

## Compact Phasing X user manual v1.1 2023



Originally designed by Gerd Schulte in the 70s in Germany and was called Number One, Compact phasing A.

Very unique sounding and looking phaser. It works with incandescent light bulbs and light dependent resistors (LDR). This combination makes it interesting, phasing is not linear, freq resonance peaks vary and this creates a very playful phasing effect.

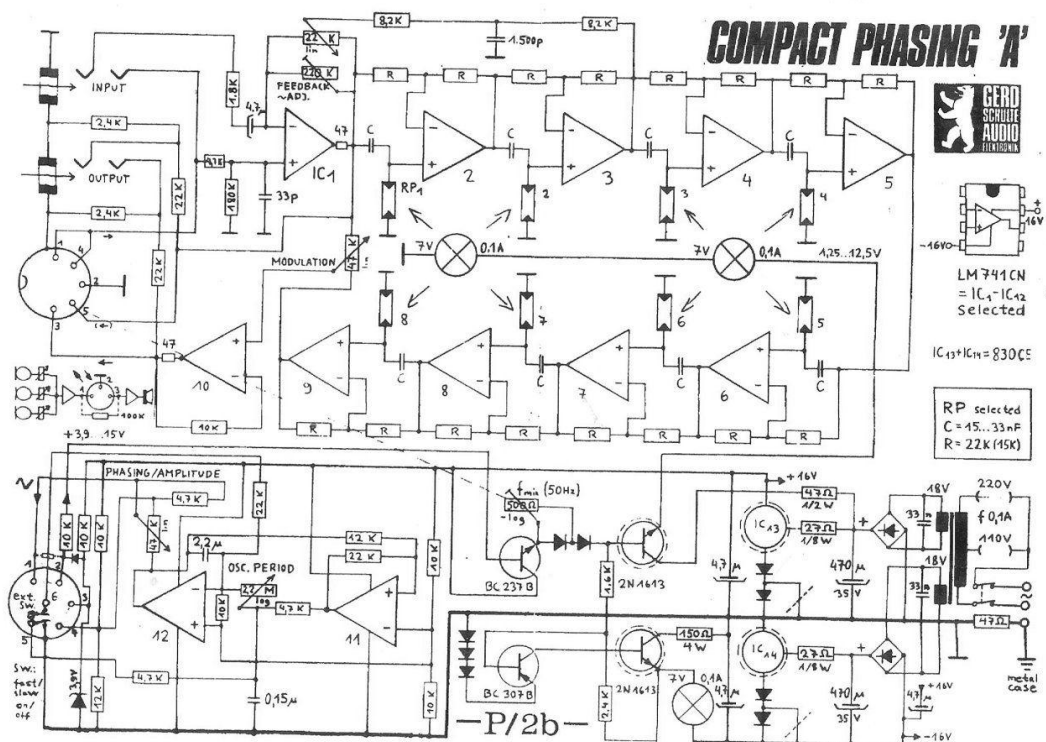
There has been few clones around after the original was discontinued. Jürgen Haible made his own clone and added new functions, but also kept it very close to the original. His boards were also used by Mode Machines KRP-1.

His work and explanations are still available on his website.

[http://jhaible.com/legacy/compact\\_clone/](http://jhaible.com/legacy/compact_clone/)

This website also has all the build information needed, schematics, partlists etc.

Original Schulte schematic:



## Features.

Mains PSU that will convert the mains voltage to +/-15VDC.

8pole phasing circuit with LM741 opamps, 2x 7V 100mA light bulbs, 8x LDR-s that are mounted around the bulbs, 4 per bulb.

Internal triangle LFO with added offset. With maximum swing close to +15V.

Mono in, 2 channel out (pseudo stereo with phase control).

Relay truebypass controlled with red illuminated button.

## Controls.

Red illuminated bypass switch. Truebypass with relay.

Modulation (pseudo stereo phase control).

Feedback. Originally the feedback signal was taken from the second pole of the 8pole filter.

Oscillator period/speed.

Phasing Amplitude.

Auto/Manual switch. In Auto mode, phasing is controlled by internal LFO. Internal LFO is controlled by Speed, Amplitude and \*LFO Offset.

\*LFO speed LED. This led indicates the intensity and the speed of the LFO, it also reflects the amplitude and offset controls.

\*2p/4p/6p phasing toggle switch on the rear panel.

\*LFO offset potentiometer on the rear panel. If maximum Phasing Amplitude is dialed on the knob, offset knob doesn't have any effect as maximum amplitude is chosen over the offset.

Phasing amplitude expression pedal input. This control is affected by the Phasing Amplitude knob. Expression pedal can only reduce the value of Phasing Amplitude knob.

LFO rate expression pedal input.

### First start guide.

Modulation: 5

Feedback: 7

Osc.- Period: 6

Phasing Amplitude: 10

Manual/Auto mode (rear toggle switch): Auto

2P4P6P (rear toggle switch): 6P

LFO Offset(rear panel): Center

## The DIY way.

PCBs are still available from

<https://serge-modular.com/>

There is a separate Haible section that leads you to all old Haible designs. Haible Krautrock Phaser is one of them. You can buy the bare PCB and start building. Follow the original documentation linked under the PCB ordering page.

Van Daal Compact Phasing X case comes with screws and nuts to hold the case together. It has 3D printed standoffs to fix the PCB to the case. 4pcs numbered knobs, Illuminated Bypass switch, Power switch, LFO LED holder, self adhesive legs.

You might need to file the Power switch hole a bit, as its very tight fit, flat file will do the job.

Case is made for ALPS 16mm potentiometers with 6.35mm shaft.

You need to drill a hole for the toroidal transformer, choose where it fits.

You need to ground the case. Dont use transformer bolt for this, it will create issues.

## My comments and suggestions:

\*Use the parts JH has listed on his page, they are important.

\*LDRs that we know work are made by adafruit and available from Mouser.com 485-161.

\*7V 100mA or 6.3V 100mA bulbs are used. Look from ebay.

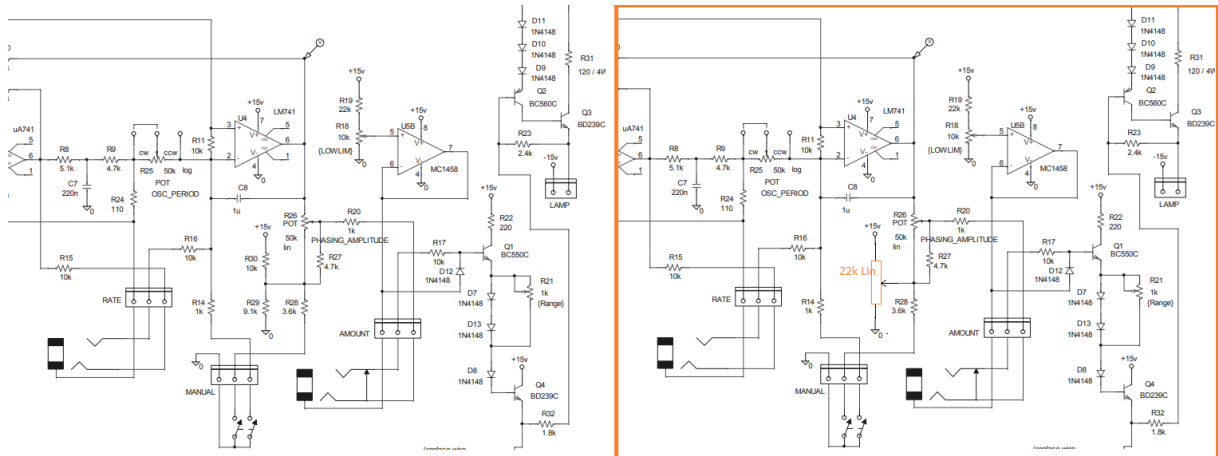
\*If you build it inside a case then you dont need to cover the LDRs and bulbs with black tape.

\*Mount the trimmpotentiometers to the opposite side. This will let you adjust them when the board is mounted inside the case.

\*Isolated jacks only. The case and the jack can not be electrically connected.

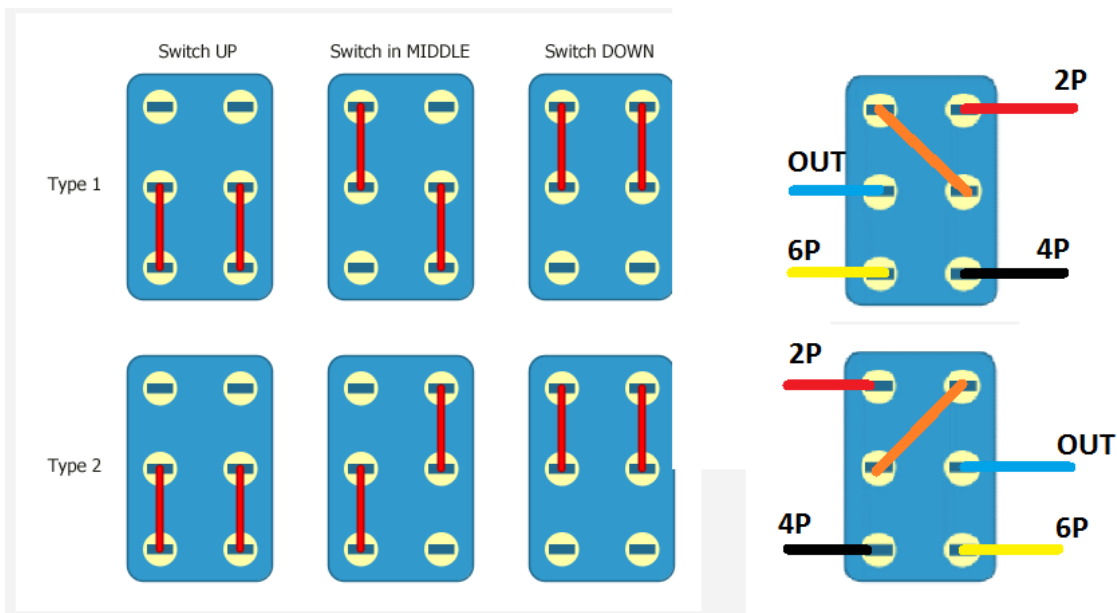
\*If you reach to the expression pedal inputs. You must wire the Amount jack or have it correctly jumped. Internal LFO will not function without the correct connections.

**\*LFO Offset potentiometer wiring.** In the Haible schematic R30 and R29 provide the correct offset. These 2 resistors can be removed and a 20k or 22k linear potentiometer can be wired instead.



**\*LFO Speed LED.** You can wire it to the "LAMP" connector. But you need to add resistor and remove some DC offset from the control signal. A TIP: 1x1N400X diode will have 0.6V voltage drop. Use the diodes in series with the LED, experiment, the more diodes you add, the more DC offset is taken away. If you dont remove the offset, LED will always be on.

**\*2P 4P 6P toggle switch is ON-ON-ON type.** It has 6 legs. Its wired where the jumpers are for 2/4/6 on the PCB. There are two types available. You need to measure which one you get.



**\*AUTO/MANUAL toggle switch is ON-ON DPDT switch.**

**\*Bypass switch is wired to "SWITCH" and its 12V LED is wired to "LED" connector.** Its a momentary switch. Watch for LED polarity.

**\*After all is done and working, adjust the Trimmers by ear.** You can feed the unit with some random music. Make sure you have a track that has good low end and topend, this will allow you to listen what it does and how it behaves. We like to have RANGE maxed out, min LOW LIMIT.

**\*Dont use modern day upgrade opamps, this design is not made for them. If you are experienced enough, you can try, but our tests have concluded that they dont add good character. Ancient LM741 technology sounds best.**

