

*California*  
*tweed*™



*Owner's Manual*

## *Hello from the Tone Farm*

*Congratulations on your choice of the CALIFORNIA TWEED™ and welcome to the MESA/Boogie® Family! The model you've selected has a deep heritage that combines the best attributes of vintage tube amplification with pioneering innovation to arrive at a new realm of performance. One look at the feature set tells you it's true to its genre, but underneath the hood, while the authenticity has been considered and adhered to where appropriate, it has also been revised and upgraded to provide modern flexibility and a new frontier in power expression. The lineage dates back to our earliest MARK I™ and the very beginnings of guitar amplification that inspired it, while the breakthroughs included reach forward to set a new bar in traditional Tone. So feel a sense of pride that you're playing an instrument 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 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 CALIFORNIA TWEED™ 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!*

# California tweed™

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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.

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.**

# California tweed™

## Operating Instructions

### OVERVIEW

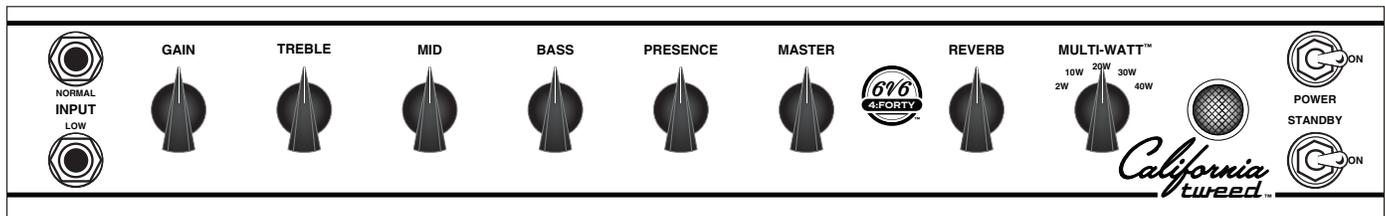
Congratulations on your choice of the California Tweed™ 6V6 4:Forty and welcome to the MESA/Boogie® Family. You chose wisely as this amplifier, though simple and straightforward in comparison to our Channel Switching multi-Channel models, represents no less commitment to excellence, attention to detail and refinement in performance.

Fifty years in the making and looking forward to reinvent “Vintage” Tone, we’re proud to introduce this new Single Channel, mid-power, “old school” offering aimed at all sounds Americana. Equipped with all the essential features you do need, none of the complexity you don’t and bona fide delicious 6V6 Tone in every viable wattage with an addictive, inspiring feel guaranteed to keep you inspired and growing musically.

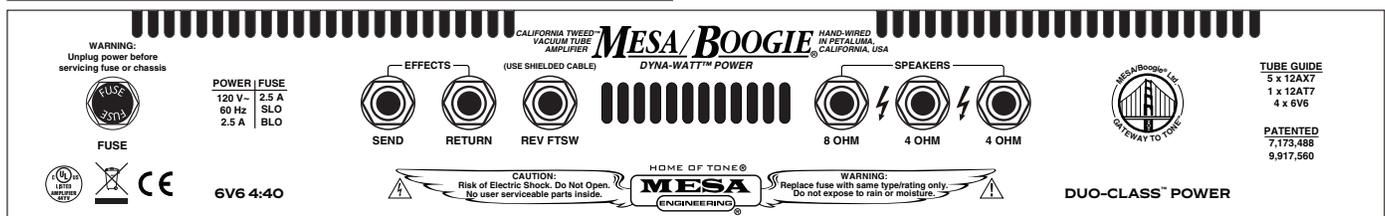
In the twilight of the 1960s San Francisco Bay Area amp repairman to the Stars, Randall Smith, was inspired to start building his own amplifiers after coming to a deep appreciation for the ‘50s Tweed circuits Leo Fender created. He loved their organic sounding voice, powerful controls and the way they smoothly transitioned from clean to clip and back again. So standing on the shoulders of a giant, Smith’s (and the World’s) first venture into a Boutique guitar amplifier saw the foundation built atop that wonderful, timeless sounding preamp. Five Decades later we return to pay homage, yet also bring forward with our 50 years of experience earned hand building high gain amps, an exciting new realm of Tweed-based performance and authentic 6V6 character.

While the traditional gain preamp on this model is relatively simple and straightforward providing the full compliment of Gain, Master, Tone Controls and Presence, the power section is progressive in both operation and design and we feel an evolutionary step forward in what many think of as Vintage-style amplification. The tube compliment in standard form is tried and true, appearing on Boutique and possibly vintage Hi-Fi offerings, but what we’ve done with it is revolutionary. The update includes our Incremental Multi-Watt™ featuring Duo-Class™ and our (originally patented) Dyna-Watt™ Technology. The Incremental Power Select switch encompasses a wide range of the most usable power levels employing different Operating Classes and Wiring Configurations for ultimate tonal flexibility and optimum venue-matching power choices. This Incremental version of Multi-Watt is protected by 2 Active Patents and is definitely the State of The Art in terms of taking old school Tone to new and exciting performance levels.

### FRONT VIEW: CALIFORNIA TWEED™ 6V6 4:FORTY



### REAR VIEW: CALIFORNIA TWEED™ 6V6 4:FORTY



Five Power Ratings Featuring 2 Operating Classes and 3 Wiring Options are provided; 40 Watts utilizing 4 x 6V6s operating in Class AB Pentode, 30 Watts utilizing 4 x 6V6s; 2 operating in Class AB Pentode, 2 in Class AB Triode, 20 Watts running 2 x 6V6s operating in Class AB Pentode, 10 Watts running 2 x 6V6s operating in Class AB Triode and 2 Watts harnessing 2 x 6V6s operating in Class A Parallel, 1 6V6 wired Pentode, 1 wired Triode.

Throughout these popular wattage levels almost any musical style or venue can be accommodated, and with sensible adjacent options, you'll have room to move up or down the power scale seamlessly on the fly in the heat of the performance.

With this powerful advancement in power technology, tuning the headroom and riding the threshold of sweet, musical clip-ability is as simple as a quick flick of the wrist. It opens up the usefulness and flexibility of a Single Channel traditional amplifier and allows a much wider range of sounds based on power section performance and saturation.

The Reverb in this traditionally oriented model is different in sound and components in comparison to our other multi-channel models. It's voiced and optimized for the sounds fans of yesteryear's amplifiers are accustomed to and expect. Lush and deep with a brighter voicing and a long but controllable "vintage" decay. It creates the ambience that authenticates the sounds dialed up in Tweed-based preamp and choice of unique power sections available on the POWER SELECT Rotary. We feel it complements the personality and character of the California Tweed perfectly and is arguably one of our best Reverbs — ever.

The Rear Panel of the California Tweed matches the Front Panel in that it contains only those features that are congruent with its straightforward, simple design while still accommodating modern essential needs. Throughout the design process restraint was in order to meet the expectations of those who abide by this simplistic view regarding amplification. Hence the Rear Panel is very sparse compared to other MESA models and contains only SPEAKER Outputs (one 8 and two 4 Ohm), an Effects Loop and a Reverb Footswitch jack. In the spirit of the genre, less is more.

Cabinetry and its construction plays a big role in the California Tweed's sound and character, along with a great traditional sounding Speaker. Different and unique Rear Panels and Speaker Baffles tune the Combo and Extension cabinets in this model and provide increased vintage-voiced resonance and a sweeter, less forward sound and feel coming from the Combo cabinet or Extension. The 100 Watt Jensen Alnico is perfectly voiced for "American" sounds, from Blues to Roots, Country to Gospel, R&B and everything between and has a more organic midrange character and sweet, but slightly lower frequency top end than our other proprietary English-made Celestion speakers. This translates into a stylistically appropriate and wonderfully different openness to that of our more modern oriented models.

In combination all these differences add up to a stylistically strong statement that redefines the genre and brings new performance to a very old game full of long standing classics. We really hope you'll enjoy the enhancements and refinements to this amplifier class as much as we enjoyed the process of bringing them to you and sincerely hope they bring your inspiration and your playing to new heights!

## GETTING STARTED

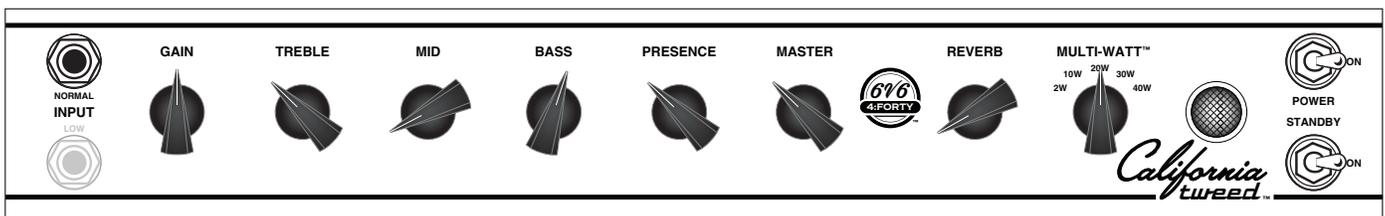
1. After unpacking the amplifier, check to make sure all the tubes are firmly seated in their sockets as some may have loosened a bit during shipping.
2. Connect the A.C. Cord to a grounded (3 pin) A.C. outlet.
3. If you have purchased a Head Format, connect your speaker enclosure to the proper matching impedance SPEAKER OUTPUT on the Rear Panel, most typically to the 8 Ohm SPEAKER OUTPUT jack. An 8 Ohm load is preferable for your first experience with an amp this dynamic and explosive as you will hear the full power potential and best tonal balance. Combo amplifiers use an 8 Ohm internal speaker and it should already be connected to the proper impedance SPEAKER OUTPUT. If not, move the speaker cable to the 8 Ohm SPEAKER OUTPUT jack.
4. Flip the POWER Switch to the ON (Right) position while leaving the STANDBY Switch in the STANDBY (Left) position for at least 30 seconds. This allows the filaments to warm up in the tubes before being put to use. Following this cold-start procedure every time you power up will increase the toneful life of your tubes.
5. If you intend to connect processing devices to the EFFECTS LOOP, do so now. Look up EFFECTS LOOP in this manual for proper connection and operation. We recommend auditioning the California Tweed without processing for the first time, just to hear the pure sounds and get to know the amp by itself before adding processing. This also helps tell you if your processing might be robbing anything sonically from your new amplifier. If the Loop is to be used, check the INPUT levels on your processor to make sure they are in the medium to lower range so you can increase the level slowly once you have lifted STANDBY on the California Tweed and play to view the SEND level coming from the amp.

**NOTE:** Pedal type Processors don't usually have an Input Level indicator, some have clip lights, and on either of these types you'll need to trust your ears regarding levels

6. Follow the Sample Settings examples below and set the Controls at these approximate settings for a tour through your new world of TONE. Remember these are just a glimpse at the vast possibilities and are meant to give you a taste of one possible way to set up your Channels. Feel free to fine tune the sound as you go...you can't hurt a thing and you will be learning by feel...the best way.
7. Flip the STANDBY to the ON position and enjoy the ride!

## INSTANT GRATIFICATION

In case you haven't yet played your new amplifier, below is just one example of the many ways to set up a sound. This example demonstrates a Clean sound in the 20 watt power level.



## HELPFUL HINTS

**NOTE: REDUNDANT INFORMATION:** Throughout this Operating Guide you may encounter redundant information and sections that are repeated for your continued awareness and as reminders. This is done so a person can read only the sections they are interested in, and yet still get the important points they should know or NEED to know about the California Tweed. We apologize if this gets annoying for the cover-to-cover reader, but even they may appreciate it sometime in the future when referencing this Guide quickly for a specific topic.

- We suggest using the NORMAL Input first to explore the amplifier, as it will provide the unadulterated full range of sounds possible, including clip/overdrive sounds, with any given guitar.
- For maximum headroom and clarity for Clean sounds, try the LOW Input (and the 40 Watt setting on the POWER SELECT Rotary). It may be darker sounding, but the preamp will tolerate more input signal from hot pickups before the onset of tube saturation/clipping, which may or may not be desirable depending on the stylistic application.
- Beware of high settings on the BASS control especially when the GAIN is set high. Too much BASS will produce a flubby, indistinct attack and “slow” the response time. A basic rule regarding the BASS control might be this; As the GAIN goes up...the BASS should come down.
- The GAIN and TREBLE Controls are the most powerful tone shaping controls and should be used with taste. They determine much about the attack characteristic and the overall personality of the sound. Many of the great sounds will find these two Controls in their middle ranges.

**NOTE:** When possible, avoid setting the TREBLE high (above 2:30) when the GAIN is to be set high as this brings about the tendency for a slightly microphonic tube to ring or squeal.

- Your amplifier will sound better and feel better to play if you have at least one speaker cabinet touching the floor you are standing on while you play. The coupling effect and especially the transmission of bass frequencies will cause the amp to sound fatter and the strings to feel more substantial and tangible when the amp (or cab) sits on the floor. Wood floors (like stages) are really great! Let's face it... the guitar can be one of those weird instruments that rarely feels the same way two days in a row, night to night, from room to room... and we can use all the help we can get. This usually helps... with the only exception being a stage filled with many live mics...sometimes then you may be forced to lift the amp to avoid the coupling effect creating resonances that will cloud up a mix or cause things to “runaway” in the low end.
- Use the STANDBY switch (Set Left) every time you power-up (from cold or hot), during set breaks, cable hook-ups and anytime you are not playing for a few minutes. Doing so will increase the toneful life of your tubes.
- Circuits emanating from this “other side” of the MESA Line (as in non-MARK amplifiers) like your California Tweed, tend to favor TREBLE and PRESENCE control settings on the lower side for sounds that are balanced and/or in the warmer domain. Depending on guitar woods, pickups and technique, don't be surprised if you find great sounds below 12:00, or even all the way off on the TREBLE and PRESENCE, with the MID's broad Q (that carries substantial top end) providing all the top end cut you need.
- In the California Tweed, different and unique top end frequencies are found in the TREBLE, MID and PRESENCE controls. We suggest becoming familiar with what each of these powerful controls bring out or bury in the mix and learn to “swap the top” as you see fit for different styles, characters, responses and attack center-points. Spending a little time early on with these three powerful Tone and “dynamic” controls will allow you to dial up sounds quickly and easily and enhance your enjoyment of the amplifier.
- While the California Tweed's output section is not overly sensitive to impedance matching, its sound is affected by it. We suggest auditioning the 4 Ohm Speaker Output on the three lowest, 20, 10 and 2 Watt Power Selections, as the 4 Ohm Output produces a more technically “correct” load scenario. The sound may be brighter and punchier in the 4 Ohm Jack, but regardless, leaving it in the 8 Ohm Output will not harm the amplifier and for many sounds or players, the mismatch may be preferable.

## FRONT PANEL

### INPUTS

Two INPUTS are provided on the California Tweed to allow for different gain levels, pickup output levels and Tone.

NORMAL is the “full strength Input and allows the full signal of your instrument to hit the first stage of the preamp. This Input allows more touch sensitive transitioning between clean and overdriven sounds when the GAIN control is set above 11:30 or 12:00, depending on your pickup’s output. The higher the setting of the GAIN control, the more easily you will be able to push the preamp, and even power section (depending on wattage selected at the Rotary POWER SELECT) into clip or overdrive.

The NORMAL Input is also the brighter Input and allows the maximum harmonic content from your instrument to pass on through the preamp. This will ensure the Tone Controls react with their full power and the gain levels to reach their maximum. Most of the critical “Toning” during the development of the amplifier was done using the NORMAL Input, so as to ensure all gain regions and frontiers were explored and refined to their absolute maximum potential. We suggest using the NORMAL Input first and exploring the amplifier, as it will provide the unadulterated full range of sounds possible with any given guitar.

The LOW Input should be explored for maximum headroom at the input of the preamp, and/or for the absolute cleanest (not necessarily brightest, which can often be confused for cleanest) response and character. For the loudest version of this, also use the 40 watt setting on the POWER SELECT Rotary. This LOW Input is padded down so that a reduced signal is seen at the first tube stage. This padding also reduces the punch and brightness, so you will have to determine what you are looking for, headroom or cut. More Cut would actually be possible with the NORMAL Input, as though it may be less pristine in terms of the onset of clip, it’s inherent punch and more active Tone controls due to the higher signal strength may actually sound cleaner, or feel better in an ensemble. Experiment with both Inputs to learn which one works best for your application. Just be aware that often brightness is often confused with headroom, clarity and even power.

The LOW Input and its inherent top end roll off can be nice for Jazz playing or single note solo work where cleanliness and a warmer character is desired. It may take a bit to get accustomed to the less urgent and less forward/punchy feel as compared to the NORMAL Input, but there are some nice and unique sounds available using LOW when you explore it for the right applications. Just remember it will be all but impossible to achieve much clipping or even subtle breakup in LOW, as the signal strength just won’t be there to push the preamp stages into saturation.

### GAIN

This is, by far, the most powerful control in the Preamp and its setting determines the style and personality of the sound. It meters the gain and it sets Input Stage headroom, which determines whether the sound will be clean or begin to be overdriven. It also acts as a subtle Tone control as the tube stages’ gain is increased and decreased and imparts its own “color” on the sound.

There are three regions of the GAIN control; a low gain zone between 9:00 - 11:30, a warmer, more saturated zone from 11:30 - 2:00 and a higher gain zone from 2:30 – 5:00. Each of these zones can be used for many different applications and all can be used for both chording and single note solo work. As the GAIN control is swept throughout its range it imparts different textures and tonal characteristics.

Generally speaking, the lower end of the control (9:00 – 11:30) produces a brighter, more open character that has more dynamic content available. This region is great for clean, sparkling chording where the maximum headroom is available, the top end harmonics are bubbly and the attack is fast. There is an abundance of dynamic range as the signal has not yet been compressed by much saturation.

The middle region of the GAIN control (11:00 – 2:00) is where the most balanced sounds live and you will find this region delivers warm, full sound, detailed attack and good dynamics. This range delivers great chording response, sounds richer and has more body with the cleanest sounds falling off fairly rapidly as the GAIN is turned past 12:30. Depending on pickup style and strength you will have to watch for clipping as you are nearing the crossover or threshold point gain-wise between clean and some saturation. Some of the most expressive best sounds possible are to be found here, as things start smearing nicely as they transition more and more toward tube overdrive.

The highest region of the GAIN control (2:00 – 5:00) is all about saturation. Up here the signal gets much fatter in the low end and the top end begins to recede to create a rounder, more compressed sound. Dynamics become a little slower with lower peaks that are smoothed a bit and a more liquid feel is produced. The highest region of the GAIN control produces some great pushed sounds as the Input stage gives it up and starts to saturate. This range of the GAIN control turns this traditional “Clean circuit” into a viable and very expressive vintage-inspired single note Soloing sound. With an already thicker base of gain, the upper region also accommodates diode and tube based overdrive pedals nicely as they increase saturation and/or signal strength at the INPUT.

You may be a bit surprised how wonderfully aggressive the top end of the GAIN control can be on this ‘traditional amp’, unveiling its true potential for Crunch Rhythm and even Rock oriented soloing. There is ample gain up here to rip into any style you wish, save for perhaps Modern Metal, pumping out surprisingly thick stacked harmonic layers for chording and/or very expressive and nuanced overdrive for single notes.

At the highest GAIN settings you may notice the Tone controls have a slightly diminished effect on the sound. This is because the notes are becoming so saturated and their character has been pre-determined by the circuit’s overall voicing as it reacts to this level of gain.

**NOTE: TONE CONTROLS;** *In the California Tweed, different and unique top end frequencies are found in the TREBLE, MID and PRESENCE controls. We suggest becoming familiar with what each of these powerful controls bring out or bury in the mix in terms of top end and learn to “swap the top” as you see fit for different styles, characters, responses and attack center-points. Spending a little time early on with these three powerful Tone and “dynamic” controls will allow you to dial up sounds quickly and easily and enhance your enjoyment of your amplifier.*

## **TREBLE**

While the GAIN is the most powerful control in the preamp, the TREBLE comes in a close second. The TREBLE is largely responsible for shaping the character of the sound and response. It can overpower the rest of the Tone controls due to its cut and slice component and therefore its setting is crucial to a rich and balanced sound. Setting the TREBLE with care and taste in mind is critical for achieving a blend and assuring the Tone control string works harmoniously.

The middle region of the TREBLE delivers the best balance and creates sounds that are plenty bright enough but still rich and warm. We suggest that you start with the TREBLE at 11:00 and adjust up or down slightly until the desired blend is achieved. However, circuits emanating from this “other side” of the MESA Line and sharing Tweed-based DNA tend to favor TREBLE and PRESENCE control settings on the lower side for sounds in the warmer domain. Depending on guitar woods, pickups and technique, don’t be surprised if you find great sounds below 11:00, or even occasionally very low on the TREBLE and PRESENCE, with the MID’s broad Q that carries substantial top end providing all the top end cut you’ll need for some sounds.

Higher gain sounds, especially for Single Note Soloing, beg for experimenting with the TREBLE and PRESENCE around 10:00 -11:00 and the MID around 9:00 - 10:30 for a rich creamy response that feels great on the strings and sounds soulful and pleasing. Adjust up or down to taste, but you will likely find the most vocal and round attack characteristics down in this range, especially for Fender Scale Instruments. Shorter Scale guitars like Gibsons and darker woods like Mahogany may require a little higher settings on these three controls or a deviation in ratio between them for the best balance and harmonic content.

## **MID**

The MID control brings in and out a broad band of midrange frequencies and – as we have mentioned earlier in the TREBLE section – along with these rides a fair amount of higher “low treble” range frequencies. These highs are lower than that of the TREBLE, but they are important for the punch and cut of the amplifier in a mix.

For rhythm playing, but really globally, a lower MID setting (7:30–10:00) scoops some of this midrange attack and makes the bottom end breathe more while letting the higher harmonics define the top end, producing more sparkle, chime and openness. This range will also make things more resilient and create an easier to play, more elastic feel on the strings. Single coil guitars work very well here for the slinky, rubber-band attack and bouncy bass character associated with Blues, R&B and Country or most any styles based on clean response.

The middle region (10:00–1:00) is where the punch and attack begin to come on with more urgency and this is where mahogany guitars really like to see the MID set for adding the cut and definition. Here the top end begins to show itself in the mix of the MID

controls' spectrum and chording sounds start to chime and slash with a more forward and very present character.

From there on up (1:00–5:30) the MID introduces an aggressive range of sounds that are still full, but quite forward as the dominant frequencies become those present under control of the MID. In this range you will likely have to increase the BASS to add back in the richness and warmth that gets overshadowed when the MID control is set high. If you like the attack and urgency found in this range of the MID, all the other controls (except maybe the MASTER, which you may have to back down as the sound gets more forward) may have to be set higher to keep up with the MID-dominant curve. This is fine, although there will reach a point of diminishing return as the headroom in the preamp gets eaten up by this tonal arms race and you begin to clip the preamp with the high signal from the Tone control string.

For gained-up sounds at the top of the GAIN control a similar story unfolds as the MID is increased. Lower settings (7:30 – 10:30) will produce wider sounding, more elastic feeling chording sounds and the single notes will have a creamier, smoother character. High harmonics created by the gain and controlled largely with the TREBLE, will put a patina of three-dimensional, harmonic-enriched haze on things that smears nicely.

As the MID is increased past the 10:00 range, cut and bite begins to creep in along with a more chesty midrange punch. This is where, depending on guitars and pickups, you may approach some classic “almost 70s “Crunch” This MID kick is an integral part of the impact and tight-tracking accuracy of this iconic medium-gain sound that has been a Rock staple for the last four decades. The Preamp is traditional in nature and therefore not able to go all the way to what we think of today as “Crunch”, but reducing the Power to the lower wattage settings (20, 10 and 2) can expand the available gain range substantially, albeit from the power amp and therefore a different character.

Passing the 1:00 on the MID unleashes the brash attitude and top end joins the party. Here is where you look for the most forward and aggressive attack over a wider range than that of TREBLE control. The feel on the strings will become less forgiving and your playing will be put under a microscope in the time domain. This region is great for pushing Rock rhythm sounds to the forefront of a mix. Single note solo sounds in this range on the MID will be fast and accurate and certainly will be heard by all, as they will have a definite point of origin in the bar line.

One suggestion, or maybe more of a word of caution... the MID control contains frequencies that can be a little tough on the ears if not used with some discretion. Be sure to put your head down by the cabinet at some point and sample what you are doling out to the audience and/or the microphone. You might be surprised how much impact – and possibly even unpleasantness – can be dialed in with higher settings of the MID. Unless you are out to hurt people, which is never a good idea, you may find the middle to lower range of the MID gives you plenty of attack and definition but still sounds balanced and warm and lets others enjoy your playing without wincing at every note.

## **BASS**

The BASS control blends in a fairly wide slice of rich bottom end to round out the sound. Being an amp that needs to have luscious clean sounds as well as traditional Tweed clipping potential, we have taken liberties with tradition to expand its usefulness and enrich its character for the bottom half of the GAIN control. This was one of our biggest challenges in the development of the California Tweed and once dialed in became one of our proudest achievements; to have response similar to Black Face architecture at the low end of the GAIN control and Tweed response once the GAIN is increased past 12:00 noon. Much of this trick is achieved through diligent work with the BASS region of the circuit and associated Tone Control stack, the rest is dependent on Gain structure and its perfection. The end result is a traditional-voiced amp that does double duty what we feel to be shockingly well and something we have long dreamed of, but never before experienced in “vintage” style Amps.

A great sound will always be dependent on a good ratio between the GAIN and Bass controls. Depending on the setting of the GAIN control and guitars employed, generally speaking, Cleaner sounds (lower GAIN settings) can handle a little higher BASS settings. More overdriven sounds (higher GAIN Settings) will require lower BASS settings for the best balance and an accurate, defined attack. Obviously there will be times these suggestions won't be relevant, and also, whatever you do to the bottom end affects the top end and vice versa, but these are good general guidelines for many great sounds in the realm of musical and traditional.

You will have to experiment with the exact setting, however below is a rough guideline example. If you at least begin with this simple

common sense approach; as GAIN goes up - BASS should come down, you'll find great sounds easily and quickly.

**Example:**

- With the GAIN at 12:00 – BASS at 1:00
- With the GAIN at 1:00 – BASS at 12:00
- With the GAIN at 2:00 – BASS at 11:00

Again, this is just to give you a rough example of the concept. The offset differences might be greater than this or less, depending on guitar, speaker cabinet, room, live pics on stage, outdoors vs. indoors, etc.

And finally, the nice thing about the BASS control is that it is the least affected by other controls and really the GAIN is the only control you will need to consider with it as far as avoiding less than optimum sounds. Unlike the TREBLE, MID and PRESENCE, which share the top end duties across a wide spectrum from really high midrange all the way to the harmonic region far above that the TREBLE affects, the BASS is a one stop shop in terms of dialing in rich low end.

**PRESENCE** This control adjusts high frequencies above those of the TREBLE and is farther downstream in the signal path than the standard Tone Controls and located in the power section. 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 it up and let the full spectrum of upper harmonics come chiming 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 attack, especially in the upper frequencies that add urgency, will be limited. As the PRESENCE is increased (11:00 – 2:30), the top end starts to become more dominant and that compression gives way to “cut” and dynamic peaks jump out with startling speed and accuracy. At the top end of the control (2:30 – 5:30), a super aggressive blend of upper harmonics dominate the sound and this region can be somewhat dangerous if it's not applied in small measures. Higher notes will slice and dice even the bravest set of ears and we suggest using this region mostly in the studio for recording where the sound can be isolated and dealt with in context. Even then, it may find it's most appropriate applications on parts that feature the lower strings. This highest 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 in the wrong hands, so be cautious and courteous to your bandmates and audience and dial with care.

Clean sounds can generally benefit from a bit higher PRESENCE settings (10:30 – 12:30) than sounds that have overdrive involved in their makeup. Once saturation begins, the frequencies carried in the PRESENCE control can make things edgy or brittle... even buzzy, real fast if you aren't careful. Overdriven chording sounds can tolerate higher settings (10:30 – 12:30) better than can single note sounds, which usually want to roam the zone below 11:00 to stay round, focused and vocal.

**NOTE:** As mentioned earlier, the entire top end spectrum is shared among the TREBLE, MID and PRESENCE, each having its own region, power (effectiveness) and character in the overall signature of the top end. So when dialing in your sounds make sure to use all three of these controls to balance the different frequencies.

**MASTER** This control determines the overall output level and is located at the very end of the preamp. By using it in combination with the GAIN control, any amount of preamp signal strength – gain – (within the California Tweed's traditionally-oriented gain parameters) can be achieved at any playing volume. Once you have dedicated the GAIN control to the desired type of sound, clean or overdriven, you can then balance the volume level using the MASTER control.

In addition, the MASTER, along with the setting of the GAIN control way upstream, functions as an EFFECTS SEND level control for the EFFECTS LOOP. The levels have been optimized at the SEND to accommodate the widest range of great usable sounds, so you will never likely know all the trouble we go to to make sure not only do these elements work seamlessly to protect the integrity of your Tone WITHOUT using the Loop, you can rest assured your processors will interface nicely without compromising it. However, please remember that EVERYTHING in the signal path is a “Tone element”, so keep that in mind when choosing processors to place

right in the middle of your amplifier. Try to use processors of good quality that utilize good input and output circuitry as well as effects processor(s) or engines.

Some purists like to run the MASTER all the way up and raise the GAIN until they reach their desired sound. The thinking there is that this scenario achieves the purest sound. In theory, 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 sensitivity.

The MASTER is nothing more intrusive (in that regard) 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 this old school approach, then by all means, use it... it won't hurt the amplifier. However you will be severely limiting the potential sounds you can achieve by removing the limitless great sounding combinations of GAIN and MASTER settings and also perhaps be challenged when trying to achieve normal or optimum levels at the Input of any processing you might try to use in the EFFECTS Loop.

**REVERB** The California Tweed incorporates an analog all-tube, spring Reverb circuit that produces lush, ambient Reverb effects from subtle to fully-drenched “Surf” levels that really enhance its vintage-oriented character. This control is the easiest to operate on the entire amp because what you hear is exactly what you get and, other than the physical interaction of volume and whatever harmonic resonances that might create, it is largely autonomous in nature and really shares no duties.

That said, much like the BASS, the more extreme the setting the GAIN control is, the more sensibly the Reverb may want to be applied. Luckily, this seems to follow the stylistic boundaries to a certain extent, in that most players who use extremely gained up sounds, tend to rely more on Delay than Reverb as their main form of adding a spatial quality to their sound. To be fair though, that notion may not apply so much to overdriven rhythm playing in say, a Blues or Roots style, especially when it's time to be dramatic.

In the traditional world of Clipped Clean, where clean amps cranked up produces the desired flavor, the sound of Reverb Tanks and their input being overdriven, along with the analog circuitry feeding them, is an integral part of the authenticity and vibe. Feel free to utilize the REVERB set high for this application... crank the preamp's GAIN control and set the REVERB to your desired saturation level.

Just remember that Reverb is essentially a mechanical moving part at its core and therefor affected by nearby and/or internal physical elements such as vibration, both in the amp from high volumes and externally, and also by certain frequencies, as everything that vibrates can potentially resonate with other things vibrating. The most clear example of this is Reverb set at very high levels “feeding back” on certain notes.

We go to get lengths to ensure your amplifier is as impervious to these anomalies as possible during the build and play testing process, but the real world of long Road Trips in Trucks or Airline Flights, loud Gigs with excited Drummers and Bassists and even the flexing movement of Stages or loud PA systems with loud Monitors can all subject the Reverb's mechanical components to rigors that tax the limits of it's design. Some of these can be avoided or minimized by careful transport, wise setup and vibration isolation within your playing environment, but should you experience any vibrational and/or mechanical issues, try first reducing the REVERB control, or even some of the other Controls, to see if perhaps a slight adjustment of settings will eliminate or reduce the anomaly.

**POWER SELECT** As mentioned in the Overview of this Manual, your California Tweed presents the next evolutionary step in traditional amp power sections. This dream-realized flexibility in power rating is both revolutionary and also extremely useful. It features the full compliment of gigable wattages inform mid power to low, 2 Operating Classes, Class AB Pentode and AB Triode and 3 Wiring Options (listed below) are provided;

Throughout these popular wattage levels almost any musical style or venue can be accommodated, and with sensible adjacent options, you'll have room to move up or down the power scale seamlessly on the fly in the heat of the performance with the handy Front Panel POWER SELECT Rotary control.

With this powerful advancement in power technology, tuning the headroom and riding the threshold of sweet, musical clip-ability is

as simple as a quick flick of the wrist. It opens up the usefulness and flexibility of a Single Channel traditional amplifier and allows a much wider range of sounds based on power section performance and saturation.

Five Power Ratings Featuring 2 Operating Classes and 3 Wiring Options are provided;

- 40 Watts utilizing 4 x 6V6s operating in Class AB Pentode
- 30 Watts utilizing 4 x 6V6s; 2 operating in Class AB Pentode, 2 in Class AB Triode
- 20 Watts running 2 x 6V6s operating in Class AB Pentode
- 10 Watts running 2 x 6V6s operating in Class AB Triode
- 2 Watts harnessing 2 x 6V6s operating in Class A Parallel, 1 6V6 wired Pentode, 1 wired Triode

Among these different wattage selections and voicings (as each has its own character, clip threshold and EQ curve) you will find many different Tones and optimum combinations of preamp settings that allow you to roam much farther than any traditional amp before this. Spend time exploring each of the wattage settings to learn its character and best application... you'll quickly understand that whether clean or overdriven, the California Tweed is also California Gold when it comes to iconic guitar sounds in the 6V6 realm.

**POWER** This switch controls the AC power Mains in your amplifier. Always make sure the (supplied) IEC Power Cable is connected to a grounded Outlet delivering the proper AC voltage –117v USA. Never alter the Power Cable as doing so may cause damage to the amplifier, increase the risk of electric shock for you, and will void your Warranty. Always follow the Cold Start Procedure below and allow the tubes to warm up before turning the STANDBY on (switch Right) as this will help the tubes and all other components in your amplifier to provide years of reliable service.

**STANDBY** This large toggle controls the high voltage to the power tubes and from cold start, helps minimize the inrush of current and reduces the “shock” on them, which ultimately helps increase their useful life. Just like a light bulb, much of the wear on tubes happens at the instant of power up. Minimizing this shock and allowing them to warm up more slowly ensures they will give you the longest life possible.

Before POWER is switched on, make sure the amp is in STANDBY (Switch Left). Wait at least 30 seconds and then flip the STANDBY switch to the ON position (Switch Right). STANDBY is also very useful as a MUTE for either short interruptions—like changing instruments or patching cables, as well as longer intervals such as Set Breaks or other extended periods. While you can leave the amplifier in STANDBY mode for hours with no harm, it is probably wise to power down if you know you won't be playing for an hour or two. Why waste the electricity? Just remember to follow the Cold Start procedure mentioned above when you power back up, even if the amp is still “warm”. The filaments in the tubes cool much more quickly than even the glass they are encased in, and they return to their “cold” state even after a short time with the power off. This procedure, when followed religiously, will help prevent tube problems and extend their useful life substantially.

#### **COLD START PROCEDURE:**

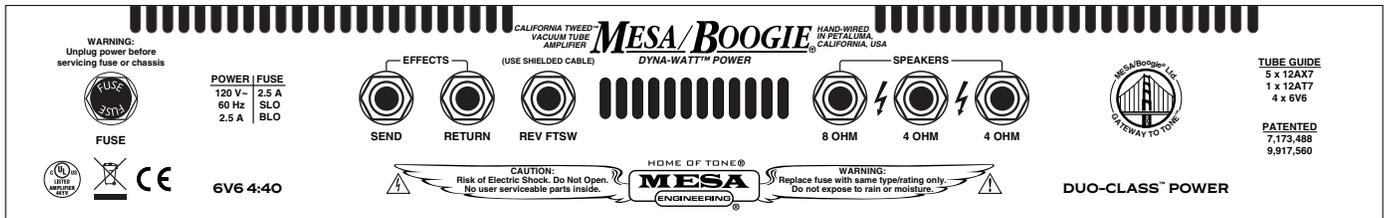
*(Use every time amplifier has been switched off for more than 3 minutes)*

1. Switch to STANDBY (STANDBY Switch Left)
2. Turn POWER to ON (POWER Switch Right).
3. Wait AT LEAST 30 Seconds, preferably longer, for tubes to warm up.
4. Flip STANDBY to ON (STANDBY Switch Right)

**NOTE:** *This Cold Start Procedure is an important part of ensuring maximum tube life and reliability. Like a light bulb, the most wear occurs in the instant (short period, first few seconds) voltage is first applied. Like a light bulb, if a dimmer is used to reduce the voltage for the first few seconds or so of use, increased longevity is the result. The STANDBY is the amp's equivalent to a dimmer and using it in the above described method will ensure the longest life and best performance from a set of tubes (especially Output tubes).*

That's it for the Front Panel Features and Controls, now let's jump to the Rear Panel.

## REAR PANEL



### POWER OUTLET/AC MAINS SOCKET: (Removable IEC TYPE)

Underneath Rear Panel: This is the AC MAINS Power Cord Socket. The standardized removable power cable supplied with your amp can only be plugged in one way. Always connect the male end to a grounded (3-Hole) wall socket with the proper voltage present (117 Volts on U.S.A. Models). To Avoid The Risk Of Shock, Never Alter The Power Cable in any way. Altering the Power Cable will void your warranty and put you at risk while leaving your amplifier open to the possibility of damage.

### FUSE

This is the A.C.'s (Alternating Current) main fuse and provides protection from outside A.C. fluctuations as well as power tube failure damage. Should the FUSE blow, replace it with the same rating in a Slo-Blo type package. The Domestic 117V version requires a 2.5 Amp Slo-Blo fuse. A power tube short or failure is often the cause of a blown fuse. Follow the cold start procedure mentioned in the STANDBY switch section and watch the power tubes as you flip the STANDBY to the ON position. If a power tube is going bad or is arcing, you will see it! Flip the STANDBY switch down immediately and replace the faulty power tube and the FUSE if necessary.

### EFFECTS LOOP (SERIES)

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 signal back in right before 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 California Tweed'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 and the loop signal mixed back in later. 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 to quality 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 at a frightening pace and features are at an all time pinnacle, it is sound and feel you've likely chosen your pure analog all-tube amplifier for, and 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 SHIELDED 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 the Loop and 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 California Tweed's Effects Loop and if the sound gets better, or the level jumps up, you will know that your Processor's levels are set too low. And If you can't achieve a good and almost seamless balance between the processor inserted and removed with the processors Input and Output level controls, perhaps the quality of it, or at least its input and output circuitry, is in question. Again, most times you get what you pay for.

If when you unplug the cables from your Effects Loop the signal level drops, simply reduce the Input or Output Levels, or both, on you processors and 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.

**REV FTSW (REVERB FOOTSWITCH JACK)** This jack allows remote on and off control of the Reverb circuit so that you can bypass the effect at will remotely for parts that are more suited to dry a sound. Connect any standard latching type (not momentary) ON/OFF foot switch to the REV FTSW jack with a SHIELDED cable and toggle the Reverb on and off.

**SPEAKER OUTPUTS** These are the Speaker Outputs to your cabinetry or in the case of a Combo, the Internal Speaker. As mentioned earlier, we prefer 8 Ohm Loads whenever possible for many reasons from sonic to adaptability with other speakers and feel your amplifier sounds its best with that impedance loading it. The 8 Ohm 100 Watt Speaker in the 1x12 Combo should be connected to the 8 Ohm SPEAKER OUTPUT.

In the 20, 10 and 2 Watt positions on the POWER SELECT Rotary, for a more "proper" impedance match and a different Tone (slightly brighter), you may also connect the single 8 Ohm Internal Speaker (or Extension Cabinet if you have the Head version) to the 4 Ohm Speaker OUTPUT. This is not essential and it will NOT hurt the amplifier to leave the single 8 Ohm Speaker (or any 8 Ohm Speaker Load) in the 8 Ohm jack in the 3 lowest wattage settings. In fact, you may prefer the sound with the mismatch the 8 Ohm Output produces as it is a little warmer and smoother sounding, however The 4 Ohm Output does provide an optional response curve and sound worth auditioning.

When using the Combo by itself or the Head through a standard MESA 8 Ohm 1x12, 2x12 or 4x12 Extension cabinet, use the 8 Ohm jack. Most MESA 2x12 Cabinets are also wired to 8 Ohms and they can be used in this Output as well. The California Tweed 2x12 Extension Cabinet is wired parallel to provide a 4 Ohm Load. Use the 4 Ohm Output for that cabinet.

Adding a second 8 Ohm speaker or Cabinet we advise connecting them each to a 4 Ohm Output. Current and recent MESA Cabinetry also provides a Parallel Jack that allows daisy-chaining and this configuration mimics connecting each 8 Ohm Speaker to a separate 4 Ohm Output. This will provide a better impedance match and ensure the full power and headroom is available.

A single 4 Ohm Cabinet should be used with the 4 Ohm Output.

A 16 Ohm 4x12 Cabinet or 2x12 Cabinet should be used in the 8 Ohm Output and will result in a slight reduction in maximum power, though it will likely be unnoticeable with the additional coverage four, or even two speakers, provides.

Two 16 Ohm Cabinets connected to the 8 Ohm Output will produce a better impedance match and will offer the full power and headroom.

**NOTE: IMPORTANT!** We do not recommend using two 4 Ohm cabinets as this will present a 2 Ohm load to the Output transformer and put undue strain on it as it was not designed for this application.

Below for your reference are some common and correct SPEAKER Output Connection Examples;

- One 8 Ohm Cabinet – To 8 Ohm SPEAKER Output (One MESA 8 Ohm Cabinet).
- Two 8 Ohm Cabinets – Each to a separate 4 Ohm SPEAKER Output or... One Cabinet to PARALLEL Input on MESA Speaker Cabinet and 2nd Cabinet to other PARALLEL jack On MESA Cabinet.
- One 4 Ohm Cabinet – To 4 Ohm speaker output. (Any 4 Ohm Cabinet)
- Two 4 Ohm Cabinets – NOT RECOMMENDED! Output Transformer NOT setup to run on 2 Ohm Load.
- One 16 Ohm Cabinet – To 8 Ohm SPEAKER Output. (Slight reduction in maximum power)
- Two 16 Ohm Cabinets – Use Parallel box or “Y” connector to 8 Ohm SPEAKER Output.

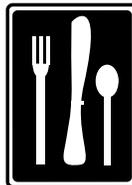
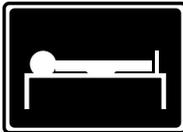
These common Cabinet connection scenarios will cover most of the widely used setups you will run into. There are likely others less common that we have not identified here, and some may also be safe and unique sounding. Feel free to call us if you are concerned as it is always better to be safe than sorry when it comes to ensuring proper loading of an expensive amplifier/piece of equipment like the California Tweed. Our Product Specialists will be happy to guide you and/or get you the proper information regarding this important topic.

That's it for the Features, Controls and Interfacing of the California Tweed. We hope this Manual and Operating Guide helps you get the very best performance from your new amplifier. Here's wishing you many years of amazing Tone and inspiration from the California Tweed. Hopefully it will reward you many times over for your initial investment helping you take your playing and musical endeavors to exciting new heights.

From all of us here at MESA/Boogie, Cheers and Enjoy!

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**REST AREA**



# FACTORY SAMPLE SETTINGS

## SWEET VINTAGE CLEAN

Control panel for the Sweet Vintage Clean setting. The knobs are set as follows: NORMAL INPUT (Low), GAIN (low), TREBLE (low), MID (low), BASS (low), PRESENCE (low), MASTER (low), REVERB (low), and MULTI-WATT™ (2W). The 6V6 4-FORTY tube logo is visible. The California Tweed logo and POWER/STANDBY switches are also present.

## MAX HEADROOM CLEAN

Control panel for the Max Headroom Clean setting. The knobs are set as follows: NORMAL INPUT (Low), GAIN (medium), TREBLE (medium), MID (medium), BASS (medium), PRESENCE (medium), MASTER (medium), REVERB (medium), and MULTI-WATT™ (10W). The 6V6 4-FORTY tube logo is visible. The California Tweed logo and POWER/STANDBY switches are also present.

## SWEET TRANSITIONS

Control panel for the Sweet Transitions setting. The knobs are set as follows: NORMAL INPUT (Low), GAIN (medium), TREBLE (medium), MID (medium), BASS (medium), PRESENCE (medium), MASTER (medium), REVERB (medium), and MULTI-WATT™ (20W). The 6V6 4-FORTY tube logo is visible. The California Tweed logo and POWER/STANDBY switches are also present.

## PURRING SOLO

Control panel for the Purring Solo setting. The knobs are set as follows: NORMAL INPUT (Low), GAIN (high), TREBLE (medium), MID (medium), BASS (high), PRESENCE (high), MASTER (medium), REVERB (medium), and MULTI-WATT™ (20W). The 6V6 4-FORTY tube logo is visible. The California Tweed logo and POWER/STANDBY switches are also present.

## CLIPPED RHYTHM

Control panel for the Clipped Rhythm setting. The knobs are set as follows: NORMAL INPUT (Low), GAIN (high), TREBLE (medium), MID (medium), BASS (high), PRESENCE (high), MASTER (high), REVERB (medium), and MULTI-WATT™ (20W). The 6V6 4-FORTY tube logo is visible. The California Tweed logo and POWER/STANDBY switches are also present.

# FACTORY SAMPLE SETTINGS

## VINTAGE O.D.

Control panel for VINTAGE O.D. mode. The settings are as follows: Input is set to NORMAL; Gain is approximately 1/4; Treble is approximately 1/4; Mid is approximately 1/2; Bass is approximately 1/2; Presence is approximately 1/4; Master is approximately 1/4; Reverb is approximately 1/4; Multi-Watt is set to 20W; Power is ON; Standby is ON. The panel includes a 6V6 4-FORTY tube logo and the California Tweed logo.

## JAZZ CLEAN

Control panel for JAZZ CLEAN mode. The settings are as follows: Input is set to NORMAL; Gain is approximately 1/4; Treble is approximately 3/4; Mid is approximately 1/2; Bass is approximately 1/4; Presence is approximately 1/4; Master is approximately 1/4; Reverb is approximately 1/4; Multi-Watt is set to 10W; Power is ON; Standby is ON. The panel includes a 6V6 4-FORTY tube logo and the California Tweed logo.

## SQUEAKY CLEAN

Control panel for SQUEAKY CLEAN mode. The settings are as follows: Input is set to LOW; Gain is approximately 1/4; Treble is approximately 1/4; Mid is approximately 1/2; Bass is approximately 1/2; Presence is approximately 1/4; Master is approximately 1/4; Reverb is approximately 1/4; Multi-Watt is set to 10W; Power is ON; Standby is ON. The panel includes a 6V6 4-FORTY tube logo and the California Tweed logo.

## SINGING VINTAGE LEAD

Control panel for SINGING VINTAGE LEAD mode. The settings are as follows: Input is set to NORMAL; Gain is approximately 1/4; Treble is approximately 3/4; Mid is approximately 1/2; Bass is approximately 1/2; Presence is approximately 3/4; Master is approximately 1/4; Reverb is approximately 1/4; Multi-Watt is set to 20W; Power is ON; Standby is ON. The panel includes a 6V6 4-FORTY tube logo and the California Tweed logo.

## FULL TILT

Control panel for FULL TILT mode. The settings are as follows: Input is set to NORMAL; Gain is approximately 1/4; Treble is approximately 1/4; Mid is approximately 1/2; Bass is approximately 1/2; Presence is approximately 3/4; Master is approximately 1/4; Reverb is approximately 1/4; Multi-Watt is set to 20W; Power is ON; Standby is ON. The panel includes a 6V6 4-FORTY tube logo and the California Tweed logo.

# USER SETTINGS

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Control panel for California Tweed amplifier. Features include: NORMAL INPUT (top) and LOW INPUT (bottom) jacks; GAIN, TREBLE, MID, BASS, PRESENCE, MASTER, and REVERB knobs; a 6V6 4-FORTY tube logo; a MULTI-WATT™ knob with 10W, 20W, 30W, and 40W settings; and POWER and STANDBY jacks. The California Tweed logo is on the right.

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Control panel for California Tweed amplifier. Features include: NORMAL INPUT (top) and LOW INPUT (bottom) jacks; GAIN, TREBLE, MID, BASS, PRESENCE, MASTER, and REVERB knobs; a 6V6 4-FORTY tube logo; a MULTI-WATT™ knob with 10W, 20W, 30W, and 40W settings; and POWER and STANDBY jacks. The California Tweed logo is on the right.

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Control panel for California Tweed amplifier. Features include: NORMAL INPUT (top) and LOW INPUT (bottom) jacks; GAIN, TREBLE, MID, BASS, PRESENCE, MASTER, and REVERB knobs; a 6V6 4-FORTY tube logo; a MULTI-WATT™ knob with 10W, 20W, 30W, and 40W settings; and POWER and STANDBY jacks. The California Tweed logo is on the right.

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Control panel for California Tweed amplifier. Features include: NORMAL INPUT (top) and LOW INPUT (bottom) jacks; GAIN, TREBLE, MID, BASS, PRESENCE, MASTER, and REVERB knobs; a 6V6 4-FORTY tube logo; a MULTI-WATT™ knob with 10W, 20W, 30W, and 40W settings; and POWER and STANDBY jacks. The California Tweed logo is on the right.

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Control panel for California Tweed amplifier. Features include: NORMAL INPUT (top) and LOW INPUT (bottom) jacks; GAIN, TREBLE, MID, BASS, PRESENCE, MASTER, and REVERB knobs; a 6V6 4-FORTY tube logo; a MULTI-WATT™ knob with 10W, 20W, 30W, and 40W settings; and POWER and STANDBY jacks. The California Tweed logo is on the right.

# USER SETTINGS

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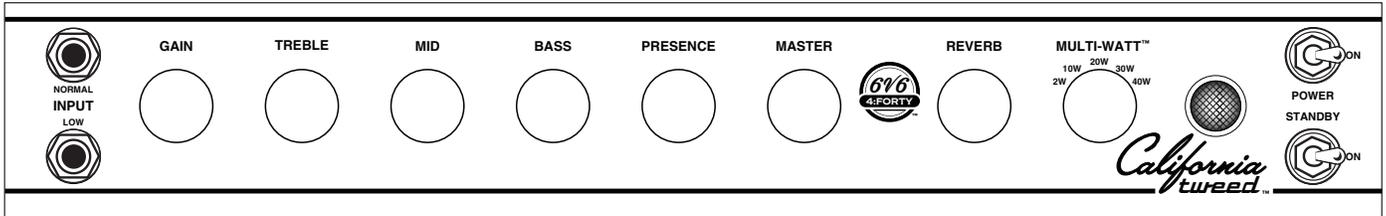


Diagram 1: Control panel layout. From left to right: two input jacks labeled 'NORMAL' and 'INPUT LOW'; knobs for 'GAIN', 'TREBLE', 'MID', 'BASS', 'PRESENCE', 'MASTER', and 'REVERB'; a '6V6 4-FORTY' tube logo; a 'MULTI-WATT™' knob with settings for 10W, 20W, 30W, and 40W; a speaker grille; and two power switches labeled 'POWER' and 'STANDBY'. The 'California tweed™' logo is at the bottom right.

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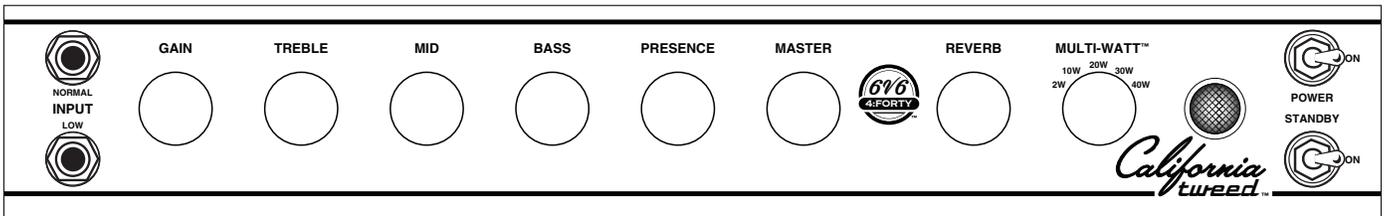


Diagram 2: Control panel layout, identical to Diagram 1.

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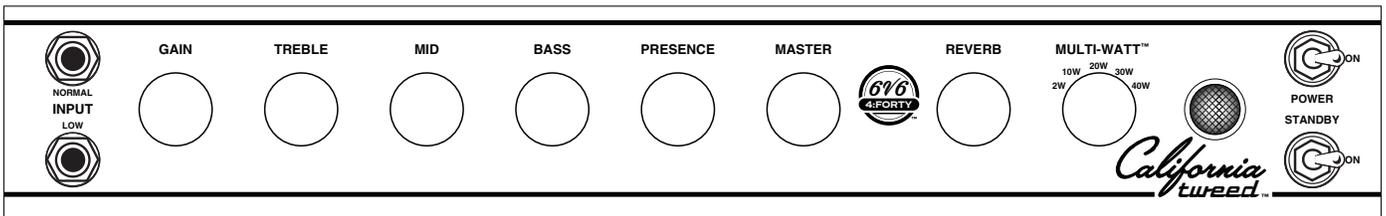


Diagram 3: Control panel layout, identical to Diagram 1.

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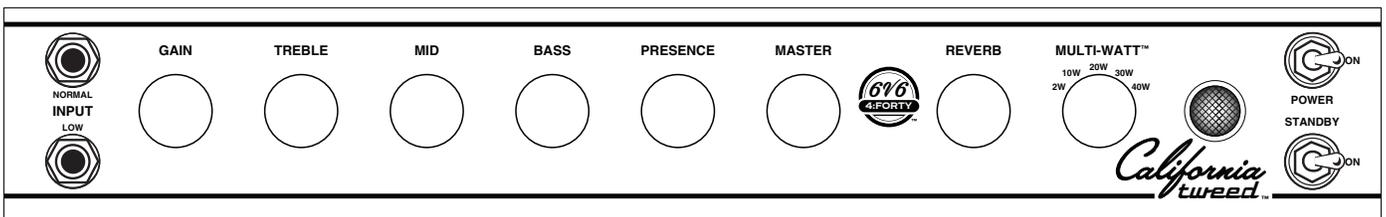


Diagram 4: Control panel layout, identical to Diagram 1.

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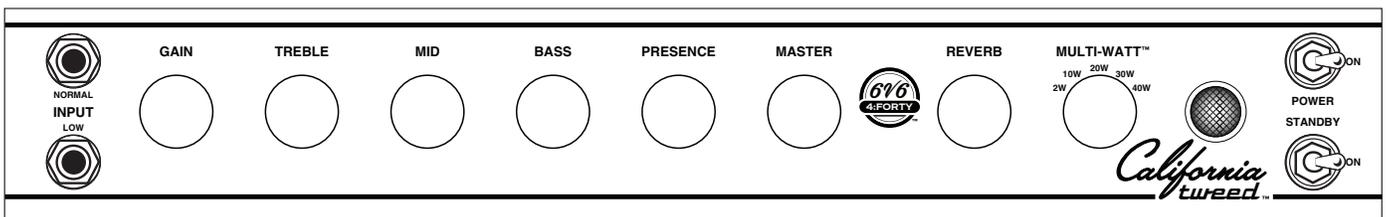


Diagram 5: Control panel layout, identical to Diagram 1.

**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.*

**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.

## SPEAKER IMPEDANCE MATCHING & HOOK-UP GUIDE:

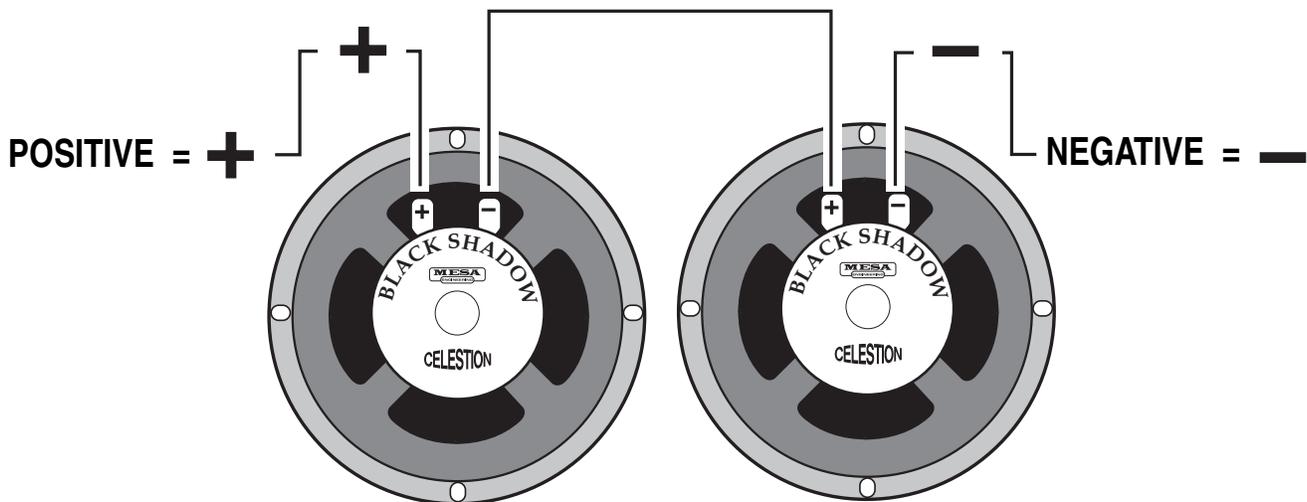
**IMPEDANCE:** Wiring up speakers to provide the most effective load and making sure that all of them are in phase will help in creating the best sound possible. This is not too difficult, as long as you understand a few things about loading and how to connect your speakers to provide an optimal resistive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



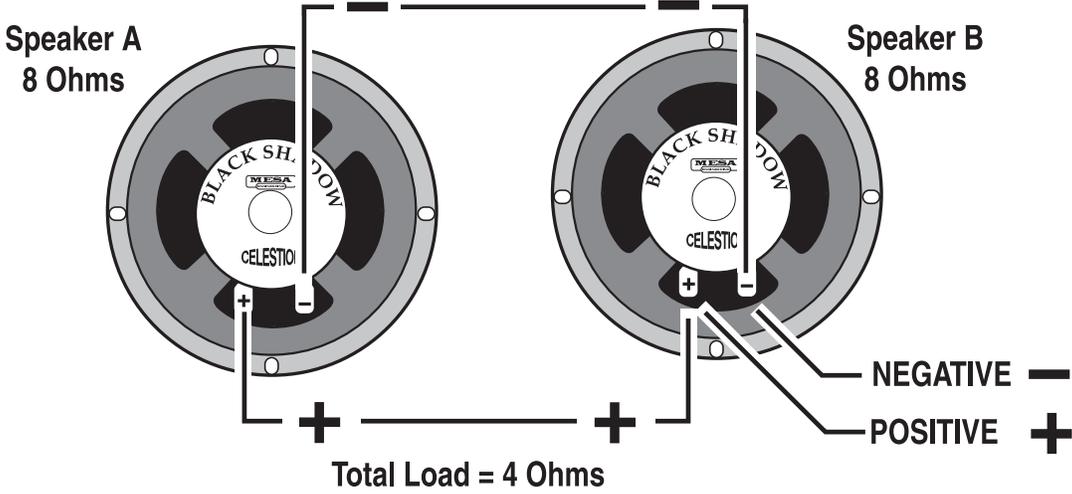
Speaker A = 8 Ohms

Speaker B = 8 Ohms

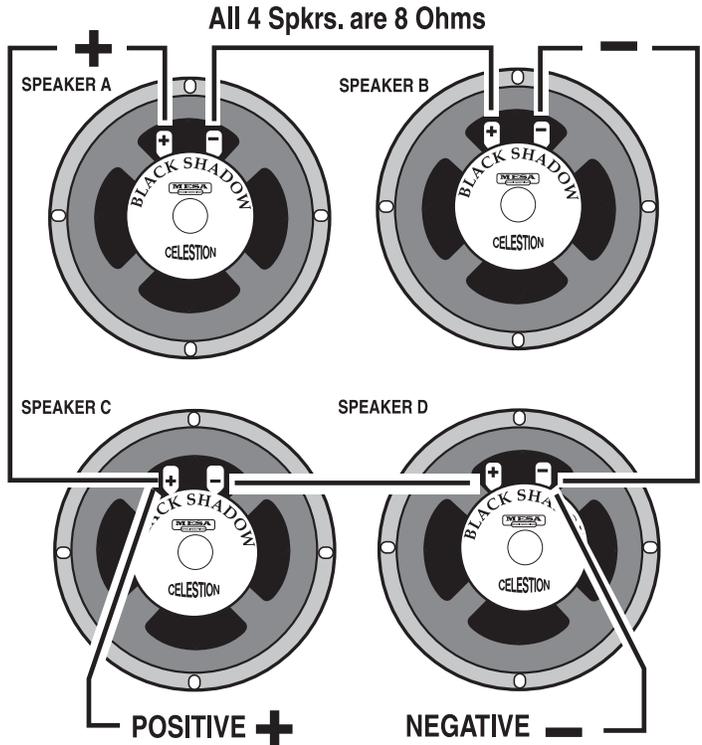
**SERIES:** Connect the Negative side of Speaker A  
to the Positive side of Speaker B

## 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.



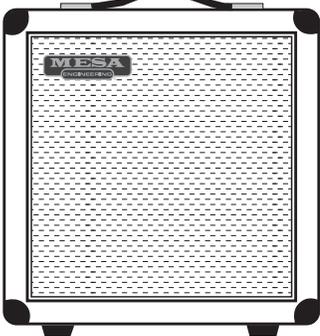
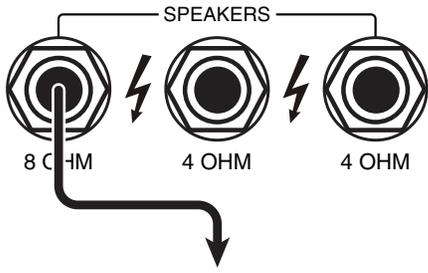
Simply connect the Positive side of Speaker A to the Positive side of Speaker C.

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.

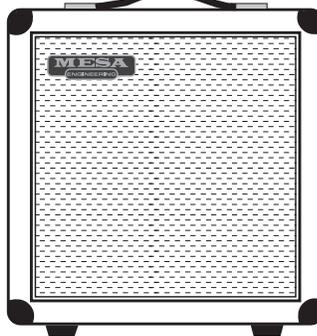
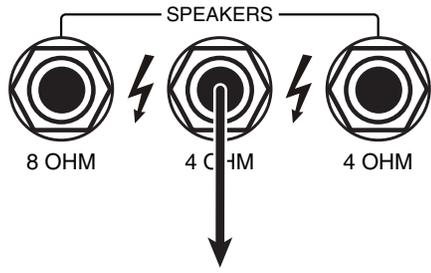
4 Eight ( 8 ) Ohm speakers wired in Series Parallel = a Total Load of 8 Ohms.

# WIRING SCHEMES...Amplifier to Speaker Cabinets



1

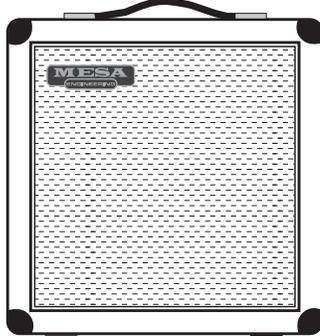
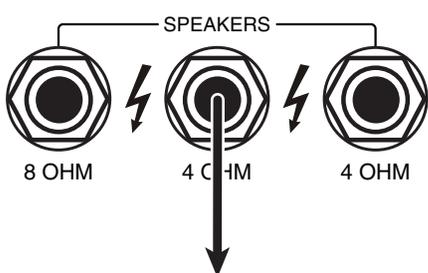
8 Ohm Cabinet



2

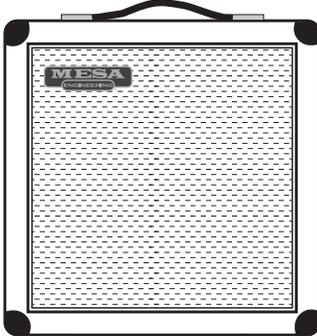
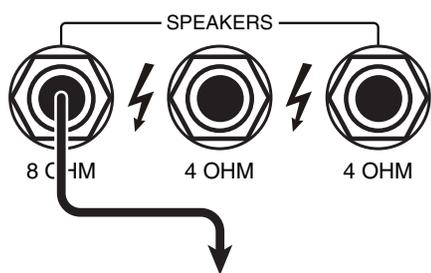
4 Ohm Cabinet

3



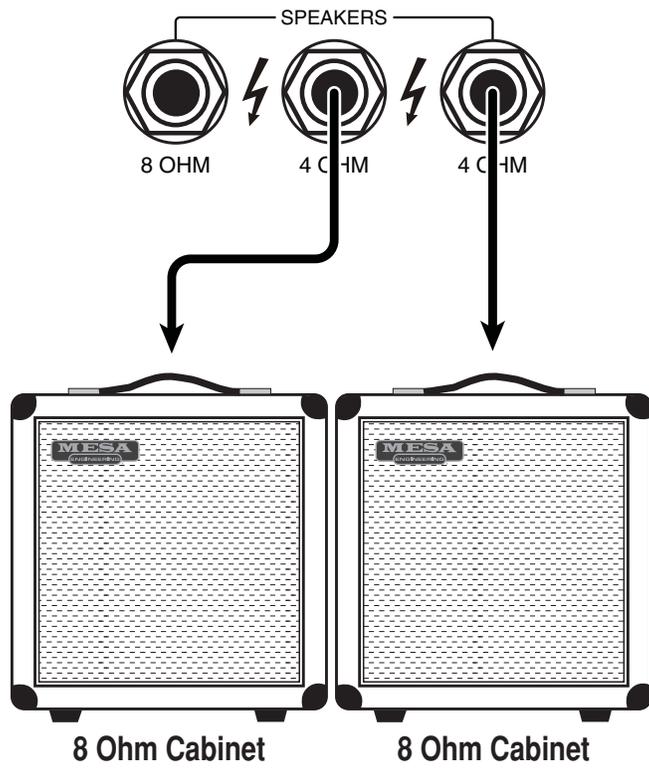
8 Ohm Cabinet  
SAFE MISMATCH

4



16 Ohm Cabinet  
SAFE MISMATCH

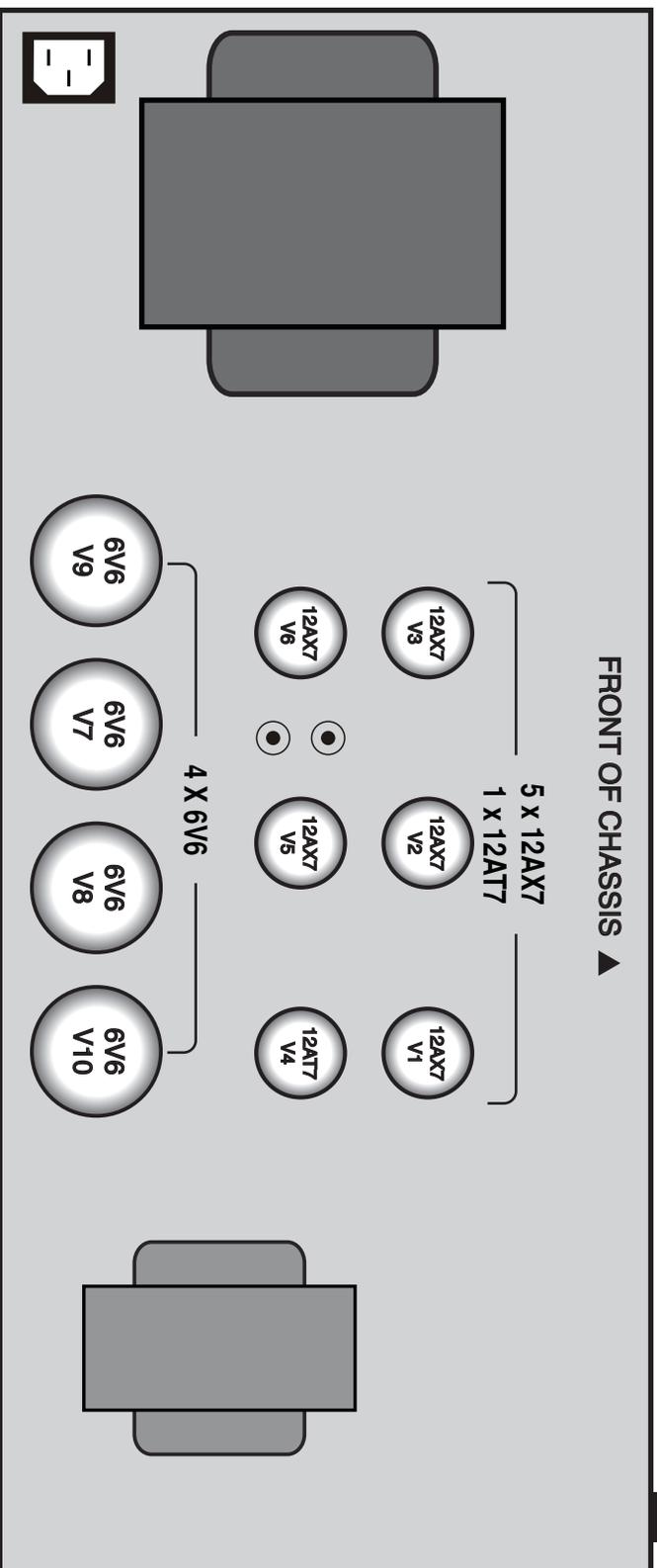
# WIRING SCHEMES...Amplifier to Speaker Cabinets



5

# CALIFORNIA TWEED™ 4:FORTY

## TUBE REPLACEMENT DIAGRAM



### PREAMP TUBES

V1A • INPUT STAGE  
 V1B • N/A  
 V2A/B • TONE CONTROL DRIVER  
 V3A • EFFECTS LOOP SEND  
 V3B • EFFECTS LOOP RETURN

V4A/B • REVERB SEND STAGE  
 V5A/B • DRIVER/PHASE INVERTER  
 V6A • REVERB RETURN  
 V6B • REVERB MIXER

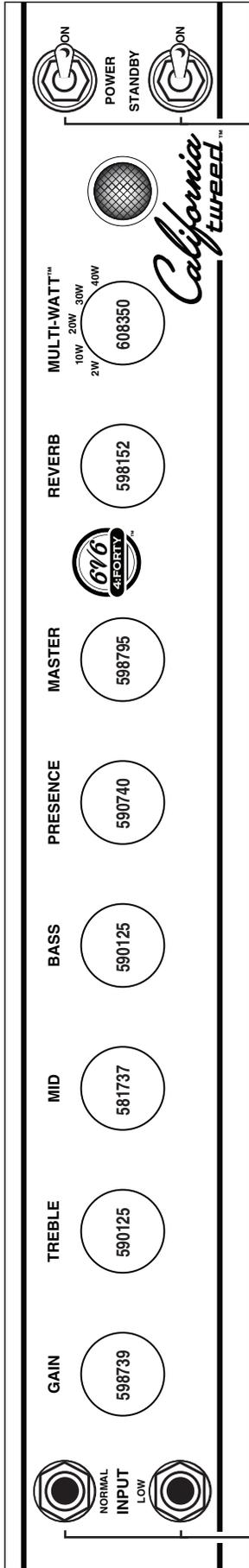
### POWER TUBES

40W • V7-V10 PENTODE  
 30W • V9, V10 PENTODE  
 V7, V8 TRIODE  
 20W • V7, V8 PENTODE  
 10W • V7, V8 TRIODE  
 2W • V7 TRIODE  
 V9 PENTODE

TO MAINTAIN WARRANTY, USE MESAS/BOOGIE® TUBES WHEN REPLACEMENT IS NECESSARY

**FRONT PANEL: CALIFORNIA TWEED™ 4:40**

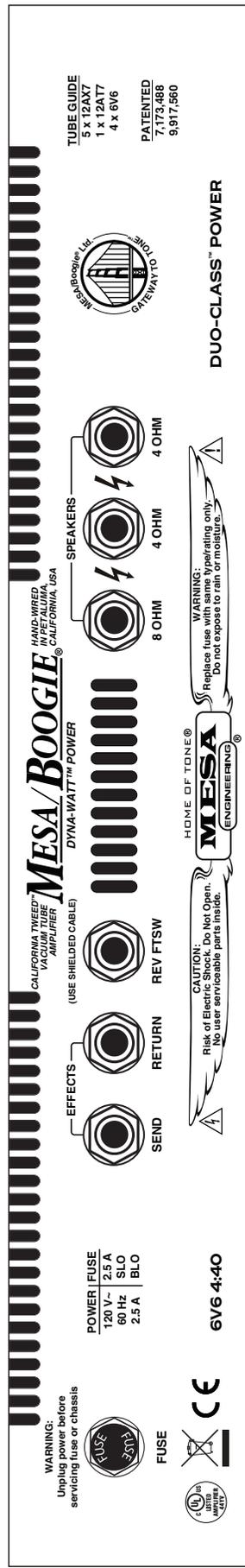
ALL KNOBS  
PT# 408660



2 x JACK pt# 619112  
2 x WASHER pt# 300063

SWITCH x 2  
pt# 600626  
LENS pt# 703601  
BULB pt# 703047  
HOLDER pt# 0703850

**REAR PANEL: CALIFORNIA TWEED™ 4:40**



DOMESTIC  
FUSE: 790250  
HOLDER: 790347  
EXPORT  
FUSE: 795125  
HOLDER: 790346

JACK x 3  
pt# 619112

JACK x 3  
pt# 619112

DUO-CLASS™ POWER

TUBE GUIDE  
5 x 12AX7  
1 x 12AT7  
4 x 6V6  
PATENTED  
7,173,488  
9,917,560



POWER FUSE  
120 V ~ 2.5 A  
60 Hz SLO  
2.5 A BILCO



6V6 4:40

WARNING: Unplug power before servicing fuse or chassis

WARNING: Risk of Electric Shock. Do not operate. No user serviceable parts inside.

WARNING: Replace fuse with same rating only. Do not expose to rain or moisture.

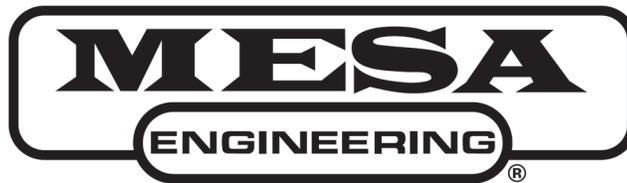
CAUTION: Do Not Operate. No user serviceable parts inside.

MEASURING THE GATEWAY TO YOU

# ***MESA/BOOGIE***<sup>®</sup>

*The Spirit of Art in Technology*<sup>™</sup>

*Thank you for trusting MESA/Boogie<sup>®</sup> to be your amplifier company and we wish you many years of toneful enjoyment from this handcrafted instrument.*





*The Spirit of Art in Technology™*



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