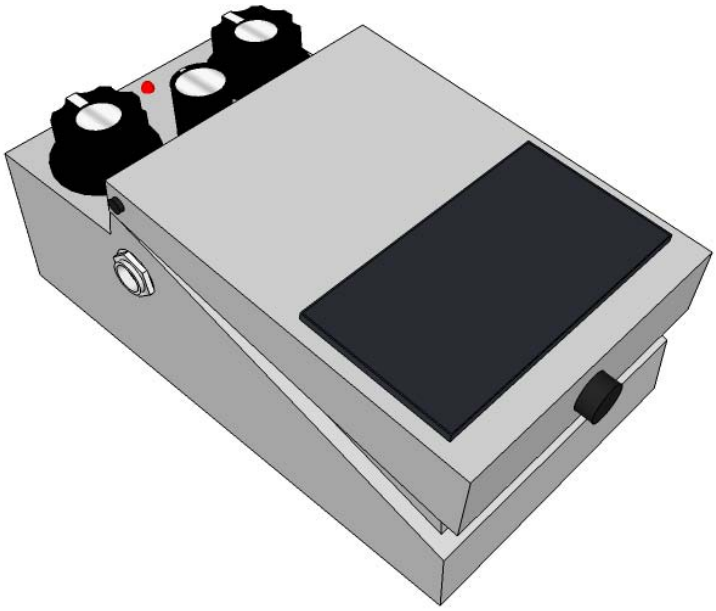
Click-Less™ True-Bypass BOSS Universal Install Guide

ABOUT THIS MANUAL

This manual covers Click-Less™ True-Bypass installation for a variety of monophonic BOSS compact effects circuits. Component reference numbers have been omitted as each circuit's unique component reference numbers will vary.
It is recommended that you fully read this manual and become familiar with the installation procedure before beginning any work.



RECOMMENDED TOOL AND SUPPLY LIST:

- Soldering station (with temperature control/regulation)
- Solder & Flux
- De-soldering braid or solder sucker
- Wire strippers
- Wire cutters
- Phillips head screwdriver
- Double-stick foam tape

OVERVIEW

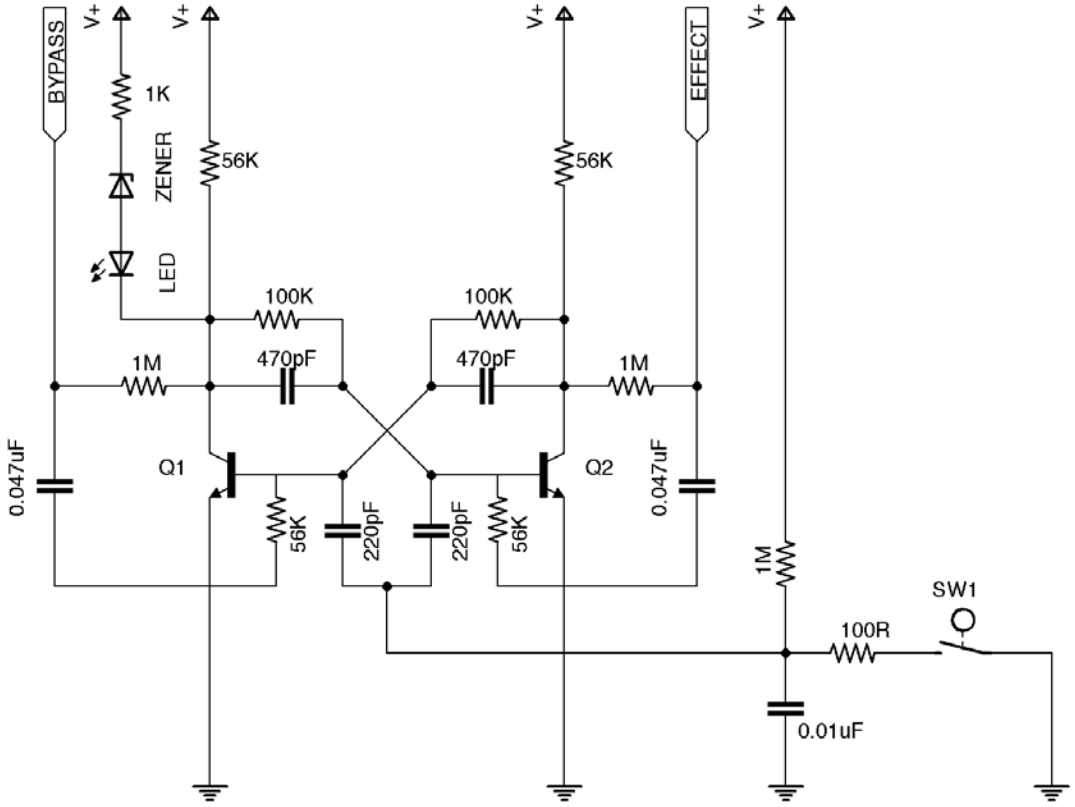
BOSS analog effects employ buffered electronic switching comprised of four main circuit elements:

- A buffer/driver circuit used to prevent loading of the signal path and to drive the electronic switching circuit
- Two FETs (field effect transistors) used to block/allow signal flow through the bypass and effect circuits
- A flip-flop circuit used to select which FET is on/off (BYPASS/EFFECT) and route the signal appropriately
- A mechanical momentary contact switch used to control the flip-flop circuit

Installing Click-Less™ True-Bypass requires circumvention of the electronic switching system and re-routing the signal path through the Click-Less™ PCB.

This manual will focus on the flip-flop circuit and signal routing.

A TYPICAL BOSS FLIP-FLOP



OPERATION:

- If Q1 is ON, Q2 is OFF and circuit is in EFFECT mode
- If Q2 is ON, Q1 is OFF and circuit is in BYPASS mode

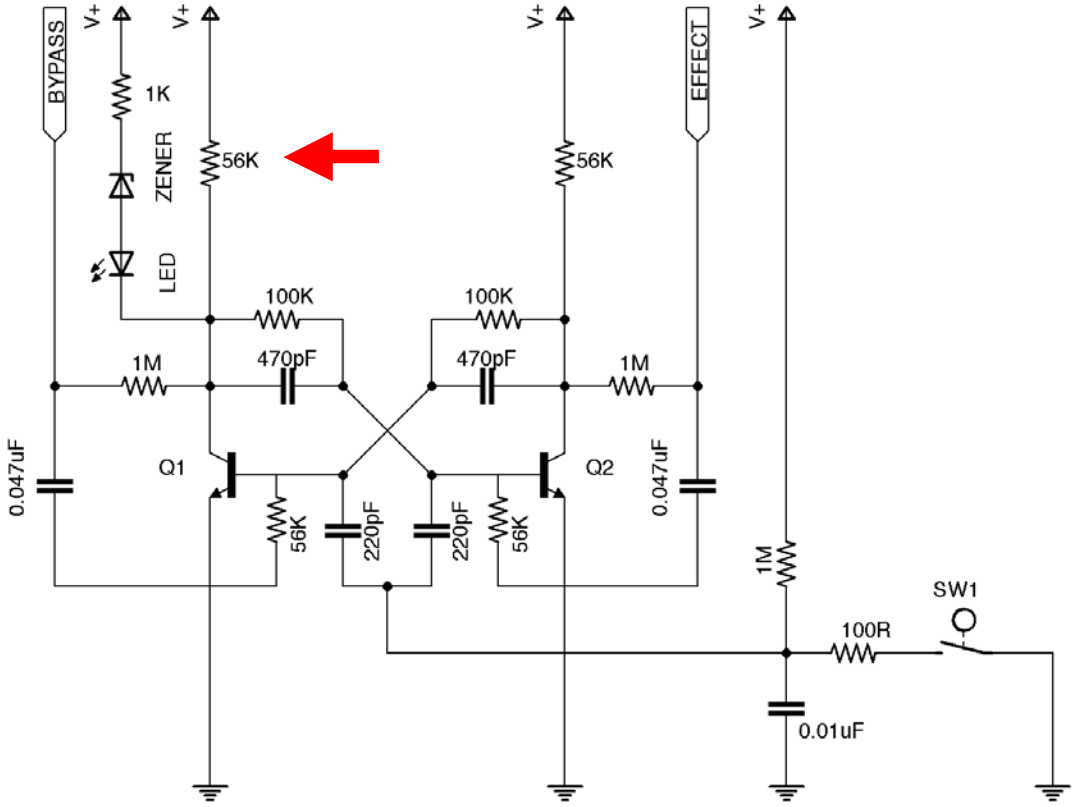
ACTION:

When Q1 is ON its base is high and its collector is low. This forces Q2 to turn OFF because Q2's base is tied to Q1's collector via a 100K resistor. This simultaneously forces Q1's base to stay high because it is tied to Q2's collector, which is held high.

When Q2 is ON its base is high and its collector is low. This forces Q1 to turn OFF because Q1's base is tied to Q2's collector via a 100K resistor. This simultaneously forces Q2's base to stay high because it is tied to Q1's collector, which is held high.

DEFEATING THE FLIP-FLOP

In order to install the Click-Less™ system, the flip-flop circuit must be forced into the EFFECT mode at all times so that signal is flowing through the effect circuit when the pedal is activated. This can be accomplished quickly and easily by simply removing one resistor:



Removing the 56K resistor indicated above (actual value may vary) insures Q2 will not turn on by preventing its base from ever receiving voltage. This forces the flip-flop circuit into permanently retaining the EFFECT mode state.

TECHNICAL NOTE:
THE FLIP-FLOP RETAINS THE ABILITY TO TOGGLE STATES UNTIL THE LED NODE IS DISCONNECTED FROM THE CIRCUIT.

RE-ROUTING SIGNAL FLOW

Now that the flip-flop circuit has been defeated the pedal is locked in EFFECT mode. Signal must now be re-routed from the input and output jacks to the Click-Less™ PCB to accomplish Click-Less™ True-Bypass switching. The Click-Less™ True-Bypass system has been designed to allow you to perform these actions quickly, easily and effectively.

There are a total of ten wires you will need to address in order to re-route signal flow through the Click-Less™ PCB:

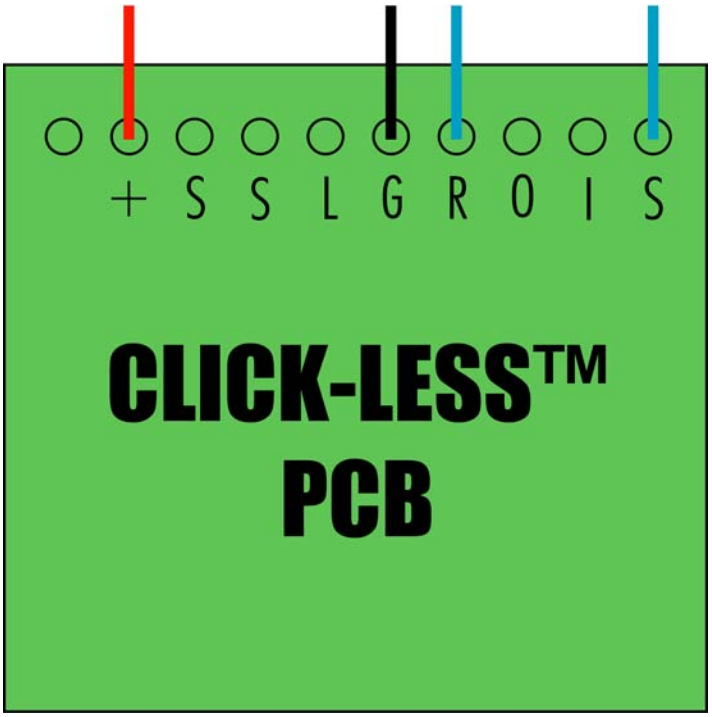
- The input jack wire on the pedal
- The output jack wire on the pedal
- The two wires connected to the small LED PCB
- The two wires connected to the pedal's switch
- The + power wire from the Click-Less™ PCB
- The G ground wire from the Click-Less™ PCB
- The S send wire from the Click-Less™ PCB
- The R return wire from the Click-Less™ PCB

Disconnect the input jack wire from the effect PCB and write down the hole that the wire was connected to.

Repeat this procedure for the output jack wire, LED PCB wires and switch wires.

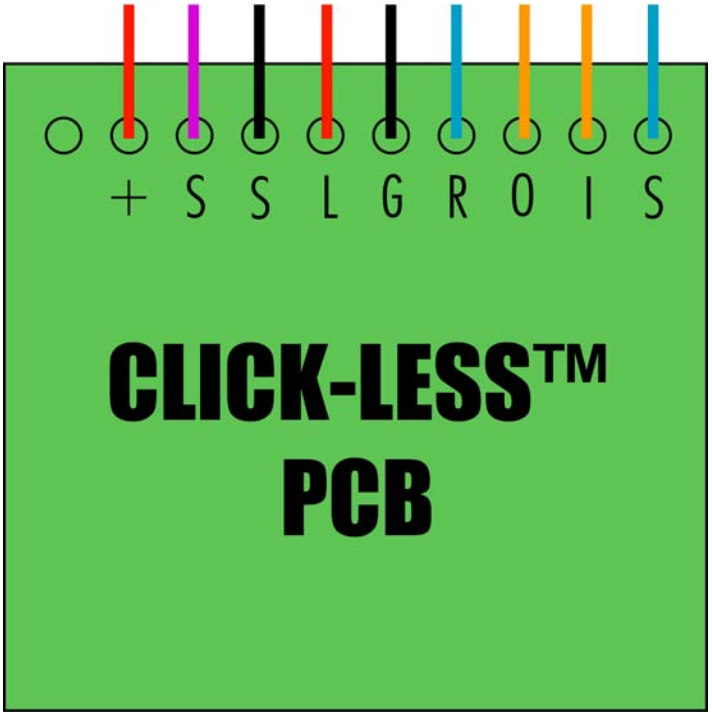
Connect the four of the supplied wires to the Click-Less™ PCB pads following the diagram below:

NOTE: Wire color employed may vary. Colors indicated below are for reference only.



- + power pad. (Red wire shown)
- G ground pad. (Black wire shown)
- R return pad. (Blue wire shown)
- S send pad. (Blue wire shown)

Connect the ten wires to the Click-Less™ PCB pads, effect PCB and to ground as shown below:



- + power wire to 9V source
- S pads on the left side of the Click-Less™ PCB to the switch (Purple and Black wires)
- L pad to the anode (positive side) of the LED PCB
- G ground wire to suitable ground*
- R return pad to the hole on the effect PCB that the output jack was connected to
- O output pad to the output jack
- I input pad to the input jack
- S pad at the right side of the PCB to the hole that the input jack was connected to
- Remaining LED PCB wire** to a suitable ground*

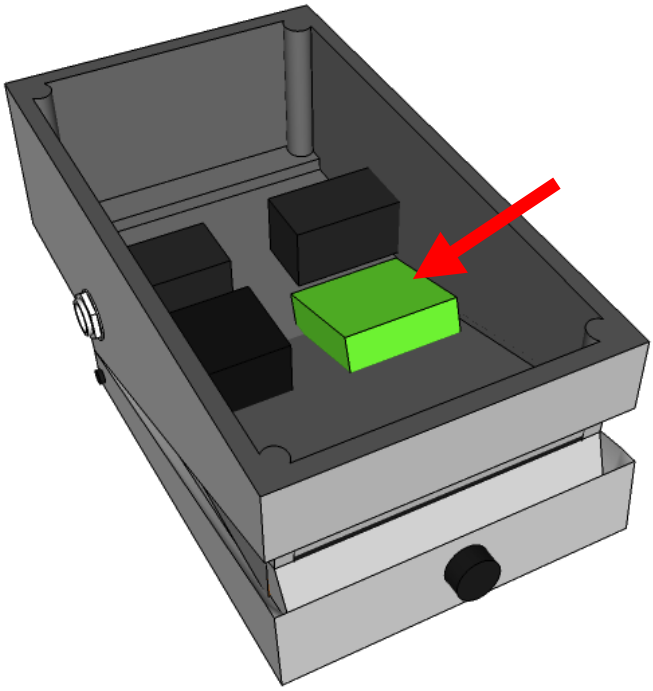
**The output jack sleeve lug serves as a convenient ground*

***LED PCB wire not shown above*

COMPLETING THE JOB

Installation is nearly complete. All that remains to be completed is securing the Click-Less™ PCB and putting the pedal back together.

The recommended placement for most BOSS compact analog effect pedals is on the inside of the chassis just below the output jack. See illustration below:



Apply double stick tape to the back of the Click-Less™ PCB and secure it to the chassis in the desired location, taking care to insure that no leads are poking through the tape. This will prevent the board from shorting to the chassis.

Congratulations! Your BOSS pedal has been converted to Click-Less™ True-Bypass.