Lehle Mono Volume 90
User Manual

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www.lehle.com

Dear Musician,

Thank you for purchasing your **Lehle Mono Volume 90**!
I have been building units that switch, split and route signals with no technical compromises and with maximum musical fidelity since 1999. Your new **Lehle Mono Volume 90** comprises only the very best components. Every module of your **Lehle Mono Volume 90** has been made and tested in Germany.
To make sure that you can enjoy your **Lehle Mono Volume 90** for a long time, it is of extremely robust design and construction. If you should nonetheless have a problem, or simply a question, just mail me or a member of the Lehle team at: support@lehle.com

I wish you much pleasure and success with your **Lehle Mono Volume 90**!

Burkhard Georg Lehle

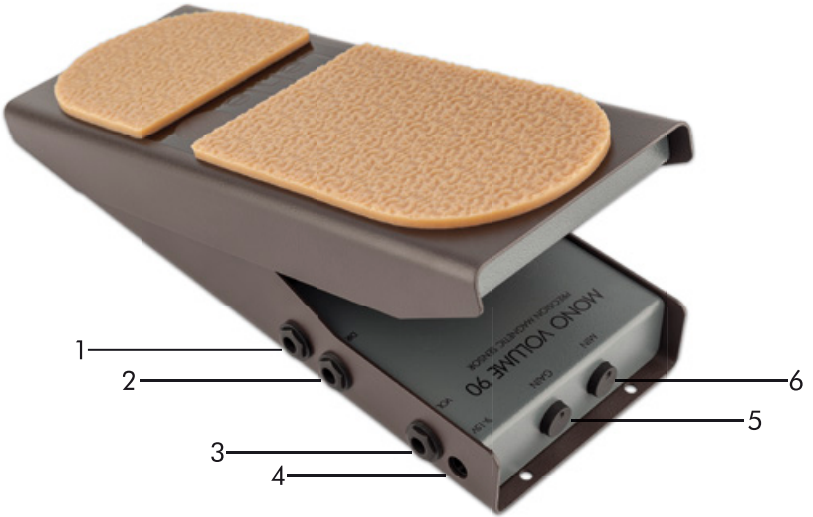
Contents

The **Lehle Mono Volume 90** is a volume pedal equipped with a precise magnetic sensor enabling it to operate almost wear-free. This sensor uses the Hall effect, named after Edwin Hall, to measure the strength of magnetic fields. In the **Lehle Mono Volume 90** the Hall sensor, which is made in Germany, is accurately calibrated to the built-in magnet and the control range of the pedal. The pedal moves only the magnet, while the distance is measured by the Hall sensor which controls a VCA.
A premium Blackmer® VCA (= Voltage Controlled Amplifier) from the United States replaces here the mechanical potentiometer. The principle of the voltage-controlled amplifier is based on the fact that gain can be varied by the control voltage coming from the Hall sensor. This technique allows to operate more precisely than conventional mechanical potentiometers or optical sensors used by the standard volume pedals. In addition the potentiometer-typical noise and the complicated adjustment are eliminated.
Over the entire control range the **Lehle Mono Volume 90** transmits the full sound spectrum of the connected instrument. The input and output impedance always stay the same, ensuring that there will be no damping of higher frequencies as with potentiometers.
Internally, the input voltage coming from the power supply socket of the pedal is rectified, then filtered, stabilized and doubled to 18 V, thus achieving a total dynamic range of 110 dB. The volume control of the **Lehle Mono Volume 90** ranges from -92 dB to 0 dB - so from a virtually muted level to the same volume. If a minimum level is necessary, the quietest position of the **Lehle Mono Volume 90** can be adjusted via the MIN control. Using the MIN control, the minimum volume of the **Lehle Mono Volume 90** can be set within a range from mute (0%) to -10 dB (90%) of the original level. Furthermore, the GAIN knob allows to add a boost up to approx. +12 dB.
The **Lehle Mono Volume 90** runs mechanically extremely smooth and steady, as it is equipped with low-friction bearings of a high-performance polymer, and there is no mechanical transmission of the pedal to other components. By means of an adjusting screw the mobility of the pedal can be modified very precisely.
In addition the **Lehle Mono Volume 90** has a buffered direct out which can supply a tuner, DAW or a second amp without affecting the sound.
In- and output jacks on the side of the pedal make the **Lehle Mono Volume 90** an ideal device for pedal steel players – without any obstruction, the pedal can placed in the usual spot on the pedal steel rack.

Technical data

Weight:	1,690 g
Length:	26 cm (10.24'')
Width:	10 cm (3.94'')
Overall height:	6.6 cm (2.6'')
Voltage:	9 - 15 V DC or 7 - 12 V AC
Power consumption:	40 mA
Frequency range:	35 Hz - 125 kHz (-3/ +0,4 dB)
THD:	< 0,05 % at 1 kHz, -10 dBu
Impedance input:	2 MOhm
Impedance output:	500 Ohm
Signal-to-noise ratio:	-102 dB at 1 kHz, 0 dBu A weighted
Max level:	3 V RMS (approx. 12 dBu at 12 V input voltage)

General description



1. Input jack

■ *Connect your instrument here.*

The **Lehle Mono Volume 90** processes signals of electric and acoustic instruments, as guitars and basses, steel string and nylon string acoustics and acoustic string instruments of all kinds. The input impedance of the **Lehle Mono Volume 90** is approx. 2 MOhm. It does not matter whether the connected signal has high or low impedance, or if it comes from a passive or an active pickup system.

2. DIR Output

■ *Connect your tuner or your amp here.*

This output supplies the input signal with exactly the same level. The DIR Out is buffered, which means you can connect both high and low impedance inputs to the DIR Out without influencing the sound of the input signal. If you are using a tuner, you can mute the VOL Out (heel-down position for tuning) and the DIR Out will provide a signal for the tuner.

3. VOL Output

■ *Connect your target device here.*

For instance, this would be an amplifier, a mixer panel, a stage box or a sound card. This output, like the DIR Out has low impedance and does not change its output impedance when the volume is altered via the volume pedal.

4. External power supply

■ *Connect your external power supply here (9 -15 V DC or 7 -12 V AC).*

For the **Lehle Mono Volume 90** an external power supply is required.

This should provide a minimum of 9 V and no more than 15 V DC, but alternatively you can also connect an AC voltage source with more than 7 or up to 12 V. The polarity is not relevant. The voltage supplied is internally rectified, filtered, stabilized and then brought to 18 V.

5. Gain Control

■ *Use the gain control to adjust the level of the preamp signal.*

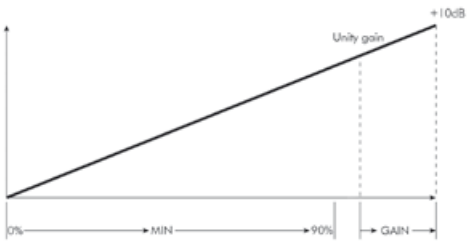
The gain control influences the maximum volume of the **Lehle Mono Volume 90**. The gain control knob is recessed into the housing. It can be easily turned by placing your fingertip in the top depres-

sion, with the great advantage that, thanks to the recessed design, the setting cannot be inadvertently disturbed on stage or during transportation. With the gain control closed up to the stop (7 o'clock position) and the pedal in level position, the signal is neither amplified nor attenuated, this position is "unity gain".
Turning this control to the right will increase the signal by approx. 12 dB. The frequency range is not influenced by this control.

6. MIN Control

■ *Use the MIN Control to adjust the minimum level of your Lehle Mono Volume 90.*

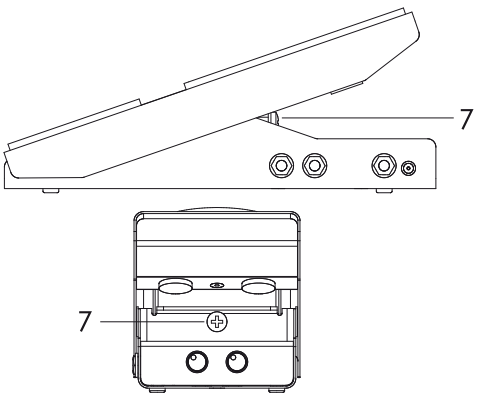
In the heel position the output signal on the VOL Out of the pedal can be virtually muted.
If you need to use a minimum level, you can adjust it via the MIN Control. With the MIN Control in 7 o´clock-position, the VOL Out will be virtually mute when the pedal is in heel position. Turning the MIN Control clockwise, you can narrow the control range of the pedal, until it will, for example attenuate the volume only down to -10 dB. In the first section of the MIN Control range you can precisely change the curve in which the pedal reacts, whereas in the second section of the potentiometer the minimum level can be increased.



7. Pedal Feel

■ *Turn this screw to adjust the feel of the pedal.*

If you turn this screw clockwise, you tighten the brake. This way the pedal feel will be heavier. Turning the screw counterclockwise diminishes the resistance when pressing and gives the pedal a lighter feel.



8. Base and fixing

■ *You can use the fixing screws supplied with the Lehle Mono Volume 90 to fix it to a base plate (or to a pedal board, for example).*

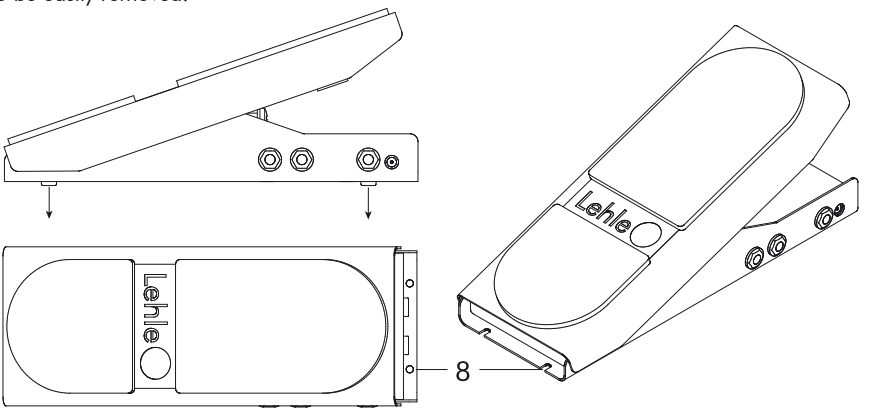
The base of the **Lehle Mono Volume 90** can be easily attached on any base plate with Velcro or using the supplied screws. First, we recommend you to pull out the rubber pads on the bottom. If a rubber buffer gets lost in this process or breaks, you will get a replacement at any time.

Fixing the **Lehle Mono Volume 90** with screws: Place the volume pedal without the rubber buffers in the position where you want to attach it to the board. Use a fine-point pen or a sharp pencil to sketch the subsequent screw holes through the mounting holes onto the base plate. Now drill at the site of the later screw holes a hole with a diameter of approximately 2.5 mm (1/10 inch). Then turn in the two screws for the u-shaped mounting holes together with the washers just halfway.

Slide the volume pedal with the U-shaped mounting holes under the screw heads of the screws already screwed in. Make sure that the washers

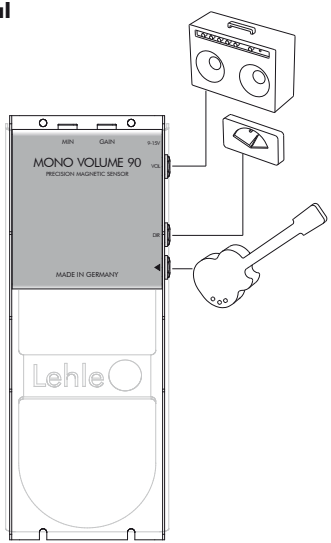
are placed between the bottom plate of the **Lehle Mono Volume 90** and the screw head, to protect the paint.
Now you can turn in the remaining two screws and spacers through the two round mounting holes next to the jack plugs. Tighten those screws only slightly, then fix the screws you first turned in. This type of mounting is extremely stable and can also be easily removed.

Tip: In case you prefer a Velcro solution for your pedal board we recommend to write down the serial number of the pedal for eventual support matters before covering it.



Typical uses

Lehle Mono Volume 90 as a classic volume pedal



The main purpose of the **Lehle Mono Volume 90** certainly is to vary the volume of the connected instrument. The DIR output can be used for a tuner to tune the instrument silently with the VOL output volume turned down. Of course, this output can remain free.

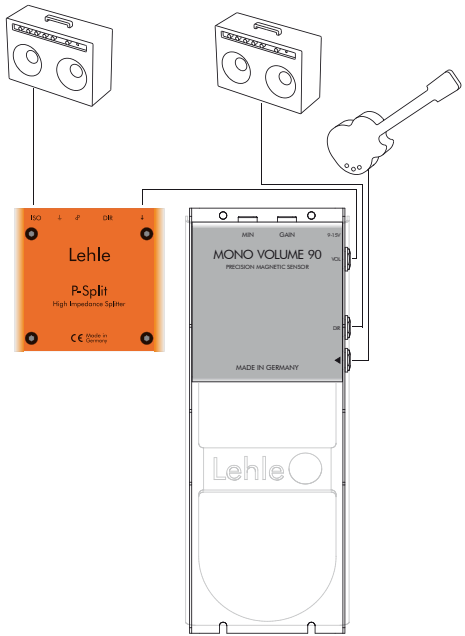
Connection of units:

Input (1) → Instrument
Output DIR (2) → Tuner, or nothing
Output VOL (3) → Amp, mixer

How to do this:

1. Connect your instrument to the Input jack (1) of the **Lehle Mono Volume 90**.
2. Connect a tuner to the jack named DIR (2) or leave this input vacant.
3. Connect the VOL jack (3) to the input of your amp.
4. Adjust the maximum volume using the Gain control (5).
5. Use the MIN control (6) to set the volume you want the **Lehle Mono Volume 90** to put out in heel position.
6. There you go!

Lehle Mono Volume 90 with two amps



With this setup you can blend your original sound with the sound of a second amp. The amp connected to the DIR Out is always on, while the second amp can be faded in and out smoothly via the VOL Out. Using the **Lehle P-Split II**, as shown here between the VOL output and the second amplifier is optional. In case ground loops or phase cancellations occur, these will be eliminated effectively by using the **Lehle P-Split II**.

Connection of units:

Lehle Mono Volume 90

Input (1) → Instrument
Output DIR (2) → Amp 1
Output VOL (3) → Amp 2

Lehle P-Split II

Input → Output VOL (3)
ISO output → Amp 2

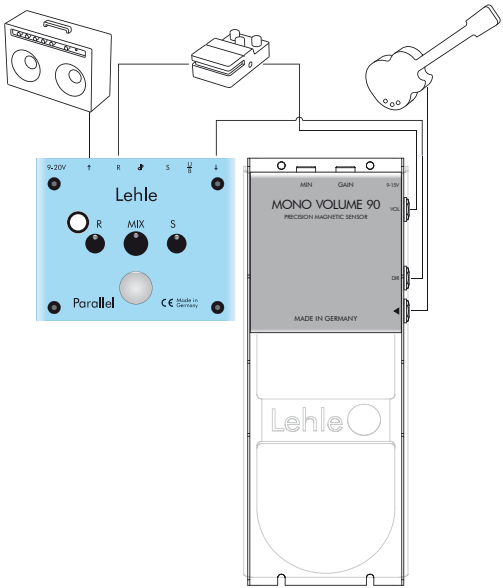
How to do this:

1. Connect your instrument to the Input jack (1) of the **Lehle Mono Volume 90**.
2. Connect the amp that shall be always on to the

DIR Out (2).

3. Connect the VOL jack (3) to the input of the **Lehle P-Split II**.
4. Connect the ISO output of the **Lehle P-Split II** with the input of your second amp.
5. Use the MIN control (6) to set the volume you want the **Lehle Mono Volume 90** to put out on VOL Out to amp 2 in heel position.
6. Adjust the maximum volume for your second amp using the Gain control (5).
7. Now press the ground switch of the **Lehle P-Split II** and find out in which position you have the least noise. In order to eliminate phase cancellation, press the phase switch.
8. There you go!

Lehle Mono Volume 90 to blend effects



Many effects, like delay, chorus or reverb sound much better when they are blended with the dry instrument signal. This can also be done with the **Lehle Mono Volume 90**. However, you will need a mixer - in our example, we are using a **Lehle Parallel L**.

Connection of units:

Lehle Mono Volume 90

Input (1) → Instrument
Output DIR (2) → Input **Lehle Parallel L**
Output VOL (3) → Input effects unit

Lehle Parallel L

Input → Output DIR (2)
Return R → Output effects processor
Output → Amp

How to do this:

1. Connect your instrument to the input jack (1) of the **Lehle Mono Volume 90**.
2. Connect the DIR Out (2) to the input of the **Lehle Parallel L**.
3. Connect the VOL jack (3) to the input of the effects unit.
4. Connect the output of the effects unit to the return jack of the **Lehle Parallel L**.
5. Connect the output of the **Lehle Parallel L** to the amp.
6. Use the MIN control (6) to set the volume the **Lehle Mono Volume 90** shall send from VOL out to the effects unit, with the pedal in heel position.
7. Adjust the maximum volume for the input of your effects unit with the Gain control (5).
8. Use the MIX knob on the **Lehle Parallel L** to set the required mixing ratio for the effects signal and the dry signal while the **Lehle Mono Volume 90** is in toe position.
9. If necessary, press the phase switch on the **Lehle Parallel L**.
10. There you go!

Lehle Mono Volume 90 signal flow diagram