Komet™ 60 Owner's Manual

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PRECAUTIONS

TUBES ARE HOT! Make sure you allow the tubes in your amplifier to cool down before handling them. They are also made of glass and can easily break. Wear safety gloves and goggles when handling audio tubes.

DO NOT OPEN UP THE AMPLIFIER! There are no user serviceable parts inside. There are lethal voltages present even when unplugged.

NEVER: replace the Mains or H.T. fuse with a higher rated fuse. This will most certainly cause severe damage to your amplifier.

NEVER: use a shielded guitar or instrument cable as a speaker cable connection.

NEVER: operate any amp without a speaker load connected to the output jack(s).

ALWAYS: make certain that your AC power cable is unplugged when replacing any fuse.

ALWAYS: operate your Komet™ amplifier with the correct tube types listed in this owner's manual.

ALWAYS: use a three pronged, grounded AC power cable and always plug into a properly grounded outlet. Failure to do so may result in injury or death.

ALWAYS UN-PLUG YOUR AMPLIFER WHEN YOU ARE DONE! This is to protect your amplifier from surges in electrical power, or transient voltage. The standard American home AC voltage is 120 Volts. Anything over this amount is considered transient and can damage electronic devices that are plugged into an AC outlet. Though power surges are brief and measured in nanoseconds, they can cause considerable or permanent damage to electronic equipment. Electrical surges can damage electrical equipment by burning or fusing internal wires or by the gradual degradation of a device's internal components. **The best way to prevent damage is to unplug your amplifier when not in use**.

NOTE: Devices such as refrigerators and air conditioners require large amounts of energy to switch motors and compressors on and off. Such devices can create surges in power that disrupt the steady flow of line voltage. Lightning, faulty wiring, downed power lines and faulty equipment at the power source (utility company) can all cause power surges as well.

ALWAYS: try to keep your amplifier and/or speaker cabinet in a climate controlled setting. Failure to do so can be problematic. The tolex on your amplifier head box cabinet can shift and shrink in the Summer, especially if you leave your amplifier for an extended amount of time in a sun heated vehicle, trunk, trailer, or an extremely hot and humid - un-air conditioned environment. This is due to the glue used to apply the tolex to the wooden head box cabinet. The glue can become slightly molten from excessive heat, which can make the tolex movable, expand and then shrink when cooled. Excessive heat can only cause this tolex situation and this **is not** covered under your Komet™ warranty.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Clean only with dry a cloth.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Only use attachments/accessories specified by the manufacturer
10. Unplug this apparatus during lightning storms or when not used for long periods of time.
11. Refer all servicing to qualified personnel. Servicing is required when the apparatus has been damaged in any way, such as a 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.
12. **CAUTION**: To disconnect the unit completely from the Mains, unplug the unit. Turning the power switch off does not completely disconnect the unit from the Mains.
13. 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 and 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.
14. The unit shall not be exposed to dripping or splashing of liquids, and that no objects filled with liquids such as vases shall be placed on the unit.
15. **WARNING**: This is a **Class 1** apparatus. This unit should be connected to a MAINS socket outlet with a protective earthing connection.

EU ENVIORNMENTAL DIRECTIVES

RoHS This product is compliant with the EU Directive 2011/65/EU for the Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment. No lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr+6), PBB or PBDE is intentionally added to this device. Any traces of impurities of these substances contained in the parts are below the RoHS specified threshold levels.

REACh This product is compliant with the European Union Directive EC1907/206 for the Registration, Evaluation, Authorization, and Restriction of chemicals (REACh) and contains none or less than 0.1% of the chemicals listed as hazardous chemicals in the REACh regulation.

WEEE This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

CE This product complies with the European Union Council Directives and Standards relating to electromagnetic compatibility EMC Directive (2006/95/EC) and the Low Voltage Directive (2004/10)

Thank you for purchasing a Trainwreck® Engineered™ Komet™ Amplifier.

The Komet™ 60 is a straightforward and easy to operate amplifier. The goal of this manual is to help you "*get acquainted* " with your Komet™ amplifier, and how to make use of its many capable sounds.

FRONT CONTROL PANEL LAYOUT (left to right):

1. **Power Switch**: engages the wall AC / power to the amplifier.

2. **Standby Switch**: allow the amplifier to warm up for **60** seconds before engaging the standby switch to the play position. This action will allow for all of the tubes to heat up to the proper voltage required for operation and will help prolong their lifespan.

3. **Pilot Light**: illuminates when power switch is placed in the "On" position. The pilot light is a type #**47** (6.3 Volt) light bulb. (See troubleshooting section for bulb replacement information).

4. **Hi-Cut**: this control allows shaping of the treble response in the power amp. For players who prefer a darker tone, the only option with most amplifiers, is to roll down the treble control. The treble control is passive (reduces a portion of the signal), so the result is a loss of gain, and "**muddy**" distortion. The Hi-Cut feature allows you to set the preamp EQ for the right balance by "darkening" or "brightening" the overall tone without changing the basic EQ setting.

5. **Presence Control**: affects the highest frequencies in the output stage. It is normal to hear a slight "**scratchy**" sound when engaging the Presence control. This is due to this amplifier's particular circuit design.

6. **Bass Control**: controls the low end range bass frequencies.

7. **Midrange Control**: controls midrange frequencies.

8. **Treble Control**: controls high end range treble frequencies.

9. **Volume Control**: controls overall volume and gain of the amplifier.

10. **Input Jack**: accepts standard ¼ inch plug. Input impedance is 1 Megohm.

BACK CONTROL PANEL LAYOUT (left to right):

1. **AC Input**: this IEC receptacle accepts standard DIN AC power cable. All Komet™ amplifiers can be modified to run on either 120V or 240V. Please inquire with Komet™ Amplification for AC conversion information.

2. **Mains Fuse**: **3 Amp** "slow-blow" fuse (a.k.a. MDL 3A size: ¼ inch by 1 and 1/4 inch) on **120V** model, **2 Amp** "slow-blow" fuse on **240V** model. **CAUTION**: **ALWAYS MAKE SURE YOUR AMPLIFIER AC CABLE IS UN-PLUGGED BEFORE REPLACING A FUSE**.

3. **H.T. Fuse**: (high tension fuse) **¾ Amp** or **750mA** (a.k.a. AGC 750 mA a.k.a. "**fast acting**" fuse size: ¼ inch by 1 and 1/4 inch). Should the high voltage H.T. fuse repeatedly fails in your Komet™, replace the fuse and replace the power tubes with a new set. Make sure your bias is properly set. Your amp may need servicing by an authorized technician if the problem persists. **CAUTION**: **NEVER REPLACE ANY FUSE WITH A HIGHER RATED FUSE**. This will **most certainly** cause severe damage to your amplifier.

4. **Bias Test Points** (**V1**, **Ground**, **V2**): See "Biasing The Komet™Amplifier". You will need a digital multimeter with an **mV** (millivolt) setting.

5. **Output Impedance Selector**: set this selector according to the appropriate speaker impedance you are using. **4**, **8**, and **16** Ohm settings are available.

6. **Output Jacks**: two, standard ¼ inch speaker jacks wired parallel, which will accommodate any quality standard speaker cable. **Note**: never use a shielded guitar cable as a speaker cable. You can severely damage an amplifier.

7. **TOUCH RESPONSE**™: A circuit invented by Ken Fischer of Trainwreck® Circuits. The following is Ken Fischer's own description:

THE TRAINWRECK® TOUCH RESPONSE CIRCUIT™

Introducing **TRAINWRECK'S**® proprietary **TOUCH RESPONSE CIRCUIT**™ for guitar amplifiers. This **TRAINWRECK ENGINEERED**™ circuit enables the musician to alter the touch response characteristics of their amplifier to suit their playing style. A simple flick of a switch lets you choose between a gradual or fast response to your picking dynamics and guitar's volume control settings. The **TOUCH RESPONSE CIRCUIT**™ is not an extra gain stage or gain boost circuit. Instead it works by magnifying subtle changes in pick or finger attack along with subtle changes in guitar volume. This circuit allows a clean player to run the full range of dynamics without breaking into unwanted distortion. A blues player can play on the edge of distortion easily going from clean to blues overdrive using pick attack as the controlling factor. An over the top player can go from clean to scorch using the fast setting. The slightest change in pick attack or guitar volume setting will translate to huge changes in dynamics and power. To sum it up, the **TOUCH RESPONSE CIRCUIT**™ lets you choose the response and feel you want and makes your amplifier capable of playing every style of music. (continued)

Note: you will hear a "**thump**" coming from the speakers when the Fast / Gradual switch is engaged in the "Play" position. This is normal, part of the circuit design, and is not indicative of a problem with your amplifier. We recommend that you engage the "Stand By" switch before changing the Fast / Gradual switch setting to avoid this sound.

Note: if you are using effects pedals with your Komet™, you may want to experiment with the two different Touch Response settings and see which one works best with your particular pedal of choice.

Note: be aware that the tone controls on all Komet™ models are passive, but very powerful. Should you come across a set of parameters, which does not work well with your guitar / speaker combination, simply change the settings, and avoid that particular setup in the future.

TUBE CHOICES FOR THE KOMET™ 60

The Komet™60 was designed and voiced to utilize current production tubes to their maximum potential. The stock rectifier tube is the Sovtek® or JJ Tesla® - 5AR4/GZ34. These rectifier tubes are patterned and similar to the old Mullard GZ34. They are available from virtually every tube distributor.

The stock power tubes are a "**matched**" set of the Electro Harmonix® EL34s (Made in Russia). They are excellent sounding, reliable, and have similar tonal characteristics to the vintage Mullard EL34. The current stock 12AX7 pre amp tubes (from the far left to right) **V1, V2** and **V3 -** are the Sovtek® 12AX7 LPS. The LPS is an excellent sounding 12AX7 and are used in all Komet™ amplifier models. With this power and pre amp tube compliment, the Komet™60 sounds powerful, complex and detailed. The distortion is balanced and harmonically rich. This selection is only a recommendation and is our standard factory set up. There are several other tube types that can operate in the Komet™60.

6L6 / 5881: These two power tube types will give you a slightly more "American" tonal flavor in your Komet™60. Both sound spectacular and are certainly worth a try. You may want to experiment with lowering the amplifier's gain and increasing the amplifier's clean headroom by installing a 12AT7 pre amp tube (instead of the stock 12AX7) in the **V3** position of your amp (a.k.a. the phase inverter). You can also experiment with the European version of the 6L6 - the KT66.

Note: having matched power tubes within your amp, helps to ensure that all of the power tubes will operate *and react* equally within the amplifier. Matched power tubes also guarantee better harmonics, a better sonic performance, and a more extended tube lifespan. Most reliable and reputable audio tube vendors and **n.o.s**. tube dealers sell their power tubes in matched, output power or plate current draw, numerically rated sets.

Solid State Rectifier Module: You can also substitute a solid state diode module for the rectifier tube. A solid state diode module will allow for less "**sag**" in the power supply, resulting in a tighter and more transient signal with less compression. It is a reliable and cost effective replacement for a tube rectifier, and should your rectifier tube fail (*especially on a gig*) it can come in handy as a spare replacement. **Note:** Komet™ Amplification does not recommend using "**Copper Caps**" rectifiers in our amplifiers.

WARNING: Komet™ Amplification does not recommend using **6V6** power tubes and a **5Y3** rectifier tube in the circuit of the Komet™ 60 amplifier. This is due to the higher plate voltage and plate voltage current draw produced by this amplifier's circuit.

Please note: you may find that some pre amp tubes, whether newly manufactured, used, or even n.o.s., may be too "**microphonic**" for the first gain stage (V1) of a Komet™ amplifier. A microphonic preamp tube is a condition in which a tube will absorb mechanical vibration and amplify it into the audible range. In this scenario, a tube can "**feed-back**", or give off a loud, high pitched squealing noise. Feed-back can occur intermittently, even without an instrument plugged into the input of the amp. This does not mean that the tube(s) are completely unusable. One possible solution you can experiment with is moving the microphonic tube to the V3 phase inverter socket where microphonics are not as noticeable. The microphonic 12AX7 may be quieter in the V3 position as opposed to the V1 or V2 position.

Please note: a small amount of "**hiss**" is normal for high gain amplifiers. An excessive amount of hiss, especially when the volume control of the amplifier is all the way down and with no instrument plugged in the amplifier's input, usually denotes a bad pre amp tube. Some n.o.s. audio tube suppliers offer "select", or hand picked pre amp tubes, which are superior in all aspects of quality, especially when it comes to being quiet and non-microphonic.

Please note: your amplifier produces heat. Prolonged gigs, outdoor or non-climate controlled venues, only multiply that factor. We suggest (after extended periods of play) that you allow for a sufficient amount of time to pass so as to let your amplifier cool down prior to moving or loading. This action will help protect and extend the lifespan of the audio tubes and internal components from excessive vibration or damage.

Caution: please pay close attention when extracting and installing the power and pre amp tubes. The pins of the tube - must align perfectly - into the tube's socket. Bent pins, especially when forced into a tube socket, **will** cause serious damage to an amplifier's tube socket pin inserts. **99%** of the time this results with the tube socket needing to be replaced. To avoid this contingency, we recommend that you purchase a miniature pinned, nine hole, pre amp tube pin straightener. These can be found on line from many vintage tube retailers. This easy to use device guarantees that your 12AX7 pre amp tube power tube pins will be straight and aligned for socket insertion. **Note**: Komet™ Amplification's warranty **will not** cover damage done to a tube socket's insertion pins from forced or accidental mis-alignment / and or bent / crimped insertion pins.

TUBE REPLACEMENT

A noticeable deterioration in your amplifier's overall sound is an indication of an imminent tube replacement. You may notice symptoms such as "**muddy**" or "**saggy**" power chords, a loss of tightness or "**punch**", a weak sounding treble and bass, and loss of certain sonic frequencies or note "**bloom**". We suggest that you first start by replacing your power tubes. Pre amp tubes can last a very long time, and do not necessarily need to be replaced as often as the power tubes. However, we do recommend that you have them properly tested by a technician between servicing.

BIASING THE KOMET™ 60 AMPLIFIER

CAUTION: Komet™ Amplification is not responsible for any damage to the tubes or amplifier as a result of improper biasing. If you have any doubt about your understanding of the following procedure, - PLEASE STOP ! - and bring your amplifier to a qualified technician for help or servicing.

You will find the **Bias Probe Test Points** on the Back panel of the amplifier. They are labeled **V1** (**red**), **Ground** (**black**), and **V2** (**red**). These jacks will accept a standard digital multi-meter's red and black probe tips. **V1** is for measuring the bias current draw of the left power tube, **V2** is for measuring the right power tube. Remove the back panel. On top of the amplifier's chassis, close to the power tubes, you will find the bias adjustment control dial. This silver colored, hand turned device controls a 10-turn, precision potentiometer. You will notice that there is a counter ring on the bottom of the bias dial. This ring automatically turns one digit for every 360 degree rotation of the dial. Please be cautious of the hot power tubes nearby when operating this control.

Note: the bias control has a small brake lever to lock the dial. This is to prevent the dial from accidentally being turned and changing your bias setting. Remember to gently release the lock mechanism on the dial when preparing to adjust bias. Using a standard digital multimeter**,** insert the probes into the corresponding test points, - **red** probe lead into V1, **black** probe lead into the black insert labeled **ground**. There are no dangerous voltages present and you will not damage anything. Set your multimeter to the millivolt (**mV**) setting. **Note**: do not set your meter to the **mA** setting. Make sure your amp is plugged into a speaker cabinet and with no instrument plugged into the input of your amp. Turn on the amp. After a minute - now that the tubes have warmed up, flip the standby switch to the " Play " position.

You will notice a numerical mV reading on your meter. This mV number corresponds exactly to the amount of bias current (mA) that is being drawn from either V1 or V2. Example: insert probe into V1. Let's say the meter reads for example **33mV = V1** tube draws **33mA** of bias current. Then measure the other tube (V2). The reading should be close and no more than **5mV** apart for the power tubes to be considered a matched pair. You can also use this Komet™ bias method to match your own EL34s. Just plug in different pairs, measure each side and mark the ones that are close. Turning the bias control clockwise will **increase** the reading and **vice versa** (disengage the brake lever first).

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Many musicians do not like to contend with the technical aspects of an amplifier. They would rather leave these details to a technician. Then again, you may find yourself in an emergency situation (live performance) where you may have to make a quick tube change due to a power tube failure. In this scenario you could install a new set of matched tubes in the amp, gently unlock the brake lever, set the bias at **33mA** per tube (33mV on the meter), lock the brake lever, and your done. **33mV** is a bias point that we have selected where the power tubes are not running too cool, or too hot, …..the "*Goldilocks Zone* " so to speak. The amp will work great, sound great, and be reliable. For those of you who would like to tweak the amp for maximum performance, read on.

IMPORTANT: The bias control has a very wide operating range. It is possible to turn the bias dial to the point where the power tubes exceed the maximum current threshold for which a particular set of power tubes is designed to safely operate. This can severely damage the tubes and / or an amp. We recommend you closely monitor your volt meter and power tubes, and strongly recommend you do not bias your stock power tubes any higher than **33mV**. This will guarantee an efficient life span of your power tubes. **Note**: the pre amp tubes in your amp are self biasing and need no adjustment.

The setting of the power tube's bias is a critical factor in the overall tone of the amplifier. The bias setting affects the distortion characteristics, harmonic content, note separation, and headroom, among other things. Many technicians and book authors recommend a specific amount of bias current for a certain tube type. This approach is not wrong, but it allows for a very quick biasing procedure. Time is money, especially in the mass production of amplifiers. Unfortunately, this method disregards the most important aspect of biasing - **the sound**.

A change of a few milliamperes in bias current, in a sensitive amplifier such as the Komet™, will result in a noticeable difference in tone. This amplifier reacts differently for each new set of audio tubes, even if from the same manufacturer. Therefore we recommend setting the bias by ear. **This is an acquired art, takes time to learn, and demands a good set of ears and a lot of concentration**. This method is more time consuming than any other method, but its fun to learn and will benefit you in many different ways.

BIASING BY EAR

Start with the bias control turned all the way down (counter clockwise). Let the amp warm up for a minute and flip the standby switch to the "Play" position. Nothing should be plugged into the input of the Komet™ at this point. Disengage the bias dial's brake lever, insert the volt meter's probes into the proper test points. Turn the bias control clockwise to approximately 30mV on the meter (30mA of bias current). Now check the other tube. The power tubes should be within **5mA** of each other after 10 to 20 minutes of warming up. Unfortunately, you do not have a matched pair of power tubes if they are farther than 5mA apart. **Note**: it is common for the mV readings to fluctuate somewhat when measuring the power tube bias over a period of a few hours. This is due to the fact that some power tubes "**drift**" somewhat. Again, this is not un-common and not a problem with your amplifier.

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This is what you may notice: generally speaking, lower bias current settings (18mV to 25mV) will yield more headroom and note separation. There will be more clean volume available and as the amp breaks up, the distortion can be slightly harsher and grittier. The treble strings will sound thinner. Power chords, especially with emphasis on the bass strings, will sound clearer and more defined, with more "**space**" between the notes. As you increase the bias current, (past 25mV to 33mV), the treble strings will sound fatter and "**sing**" more. The amp will distort more readily and with more harmonic content. The bass will stay consistent and strong. Also, **listen to the clarity** of the pick attack, the "**envelope**" of the note and the sustain characteristics. Try playing double stops and chords and listen to the blend of notes and their harmonic overtones.

As you experiment with different bias settings, you'll find certain "**sweet spots**" where things just fall into place. The bass to treble balance is just right and the amp sparkles with harmonics. At that point you have biased your amp perfectly for the tubes you're using, the guitar you're playing, your playing style, your string gauge, your speakers, etc. Don't forget to carefully lock the bias control's brake lever at this point. In order to be able to replicate your setting, just make a note of the dial setting of the bias pot. You can do this for any number of different tube sets and types. This will allow you to simply plug in a set of tubes, set the dial to the noted setting and be done. Instant tube change and perfect bias without a meter!

What is the safe bias setting range? Use these guidelines: the lowest usable bias current (in our opinion) is somewhere around **13mA** (mV on the meter). This depends on the power tube type and manufacturer, among other things. Lowering the bias further causes your amp to be "**over biased**" (very low bias current). The sound produced of an over-biased amp is just unusable. Lowering the bias dial further causes the signal to cut " *in and out* " until your amp produces no sound. No damage will occur to your amplifier by doing this.

In most amplifiers, biasing above **50mA+** will cause the plates of the power tubes to glow red. The plates are the large gray or black metal parts inside the tube. In this condition the amp is described as "**under biased**" (too much bias current). You do not want this to happen. An under biased amplifier can damage the tubes right away and destroy them within minutes. So keep an eye on the power tubes' plates and back off the bias control immediately should they start to glow. **Again**, **-** we recommend that you do not bias this amplifier higher than **33mV** with the stock, (or modern made power tubes), to guarantee an efficient life span of your power tubes.

SPEAKERS FOR THE KOMET™ 60

The Komet™60 is a big sounding amp. It is voiced for a sparkling clean sound at low volumes, and a smooth, dynamic - harmonic overdrive and strong midrange punch. *In our opinion*, these characteristics are best complimented with a closed back, (preferably vintage) **4** x **12** speaker cabinet. Our favorite reference speakers for Komet™ amplifiers in general are original coned, vintage 12 inch Celestion® speakers from the 1960's. You may come to a different conclusion, depending on your playing style and preferences. A **2** x **12** cabinet, (open or closed back), is another excellent choice, but care should be taken to select speakers that can handle the power, low end, and attack. The Komet™Amplification speaker cabinet lineup is another excellent option. Please see our website **www.kometamps.com** for full speaker cabinet information.

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Whichever cabinet you do use, make sure you **set the impedance selector correctly**. If you use two cabinets, keep in mind that the amplifier's outputs are in parallel. This means that if you are operating the amplifier on two, 16 Ohm cabinets, you must set the amplifier's impedance selector to the 8 Ohm setting. Set the Ohm selector to 4 Ohms if you are operating two, 8 Ohm cabinets. We do not recommend using two, 4 Ohm cabinets. Speaker wiring diagrams are located at the end of this owner's manual.

A Special Note on Speaker Cable, **Cabinets and Speakers**: It is crucial that you always maintain a solid, un-interrupted signal between your amplifier and speaker cabinet. Sub-standard speaker cables as well as sub-standard cabinet wiring can become problematic, intermittent and fail over time. This can possibly causing damage to your amplifier and speakers. We recommend that you use quality brand speaker cables (18 gauge is sufficient) made with quality male input plugs. The speaker cable plugs should be soldered directly on to the internal speaker cable wires. Using a quality made speaker cable will ensure a tight fit from the amplifier's speaker jacks to the speaker cabinet.

Your speaker cabinet should be equipped with a quality brand input jack. We prefer and use the Switchcraft® #11 mono input on our cabinets, amplifiers and vintage repairs. Many vintage speaker cabinets from the 1960's to 1970's used the #11 jack. It is reliable, solid and time tested. Many modern made brand speaker cabinets use the Switchcraft® #11, but not all. Some manufacturers have their speaker jacks panel mounted on the back of their cabinets which incorporate an internal circuit board on which the jacks are soldered. This type of system is not designed for a type #11 jack, and conversion to the #11 jack can be very tedious. All electrical work should be performed by a professional and knowledgeable technician.

We also strongly urge you to inspect and make sure that all of your internal speaker cabinet wire leads are soldered at the speaker jack and soldered at the speaker terminals. We **do not** recommend using the "slide on" type gripping speaker wire terminals. These grip type terminals loosen over time causing an interruption or failure of the signal. These recommendations help guarantee a solid, **un-interrupted signal** from the amplifier to the speakers at all times.

NOTE: Komet™Amplification recommends using resistive load attenuation devices in conjunction with any Komet™ amplifier and speaker cabinet. Please see our website **www.kometamps.com** for further information on the Komet™ Airbrake™ attenuator. The Komet ™ Airbrake™ owner's manual is also located at the end of this manual.

TROUBLESHOOTING

When troubleshooting a problem, we recommend that you remove all effects pedals and only go direct with your guitar and guitar cable into the amplifier. Also, remove any attenuation device from your amplifier to speaker cabinet signal chain. This way you can easily and quickly rule out or discover if your amplifier is the source of the problem.

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Pilot Light Not On:

Check to see if the amplifier's AC cable is plugged in at wall and plugged in at the IEC connection on the back panel of the amp

Make sure the DIN AC cable plug is securely inserted into the IEC AC input connection, and pushed in all the way. Check the type 47 pilot light bulb. It may be burned out. For the bulb replacement, gently turn the jewel lens cap counterclockwise and remove. Using the tips of your fingers, gently push and turn the exposed bulb counterclockwise, extract bulb and replace. **Note:** your amplifier will continue to operate with no problem with a shorted type 47 bulb or with no bulb at all.

Check the **3** amp "slow blow" AC supply Mains fuse to see if it has blown. If blown, replace the blown fuse with a **3** amp slow blow (a.k.a. MDL 3A 250V). 2 Amp S.B. if under 240 Volt operation. **ALWAYS**: make certain that your AC power cable is unplugged when replacing any fuse.

Main's fuse - "**Blowing**"

Un-plug amplifier from the wall AC. Remove the power tubes. Install a new 3 amp "slow blow" fuse. Plug into the wall AC and turn the amp on. If amp continues to blow the mains fuse, (with no tubes in the amp), then your amp will need to be serviced.

If the fuse does not blow, and the amp lights up, turn the amp back off again, and install the power tubes or a new set of power tubes. Turn the amp back on. If the fuse does not blow, check the bias and play the amp and monitor. If the fuse blows with the original set of power tubes, but does not blow with new power tubes, then one or both of the original power tubes are defective. If the high voltage H.T. fuse blows, it is most likely a defective power tube, or your bias setting may be too high.

Amp Lights Up - No Sound:

Check the speaker connection at back of amp and at the input of the speaker cabinet. Bypass all pedals and effects and plug your guitar into only the amplifier. Check the guitar cable.

Check the **power** and the **pre amp** tubes and make sure that they are installed correctly and that the filaments within each tube are lit. **Important Note**: occasionally, audio vacuum tubes can look operational - (with the filaments lit) - but be defective in not passing signal. This is rare, but can occur. Check each tube individually against a spare (good) 12AX7 in each pre amp tube socket.

The power tubes can easily be ruled out by testing the bias of each tube with your volt meter. Check / test / replace - the **H**.**T**. fuse for continuity with a digital Ohm meter. It may be blown.

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Amp is making a "Humming", "Hissing", "Feedback" or "Crackling" - sound

This is most likely a bad pre amp tube. Pre amp tubes can develop problems over their life span. They may be operating flawlessly, and they may also test fine on a tube tester, but for what appears like for no reason, can suddenly begin to make a "**hissing**" or a "**crackling**" sound. They can begin to feedback or have microphonic or "**ringing**" symptoms. (See previous section titled: ECC83, 12AX7, 7025, and CV4004), or develop filament "**humming**" - which is a low background hum, often mistaken for a problematic filter cap. Filament "**humming**" is much more common with new, modern available pre amp tubes, as opposed to n.o.s. power and pre amp tubes. Unfortunately, you will most likely have to replace one of more of your pre amp tubes that develop or have this problem

Fluorescent and neon lights, rheostat wall dimmers, and some appliances may cause your amp to contain a "**hum**" or "**buzz**" sound. An internally shorted guitar cable or using a speaker cable for a guitar cable can also create a "**buzz**" sound through your amp. Always check your cables!

Over time, the input jack may occasionally make a "**crackle**" sound when you extract your instrument cable from the front panel of your amp. This is usually due to a dust / contaminate build up on the input jack's ground shunt. This would require that the inside of the input jack be cleaned professionally. We recommend using DeoxIT® Gold G5.

Amp is distorted and sounds half its original power:

Check the numerical mV reading on each EL34 power tube with your multimeter set to the mV setting. (see Biasing the Komet™60 section for biasing instructions). You may have a shorted power tube. Should you not see an mV reading on the voltmeter after insertion in either V1 or V2, mark the tube with no numerical reading, place the amp in "Stand By" mode and reverse the EL34s position in the power tube sockets.

If this marked power tube continues not to display a numerical mV reading (while inserted into the reversed position power tube socket) then you have a defective power tube. If the marked tube has an mV reading in the other power tube socket, then the EL34 tube is functional, and you most probably have a shorted screen resistor over the first power tube socket. This shorted screen resistor will need to be replaced by a tech. **Note**: a shorted tube with no mV reading can still look operational (with lit filaments) but still be defective internally (with no mV reading). This is rare, but can happen.

SERVICING THE KOMET™ 60 HD

We are very confident that your Komet™ amplifier is one of the most reliable amplifiers ever built. A combined experience of many decades of design and service has been applied to the construction of all Komet™ amplifier models. We have been inside thousands of amps and we have seen every type of problem that can occur. Great care has been taken to anticipate and prevent such problems in your Komet™ amplifier.

(continued)

Every part and component in this amp is carefully chosen for its specific performance. Some parts are proprietary or hard to find. We do not recommend replacing any of the internal components with generic parts from different manufacturers. We also recommend that you should bring your Komet™ amplifier to a qualified service technician if you do not feel comfortable changing the tubes. Should your Komet™ amplifier ever need servicing or repair, please make arrangements to have your amp shipped back to Komet™ Amplification for factory service.

SPECIFICATIONS

- **Dimensions**: 22.5" x 9" x 9"
- **Weight**: 38 lbs.
- **Power**: 60 Watts RMS (60 clean watts measured before distortion)
- **Tubes**: 3 - 12AX7, 2 - EL34 or 6L6
- **Mains Fuse**: 3 Amp "slow blow" a.k.a. MDL 3A - rated at 250V (2 Amp / 240V operation)
- **H.T. Fuse**: ¾ Amp "fast acting" a.k.a. AGC 750 mA - rated at 250V

A FINAL WORD

Your Komet™ amplifier was designed to be played and enjoyed. By virtue of its unmatched quality, it will free you from thinking about your equipment and concentrate on the very thing that matters: **your music**. The Komet™ 60 responsiveness, musicality and immediacy - places you in charge of your sound. It can handle any live / club performance situation with ease and is voiced to cut through the band mix.

Give yourself and your new amp a little time to get to know each other. No matter how good it sounds right out of the box, your amp will break in and improve tremendously after being played over time. The harmonic complexity will also improve; the tone will sweeten up and become even more fluid and resonant. Have fun!

Thank you for purchasing our product.

Michael Kennedy
Holger Notzel
Co-owners
Komet Amplification

CONTACT

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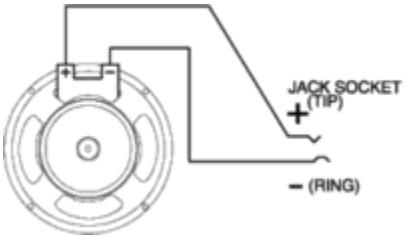
Tumbler: **http://kometamplification.tumblr.com/**
Twitter: **https://twitter.com/kometamps**

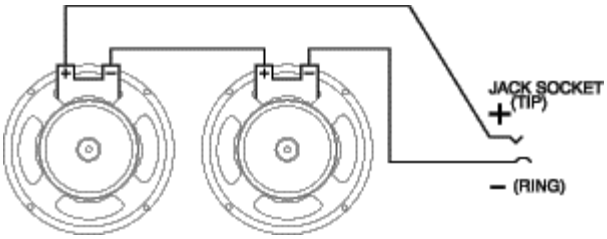
Komet™ Warranty information located at end of owner's manual.

Komet™ Speaker Wiring Diagrams

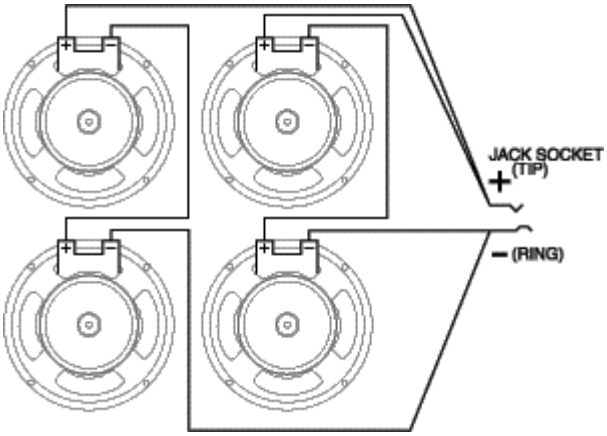
Single 12” 16 Ohm Speaker



2 X 12” 8 Ohm Speakers in series for 16 Ohms



4 X 12” 16 Ohm Speakers in series / parallel for 16 Ohms



Note: Komet™ Amplification recommends using a **16 Ohm** load with their amplifiers for the best sonic results.

Tube Placement and Installation Instructions

Please read the last paragraph from the section: TUBE CHOICES FOR THE KOMET™ AMPLIFIER before you install your amplifier's tubes.

Note: The power tube bias on your Komet™ amplifier is set here at our shop before the amplifier is packaged and shipped. You can begin to play your amplifier as soon as you install the three pre amp tubes, the two power tubes, and the rectifier tube. You can easily check the mV (millivolt) bias status with a digital multimeter meter with an mV setting. Please carefully review the section "Biasing The Komet™ Amplifier" for the biasing procedure and details. The amplifier should read anywhere from 28mV to 30mV, depending on your AC wall voltage.

Carefully un-screw the six insertion screws from back panel, then remove back panel **evenly** with both hands.

You are now looking at the back of your amplifier. Observe the tube placement. There are six tube sockets in total. Starting from the left, the first three tube sockets, (V1, V2 and V3), are nine pin, miniature pre amp tube types. The last two sockets, (V4, V5), are eight pin octal types.

Each tube enclosed is labeled with a number for the tube's required placement within the amp.

V1, V2 and V3 are 12AX7 pre amp tubes.

V4 and V5 are matched EL34 power tubes.

Please note that each tube's pin configuration must be properly and perfectly aligned with the tube socket for installation. Gently install each tube in the correc-corresponding tube socket.

NEVER - force a tube into a socket.

Please have a qualified technician install the tubes if you are not comfortable with this procedure.

Note: " **V** " stands for " **valve** ", - term as used in England for audio tubes.

Komet™ Airbrake™ Manual

The Komet™ Airbrake™ Users Manual

The Komet™ Airbrake™ is a resistive load power attenuator, which connects between an amplifier's speaker output jack and a speaker cabinet. It allows the user to "turn up" the amplifier's volume, utilizing the amplifier's harmonically rich output stage distortion, while reducing the signal sent to the speakers. This lowers the amplifier's overall sound pressure level and is useful when high volume is not required.

All power attenuators by design reduce the interaction between an amplifier's output stage and the speakers, which is a critical part of the sound and feel of a tube amp. An attenuator can change the human ear's perception of the frequency spectrum by reducing the sound pressure level. Accordingly, there is no power attenuator that does not change the overall sound of an amplifier.

The Komet™ Airbrake™ sounds very natural and "transparent" at reasonable levels of attenuation. It allows the user to bring the level of a 50 / 60 Watt Komet™ amplifier down to that of a "cranked" 20 to 25 - watt amplifier, all the while retaining its distinct voice and dynamics. It is therefore best suited to match Komet™ amplifiers to a smaller room, or in a quieter playing setting.

Features of the Komet™ Airbrake™:

- operates on **8** Ω or **16** Ω speaker loads only.

- designed for a maximum power handling capability of **100** Watts.

- five graduated attenuation settings via a six position rotary switch.

- **3dB** drop in first step of attenuation, approx. **1**.**7 dB** each step after.

- the first (12 o'clock) position of the six position rotary switch is a true bypass setting (under no attenuation).

- one input, two parallel output jacks.

- line level signal out control.

Using the Komet™ Airbrake™ Power Attenuator:

You will need two, quality constructed, standard speaker cables. At the bottom of the Komet™ Airbrake™, below the Komet™ logo, you will find three input jacks arranged in a triangle formation. The top input jack (of the triangle formation) is the Komet ™Airbrake's ™ input. Connect one speaker cable from one of the amplifier's speaker outputs into the top input of the Komet™ Airbrake™. **Note**: (see last page for descriptive layout).

The bottom two jacks of the triangle formation are the two parallel outputs. Connect the second cable from one of the two Komet™ Airbrake™ outputs into the speaker cabinet input. If you only use one speaker cabinet, you may plug it into either one of the two, bottom output jacks on the Komet™ Airbrake™. **Note**: (see last page for descriptive layout).

Set the amplifier's impedance selector according to the impedance of the cabinet used. Remember to always use dedicated speaker cables of a sufficient gauge (we prefer 18 gauge) for both connections. **WARNING**: Never use instrument (guitar) cable as a speaker connection. By doing so will cause damage to the amplifier.

If you plug two speaker cabinets into the Komet™ Airbrake's™ parallel output jacks, make sure both cabinets or both speaker loads are rated at 16Ω. Keep in mind that the combined load of both cabinets or both speaker loads will be 8Ω. Set your amplifier's impedance selector accordingly to 8Ω.

Do not use two, 8 speaker cabinets. The combined load will be 4Ω , which is below the Komet ™ Airbrake™ 8/16 Ohm operating range. For the same reason, do not use two 4Ω cabinets. Never combine two cabinets of different impedance ratings (for example an 8Ω cab and a 16Ω cab).

The line level signal out control is the cream colored knob located at the top of the Komet™ Airbrake™. The line level output jack is located to the right of the cream colored control knob. The line level signal out feature allows the user to send the un-attenuated signal from the amplifier under attenuation, into another amplifier, say one with reverb or tremolo, or send a signal to a recording or mixing console, or can be used to send the signal to a wet/dry rig. Make sure you use a quality constructed shielded instrument / guitar cable for this signal sending portion of the device.

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Important:

We recommend that if you intend on using your Komet ™ Airbrake™ in conjunction with much older, **vintage amplifiers**, that you set your vintage amplifier's impedance selector to 8Ω for the first step of attenuation (or the first click of the rotary switch), regardless of an actual 16 Ohm impedance of the speakers or cabinet used. If your amp and speaker load is 8Ω, set the impedance selector to 4Ω in the first step of attenuation. This precaution will lower the current flowing within the output tubes under full power. We also recommend this same action with EL84/6BQ5 powered amplifiers. Set the impedance selector of your vintage amplifier according to the speaker impedance being used in any other step of attenuation past the first click.

We recommend that you do not use the Komet ™ Airbrake™ with a 100 Watt plus rated amplifier for **very long, extended periods at very high volume levels** (or with the volume controls "dimed out"). This is because the Komet™Airbrake™ is a 100 Watt rated device. Any 100W amplifier can surpass its 100W RMS rating when cranked way up. This could possibly over-heat the attenuator causing damage to one or more of the load resistors. **Note**: The Komet™ Airbrake™ will increase its ability to handle an amplifier's wattage as the attenuation level increases. The maximum load capability for the Komet™Airbrake™ is 200 Watts under full attenuation. You should not have a problem using the Komet™Airbrake™ with a 100W amplifier, but it is always best to operate your 100W amplifier and attenuator within reason.

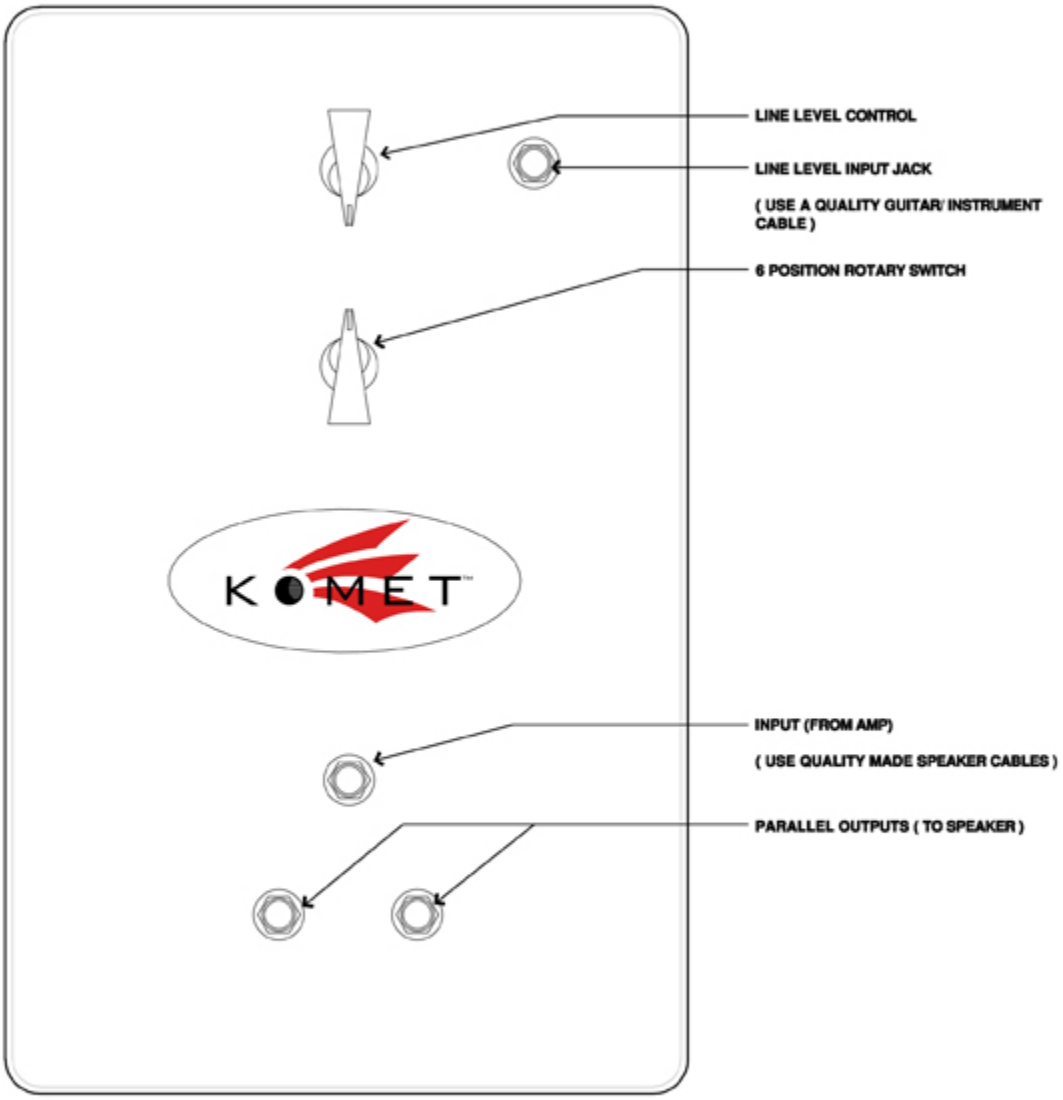
Final note:

The Komet™Airbrake™ power attenuator reduces volume by converting the amp's excessive power into heat. The device will get very warm, even hot, during use. Please make sure you place the unit it in a well ventilated area and never have it covered up.

The Komet™Airbrake™was designed for optimum performance with Komet™and Trainwreck® amplifiers. The Komet™Airbrake™will work equally well with most other manufacturer's amplifiers, but Komet™Amplification only guarantees safe operation with Komet™and Trainwreck® amplifiers.

A Special Note on Speaker Cabinets and Speakers: we recommend that you use quality speaker cable with quality brand male plugs. This is to guarantee a tight fit to the speaker jacks and cabinet. We prefer the Switchcraft® #11 mono input. We also recommend that your speaker cabinet wire leads are directly soldered to the to the speaker terminals instead of using the "slide on" gripping terminals. (See special note in the Speaker Cabinet section of this manual).

The Komet™Airbrake™Layout



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KOMET™ AMPLIFICATION'S WARRANTY

This warranty shall be void and of no force of effect in the event a covered product has been modified in design or function, or subjected to abuse, misuse, (which includes operation of amplifier with incorrect tube types), mishandling or unauthorized repair. Further, product malfunction or deterioration due to normal wear is not covered by this warranty. This includes the factory installed audio tubes and the amplifier's tube sockets. **Note:** any transformer failure will require a full inspection / diagnostic by the OEM transformer manufacturer for the cause of failure. Komet™Amplification will not warranty Komet™Amplification warrants their amplifiers to be free from defects in materials and workmanship for a (2) two year period. Komet™Amplification will repair or replace any part there of which, upon inspection by Komet™Amplification, is found to be defective in materials or workmanship. As a condition to the obligation of Komet™Amplification to repair or replace such a part, the product must be returned to Komet™Amplification with a copy of the original and dated sales receipt from the authorized Komet™dealer. Komet™Amplification's warranty is only applicable to the original owner of the amplifier. Warranty is not transferable.

The Proper Return Authorization must be obtained from Komet™Amplification in advance of a return. Please call or e-mail Komet™Amplification to receive authorization for warranty repair. All returns must be accompanied by a written statement setting forth the name, address, and daytime telephone number of the owner, together with a brief description of any claimed defects. Parts or product for which replacement is made shall become the property of Komet™Amplification. The customer may be responsible for all costs of transportation and insurance, both to and from Komet™Amplification, depending on result of inspection and validation of warranty request. Customer may be required to prepay such costs.

Komet™Amplification shall use reasonable efforts to repair or replace any part covered by this limited warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, Komet™Amplification shall notify the customer accordingly. Any output transformer found (by the OEM transformer manufacturer) to be damaged from being overstressed or internally compromised by an attenuation device.

Warranty Exclusions and Limitations: Notwithstanding the foregoing, all warranty claims are excluded if:

Warranty Exclusions and Limitations: Notwithstanding the foregoing, all warranty claims are excluded if:

i. the Product(s) is damaged or destroyed due to the effects of force majeure, including but not limited to: Acts of God, flood, fire; Acts of War, government authority, acts of terrorism, riots, explosions, embargo; Labor difficulty, strikes, breakdown of machinery or equipment, accidents; Shortage or inability to obtain raw materials, equipment, fuel, power, transportation; or Any cause beyond KOMET's reasonable control or due to environmental influences such as wind, hailstones, snow, frost, etc.

(continued)

ii. the Product(s) is damaged from abuse, misuse, improper installation, or neglect;

iii. the Product(s) is altered or appears to have been attempted repair by unauthorized personnel;

iv. if the Product(s) has been modified in any way; or if a defective product has remained in use, resulting in consequential damage to the Product(s).

SHIPPING INSTRUCTIONS

Note: Komet™Amplification highly recommends that you review all packaging, insurance requirements, and shipping recommendations of the shipping company you intend to use.

Komet™ suggests using a: **30** X **15** X **15** foam injected, **300**lb. test, corrugated cardboard shipping box.

Komet™ also suggests having your amplifier professionally packaged to ensure safety.

Shipped amplifiers should be insured for at least the full value of the amplifier.

Please **do not** return ship your amplifier with the AC power cable.

We recommend you bubble wrap and box your vacuum tubes, especially if they are n.o.s.

We are a commercial address. Please check any corresponding box on shipping label.

Please do not return ship your amplifier for "Home Delivery" service or Saturday delivery.

Please do not send for early morning (before 9:00 A.M.) delivery. We prefer afternoon delivery.

Note: Komet™Amplification will not be held responsible for any Komet™ amplifier, amplifier component, or contents, damaged or lost during shipping to Komet™Amplification. Komet™ Amplification will not be held responsible for any damage or loss of an amplifier due to improper packaging or labeling by the customer or packager. Any and all damaged packages and their contents in which claims are filed for damage via shipping to Komet™Amplification are between customer and shipper. Komet™Amplification will do their absolute best to help any customer with a shipping insurance claim.

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(225) 926-1976

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