FLANGED BLACK CHROME
DEBURR AND BREAK SHARP EDGES
IF IN DOUBT ASK
DO NOT SCALE DRAWING
MATERIAL: SEE NOTE

DRAWN BY: SPB
APPROVED BY:
THIRD ANGLE PROJECTION
SHEET 1 OF 1
SCALE 1:1
A4

TITLE: GENERAL SPECIFICATION 631 SERIES SOCKETS
DRAWING NO. 631 SERIES
ISSUE 07 Release

Colors of the wires within the Trace Elliot delivered cable seen from the front of a male plug:

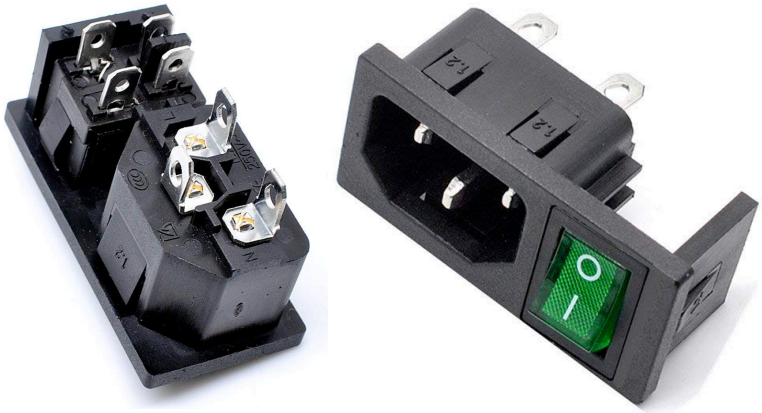
None of the pins is connected to the sleeves of the plugs. Only the center pin 8 is connected to the shielding of the cable. Analysis showed the following functionalities:

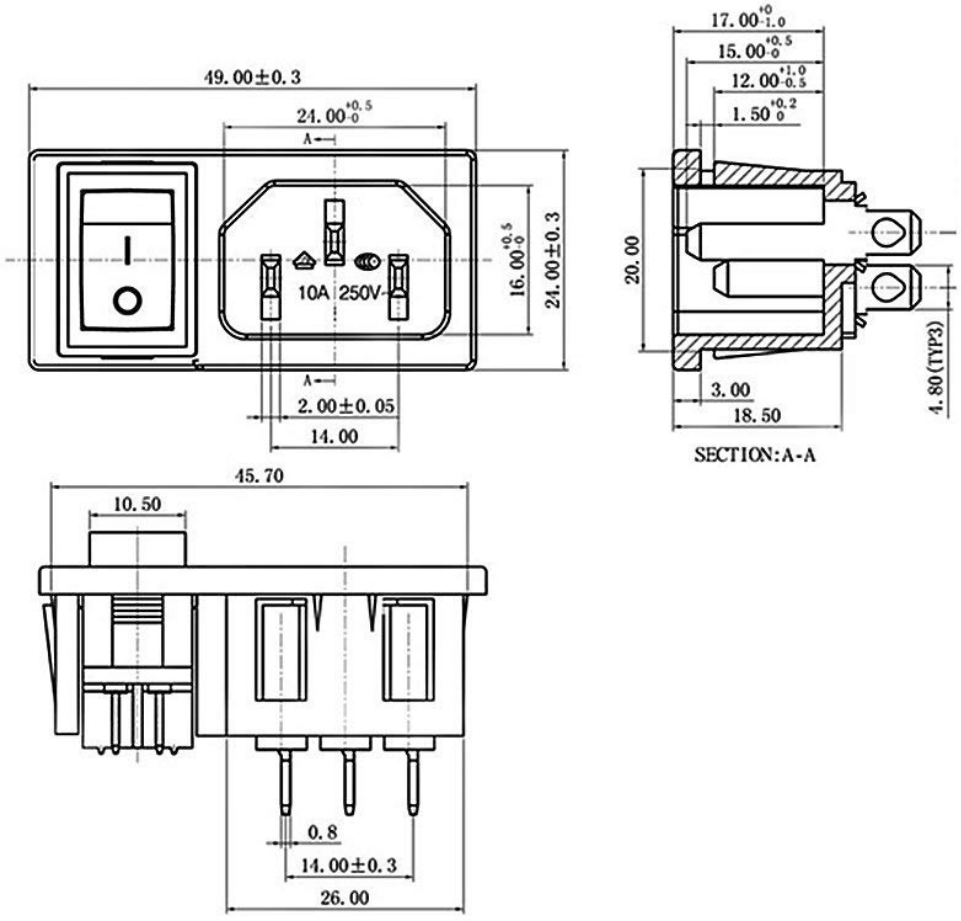
PRE-SHAPE: 7	red
VALVE: 3	blue
GRAPHIC: 5	yellow
2 “ground”	grey
COMPRESSOR: 4	white
LOOP: 1	black
MUTE: 6	green

Footswitches are non-latching and any connection between any pin 1,3,4,5,6,7 and pin 2 (“ground”) triggers the respective function to be toggled.

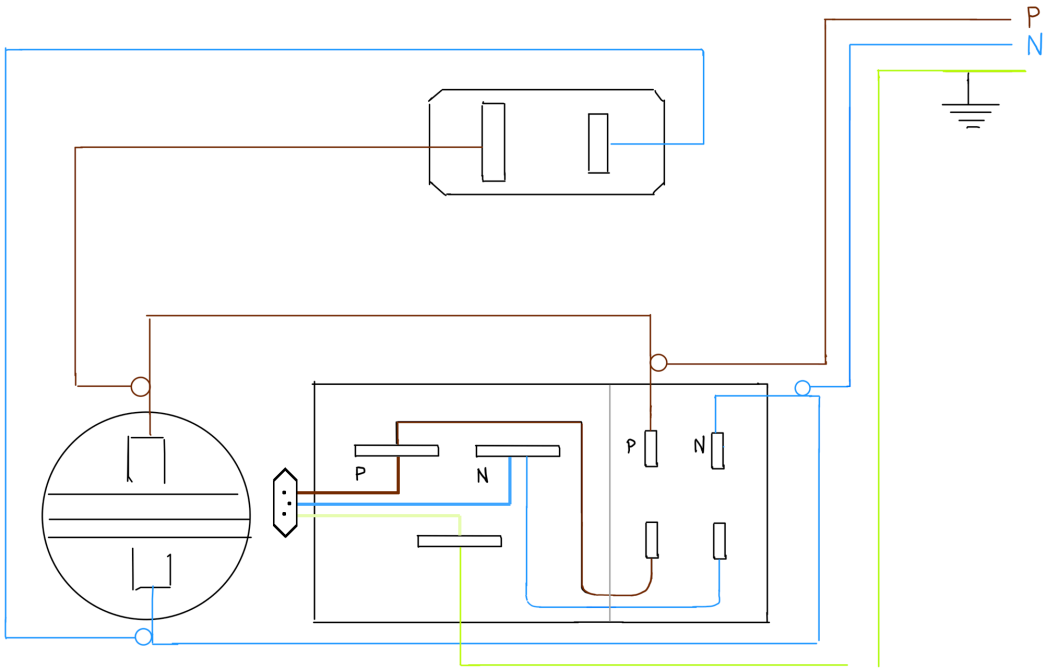
AC Power

An Inlet Module Connector Male Power Socket with Switch to accept up to AC 250V 10A (Green) and an indicator pilot light to signal power on/off state were used:





Here the wiring of the main power distribution case (1) offering also a North American socket outlet for the HX Effects power supply needing then no space wasting adapter:



There is a dangling female plug available for unswitched power carrying the full live, neutral, and earth signals. This serves to power devices, e.g. an iPad, mounted above the board while the pedal board is actually switched off. As iPads change their OS annually and Apple requires more than just power from any charger that can actually charge the device, I have chosen to go this path and not to offer USB A jacks mounted to the board. This solution allows to use any charger as new iPad OS' require.

The wires shown on the top right lead to the two red power sockets offering power to the "outside" of the pedalboard. E.g. I typically connect the light for my e-cello to one of those sockets. Those two red power sockets are mounted in a daisy chain manner to the front panel, and bring finally AC power to the "inside" distributor (see next).

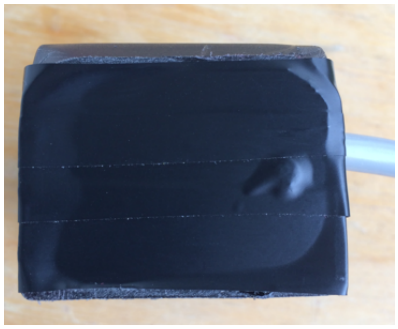
To power the "inside" of the pedalboard I wanted to offer at least two power sockets. I found at Jumbo a Max Hauri 3x T13 black (similar to the one shown below):

Max Hauri Safety-Line (Kindersicherung) - Abzweigstecker - Galaxus

It has a perfect height (note, these power strips vary slightly in height and some are impossible to fit into the board, others fit easily). The one I purchased sits very tight when using the power supply for the Dunlop DC brick.

I have sawed off two parts of the power strip to make it fit the board: Firstly the three prong plug and secondly the third socket to shorten the strip to fit underneath the board. Finally I soldered at the sawed off end an ordinary three wire AC power cable (in first picture the grey cable in the right bottom corner) to it. The cable is secured by a clamp (clamp and soldering shown in the 4th picture).

To have all safe I hid the hot and neutral remainders of the sawed off prongs inside the case, putting a small piece of wood between them and covering all with insulating tape (2nd and 3rd picture). The sawed off end of the strip was covered by a small plastic lid (last 3 pictures) and also further insulated using insulating tape (6th picture).

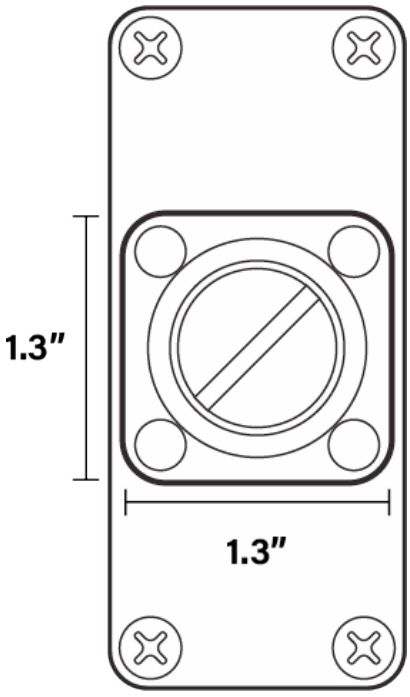


Once mounted to the board the strip is further protected by two small fitting metal sheets, preventing the strip from coming loose and covering all holes between the front panel and this strip.

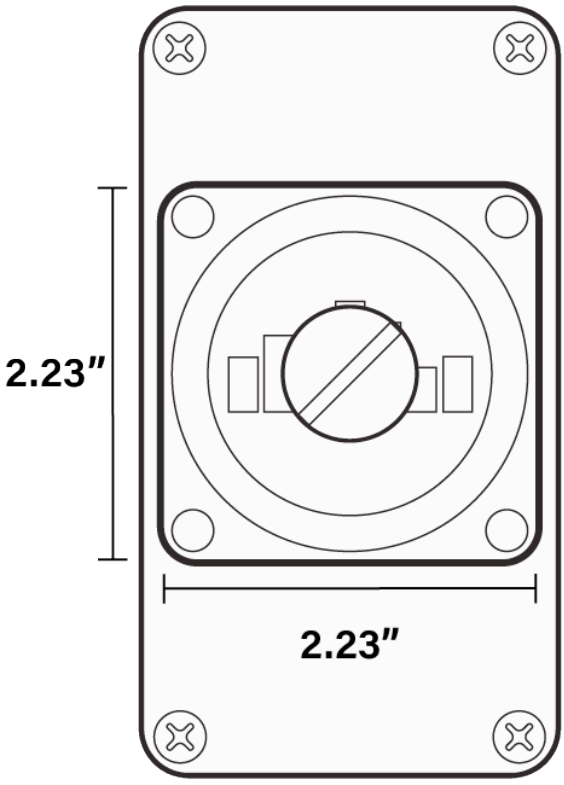
In general, unless someone would forcefully poke with a long metal tool inside the AC power parts of the board there is no danger of electrical shock. All cables carrying AC power are well insulated from all rails of the board by plastic cases, shrink tubes, insulating tape, and conductor board without any circuits. By design the ground wire coming from AC outlets is not connected to the rails of the board.

Mounting devices

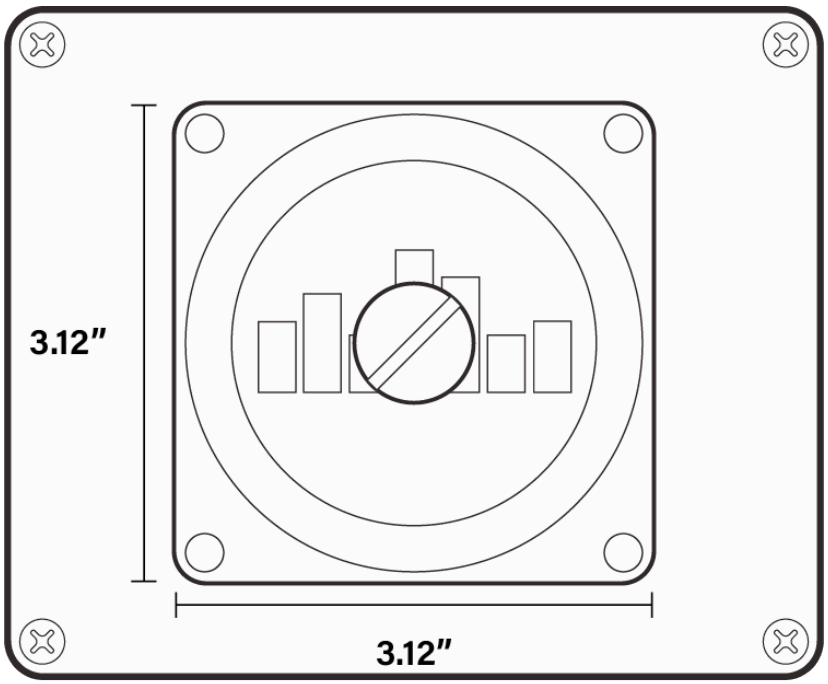
Temple Audio Design plates with filed down corner feets allow to solidly mount the Zoom B60 and FP02 expression pedal. Dimensions of these plates are:



33 mm



57 mm



79.3 mm

Cabling

I purchased for the audio cabling RockBoard Flat Patch Cables from MusiX.ch and needed to purchase many more parts from Pusterla, and promusig (see ‘Costs of customization of Pedaltrain Classic 1 pedal board.xlsx’). With a total of ca. 2000 CHF/$ for all parts and devices, the board has become quite expensive.

I cut a couple of patch cables into half (120 and 100 cm) to obtain the wanted cables and soldered them to the mounted jacks.

On disassembling the pedalboard

Everything mounted to the panel can be unscrewed and removed without unsoldering except for following two items:

1. The 8-pin DIN socket and the cable soldered to it
2. The North American power socket offered in the lid of the power distributor case

To 1) When the socket is unscrewed from the side plate the plug is too large to slide through the hole of the socket in the right side panel. Note, this is not the case for all other cables, which can therefore be detached from the pedalboard without unsoldering.

To 2) When you unscrew the lid covering the power distributor case, a brown (hot) and blue (neutral wire) going to the power socket that is offered in the lid remain connected to the distributor. If you need to disassemble that case, there is no need to really unsolder the end of those two wires. Better to cut them near the middle and reassemble the two wires afterwards with ordinary insulating screw joints (luster terminals).

Note, the two red power sockets are mounted to the front plate, but no wire is soldered to these sockets. Those sockets offer slid-in contacts that can be disengaged by pushing with an awl the holding lug into the socket, which frees the wire and it should then become easy to pull the wire out.

To really slide the audio cables through the holes of the side panel it is necessary to cut first the cable ties that hold the shrink tubes to the Neutrik locking chassis jacks. Otherwise the total diameter is too large to fit through the hole in the side panel.

The shrink tubes stick to the jacks also without the cable ties, the latter adding only a bit more stability.

Every other disassembling step is simple unscrewing, nothing is glued. Note, the side panels are also only screwed to the board, yet the 2nd screw on each side is covered by mounted items: On the right side the Neutrik locking chassis jacks and on the left side the power distributor case plus the inlet male power socket with the switch need first to be unmounted.