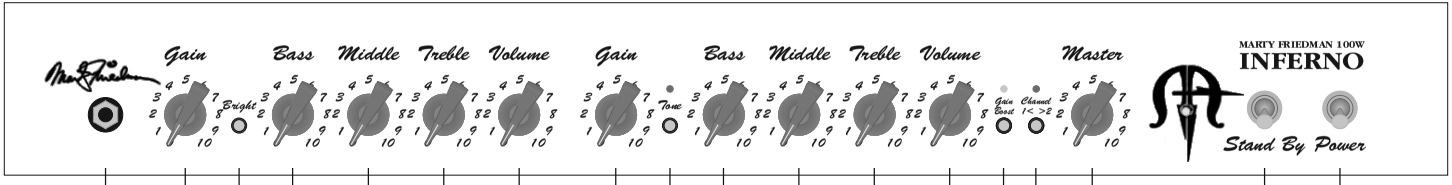
E766
Marty Friedman
Operator´s Manual



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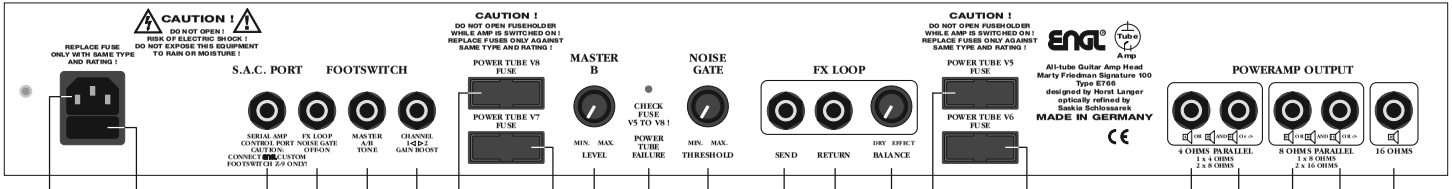

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CAUTION! Please read and heed the following:

You'll find an ancillary pamphlet accompanying this owner's manual entitled Instructions for the Prevention of Fire, Electrical Shock and Injury.
Be sure to read it before you plug in and power up the amp!
Note: Technical specifications are subject to change without notice.

A few words from Marty Friedman to his ENGL Signature Amp:

On every album and every tour I`ve done since I`ve started working with Engl, I`ve used a combination of some of Engl`s most popular amps. Mostly the Steve Morse (for leads) the Special Edition, Powerball and the Invader. I have never once had a single issue with any of these!
During the recording sessions for my INFERNO album, the people at ENGL analyzed how I used those amps, and got detailed information about what sounds I liked, what my go-to settings seemed to be and what features of the amps I needed-and what features I didn`t need.
The following INFERNO world tour gave the ENGL engineers a lot more time to find out what I needed for live tones as well.
What this resulted in was all of that info was carefully combined to create an absolute monster-one new amp with everything I wanted from all those amps and nothing I didn`t need. This is the Marty Friedman INFERNO amp.
The amp was used as a guinea pig for the recording of my new album, **WALL OF SOUND**. On this album you can hear the thick, dense distortion carry the pitch of the notes more melodically than typical distortion. This is a big point with me as I approach many of my solo lines like a lead vocalist, so I need to hear uncompromised pitch at the same time as a percussive aggressive punch.
By the time the album was finished recording, the prototypes were approved by me, and ready for production.
I`m proud to commemorate my long and successful relationship with ENGL with my first Signature amp ever!

Features and Functionality at a Glance

-> **Two channels**: *Channel 1* and *Channel 2*, each channel with separate Gain and Volume knobs.
-> **Two voicing sections specially tuned according to Marty's sound ideas for each channel**: One three-band EQ for *Channel 1* and one three-band EQ for *Channel 2*.
-> **Two sound switching options in the preamp section:** *Bright* assigned to *Channel 1*; *Tone* button for precice-tuning of the Mid frequency range assigned to *Channel 2*.
-> **Switchable and adjustable *FX Loop***. You can control the *FX Loop* remotely via a footswitch and use this circuit as a hardware bypass for connected FX.
-> **Two power amp Master knobs**. You can footswitch these knobs to activate two different power amp volume settings on the fly without twisting a knob.
-> The optional Z-9 Custom Footswitch. It lets you select the two channels in combination with *Gain Boost*, thereby affording you direct access to four gain stages, and the means to control two additional (sound-shaping) features of your choice. Three ¼" (6.3 mm) stereo jack plugs accept three dual footswitches that let you remotely control the two channels; *Gain Boost*, *Tone*, *Master A/B*, *FX Loop* (off/on), and the *Noise Gate* (off/on).
-> **A Noise Gate for the Channel 2 with Gain boosted.** Activate it at the amp or via footswitch to suppress excessive noise at very high gain settings.

Among the hallmarks of this fine amp are painstaking workmanship and finishing as well as rigorously tested and carefully selected quality components. You'll find guidelines on care and maintenance of tube amps on page 16. Under the heading Tips from the designer, you'll come across practical tips on the aforementioned features throughout the manual. All critical information concerning the operation of this amp is preceded by "NOTE", "CAUTION", "Read and heed" or some other eye-catching comment. We're calling your attention to these remarks for reasons of safety or other compelling motives, so please give them due consideration.
Everyone at ENGL is confident that the **Marty Friedman Signature amp's extraordinary versatility** and **outstanding features** are sure to delight you: **Simply plug in, play and be inspired by the tone of your new great ENGL Amp likewise Marty!**
A few words of wisdom from the designer:
Though this amplifier is relatively easy to handle and you're probably raring to give it a go, I recommend that you read the owner's manual thoroughly before you power it up. It is equipped with several safety features that require further explanation to prevent malfunctions.

Contents:

1. ENGL Marty Friedman Signature Amp Head type E766 - 100 watts;
2. mains cord;
3. this manual;
4. a pamphlet entitled *Instructions for the Prevention of Fire, Electrical Shock and Injury*.

Front Panel Features

On page 2 of the manual, you'll find diagrams of the front and rear panels.

1 Input
¼" unbalanced input jack. Plug your guitar in here using a shielded cord.
A tip from the designer:
Depending on the type of cord and its shielding, you may occasionally encounter interference from sources such as radio stations or powerful magnetic fields. When this occurs, try connecting your guitar to the amp using different cords. What's more, to minimize signal degradation due to high-frequency loss, use the shortest cords feasible.

2 Gain Channel 1
The Channel 1 Gain control knob determines the preamp's input sensitivity and amplitude when Channel 1 is active.
A tip from the designer:
Here's how this knob's settings relate to the type of guitar pickup. If you are using single-coils, the preamp will start breaking up at about 7, and at around 5 or 6 with more powerful humbuckers or an active pickup.

If you want a pristine clean sound, back off the Channel 1 Gain knob setting and switch off *Gain Boost* (14).
If you want just a touch of preamp overdrive, I recommend the following settings for single-coil pickups: Set the Gain knob between 8 and 10 and deactivate *Gain Boost*. For humbuckers, set the knob between 6 and 9 to get moderate overdrive.
Then when you need a grittier tone perfect for playing rock riffs, all you have to do is activate the *Gain Boost* in Channel 1.
This particular sound-shaping option (Channel 1 - *Gain Boost* activated) is comparable to plugging an overdrive pedal into the amp's front end. This not only boosts the gain level, it also re-voices the internal filter stages to boost the low mids and conjure a more assertive tone.
CAUTION: Extremely high gain and volume levels can produce powerful feedback. Avoid feedback squeals; they can lead to hearing loss and damage speakers! At higher volumes, back off the Gain and Treble levels in order to prevent unchecked feedback!

3 Bright
This feature boosts the upper end of the high frequency range for Channel 1. Its intensity decreases as gain settings increase.
A tip from the designer:
For a crisp or glassy tone, activate the Bright boost. It brightens the sound of humbucking or muddy pickups. Use it to tweak the amp's tone to taste, activating it to boost top-end frequencies or deactivating it to dampen high end response.

4 Bass
This is the preamp voicing section's passive low-frequency EQ for Channel 1.

5 Middle
This is the preamp voicing section's passive midrange frequency EQ for Channel 1.

6 Treble
This is the preamp voicing section's passive high-frequency EQ for Channel 1.
A tip from the designer:
The best way to get to know the amp and its fundamental sounds is to start out by setting all tone knobs to the center position (means "5"). These are passive tone controls selected and tuned specifically for the whole amp concept, so their control ranges are narrower than those of active EQs.

7 Volume Channel 1
Determines the level of Channel 1. Twist this knob to adjust Channel 1's volume and dial in the desired balance of levels with Channel 2. Because this volume control is located pre effects loop, it also determines the effects send level for Channel 1.
A Tip and Some Important Info from the Designer:
The inputs of modern effect devices can handle signal levels up to +10 dB, so it's a good idea to dial up a higher send level for the FX loop. Do this by turning up the Channel 1 (7) and Channel 2 (13) preamp Volume knobs. Dial in settings higher than 5 to make the most of the dynamic range between the preamp and power amp.

Once you have matched the preamp and effects device level, use the Master knob (16) to adjust the amp's overall volume. If you insert older stomp-boxes devices into the amp's FX loop, you can reduce the level at the FX Loop Send jack (30) to somewhere between -20 dB and -10 dB by setting the two channel Volume knobs between 1 and 4. Older effects pedals usually don't handle high input levels well. Even a -10 dB signal can cause undesirable distortion.

8 Gain Channel 2

Gain control for the Channel 2. This Control knob determines input sensitivity when Channel 2 is active. Use it to dial in the desired amount of preamp saturation level.

A tip from the designer:

Preamp Channel 2 is a lot hotter than Channel 1 because its baseline gain level is a lot higher. However, its tonal structure is different, giving you yet another flavor of overdriven tone to spice up your musical act.

Activating *Gain Boost* sends Channel 2 into very different sonic territory with sustaining lead tone that is great for soloing.

If you push Channel 2 hard while *Gain Boost* is active, the preamp gain will be substantial and noise such as hissing and any buzzing produced by guitar pickups will be amplified considerably. If you wish to configure the preamp so that both Channel 2 and *Gain Boost* are on, you can activate the *Noise Gate* (see section 29) to largely suppress such noise.

CAUTION: Extremely high gain and volume levels in Lead mode can produce powerful feedback. Avoid feedback squeals; they can lead to hearing loss and damage speakers! At higher volumes, back off the Gain and Treble levels in order to prevent unchecked feedback!

9 Tone

This sound-shaping button influences a broad midrange spectrum. When activated, it boosts the level in a frequency range between 300 Hz and 1.5 KHz.

The LED above the button lights up to indicate *Tone* is activated.

The Tone sound feature may also be switched using a Z-9 Custom Footswitch connected to the S.A.C. Port (21) or a footswitch connected to jack (23).

For more details see the chapter 21 and 23 on page 10 and 11 !

A Tip from the Designer:

The Tone button voices specific midrange frequencies that are instrumental in fine-tuning a guitar's sound. The amp's sound will be thicker when it is activated.

If you want a less dominant midrange, leave this feature deactivated; that is, don't push this button. The Tone button also lets you adapt Channel 2's fundamental sound to suit different types of guitar pickups.

10 Bass

This is the preamp voicing section's passive low-frequency EQ for Channel 2.

11 Middle

This is the preamp voicing section's passive midrange EQ for Channel 2.

12 Treble
This is the preamp voicing section's passive high-frequency EQ for Channel 2.
A tip from the designer:
To help you get acquainted with the amp's fundamental sounds, I recommend that you set all tone controls to the center position; that is, to around 5. For higher-gain, high-volume lead sounds, your best bet is to turn the Treble knob down to prevent the pickups and speakers from generating undesirable feedback. I'd recommend a setting below 5.
Though this passive voicing section's control range is narrower than that of a comparable active system, its EQ curve is tweaked specifically for its designated purpose and will give you satisfying results, so you have heaps of voicing options for tailoring your desired sounds to taste.

13 Volume Channel 2
Determines the level of Channel 2. Twist this knob to adjust Channel 2's volume and dial in the desired balance of levels with Channel 1. Because this volume control is located pre effects loop, it also determines the effects send level for Channel 2.
A tip and important info from the designer: see the chapter 7 on page 6!

14 Gain Boost
Press this button to increases the gain level (amplification factor) in Channel 1 and Channel 2 considerably. The yellow LED above the button lights up to indicate *Gain Boost* is active. The button (14) on the amp's front panel is disengaged when you switch *Gain Boost* via footswitch (21, 24). *Gain Boost* may also be switched via an ENGL Z-9 Custom Footswitch connected to the S.A.C. Port (21) or via a footswitch connected to jack 24. For more details, see chapters 21 and 24 on page 10 and 11 !
A tip from the designer:
Activating Gain Boost in Channel 1 increases the gain level significantly, enough to push the preamp into overdrive. This brings out and tightens up the middle frequencies to conjure a more assertive sound for classic-style rhythm workouts. Activating Gain Boost in Channel 2 kicks up the gain level considerably, saturating the preamp to give you far more sustain and much thicker tone. This means you can coax blazing lead tone out of the amp without having to connect an outboard gain enhancer or overdrive pedal. And the sound quality may well send your stomp-boxes into retirement.

15 Channel 1 <> 2
This channel switching button selects *Channel 1* or *Channel 2*. Press it to activate *Channel 2*. The red LED above the button lights up to indicate *Channel 2* is active. Channels may also be switched via the ENGL Z-9 Custom Footswitch connected to the S.A.C. Port (21) or via a footswitch connected to jack 24. For even greater convenience, you could also use the optional ENGL Z-9 Custom Footswitch to select the two channels in combination with the two Gain Boost stages directly by simply tapping the Z-9's four channel-switching buttons. For more details, see chapters 21 and 24 on page10 and 11 !

16 Master A
Master A volume knob. Located post FX Loop, it adjusts the power amp's output level. Master A is enabled and its setting determines the master level if you have not

connected a footswitch to the amp. If you have connected a footswitch you can use it to activate another master level as determined by the Master B (27) knob setting.

A tip from the designer:

You could use an ENGL Z-9 foot controller, for example, to remotely control Master A, the default when you are not using a footswitch, and Master B, which is only accessible via footswitch. Then you could dial in different levels for Master A and Master B and combine these with the amp's various modes – very practical for shaping tone and controlling volume on the fly at gigs. Note that the four channel switches on the ENGL Z-9 foot controller let you access Channel 1 and Channel 2, and each directly in combination with Gain Boost and Master A/B modes. This gives you a range of alternatives that you can apply to different playing styles and situations to great dramatic effect, for instance, to play rhythm and more restrained leads over Channel 1 and then kick up the preamp gain for playing high-octane rock riffs and leads over Channel 2.

Beyond that, you can also broaden the volume and tonal ranges by working your guitars' volume knob. If your arsenal includes MIDI gear - for instance, the Z11-S.A.C. ENGL MIDI Switcher in combination with the Z-9 Custom Footswitch - you can use the Master A/B switching function to call up different volume levels for the various preamp setups.

17 Stand By

Power amp standby switch: Use this switch to silence (0 position) the amp when you take longer break. The amp's tubes stay nice and toasty, and the amp is ready to roll immediately when you ramp it back up to full power.

A tip from the designer:

I suggest you get into the habit of using standby during short breaks. In this mode, current is not piped through the power tubes, so they don't get as hot (due to the lack of anode dissipation) and are spared considerable wear. The amp is ready to run when you flip the Standby switch because the tubes are already warm and don't require time to heat up. For breaks of 20 minutes and longer, I recommend that you switch the amp off in order to conserve energy.

18 Power

Mains power on/off.

Please note: ensure that the Stand By switch (17) is set to *Stand By* (0 position) before you switch the amp on. Let the tubes heat up for about 30 seconds before you activate the power amp. This procedure spares the tubes.

CAUTION: After an extended period of operation and higher ambient temperatures the amps's chassis can become very hot, therefore avoid touching the rear panel surface !

Rear Panel Features

On page 2 of the manual, you'll find diagrams of the front and rear panels.

19 Mains Connector (AC Power Inlet; IEC - C14 connector)
Plug the mains cord in here. For European models, use a standard non-heating equipment connector cable.
CAUTION: Make sure you use an intact mains line cord with a grounded plug! Before you power the amp up, ensure the voltage value printed alongside **the mains socket is the same as the current of the local power supply or wall outlet.**
Please also heed the guidelines set forth in the separately included pamphlet, *Instructions for the Prevention of Fire, Electrical Shock and Injury*.

20 Mains Fuse Box:
The rear chamber contains the mains fuse and in the front chamber, a spare fuse.
CAUTION: ALWAYS make sure replacement fuses are of the same type and have the same ratings as the original fuse! Please refer to the fuse ratings table.

21 Footswitch: Serial Amp Control Port (S.A.C.)
This serial data input serves to control six of the amp's switching functions remotely. It accepts the optional ENGL Z-9 Custom Footswitch as well as the optional ENGL Z11-S.A.C. MIDI Switcher for use as a MIDI interface. Use a cord equipped with stereo 6.3 mm (¼") jack plugs to connect this input to the S.A.C. Out on the Z-9 Footswitch or Z11-S.A.C. MIDI Switcher. The custom-designed Z-9 and the MIDI Switcher (in MIDI interface mode) let you switch every amp feature designated as footswitchable in this manual. You can configure the Z-9 Footswitch to control the two channels in combination with *Gain Boost* and *Master A/B* and two further features directly.
To learn if a given feature may be controlled remotely, refer to its description herein. You'll find a configuration table showing the Amp's functions on page 22.
The ENGL Z-9 Custom Footswitch is optional.
Heads up: Plugging a jack plug into the S.A.C. Port disables the Gain Boost and the Channel switching functions controlled by the buttons (14, 15) arrayed on the amp's front panel. What's more, it also disables the footswitch jacks' (24) remote-control capability. In other words, when a Z-9 board is plugged in, it has priority over the amp's Gain Boost and Channel switching controls as well as Gain Boost and Channel switching via a footswitch connected to jack (24).
CAUTION: Connect only the ENGL Z-9 Footswitch or the ENGL Z11-S.A.C. MIDI Switcher (S.A.C. Out) to this 6.3 mm (¼") stereo jack! Connecting any other switching device may damage it and/or the amp's circuitry!
Insert and remove the Z-9's cable to and from the S.A.C. Port only when the amp is switched off!
Please note: Never link two S.A.C. Ports of Engl amps via an Y-adaptor to a Z-9 Custom Footswitch; this can cause ground hummming noise and damage the internal circuits!
A tip from the designer:
Try out the ENGL Z-9 Custom Footswitch - chances are you'll love the remote-control convenience for your Marty Friedman Signature amp. Based on a rather clever switching concept, it features four switches that afford you direct access to *Channel 1*

and *Channel 2* in combination with the two *Gain Boost* stages. Alongside selecting channels and the Gain stages, you can opt to control any other two switchable amp functions such as *Tone* and *Master A/B* or *FX Loop* and *Noise Gate*, and so forth.
Another tremendous benefit of this very handy footboard is that it connects to the amp via an easily obtained, standard stereo cord. But that's not the last of the Z-9's advantages: At some point, you may decide to ramp up or connect to a MIDI system using the ENGL Z11-S.A.C. MIDI Switcher. This won't render the Z-9 obsolete because it also serves as a simple MIDI footboard with a MIDI OUT (5-pin DIN connector) that selects 10 MIDI patches (or presets, if you prefer). Again, I want to emphasize that you should never connect another footboard to this jack: The Z-9 and the Z11-S.A.C. control the amp via a proprietary ENGL serial data protocol, and the Serial Amp Control Port was developed exclusively for ENGL amps. No other footboard will work and in fact is likely to damage the footboard or the amp's circuitry!
You can use the ENGL Z11-S.A.C. MIDI Switcher to integrate the amp straight into a MIDI system. You can also opt to control two ENGL amps in parallel using the Z11-S.A.C. MIDI Switcher and MIDI commands. The Z11-S.A.C. Switcher is equipped with six switching loops (accessed via three stereo jacks) and the S.A.C. Out (stereo jack) for precisely this purpose!

22 Footswitch: FX Loop, Noise Gate Off - On
Use this ¼" (6.3 mm) stereo jack to connect a conventional footswitch with two switching functions, for example, the ENGL Z-4 (2 x off/on - Single Pole Single Throw or SPST for short). This type of footswitch lets you access *FX Loop* on/off and *Noise Gate* on/off. One of the two switches enables or bypasses *FX Loop*, while the other switches the *Noise Gate* on and off (Channel 2 with *Gain Boost* engaged only).
Note also: A footswitch may be equipped with LEDs indicating the given switching status. Each of the two switches is provided with approx. 10 milliamperes current, which suffices to power a standard LED. The jack's mono terminal controls *FX Loop* on/off, while the stereo terminal controls *Noise Gate* on/off (for pin assignments, see page 21).

23 Footswitch: Master A/B, Tone
Use this ¼" (6.3 mm) stereo jack to connect a conventional footswitch with two switching functions, for example, the ENGL Z-4 (2 x off/on - Single Pole Single Throw or SPST for short). This type of footswitch lets you access *Master A/B* and *Tone*. One of the two switches activates Master A or B, while the other selects the Tone control, which boosts Channel 2's midrange frequencies. Plugging a footswitch into this jack disables onboard *Tone* (9) switching.
Note also: A footswitch may be equipped with LEDs indicating the given switching status. Each of the two switches is provided with approx. 10 milliamperes current, which suffices to power a standard LED. The jack's mono terminal selects *Master A/B*, while the stereo terminal controls the Tone feature (for pin assignments, see page 21).

24 Footswitch: Channel 1 < > 2, Gain Boost
Use this ¼" (6.3 mm) stereo jack to connect a conventional footswitch with two switching functions, for example, the ENGL Z-4 (2 x off/on - Single Pole Single Throw or SPST for short). This type of footswitch lets you access the two channels and Gain Boost

off/on. One of the two switches activates *Channel 1* or *Channel 2*; the other engages *Gain Boost*. Plugging a footswitch into this jack disables onboard channel (15) switching and *Gain Boost* (14).
Note also: A footswitch may be equipped with LEDs indicating the given switching status. Each of the two switches is provided with approx. 10 milliamperes current, which suffices to power a standard LED. The jack's mono terminal selects Channel 1 or Channel 2, while the stereo terminal controls the Gain Boost feature (for pin assignments, see page 21).

25 Power Tube V8 Fuse
A fuse in the rear chamber of this fuse drawer protects the V8 power tube. It is designed to blow in the event of an electrical problem with tube V8. The Power Tube Fuse LED (28) lights up to indicate that one or several of the four fuses has blown. There is a replacement fuse in the front chamber of the fuse drawer.
CAUTION: Switching off the amp and pull the mains plug before opening the fuse drawer!
Need-to-know info: Always make sure replacement fuses are of the same type and have the same ratings as the original fuse! See section 28 for some more key facts about tube defects.

26 Power Tube V7 Fuse
A fuse in the rear chamber of this fuse drawer protects the V7 power tube. It is designed to blow in the event of an electrical problem with tube V7. The Power Tube Fuse LED (28) lights up to indicate that one or several of the four fuses has blown. There is a replacement fuse in the front chamber of the fuse drawer.
CAUTION: Switching off the amp and pull the mains plug before opening the fuse drawer!
Need-to-know info: Always make sure replacement fuses are of the same type and have the same ratings as the original fuse! See section 28 for some more key facts about tube defects.

27 Master B
Master B volume knob. Located post FX Loop, it gives you an alternative to the Master A knob (16). In another words, you can set a different power amp output level and then activate this Master B volume via footswitch. If you wish to switch between Master A and Master B, you have to connect an ENGL Z-9 Custom Foot Controller to the S.A.C. Port (21) or footswitch such as the ENGL to jack no. 23. Two options for controlling Master A/B via the Z-9 are described on page 10. You'll find tips on how to make the most of Master A/B switching in section 16 on page 8 & 9.

28 Power Tube Fuse LED
This LED lights up to indicate one of the fuses in the fuse drawer (see the descriptions under 25, 26, 33, 34) has blown to protect the power tubes.
Need-to-know info: As a rule, it is an electrical problem with the tube that causes a power tube fuse to blow. Normally this power tube is defective and needs to be swapped for a new tube. The best way to tell if the defect is permanent is to replace the fuse before installing a new power tube.

The tube map on page 20 shows the positions of the power tubes. With a replacement fuse in every fuse drawer, there are plenty of backups on board.

29 Noise Gate Threshold Level

This control activates an onboard *Noise Gate* serving to suppress any excess noise generated when both *Channel 2* and *Gain Boost* are active. To this end, twist the knob clockwise, near or just beyond the 9 or 10 o'clock position.

In addition the *Noise Gate* can be controlled remotely (on/off) via a footswitch connected to jack 22 (for details refer to chapter 22) or via the ENGL Custom Footswitch Z-9 (refer to chapter 21 for details). If you want to control the *Noise Gate* remotely via footswitch, you must set the Threshold knob to 10 o'clock or beyond.

Use this knob to set a threshold value (that is, the noise level) at which the *Noise Gate* activates to suppress the signal within the 9 to 5 o'clock range. The further you twist the knob to the right, the higher the signal level at which the *Noise Gate* kicks in. If you set the knob to the 5 o'clock position, the *Noise Gate* reacts to extremely high noise levels, meaning that there's not much of a margin between the guitar signal and background noise.

A tip from the designer:

Noise is a definite no-no in many situations. For example, studio etiquette demands that you keep a lid on extraneous noise during short breaks. It's in the nature of high-gain rigs to generate undesirable peripheral noise in overdriven (high gain) channels. This is attributable to the physical properties of an amp's constituent components, in particular its active components. That's right; those cherished tubes are the culprits. The *Noise Gate* is a tool that lets you silence this noise during breaks by way of signal mute circuit. Note that electric guitars pick up interference signals, and these are amplified tremendously at high gain levels (Channel 2 with Gain boosted). The most common source of noise is 50 Hz or 60 Hz (hertz/cycle) mains hum, particularly when the guitar is positioned near transformers and power units. Because in worst-case scenarios this humming can attain extremely high levels, the *Noise Gate* can hardly distinguish between the musical signal and noise. This makes it hard to find the right Threshold setting. It is entirely possible for this humming and other noise to rise to a level that deactivates the *Noise Gate* and therefore becomes audible. My advice is to stay as far away from transformers and power units as space allows.

IMPORTANT note; please read and heed: The *Noise Gate* may open up inadvertently when the *Noise Gate* is activated, a high-gain Lead channel is selected, and the volume exceeds the Threshold knob setting. At very high volume and gain settings, this may generate instant feedback, particularly if your guitar is facing the speakers. Rather than musical and controlled, this is the shrill, unpleasant and potentially harmful variety of feedback squealing that sends your audience and fellow musicians packing. Though the amp is not more susceptible to feedback when the *Noise Gate* is activated, the fact that it suppresses extraneous noise means you can't hear those telltale signs that feedback is swelling and consequently can't take measures to suppress it. For this reason, make an extra effort to be careful when the *Noise Gate* is activated: Before you approach the amp and speaker cabinet with your guitar in hand, turn the guitar's volume knob to the far left position (to 0 so that no signal is audible) to prevent the pickups and speakers from interacting!

30 FX Loop Send
Connect the FX Loop output to a signal processor's input/return jack using the shortest possible shielded cord equipped with 1/4" plugs. The FX Loop can be controlled remotely (: on/off) via a footswitch connected to jack 22 (for details refer to chapter 22) or via the ENGL Custom Footswitch Z-9 (refer to chapter 21 for details). In the signal path, the FX Loop is located post preamp and pre the two power amp Master knobs.
NOTE: The FX Loop Send output is removed from the preamp signal path when the FX Loop is deactivated.

31 FX Loop Return
Connect the FX Loop input to a signal processor's output/send jack using the shortest possible shielded cord equipped with 1/4" plugs. The FX Loop can be controlled remotely (: on/off) via a footswitch connected to jack 22 (for details refer to chapter 22) or via the ENGL Custom Footswitch Z-9 (refer to chapter 21 for details). In the signal path, FX Loop is located post preamp and pre the two power amp Master knobs.
NOTE: The effect signal at the FX Loop Return input is removed from the signal path when the FX Loop is deactivated.

32 FX Loop Balance
FX mix control for the *FX Loop*. When the knob is set to *Dry*, the amp signal is routed through with no processed signal (0% wet balance) added to the mix. Twist the knob clockwise to blend in the processed signal (parallel/passive, wet balance 1-99%, depending on knob position). When the knob arrives at the Effect position, only the wet signal (that is, the processed signal generated by the connected effect device) is patched to the power amp (serial, 100% wet).
NOTE: Set this knob to *Dry* when this loop is not in use! Settings between the 9 and 3 o'clock position reduce the signal level.

33 Power Tube V5 Fuse
A fuse in the rear chamber of this fuse drawer protects the V5 power tube. It is designed to blow in the event of an electrical problem with tube V5. The Power Tube Fuse LED (28) lights up to indicate that one or several of the four fuses has blown. There is a replacement fuse in the front chamber of the fuse drawer.
CAUTION: Switching off the amp and pull the mains plug before opening the fuse drawer!
Need-to-know info: Always make sure replacement fuses are of the same type and have the same ratings as the original fuse! See section 28 for some more key facts about tube defects.

34 Power Tube V6 Fuse
A fuse in the rear chamber of this fuse drawer protects the V6 power tube. It is designed to blow in the event of an electrical problem with tube V6. The Power Tube Fuse LED (28) lights up to indicate that one or several of the four fuses has blown. There is a replacement fuse in the front chamber of the fuse drawer.

CAUTION: Switching off the amp and pull the mains plug before opening the fuse drawer!
Need-to-know info: Always make sure replacement fuses are of the same type and have the same ratings as the original fuse! See section 28 for some more key facts about tube defects.

35, 36 Poweramp Output, 4 Ohms Parallel
4 ohms speaker output jacks, internal connected parallel. For diverse cabinet options see the chapter *Cabinet options* !

37, 38 Poweramp Output, 8 Ohms Parallel
8 ohms speaker output jacks, internal connected parallel. For diverse cabinet options see the chapter *Cabinet options* !

39 Poweramp Output, 16 Ohms
16 ohms speaker output jack. For diverse cabinet options see the chapter *Cabinet options* !
IMPORTANT NOTE, please read and heed: Never operate the power amp without a sufficient load, otherwise you may damage or destroy it! Always check the connected cabinets' impedance to confirm it matches the amp's output impedance! For example, if you are connecting a cabinet to one of the two 8-ohms output, make sure the speaker system is indeed rated for 8 ohms. You'll find the various speaker and cabinet options listed in the nest section. I cannot stress enough the importance of proper impedance matching when connecting one or more cabinets to your amp. Impedance mismatching can damage the power amp!

Cabinet options
1. One 4-ohm cabinet connected to a 4-ohm jack;
   Summary: 4 Z, -> connected to 4-ohm output.
2. Two 8-ohm cabinets connected to the 4-ohm jacks;
   Summary: 8 Z + 8 Z, -> connected to 4-ohm + 4-ohm output.
3. One 8-ohm cabinet connected to an 8-ohm jack;
   Summary: 8 Z, -> connected to 8-ohm output.
4. Two 16-ohm cabinets connected to the 8-ohm jacks;
   Summary: 16 Z + 16 Z -> connected to 8-ohm + 8-ohm output.
5. One 16-ohm cabinet connected to the 16-ohm jack;
   Summary: 16 Z -> connected to 16-ohm output.
6. An 8-ohm cabinet connected to one of the 4-ohm jacks in combination with a 16-ohm cabinet connected to one of the 8-ohm jacks
   Summary: 8 Z + 16 Z -> connected to 4-ohm + 8-ohm output.

Handling and Care:

* Keep the amp safe from hard knocks and shocks. Tubes are fragile and tend to suffer when exposed to mechanical stress!

* Let the amp cool down before you transport it. Ten minutes or so will spare the tubes.

* Tubes take some 20 seconds to warm up after you switch the power on, and about two to three minutes before they are able to pump out full power. Make a habit of giving your amp plenty of time to get toasty and flipping the Standby switch for short breaks.

* In order to spare the power tubes and prolong their lifetime, we recommend to set the Stand By switch to *Stand By* (0 position, that is) before you switch the amp on. After a period of 30 seconds you may activate the poweramp by flipping the Stand By switch.

* Avoid storing the amp in damp or dusty rooms to spare jacks, switches and potentiometers. If you don't use the amp all the time, I recommend that you drape a covering over it to prevent the intrusion of dust. Even better, keep it in a transport cover or flight case.

* Never use caustic or scouring detergents to clean the amp's housing, front or rear panels. Use a soft, damp cloth or sponge with diluted soapsuds or a standard brand of mild dishwashing liquid instead. Never use solvents they can corrode the amp's vinyl skin and dissolve the front and rear panel labels. Keep liquids well away from the amp, particularly the interior of the housing.

* Make sure air can circulate at the rear and top of the amp to allow for adequate cooling, which increases component life.

* Never operate the amp without an adequate load (a speaker, cabinet or suitable terminating resistor).

* High ambient temperatures place an additional strain on diverse components; so if at all possible, avoid operating the amp at temperatures far higher than 30°C for longer periods. Running the amp at mains voltages exceeding the nominal mains input voltage over longer periods can also shorten component life.

* Replace tubes with selected tubes that satisfy ENGL selection criteria to forestall microphonic properties, undesirable noise and unbalanced power amp signals. Because power tubes' idle current (bias) must checked and possibly adjusted when replacing tubes, this is a job best left to experienced and authorized specialists.

Troubleshooting

*** Some features that may be controlled remotely using a Z-9 or Z-4 footswitch fail to respond when you change settings:**

-> Powerful static charges, strong radio signals, or mains voltage spikes can affect microcontroller-driven systems, setting them to an undefined status commonly called a hung chip. In this event, your only choice is to reset the system. Simply switch the amp off and on again.

-> If a reset doesn't solve the problem, there is a defect in the control system, probably on the logic board holding the microcontroller or merely a faulty contact on one of the four stereo footswitch jacks (21, 22, 23, 24). In this case, consult an authorized service center or a professional specialist.

*** The amp fails to respond when you try to control switching functions remotely via the Z-9 footboard.**

-> Is the Z-9 footboard connected to the S.A.C. Port (21)?

-> Is the cord you are using stereo, intact, and wired properly?
(Refer to page 21 for pin assignments.)

*** The amp fails to respond when you try to control switching functions remotely using a footboard such as the Z-4 or a MIDI switcher such as the ENGL Z-11.**

-> Are the footboards or switching loops connected to the corresponding footswitch jacks (22, 23, 24)?

-> Are the cords you are using stereo, intact, and wired properly?
(Refer to page 21 for pin assignments.)

-> If you are using footswitches other than an ENGL Z-4 or Z-11, are the switches or relays inside the boards or switching loop systems off / on Single Pole Single Throw (SPST) switches? In other words, do these switches continuously connect to GND when you wish to activate the given function? If you're unsure about the answers to these questions, consult an authorized service center or a professional specialist.

*** The amp is not providing an output signal / no sound is emanating from the speaker.**

-> Is at least one speaker connected to the speaker outputs 4 ohms, 8 ohms or 16 ohms (35, 36, 37, 38, 39) ?

-> Is the power amp activated (Standby switch to ON) ?

-> Are all cords (guitar, effect, and speaker) connected properly and are they functional ?

-> Unplug connected effectors and see if the preamp works fine without these peripheral devices.

-> Is the *Noise Gate* activated in one of the Lead channels and the Threshold (29) knob set to a high value? Deactivate the Noise Gate (29) for a quick check.

-> Are the active Master knob and the Gain and Volume knobs set to a value greater than 0 ? If any of these knobs is set to 0, no signal is routed to the amp's outputs.

-> You may be looking at a faulty tube or another defect. In this case,

be sure to take the preamp to an authorized, professional service center.

*** The speaker is emitting humming noises:**

-> Is there a connection (for example, via a shielded circuit) between the amp and another device that is grounded via a power plug of its own? Two or more circuits sharing a common electrical ground line can cause audible hum. If low-frequency noise is emanating from your rig, be sure to consult a specialist.

-> The amp and mains grounds are not connected properly or are altogether disconnected. Have an experienced specialist check this.

-> Cords connected to the input or effect loops may not be shielded properly. Replace them to check if this is indeed the case.

-> The amp or speaker cords may be picking up interference from powerful magnetic fields (for example, of nearby power transformers or electrical motors). Reposition the amp and connector cables.

-> The amp or speaker cords may be picking up radio signals, for example, from activated mobile telephones or powerful local transmitting stations nearby. Switch off mobile phones while troubleshooting noise problems.

*** One of the power tube fuses blows:**

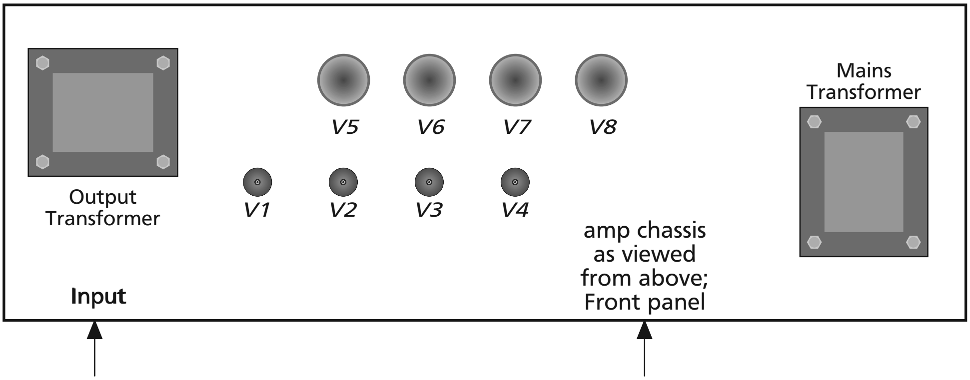
-> The given power tube is probably defective. If that power tube's fuse is replaced and the new fuse also blows, the tube needs to be swapped out.

-> The amp has been overloaded, perhaps by excessive volume levels, excess mains voltage, or the wrong output impedance (where the impedance setting does not match the connected speaker's impedance).
Check the speakers' overall impedance and, if necessary, adjust your setup accordingly (see the list on page 15). Refer to section 28 for some more key facts about tube defects.

Technical Data

Output power:	approx. 100 watts; adjusted accordingly to 4, 8 and 16 ohms;
Input sensitivity levels	
Input:	range: –40 dB to -10 dB (Channel 1), max. 0 dB
Effect Return:	range: -20 dB to 0 dB, max. 5 dB
Output levels	
Effect Send:	range: -20 dB to 0 dB, max. 5 dB
Power consumption:	approx. 410 Watt (490 VA) max.
Fuses:	
at 220/230/240 mains voltage	2 AT L (T: slo-blo);
at 100/120 mains voltage	4 AT L (T: slo-blo);
Power Tube Fuses:	4 x 160 mAM (M: medium-blo);
Important:	**Replace these with fuses of the same type and rating only!**
Tubes	
V1:	ECC83 F.Q., input tube;
V2, V3:	ECC83 selected;
V4:	ECC83 standard;
V5, V6, V7, V8:	EL34, matched sets;
Consult Tube Map page 20 to view tube array!	Replace tubes with selected sets only!
System interface:	
Serial Amp Control S.A.C. Port:	Proprietary ENGL asynchronous data protocol. Refer to page 21 for pin assignments;
Dimensions:	approx. 71 x 27 x 27 cm (l x h x d); approx. 27.9" x 10.6" x 10.6" (l x h x d);
Weight:	approx. 22,5 kg approx. 49,4 lbs

Tube Map:



the tubes and their function:
V1 - ECC83 (12AX7): input stage, 2. gain stage; grade: FQ selected
V2 - ECC83 (12AX7): Channel 2 driver stage, 4. stage; grade: selected
V3 - ECC83 (12AX7): FX buffer stage, poweramp driver stage; grade: selected
V4 - ECC83(12AX7): phase splitter; grade: standard
V5 to V8: EL34: power tubes, poweramp, matches sets

Tube replacement report:

1. Replaced on: _ _ _ _ _ _ _ _ 20 _ _ _ Replaced by: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Replaced tubes: _

Reason: _

2. Replaced on: _ _ _ _ _ _ _ _ 20 _ _ _ Replaced by: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Replaced tubes: _

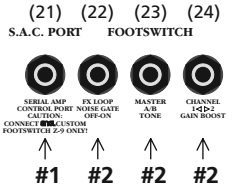
Reason: _

3. Replaced on: _ _ _ _ _ _ _ _ 20 _ _ _ Replaced by: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

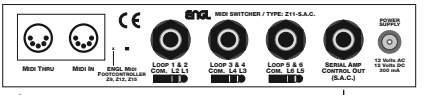
Replaced tubes: _

Reason: _

Your Options for controlling the ENGL-M.F.S. amp remotely:



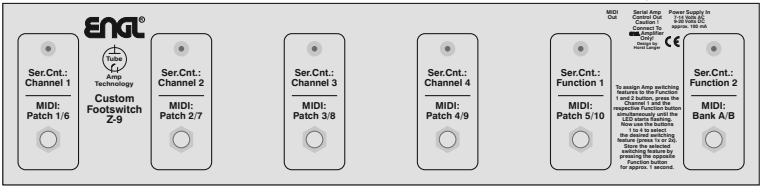
Footswitch connectors (4 x stereo jack sockets) located at the rear panel of the amp.



The ENGL Z11-S.A.C. MIDI Switcher's rear panel

#1 S.A.C. Out

#1

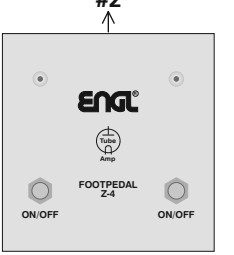


ENGL Z-9 Custom Footswitch

#1 ENGL Z-9 Custom Footswitch: This specialized footboard connects to the amp via a 6.3 mm (¼ ") stereo cord plugged into the Serial Amp Port - S.A.C. (21). The Z-9 affords you direct access to the amp's two Channels in combination with *Gain Boost* simply by tapping the four channel switching buttons, and lets you control two special functions, for example, *Tone* and *FX Loop*.
As an alternative to the Z-9 footswitch, you can also connect the ENGL Z11-S.A.C. MIDI Switcher (S.A.C. Out) to the amp's S.A.C. Port for use as a MIDI interface.

#2 A two-way footswitch such as the ENGL Z-4: Connect dual footswitches to the amp by plugging stereo 6.3 mm (¼ ") cords into jack nos. 24, 23, and 22.
-> *Channel 1< >2* and *Gain Boost* (1 x Z-4);
-> *Master A/B* and *Tone* (1 x Z-4);
-> *FX Loop* and *Noise Gate* (1 x Z-4);
As an alternative to dual footswitches, you can connect a MIDI switcher (the ENGL Z-11 will do nicely) to these three jacks to control the six switching functions.

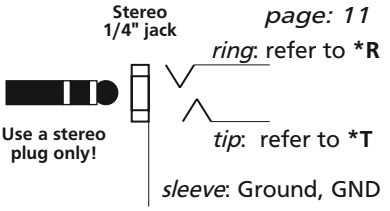
#2



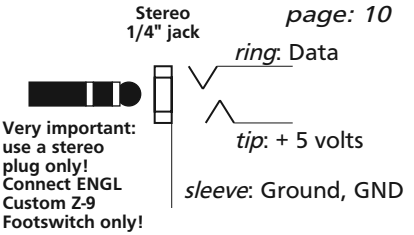
ENGL Z-4 dual footswitch

Wiring of Principal Connectors

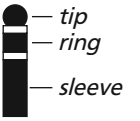
Dual Footswitch (22, 23, 24)



Serial Amp Control Port (21)



Here you'll find at a glance the technical details of the Retro Tube Amp's various remote switching capabilities:
A switch connected to this terminal ***R** controls
Noise Gate; off <-> on via jack 22;
Tone; passive <-> active via jack 23;
Gain Boost; passive <-> active via jack via jack 24.
A switch connected to this terminal ***T** controls
FX Loop; off (bypassed) <-> on (enabled) via jack 22;
Master A/B; Master A <-> Master B via jack 23;
Channel 1< >2; Channel 1 <-> 2 via jack 24.



Stereo 1/4" plug

Configuration table for assigning the ENGL-M.F.S. Amp's sound-shaping and special functions to the Z-9 Custom Footswitch's *Functions 1* and *2* :

Button	amps's Functions	Setup	Indication	S.A.C.
Function 1	*Master A/B*	1: *Channel 1*	LED 1 lights	*F1-1*
Function 1	no	1: *Channel 2*	LED 2 lights	*F1-2*
Function 1	*FX Loop off / on*	1: *Channel 3*	LED 3 lights	*F1-3*
Function 1	*Noise Gate off / on*	1: *Channel 4*	LED 4 lights	*F1-4*
Function 1	no	1: *Channel 1*	LED 1 flashes	*F1-5*
Function 1	*Tone*	1: *Channel 2*	LED 2 flashes	*F1-6*
Function 1	no	1: *Channel 3*	LED 3 flashes	*F1-7*
Function 1	no	1: *Channel 4*	LED 4 flashes	*F1-8*
Function 2	no	2: *Channel 1*	LED 1 lights	*F2-1*
Function 2	no	2: *Channel 2*	LED 2 lights	*F2-2*
Function 2	no	2: *Channel* 3	LED 3 lights	*F2-3*
Function 2	*Noise Gate off / on*	2: *Channel 4*	LED 4 lights	*F2-4*
Function 2	no	2: *Channel 1*	LED 1 flashes	*F2-5*
Function 2	*Tone*	2: *Channel 2*	LED 2 flashes	*F2-6*
Function 2	*FX Loop off / on*	2: *Channel 3*	LED 3 flashes	*F2-7*
Function 2	no	2: *Channel 4*	LED 4 flashes	*F2-8*

Comments:

Column 1 lists the Function button on the Z-9. Column 2 lists the sound-shaping and special functions that can be assigned to it.

Column 2 lists sound-shaping and special functions on the ENGL-M.F.S. Amp that can be controlled remotely via the Z-9 Custom Footswitch.

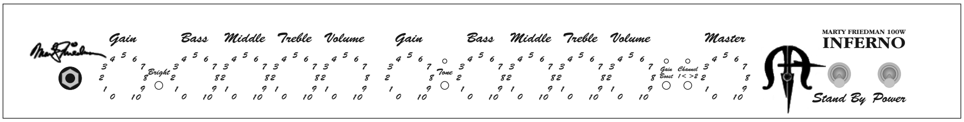
Column 3 lists the configuration or setting required to remote-control sound-shaping or special functions on the ENGL-M.F.S. Amp.
The first digit indicates the *Function Setup* routine, that is,
1: for *Function 1* Setup and 2: for *Function 2 Setup*.
Channel 1 to *Channel 4* denotes the button used to enter the setting.

Column 4 indicates the currently or newly selected configuration. For example, if LED 3 flashes when the Z-9's *Function 2* Setup routine is activated, then the ENGL M.F.S. Amp's *FX Loop* switching feature is currently assigned to *Function 2*; the corresponding S.A.C. command is *F2-7*.

Column 5 lists the shorthand designations for specific configurations that appear throughout the Z-9 Operator's Manual. For detailed information, please refer to the Z-9 Custom Footswitch Operator's Manual.

Please note: The ENGL Z-9 Custom Footswitch is an optional accessory. The afore mentioned Function buttons, LEDs and setup routines pertain to the Z-9.

ENGL® Marty Friedman Signature Amp: Noting Settings



Sound title: _

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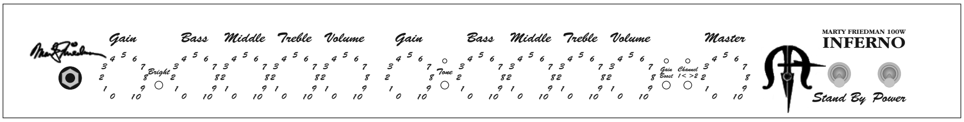

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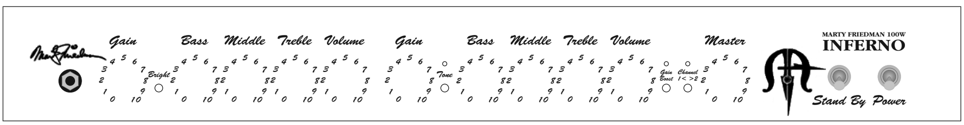

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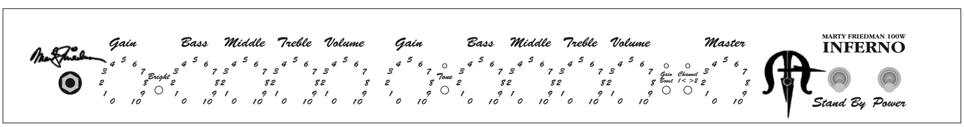

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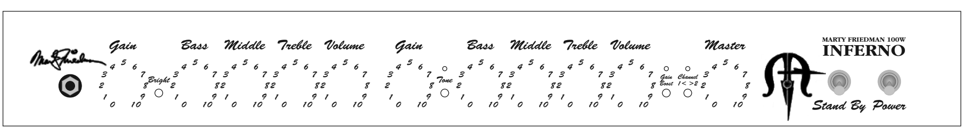

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Notes / Notizen

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