

Kustom

**DOUBLE
CROSS™**

OWNER'S MANUAL



WORLD-CLASS, ALL-TUBE, THREE CHANNEL GUITAR HEAD



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Kustom Amplification
3015 Kustom Drive
Hebron, KY U.S.A. 41048

www.kustom.com
1.888.4KUSTOM
1.888.458.7866

FCC Statements

1. Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Kustom[®]

Congratulations. You are now the owner of a world-class, all-tube, 3-channel guitar head. The Double Cross represents countless hours of development in pursuit of tone and performance intended to elevate the art of high-gain amplification to the next level. Learn its controls and capabilities and be sure to experiment, as that's the best way to understand the amplifier and develop your own signature sounds. All of us at Kustom say "Thank You" for your purchase. Welcome to the Kustom family!

ENGLISH

Danger

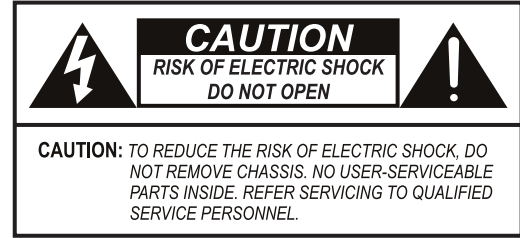
Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably to noise induced hearing loss but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time.

The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures:

DURATION PER DAY (HOURS)	8	6	4	3	2	1
SOUND LEVEL (dB)	90	93	95	97	100	103

According to OSHA, any exposure in the above permissible limits could result in some hearing loss. Ear plugs or protectors in the ear canal or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss. If exposure in excess of the limits as put forth above, to insure against potentially harmful exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of inducing high sound pressure levels, such as this amplification

system, be protected by hearing protectors while this unit is in operation.



AVIS: RISQUE DE CHOC ELECTRIQUE-NE PAS OUVRIR.



THIS SYMBOL IS INTENDED TO ALERT THE USER TO THE PRESENCE OF NON-INSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK TO PERSONS.



THIS SYMBOL IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE UNIT.



APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

ENGLISH

IMPORTANT SAFETY INSTRUCTIONS

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be kept for future reference.
3. Read and understand all warnings listed on the operating instructions.
4. Follow all operating instructions to operate this product.
5. This product should not be used near water, i.e. Bathtub, sink, swimming pool, wet basement, etc.
6. Only use dry cloth to clean this product.
7. Do not block any ventilation openings, It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
8. Do not install this product near any heat sources ;such as, radiators, heat registers, stove or other apparatus (including heat producing amplifiers) that produce heat.
9. 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.
10. Protect the power cord being walked on or pinched, particularly at Plugs, convenience receptacles and the point where they exit from the apparatus. Do not break the ground pin of the power supply cord.

IMPORTANT SAFETY INSTRUCTIONS

11. Only use attachments specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation ports or any other openings.
15. 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.
16. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
17. The MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.



FRENCH

Danger

L'exposition a des niveaux eleves de bruit peut provoquer une perte permanente de l'audition, Chaque organisme humain reagit differemment quant a la perte de l'audition, mais quasiment tout le monde subit une diminution de l'acuite auditive lors d'une exposition suffisamment longue au bruit intense. Les autorites competentes en reglementation de bruit ont defini les expositions tolerees aux niveaux de bruits:

DURE EN HEURES PAR JOUR	8	6	4	3	2	1
INIVEAU SONORE CONTINU EN dB	90	93	95	97	100	103

Selon les autorites, toute exposition dans les limites citees ci-dessus, peuvent provoquer certaines pertes d'audition. Des bouchons ou protections dans l'appareil auditif ou sur l'oreille doivent etre portes lors de l'utilisation de ce systeme d'amplification afin de prevenir le risque de perte permanente de l'audition, Dans le cas d'expositions superieures aux limites precitees il est recommande, afin de se premunir contre les expositions aux pressions acoustiques elevees potentiellement

dangeereuses, aux personnes exposees aux equipements capables de delivrer de telles puissances, tels ce systeme d'amplification en fonctionnement, de proteger l'appareil auditif.



CE SYMBOLE A POUR BUT D'AVERTIR L'UTILISATEUR DE LA PRESENCE DE VOLTAGE DANGEREUX NON-ISOLE A L'INTERIEUR DE CE PRODUIT QUI PEUT ETRE DE PUISSANCE SUFFISAMMENT IMPORTANTE POUR PROVOQUER UN CHOC ELECTRIQUE AUX PERSONNES.



CE SYMBOLE A POUR BUT D'AVERTIR L'UTILISATEUR DE LA PRESENCE D'INSTRUCTIONS D'UTILISATION ET DE MAINTENANCE DANS LES DOCUMENTS FOURNIS AVEC CE PRODUIT.



AFIN DE REDUIRE LES RISQUÉ D'INCENDIE ET DE DECHARGE ELECTRIQUE, NE PAS EXPOSER CET APPAREIL A LA PLUIE OU A L'HUMIDITE.

FRENCH

IMPORTANTES INSTRUCTIONS DE SECURITE

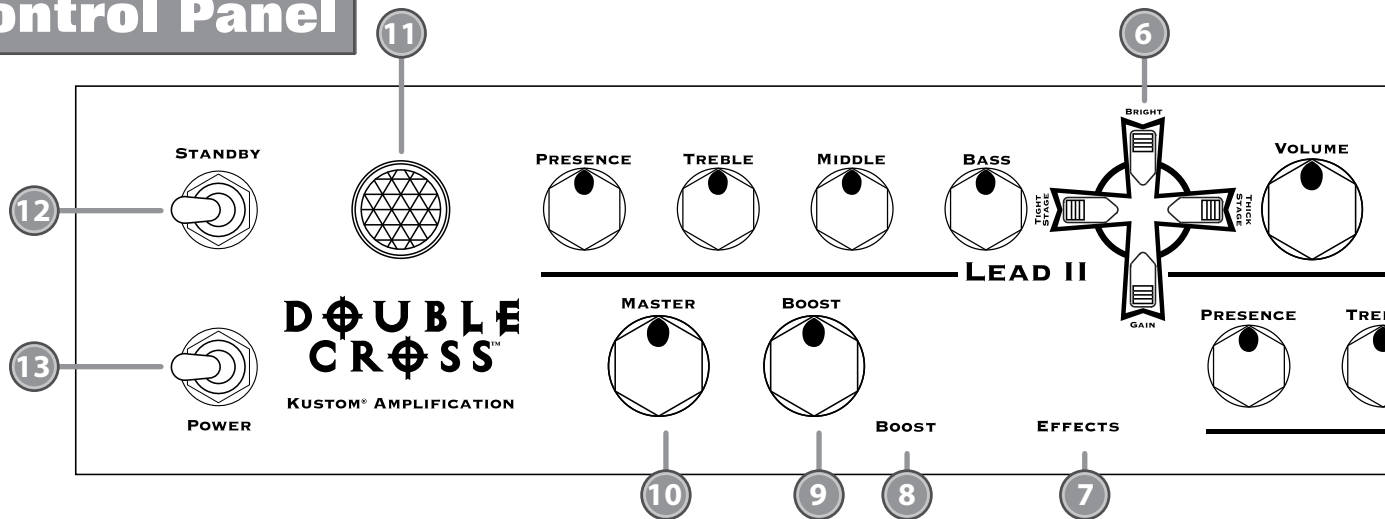
1. Lire avec attention toutes les recommandations et précautions d'emploi avant d'utiliser ce produit.
2. Toutes les recommandations et précautions d'emploi doivent être conservées afin de pouvoir s'y reporter si nécessaire.
3. Lire et comprendre tous les avertissements énumérés dans les précautions d'emploi.
4. Suivre toutes les précautions d'emploi pour utiliser ce produit.
5. Ce produit ne doit pas être utilisé près d'eau, comme par exemple baignoires, éviers, piscine, sous-sol humides ... Etc.
6. Utiliser exclusivement un chiffon sec pour nettoyer ce produit.
7. Ne bloquer aucune ouverture de ventilation. Ne pas placer le produit tout contre un mur ou dans une enceinte fermée, cela gênerait le flux d'air nécessaire au refroidissement.
8. Ne pas placer le produit près de toute source de chaleur telle que radiateurs, arrivées d'air chaud, fourneaux ou autres appareils générant de la chaleur (incluant les amplificateurs producteurs de chaleur) .
9. Ne pas négliger la sécurité que procure un branchement polarisé ou avec raccordement à la terre, Un branchement polarisé comprend deux fiches dont l'une est plus large que l'autre. Un branchement à la terre comprend deux fiches plus une troisième reliée à la terre. Si la fiche secteur fournie ne s'insère pas dans votre prise de courant. consulter un 'électricien afin de remplacer votre prise obsolète.
10. Protéger le cordon d'alimentation de tout écrasement ou pincement, particulièrement au niveau des fiches, des réceptacles utilisés et à l'endroit de sortie de l'appareil. Ne pas casser la fiche de terre du cordon d'alimentation.

IMPORTANTES INSTRUCTIONS DE SECURITE

11. Utiliser uniquement les accessoires spécifiés par le constructeur.
12. Utiliser uniquement avec le chariot de transport, le support, le trépied, la console ou la table spécifiés par le constructeur ou vendus avec l'appareil. Lors de l'utilisation d'un chariot, bouger avec précaution l'ensemble chariotlappareil afin d'éviter les dommages d'un renversement.
13. Débrancher cet appareil lors d'orages ou s'il n'est pas utilisé pendant une longue période.
14. Des précautions doivent être prises afin qu'aucun objet ne tombe et qu'aucun liquide ne se répande à l'intérieur de l'appareil par les orifices de ventilation ou n'importe quelle autre ouverture.
15. Pour toutes interventions techniques s'adresser à un technicien qualifié.L'intervention technique est nécessaire lorsque l'appareil a été endommagé de n'importe quelle façon, comme par exemple si le cordon secteur ou sa fiche sont détériorés, si du liquide a coulé ou si des objets sont tombés à l'intérieur de l'appareil, si l'appareil a été exposé à la pluie ou à l'humidité, s'il ne fonctionne pas normalement ou s'il est tombé.
16. ATTENTION: Pour réduire le risque d'incendie ou de choc électrique ne pas exposer l'appareil à la pluie ou à l'humidité.
17. La prise Mains, au coupler, est utilisé pour la source d'alimentation électrique. Il est conseillé de garder cette prise facilement accessible.



Front Control Panel



1) NORMAL This 1/4-inch input provides full tonal response and offers the same amount of gain as the Tight input.

2) TIGHT This 1/4-inch input “tightens” the attack response of the entire amplifier to provide the chunkiest tone possible. It offers the same amount of gain as the Normal input.

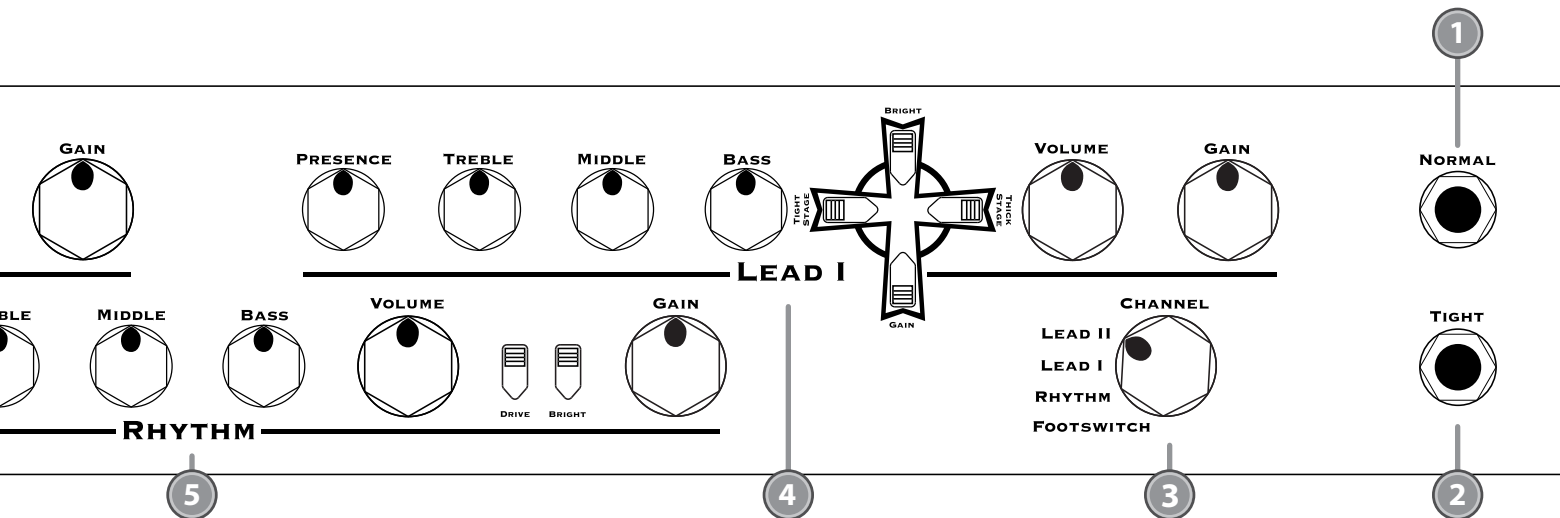
3) CHANNEL SELECTOR SWITCH This switch allows the user to manually select the Rhythm, Lead I or Lead II channels. If the Footswitch is plugged in, this front panel switch overrides the Footswitch (Boost and Effects remain controllable by Footswitch). When using the footswitch, set Channel Selector to “Footswitch” position.

4) LEAD I These six controls plus the Cross and its four switches provide complete control over the tone, gain and attack characteristics as well as the overall loudness of the Lead I channel.

5) RHYTHM These six controls and two switches control the tone, gain and attack characteristics as well as the overall loudness of the Rhythm Channel.

6) LEAD II These six controls plus the Cross and its four switches provide complete control over the tone, gain and attack characteristics as well as the overall loudness of the Lead II channel.

7) EFFECTS INDICATOR When lit, this indicates that the Effects Loop is active.



8) BOOST INDICATOR When lit, this indicates that the Boost function is active.

9) BOOST CONTROL This adjusts the amount of footswitchable boost and is particularly useful for solos. It provides up to 10dB of “Master Volume” boost, regardless of which channel is active. The boost is active if the footswitch is unplugged. The Boost occurs after the effects loop, so no adjustment of your effects will be necessary.

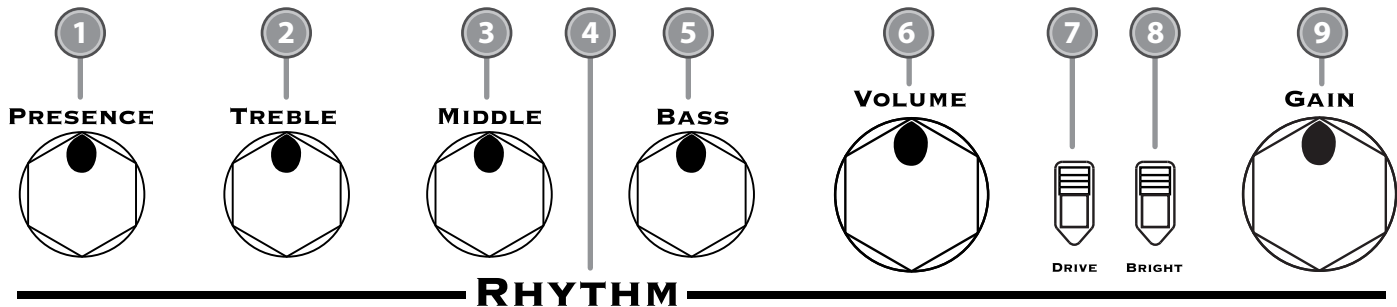
10) MASTER This is a global master volume control which sets the overall loudness of the entire amplifier. The Master is also after the effects loop.

11) JEWELED PILOT LIGHT Indicates that the amplifier’s power switch is in the “On” position.

12) STANDBY This allows the amplifier to be powered up, but with the tubes in a non-operational mode. The Standby can be used instead of the power switch between performance sets, since it allows the amp to “shut down” while keeping the tubes warm and ready to go. It’s also best to power the amp up with this switch set to the left/off position until the tubes have had a few minutes to warm up, although modern tubes are more tolerant of this.

13) POWER Provides AC power to the amplifier when in the “On” position—switched to the right.

Rhythm Channel



The Rhythm channel of the Double Cross is far more flexible than you might expect. It is NOT simply a clean channel. It takes you from sparkling Country tones to classic crunch in the blink of an eye. In particular, experiment with settings of the Gain and Volume controls in tandem with the Drive and Bright switches. Try the sample settings to hear the wide range of the Rhythm channel.

1) PRESENCE This controls the upper treble frequencies and can be used to accentuate “percussive” tones such as your picking attack. Alternately, by lowering this control, it can help soften biting tones when desired.

2) TREBLE This passive EQ adjusts the high frequency equalization of the amplifier, but also interacts with the Bass and Middle controls as follows: As the Treble is increased, the Bass automatically decreases and the Middle slides down in frequency. Conversely, if the Treble is decreased, the Bass automatically increases and the Middle slides up in frequency. This interaction is typical of vintage-style passive EQ, and is responsible for the increased efficiency of such a simple system.

3) MIDDLE This passive EQ adjusts the midrange equalization of the amplifier. It interacts with the Bass and Treble as described in the Treble EQ section. For a heavier, more distorted sound, set the Middle lower. For more of a vintage-style, cleaner sound, set the Middle higher.

4) RHYTHM INDICATOR The word “RHYTHM” lights up when this channel is active.

5) BASS This passive EQ adjusts the low frequency equalization of the amplifier. It interacts with the Middle and Treble as described in the Treble EQ section. For a tighter low end, use the Bass EQ set in its lower range. This is particularly helpful when using the amp at very loud settings.

6) VOLUME The Volume control sets the overall level of the Rhythm channel and can be used to balance the volume between it and the Lead channels. The inclusion of individual Volume controls for each channel means that the Rhythm channel of the Double Cross can be

used for moderately distorted sounds, rather than strictly being a clean channel.

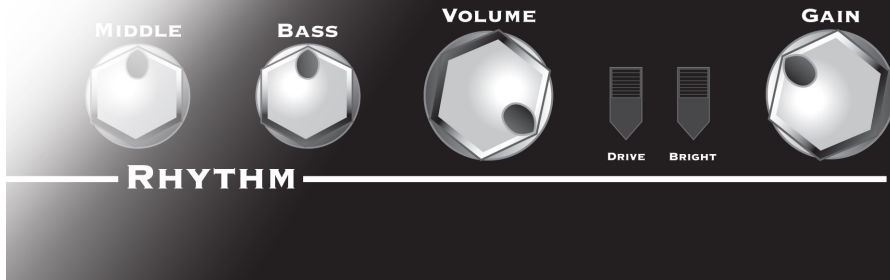
7) DRIVE When more gain is desired, activate this switch by pressing it downward. This will maximize the amount of crunch and overdrive in this channel, but it can also be used for a fatter clean sound when the gain is set lower.

8) BRIGHT Activating this switch will increase the high frequencies of the signal, while also reducing low frequencies for a chunkier, tighter attack.

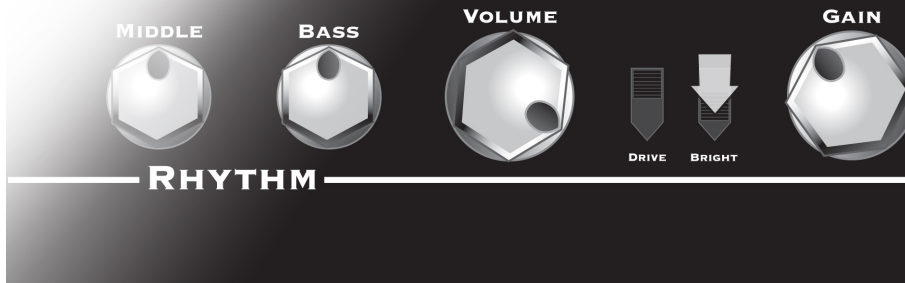
9) GAIN The Gain control adjusts the gain at the input of the amplifier and is used in conjunction with the Volume control to adjust the amount of distortion and volume for this channel. For cleaner sounds, the Gain control should be set in its lower range and the Volume set higher. For some break-up, the Gain and Volume controls should be set in their middle ranges. For more overdrive, set the Gain higher and the Volume lower.

Rhythm Channel Settings

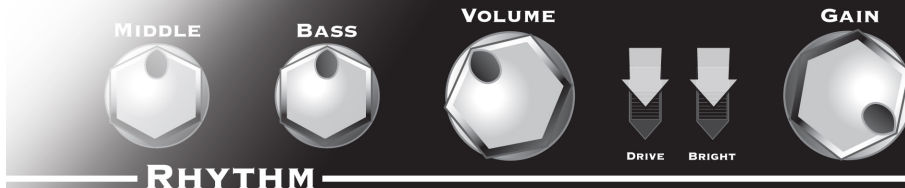
American Clean



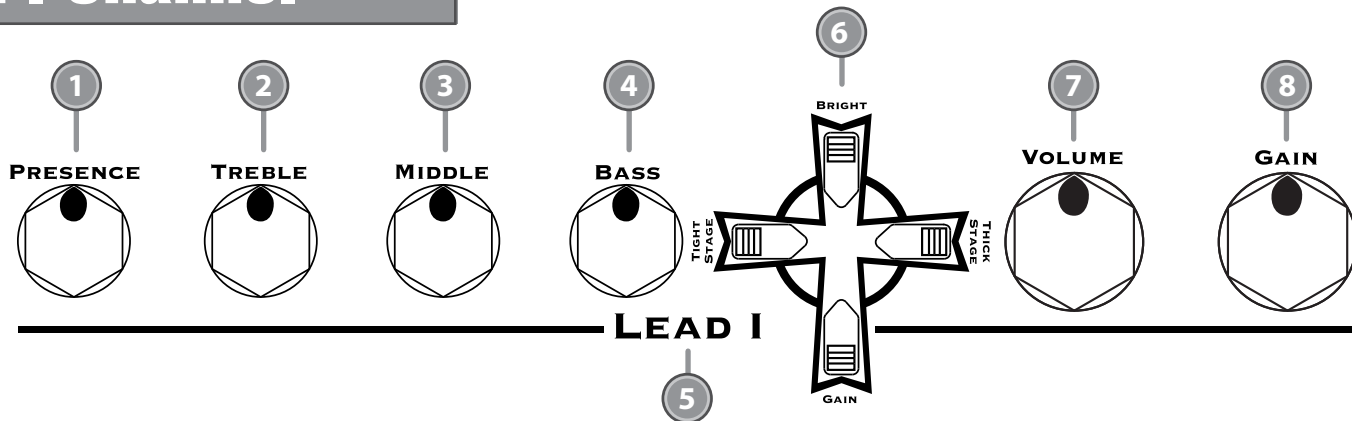
Classic Chime



Black Angus



Lead I Channel



Strap yourself down, because here's where things get intense. The Lead I channel of the Double Cross offers a breathtaking array of crushing modern tones that can be sculpted with stunning precision. The key to unlocking its secrets lies in its Cross, a deceptively simple but ultimately sophisticated tool that blends additional 12AX7 tube stages, letting players actually modify the Gain, EQ and attack parameters of their amplifier. Master the Cross and you will master a firestorm of tonal power. (For more information, see the "Cross" section of this manual.)

1) PRESENCE This controls the upper treble frequencies and can be used to accentuate "percussive" tones such as your picking attack. Alternately, by lowering this control, it can help soften biting tones when desired.

2) TREBLE This passive EQ adjusts the high frequency equalization of the amplifier, but also interacts with the Bass and Middle controls as follows: As the Treble is increased, the Bass automatically decreases

and the Middle slides down in frequency. Conversely, if the Treble is decreased, the Bass automatically increases and the Middle slides up in frequency.

3) MIDDLE This passive EQ adjusts the midrange equalization of the amplifier. It interacts with the Bass and Treble as described in the Treble EQ section. For a heavier, more distorted sound, set the Middle lower. For more of a vintage-style, cleaner sound, set the Middle higher.

4) BASS This passive EQ adjusts the low frequency equalization of the amplifier. It interacts with the Middle and Treble as described in the Treble EQ section. For a tighter low end, use the Bass EQ set in its lower range. This is particularly helpful when using the amp at very loud settings.

5) LEAD I INDICATOR The word LEAD I lights up when the Lead I channel is active.

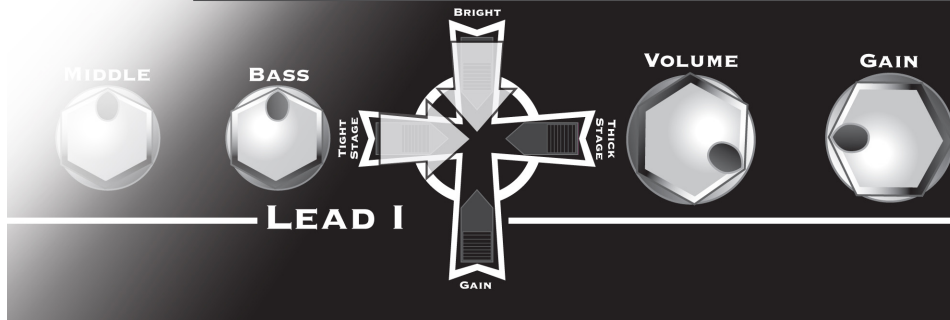
6) THE CROSS The Cross offers these functions: (1) Bright: This enhances high-end response and tightens the low end. (2) Gain: This boosts preamp gain. (3) Tight Stage: Adds an extra 12AX7 stage that provides a chunky, vintage-style gain like a classic amp when fully cranked. (4) Thick Stage: Adds an additional 12AX7 stage that generates rich, aggressive tonal qualities with complex harmonics. Each switch may be activated by sliding it towards the center of the Cross. (For more information, see the “Cross” section of this manual.)

7) VOLUME The Volume control sets the overall level of the Lead I channel and can be used to balance the volume between it and the other channels.

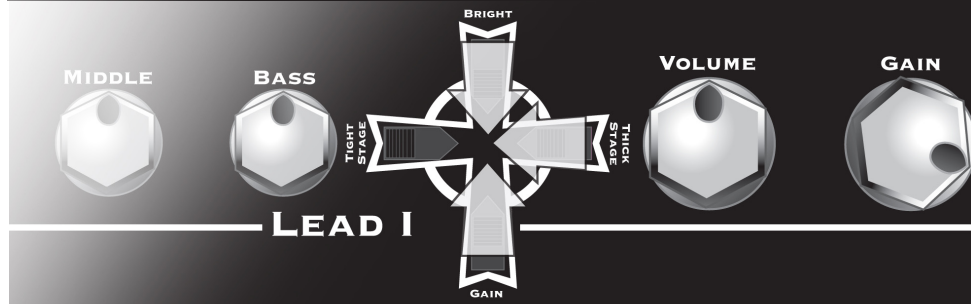
8) GAIN The Gain control adjusts the gain at the input of the amplifier and is used in conjunction with the Volume control to adjust the amount of distortion and volume for this channel. For cleaner sounds, the Gain control should be set in its lower range and the Volume set higher. To increase distortion, set the Gain higher and the Volume lower.

Lead I Channel Settings

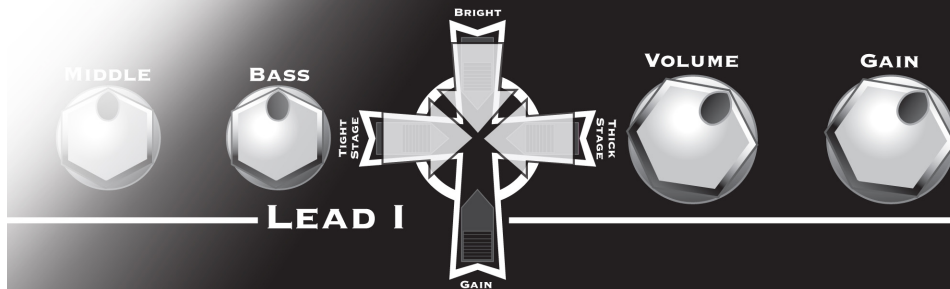
Cranked Vintage



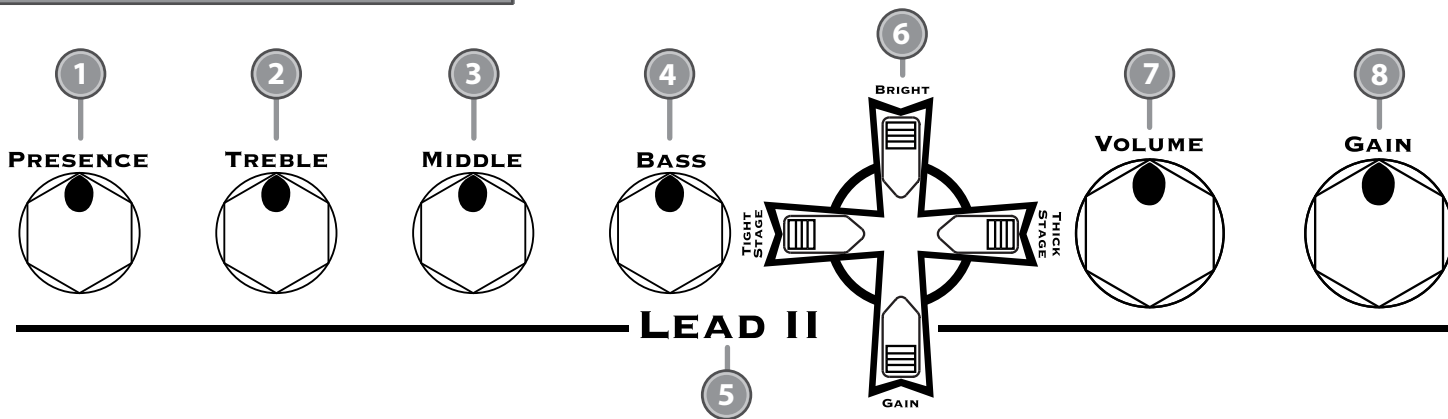
Thick Modern



Heavy Dynamic



Lead II Channel



The Lead II channel is voiced differently from the Lead I channel, providing a classic high-gain “cranked amp” tone and a powerful contrast to the Lead I channel. Although both Lead channels provide a duplicate set of controls, you’ll notice they each have their own personality and tonal characteristics. Experiment with both to nail the sounds in your head.

1) PRESENCE This controls the upper treble frequencies and can be used to accentuate “percussive” tones such as your picking attack. Alternately, by lowering this control, it can help soften biting tones when desired.

2) TREBLE This passive EQ adjusts the high frequency equalization of the amplifier, but also interacts with the Bass and Middle controls as follows: As the Treble is increased, the Bass automatically decreases and the Middle slides down in frequency. Conversely, if the Treble is decreased, the Bass automatically increases and the Middle slides up in frequency.

3) MIDDLE This passive EQ adjusts the midrange equalization of the amplifier. It interacts with the Bass and Treble as described in the Treble EQ section. For a heavier, more distorted sound, set the Middle lower. For more of a vintage-style, cleaner sound, set the Middle higher.

4) BASS This passive EQ adjusts the low frequency equalization of the amplifier. It interacts with the Middle and Treble as described in the Treble EQ section. For a tighter low end, use the Bass EQ set in its lower range. This is particularly helpful when using the amp at very loud settings.

5) LEAD II INDICATOR The word LEAD II lights up when the Lead II channel is active.

6) THE CROSS The Cross offers these functions: (1) Bright: This enhances high-end response and tightens the low end. (2) Gain: This

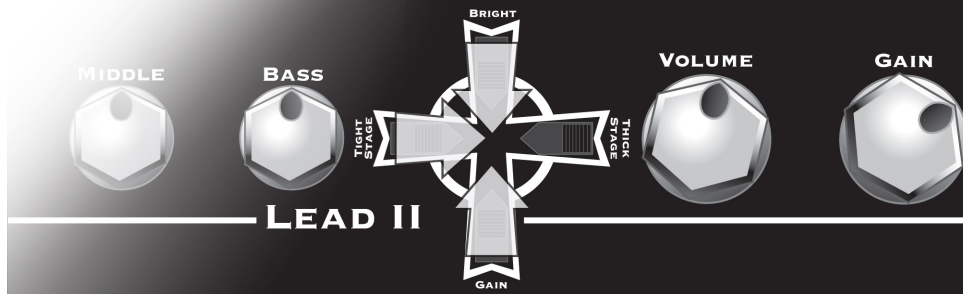
boosts preamp gain. (3) Tight Stage: Adds an extra 12AX7 stage that provides a chunky, vintage-style gain like a classic amp when fully cranked. (4) Thick Stage: Adds an additional 12AX7 stage that generates rich, aggressive tonal qualities with complex harmonics. Each stage may be activated by sliding its switch towards the center of the Cross. (For more information, see the “Cross” section of this manual.)

7) VOLUME The Volume control sets the overall level of the Lead II channel and can be used to balance the volume between it and the other channels.

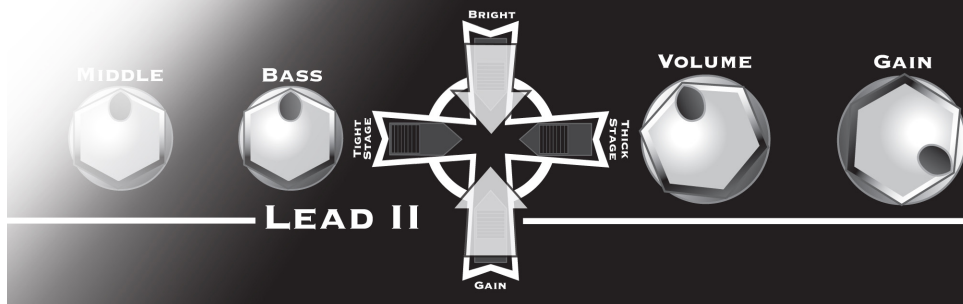
8) GAIN The Gain control adjusts the gain at the input of the amplifier and is used in conjunction with the Volume control to adjust the amount of distortion and volume for this channel. For cleaner sounds, the Gain control should be set in its lower range and the Volume set higher. To increase distortion, set the Gain higher and the Volume lower.

Lead II Channel Settings

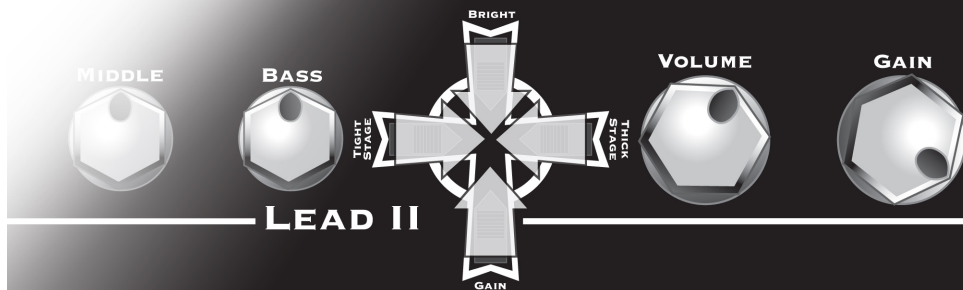
Tight Aggression



Fluid Legato



Unleashed Monster



THE CROSS

USER-MODIFIED PREAMP STAGES

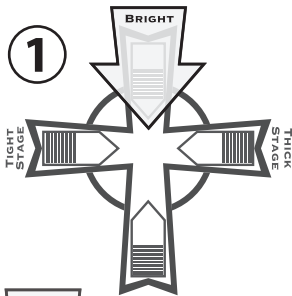
Try the following sequence to gain a basic understanding of the Cross functions. Keep in mind that all switches may be added or omitted in any combination -- there is no "right way" to set them. Experiment to find the sounds that work for your specific application.

Keep in mind that your EQ controls (Bass, Middle, Treble, Presence) will play a powerful role in determining your overall tone, so be sure to adjust them accordingly.

For the tightest response possible, don't forget about the TIGHT input – it maximizes the chunkiness of your guitar tone.

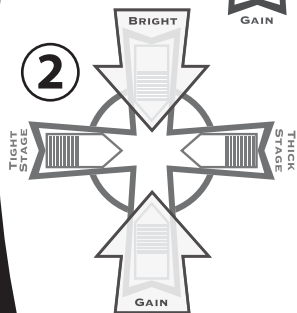
D **+** **U** **B** **L** **E**
C **+** **R** **O** **S** **S**TM

Mastering The



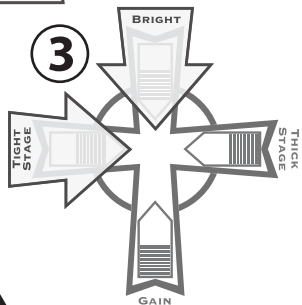
Bright

Press switch down toward center of Cross. Listen to the enhanced Highs and tighter Bass response.



Bright + Gain

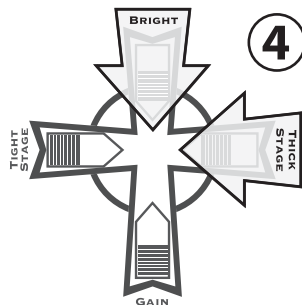
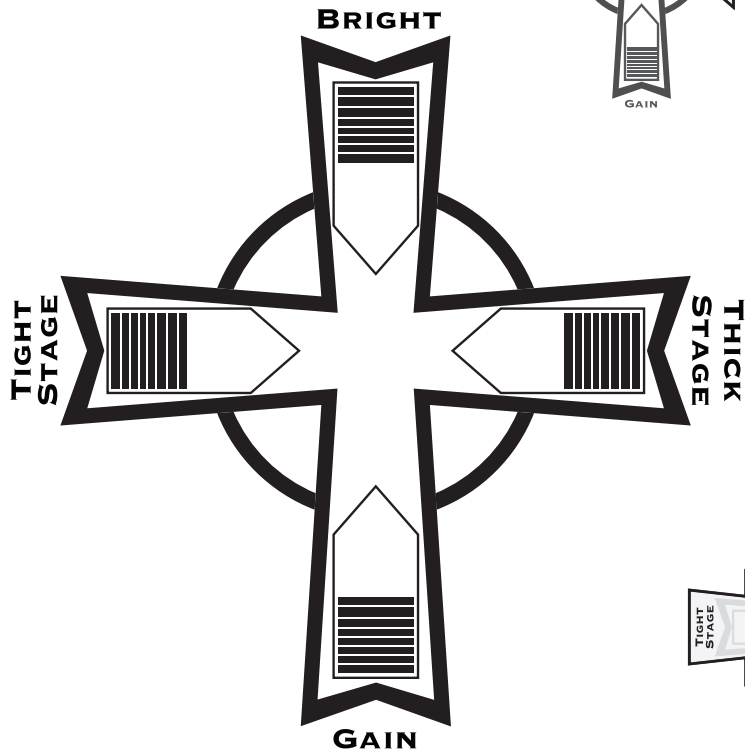
Everything gets heavier with a good dose of Gain. Slide GAIN switch toward the center of the Cross to add distortion and more compression, similar to a traditional gain boost.



Bright + Tight

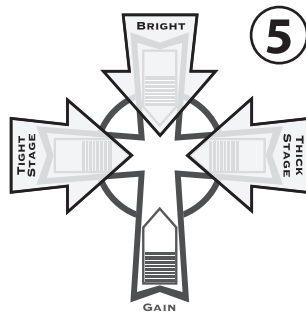
Turn off GAIN and slide TIGHT switch toward center of Cross to activate. This activates an additional tube stage, providing maximum amount of "chunk" and "cut" on the attack without compression, which is especially good for palm muting and fast articulate playing.

Cross



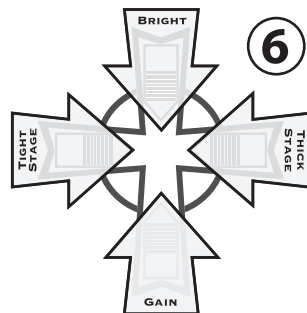
4 Bright + Thick

Turn off TIGHT and slide THICK switch toward center of Cross. This activates an additional tube stage, adding a deep, rich quality to the tone, without sacrificing definition. This is great for power chords.



5 Bright + Thick + Tight

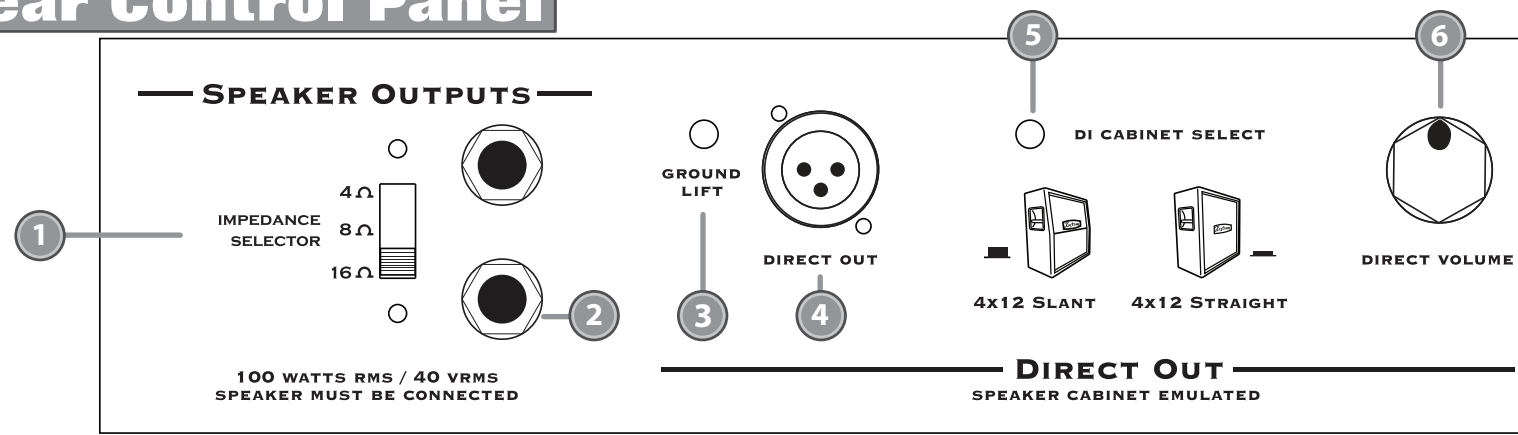
Add TIGHT back into the mix. This setting provides richness for Rhythm playing, but keeps a chunky, punchy tone to cut through the mix. Notice how well the amp responds to the dynamics of your playing.



6 Bright + Gain + Tight + Thick

Add GAIN back into your mix. This setting blends the maximum amount of ... well, everything! Yet another color for your "Tone Palette."

Rear Control Panel



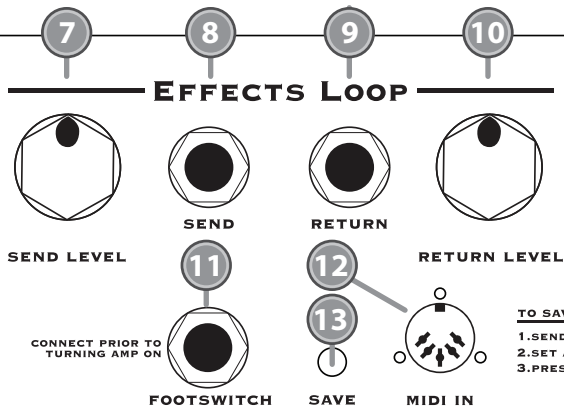
1) IMPEDANCE SELECTOR This switch is used to select the appropriate impedance and is important in achieving the desired results from the Double Cross. The correct impedance should be selected using the Impedance Selector switch as in the following impedance settings chart. Note: Incorrectly “mismatching” the amp head to a speaker cabinet should not damage the amplifier, but would result in lower output power and could result in shorter output tube life. Also, the Double Cross should never be operated without a speaker plugged into a speaker jack, even when using the Direct Out.

Cabinet = Impedance	Use Setting
(1) 16 ohm Cab = 16 ohm	16 ohm
(1) 8 ohm Cab = 8 ohm	8 ohm
(1) 4 ohm Cab = 4 ohm	4 ohm
(2) 16 ohm Cabs = 8 ohm	8 ohm
(2) 8 ohm Cabs = 4 ohm	4 ohm
(3) 16 ohm Cabs=5.3 ohm	4 ohm
(2) 16 ohm Cabs+(1) 8 ohm Cab = 4 ohm	4 ohm
(4) 16 ohm Cabs = 4 ohm	4 ohm
DO NOT USE LESS THAN 4 OHM TOTAL CABINET LOAD!	

2) SPEAKER OUTPUTS These paralleled 1/4-inch jacks are provided to connect the Double Cross head to external speaker cabinets.

3) GROUND LIFT This switch is used to eliminate a “ground loop” hum when using the Direct Out. A ground loop can exist when the Double Cross and the mixer it is plugged into are connected to grounded outlets that are in physically different locations and/or on different circuits, and should only be used if there is an audible hum. Pressing the ground lift does not disconnect the ground connection from the amp’s chassis.

4) DIRECT OUT The XLR Direct Out is designed to connect the Double Cross to a recording or live mixer. The output is speaker-emulated to generate the tone of a Celestion Vintage 30-loaded Straight-front or Slant-front 4x12 speaker cabinet. Either tonality may be activated using the DI Cabinet Select switch. Make sure that a speaker is connected to the amp even when using the Direct Out.



TO SAVE MIDI PRESETS:

1. SEND MIDI PRESET NUMBER TO AMP
2. SET AMP FOOTSWITCH TO DESIRED SETTING
3. PRESS AND HOLD SAVE BUTTON

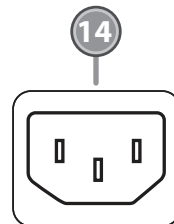


CAUTION CHASSIS SURFACE HOT **ATTENTION** SUPERFICIE DE CHASSIS CHAUDE



CONFORMS TO
UL STD 50005
CERTIFIED TO
US CANCASA STD:
C22.2 NO 50005:06
3984354

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



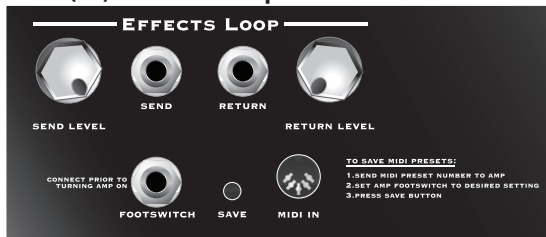
**FUSE: T8A L/250V
120V ~ 60HZ 450W**

5) DI CABINET SELECT When pressed IN, this switch provides a signal to the Direct Out that emulates the tonality of a Celestion Vintage 30-loaded Straight-front 4x12 speaker cabinet. When the switch is OUT, it emulates the same speakers in a Slant-front 412 cabinet. Kustom went to great lengths to make sure that this signal sounded like the actual amp head and speaker cabinet combinations. This was accomplished in a studio environment using condenser microphones to analyze the tonality of the Double Cross when heard at “head level” versus “close mic’d” directly in front of the speaker. The result is a signal that reflects the true characteristics of these cabinets as heard by a player. If you haven’t tried the Double Cross’ Direct Out yet, we urge you to experiment with it for both live and studio applications.

6) DIRECT VOLUME This control sets the level of the speaker-emulated Direct Out, and should be set as high as possible for the best signal-to-noise ratio.

7) SEND LEVEL This control adjusts the amount of signal that will be sent out the Effects Send jack, nominally ranging from -10dBV(0.3VRMS) to about 0dBV(1VRMS). This control should be adjusted as high as possible to minimize the amount of noise caused by the inserted effect, but not so high as to distort the effect used. Since the Effects Loop is a series connected loop, this control will adjust the overall volume any time the Effects Loop is active. The Send jack can also be used to send a signal to a tuner or an auxiliary amplifier when footswitched. For example, to A/B between this amp and a second amp (or tuner), simply insert a shorted 1/4” plug into the Return jack. Then the Send can switch over to another amp while disengaging this amp’s output.

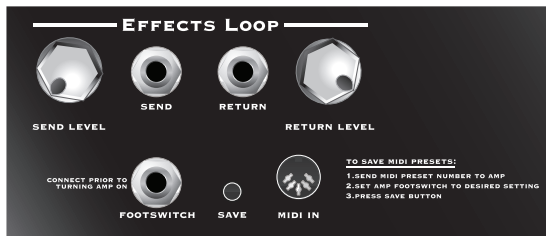
0 dBV (1v) Rack Effects Optimal



8) SEND JACK This 1/4-inch jack delivers a tube-driven preamp signal to external effects devices. It can also be used to send the signal to another amplifier to run multiple amps. Connecting a 1/4-inch plug does NOT break the flow of the amplifier signal.

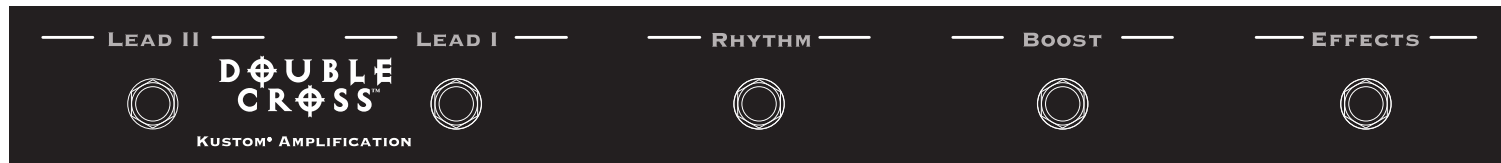
9) RETURN JACK When the effects loop is active, this 1/4-inch jack breaks the flow of amplifier signal to allow an external effects device to “return” to the amp. The Return jack can also be used for a power amp input when using an external preamp. This all-tube effects loop is known as a “series” loop, since it breaks the path of the amplifier and “inserts” the effect in series.

-10 dBV (0.3v) Pedal Effects Optimal



10) RETURN LEVEL This control adjusts the gain after the Effects Return jack, to adjust for an Effects Loop level nominally ranging from 0dBV(1VRMS) to -10dBV(0.3VRMS). This control should be set to the lowest level that provides unity gain when using your effects, when compared to the level if the Effects Loop is disabled via the footswitch. However, using the Send and Return Levels, you can easily get up to 10dB boost when using effects. This can be very helpful when using effects like delay or tremolo where the level appears to be lower due to the nature of the effect. Because the Effects Loop is a series connected loop, this control will adjust the overall volume any time the Effects Loop is active.

11) FOOTSWITCH Before powering up the amplifier, connect the provided 5-button footswitch here using a 1/4” TRS stereo cable. The Channel Selector knob on the front panel should be set to Footswitch when the Footswitch is being used. If it is not, the footswitch will blink when channel selecting, but the channels won’t change. The footswitch selects between Rhythm, Lead I and Lead II channels; enables the power amp Boost; enables the Effects Loop. To select the appropriate channel, simply press the switch you want to activate. After doing so, the footswitch remembers the last channel, so you can toggle back by hitting this same switch again. This allows the user to jump to and from a channel quickly without having to look down at the footswitch. Any changes on the footswitch will be mirrored on the front panel of the amplifier.



12) MIDI IN This jack is used to receive MIDI data from other MIDI enabled products, such as MIDI Preset Footswitches or Effects Processors. MIDI is a great way to allow different products to communicate together. Many guitarists have found that the ability to hit one switch and have multiple devices instantly respond can help create a more seamless on-stage performance. While using this MIDI In system, you can still use the amp's regular footswitch to channel select, boost or bypass the effects loop.

13) SAVE This switch is used to program the MIDI preset as follows: First, send the desired MIDI preset to the Double Cross. Then, footswitch the Double Cross to whichever channel you want, and set the Boost and Effects appropriately. Lastly, press and hold the Save button until the LEDs on the amp and footswitch begin blinking (in about 2-3 seconds). When they stop blinking, the preset is stored. From now on the amp will "footswitch" to this setting whenever that MIDI preset number is received.

MIDI "Channel": Note that the amp responds to MIDI channel 1 by default. To change the MIDI channel that is globally recognized, simply send a preset change to the Double Cross on whichever MIDI channel you want to use, set the amp's footswitch appropriately, and press and hold the Save button to set the amp's MIDI channel to that number (1 through 16).

14) POWER CORD RECEPTACLE/FUSE HOLDER Insert the AC cord (provided) firmly into the AC connector. Replace the AC power cord if protective jacket is damaged or ground pin is damaged or removed. The fuse is located in a housing just below the receptacle. To remove the fuse, remove AC cord and pull out on the tab above the fuse symbol, located on the fuse carriage. Place the new fuse in the carriage clip and re-insert. Replace only with the same type and size. NOTE: To prevent an electrical hazard, DO NOT replace fuse without using the fuse carriage. Replace the fuse carriage if lost or damaged before re-inserting the AC power cord.

Effects Loop Syncing

This hidden feature allows the user to synchronize the Effects Loop with any or all channels and/or the Boost function, so that it will always be activated when a particular channel or the Boost is selected. (The Effects Loop can always be turned off, even when synced with a channel, simply by pressing the switch.)

1) To enable this feature, you first must enter into Effects Loop Sync Program Mode by turning on the amp while first pressing and holding down the Save button on the back of the amp.

2) When the amp comes on, the Effects Loop LEDs on the amp and footswitch will begin blinking, indicating that you are in Effects Loop Sync Program Mode.

3) Press the channel(s) and/or Boost buttons one at a time that you want effects with.

4) Note that the channels you select will begin blinking along with the Effects Loop LED. When you select a channel that has the effects loop Sync'd to it, the Effects Loop LED will blink.

5) When finished selecting your channel(s) and/or boost status, press and hold the Save button on the amp; after a few seconds it will blink faster indicating that it's storing your choices. Effects syncing can be changed at any later time by going into Effects Loop Sync Program Mode and turning off the channels that you DON'T want effects synced with. If you turn all three channels AND the Boost off, then the Effects Loop will no longer track or be synced.

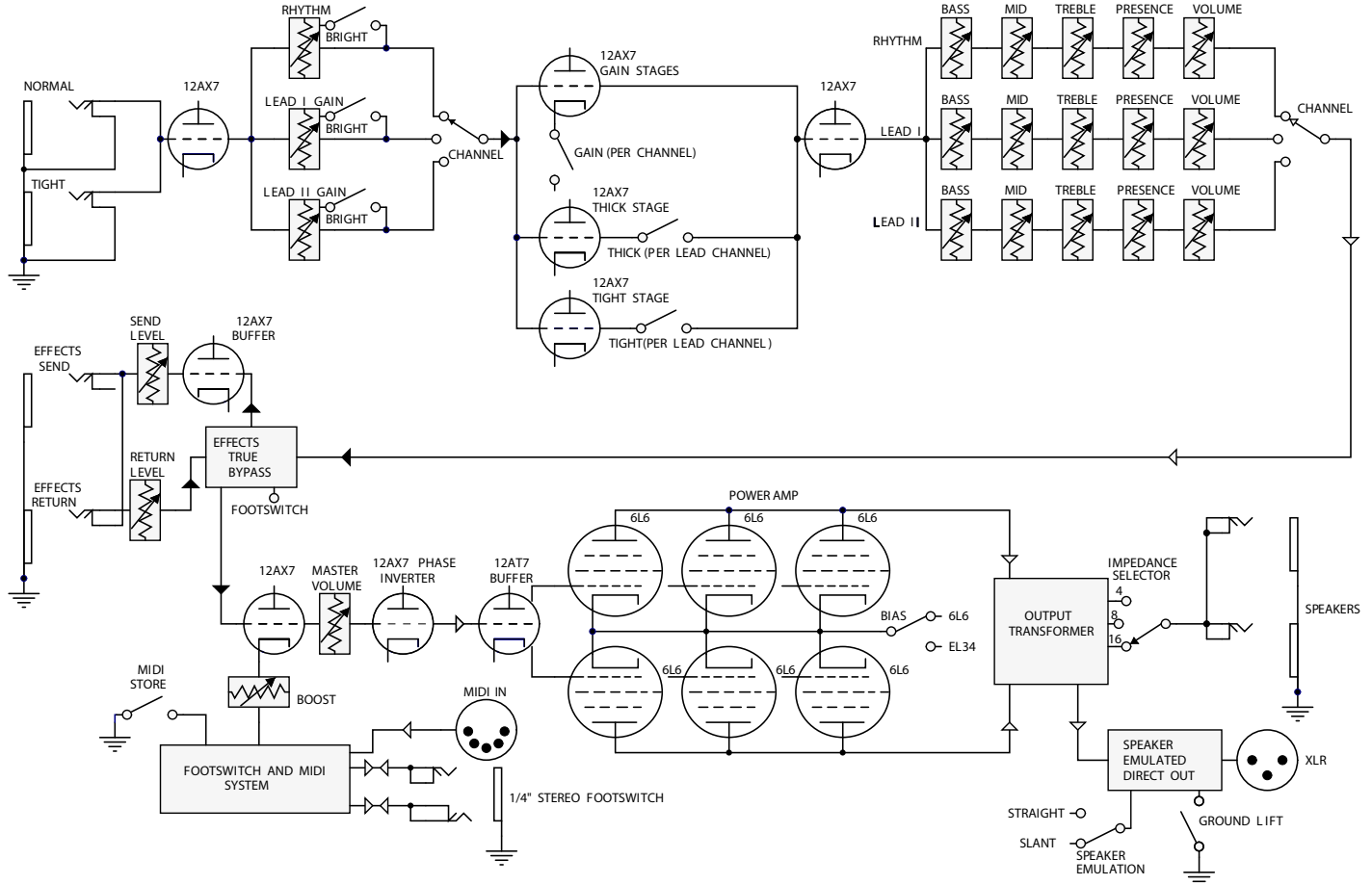
When operating in Effects Sync Mode, "Effects" will blink. Solid illumination indicates manual override. (Manually selected effects will remain on until deselected.)

Note: MIDI programming is separately handled so it isn't affected by programming the Effects Loop Sync. Effects Loop Sync only works with the amp's normal footswitch.

Amp Specifications

Model	Double Cross	All Tube 3 channel guitar amp head
Tubes	Power Amp Tubes	6-6L6GC or EL34 power tubes using AUTOKRUISE TM biasing scheme
	Preamp Tubes	5-12AX7 preamp tubes & 1-12AT7 buffer tube for power amp
Output Power	100 W RMS	16, 8, or 4 Ohms @ 5% THD using 6L6s, 110W w/EL34s
Input Impedance	1M ohms Normal or Tight Inputs	
System Gain All measurements taken with 1 kHz input signal, Tone controls flat, Gain Halfway and Volume Maximum, Boost @ 10, Effects OFF, overall Master @ 10. All Bright, Drive & cross switches off. Measured at speaker jack at 16 ohms unless noted.	50 dB	Rhythm Channel Nominal gain, Normal Input, Gain @ 5
	64 dB	Rhythm Channel Maximum gain, Normal Input, Gain @ 10
	10 dB	Rhythm Channel extra gain when Drive is activated
	+3 dB	Gain increase at 1 kHz when Bright is activated
	90 dB	Lead I or II Channels Maximum gain, Normal Input, Gain @ 10
	75 dB	Lead I or II Channels Nominal gain, Normal Input, Gain @ 5
	8 dB	Broadband gain increase with only Lead Gain switch activated
	5 dB	Gain increase with only either Tight or Thick stage activated
Nominal Signal to Noise	10 dB	Gain increase with all switches engaged
	64 dB	Rhythm Channel, with Volume half and Master Maximum, Boost on 10
Effects Loop	0.15 VRMS (-16 dBV)	Levels w/Boost, Send & Master @ 10 to reach full power output
	0.45 VRMS (-6 dBV)	Levels w/Boost & Master @ 10, but with Send @ 0 to reach full power
	Effects Send	Tube driven, Nominal load >10k ohms
	Effects Return	Tube driven, >100K ohm input impedance
Footswitchable Boost	Master Volume Boost	Adjustable from 0 to +10 dB boost AFTER the Effects Loop
XLR Direct Output		After power amp w/speaker emulation of 412 Straight & Slant cabs
	Output level	Adjustable from 0 to +6 dBV, nominal -3 dBV
Footswitch	Supplied Footswitch selects Rhythm, Lead I or Lead II Channel, Boost, and Effects Loop On/Off	
	Uses a standard stereo shielded cable, and should be plugged in before turning on amp	
Power Requirements	USA/Canada	120VAC/60Hz, 450W nominal
	Europe/UK	230VAC/50Hz, 450W nominal
	Australia	240VAC/50Hz, 450W nominal
	Japan	100VAC/50-60Hz, 450W nominal
Dimensions/Weight	mm/kg	304 mm (Height) x 686 mm(Width) x 276 mm(Depth), 21.3kg
	Inches/Pounds	12" (Height) x 27" (Width) x 10.875" (Depth), 47 lbs

Signal Flow Diagram





**DOUBLE
CROSS™**

**KUSTOM® AMPLIFICATION
HEBRON, KY USA**