



OPERATING INSTRUCTIONS
LEHLE LITTLE DUAL II





Dear Musician!

Thank you for purchasing your LEHLE LITTLE DUAL III!

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 LITTLE DUAL II comprises only the very best components.

Every assembly of your LEHLE LITTLE DUAL II has been made and tested in Germany.

Your LEHLE LITTLE DUAL II is of extremely robust design and construction, to make sure that you get absolutely years and years of enjoyment from it. 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 the very greatest pleasure and success using your LEHLE LITTLE DUAL III!

Bodo G. Lehle

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INTRODUCTION

The LEHLE LITTLE DUAL II is the successor to the Lehle Little Dual and is a maximum signal-fidelity amp switcher for two amps. By using the soft-touch switches you can switch between two connected amplifiers hum-free and without sound loss.

Two different operating modes are ready for you. You decide if you want to activate or deactivate every output individually or if you want to switch between the amps and activate the remaining one.

The LEHLE-Switches work with a micro-controller and an intelligent True-Bypass-Relay-Circuit with active pop noise suppression circuit. Thereby they switch the LEHLE LITTLE DUAL II even faster than mechanical switches and in addition to that wear- and noise-free.

The easy-action mushroom-shaped buttons characteristic of LEHLE products are mounted in the cover, so that your foot pressure is transmitted indirectly only, via a spring. Thus the electronics board is not exposed to mechanical loads, making the LEHLE LITTLE DUAL II virtually indestructible and guaranteeing years of trouble-free switching.

High-intensity LEDs make it easy to read off switching state A or B, or both, even under high-power spots.

The centrepiece of the LEHLE LITTLE DUAL II is its high-end LEHLE TRANSFORMER HZ, which galvanically isolates output A from output B, making history of hum loops - permanently! The LEHLE LITTLE DUAL II features a gold-plated contact phase inverter and a gold-plated contact ground switch. The two inputs can also be routed in stereo to outputs A and B, if you use the stereo signal of an effects unit as the input, for example. This also makes it possible to route instruments equipped with two pickups, including many acoustic and hybrid guitars, and also double basses, via two amplifier systems - with no complications.

Additionally the LEHLE LITTLE DUAL II is equipped with a TRS switch. Therewith it is possible to send in above-mentioned stereo- or dual-mono signals via a TRS jack or "stereo-jack".

These signals can be operated either in alternation or in parallel - without hum, and without sound losses, needless to say.

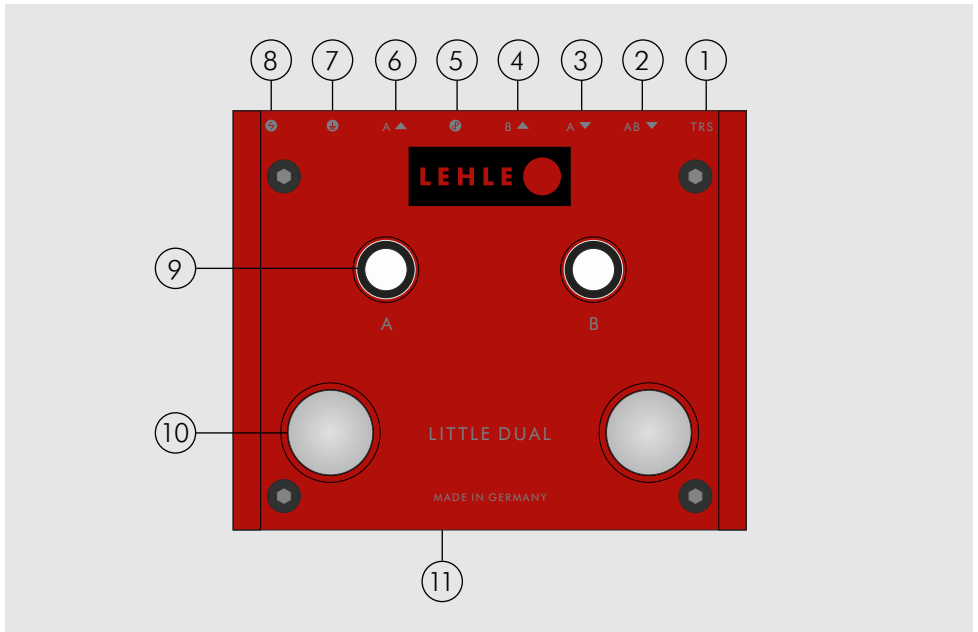
The LEHLE LITTLE DUAL II - small, but so utterly effective!

We take care of your signal so that you can take care of the music.

TECHNICAL DATA

Weight	540 g
Length	3.9"
Width	4.8"
Overall height	1.85"
Supply voltage	9-15 V DC
Current consumption	63 mA
Max Level	+20 dBu (THD < 1%, 50 Hz - 20 kHz)
Total harmonic distortion	0.003 % (0 dBu, 1 kHz)
Frequency range	20 Hz – 100 kHz -0.1/ +0.4 dB (source 600 Ω , load 1 M Ω)
Input impedance (transformer load impedance)	min. 2 M Ω at 2 kHz

GENERAL DESCRIPTION



1. TRS SWITCH

TRS

Press this switch to distribute a stereo- or dual-mono-signal, provided by a TRS jack, to both outputs A and B.

If you have a mono-signal (TS jack), or a stereo-signal via two TS jacks, use the A/B input or input A/B and A respectively. However some instruments offer a TRS output, where e.g. the separated signals of a magnetic pickup and piezo pickup are supplied or e.g. separated signals of

the neck- and bridge-pickup.

Now you can insert these signals via a TRS-TRS cable into the LEHLE LITTLE DUAL II, by pressing the TRS switch, so the signal is distributed to both outputs A and B.

2. A/B-INPUT SOCKET



Connect your instrument or the output from an effects unit or DAW here.

The mono input signal is fed into this socket; should the input socket A (3) be used as well this signal will be routed to output B only.

If the TRS switch (1) is pressed, a stereo- or dual-mono-signal can be distributed to both outputs.

3. A-INPUT SOCKET



Connect the second pickup of your instrument or the second stereo output from an effects unit or DAW here.

The signal from this input socket is routed to output A only. Stereo signals such as the signals from stereo effects pedals or dual-mono signal from different pickups can be switched individually to the outputs A and B, which could be 2 separate amplifiers or PA channels.

4. B-OUTPUT



Connect your amplifier or the input of a mixing desk here.

The signal is routed to output B directly via a microcontrolled relay-switching-circuit with no semiconductors. The LEHLE LITTLE DUAL II, and therefore the instrument connected, is grounded via this socket. This output should therefore always be occupied.

5. PHASE SWITCH



Here you can invert the phase of output A if necessary.

This switch can be used to invert the phase of the input signal from the A output socket by 180°. Splitting signals to two amps may sometimes cause phase cancellations, resulting, for most musicians, in a "thin" sound. Inverting the phase eliminates this problem. Experiment to find out which position you prefer - as always, your individual taste is what counts.

6. A-OUTPUT



Connect your amplifier or the input of a mixing desk here.

Output A is galvanically isolated from output B by the LEHLE TRANSFORMER HZ - so hum loops are impossible, even if A and B are switched on simultaneously. A balanced or an unbalanced signal is possible, irrespective of the type of signal fed from the input, this way you can connect any guitar or bass amp as well as balanced inputs on a mixing console. If both input jacks A/B (2) and A (3) are occupied, but not output jack A (6), a passively summed signal will be sent out of output B (4). This way you can easily sum down a stereo signal to mono, in case you don't have enough space for your second amp or it's simply too loud. Please keep in mind that the stereo signal has to be sent out of one device. If the

signals are coming from two different devices, an impedance mismatch can occur and the mix won't sound balanced. In this case, for active summing of two different signals we recommend using the LEHLE PARALLEL SW II.

7. GROUND SWITCH

Connect the grounds of output sockets A and B if necessary.

If this switch is not pressed (standard), the ground of output A (6) is disconnected from the pedal.

It reconnects the chassis of outputs A and B when it is pressed since connecting the ground conductors can help in some situations, depending on the units connected and on their power supplies. Actuate the ground lift switch to find out for yourself the position in which noise is minimised.

8. EXTERNAL POWER SUPPLY

Connect a power supply with a voltage of 9 – 15 V.

In order that the LEHLE LITTLE DUAL II can work flawlessly, it needs a current supply. This should supply a minimum of 9 V and a maximum of 15 V. Polarity is of no importance. The supply voltage is internally rectified and stabilized in order to guarantee trouble-free operation. In order to avoid noise it's recommendable to use a single power supply or an output of a multi power supply offering galvanically

isolated outputs for the LEHLE LITTLE DUAL II.

9. LEDS FOR SWITCHING STATUS

If the left (A) LED shows green, the output A (6) is active, if the right (B) LED is red, a signal is routed through output B (4).

The high-intensity LEDs under the lenses clearly indicate switching State A or B, even under stage lighting.

Output A (left) is GREEN and output B (right) is RED.

10. TRUE-BYPASS-SWITCH

Here you can switch.

The LEHLE LITTLE DUAL II switches all audio signals controlled by a microcontroller and an intelligent True-Bypass-Relay-Circuit with an active pop suppression function.

Triggered by the easy-action mushroom-shaped buttons characteristic of LEHLE products, mounted in the cover so that your foot pressure is transmitted indirectly via a spring. Thus the circuit board is not exposed to mechanical loads, making the LEHLE LITTLE DUAL II virtually indestructible and guaranteeing years of trouble-free switching.

According to the operating mode following configurations are given:

- Classic Mode:

Left switch: alternates between outputs A and B

Right switch: adds in the other output, so both outputs are active, press again to remove it

- Manual Mode

Left switch: activates and deactivates output A

Right switch: activates and deactivates output B

The LEHLE LITTLE DUAL II is shipped in the Classic Mode. How to change the operating mode can be found in the chapter "Selecting the operating mode" on page 10.

You can reprogram the LEHLE-Switches (for the Manual Mode) from latching (switch) to momentary (button) with ease. You will find out how to do this in chapter "Selecting the footswitch mode" on page 11.

11. BASE AND FIXING

The LITTLE DUAL II can be mounted to a plate such as a pedalboard using the two holes in the bottom of the pedal.

You can find the optional LEHLE Mounting Kit V3 (order number 100981) online at www.lehle-components.com.

To mount, undo the four housing screws by using a 2.5 mm Allen Key and detach the cover.

Then fix the device base to a base plate using the two screws, the washers and the

spacers of the Mounting Kit.

Attach the cover and tighten the four housing screws - done!

For flexible solutions we recommend using 3M Dual Lock™ instead of Velcro for stability, which you can also find in handy sizes at www.lehle-components.com

Tip: if you are using the Velcro / Dual Lock™ method, please make a note of the serial number on the bottom of the pedal before you cover it, in case you have a support question for us later and don't fancy dismantling your board!



SELECTING THE OPERATING MODE

The LEHLE LITTLE DUAL II can be operated in two different modes.

According to the operating mode the following configurations are given:

- Classic Mode:

Left switch: alternates between outputs A and B

Right switch: adds in the other output, so both outputs are active, press again to remove it

- Manual Mode

Left switch: activates and deactivates output A

Right switch: activates and deactivates output B

To change the mode please proceed as follows:

1. Disconnect the power supply.
2. Press and hold the left foot switch.
3. Reconnect the power supply.
4. Both LEDs start flashing 1x (Classic Mode), then 2x (Manual Mode).
5. Depending on when you release the left foot switch, the pedal selects the requested mode, saves and reboots.
6. Finished.

When the power is disconnected, the selection of the operating mode is stored inside and recalled when the pedal is powered on the next time.



SELECTING THE FOOT SWITCH MODE

It's possible to reprogram the LEHLE-Switches (for the Manual Mode) from latching (switch) to momentary (button) with ease.

A switch „latches“ by a press and release, while a button only triggers a contact when pressed down. When released, the contact is disconnected.

For both foot switches you can set an individual operating mode.

To change the mode for the foot switches please proceed as follows:

1. Disconnect the power supply.
2. Press and hold the right foot switch.
3. Reconnect the power supply.
4. Both LEDs start flashing. You are in the foot switch program mode.
5. If the LED of the respective foot switch flashes, it works (as usual) as latching foot switch.
6. If you are pressing a respective foot switch, the corresponding LED turns off and the foot switch works as a momentary button, which is deactivated by default.
7. If you are pressing the respective foot switch again, the corresponding LED turns on and it works again as momen-

tary button, but activated by default.

8. To save, please disconnect the power supply, wait a second and reconnect the power.

9. Done.

When the power is disconnected, the selection of the foot switch mode is stored inside and recalled when the pedal is powered on the next time.



Please keep in mind that the mode selection of the foot switches applies for the Manual Mode only. In other words, if you are using one or both foot switches in momentary or latching, they work in Manual Mode in the selected mode. In the Classic Mode they are always latching.



RESTORING FACTORY SETTING

If you decide to restore all settings back to the factory setting, please proceed as follows:

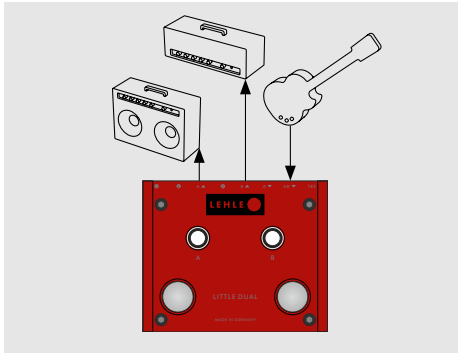
1. Disconnect the power supply.
2. Press and hold both foot switches.
3. Reconnect the power supply.
4. The LEDs will flash alternately.
5. The pedal turns off and starts again.
6. Done.

In factory state the Classic Mode is selected and the foot switches work as latching switches.



TYPICAL USES

LEHLE LITTLE DUAL II AS AN AMP-SWITCHER



The LEHLE LITTLE DUAL II was designed specifically to split and switch the signal of your instrument between 2 amps which are running at the same time. This way you can achieve very nice blends, e.g. with a clean and a crunchy amp sound. Phasing issues can be corrected at the push of a button, as mentioned previously output A features a phase-inverter switch.

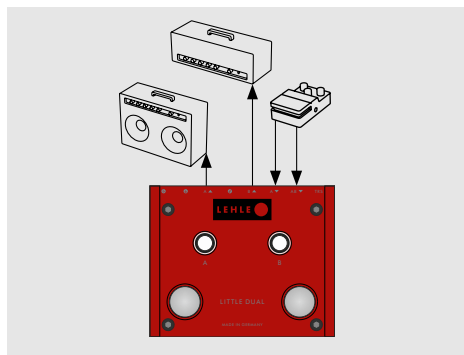
DEVICE CONNECTIONS

AB ▼	Input	Instrument
B ▲	Output	Amplifier 2
A ▲	Output	Amplifier 1





HOW TO DO THIS

1. Connect output A (6) to the first amplifier.
2. Connect output B (4) to the second amplifier.
3. Input socket A (3) is not used.
4. Connect your instrument to the input socket A/B (3) of the LEHLE LITTLE DUAL II.
5. Activate both amps using the foot switches (10).
6. Use the phase inverter switch (5) to find out which setting you prefer.
7. Use the ground lift switch (7) to determine which position eliminates the most background noise.
8. There you go!

LEHLE LITTLE DUAL II AS AN AMP-SWITCHER FOR STEREO EFFECTS AND 2 AMPLIFIERS



DEVICE CONNECTIONS

 AB ▼	Input	Effects signal right
 A ▼	Input	Effects signal left
 B ▲	Output	Amplifier right
 A ▲	Output	Amplifier left

A dual amp setup suggests the use of stereo effects, with one amp receiving the left stereo signal and the other amp receiving the right stereo signal. Chorus and delays create a very wide soundscape when played through 2 amps simultaneously.

In case you don't have enough space for your second amp or it's simply too loud you can easily sum down the stereo signal to mono. If both input jacks A/B (2) and A (3) are plugged-in, but not output jack A (6), a passively summed signal will be sent out of output B (4).

Please keep in mind that the stereo signal has to be sent out of one device. If the signals are coming from two different devices, an impedance mismatch can occur and the mix won't sound balanced. In this

case, for active summing of two different signals we recommend using the LEHLE PARALLEL SW II.

HOW TO DO THIS

1. For the left stereo signal connect the output socket A (6) to the input of amp 1.
2. Connect the output socket B (4) to the amp that should render the right FX signal.
3. Connect the left stereo output from your effects unit to the input socket A (3).
4. Connect the right stereo output from your effects unit to the input socket A/B (2).
5. Activate both amps using the foot switches (10).
6. Use the phase inverter switch (5) to find out which setting you prefer.

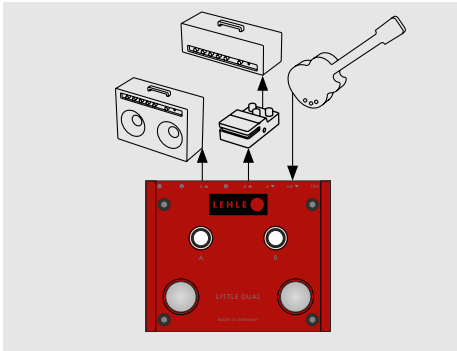
7. Use the ground lift switch (7) to determine which position eliminates the most background noise.

8. There you go!




If your stereo effects unit has only TRS stereo output, use a TRS-TRS stereo cable to make a connection to the LEHLE LITTLE DUAL II. Use the input socket A/B (2) only and press the TRS switch (1).



LEHLE LITTLE DUAL II AS AN AMP SWITCHER IN A WET/DRY SYSTEM



DEVICE CONNECTIONS

 Input	Instrument / dynamic effects
 Output	Wet effects
 Output	Amplifier 1 (Dry)

When setting up two amps and effects, it's not necessary to use stereo effects only - mono effects can be used too, in order to get a wider, but more controllable sound picture.

There is talk of a wet/dry system, where one amp gets the dry signal (without effects) and the other amp the wet signal (with effects). By doing this you keep the original dry signal, but you can control the amount of effects on the second amp.

We recommend placing dynamic effects (volume pedal, compressor, overdrive/distortion) between your instrument and the LEHLE LITTLE DUAL II so both amps benefit from them, while the modulation and time based effects (chorus, tremolo/vibrato, delay, reverb) are sent to one

amplifier only. Place them between the LEHLE LITTLE DUAL II and the wet amp. The order of your effects (before or after the LEHLE LITTLE DUAL II) is up to you too. Ultimately, your individual taste decides here.

HOW TO DO THIS

1. Connect the output socket A (6) to the input of the dry amp.
2. Connect the output socket B (4) to wet effects and finally the wet amp.
3. Connect your instrument or the output of the dynamic effects to the input socket A/B (2)
4. Activate both amps using the foot switches (10).
5. Use the phase inverter switch (5) to find out which setting you prefer.

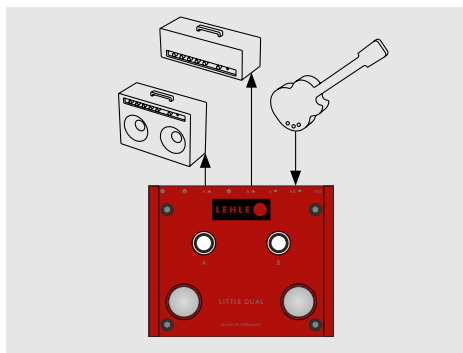
6. Use the ground lift switch (7) to determine which position eliminates the most background noise.

7. There you go!




To get absolute control of the effect level you can place a volume pedal like the LEHLE MONO VOLUME between the output B (4) and the wet effects. This way you can control the level of the effects with your foot.



LEHLE LITTLE DUAL II AS AN AMP SWITCHER FOR 1 INSTRUMENT WITH PIEZO AND MAGNETIC PICKUPS SENT TO 2 AMPLIFIERS



DEVICE CONNECTIONS

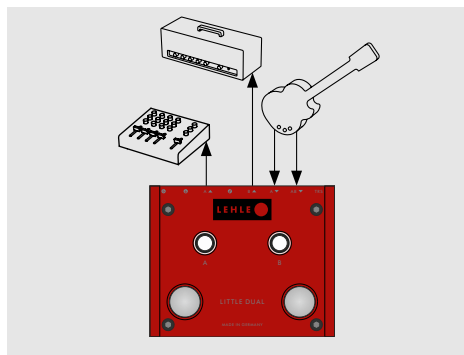
	Input	Instrument
	Output	Amplifier 2
	Output	Amplifier 1

Some instruments are equipped with 2 different type of pickups, usually one magnetic e-guitar pickup and one piezo pickup. These signals have totally different characteristics and sound best when played through their respective amp-types. Usually the instrument offers a TRS jack for the two signals, you can use a TRS-TRS stereo cable. In this case the TRS switch (1) has to be pressed.

HOW TO DO THIS

1. Connect the amplifier for pickup signal 1 to the output socket A (6).
2. Connect the second amplifier for pickup signal 2 to the output socket B (4).
3. Connect a TRS cable of your instrument to the input socket A/B (2).
4. Press the TRS switch (1).
5. Activate both amps using the foot switches (10).
6. Use the phase inverter switch (5) to find out which setting you prefer.
7. Use the ground lift switch (7) to determine which position eliminates the most background noise.
8. There you go!


LEHLE LITTLE DUAL II AS AMP-SWITCHER FOR ONE INSTRUMENT WITH PIEZO AND MAGNETIC PICKUP TO ONE AMP AND A MIXER



In order to extend the previous setup and to make it more flexible, you can route the piezo signal to a mixer, stage box or DAW instead of a regular guitar amp. This way acoustic and electric guitar sounds can be mixed together, either live for the FOH mix, monitoring or recording. Having the option to convert unbalanced signals to balanced is extremely useful and makes the use of additional equipment like DI boxes redundant.

DEVICE CONNECTIONS

	Input	Instrument
	Output	Amplifier
	Output	Mixer, stage box, DAW

If your instrument has a stereo output socket (TRS) you can use a stereo cable (TRS-TRS) to make the connection to the LEHLE LITTLE DUAL II. Use the input socket A/B 2) only and press the TRS switch (1). Please take a look at „LEHLE LITTLE DUAL II as an amp switcher for 1 instrument with piezo and magnetic pickups sent to 2 amplifiers“ 

HOW TO DO THIS

1. Connect the mixer, stage box or DAW for the piezo signal to the output socket A (6).
2. Connect the amplifier for the magnetic pickup to the output socket B (4).
3. Connect the cable with the signal of the piezo pickup to the input socket A (3)

4. Connect the cable with the signal of the magnetic pickup to the input socket A/B (2)
5. Activate both amps using the foot switches (10).
6. Use the phase inverter switch (5) to find out which setting you prefer.
7. Use the ground lift switch (7) to determine which position eliminates the most background noise.
8. There you go!

Output A can send an unbalanced signal to guitar or bass amps, or balanced signals to mixers or DAWs.

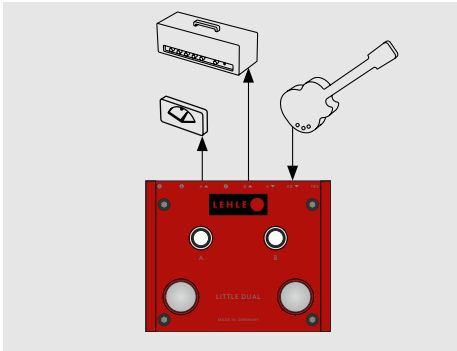
For connections to mixers or DAWs the signal should be buffered to eliminate impedance issues/ mismatch.

Balanced signal lines are used to cross larger distances without interference. They are generally fitted with XLR connectors or TRS (Tip Ring Sleeve) jack plugs.

Here, three cores are required: there are two signal conductors. In a balanced signal line, the signal is present in phase at the tip, as in the case of an unbalanced signal line (XLR Pin 2). The second signal conductor carries the same signal, but with the opposite polarity or mirror-image phase (Ring, XLR Pin 3). The third conductor is the screening, and again constitutes the signal ground (Sleeve, XLR Pin 1).



LEHLE LITTLE DUAL II AS TUNER MUTE BOX



In smaller setups with only 1 guitar and 1 amplifier the LEHLE LITTLE DUAL II can also be helpful to mute the signal for tuning in case you would like to keep it silent for the audience or your fellow musicians. This way the tuner is not in the direct signal path and is isolated electrically from your amp.

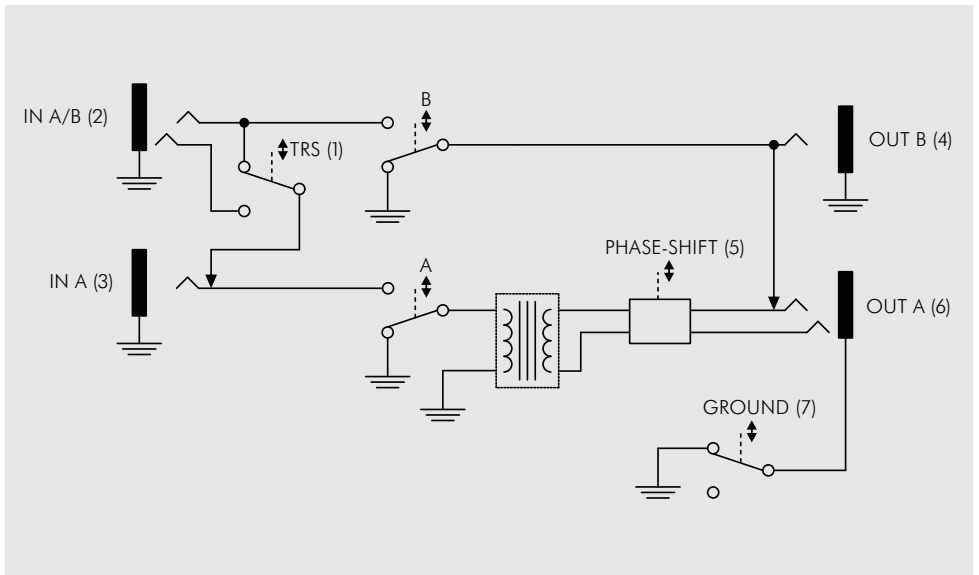
DEVICE CONNECTIONS

AB ▼	Input	Instrument
B ▲	Output	Amplifier
A ▲	Output	Tuner

HOW TO DO THIS

1. Connect your tuner to the output socket A (6).
2. Connect the amplifier to output B (4).
3. Do not use the input socket A (3).
4. Connect your instrument to the input socket A/B (2) of the LEHLE LITTLE DUAL II.
5. Use the ground lift switch (7) to determine which position eliminates the most background noise.
6. There you go!

LEHLE LITTLE DUAL II SIGNAL FLOW DIAGRAM





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