

MESA/BOOGIE[®]

M3 CARBINE[™]

Owner's Manual

Greetings from the Home of Tone

...You, smart player and intuitive human, have put your trust in us to be your amplifier company. This is something we do not take lightly. By choosing this instrument to be a part of your musical voice, you have become part of the Mesa family...WELCOME!

Our goal is to never let you down. Your reward is that you are the new owner of an amp, bred of fine all tube heritage...benefiting from the many pioneering and patented Mesa circuits that led to the refinement of your new model. We feel confident, this amp will inspire many hours of musical satisfaction and lasting enjoyment. It was built with you in mind, by players who know the value of a fine musical instrument and the commitment it takes to make great music. The same commitment to quality, value and support we make to you...our new friend.

M3 CARBINE™

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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.

READ AND FOLLOW INSTRUCTIONS OF PROPER USAGE

Important Safety Instructions

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!

When Rack Mounting this unit proper ventilation space must be maintained. Do Not cover or block Front and Rear and allow at least 2" of open "breathing" space on both sides of the unit. Allow 2 Rack Units of open space above the unit to allow heat to escape the upper rear vents.

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

READ AND FOLLOW INSTRUCTIONS OF PROPER USAGE

M3 CARBINE™

Operating Instructions

OVERVIEW:

Congratulations on your choice of the M3 Carbine and welcome to the Mesa/Boogie Family!

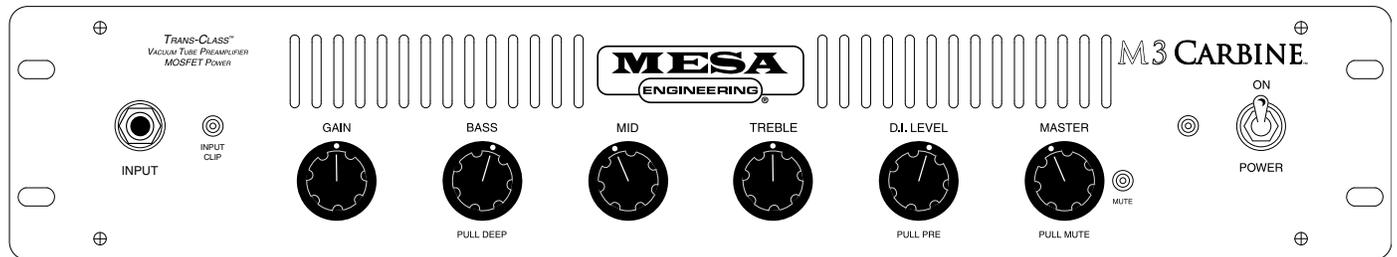
First we would like to thank you for choosing us as your amplifier company and trusting us to help create your musical voice. This is something we never take for granted and you'll find that we are here ready to assist you should you ever need help. Our goal is to help you sound your best at all times! We feel confident that your new amplifier will bring you many years of reliable service and rewarding inspiration and create for you a newfound freedom to express through your music.

The M3 Carbine expands the MESA Family of Bass amplifiers with an exciting new voice that's super fast and extremely focused! The output section relies on the same time-proven array of custom designed mosfets used in our M-Pulse, Big Block 750 and Titan models, but the preamp and driver section are all new creating a very different feel and attitude.

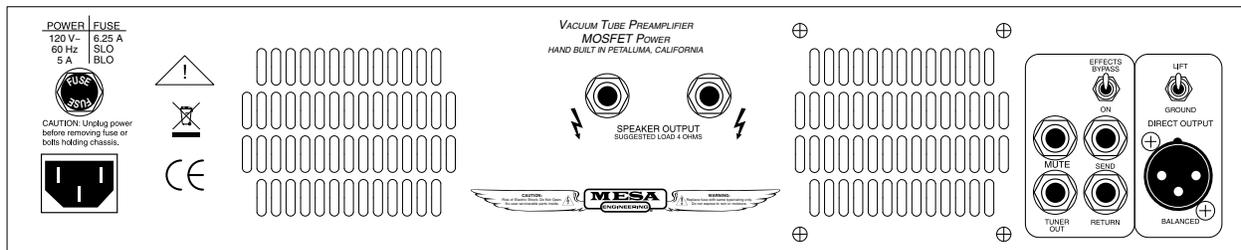
Up front the tube preamp utilizes a standard tone control string of Bass, Mid and Treble to shape the basic sound, but the shaping power doesn't stop there. There is a PULL DEEP feature found on the Bass control that keeps the low end tight and articulate when pushed in or, enhances the sub-lows and adds super-top air when pulled out.

DI LEVEL and MASTER controls make adjusting your playing volume levels quick and easy on stage. The DI LEVEL features both post and pre Tone control options, with post being the default (pushed in) setting and PULL PRE activating the pre setting that bypasses the entire preamp. A TUNER MUTE pull pot is added to the MASTER Output control for silent tuning in live or studio applications. This feature can also be triggered remotely from the Rear Panel Function Switch jack labeled MUTE.

FRONT VIEW: M3 CARBINE



REAR VIEW: M3 CARBINE



OVERVIEW: *(Continued)*

The Rear Panel follows suit with simplicity dictating the layout of the essential features every pro rig should include. Next to the intake/exhaust vents sit the SPEAKER OUTPUTS and a FUNCTION SWITCH jack. The FUNCTION SWITCH ¼" jack provides a switch port to control the TUNER MUTE. Connecting any grounding (tip to ground) logic switch here will trigger the MUTE. This allows settings to be stored under programs in a master external switcher. The SPEAKER OUTPUTS utilize standard ¼" phone type jacks.

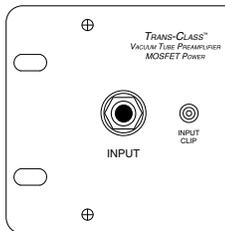
To the right of the air intake vent are the EFFECTS LOOP and DIRECT OUTPUT sections. The DIRECT OUTPUT consists of a standard 3 pin male XLR jack and a ground lift for the circuit to chassis ground connection. Leave the switch set to GROUND (switch down - circuit grounded) unless you experience hum when connecting to a live sound board or studio recording console in which case try the LIFT position to eliminate the hum caused by the two different references to ground.

The EFFECTS LOOP is in series with the main signal and can be bypassed with the switch located above the SEND jack. The TUNER OUT jack will feed a signal to your outboard tuner and you can use the Front Panel PULL MUTE feature located on the MASTER control to mute the signal for silent tuning. The MUTE can also be remote triggered by connecting a grounding footswitch to the Rear Panel FUNCTION SWITCH labeled MUTE.

That wraps up our Overview of the controls and features of the *M3 CARBINE* and now we're ready to look at the controls and their individual roles in creating the sounds you hear in your head. Once again, thank you for choosing Mesa and most of all Enjoy!

FRONT PANEL CONTROLS:

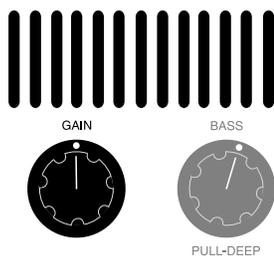
INPUT: This jack is the instrument **INPUT** which feeds the first tube in the all-tube preamp of the *M3 CARBINE*. It is set up with enough headroom to handle both passive and active style instruments. For active instruments you may find yourself running the **GAIN** control somewhere between 10:00 and 2:00 for optimum headroom. If you do hear a soft clip creeping in at higher settings, don't worry, this is the beauty of a tube front end. You may feel free to drive the preamp for a more furry character when hyper-clean is just too clean.



NOTE: When driving the preamp with higher settings of the **GAIN** control it is wise to reduce the **BASS** control. This will protect accidental damage to speakers and help avoid tubbiness or lack of tightness in the low end.

The Input Clip LED indicates when the input grid of the M3 Carbine's preamp tube will run out of headroom and begin to clip, no longer sending a clean signal through the rest of the preamp. As mentioned above, clip or distortion generated at the input is sometimes desirable and no damage is being done to the amp when this LED is lit. Passive basses are unlikely to cause this LED to be lit even with higher gain settings whereas Active basses and modern higher output pickup systems are more likely to cause the LED to light up at extreme settings and at extreme peaks of attack.

GAIN: This control determines the overall character of the input sensitivity. The lower regions of the control (below 12:00) lend greater headroom and provide a scooped, brighter personality. The upper harmonics come through more prominently in this area of the control making the top end sound more transparent and sweet. This region is especially useful for funkier stuff when thumbing is in order. It keeps the rubber-band feel intact in the lows and mids while voicing the snap just high enough to avoid harshness, or the dreaded "gak" when the G string is plucked.

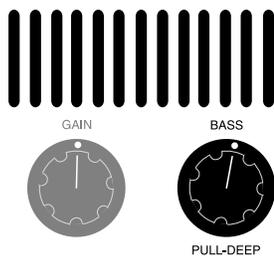


As the **GAIN** control is increased past 12:00 a richer, more "well-rounded" voice becomes dominant and headroom starts to diminish in increments until eventually, a tube overdrive sound appears as the 12AX7 input tube is driven into saturation.

The region between 12:00 and 2:30 is where the classic, warm tube sound resides and within this narrow band you will discover a world of tone. Tiny increments here produce subtle, but important differences in the attack characteristic which in turn, feel like changes in the time domain.

By experimenting with the amount of gain, you can actually voice the amp to feel as if it bounces just ahead of the groove - or lays back a little deeper to produce a more Fatback feel. The difference in attack and sustain produces striking results as to how the bassist - and in fact the whole band - perceives things in the time domain.

BASS: This control is responsible for the basic mix of low frequencies in the tube pre-amp. The **BASS** control is an active shelving type control as opposed to a passive style control. This means that a center Q point has been chosen and this control allows you to either boost or cut that frequency.

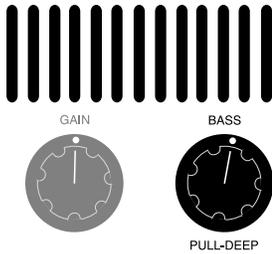


The **BASS** control is actually a gain and frequency control all rolled into one with the Q center at 55Hz and harmonics in both low and high directions are affected because of its broader band nature. As the control is increased past 12:00 there is a 6db per octave rise in gain with the frequency topping out at 321Hz. With 12:00 straight-up representing "flat" (a no boost/no cut setting). As the **BASS** control is dialed below 12:00, 55Hz and all associated harmonics are reduced and eventually notched completely out of the signal. Conversely, there is a 6db per octave cut beginning at 55Hz going down to 20Hz where the shelving ends with a cut gain of -20db as the control approaches 7:30 (off).

FRONT PANEL CONTROLS: (Continued)

This type of broad band, active rotary control makes it possible to achieve bass characteristics far beyond that of a conventional passive type control. It can increase the low end to an almost absurd level and with a flick of the wrist, dip it to near transistor radio skinniness. Needless to say, with any control this powerful a certain amount of finesse must be applied to achieve musical results.

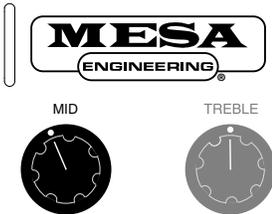
PULL DEEP: The *M3 CARBINE* features a pull shift for the BASS control that allows you to choose between two different regions of low end and affects how the control will react.



When the control is pushed in (normal) the bass frequencies are higher and a cut-off is employed so that below a certain point, sub-low frequencies are not part of the mix. This results in a tighter, faster feeling response that is more articulate and will stand out and be heard in a live stage environment. This also works well for recording scenarios where the Bass part needs to sync-up with a complex kick drum line or anytime you need a defined, punchy sound that won't get lost as the layers of other parts get applied.

PULL DEEP (control pulled out) allows the entire range of low frequencies to pass and fill in the curves creating a warm, rich sound that is foundational for smaller groups. Along with these deeper lows, a subtle enhancement of the super-high frequencies is added to create a round, breathing cushion of air the whole band can ride. Be sure to check out this setting for three-piece Rock or Blues combos and playing R & B styles where you need to add juice to thumping part.

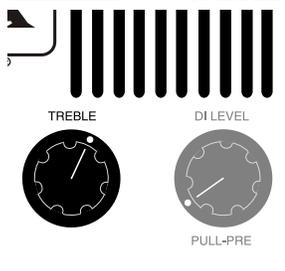
MID: This is the only passive style control in the string of rotary tone controls. This scheme was chosen for its inherently musical blend and for the way the passive style midrange control, with its wide spread and smooth taper, fills in the holes. Unlike the BASS, this control is a **boost only**, and while it can competently remove this broad spectrum of midrange from the mix, it cannot provide the extreme attenuation of an active style control.



You will find, as we did, that this control works amazingly well for shaping the midrange frequencies with a natural earthiness and character that is a perfect counterpart to its neighbors. It is hard to find bad sounds with this more forgiving control as it seems to give you just enough and no more.

We opted for the tried and true passive style midrange control because it's been working great in all of our amplifiers for decades. It's hard to improve on a classic.

TREBLE: The **TREBLE** is also an active shelving style control like that found in the BASS and again, it was chosen for its ability to radically shape the upper harmonic region. Like the BASS, it also has a center Q point with harmonics above and below responding in harmony as it is dialed for either cut or boost.



As the control is increased past 12:00, it produces a 6db per octave rise in gain starting at 723Hz until +20db is reached. From this point, gain remains constant at +20db for all frequencies above 723Hz all the way out to 20Khz. This scheme lends a sweetness of sound while retaining all the necessary cut and focus associated with a traditional passive **TREBLE** control. As this control is dialed below 12:00, it begins a 6db per octave cut from 3.2Khz to the shelving point at 723Hz, where it continues to attenuate

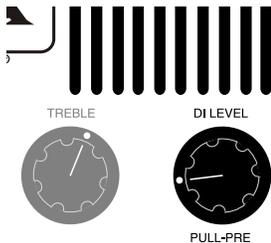
FRONT PANEL CONTROLS: *(Continued)*

all frequencies above 723Hz until - 20db is reached where cut gain remains constant until the control reaches 7:30 (off). The ability to cut these frequencies more radically makes it possible to obtain incredibly rich and warm old-school R&B and Jazz sounds that rival any recordings of the day.

This active shelving **TREBLE** control completes the rotary tone control string to create a powerful and extremely accurate network to use as your fundamental platform. It's no wonder many first time **M3 CARBINE** players make the comment that just these controls combined with the GAIN create the best tone they have ever heard!

NOTE: *As with the BASS control, may we remind you that a control of this type with its increased power should be used with finesse. In the TREBLE'S case, almost more so, because higher frequencies seem louder to the ear and are generally more painful when set to extremes. Another reason to use care is that high frequencies tend to increase the ambient noise floor when set too high.*

DI LEVEL: This control determines the level present at the 3 pin XLR DIRECT OUTPUT jack on the Rear Panel. The range on the control should provide an optimum level for matching the Input requirements of most any live or recording console.



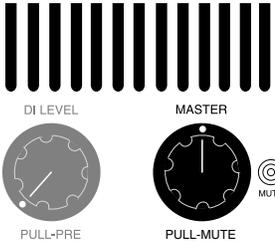
PULL-PRE: This pull pot toggles the output signal at the DIRECT OUTPUT between a POST signal (pushed in) - where the entire preamp and all the controls affect the sound – and a PRE signal (pulled out) – where the instrument signal is fed directly to the DIRECT OUTPUT bypassing the entire preamp. **In the PRE setting**, the GAIN, MASTER and Tone controls will not affect the signal at the DIRECT OUTPUT. You will hear the pure sound of your instrument optimized for the input impedance of a mixing console with virtually no shaping from the preamp or power section. **In the POST setting**, the GAIN, MASTER and Tone controls **WILL** affect the signal at the DIRECT OUTPUT. This setting will provide you with all the warmth and attack characteristics of your **M3 CARBINE** as it sounds when connected to a speaker enclosure. You will also have the shaping power of the GAIN and Tone controls to enhance your tone.

The PRE setting is useful for large venues when the sound you have dialed up for your optimum stage tone might have to much low end for the front of house engineer to balance through a large PA where there are subs employed. POST is great for Direct feeds in smaller venues where some extra bottom end is preferred or for recording where you need to be able to craft your sound for specific tracks using the on-board controls.

NOTE: *Always start by turning the DI LEVEL all the way down before connecting the M3 CARBINE to the console. After connecting the DI OUTPUT to the console, slowly increase the signal until you reach the desired level. This procedure will prevent damage to equipment and ears should someone play a note before the levels have been set to optimum levels.*

FRONT PANEL CONTROLS: *(Continued)*

MASTER: The **MASTER** control is the feed to the *Trans-Class* power section and determines the overall playing volume of the *M3 CARBINE*. An optimum setting will be determined by the setting of the GAIN control as well as the entire tone control network.



All these controls affect the signal strength at the end of the preamp and can make the **MASTER** control very sensitive.

NOTE: Remember to use with caution as the **MASTER** is the gas pedal for the power available. We suggest a zero setting at each power up to avoid damage to speakers and ears.

MUTE LED: This LED indicates that the Tuning MUTE function has been triggered either by pulling out the Front Panel **MASTER PULL MUTE**, or by the Rear Panel Function Switch jack. When this LED is illuminated there will be no signal present at the **SPEAKER OUTPUT** jacks.

POWER SWITCH: This switch delivers the A.C. power to the *M3 CARBINE*. Make sure the unit is grounded (all three terminals of the A.C. power cord must be connected whenever possible to avoid injury to the user as well as to the amplifier). Also, make sure that the proper voltage requirements are present at the A.C. wall socket receptacle.

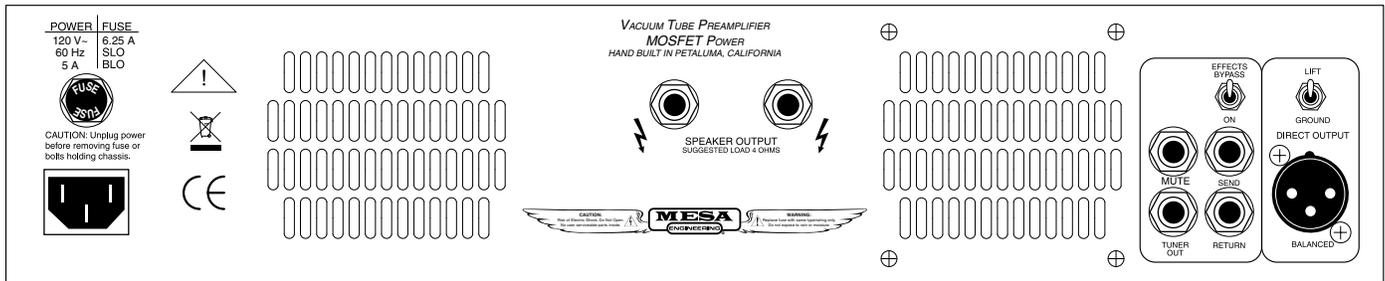


NOTE: As a reminder, never alter the A.C. power cord in any way for possible damage to the amplifier may occur not to mention the possibility of a fire outbreak.

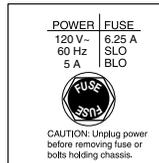
Now that we've gone through the Front Panel of your *M3 CARBINE*, let's go around back and take a look at the features of the Rear Panel.

REAR PANEL CONTROLS:

REAR VIEW: M3 CARBINE

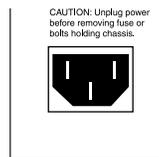


FUSE: This is the A.C. Mains Fuse for the *M3 CARBINE*. REPLACE ONLY WITH A SLO-BLO TYPE FUSE OF THE PROPER RATING. THIS IS EXTREMELY IMPORTANT, AS THE *M3 CARBINE* DRAWS A SUBSTANTIAL AMOUNT OF CURRENT AT HIGH OUTPUT LEVEL SETTINGS.



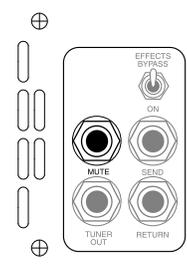
FUSE rating for USA - 6.25A S.B. / 120 Volts.

A.C. RECEPTACLE: The removable “Euro” Style” A.C. cord that is supplied with the *M3 CARBINE* makes set-ups and tear-downs after the gig a snap. It also makes de-racking much easier when you wish to remove the unit from a hardwired rack system where all the A.C. cords have been cable-tied in. Additional heavy duty cords are available should you ever need one...simply call us and we can ship one directly to you for a nominal charge, plus shipping cost. Make sure the A.C. cord is firmly in its socket (receptacle) before powering up the amplifier.



NOTE: NEVER ALTER THE THREE PRONG POWER CORD IN ANY WAY.

MUTE SWITCH: This ¼” jack is provided to allow control of the Front Panel Tuner MUTE from a master switching device. In this scenario, all sounds and features are controlled from one source and usually these commands are stored in the master switcher under programs (usually midi) that can be recalled with one footswitch keystroke.



The *M3 CARBINE* Function jack responds to simple grounding type (tip-to-ground) latching (not momentary) logic and most switchers on the market offer several jacks that can be dedicated to this type of logic.

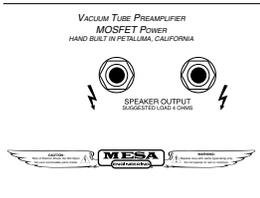
To trigger the Tuner MUTE feature: simply connect an unshielded ¼” cable to the MUTE Function Switch jack and ground the tip to the ring of the opposing end of the cable with either a master switcher or a latching type (not momentary) grounding footswitch.

NOTE: The Front Panel PULL MUTE feature overrides the Function Switch jack. Once MUTE is engaged on the Front Panel by pulling the MASTER control out, MUTE can not be defeated via the Rear Panel Switch jacks.

REAR PANEL CONTROLS: (Continued)

SPEAKER OUTPUTS:

These are the Speaker Outputs for the *M3 CARBINE*. These jacks accept standard ¼" phono type plugs. This is the suggested configuration. With an 8 ohm speaker load, your *M3 CARBINE* will produce approximately 150 watts of clean power. A 4 ohm speaker load connected to your *M3 CARBINE* will produce approximately 300 watts of clean power.



TUNER:

This Rear Panel auxiliary **TUNER** output provides for Rear Panel interfacing of rack mount tuners, where it is preferable to have all wiring stay in the rear of a rack system.



EFFECTS LOOP:

The *M3 CARBINE* incorporates an internal EFFECTS LOOP to handle the interfacing of outboard processing. This circuit is a patch point between the preamp and the power section and it is wired in series with the dry (un-affected) signal. Since this loop is a series-type loop (as opposed to parallel) it is important that you use good quality processors "in the middle" of your amp. While the loop is compatible with most processor Input/Output impedance demands, there can be a lot of room for sonic compromise in some of the less expensive units. Remember that every part in your signal path is a tone part.



NOTE: Always use good quality shielded cable of the shortest possible length when patching your effects. One foot lengths are preferable - with lengths of more than 3 feet (each cable) starting to roll off top end and reduce midrange punch and clarity.

The LOOP is fitted with a "Hard Bypass" switch that allows you to completely remove all associated LOOP circuitry from the signal path when you are in the studio or when the LOOP is not to be used. While many won't be able to hear any discernible difference with the LOOP bypassed, for you purists, it will give you peace of mind that your signal is as direct as possible.

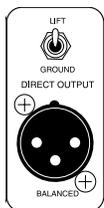
To use the EFFECTS LOOP:

- 1) Connect the SEND jack to your processor's Input
- 2) Connect the RETURN jack to your processor's Output
- 3) Switch the EFFECTS LOOP BYPASS switch to the ON position.
- 4) Adjust the processor's Input/Output Level attenuator to achieve unity gain by toggling the LOOP switch in and out of BYPASS while making fine adjustments at the processor until you hear no level difference. Keep in mind you might have to adjust the *M3 CARBINE* OUTPUT control also if the processor indicating lights read unity gain (look good and are not clipping).

NOTE: The EFFECTS LOOP IS optimized for professional quality rack mount processors. Most pedal type effects work better in the "front-end" between your instrument and the INPUT. You will experience some tonal changes because of the additional cable and the fact that your instrument will no longer be going straight into the grid of the first tube. It's up to you to decide if the trade off is acceptable.

REAR PANEL CONTROLS: *(Continued)*

GROUND LIFT, DIRECT OUT: This section captures the entire pre-amp signal including the Effects Loop and allows you to send a Balanced signal to either a House Main Board or a Recording console. There are two elements to this circuit which are; **(1)** a male XLR jack and **(2)** a GROUND LIFT switch.



GROUND LIFT: This switch removes the circuit-to-chassis ground connection from the XLR jack. Leave it in the grounded position (switch down) normally unless you experience a hum when connecting to a console. If you do experience a hum when connecting the XLR Output to a console, try lifting the ground (switch up) on the circuit. This will usually (but not always) remedy most ground loop type noise from the signal path.

Sometimes it may also be necessary to lift the A.C. Cable Ground also by using a 3-2 ground adapter to achieve a quiet signal path.

NOTE: *Ground loops can occur in many places in a complex signal path. The DIRECT OUTPUT GROUND LIFT switch is not a cure-all and therefore should not be expected to remedy every type of ground related problem.*

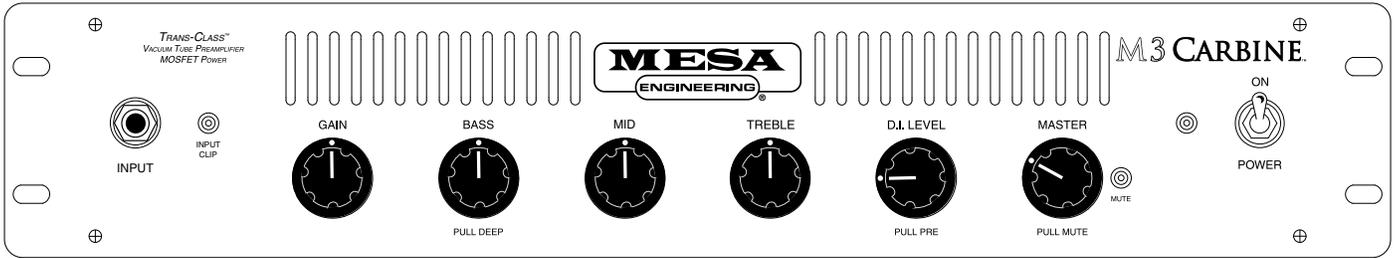
Now that we have the Rear Panel sussed-out, you are ready to enjoy the musicality and sheer power of the **M3 CARBINE**. We hope this instrument brings you many years of inspiration and musical discovery. From all of us here at MESA...Enjoy!

REST AREA

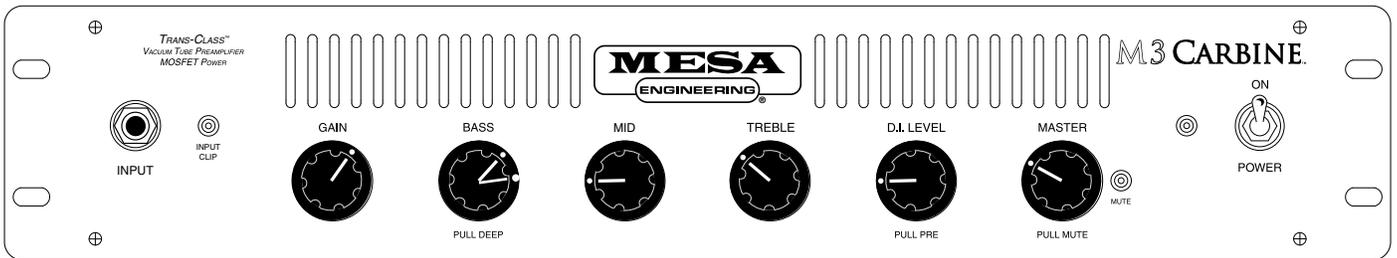


FACTORY SAMPLE SETTINGS

SAMPLE #1: STRAIGHT UP GREAT

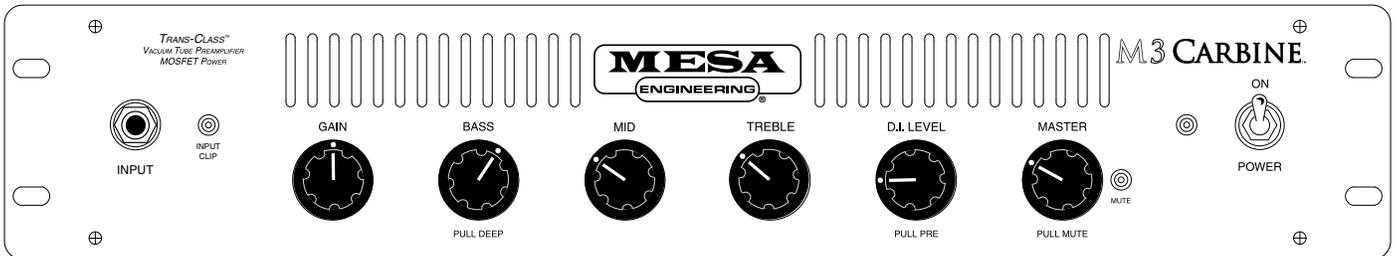


SAMPLE #2: BIG & WIDE

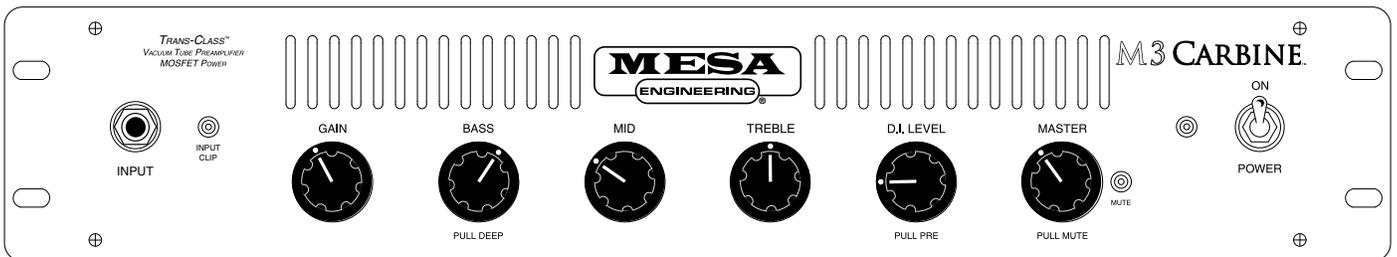


(Pull)

SAMPLE #3: TIGHT TRACKING

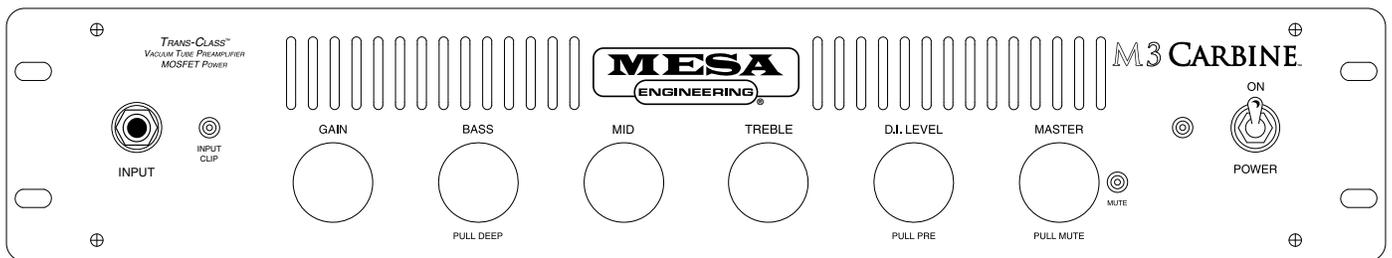
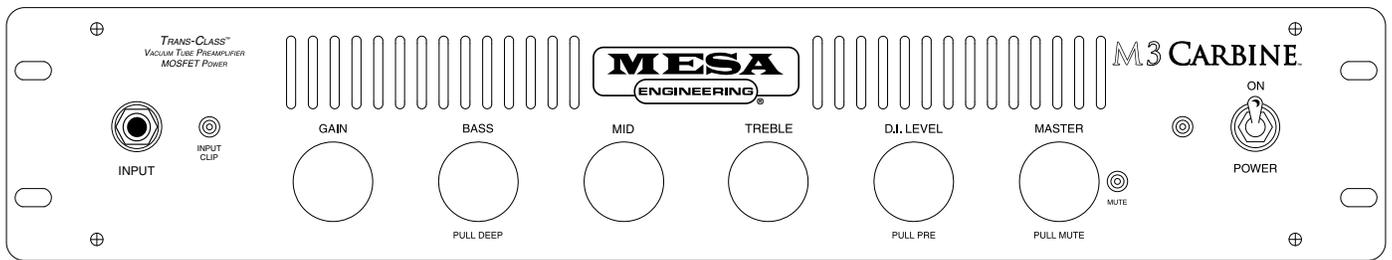
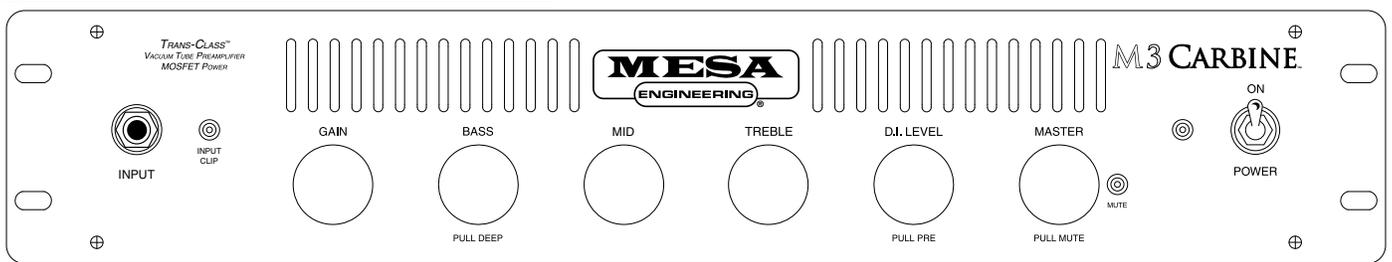
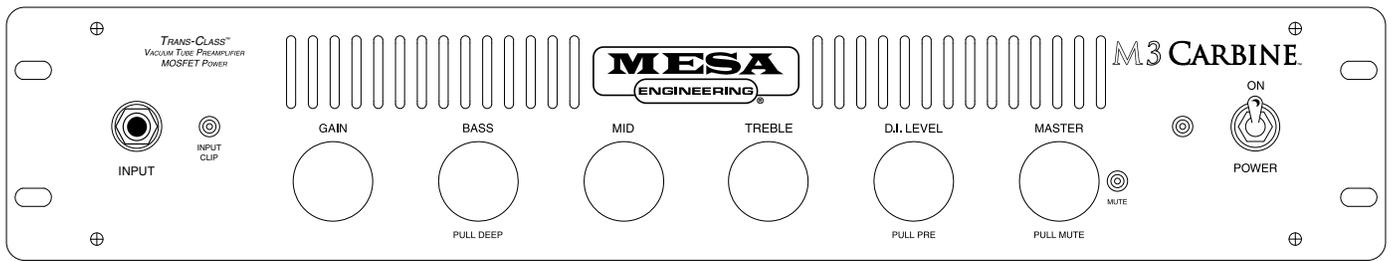


SAMPLE #4: SLAP HAPPY



(Pull)

PERSONAL SETTINGS SHEET

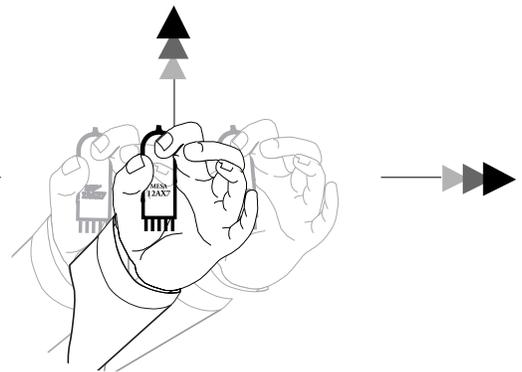


DIAGNOSING PRE-AMP TUBE PROBLEMS:

At some point it is quite possible that you will experience some kind of 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. It is always a 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. 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.

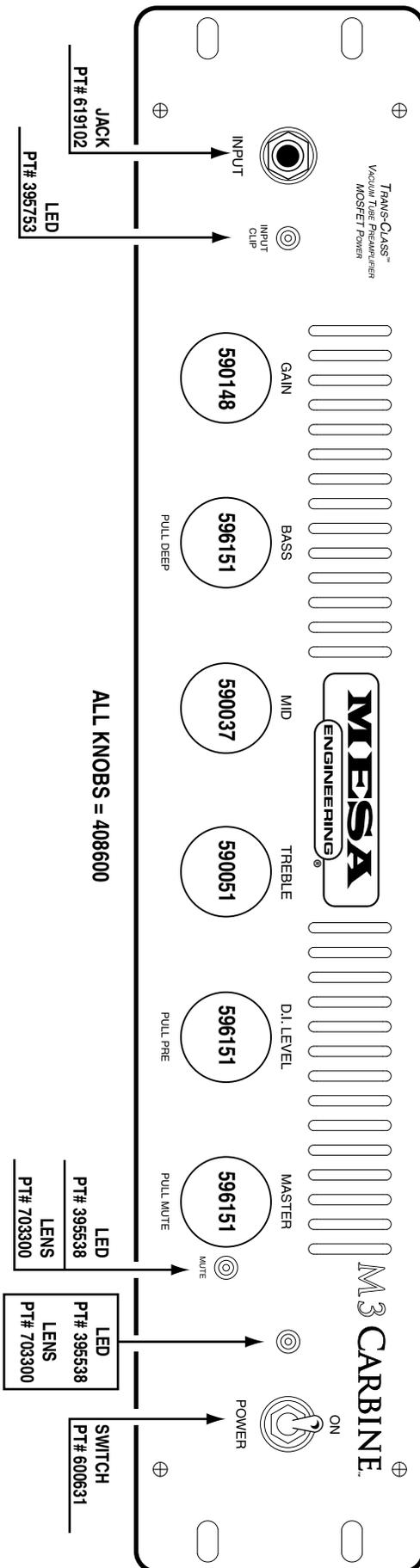
NOTE: When removing a tube from its socket, grasp tube near the top and rock gently from side to side while simultaneously pulling upward.



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.

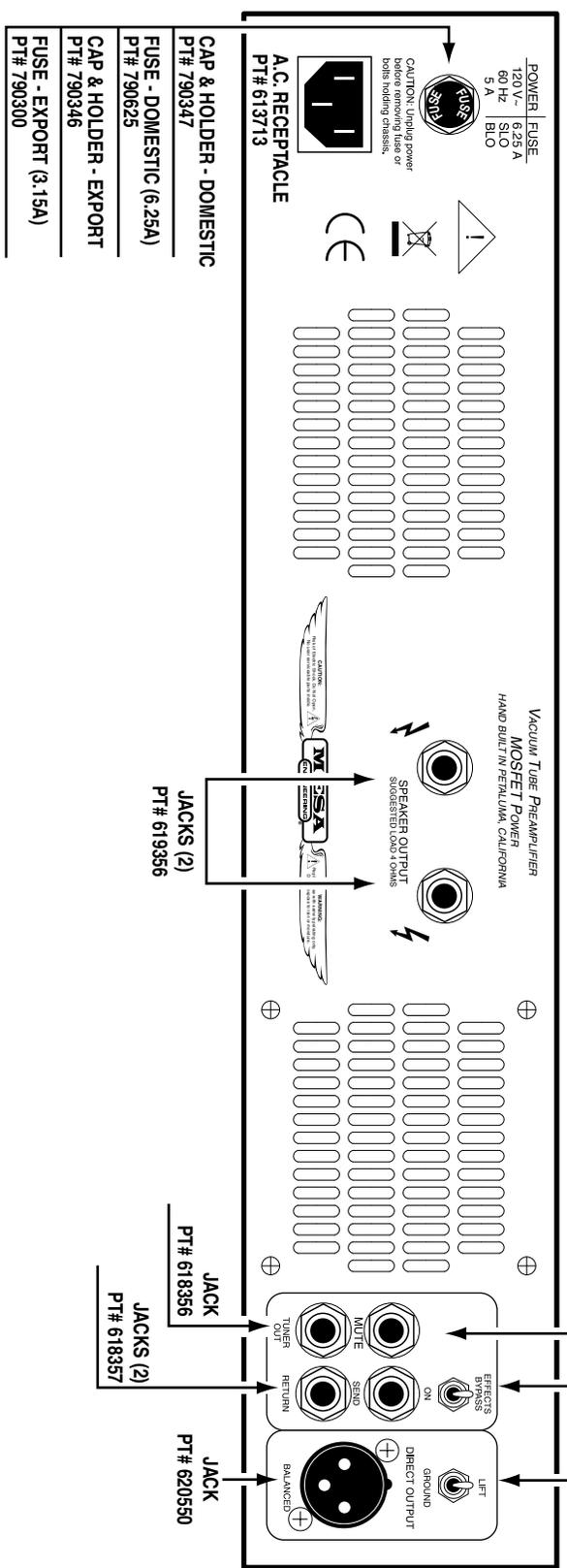
To wrap the chassis, use plenty of tightly wadded up newspaper so there is at least six inches of "crush space" between the chassis and the cardboard box. Bubble wrap also works well, but please DON'T use styrene peanuts - they will shift during transit and get lodged inside your electronics as well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

FRONT PANEL : M3 CARBINE



ALL KNOBS = 408600

REAR PANEL : M3 CARBINE

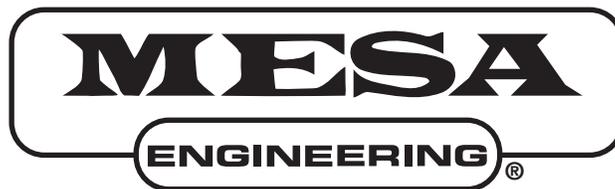


- CAP & HOLDER - DOMESTIC
PT# 790347
- FUSE - DOMESTIC (6.25A)
PT# 790625
- CAP & HOLDER - EXPORT
PT# 790346
- FUSE - EXPORT (3.15A)
PT# 790300

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