User Manual

Diezel Schmidt Amplifier

Table of Contents

Chapter Six: Functions and Switches

Chapter Seven: Maintenance and Cleaning

Chapter One: Safety and Warranty

1.1 Safety warnings

We would like to stress the importance of the following points, for reasons ofyour personal safety, product longevity and product liability.
Do not use the Amplifier in or near wet locations
Do not store the Amplifier in damp or wet locations
Do not operate the Amplifier on voltages other than those designated on the rear panel of the amplifier.
Do not open the panels of the amplifier. No user serviceable parts inside.Your Schmidt operates on very high internal voltages, which may still bepresent after the Amplifier has been turned off and disconnected for awhile.
Do not use the Amplifier for anything other than its designed purpose: To Amplify Electric Guitar Signals
Do not use fuses other than those intended and specified for the Amplifier
Do not use 2-conductor extension cords or anything other than 3-polegrounded outlets for this appliance. Your life may depend on it!

Please observe the following points when transporting your Schmidt:

Schmidt is a tube-powered amplifier; therefore it is sensitive to shock especially after playing the amplifier for a while. Please store and transport your amplifier gently and try to avoid extreme temperatures, which might produce condensation, resulting in moisture on internal components. Usually a 60 Minute acclimatizationperiod is sufficient to ensure safe operation. The amplifier should be stored in a controlled environment, and it should be transported in a suitable flight case. Make sure the amplifier gets transported in itsnormal operating position, not upside down or on its side. The Schmidt's design incorporates a very potent power amplifier. It is configured to deliver satisfying guitar tones at most volume levels. In its normal operational volume level (75-80dB) it will provide beautiful tones with very little coloration. For reasons of your own safety, please do not run the amplifier above these levels for extended periods of time without wearing a hearing protection. Hearing Loss is a long-term ailment, and is not normally curable.

1.2 Warranty

5 years to the original owner with proof of purchase. Power Tubes and Pre Amp tubes are covered for 3 months to the original owner. The amps will be tracked via both Diezel USA and Diezel Germany recorded sales beginning 1/20/2009. ALL REPAIR WORK MUST BE DONE BY A DIEZEL CERTIFIED TECHNICIAN. Not following this procedure will VOID WARRANTY. This will ensure the the original owner and us at Diezel Amplification that the work is done correctly and that there is knowledge of what is going on out there with each amp. To any second owners or more, there is no warranty coverage nor is a warranty transferable. (This policy is no different then before). Of course we at Diezel are happy to serve people who purchase their amplifier on the used market should your amp ever need servicing. Parts and labor charges will occur for our work on your amplifier as usual.
If you purchased your amp before 1/20/2009 you are categorized under the same guidelines as when you purchased your amp (Lifetime warranty for the original owner, 1 year transferrable warranty).

Chapter Two: Using Your Schmidt

2.1 Mains Connections, Power and Standby

2.1.1 Mains/Connection to Power Outlet

Please make sure that both switches (Power and Standby) are in the off position before connecting to the mains circuit. Verify line voltage before connecting the power cord. Never start Schmidt without connecting speakers to the proper terminals. (See 3.2.5)

2.1.2 Power up, Warm up, Standby off

First, turn the Power switch to on (facing up). The indicator light will turn on. This starts the tube heating process. After about 40 seconds, the tubes should be sufficiently heated for normal operation. Your Schmidt is then ready for operation and the standby switch can be turned to “run” (also facing up). Premature activation of the standby switch will lead to unnecessary tube stress and subsequent reduction of the power tube’s life span.

2.1.3 Power Tube Caution

Tubes are electronic components that function only with vacuum intact and under very high operating temperatures. Each tube has one or more heating filaments, much like a light bulb. These filaments heat up the anode of the tube. If you switch the standby switch to the “run” position before these anodes have reached their operating temperature (when the anode surfaces are not heated evenly), this causes undue stress to the tubes and their related components inside the amp. Always give the amp its much needed warm-up time, even if musical inspiration hits you with a full force.

2.1.4 Operating Temperature

It will take a little more time after warm-up until everything inside the amp is working in sync and to its fullest potential. A trained ear will notice a slightly warmer tone and better complexity in tone after playing the amp for a short while. It's like stretching before exercising.

2.1.5 Power Tube Life

The power tubes of your amplifier are subjected to a certain aging process. Once signs of aging, such as unreliability or unusual noise, are detected, we suggest that you replace both power tubes at once. Matched tube sets age relatively evenly, so our experience suggests. This means that if one goes, the others are not far from meeting the same fate. The aging process manifests itself by a depletion of a thin layer of wolfram on the anodes. This can take anywhere from 6 month to 3 years, depending on the amount of use of the amplifier.

Chapter Three: Peripheral Connections

3.1 Front Panel Connections

3.1.1 The input jack ("IN")

The input jack receives your Electric Guitar signal by means of a shielded guitar cord with 1/4" mono style plug.

Your guitar cord is an important part of your signal chain and its quality and construction type clearly affect the overall tone of your rig. Try and buy the best quality guitar cord that you can or want to afford. Call us if you have doubts and need recommendations. This is where the smart "weak link" comment comes in.

3.1.2 Cable ABC

Some cords and cables sound very neutral; others color the sound spectrum and/or attenuate high frequencies due to capacitance inside the wire and the shield. What are we talking about? OK. A capacitor is used in electronic crossovers, amongst other things, to divide low and high frequencies. Capacitance in a cable cuts your guitar's high end to a certain degree. Generally, the longer of a cord you use, the more of the cord's inherent characteristics will be audible.

3.1.3 Cable Selection

In certain circumstances, it is desirable to match a guitar cord to a specific instrument. One may use the otherwise undesirable qualities of a cord to one's advantage, if one has the time and patience to experiment with different cords and guitars. This should be done while playing with your band, or while recording. Sometimes it is difficult to tell a component's true advantages until it is used in the right context. A guitar that has very piercing highs could theoretically be tamed down somewhat by using a long guitar cord that offers some high-end attenuation. The loops of your Schmidt send signals at higher levels and impedances, which makes this section of wiring less sensitive. You should still use reliable and good quality wiring for all loops.

3.2 Rear Panel Connections

3.2.1 Send/Return Loop

The system consists of a loop which can be run either in series or in parallel with the signal. Use good quality cables to run your fx unit. Turning the "Mix" pot to 100% means that the loop is working in series – all the signal goes out of Schmidt, thru your fx unit and back to the amp. Using lower settings of the "Mix" pot will increase the original, unaffected signal of Schmidt. Setting the Mix pot to 0 results (even if the amp is hooked to a fx unit) the original signal. Good results with delays and reverbs can be achieved by setting the Mix-pot to 20-30% - and (!) setting the fx unit (level) to full wet. If you don't do that, you may run into phasing issues, which sounds strange.

3.2.2 Parallel or Serial

Which is better for you? Read on.There are 2 ways to handle effects signals. The serial loop interrupts the signal path of the Schmidt and the signal is sent to the processor, becomes processed, then sent back to the serial return into the power amp. Digital effects units often digitize this signal once received, then process the signal, convert it back toanalog, then send it to the amp. This is called ADA (analog digital analog) conversion. It is necessary for digital effects units digitize your guitar signal sothat the processor can read and understand signal. Your tubes, however, need an analog signal to operate, so the processor converts the signal back to analog before it goes back to the amp. Generally, even in highest quality effects processors, this causes a change in the original signal, typically a loss of tonality and warmth, also noticeable as a “harder” sound. When you use the serial loop foran effects unit like this, then your signal will have been ADA converted at least once. Tone junkies and vintage freaks alike will more than likely have hives developing by now. But - as always, there is a better way. Use the Parallel loop and the Mix control in the rear determines how much effect signal is being added to the original signal, which now still flows through the amplifier. There is always an analog connection between the send and return jacks; a parallel loop! Important: You must set the mix control on the effects unit to 100% wet when using the parallel operation mode of the loop. Otherwise there will be nasty phasing problems resulting in unsatisfactory tone. The signal portion that is unaffected by the mix control in the effects unit would reach the amplifier at a different time due to the cabling, and cause phasing cancellations.

3.2.3 Top 5 Reasons for dynamic losses in the effects loop

Many different factors can be responsible for loss of dynamics, aside from those mentioned in 3.2.2 (ADA conversion). A vital point that often leads to frustration is a maladjusted output level of an effects unit. If the output level is too high, the unit will cause unwanted distortion in the power amp. If it is too low, then the rig will not sound punchy and might get lost in the band sound. When used in the serial loop, the output of the effects unit determines the ultimate drive signal strength of the power amp. The output level should be matched to give the best possible sound with all channels without over driving the power amp section. (Unless this is desired for power amp distortion) Headroom adjustments of 10% are usually sufficient.

3.2.4 Compensated Out

A frequency corrected signal will leave this jack if you connect it to a mixer or recording device. Use it to quietly compose or send an auxiliary signal to a console etc. The comp out is located after the pre- and power amp, so it is a must that the amplifier is running either with a speaker or a loadbox (THD HotPlate or similar).

3.2.5 Speaker Connections

There are 5 speaker outputs available on the rear panel. They are labelled according to the intended impedances:
16 Ohm: connect any 16 ohms guitar cabinet to this jack.
8Ohm: connect a single 8 ohms guitar cabinet or two 16 ohms guitar cabinets.
4Ohm: connect a single 4 ohms guitar cabinet or two 8 ohms guitar cabinets.

WARNING: Although the Schmidt amplifier has 5 speaker outputs never attempt to connect more speakers than rated. The safe combinations are 1x16 Ohm, 1x8 Ohm, 1x4 Ohm, 2x16 Ohm or 2x8 Ohm. Any other speaker configuration may stress the power amplifier section and in extreme cases may lead to valve and/or output transformer failure.

3.2.6 Switching

Included with your carton a proprietary footswitch shipped with your amp. Hook a standard mono guitar cable (instrument or speaker, included) between the footswitch and the FS5S-jack on the back of your amp.

The footswitch controls all channels, the loop and the reverb.

Chapter Four: Two (and a half) Pre-Amplifiers

4.1 Pre-Amplifiers and their Jobs

The Diezel Schmidt comes equipped with 2 different and totally independent preamps each with its own Reverb pot. This allows the artist to play through nearly all musical-styles without having to make major changes to his/her amplifier. The preamps are voiced to deliver the most wanted guitar tone flavors: Clean, Crunch, Heavy, Lead. This design concept delivers stellar guitar sounds with excellent playability, warm dynamics and razor sharp equalization possibilities. The tone controls work in an unusually wide range, so a little adjustment does quite a lot. As with so many things, less is often more. We suggest you start exploring the channels with all controls set to 12:00 o'clock, and the channel volume just slightly cracked open. (To avoid hearing damage)

4*.1.1 Channel One (low to medium gain)*

Clean Tone is a very sensitive subject, because there are so many different ideas on how a clean amp should sound like. Clean tonal textures require much higher dynamic range than distorted sounds. From hard and percussive sounds to soft, warm, and blossoming tone. Schmidt was designed to offer as many of the clean varieties as possible. Your choice of guitars and pickups will have a large part in this equation. The more you crank the volume of this channel, the more you will add poweramp warmth to your sound.

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4.1.2 Channel Two (crunch, heavy)

This channel is voiced for single notes, or for heavier rhythm guitar. Due to its slight midrange accent and very high gain, it possesses a good punch, will play with ease, and gain authority to rule any stage, or studio. The"less is often more" rule applies here also.

Channel three shares the reverb and equalizing section with channel 2, it has separate gain and volume pots to carry the player from channel 2's crunchy spectrum into more singing leads.

4.2 Pre-amplifier Tubes

The pre-amps are equipped with 12AX7 tubes in all positions. The pre-amp tubes are not designed to produce high power output. Therefore, their life expectancy is much higher than that of the power amplifier tubes.This is not to undermine their utter importance in overall sound and response ofthe amplifier. Also, annoying defects like crackling noises and low dynamics are directly related to defective pre-amp tubes. Like all other tubes, 12AX7 tubes come in many different gain stages, and offer a wide variety of tonal behavior. Our choice for production was made to ensure a wide variety of tones, with low noise and good reliability.

4.2.1 Microphonics and Bad Noises

The overall performance of pre-amp tubes is easily influenced by external mechanical factors. Malfunction in these external components will manifest themselves by a sudden, high-pitched feedback sound. The input stage is especially suspect to these phenomena. If one encounters microphonic tube behavior, then the first tube should be checked as a rule. Pre-Amplifier tubes can also cause a hum or other bad noises, like crackling or ticking.

Chapter Five: Power Amplifier

5.1 Tone and Volume of the Power Amplifier

5.1.1 Channel Volume

As the name suggests, this controls the overall, volume of the amplifier's channel. The more the channel volume is increased, the higher the rate of power amp warmth (until power amp distortion is achieved) will be.

5.2 Power Amplifier Tubes

5.2.1 Function

As the name suggests, the power amp section is the part of the amplifier that produces output power, measured in watts. Preamp signals are sent to the poweramp(s), which amplifies this signal to a level that is acceptable for loudspeakers. Guitar amplifiers utilize several different types of power amps, which differ in output power and tone. We chose the tube type power amplifier for its tried and true performance and familiar tonal behavior.

5.2.2 Selection

Diezel Co. installs the most reliable and best sounding tubes that are currently available in sufficient quantities. So it is possible that tube brand and tube type will change during production. You can fine-tune your Schmidt by having different type and brands of tubes installed, and because Schmidt is working in Class A operation mode, there is no need to rebias the amp. Just let the tubes cool down and feel free to try what you prefer: 5881, 6L6, 6V6 (we're suggesting to use JJ 6V6S tubes) and so on.

5.2.3 Life Span

Power tubes last 1 to 3 years, depending on care, volume and frequency of use ofthe amplifier. If you use your amp only once a month, then the tubes will last much longer. Really. We have heard tubes that are over 10 years old, but it was not a good thing. Tubes age very slowly; slow enough for the artist to get used tothe changing tone.

Chapter Six: Layout of Controls

6.1 Manual Channel Selection

On the left of the pots are the switches for the channels and the loop on/off switch. Each switch also has an LED indicator, the loop LED on the left of the switch, the channel's LED are located between the pots of each channel.

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6.2 Switching

If you should prefer to use Schmidt inside a more complex rig, then Diezel provides three switching jacks on the back of the amp (labelled "reverb", "channel 3/loop", "channel 1/2"). If you hook a midi switcher to these jacks, make sure that the later two need stereo cables while the first jack can be operated with a mono cable.

Chapter Seven: Maintenance and Cleaning

7.1 Cleaning

Never use anything wet to clean the amplifier, any amplifier. Usually, it issufficient to wipe down the outside of the amp with a slightly moist cleaning rag. Do not use abrasive cleaning chemicals. Sometimes a vacuum cleaner can be usedto remove dust and dirt from nooks and crevices. Do not remove the chassis from the housing to clean the amp; the inside of your amp carries dangerous Voltages.

7.2 Care

Be gentle with this Amplifier. Any mechanical shocks, extreme temperaturechanges, damp environments, and other extreme conditions (dust, wind) cansubstantially shorten tube life. In some cases, even the amplifier life. Do not block the air circulation grilles in the back of the amp. Do not push the amp right up against objects that would interfere with its normal airflow. The top of the amplifier might get warm after a prolonged use; this is normal, but will melt your ice cream and definitely ruin your beer. Never put beverages on top of the amp where they could spill and flow inside the amplifier. Will you rue the loss of your beverage first or the loss of your amplifier?

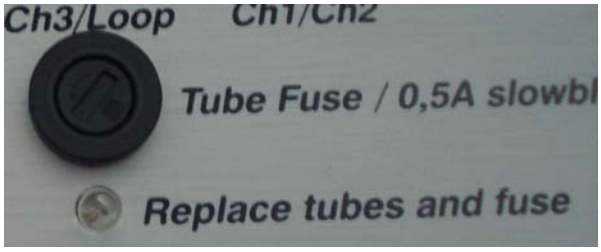
7.3 Tube Change

Since Schmidt is a so called Cathode Biased Class A amplifier, you can change the power tubes by yourself, no biasing necessary. Just make sure that you are using only octal tubes (EL34, 5881, 6V6, 6L6, KT66, KT88, 6550), use matched pairs and let the amp and his tubes cool down before swapping tubes.

7.4 Fuses

Your Schmidt has two external fuses – the mains fuse is located inside the mains jack, which includes a small drawer. Pull it out (no chord attached to the amplifier) gently. Inside it you will see two fuses, the one closer to the amp’s internals is the active fuse, whicle the outer one is a spare.

If the amp will not switch on, please check this fuse first and in case that the inner fuse of the drawer will need replacement, please only use those values which are labelled underneath the mains jack. The dimension of the fuse is 5x20mm. Also the power tubes have their own fuse and an indicator on the back. In case that the power tubes are faulty the amplifier will stop to operate and you will need a replacement of the power tubes and this fuse. The value of the fuse is labelled to the backpanel (0.5A slow blow, 5x20mm).



The Diezel Company wishes to express their gratitude and congratulate you on your decision to purchase the Diezel Schmidt Amplifier.