

Ruppert Musical Instruments



SONIC SPARK

User Manual

Congratulations!

The Basswitch Sonic Spark combines a harmonic overtone generator and a complex EQ section with a high-end-preamp in one super-compact pedal and gives the confidence to be adequately prepared for any situation, be it in a live performance or in a recording studio.

When developing the Basswitch Sonic Spark we focused on the needs and wishes of the professional bass player who is not willing to compromise on either sound or the technical quality of the equipment. The Basswitch Sonic Spark is manufactured, assembled and tested in Germany to the highest quality standards using only the best brand components available to ensure optimal treatment of the electrical signal from your instrument.

Please take your time to read this user manual carefully before you start using your Basswitch Sonic Spark. You will find lots of useful information

on the pedal and the various ways it can be used. Keep this user manual carefully so that you can consult it at any time.

Your Basswitch Sonic Spark package contains the following items:

- Basswitch Sonic Spark
- User manual

Please check that all these items are there as soon as you unpack. Should something be missing, please contact your authorised dealer.

The Basswitch Sonic Spark is built to last, but if you nonetheless experience problems or have any questions do not hesitate to contact us.

I wish you every success with your Basswitch Sonic Spark.

Yours, *Jacques Ruppert*

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Introduction

The Basswitch Sonic Spark combines a complex tonescale-type EQ with a harmonic overtone generator and a high-end-preamp and is designed to process the whole frequency range of a bass instrument from very deep fundamentals (e.g. 30.87 Hz for low B or 41.20 Hz for low E on an electric bass) to very high overtones that have a crucial impact on the timbre of the bass instrument even though they are approaching the upper limits of the audible spectrum (from 18 Hz to 20 kHz). On top of this, bass instruments have a characteristic attack with a very steep initial transient followed by a weak electrical signal.

The Basswitch Sonic Spark creates a very alive and characteristic sound like a high quality tube amp with only a few controls.

Functions and applications overview

- *Basswitch Sonic Spark as a sonic enhancer*

The Basswitch Sonic Spark's primary application is sonic enhancing. The Basswitch Sonic Spark provides a characteristic sound and, if needed, a higher volume level for the connected instrument via footswitch.

Note: The Basswitch Sonic Spark's gain control has a cut- and boost-function to enable a perfect match of sound levels.

- *Basswitch Sonic Spark as a high-end-preamp*

The Basswitch Sonic Spark features a high-end-preamp and a complex tonescale-type EQ with a harmonic overtonegenerator.

As stand-alone-preamp the Basswitch Sonic Spark can drive a power amp, an active monitor an active bass cab or an in-ear-monitoring-system.

Additional features

- Lehle "True Sound Technology" (for details please consult the chapter "Tech Talk").
- Specially designed to protect the controls from damage and to prevent inadvertent changes to the settings.
- The design of the housing permits easy installation: the ultra-flat base and removable rubber feet allow the unit to be securely attached to the pedal-board using Velcro or similar.

Description

1. Input IN

Connect your first instrument here.

This is the standard input for all instruments. The input is designed to accept active and passive instruments.

2. Output OUT

Connect your bass amp or power amplifier or active monitor here.

If the Basswitch Sonic Spark is used in its function as sonic expander upstream of a bass amps it should be in "straight through" mode (LED lights white) when the settings for the basic sound are made on the amplifier. Only then the tone enhancing settings should be done with the Basswitch Sonic Spark.

When using the Basswitch Sonic Spark with a power amp, an active monitor, an active bass cab or an in-ear-system, the Sonic Spark should be activated (LED lights blue). The settings of the basic sound are made by the Basswitch Sonic Spark's preamp.

We recommend to set up the Sonic Spark as follows:

1. Use the gain control to set the desired volume level (also refer to point 3).
2. Set the Enhance control to zero (all the way counter-clockwise).
3. Set the Intensity control to max (all the way clockwise).
4. Use the Bright/Deep control to adjust the sound of the Sonic Spark, the basic setting is around 12 o'clock.
5. The Enhance control lets you add the amount of overtones you want.
6. For higher volume levels adjust the basic sound by using the Intensity control.

Note: The overtone generator can be used separately. To do so set the Intensity control to zero (all the way counterclockwise)..

3. External power supply

Connect your external power supply here (9-15 V; min. 65 mA) with a standard 5,5 x 2,1 mm connector.

Because of the uncompromising design, the quality of the components and the switching technology used, the power consumption of the Basswitch Sonic Spark is too high to run it satisfactorily on batteries. The external power supply should provide not less than 9V and not more than 15V. Either alternating (AC) or direct current (DC) sources can be used and the polarity is not relevant. The voltage supplied is internally rectified, filtered, stabilised and then brought to 18 V.

Note: To get the best out of your pedal set-up we recommend that you use high-quality power supplies with isolated output sections in your set-up!

Warning: The Lehle power supply (item no. 7014) with the connector acc. to DIN 45323 is not suitable.

4. GAIN Control

Use this control to adjust the volume of your Sonic Spark.

To permit optimal matching of signals this control enables you to boost and to cut the signal, the neutral position is at 12 o'clock. The high-end preamp of the Basswitch Sonic Spark allows you to connect the Bassswitch Sonic Spark directly to a power amp (see also point 2).

5. Enhance Control

Controls the amount of overtones.

This control serves to adjust the amount of overtones generated by the Bassswitch Sonic Spark. The control technology used here allows sustaining a good sound even when re-shaping the sound drastically.

Nevertheless we recommend to use this control with caution and sensitivity when adjusting the sound.

6. Intensity Control

Use this control to set the ratio between direct sound and the Sonic Spark.

This control allows adjustment of the amount of sound of the Sonic Spark of the overall sound progressively from 0 % - 100 %. This can be very useful for big volume changes.

Basically the rule applies: the more volume the less participation of the Sonic Spark to the overall tone.

The control technology used here allows sustaining a good sound even when re-shaping the sound drastically.

7. Bright/Deep Control

Adjust the sound of the Sonic Spark.

This control allows adjustment of the Sonic Spark to the environment (Bass, Amp, Box) and changes the basic setting of the EQ over all frequencies.

8. Footswitch

Push this switch to activate the Sonic Spark.

Pressing the footswitch turns the Sonic Spark on or into 'straight through' mode. Re LED please read point 9.

9. Status LED

This LED will light up in blue when the Sonic Spark is activated and white in bypass-mode.

Tech Talk

True Bypass and True Sound

Today more and more effect pedals feature true bypass switching to completely bypass the pedal in the signal routing when the pedal is switched off. The target of this design is to ensure that the pedal does not affect the electrical signal when it is switched off. This way the sound is left unaltered - in theory.

In practice, however, connecting several pedals featuring a true-bypass design in series does not improve the sound or keep it unaltered at all. Long runs of cable and multiple connections lead to a weak and lifeless sound. On large pedalboards the overall length of the cable is enough for the capacitance of the cable to have a negative effect on the sound. The capacitance of the cable acts as a low-pass filter (= the low frequencies pass through the filter while the high frequencies are filtered out). The price and quality of the cable you are using will not change this physical phenomenon.

A solution would be to use only devices with buffered bypass design instead of true bypass. This, however, is only a good solution if the buffer is of very high quality. If several units with buffered bypass are connected in series it only needs one buffer to be noisy, to cut the dynamics of the sound signal or to negatively affect the sound in any other way for the sound of the whole effect chain to be spoiled. As the saying goes: "a chain is only as strong as its weakest link". In addition, the noise of the individual buffers adds up to produce audible noise (It is a fact that every buffer produces some noise, even if it cannot be heard when only a single buffer is used). The ideal solution is to have a very high-quality buffer at the beginning of the chain that brings the signal down to a very low impedance. This makes the signal insensitive to the length of the cable. It is important, however, that this buffer is of the highest quality with the dynamic range and headroom necessary to ensure that all the details of the bass signal stay are retained unaltered.

The effect pedals in the downstream should then ideally have true bypass so that they will not have a negative effect on the now buffered signal, as the true bypass design does not reduce dynamics and headroom or produce any noise.

Conclusion: Having a True Sound Lehle buffer at the beginning of your effect chain combined with good true-bypass-equipped effects in the loop guarantees the best sound.

What is Lehle True Sound Technology?

Lehle True Sound Technology is a combination of several electrical design measures with only one aim in view: to transmit the sound and the character of the instrument without altering it.

The voltage supplied to the Basswitch Sonic Spark is internally rectified, filtered and stabilized and then brought to almost 18 V. This gives enough headroom to guarantee an open and dynamic sound in all situations without losing any detail, even when confronted with pickup power peaks from plus 7 to minus 7 volts.

The buffers are designed to effortlessly handle signals reaching the megahertz range. At the output, the frequency bandwidth is limited to the audible frequency range to prevent HF interference, disturbing the electronic circuitry. This guarantees optimal transient response by the circuitry and is key to obtaining a sound that is transparent and, above all, cuts through.

For switching, Lehle True Sound Technology uses exclusively gold-plated contact relays and/or gold-plated switches. The decaying signal from a string is so weak that contact materials with lower conductivity have a negative impact on the sound. Ordinary footswitches use contact materials developed to switch high voltages (e.g. electrical power tools) as this is their main field of application. This can be heard, for example, when, after a switch has been in use for some time, a decaying tone starts to break off abruptly. Relays and switches with gold-plated contacts do not have this problem and even the smallest electrical signals can be transmitted for years without being negatively affected. In addition, the relays used in the Basswitch Sonic Spark have a lifetime about 100 times as long as those used in ordinary footswitches.

Together with typical Lehle electronic circuitry to reduce the switching pop of relays, the combination of the above design features represents today's state-of-the-art solution for an uncompromising preservation of the signal and hence the sound and character of the instrument.

Working principle of the Basswitch Sonic Spark footswitches

Footswitches are pressed thousands of times during their long lifetimes – sometimes sensitively but some times more brutally depending on the situation and the musician's temperament. An ordinary footswitch will switch up to 20 000 times before wearing out mechanically or electrically, which means that either it will stop working altogether or the signal will start to lose transparency and dynamics.

The Basswitch Sonic Spark is equipped with high-quality Lehle footswitches. Here the foot of the musician does not press an ordinary footswitch but an actuator button that activates a pushbutton inside the Basswitch Sonic Spark via a metal lever. Because the actuator button and the internal pushbutton are not directly connected, the load exerted by the foot is absorbed by the actuator button and the housing, preserving the circuit board from mechanical stress. The design is as robust as possible and the actuator button mounted in a special socket making for easy and silent operation.

Inside the Basswitch Sonic Spark the impulse from the pushbutton activates special gold-plated relays via discrete logic circuitry. This way the switching is done only via high-quality relays and thus guaranteeing absolutely reliable and loss-free switching of very sensitive signals. The switching technology and the gold-plated relays in the Basswitch Sonic Spark are designed to operate for up to two million switching cycles!

Technical Data:

Weight:	390 g
Length:	14.9 cm
Width:	6.0 cm
Height:	4.4 cm
Current consumption:	9-15 V AC/DC 9 V DC max. 60 mA DC 15 V DC max. 65 mA DC
Frequency response:	20 Hz – 75kHz, +0,5/-3 dB, re -10 dBu
THD+N:	< 0,2 %, re -10 dBu input signal, 22 Hz - 22 kHz, max Gain, intensity and deep-bright pots in 12h position, enhance pot in 7h position
Input impedance:	3.2 MOhm @ 1 kHz
Output impedance:	58 Ohm @ 1 kHz
Residual noise:	< 78 dBu, 22 Hz - 22 kHz, unweighted, all pots in 12h position
Max. output level:	+ 16 dBu < 1 % THD, 1 kHz, gain +14 dB, 15 V DC
Max. gain:	+14/-15 dB < 0.1 % THD, 1 kHz