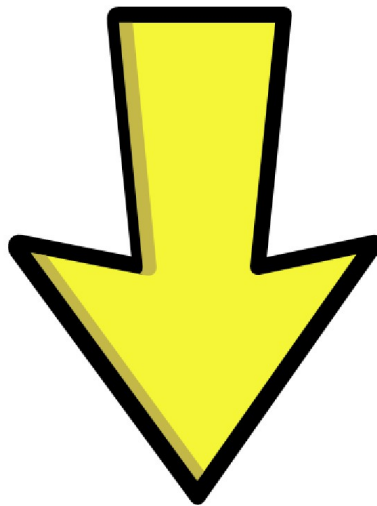


Photo series Quantophone "The Shell" during construction

< Under construction – back to the 9 cm pedal cap >

1. Quantophone "The Shell" overview

This post follows the completion of Quantophone „The Shell,,.



Visit:
www.quantophon.com

Hans Ulrich Stalder / 05/11/2023

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2. Pedal construction - Deviations from the original documentation

a) Pedal base construction

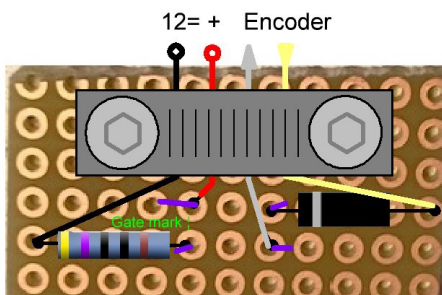


Reshape the mirror holder clips (increase gap distance)



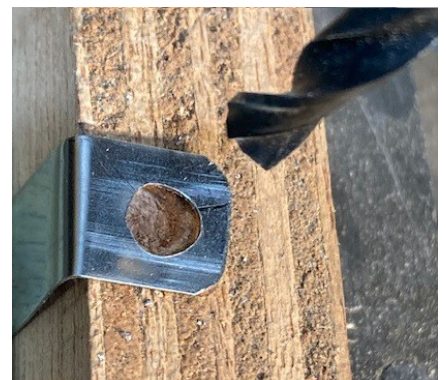
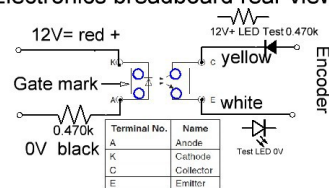
The mirror holder clips before and after forming

Electronics board wiring



Resistor series E12 and symbolic diode

Electronics breadboard rear view



How to drill the 5 mm hole in the spring steel strip



Grinding at right angles to the correct length in its highest form



Interior construction



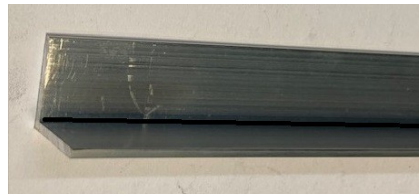
Functional simulation

3. Pedal construction

a) Pedal raw material



2 x (Alu U-profile 20 x 20 x 2 x 1000 mm)



2 x (Alu angle profile 20 x 2 x 1000 mm)



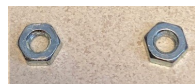
2 x (Alu flat profile 40 x 2 x 1000)



80 pcs M3 15 mm
Elektro+Alu connect.



40 pcs cable holder



2 pcs M3 temp



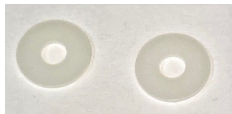
40 pcs M4 slotted
nuts



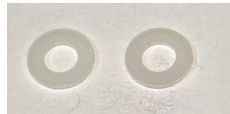
40 pcs springs
18 x 8.7 mm / 18 N



40 pcs M4
countersunk screws



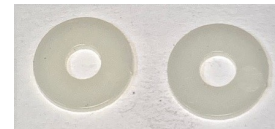
40 pcs Poly 4,3x12



40 pcs Poly 5,3x10



80
pcs
M4
15
mm



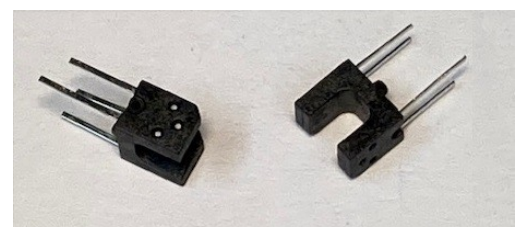
40 pcs Poly 5,3x15



160 pcs 3,5x13 mm

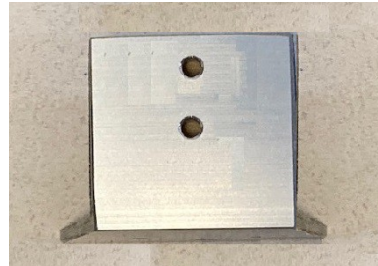
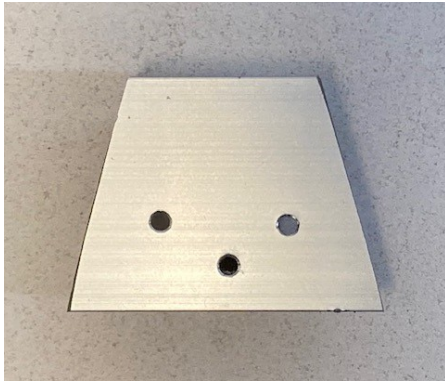


80 pcs M3 + 80 pcs M4



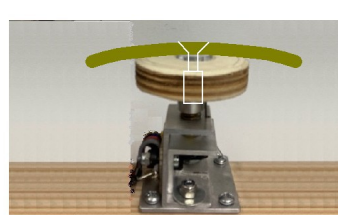
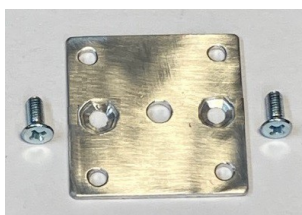
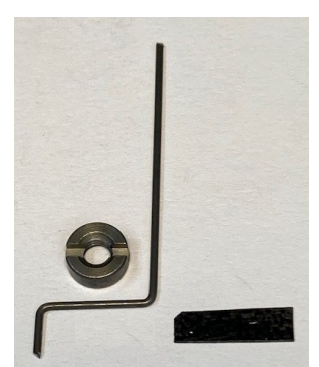
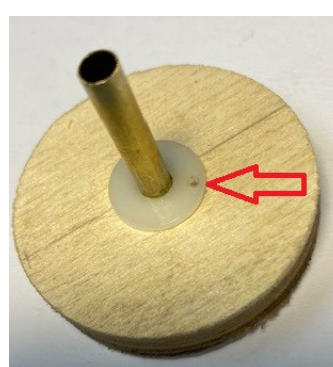
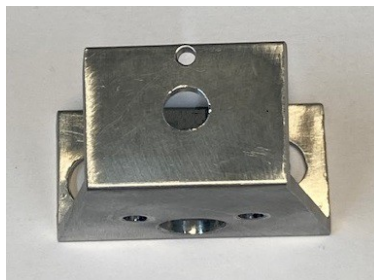
40 pcs Omron fork light barrier EE-
SX1106

b) Stencil of the sixth prototype of pedal design and mechanics



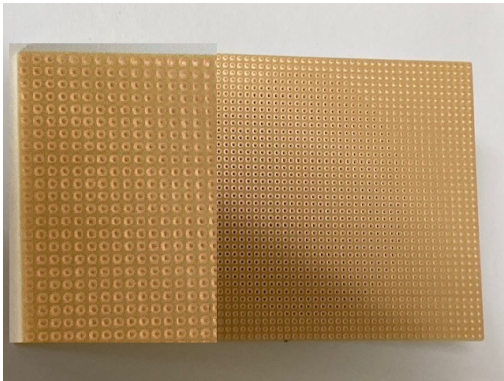
c) Production of 40 foot-switch units, beginning with prototyping

Detailed information on the following images can be found in the following documentation: <https://www.quantophon.com/Quantophone-The-Shell.pdf>

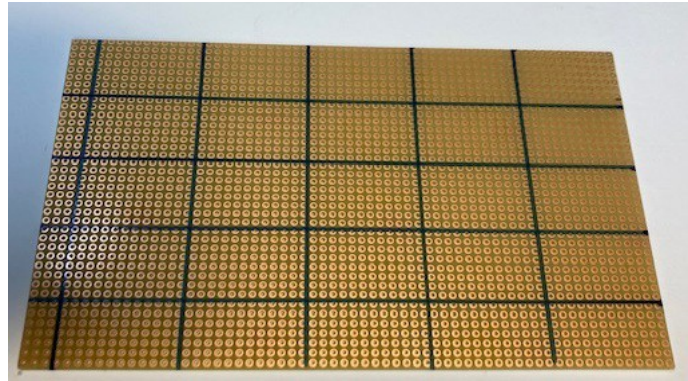


Wood cap substitute

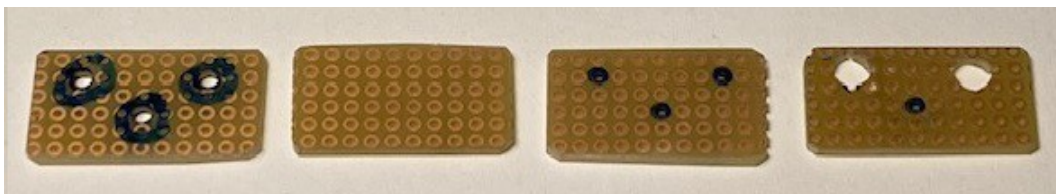
d) Pedal Construction - Electronics



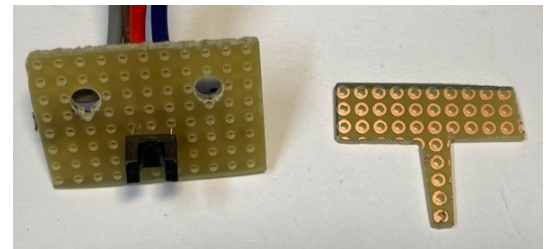
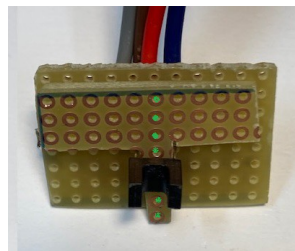
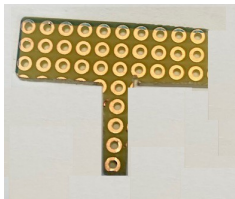
2 x (Hard paper 160 x 100 x 35µm,
Hole spacing 2.54 mm)



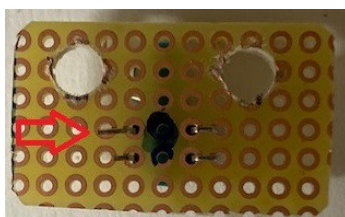
Electronic circuit board marked for sawing



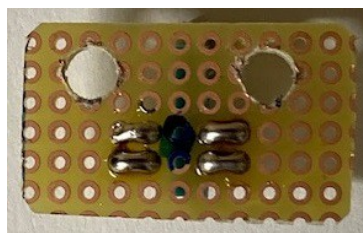
1. Drilling template with positioning hole; 2. Electronics board, actual size 18 x 28 mm;
3. Electro board marked for drilling; 4. Drilled 3.4 mm holes and a positioning marker.



Opto-interrupter positioned with temporary
spacer 1,5 mm.



Note the longer terminal lug
from the opto-interrupter



Soldered opto-interrupter lug

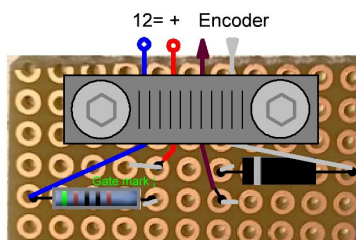


Electrical
resistance
Lower Row



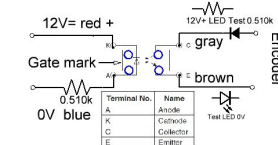
Diode Upper
Row

Electronics board wiring

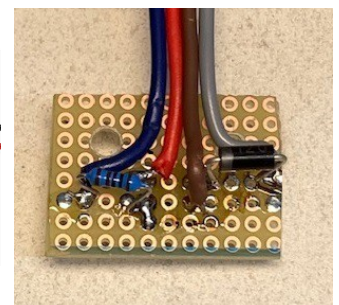


Resistor series E12 and symbolic diode

Electronics breadboard rear view



40 pcs T-wire
connector 2-pin



Completely configured
electric board

4. The following pedal construction has already been replaced by the documentation above

Production of 40 foot-switch units, beginning with prototyping.

a) Pedal aluminium blank



2 x (Alu L-Profil 18 x 17.8 x 1.8 x 1000 mm)



2 x (Alu U-Profil 20 x 20 x 2 x 1000 mm)

Prepare the contact surfaces of the aluminium profiles for gluing:

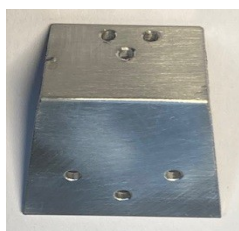
- Acetone pre-clean
- Surface roughen with sandpaper P 100
- Acetone post-cleaning



Gluing process



Glued aluminium profiles



Pedal drilling template



Drill holes marked (note the asymmetry of the inner profile)



Drill holes pre-punched



Position drilling made (2.4 mm)



Drilled positioning holes outside view



Drilled positioning holes inside view

After pre-drilling, the two profiles must be temporarily screwed together several times.



Pedal Alu-blank marked for cutting



Bottom holes 8 mm

The temporary screw connections can now be removed again.



Final drilling done (the inner 5.3 mm hole is conically ground out by hand with a 6 mm drill)



Time to polish the blank



Finished handcrafted Alu pedal prototype

b) Pedal wooden cap plastic substitute construction for testing

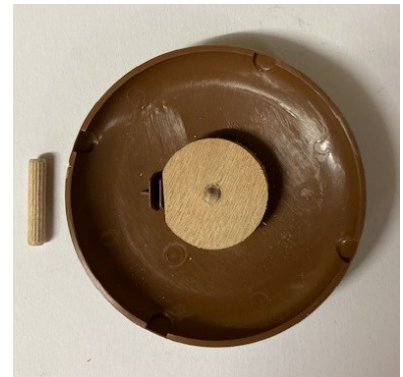
Due to the tests, the cap diameter was reduced to just 50 millimetres, with all its consequences.



Blind covers, ceiling rosette, already drilled through



Distance round wood placed



Borehole filled



Pedal underside filled



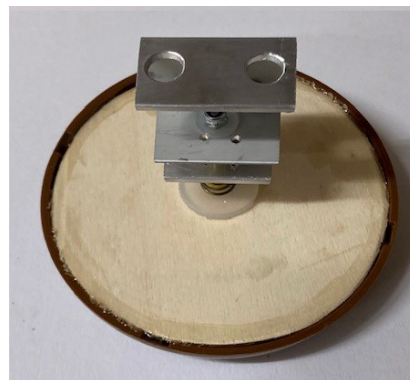
Through hole for M4 screw



Countersunk screw hole



Brass tube 5mm with damping washer



Provisionally completed mechanics for testing - 05/07/2023



Pedal top view 90 mm



Pedal cap reduced from 90 mm to 50 mm



Pedal (50 mm) test board, centerline spacing 70 mm

The initial central axis distance of 60 mm proved to be too small - a good compromise was found with 70 mm.

c) Pedal Construction - Mechanics



Outer tube 6 mm; Inner tube 5 mm; Screw 45 mm



The end of the outer tube is tapered ↓ to fit the lower 5.3 mm Alu hole.

* * * * *