

EL34/100

Owner's Manual

Hello from the Tone Farm

Congratulations on your choice of the BADLANDER™ and welcome to the MESA/Boogie® Family! The instrument you've selected has a deep heritage that combines the best attributes of vintage tube amplification with pioneering innovation that brings high-gain channel switching performance to a new frontier. One look at the thoroughness of the feature set of this amplifier tells you it's loaded with inspiring tools, but underneath the hood, the authenticity of these groundbreaking circuits and features (beware imitators) dates back to our MARK I™ and the very beginning of Modern guitar amplification. So congratulations on your choice... you should feel a sense of pride that you're playing an amp like no other, an original in every way! Just like you!

Our 50+ year commitment to excellence along with our solemn promise to musicians - to treat each of them as we ourselves would wish to be treated - guarantees you an experience that will make you feel truly justified in your choice. We're confident your new amplifier will have you smiling and inspired within minutes of plugging in for the first time...but what's really gratifying is that you will be finding new and inspiring sounds years after the price of admission has faded from memory and the BADLANDER™ continues to unveil it's true worth.

It's with our sincere thanks for trusting us with your TONE and our best wishes for all your musical endeavors that we welcome you home. Should you ever need assistance or guidance we're here to help. You now have in your hands an instrument of limitless expression. Our hope is that it takes you and your playing to new and unimagined places throughout your musical journey. From all of us here at MESA®...Enjoy!



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IMPORTANT SAFETY INSTRUCTIONS

Read these instructions.

Keep these instructions.

Heed all warnings.

Follow all instructions.

Do not use this apparatus near water.

Clean only with dry cloth.

Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

Only use attachments/accessories specified by the manufacturer.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

To insure proper ventilation always make sure there is at minimum four inches (101.6mm) of space behind the rear of the apparatus. The ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, tablecloths, curtains, etc. Do not impede ventilation by placing objects on top of the apparatus which extend past the rear edge of its cabinet.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

The AC plug is the mains disconnect. The plug should remain accessible after installation.

WARNING: EU: permission from the Supply Authority is needed before connection.

WARNING: Always make sure proper load is connected before operating the amplifier. Failure to do so could pose a shock hazard and may result in damage to the amplifier.

CAUTION: This amp is heavy.

CAUTION: Amplifier contains hot components and surfaces.

CAUTION: Tube envelopes are glass and can present a hazard if broken.

CAUTION: Do not operate this amplifier without the appropriate load connected to the appropriate speaker jack(s). Do not expose amplifier to direct sunlight or extremely high temperatures.

Always insure the amplifier is properly grounded. Always unplug AC power cord before changing fuse, tubes or removing chassis. Use only same type and rating when replacing fuse.

Avoid direct contact with heated tubes. Keep amplifier away from children.

To avoid damaging your speakers and other playback equipment, turn off the power of all related equipment before making the connections.

Do not use excessive force when handling buttons, switches and controls. Do not use solvents such as benzene or paint thinner to clean the unit.

Always connect to an AC power supply that meets the power supply specifications listed on the rear of the unit. Export models: always insure unit is wired for proper voltage. Make certain grounding conforms with local standards.

YOUR AMPLIFIER IS LOUD! EXPOSURE TO HIGH SOUND VOLUMES MAY CAUSE PERMANENT HEARING DAMAGE!

Your Mesa/Boogie Amplifier is a professional instrument. Please treat it with respect and operate it properly.

READ AND FOLLOW INSTRUCTIONS OF PROPER USAGE.



Operating Instructions

Overview

Congratulations on your choice of the Badlander™ and welcome to the MESA/Boogie® family!

The Badlander is the latest in a long line of iconic Rectifier® products that carries the tradition of high performance, high gain forward with a tighter low end, more aggressive midrange character and enhanced harmonic content. All this tonal updating is, thanks to an all new preamp as well as a more aggressive power section featuring a stock complement of EL34 power tubes.

While cut from much the same cloth as its forbearer, the original Dual Rectifier® Solo Head from the early '90s, this model stakes new ground and pays homage to Heavy sounds in its own new distinctive and more percussive way.

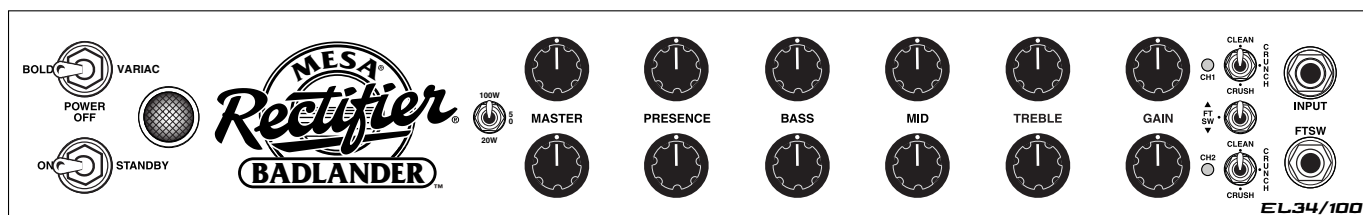
Two identical, footswitchable preamp Channels offer the ability to configure the amplifier for virtually any style and make it a supremely versatile choice while decidedly leaning toward all things Rock. CLEAN, CRUNCH and CRUSH Modes are doubled up and appear in both Channels allowing for multiple ways to get your differing gain signatures done.

Our Patented Multi-Watt™ power switch rounds out the mix of Front Panel options providing FULL power 100 Watt, HALF power 50 Watt or Triode-wired 20 Watt operation of the power section. The 50 Watt Version of the Badlander allows choices of 50 Watt Pentode and 20 Watt Triode-wired operation. A Variac setting on the Power Switch allows reduced voltage, a different EQ curve and a saggier feel.

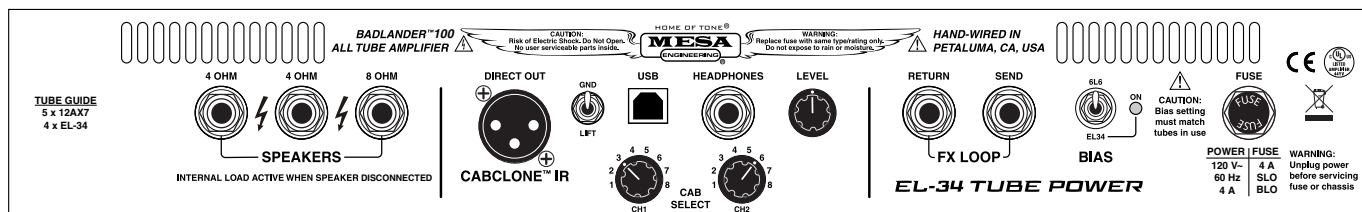
Looking to the Rear Panel, features include first, a full complement of Speaker Outputs in two 4 Ohm and one 8 Ohm ¼" jacks, enabling a wide array of impedance matching options for your favorite cabinets and most popular configurations.

Next, the on-board CabClone™ IR DI Section opens a new world of flexibility and convenience, providing 8 choices (repeated in each Channel) of Impulse Response Captures of our most popular MESA Speaker Cabinets mic'd for Live applications. This array of IRs provides instant great choices in the very best of virtual cabinetry with 8 voicing options, as well as footswitchable independence

FRONT VIEW: BADLANDER™ 100



REAR VIEW: BADLANDER™ 100



to treat the two Channels differently when recording Direct or sending Live, mic-free, or even cab free stage sounds to the Front Of House in Venues.

All this is possible in part due to the great sounding, great feeling built-in reactive Load that allows integration of the power section and all its character without the need for a speaker cabinet connected. This new addition makes the Badlander a mighty riff-catcher as the first MESA amplifier to feature such comprehensive, effortless and inspiring DI performance. With the Badlander's vast preamp versatility, power options and the fact you can record or perform "silently" and safely with no live speaker as well as with your favorite Cab, it sets a new standard for Tone, feel and convenience in capturing your own brand of electrified guitar magic direct.

The interface points and features of this powerful inclusion are as follows: a standard 3-Pin XLR for the balanced DI signal, a Circuit-To-Chassis Ground/Lift Switch, a standard USB port to interface with your computer for File manipulation/transfer/downloads, a HEADPHONE Output, a LEVEL control to adjust the DI Output and Headphone level, and a pair of CAB SELECT 8-position Rotary Switches enabling you to call up different Cabinet choices for each preamp Channel.

The CabClone IR circuitry also supports third-party IRs and the processor can hold, depending on File size, hundreds of IRs in its Storage Library that you can drag into any of the 8 Preset Locations in each Channel for a customized set of Cab choices. Simply connect the Badlander to your computer using the USB port and manipulate the IR Files in accordance with your needs.

Next on the Rear Panel the Badlander includes a no-compromise buffered serial EFFECTS LOOP that provides a patch point between preamp and power section for seamless integration of processing you don't want on the amp's Input. Time-based Effects such as Reverb, Delay, Chorus, Flange, and in some cases even things like compression, are all candidates for use in this Tone-preserving EFFECTS LOOP.

The Badlander is also fitted with our BIAS SWITCH, enabling you to swap the Stock compliment of EL-34 Power Tubes with 6L6s for fatter lows and midrange and a whole different top end as well as feel and character. Always make sure the BIAS SWITCH setting matches the tube type in use!

The Fuse Holder rounds out the Rear Panel. Always use the proper rating for your particular model in a Slo-Blo type package.

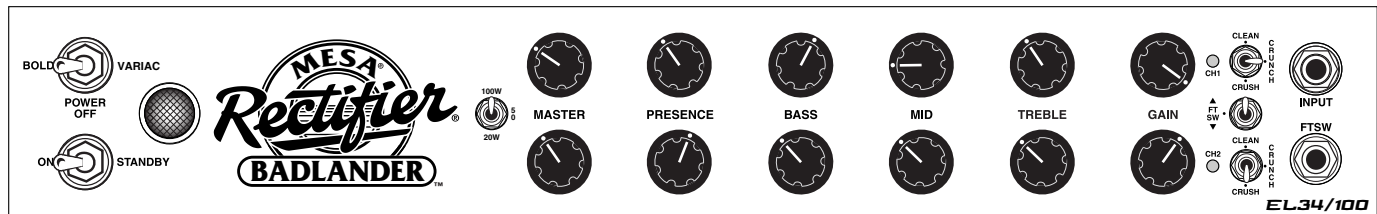
Now it's time to get to information that will help you get the most enjoyment out of your new amplifier.

INSTANT GRATIFICATION

Here below is an "instant gratification" tour of the Badlander's channels using the top channel set to CRUNCH for a heavy rhythm sound and the bottom channel set to CRUSH for a high gain soloing tone. This is just one of the countless possible configurations you could use to dedicate the channels to different stylistic roles and tasks. You may also set both channels to the same mode to make possible footswitching between different settings of the same gain range. However you choose to dedicate your channels, a world of possibilities await your exploration and application.

There are many possibilities for configuration across the entire gain spectrum, from traditional to modern extremes, so feel free to set the Channels to your liking and needs and experiment as much as you like. We feel confident that regardless of how you configure the two Channels, the Badlander will impress you with it's rewarding Tone and incredible versatility.

Instant Gratification Settings



HELPFUL HINTS

We recommend having at least one speaker cabinet on the floor of the stage or room you are playing in. The sympathetic resonance of the sound coming through the floor and up through your body results in a more tactile feel that we, and most players, find favorable. There may be times when this is impossible, impractical or unadvisable, such as when there are many live mics with high input sensitivity dialed up on the console or high volumes in place and the bleed factor will be too great, but whenever possible we advise having at least one cabinet on the floor for vibe and a great feel on the strings/instrument.

Gain is but a part of great Tone. While the Badlander is capable of mighty amounts of gain, it is not necessarily wise to apply it in excess. It IS a modern amp, yes, but it is also capable of GREAT Classic and more traditional sounds that see the GAIN controls used with taste and in their middle ranges in all Modes. Sure, there are also great sounds at the top of the GAIN controls, especially in CLEAN and CRUNCH Modes, but we encourage you to explore the less extreme gain ranges in the Modes as well, for that is where some of the most expressive, dynamic and character-rich sounds reside.

Use the MID control set in its middle to upper range to bring forward punch and tightness, or set below 11:00, to scoop the sound for a wider, more 3-D sound and a feel that creates the impression of less resistance on the strings. The MID is very powerful in determining the character and blend within the Tone Controls and it should be experimented with in all three Modes to learn its part in the overall shape of the sound ...Almost more than any of the other controls, as its setting tends to determine much about the overall Tone as well as the feel.

This circuit, like all those tracing some Architecture through Britain and back to LA and the '50s Tweeds designed by the late, great Leo Fender, find the TREBLE control possible of very bright sizzle and formidable cut. That can be useful at times, however we find some of our favorite, most balanced sounds below 12:00 on the TREBLE control. Some even turn the TREBLE all the way off for certain things, like liquid single note sounds that are as fat as possible. Just be aware that you may want to run the TREBLE in the lower half of its range for at least some of your favorite sounds.

The MID control carries a fair amount of top end along with the aforementioned punch, albeit in a lower place than that of the TREBLE. Keep in mind it can also be used to bring in attack and openness of a different character.

The PRESENCE also plays its role in the overall top end and open sounding quality of the mix and often in a more pleasing, global and easy to take frequency than that found in the TREBLE's upper region.

We encourage you to experiment with all three of these controls above when searching for your perfect blend of top end, as they each represent a different region of the spectrum and together provide the tools to achieve a great blend if you spend the time working with them.

When using the VARIAC setting on the POWER Switch to lower the incoming line voltage, you may want to enhance the midrange portion of the mix a bit more with the MID control than you might in full power. VARIAC tends to make the sound more scooped and elastic, which is likely why you'd select this position in the first place, but just be aware you can tweak that character further either way with the MID control.

When searching for more traditional-gain Crunch or Classic Rock sounds, especially in the CLEAN Mode, you may want to try the reduced wattage positions of the Multi-Watt Switch in addition to simply turning the GAIN control higher. Taking this approach allows for you to increase the overdrive content and characteristics in the power section with the MASTER control, while at the same time lower the overall output volume to make dB levels less punishing for yourself and others who may be nearby.

When using the EFFECTS LOOP to interface your outboard processing, use good quality shielded Audio cables of the shortest length possible to assure the best performance and least chance of signal degradation. Remember that anything you insert into the middle of your amplifier can act as a Tone shaping device, so we recommend high quality effects processors and good quality cabling to assure the best chance of avoiding degradation. Though the Effects Loop is buffered and in theory should be somewhat impervious to Tonal thievery, your entire signal will be subjected to whatever the lowest common denominator in your signal path is, so take note of this and choose your processors and cabling accordingly.

The 8 Factory-Loaded CabClone IR selections that each channel of your Badlander can hold at one time were chosen from the BANK A/LIVE Presets as they appear in our CabClone IR stand-alone unit. They were selected for their ability to sound open and sit well in a variety of Mix applications, from stage performance to recording and from small combos to more dense mixes with multiple instruments and voices. See the CabClone IR Section of this Manual for more information.

NOTE: When manipulating IRs within the MESA IR Drive, each memory location within the 8 Presets in the MESA IR Drive must contain one IR and one IR only. Placing two IRs in each or any of the locations, or no IR at all in a memory location, will produce the same result as having a blank location and there will be no sound at all in that memory location on the Cab Select Rotary.

FRONT PANEL

INPUT: This is the Instrument Input on your Badlander. Always use low capacitance, shielded Audio Cable of good quality and whenever possible in lengths below 18 Feet, preferably 15 feet or less. The Badlander is capable of extremely high gain, so noise in the instrument cable has the potential to be amplified many times depending on your application and settings. Therefore, always try to use low capacitance, low noise cable between your Instrument and your amplifier

FTSW: This mono ¼" jack is the Footswitch jack for the included Channel Switch. When the supplied Footswitch and cable are connected here, you may select the Channels remotely instead of using the Front Panel Channel Select switch located just to the left (to right on Combo) and between the Mode Select switches for each Channel.

CHANNEL SELECT: This switch in the center of the stacked switches allows manual selection of the Channels when the Footswitch is not plugged in or available. The Center position labeled FTSW accommodates the Footswitch when plugged in to the adjacent FTSW jack and allows remote switching between the Channels via the Footswitch. Make sure the switch is in the Center position when using the Footswitch. Otherwise, the switch moved upward selects Channel 1, the switch down activates Channel 2.

MODE SELECT: These mini toggles above and below the Channel Select switch selects the Modes in each Channel. In sensible fashion, the gain of each Mode increases as the switch is toggled downward. The Channels are identical so the switch operates the same way triggering identical Modes in each of the two Channels.

GAIN: In the Badlander, as with most MESA amplifiers, the GAIN is the most critical of all preamp controls. It's setting determines much about the character and texture, dynamic content and sustain factor of the sound and voices the sound in all three of the identical Modes appearing in both Channels.

Each mode reacts a little differently, but generally speaking, the middle range of the GAIN control provides enough of everything and not too much of anything. Most of the middle range is supremely useful, and for almost any style. Best of all, here, the instrument will sound like the instrument, as its character won't be overshadowed by saturation.

For classic sounds, we recommend GAIN be set in the lower to middle region, somewhere between 10:30 and 2:00. This is where you will find the best blend of dynamic preservation and attack mixed with fullness and sustain, again, without completely saturating the sound and covering up instrument's character.

One good thing to remember is that the lower the GAIN control is set, the more transparency and top end you will retain. As the control is increased the top end will start to recede and a fuller, fatter sound will emerge until eventually, it will be very fat and compressed and possibly even a little slower feeling along with the added drive and sustain.

Another approach is this; As GAIN goes up, BASS should come down. That is a very general, broad-sweeping approach, but it is a fairly good way to avoid flubby, indistinct attack characteristics and keep your dynamic content as prominent and intact as possible. Still, even reducing the BASS control can't nullify the compressing and darkening effects created by very high GAIN settings. It helps with the frequencies in regards to preserving the attack, but it can't counterbalance what happens to the dynamic characteristics.

The higher region of the GAIN Control is appropriate for Classic, 70s style Rock or overdriven Blues sounds in the CLEAN Mode, and Heavy sounds in CRUNCH and CRUSH. From 2:00 on up to 5:30/maxed, the sound becomes very overdriven and filled with harmonic complexity. There are amazing sounds up here, you just need to learn the ways to preserve attack and clarity through working with the BASS and other Tone controls, as well as the overall MASTER setting, to retain as much attack and definition as possible.

Start by observing the rule of thumb outlined above: reducing BASS while increasing GAIN, and you should be headed in the right direction. From there, some fine-tuning elsewhere in the Tone Controls where appropriate, but once you've familiarized yourself with the frequencies and the interaction between the controls, it shouldn't take long to achieve a great blend.

Also, many players into Heavy styles and fast tempos looking for the best blend of the highest gain and the tightest tracking low end possible, tend to avoid cranking the MASTER up past the point where you can start to feel the power section working, and stop before it is being pushed into clip.

When the power section is pushed into clip with high volumes, the tracking and dynamic character changes as the recovery time of the power supply starts to increase. There may be times to include power clip as part of the authentic ingredient to a sound, like Blues sounds or Classic Rock sounds in the Clean Channel cranked, however you will find the best overall tracking and dynamic response for most styles in the middle range of the MASTER controls/overall power output.

By all means, when possible, turn the amp up enough to get the power tubes working and doing their magic-adding fullness and color, but more than that isn't always better. Going past them adding color to the onset of clip and farther into saturation will present trade-offs in tracking and articulation, especially in the low end and especially when higher GAIN settings are also applied. Like most of the controls on your Badlander, for most sounds we suggest using the MASTER controls, and hence overall power, in the middle range for the best overall response.

Another way to add harmonic content is to incorporate the POWER SELECT switch and switch down to the lower wattage settings. This approach will allow you to increase the MASTER and hear more of the power tubes character, but this too must be balanced to assure the low end stays tight and tracking isn't compromised.

The best tracking and low-end accuracy will most always be experienced in the highest wattage setting. So, if your music requires accurate Bass response, especially in combination with high GAIN settings, you will want to forego the extra harmonics that might otherwise be added in the lower wattage settings and just stick with the highest Power Setting.

TREBLE: While the GAIN is the most powerful control in the Channels, the TREBLE runs a close second. The TREBLE is responsible for shaping the character of the Mode almost as much as the GAIN. It also tends to overshadow almost everything except PRESENCE, seeing as these two controls deal with top end and that is always what reaches your ears fastest. Since it can overpower the rest of the Tone controls easily, its setting is crucial to a rich and balanced sound in all three of the Modes. Setting the TREBLE with care and taste in mind is also critical for the Tone control string to work in harmony.

In all three Modes the middle region of the TREBLE delivers the best balance and creates sounds that are plenty bright enough, but still possess the ability to be rich and warm. We suggest that you start with the TREBLE at 12:00 and adjust up or down slightly until the desired blend is achieved.

Circuits emanating from the Brit side of the Tube Amplifier Family Tree and sharing that DNA tend to favor TREBLE and PRESENCE control settings on the lower side for the best blend of attack and warmth. Depending on guitar woods, pickups and technique, don't be surprised if you find great sounds below 12:00, or even all the way down on the TREBLE, and even PRESENCE, with the MID's broad Q carrying substantial top end and sometimes capable of providing all the cut you need.

The MID control also carries frequencies somewhat close to those the TREBLE commands along with the upper mid and lower mid frequencies it is centered around. Use this to your advantage and experiment with setting the TREBLE lower than you normally might and running the MID up a bit and vice versa. Some very cool sounds can be found with the TREBLE lower, very low or even off and the MID higher than you may be used to. Be sure to check the interaction between these two powerful controls, as it will be critical in achieving the sounds you want.

MID: The MID control, while perhaps not quite as powerful as the GAIN and TREBLE controls, does impart a strong character on the sound of all three Modes. MID brings in and out a broad band of midrange frequencies and – as we have mentioned earlier in the TREBLE section – along with these frequencies rides a fair amount of higher “low treble” range frequencies. These highs are lower than those the TREBLE carries, but they are important for the punch and cut in a mix and also the way the amp feels to play.

These midrange frequencies exhibit an interesting trait; At lower settings where the mids are scooped out, leaving big low end and open, soaring top end, the strings can feel more forgiving, bouncier, more elastic and easier to play. Conversely, at higher settings of the MID where this frequency creates a bump and lows and highs are somewhat overshadowed, the sound becomes more forward and the response can feel to some players less forgiving. Setting the Mid higher does not change anything in the physical sense, other than your perception, however depending on how much you rely on the relationship between what your ears hear and the tactile sensation your hands feel, you may want to give your ears and your hands some extra time to adjust to the very different EQ curve.

So it goes with us guitarists ...ever in search of Grail Tone. Guitar is a very tactile instrument, and like an acoustic instrument is sensitive to the environment, the room it's played in, electric guitar is also affected by and dependent on the frequencies manipulated and cut or boosted in the amplifier's preamp.

All these factors play a part in your perception of how the instrument responds to your attack, how the sound morphs afterward and how it feels to play as your ears capture it, your brain interprets it, and then sends signals to your hands while playing in this feedback loop.

This is a highly interactive experience and the relationship between electric guitar and amplifier are symbiotic. So spend time learning and playing with the interaction between the controls. Unlike the acoustic instrument where it's difficult to alter a room, here these controls can be used together to shape not only the sound, but also through interpretation, how the instrument feels in your hands.

BASS: The BASS is an easy to understand and gratifying control as well as being fairly benign in terms of settings...except when, as we've mentioned, high gain is involved. For clean playing in the CLEAN Mode, large amounts of BASS can be applied with very little worry as to detrimental effects. Fullness and body, warmth and girth are its benefits as the control is increased past 11:00, with most players finding all they need by about 1:30 or 2:00.

For overdriven sounds in all three Modes, you will need to apply the previously mentioned suggestion; As Gain goes up, the BASS should come down. Failure to apply this rule will result in tubbiness and a compromised attack. This is especially true with the highest region of the GAIN control. A little BASS can go a long way when this much gain is applied and in CRUNCH and CRUSH Modes you may find that 11:00 or 12:00 is the highest you'll ever need for a great sound.

You can probably get away with the BASS as high as 1:30 or 2:00 for Blues, Nu- Country, Roots and Indy Rock sounds where the GAIN control is below 2:00 in CLEAN or CRUNCH. For Classic Rock sounds in CLEAN where the GAIN is maxed, you will likely want to use less than that to keep things tight and dynamic. Use a little restraint and some good taste and you'll find great sounds in all three Modes with plenty of low end available to make things sound and feel huge.

PRESENCE: This control adjusts high frequencies - above those of the TREBLE - and is farther downstream in the signal path than the Tone Controls. It works with negative feedback and allows adjustment of the top end in the power section and its placement there is part of achieving its urgent character and its ability to help you hit hard when you need cut in a dense mix.

You can think of the PRESENCE as a control that allows you to either clamp the highs down in the power amp - compressing and darkening things - or open the power section up and let the full spectrum of upper harmonics come blazing through. It also has a great deal to do with how dynamic the signal is and how a sound will cut through the mix in an ensemble environment.

At low settings (7:30 – 10:30) the sound will be warm and round with a more compressed feel and dynamic fluctuation will be somewhat tamed. As the PRESENCE is increased (11:00 – 2:30), the top end becomes more dominant and that compression gives way to “cut” and dynamic peaks jump out with startling speed and accuracy, unleashing the Badlander's wilder side.

Clean sounds in Channel 1 can generally benefit from slightly higher settings (10:30 – 12:30) than sounds that have overdrive involved in their makeup.

Once saturation begins the frequencies carried in the PRESENCE control need to be administered with care, as too much top end applied in the power section can create edgy, unpleasant or even painful sounds. Set too high it starts to separate the high frequencies from the rest of the notes, resulting in a buzzy, detached Tone ...something you probably don't want!

Overdriven chording sounds can tolerate higher settings (10:30 – 12:30) better than single notes, which usually want to roam the zone below 11:00 to stay round, focused and sound as big, wide and vocal as possible.

At the top end of the control (2:30 – 5:30), an aggressive blend of upper harmonics dominate the sound and this region can be somewhat dangerous to balanced Tone if it's not applied in small measures. Higher notes will slice and dice even the bravest of ears and we suggest using this region mostly in the studio for recording heavy crunch rhythm parts and even then, mostly on parts that feature the lower strings. This region – especially when coupled with the inherent curve of many of the microphones typically used in P.A. (sound reinforcement) applications, can be truly punishing to both band-mates and the audience.

It's especially important in terms of PRESENCE settings, to check the "line of fire" if you are standing very close to and in front of your Cabinet(s)!

Remember, the aggressive highs you may want to dial up with the PRESENCE in an attempt to hear yourself "cut through" that's hitting only your legs, will be hitting microphones and/or the audience directly. What you hear standing right over your Cab will be WAY different, and less punishing if you've got the TREBLE or PRESENCE set very high, than what hits the mic diaphragm and the audience's ears.

NOTE: *In the name of great and balanced Tone, we'd like to humbly suggest putting your head down by your speakers now and then (but not for too long!) to ensure your Tone is really what you think it is.*

SO often in small to medium Venues, the tendency is to dial in WAY more brightness than you really need because you're standing almost on top of your Cab. More times than not, that means you aren't hearing all that extra top end you think you need. It may take some getting used to at first, but you can learn to hear a darker, warmer sound that is found lower on the TREBLE and PRESENCE controls and your sound will be FAR more pleasing and balanced at the Front Of House and in the first few rows of the audience.

The lucky few playing mostly large venues learn this early on, as the distance from their cabinets helps reveal the excess top end quickly. And if they don't, the Front Of House Engineers help out in short order. The rest of us players performing mostly in small to mid-size venues tend to learn this the slow way or need to get the tip off from veteran associates. Either way, your audience, your recordings and even your own ears over time, will benefit from this more respectful, tasteful approach to dialing up top end in your Tone.

MASTER: This control determines the overall output level of each Channel and is located at the very end of the circuit, just before the Driver stage. By using it in combination with the GAIN control, any amount of preamp signal strength – gain – (within a Channel's parameters of course) can be achieved at any playing volume. Once you have dedicated the Channels to their respective sounds, you can then balance the volume levels of the Channels using the MASTER controls.

For general applications and to get the best performance out of the Channels we recommend MASTER settings in the 9:00 – 12:00 range with most people settling in around 10:00 – 11:00 for average playing volumes.

Some purists like to run the MASTER all the way up and raise the GAIN until they reach their desired sound—the thinking there being that this achieves the purest sound. They believe this resembles removing the control altogether from the signal path, and in a way it does. However, most all the "vintage non-master" amplifiers they are seeking to emulate have discrete resistors in that place in the circuit anyway to adjust or "tune" the output of the preamp to the power section's sensitivity.

The MASTER is nothing more than a variable resistor(s) that offers an infinite range of settings possibilities and makes the amplifier many times more versatile with no sonic penalty. If you prescribe to the above old school approach, then by all means, use the MASTERS in this way... it won't hurt the amplifier. However you will be severely limiting the sounds you can achieve by removing the limitless great sounding combinations of GAIN and MASTER settings.

NOTE: *VERY high settings of the Master combined with high output pickups can potentially overload the input of the IR circuitry, causing some unwanted distortion. If you notice some nasty “digital” clipping at the IR Output with the Master all the way up, turn the Master down just a bit.*

MULTI-WATT POWER: This 3-position mini toggle allows selection of one of three wattage ratings. Its upper position runs all four EL34s in Pentode wiring for 100 watts of power, the Center position harnesses the far outside pair of EL34s for a Half Power scenario at 50 watts of Pentode power, and the lower position of the toggle provides a low power setting in which the same 2 outside tubes run in Triode wiring and produce approximately 20 watts. Each of these power settings has its own tonal character as well as wattage rating and this provides yet another way to shape and color your sounds.

100 Watts produces the biggest sound and most girth, most accurately tracking low end response and a fullness in the lower mid-range that speaks with authority and punch. 100 Watts is also capable of the loudest clean headroom and sheer output volume in the overdrive Modes as well. Soloing in the 100 Watt setting will deliver the most authority, dynamic sensitivity and sonic width, so we like it best when it's time to shine, especially in dense mixes, recorded and live and larger venues or outdoors in performance scenarios.

The **50 Watt** position has a brighter, more elastic character that can sometimes feel easier to play, or at least command, and the fact that the Badlander ships with EL34s as the stock compliment of power tubes, this position allows you to more easily squeeze them for more power section character. For some sounds, especially those at the threshold of clip, it can add another layer of harmonic complexity. It is also easier to get the 50 Watt setting to break up on demand for things like Classic Rock Crunch Rhythm sounds in the upper range of the GAIN control in CLEAN and middle range of the GAIN control in the CRUNCH Modes.

20 Watts reconfigures the power tube wiring to Triode wiring, which is a more vintage style that is associated with sweeter, smoother transition to clip and some feel, a warmer sound. Here it is included as much for its reduced wattage, and therefore lower volume capability, as much as for its tonal characteristics. The 20 Watt setting allows you to really drive the power tubes and incorporate even more of their character into your sounds in the Modes.

The reduced wattage comes with some tradeoffs and the first you will likely notice is a reduced tightness in the low end. For Heavy sounds, especially those used for very precise rhythmic parts, the 50 or 100 watt settings will be a better match.

Conversely, if you are recording or just enjoying the Badlander in your home and don't need high volume levels, the more vintage or traditional side of the first two Modes especially are enhanced by the Triode operation of the tubes. CLEAN wound up higher and CRUNCH set somewhere on the lower 2/3 of the gain spectrum both reveal really cool traditional-gain Classic Rock, Roots and even Blues sounds.

The harmonic content present when the EL34s start to transition to clip is sweeter and smoother, more tightly glued and silkier and you will likely come to appreciate the 20 Watt mode as containing some of your amplifier's coolest, most soulful sounds. That they can be enjoyed at lesser volumes makes the Triode setting a valuable enhancement to an already great package.

NOTE: *When selecting the 50 Watt, and 20 Watt setting on the Mult-Watt Power Switch, try using the 4 OHM Speaker Output with your 8 Ohm Cabinet. The impedance changes a bit when the two power tube settings are selected and therefore, loading the amp differently can produce a tighter, punchier, brighter response that may be more similar to what you experience in the 100 watt setting. However, if you prefer the scooped, slightly warmer response the mismatch of the 8 Ohm OUTPUT creates when using the 50 and 20 Watt Power settings, feel free to continue using that OUTPUT, as it will not harm your amplifier or speaker. Some prefer this softer less forward sound and even cite it's less resistive, more inviting feel. Experiment to find what suits your style and applications best.*

POWER: BOLD/OFF/VARIAC This 3-position toggle controls the influx of AC Mains voltage from the wall. ALWAYS be sure to have all 3 Pins of the Power Cord connected to a Grounded outlet to avoid the risk of Shock.

This Power Switch serves a double purpose as it contains a lowered voltage setting, labeled VARIAC, which enables a kind of Brown-Out condition some prefer, feeling it enhances the sound and feel. It is very similar to using an actual standalone Variac with the Voltage turned down, in this case to about 93 Volts +/- depending on the Line conditions at the time in the venue or your home or studio.

The VARIAC setting DOES change the sound and we describe the differences as being scooped in the midrange, having more “air” in the low end, making it less percussive and softer, and smearing the top end in the attack region while adding higher harmonic content at the top of the spectrum.

VARIAC also changes the feel on the strings as it softens the attack and pads back the transients, creating a silkier, more elastic feel on the strings. The transients are still there, they just don’t jump out through the mix as hard or as fast due to the reduced voltage across all parts of the amplifier circuit.

We wouldn’t necessarily recommend the VARIAC position for Heavy styles, especially where the low end is required to be its tightest and most accurate tracking, as VARIAC is appealing for the opposite response.

Neither would we advise it for the highest clean headroom and boldest punch in the CLEAN Mode for rhythmic authority. However, VARIAC shines when it’s time to explore subtle-clip or break-up styles of overdrive, especially in the CLEAN and CRUNCH Modes.

CRUSH, in most of its gain range, is by nature very saturated and therefore VARIAC can sometimes be too sweet, soft and slow to produce the fire and immediacy needed for expressive soloing or percussive rhythmic parts. Classic sounds are where it shines and there, VARIAC adds a wide range of dynamic and frequency options that are difficult to achieve in other ways.

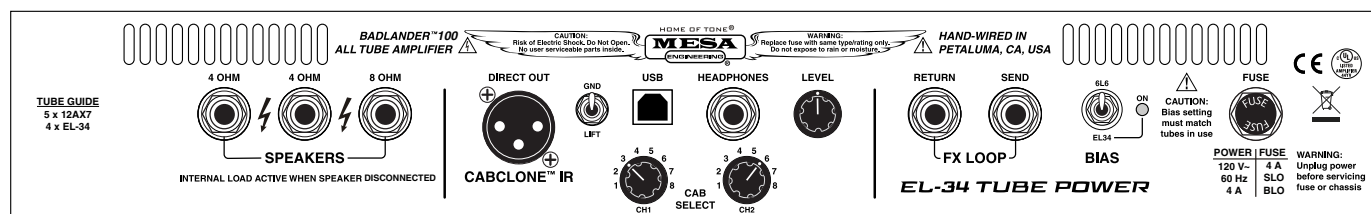
STANDBY:

Perfect for set breaks. This toggle switch also serves an even more important purpose. In the Standby position the tubes are at idle so that during power up they may warm up before being put to use. Before Power is switched on make sure the STANDBY switch is in the Standby position.

Wait at least 30 seconds and then flip the STANDBY switch to the ON position. This prevents tube problems and increases their toneful life substantially.

Now that we have the Front Panel in our grasp and you’ve got an idea how the controls and features interact to help you attain your desired sounds and footswitch between them, let’s move to the Rear Panel and go over the features found there.

REAR PANEL



SPEAKERS (OUTPUT):

One 8 Ohm and 4 Ohm jacks are provided for speaker interfacing. The Badlander is not very sensitive to speaker mismatches and will not be damaged by them, except that very low ohmage loads will cause the power tubes to wear faster. A single twelve-inch 8 Ohm speaker should generally be connected to the 8 Ohm output. When using two 8 Ohm speakers, connect them both to the 4 Ohm outputs provided (because the total load is 4 Ohms in that case.) Check out the information further back in this manual regarding speaker impedance and possible speaker hook-up schemes.

4x12 cabinets may be 4, 8 or 16 Ohms. If you are not sure of the impedance of your cabinet, you may need to remove the Rear Panel in order to verify the impedance rating of the individual speaker or speakers. MESA/Boogie 4x12 and 4x10 cabinets come wired to 8 Ohms standard, and are wired in series-parallel. Some Non-MESA 4x12 cabinets are wired 16 Ohms using four 16 Ohm speakers. By wiring all four speakers in parallel, you can reduce the cabinet to an impedance load of 4 Ohms (assuming the speakers are 16 Ohms each.) No matter how unusual your speaker setup, it is always possible to get good performance.

NOTE: Normally this is the spot we’d be reminding you to ALWAYS keep a Load connected to your amplifier. However, your Badlander is wired such that when you disconnect the (Speaker) Cable from one or more of the SPEAKER output jacks, the Internal

Reactive Load is automatically connected. This means your amplifier is always protected from a no-load condition. Still, when using Tube amps, it is important to remember they always need a load. SO if you own other tube amplifiers, make sure you don't forget to check this important factor.

NOTE: When selecting the 50 Watt, and 20 Watt setting on the Mult-Watt Power Switch, try using the 4 OHM Speaker Output with your 8 Ohm Cabinet. The impedance changes a bit when the two power tube settings are selected and therefore, loading the amp differently can produce a tighter, punchier, brighter response that may be more similar to what you experience in the 100 watt setting. However, if you prefer the scooped, slightly warmer response the mismatch of the 8 Ohm OUTPUT creates when using the 50 and 20 Watt Power settings, feel free to continue using that OUTPUT, as it will not harm your amplifier or speaker. Some prefer this softer less forward sound and even cite it's less resistive, more inviting feel. Experiment to find what suits your style and applications best.

CABCLONE IR: As mentioned in the Overview, the Badlander, the first ever to include our CabClone IR DI, opens up a new world of flexibility and convenience. The 8 choices (repeated in each Channel) of Impulse Response Captures of our most popular MESA Speaker Cabinets is a HUGE time-saver and inspiration-preserver when you can't use Cabs or don't have the environment suited for great room recordings. The array of IRs provide great choices in the very best of virtual cabinetry and give you 8 instant voicing options, as well as footswitchable independence to treat the two channels differently when recording direct or sending live mic-free stage sounds to the front of house in performance venues.

Made possible by the great sounding, great feeling built-in Reactive Load that allows integration of the power section and all its character with no speaker cabinet connected, this feature is a welcome addition for anyone doing frequent tracking as well as live playing. The all-inclusive approach brings on mighty DI performance, and when combined with the Badlander's vast preamp versatility and the fact you can record or perform "silently" and safely with or without your favorite cab, puts the Badlander in top of class status. All that means you can capture your ideas more quickly and easily and with far less in the way of your creativity.

The components of the CabClone IR DI section are:

Standard 3-Pin XLR for the balanced DI signal,

Circuit-To-Chassis Ground/Lift Switch,

Standard USB port to interface with your computer for File manipulation/transfer/downloads,

Stereo HEADPHONE Output

LEVEL Control to adjust the DI Output and Headphone level,

A Pair of CAB SELECT 8-position Rotary Switches that allow different Cab/Mic choices for each preamp Channel.

The CabClone IR circuitry supports not only the On-Board Factory-Loaded 8 Presets/Cabinet IRs, but also third-party IRs. The processor can hold, depending on File size, hundreds of IRs in its Cab Library that you can drag into any of the 8 Preset Locations in either of the Channels for a customized set of Cab choices in each, or the same ones for both.

Simply turn the Badlander on (but leave it on Standby), connect it to your computer using the USB port, then view and/or manipulate the IR Files within the folders in accordance with your needs.

MANIPULATING IR FILES/SWAPPING PRESETS

Upon connection to your computer through the USB port, you will see MESA IR in an icon much like a USB Stick Drive. Once opened, you will see three separate folders. These folders are labeled Channel 1, Channel 2 and Cab Library.

The Channel 1 and Channel 2 folders contain the same 8 "LIVE" Captures found within BANK A of our standalone CabClone IR and IR+ units. These were captured using Dynamic and Ribbon microphones and are brighter and more open sounding to allow being

better heard in Live or dense mix applications.

The MESA Cabinets featured in the 8 Presets of either Channel are as follows:

1. 4x12 RECTO STANDARD – Celestion V30s – MESA Proprietary – 8 Ohm
2. 4X12 RECTO TRADITIONAL - Celestion V30s – MESA Proprietary – 8Ohm
3. 2X12 RECTO HORIZONTAL - Celestion V30s – MESA Proprietary – 16 Ohm
4. 1X12 RECTO 1X12 - Celestion V30 – MESA Proprietary – 8 Ohm
5. 1X12 THIELE - Celestion C90 – MESA Proprietary – 8 Ohm
6. 2X12 LONE STAR - Celestion C90 – MESA Proprietary – 16 Ohm
7. 1X12 LONE STAR 23 - Celestion C90 – MESA Proprietary – 8 Ohm
8. 1X12 CALIFORNIA TWEED 23 – Jensen 100w Alnico “Blackbird” – 8 Ohm

The Cab Library Folder contains enough memory space, depending on their file size, to hold hundreds of third-party IRs. With room and power to store and manipulate sounds for your direct needs, the Badlander has the potential to be a super versatile sound palette for many of your guitar needs be they stage or studio.

NOTE: *When manipulating IRs within the MESA IR Drive, each memory location within the 8 Presets in the MESA IR Drive must contain one IR and one IR only. Placing two IRs in each or any of the locations, or no IR at all in a memory location, will produce the same result as having a blank location and there will be no sound at all in that memory location on the Cab Select Rotary.*

NOTE: *Important!! Don't forget to eject the CabClone IR Drive just as you would a Flash Drive when you are done manipulating the IRs.*

And finally, perhaps one of the most valuable uses for the CabClone IR feature on the Badlander lies in its use as a personal practice tool via headphones at home, backstage or wherever you might want to apply its great tone and feel without necessarily having to share it with others.

DIRECT OUT: This standard 3-Pin Male XLR is for connecting to your Recording Console, a Front Of House Mixer or the Monitor Board. Cable length is usually fine up to 75 Feet or so as it sends a Balanced Signal. The Level is determined by the LEVEL Control here in the CabClone section and the setting of the MASTER controls on the Channels.

NOTE: *It is always a good practice to zero out the Channel and Master Faders on the destination Console and/or Interface, as well as the LEVEL on the CabClone IR section of your Badlander, BEFORE connecting the cable to the DIRECT OUT. This routine will help avoid unwanted (hot) signals accidentally sent during hook up from damaging your ears and those of others, monitor speakers, etc.*

GND/LIFT: A mini toggle Ground switch is provided which can lift the circuit Ground from the chassis Ground. This “Ground float” switch can be helpful in eliminating some Ground loops caused by different references to Ground between Consoles and the CabClone IR circuitry.

Always start with the unit set to the GND (GROUND/upper) position when connecting the unit to a Console. If you experience noise in the form of hum or buzz, you can try the LIFT (lower) position to see if perhaps the noise you are experiencing is caused from a different Ground reference between the Console and the CabClone IR/amplifier. The switch does not always cure the noise problems associated with these differences in Ground, but it is often effective and a welcomed feature when you're anxious to get rolling in the Studio or do a timely Sound Check at a gig.

CAB SELECT: These two 8-position Rotary controls select the Cabinet IRs you will trigger in each of the Badlander Channels when connected to the DIRECT OUT and/or the HEADPHONE Output.

Having separate Rotary controls for each Channel allows you to set the Channels differently and optimize each Channel's gain region, sound style and response with a Cabinet best suited to what you've dialed up with the Mode Select, GAIN, Tone and MASTER controls. This kind of flexibility puts the Badlander in a new category in terms of direct recording with a tube amp, enabling you to further authenticate your footswitchable sounds with a virtual Cab/IR that will not just broadcast them, but rather showcase them.

USB: This standard USB port accepts a 2.0 A to B cable (not included) and is provided for connecting to a computer for managing the IR File directory. If you don't have a 2.0 USB Cable around the house, it's an easy Cart add at many on-line Retailers or available in most Music or Tech stores.

The CabClone will appear on your Desktop much like a USB Flash Drive and, once opened, will show you 3 separate folders labeled; Channel 1, Channel 2 and Cab Library. Each PRESET location on the 8-position Cab Select Rotary has its own File within the two Channel 1 and Channel 2 folders and they contain the same 8 "LIVE" IRs as loaded from the Factory.

NOTE: Important!! Don't forget to eject the CabClone IR Drive just as you would a Flash Drive when you are done manipulating the IRs.

HEADPHONES: A standard ¼" stereo phono jack provides the Output for Headphones. This allows the Badlander to be not only a wonderful live performance and Recording ally, but also a great tool and companion for "Silent" practicing when you can't make any "noise" for those around you.

Like the Balanced XLR DI OUTPUT, the volume level at the HEADPHONES Output is determined by the LEVEL control. It's not a problem that the two share the OUTPUT Control, as the DI OUTPUT's feed is almost always sent to something with an Input Level control and EQ and also, the signal level at the ¼" HEADPHONES Output has been attenuated/optimized for personal monitoring with headphones.

That said, the impedance of the headphones (and their efficiency) can have an impact on the volume level possible, so it's good to try before you buy if you have the chance, as efficiency can be as much a consideration with headphones as their sound when choosing models or brands. The HEADPHONES Output will present a signal regardless of what other Outputs are in use.

LEVEL: This control determines the output level at the DIRECT OUT as well as the HEADPHONE Output. The settings on your Front Panel will also affect the output level of these two Outputs. The levels available here should have plenty of signal strength and/or adjustability to satisfy the requirements of your different interfacing and listening needs.

NOTE: The signal levels at the DI OUTPUT and HEADPHONE jack can vary with the playing loudness as determined by the MASTER controls. Adjust as necessary with the LEVEL control to compensate for very high stage volumes or very low "bedroom" or backstage practicing volumes.

NOTE: Again, it's always wise to begin every session with the LEVEL turned all the way down/zeroed out to avoid unwanted and possibly damaging high level signals, especially those created accidentally during hook up, from damaging your ears, playback monitors, headphones, etc.

EFFECTS LOOP: These two ¼" jacks provide the interfacing patch points for your "rear end" processing needs. The Effects Loop is basically a circuit bridge from the end of the preamp to the Driver stage, with the SEND interrupting the signal at the preamp's end and the RETURN feeding the power section just before the Driver tube.

Using this patch point usually ensures the best sonic performance as well as signal to noise ratio with your outboard processors. That said, it is important to point out that this is a critical junction in the Badlander's circuit path and whatever is inserted here can have an effect on the overall performance of the amplifier.

The Effects Loop is a Series Loop, meaning that the entire signal goes through it, unlike a Parallel Loop where a percentage of the unaffected pure signal is taken around the Loop. Therefore, the quality of the devices used in the Loop and their performance is critical to achieving the best sound and performance from your amplifier. We recommend auditioning any processor with your amplifier

BEFORE buying it to ensure it delivers a good match in performance. One clue is price. Like in any segment of the marketplace, you get what you pay for most times and there is a wide range of quality in regards to both build and sonic performance. While technology has raced ahead and features are at an all time pinnacle, it is the sound and feel for which you've likely chosen your pure analog all-tube amplifier. Therefore, we recommend a similar degree of discretion when it comes to choosing your processing devices. Ultimately, what you insert in the middle of your amplifier's signal path will have a lot to do with how it performs.

To connect your Processors:

1. Connect the SEND to your processor's INPUT.
2. Connect the RETURN to your processor's OUTPUT.

Done.

It is always best to use the shortest cable lengths possible. If you intend to run very long cable lengths, use a buffer. Even though the amplifier's Effects Loop IS buffered, there can be some minimal sonic penalty the longer the cable length becomes.

Always use shielded, high quality cables to connect your processors to the Effects Loop.

One way to check the quality of your processors and also, match the levels, is this simple test:

Set up a sound without processors in the Loop. Listen to the sound and observe the feel.

Insert your processing into the Loop. Do the same.

Remove the SEND and RETURN cables from the Badlander and if the sound gets better, or the level jumps up, you will know that either your processor's levels are too low, the quality is in question, or both. If unplugging the cables from your Effects Loop drops the signal level, simply reduce the Input or Output Levels of the processors. Repeat the test until there is no or very little difference in levels when the processors are inserted and removed again from the Effects Loop.

BIAS SWITCH: EL34/6L6: Your Badlander includes the ability to run different octal-based tube types, namely the Stock compliment of EL34s, or the more "American sounding", fatter-voiced 6L6s.

For most Rock playing the EL34s contain a harmonic structure we feel is precious, full of personality and more complex and they really add to the character of the Badlander's British heritage in an authentic and flattering way.

That said, many will prefer the thicker, mids and bottom favored, smoother character 6L6's will produce, especially for clean styles or times when fatter, lower, wider is appropriate.

Your selection should be made in accordance with the musical signatures you hope to capture and define and gain regions/styles you use most, but the fun comes with the exploration, so we encourage you to try both tube types on the way to finding your sound.

NOTE: IMPORTANT!! ALWAYS – Make Sure The BIAS Setting Matches The Tube Type In Use!!

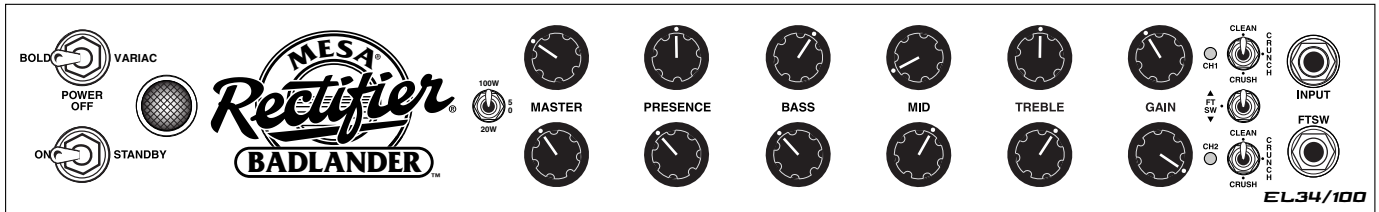
That wraps up the tour through the Controls and Features of your Badlander. We hope this Owner's Manual and Operating Guide will help you get the most out of your new instrument and bring you closer to discovering YOUR signature sound. From all of us here at MESA/Boogie, we sincerely wish you many years of enjoyment, inspiration and Great Tone!

Thank You for choosing us to be your Amplifier Company and We Wish You The Very Best on your Musical Journey!

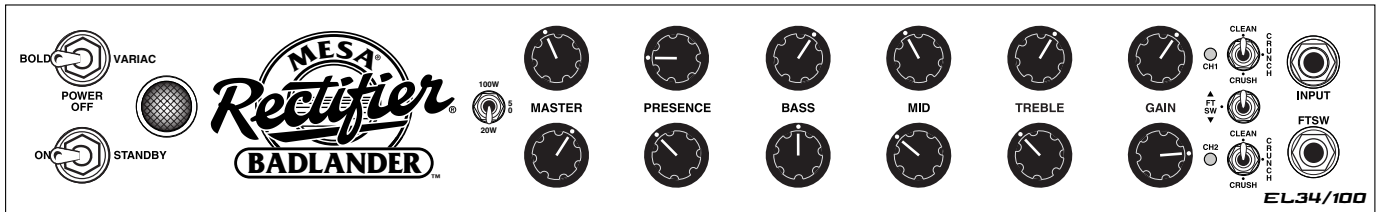
Cheers!

FACTORY SAMPLE SETTINGS

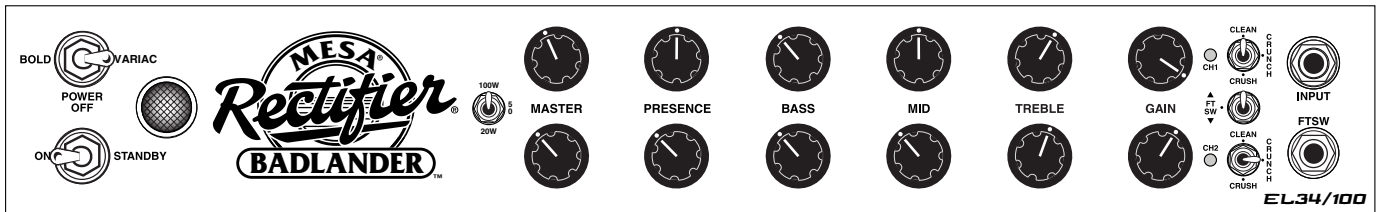
CLEAN / CLASSIC PUSHED



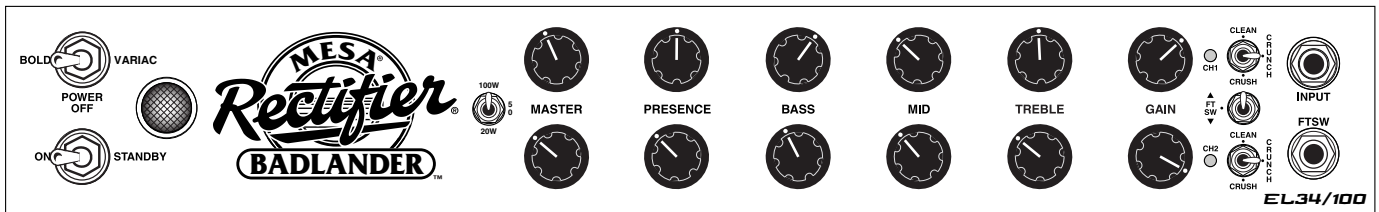
CLEAN / BLUES



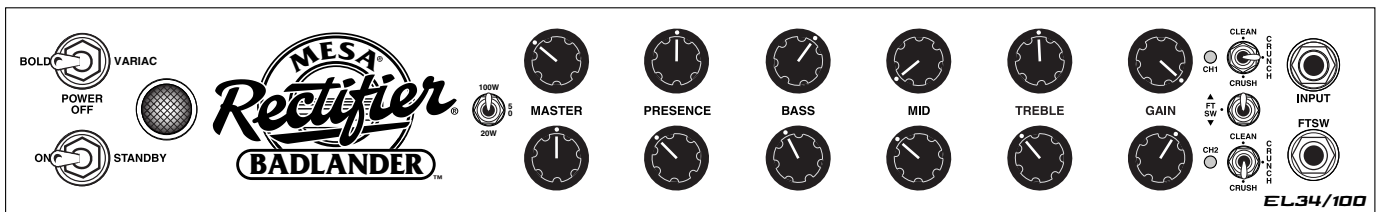
CLASSIC ROCK / CRUNCH



CRUNCH / CLASSIC LEAD



HEAVY CRUNCH / SOLO



USER SETTINGS

BOLD

POWER OFF

VARIAC

STANDBY

100W

50

20W

MASTER

MESA[®]

Rectifier[®]

BADLANDER[™]

PRESENCE

BASS

MID

TREBLE

GAIN

CLEAN

CH1

CRUSH

FT SW

▲

▼

CLEAN

CH2

CRUSH

INPUT

FTSW

EL34/100

BOLD

POWER OFF

VARIAC

STANDBY

100W

50

20W

MASTER

MESA[®]

Rectifier[®]

BADLANDER[™]

PRESENCE

BASS

MID

TREBLE

GAIN

CLEAN

CH1

CRUSH

FT SW

▲

▼

CLEAN

CH2

CRUSH

INPUT

FTSW

EL34/100

BOLD

POWER OFF

VARIAC

STANDBY

100W

50

20W

MASTER

MESA[®]

Rectifier[®]

BADLANDER[™]

PRESENCE

BASS

MID

TREBLE

GAIN

CLEAN

CH1

CRUSH

FT SW

▲

▼

CLEAN

CH2

CRUSH

INPUT

FTSW

EL34/100

BOLD

POWER OFF

VARIAC

STANDBY

100W

50

20W

MASTER

MESA[®]

Rectifier[®]

BADLANDER[™]

PRESENCE

BASS

MID

TREBLE

GAIN

CLEAN

CH1

CRUSH

FT SW

▲

▼

CLEAN

CH2

CRUSH

INPUT

FTSW

EL34/100

BOLD

POWER OFF

VARIAC

STANDBY

100W

50

20W

MASTER

MESA[®]

Rectifier[®]

BADLANDER[™]

PRESENCE

BASS

MID

TREBLE

GAIN

CLEAN

CH1

CRUSH

FT SW

▲

▼

CLEAN

CH2

CRUSH

INPUT

FTSW

EL34/100

TUBE NOISE & MICROPHONICS: You may occasionally experience some form of tube noise or microphonics. Certainly no cause for alarm, this quirky behavior comes with the territory and the Tone. Much like changing a light bulb, you don't need a technician to cure these types of minor user serviceable annoyances and in fact, you'll be amazed at how easy it is to cure tube problems...by simply swapping out a pre-amp or power tube!

First may we suggest that you set the amplifier up on something so that you can get to the tubes comfortably without having to bend down. It also helps to have adequate lighting as you will need to see the tube sockets clearly to swap tubes. **Use caution and common sense when touching the tubes after the amplifier has been on as they may be extremely hot!** If they are hot and you don't want to wait for them to cool off, try grasping them with a rag and also note that the glass down around the bulbous silvery tip is considerably less hot which makes it easier to handle. Gently rock the tube back and forth as you pull it away from its socket.

DIAGNOSING POWER TUBE FAILURE: There are two main types of tube faults: shorts and noise. Both large and small tubes may fall prey to either of these problems but diagnosis and remedy is usually simple.

If a fuse blows, the problem is most likely a shorted power tube and shorts can either be mild or severe. In a mildly shorted tube the electron flow has overcome the control grid and excess current flows to the plate. You will usually hear the amp become distorted and begin to hum slightly. If this occurs, quickly look at the power tubes as you switch the amp to STANDBY and try to identify one as glowing red hot. It is likely that two of a pair will be glowing since the "shorted" tube will pull down the bias for its adjacent mates, but one tube may be glowing hotter — and that one is the culprit. The other two are often fine — unless they've been glowing bright red for several minutes.

Because there is no physical short inside the tube (just electrons rioting out of control) merely switching to STANDBY for a few moments then back to ON will usually cure the problem...at least temporarily. Watch the tubes carefully now. Should the problem recur, the intermittent tube will visibly start to over heat before the others and thus it can be identified. It should be replaced with one from the same color batch, shown on its label. Call us and we will send one out to you.

The severe short is not nearly so benign. In the worst cases, a major arcing short occurs between the plate and the cathode with visible lightning inside the glass and a major noise through the speaker. If this is seen to happen, IMMEDIATELY turn the amp to STANDBY. By this time the fuse probably will have blown. Such a short is usually caused by a physical breakdown inside the tube including contaminate coming loose or physical contact (or near contact) between the elements. Replace it and the fuse with the proper slo-blo type and power up the amp using the power up procedure as we described earlier in this manual.

TUBE NOISE: Often caused by contamination within in a tube, the culprit can usually be identified, and by lightly tapping on the glass, you will probably hear the noise change. Hearing some noise through the speakers while tapping on the 12AX7's is normal however. And the one nearer the INPUT will always sound louder because its output is being further amplified by the second 12AX7.

The power tubes should be all but quiet when they are tapped. If crackling or hissing changes with the tapping, you have probably found the problem. To confirm a noisy power tube, merely put the amplifier on Standby, remove it from its socket and turn it back on. It will cause no damage to run the amplifier briefly with one power tube missing. You may notice a slight background hum, however, as the push-pull becomes unbalanced. Whenever you are trying to diagnose a suspect tube, keep your other hand on the POWER and STANDBY switches ready to shut them off instantly in the unlikely case you provoke a major short.

If you think you've located a problem tube but aren't sure, we recommend substituting the suspect with a new one just to be sure of your diagnoses. You will be doing yourself and us a big favor by just following the simple guidelines previously mentioned regarding tube replacement. You'll probably be successful with much less effort than is required to disconnect everything and haul the unit to a technician who will basically perform the same simple tests. If the tubes are still within their six-month warranty period, we will happily send you a replacement. Just note the color designation on the tube label so that we can send you the appropriate match.

DIAGNOSING PRE-AMP TUBE PROBLEMS:

Because your amplifier is an all tube design, it is quite possible that you will at some point experience minor pre-amp tube noise. Rest assured - this is no cause for alarm and you can take care of the problem yourself in a matter of minutes by simply swapping tubes.

Let us begin by saying; It is a "very good" idea to keep at least a couple of spare pre-amp tubes on hand at all times to insure uninterrupted performance. These minor pre-amp tube problems can take many forms but can generally be described in two categories: Noise and Microphonics. Noise can be in the form of crackling, sputtering, white noise/hiss and/or hum. Microphonic problems usually appear in the form of a ringing or high pitched squealing that gets worse as the gain or volume is increased thus are more noticeable in the higher gain "HI" modes. Microphonic problems are easily identified because the problem is still present even with the instruments' volume off or unplugged altogether - unlike pick-up feedback which ceases as the instrument is turned down. Microphonic noise is caused by mechanical vibration and shock: think of banging a microphone around and you'll understand where the word came from.

The best way to approach a pre-amp tube problem is to see if it occurs only in one specific mode or channel. This should lead you to the tube needing replacement. Then all that remains is to swap the suspect tube for a known good performer. If you cannot narrow down the trouble to a specific mode or channel, the problem may be the small tube that drives the power tubes which is operational in all modes and channels. Though rare, a problem with the driver tube would show up in all aspects of performance - so if you can't narrow the problem down to being mode or channel specific, you may want to try replacing the driver tube. Driver problems generally show themselves in the form of crackling or hum in all modes of performance and/or weak overall output from the amplifier. Occasionally an anemic driver tube will cause the amplifier to sound flat and lifeless, but this is somewhat uncommon, as worn power tubes are a more likely suspect for this type of problem.

Sometimes making the diagnosis is more trouble than it's worth and it's faster and easier to merely replace the small pre-amp tubes **ONE AT A TIME** with a replacement known to be good. But **MAKE SURE** you keep returning the tubes to their original socket until you hit the one that cures the problem. You'll notice that tubes located nearer to the **INPUT** jack always sound noisier...but this is because they are at the start of the chain and their noise gets amplified over and over by the tubes that follow. The tube that goes into this "input socket" (usually labeled V1) needs to be the least noisy of the bunch. The tube that goes at the end of the preamp chain - just ahead of the power tubes - can be quite noisy without causing any problem at all. The tubes in your amp have already been located in the most appropriate sockets and this is why you should **NEVER** pull them all out at once and **ALWAYS** swap them one at a time. **ALWAYS** return a perfectly good tube to its original socket. Also it's a good idea to put the amp on **STANDBY** when swapping tubes to reduce the heat build up in the tubes themselves and to prevent explosive noises (which can still occur even if you are pulling the tubes away from their sockets gently) from coming through the speaker.

Remember, take your time, be patient and chances are real good that you can fix your amp yourself by finding and replacing the bad tube. It kills us to see someone who has shipped their amp back to us...and all it needed was a simple tube replacement! If you must send back your amp, remove the chassis from the cabinet by unscrewing the four mounting bolts on the bottom top. The chassis then slides back like a drawer and comes out from the back. Remove the big power tubes and mark them according to their location from left to right 1, 2 etc. They need to be wrapped separately with plenty of wadded up newspaper around them and put in a smaller box within the larger carton. Remove the Rectifier tubes and wrap them also. You can leave the preamp tubes in or remove them and wrap them separately being sure to label their location. (See Tube Task Chart.)

To wrap the chassis, use plenty of tightly wadded up newspaper so there is at least six inches of "crush space" between the chassis and the cardboard box. Bubble wrap also works well, but please **DON'T** use styrene peanuts - they will shift during transit and get lodged inside your electronics as well as allowing your amp to end up at the bottom of the box unprotected and possibly damaged.

Pre-amp tubes don't normally wear out as a rule. Therefore, it is not a good idea to change them just for the sake of changing them. If there isn't a problem - don't fix it. If there is no result from your substitutions, it may be possible that you have more than one problematic tube. Though rare, this does happen and though it makes the troubleshooting process a little more intimidating, it is still possible to cure the problem yourself.

NOTE: *It is normal to hear a slight metallic ringing sound when tapping on the preamp tubes. As long as the tube does not break into oscillation or start crackling or any other form of bizarre noise, it is considered normal and functional.*

SPEAKER IMPEDANCE MATCHING & HOOK-UP GUIDE:

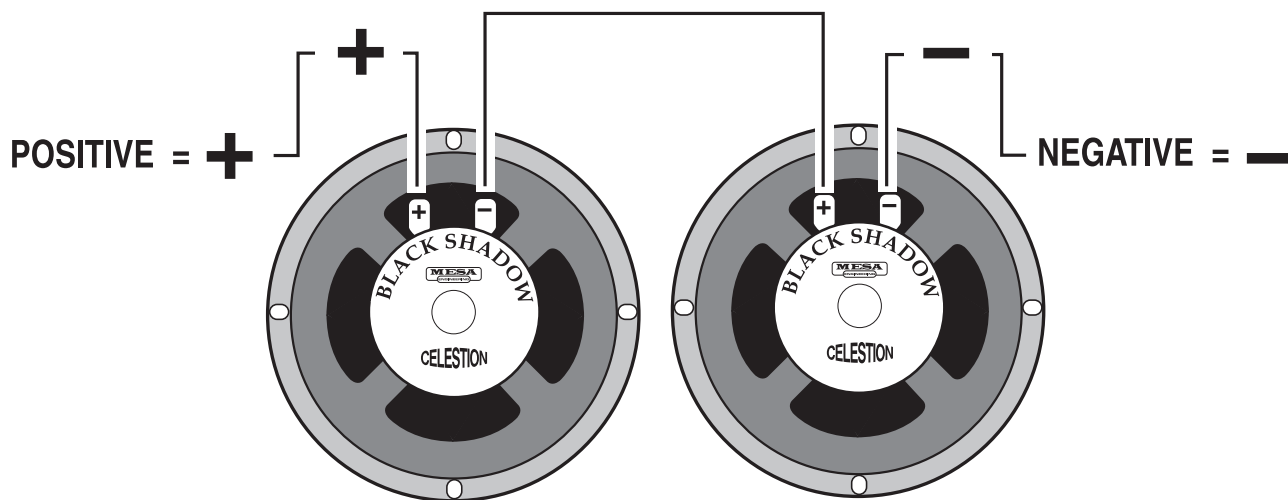
IMPEDANCE: Wiring up speakers to provide the most effective load and making sure that all of them are in phase will help in creating the best sound possible. This is not too difficult, as long as you understand a few things about loading and how to connect your speakers to provide an optimal resistive load.

MESA/Boogie amplifiers can handle 4 and 8 ohms effectively. Never run below 4 ohms in a tube amplifier unless you are absolutely certain that the system can handle it properly; this can cause damage to the Output transformer. A few amplifiers can handle 2 ohms effectively without damaging them (for example the **MESA'S Bass 400+**). You can always have a higher resistance (16 ohms, for example) without damaging results, but too low of a resistance will likely cause problems.

MIS-MATCHING: When running a higher resistance (for example: 8 ohm output into 16 ohm cabinet), a slightly different feel and response will be eminent. A slight mismatch can provide a darker smoother tone with a little less output and attack. This response is a result of the amplifier running a bit cooler. Sometimes when using more than one cabinet a mismatch will be the only option.

WHAT IS MY CABINETS IMPEDANCE?: If you have only a single speaker, you just match that single speakers impedance to the amplifier, and you are done. In many cases, you will have a number of speakers, and then you must calculate the "load" that the amplifier will need to support. There are generally three ways to wire multiple speakers together. They are as follows:

SERIES: When you wire (hook-up) speakers in Series, the speakers resistance (as measured in ohms) is additive - i.e. putting two 8 ohm speakers in Series results in a 16 ohm load.



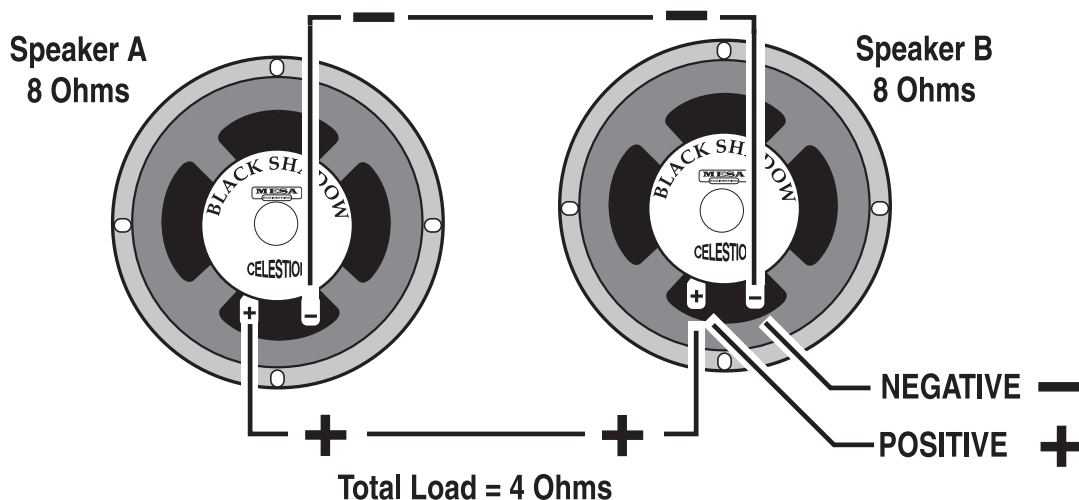
Speaker A = 8 Ohms

Speaker B = 8 Ohms

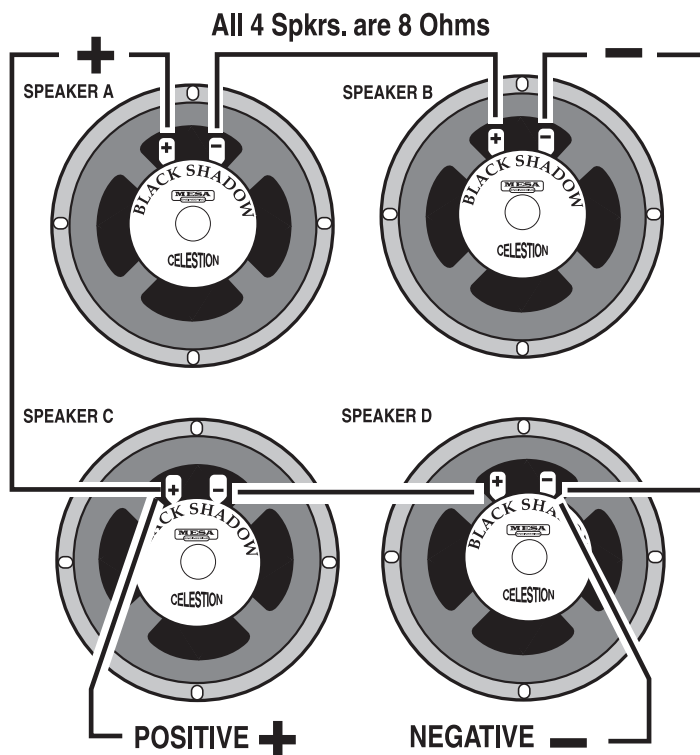
SERIES: Connect the Negative side of Speaker A
to the Positive side of Speaker B

SPEAKER IMPEDANCE MATCHING & HOOK-UP GUIDE: (Continued)

PARALLEL: When wiring in parallel, the resistance of the speakers decreases. Two 8 ohm speakers wired in (hooked-up) Parallel results in a 4 ohm load. It's easy to calculate the effect of a resistive load when all the speakers are all the same resistance. It is really not suggested to wire different resistive load values in Parallel (8 and 4, 16 and 8 etc.) The formula for figuring the total impedance in Parallel is the multiplication of the two loads divided by the sum of the two loads - i.e. putting two 8 ohm speakers in Parallel results in a 4 ohm load. Connect the Positive side of Speaker A to the Positive side of Speaker B - Connect the Negative side of Speaker A to the Negative side of Speaker B.



COMBINATION OF SERIES & PARALLEL: This is really just two sets of Series wired speakers connected in Parallel. This is how you maintain a consistent load with multiple speakers. The importance of this is more evident when you have more than one cabinet to connect to your amplifier. This is when you need to figure out the loads and how to wire them up without applying too low of a resistance on the amplifier.



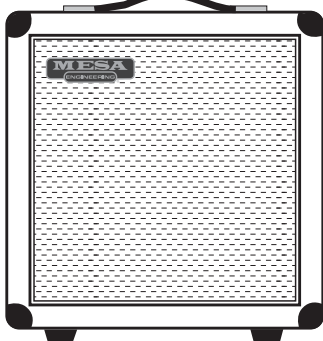
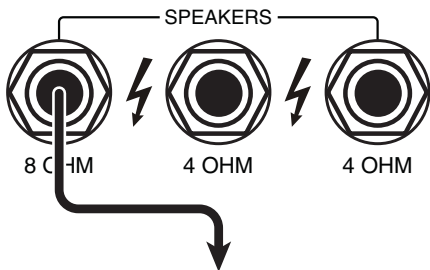
Simply connect the Positive side of Speaker A to the Positive side of Speaker C.

Connect the Negative side of Speaker A to the Positive side of Speaker B. Next, connect the Negative side of Speaker C to the Positive side of Speaker D.

And lastly, connect the Negative side of Speaker B to the Negative side of Speaker D.

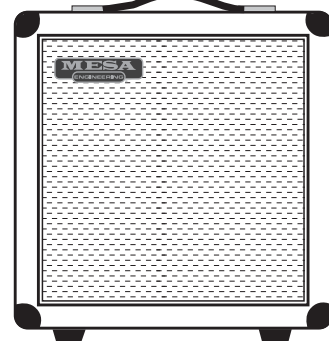
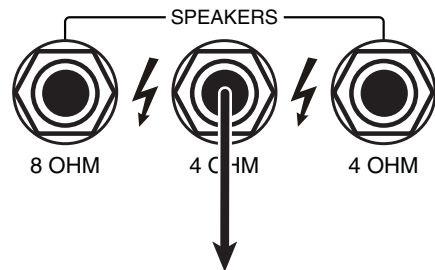
4 Eight (8) Ohm speakers wired in Series Parallel = a Total Load of 8 Ohms.

WIRING SCHEMES...Amplifier to Speaker Cabinets



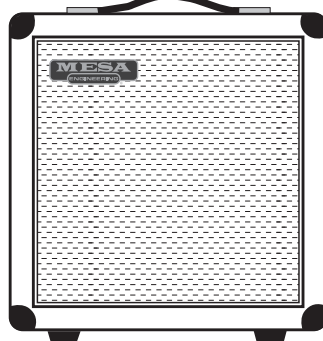
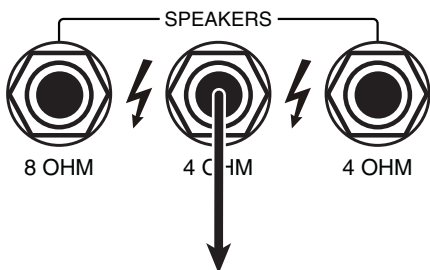
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8 Ohm Cabinet

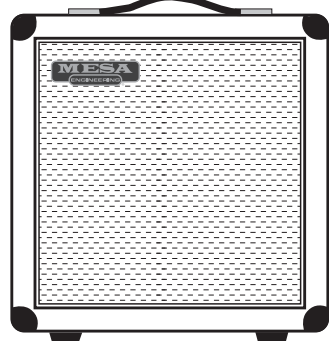
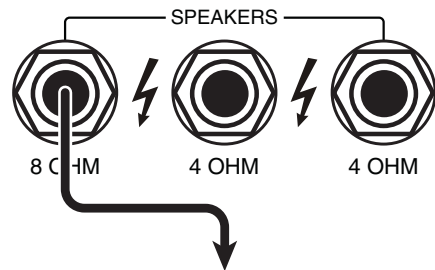


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4 Ohm Cabinet

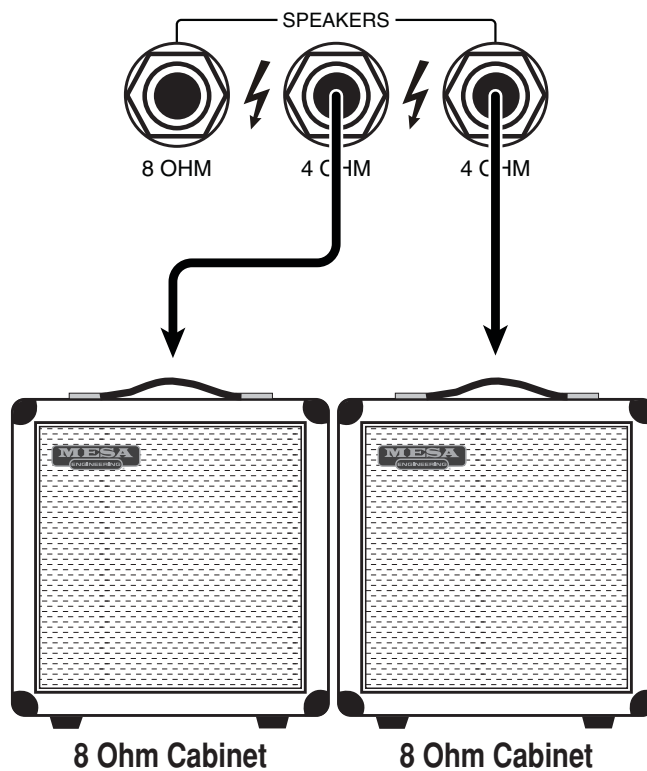


8 Ohm Cabinet
SAFE MISMATCH



16 Ohm Cabinet
SAFE MISMATCH

WIRING SCHEMES...Amplifier to Speaker Cabinets



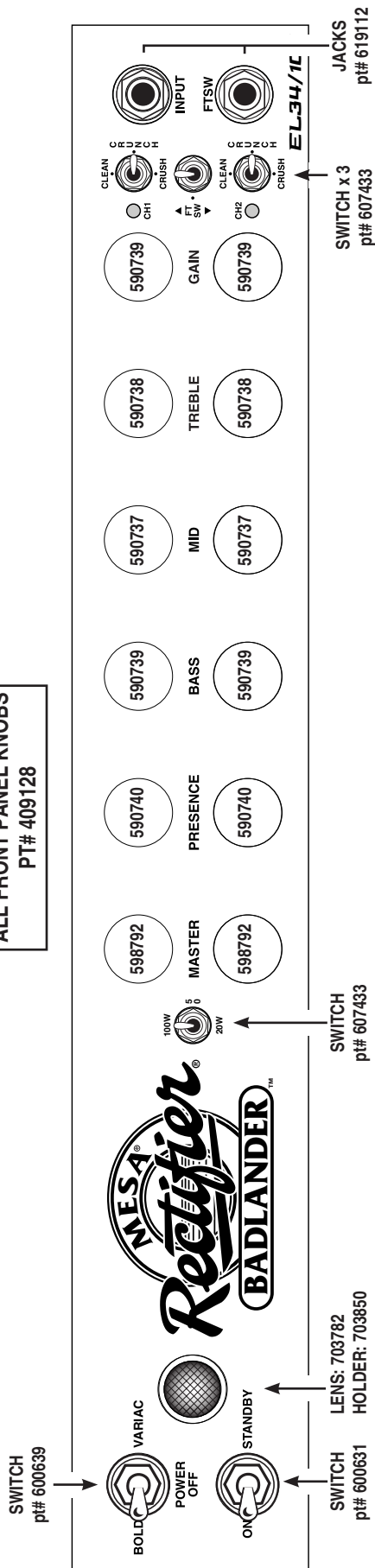
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BADLANDER™ 100 HEAD

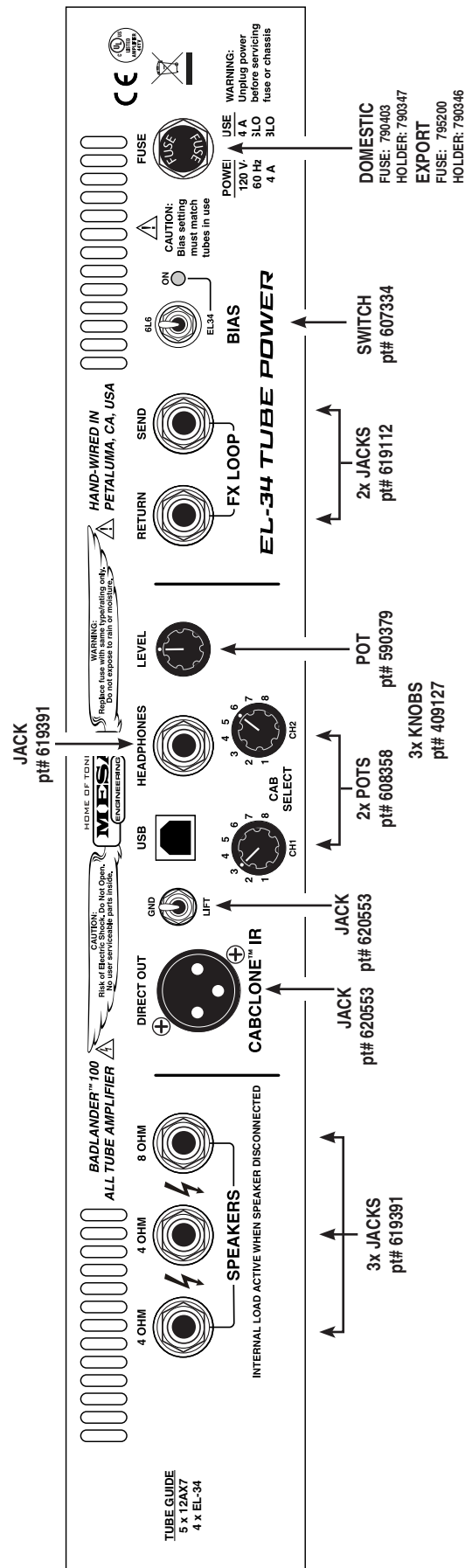


FRONT PANEL: BADLANDER 100

ALL FRONT PANEL KNOBS
PT# 409128



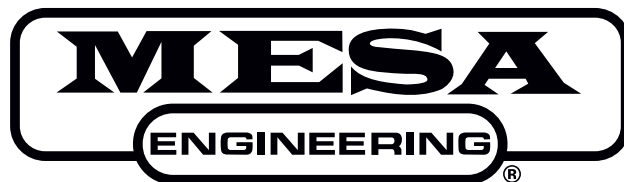
REAR PANEL: BADLANDER 100



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*1317 Ross Street Petaluma, CA 94954
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