

Randall ^{USA}®

A M P L I F I E R S



OPERATIONS MANUAL

FRONT PANEL CONTROLS:

Basic hookups/Channel Selection/Store Functions:

PLUGGING IN: Since you've already purchased this or any high end guitar amplifier, that you probably already know how to correctly plug your guitar in. Regardless of how confident you are around amps of this caliber, please carefully follow these key steps below when you using the amp for the first time. Once the amp is plugged in and powered up, please make sure the amp is on "Standby" mode then using only a high quality *INSTRUMENT* cable connect your guitar to the INPUT jack as shown to the right.

INPUT



POWER/PLAY/STANDBY These two switches determine if the amp is on and functioning. Once the amp is connected from the main AC Inlet located on the back panel to a correct power source or wall outlet, the amp can be switched to the "ON" position. When switching to the ON position it's best to keep the amp in "STANDBY" mode until you are ready to play. The amp will power up slowing, so expect a short delay of a few seconds after switching from "STANDBY" to "PLAY" mode before the amp is ready for action.

POWER



OFF ON



STANDBY PLAY

CHANNEL SELECT Button: Scrolling from channel to channel is as easy as pressing and releasing the "CH. SELECT" button. Once the "Power" is turned on, the amp is set to default on the Clean channel or Ch. 1. on the foot controller. You can arrange the channels in any order you prefer and write in your channel order on the white boxes located on the foot controller.

CH. SELECT



STORE

STORING A PRESET/STORE Functions: Please don't be fooled by the "Store" word under the "CH. Select" button. This "Store" function only applies when using any other multi-button MIDI controller. When using the included RF5V2 foot controller with the V2 it functions as the STORE control by pressing and holding any of the push buttons for 5 Seconds.

RF5V2 foot controller shown

Here's how it works: To properly set up each or any of the channels and then store your setting, you must first select the desired channel using either the front panel "CH SELECT" button or the included MIDI foot controller button. If the lighted button selected on the foot controller does not match the lighted channel that you want on the front panel, simply change to the correct channel using the "CH Select" button so it matches the lit foot controller button with front panel. Next, select the "Graphic" and/or "FX loop" buttons for On or OFF depending what you want for this selected channel, then press & hold the desired or lit foot controller button for 5 Seconds. After 5 Seconds the front panel LED's will *Flash* letting you know that preset has been stored.



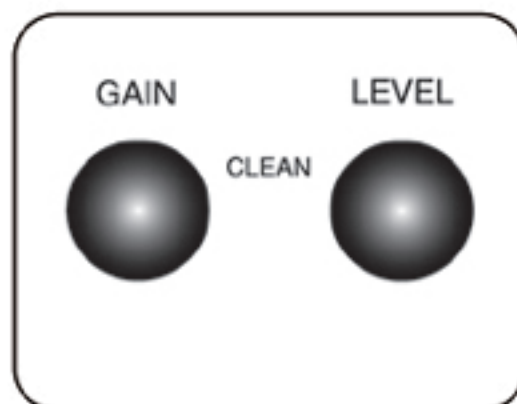
Write in your own personal combination of channels in the white boxes. Ch.1 can be the "Overdrive" or "Tube" channel if preferred.

T2 FRONT PANEL CONTROLS

The T2 is set up with 2 distinct channels, that are equipped with 3 MODES of operation. The simple panel layout gives it the look of a traditional amplifier, but with 3 MODES on tap it has the added flexibility that the older classic type of amp designs lacked. When powered up the amplifier defaults to the "Clean" or "MODE 1", which is indicated by the "green" color LED. However, because this amp is MIDI controlled you can store the channels in any order that you prefer, with instruction located on the Page 2 of this manual. Let's start with the "Clean" channel functions.

TUBE CLEAN FUNCTIONS/Settings:

Because the clean channel also shares the main EQ with MODE 2 and 3 it's important to remember that the EQ setting must work for all of them. The "GAIN" control will not only increase the level of output, but it can also be used to make this channel break up slightly. For cleaner tones, set the "GAIN" knob lower and turn up the "Level" control for the desired volume. A typical setting for a real clean sound would be the "GAIN" set around 2-3 and the "LEVEL" set around 7 or 8. For more grit or a slight overdriven tone simply reverse these settings and run the "GAIN" control on 8-9 and the "LEVEL" control on 2-3.

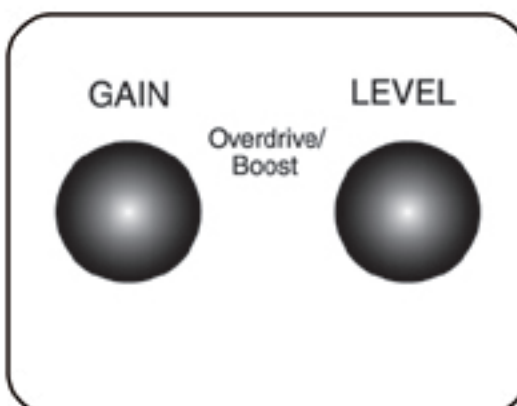


TUBE OVERDRIVE FUNCTIONS/Settings:

A sheer brute of a channel. The T2 overdrive channel with 2 MODES can achieve a huge variety of distorted tone from Classic Brit overdrive to a full out modern hi-gain. This channel is extremely versatile, so it's important to understand how the "GAIN" and "LEVEL" control affect your overall tone.

The "OVERDRIVE" mode, which is indicated by a green LED, is a great mid to higher gain rhythm channel that works perfectly for all classic rock as well. For more of vintage overdrive tone, set the "GAIN" control around 4-5 then adjust the "LEVEL" to the desired volume. If the "OVERDRIVE" mode is being used strictly for high gain rhythm then set the "GAIN" control between 7-9.

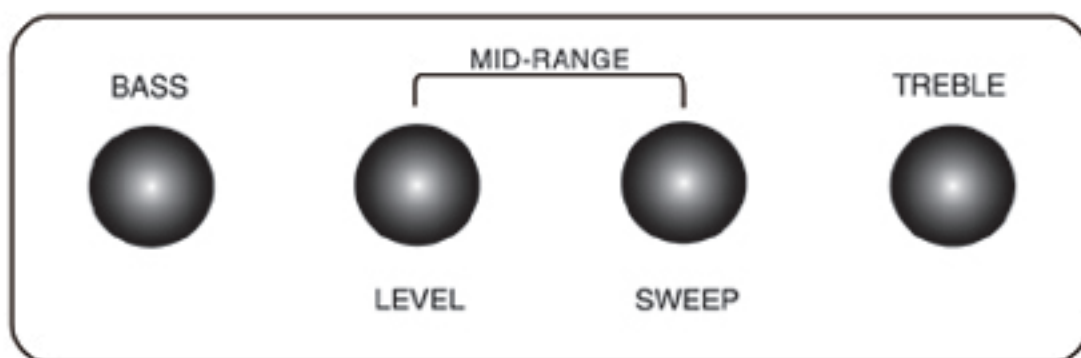
The "BOOST" mode, indicated by the red LED, is an extremely high gain mode with a massive amount of distortion built-in. This channel should be used primarily for extreme metal rhythm & lead riffs or for long sustaining rock lead tones. Because the "BOOST" mode was designed with so much gain, there are recommended settings for different volume levels. If you are practicing at very low levels, it is ok to set the "GAIN" knob higher, but when the "LEVEL" is increased for rehearsal or gigs the "GAIN" control will have to be adjusted to a lower setting or you have an excessive amount of noise in your tone. At higher volumes we recommend a "GAIN" setting of 5 to start.



WARNING: Because the OVERDRIVE & BOOST modes share the same "GAIN" control, it is not recommended to ever set the "GAIN" knob full up.

Remember: This is an extremely high gain amplifier, so the higher you set the overdrive "Gain" control the higher the noise level. If you plan to run the "Gain" very high at loud volumes you may need to insert a standard noise gate or suppressor in the "Effects Loop".

T2 Front Panel Controls/continued



MASTER EQ SECTION:

BASS CONTROL: Adjusts the amount of overall bass or low end frequencies in all modes.

A typical setting for modern rock and metal would be 7-8. A classic or vintage rock setting would be around 5.

MID-RANGE LEVEL CONTROL: This knob adjusts the overall amount of mid-range frequencies in your tone. Keep in mind this is the tonal area of your guitar as well, so pulling out or lowering the mid-range control is actually reducing some of the natural tone of the guitar. It is recommended to start with a setting between 3-5.

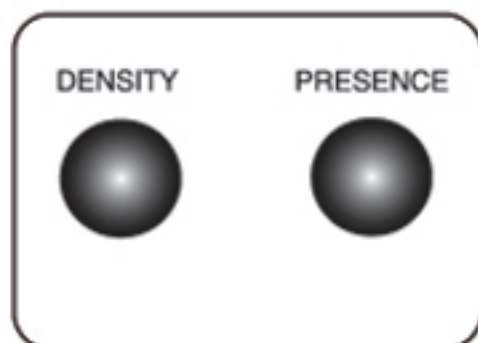
MID-RANGE SWEEP CONTROL: A very cool control which specifically allows you to dial in tones from different generations. Depending on where this knob is set you can quickly achieve a classic overdrive tone or modern overdrive tone. The knob sweeps between mid-range controls that have been used in a majority of the classic to higher gained amps. Setting the control to the left or a lower position will give you more of a modern mid-range voicing which is deeper and darker than an older vintage mid-range controls. To achieve that vintage or classic mid-range voicing you will want to set the knob to the right or higher position which you find is a throaty mid-tone with nice clear definition. Setting it to the right will basically seem to clean up the lower mid-range growl that most modern amps seem to have. Use this control to really help narrow in on the tone you're looking for, or just start with the "SWEEP" knob on 5 and have fun finding subtle little mid-range tweaks.

TREBLE CONTROL: The knob controls the amount of upper mid-range to lower high end frequencies. The passive "MIDDLE" and "TREBLE" controls work very closely together and slightly overlap depending on where the "MIDDLE" knob is set. If the "MIDDLE" knob is set lower, you will notice that the "TREBLE" control seems extremely active, but as the "MIDDLE" control is set higher the "TREBLE" seems to become less active. We recommend that you start with a setting of 7 on the "TREBLE" control.

VALVE-DYNAMIC MASTER EQ SECTION:

DENSITY CONTROL: An monstrous low end control that basically controls the lower frequencies of the Valve-Dynamic power circuit. This is focused low end enhancer, that can quickly do damage to any speaker type, so start and 5 and bring up slow. The knob really intensifies between 1 - 4 o'clock.

PRESENCE CONTROL: An additional high frequency control, this knob increases frequencies that are above the treble control which is commonly referred to as sizzle. This is also controlling the level of highs in the Valve-Dynamic power circuit.



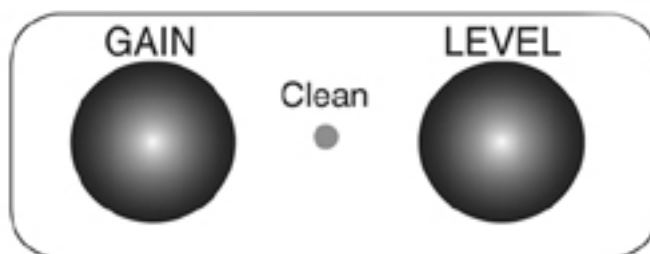
Functions of the V2 Front Panel Controls:

The V2 amplifier is set up with 3 distinct channels making the amplifier very unique to the market. When powered up the amplifier defaults to the lower level "CLEAN" channel which is indicated by the "green" color LED. However, because the amp is MIDI controlled, once the amp is in the "ON" position you can set up and store the channels in any order that you prefer. Let's first discuss the "CLEAN" channel.

V2 CLEAN FUNCTIONS/Settings:

Because the solid-state "CLEAN" channel shares the main EQ with the other solid-state "OVERDRIVE" channel, it's important to remember that your desired EQ setting must work for both of them. The "Gain" control will not only increase the level of output, but it can also be used to make this channel break up slightly.

For cleaner tones, set the "GAIN" knob lower and turn up the "LEVEL" control until you reach the desired volume. A typical setting for a real clean sound would be the "GAIN" set around 2 and the "LEVEL" set around 7 or 8. For a grittier clean tone or one with more break up and distortion, simply reverse the controls and set the "GAIN" at 7-8, and set the "LEVEL" on 2 or 3.

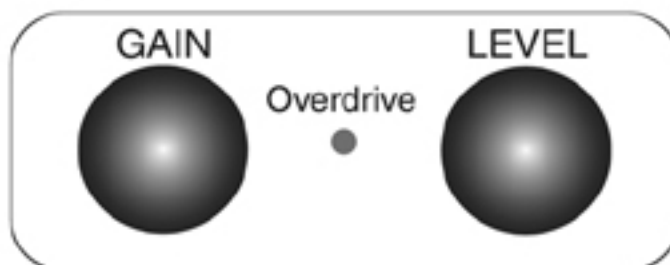


V2 SOLID-STATE OVERDRIVE FUNCTIONS/Settings:

Buckle up first, before switching to this channel. This channel is based on our classic Randall overdrive circuits which were known for. The channel is extremely versatile, which will discuss below in the EQ functions, but it's important to understand how the "GAIN" and "LEVEL" control affect your overall tone.

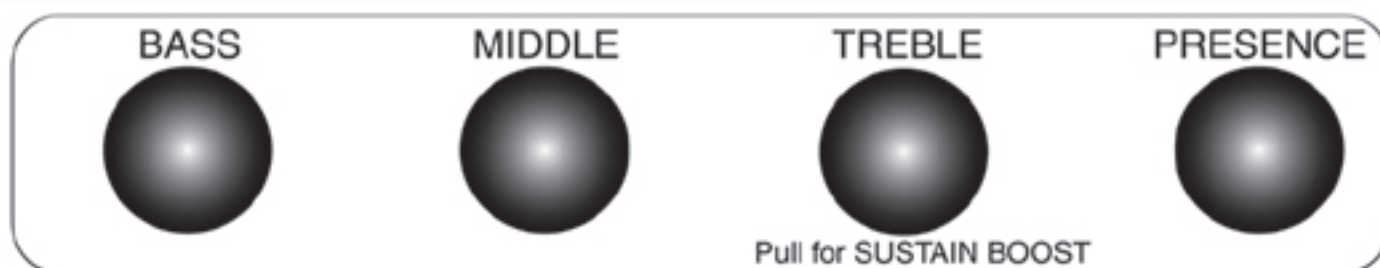
The "GAIN" control can be set in many different positions based on the type of distorted tone you're looking for. If you enjoy more classic rock tones, set the "GAIN" around 5 and turn up from there. For a modern high gain tone with fast attack, a recommended setting of 7-8 will get you started. The "LEVEL" control is just that, it controls the amount of volume in this "OVERDRIVE" channel. Start with a lower setting around 2-3, then increase the level until you find the desired volume. It is recommended that if you need to set the "LEVEL" control higher than 5-6 to get the desired volume, use the far right "MASTER" volume to get the volume you need. The "MASTER" level should always be set higher than the channel "Level" when looking for higher stage or gig volumes.

Remember: This is an extremely high gain amplifier, so the higher you set the overdrive "GAIN" control the higher the noise level. If you plan to run the "GAIN" very high at loud volumes you may need to insert a standard noise gate or suppressor in the "EFFECTS LOOP".



Functions of the V2 Front Panel Controls/continued:

V2 SOLID-STATE CLEAN AND OVERDRIVE EQ:



BASS Control: This adjusts the overall amount of low end or bass frequencies in your tone. It's recommended to start with the "Bass" control set at 5, then raise or lower as needed.

MIDDLE Control: This knob adjusts the overall amount of mid-range frequencies in your tone. Keep in mind this is the tonal area of your guitar as well, so pulling out or lowering the mid-range control is actually reducing some of the natural tone of the guitar. It is recommended to start with a setting of 5 as well.

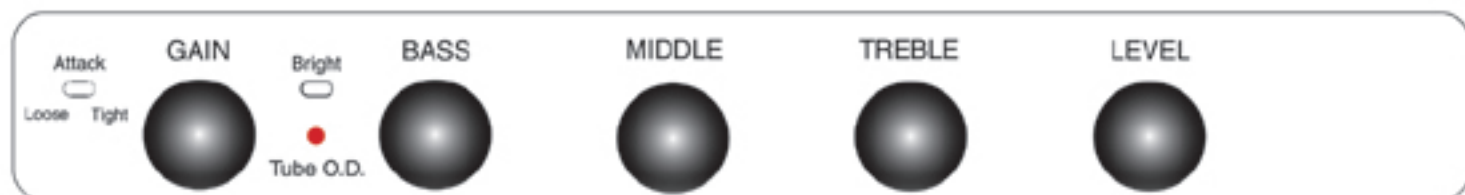
TREBLE Control: The knob controls the amount of upper mid-range to lower high end frequencies. The "Middle" and "Treble" control work very closely together, so depending on where the "Middle" knob is set the "Treble" becomes less or more active. If the "Middle" knob is set lower, you will notice that the "Treble" control seems extremely active, but as the "Middle" control is set higher the "Treble" seems to become less active. Start with a setting of 7 on the "Treble" control.

TREBLE/SUSTAIN BOOST: To activate the "Sustain Boost" mode, simply pull out on the knob. This boost function increases the gain/distortion level for much heavier and tighter distortion. Pull to make this channel scream! NOTE: The pull "Sustain Boost" function only works in the "Overdrive" mode or the "Red" channel.

PRESENCE Control: The knob controls frequencies higher than the "TREBLE" control. The term *sizzle* is quite often used to describe this control. Set high to add more definition to your sound, or if you're looking for a little sharper pick attack. Set this knob around 6 to start.

Functions of the V2 Front Panel Controls/continued

V2 TUBE CHANNEL:



A pure monster of a channel, this all tube preamp combined with the Tube Mosfet powered "Valve-Dynamic™" circuit rivals any amplifier on the market.

ATTACK Switch: A very useful switch as it really serves two purposes. If you are using this channel for aggressive and tight rhythm playing, you should start with the "Tight" setting as it adds clarity and makes your tone more defined. The "Tight" setting also works extremely well for drop tunings or baritone guitars. Consequently, if you're using this channel for sustaining lead's or solo's then start with the "Loose" mode, as it will soften the pick definition for richer tone with lush harmonics and sustain.

GAIN Control: We would be kidding if we said this channel can create some great clean tones, however the taper of the "Gain" control is such where you can either roll the "Gain" back for a milder classic distortion, or open it up for thick hi-gain heaven. We do recommend because this channel is extremely high gain, that you do not set the "Gain" control full up at any time unless you are practicing a very low volume. Also, keep in mind as the "Level" control is turned up you are adding additional "Gain" and distortion to the tone, so a typical "Gain" setting at stage volume would be around 6 and with the "Level" control around 4. Use the overall "Master" volume if you need more overall volume output.

BRIGHT Switch: An additional presence boost which adds more top end sizzle to your tone. Can be used for a more defined pick attack with increased top end definition.

BASS Control: Adjusts the amount of overall bass or low end frequencies in the tube channel only. A typical setting for modern rock and metal would be 7-8. A classic or vintage rock setting would be around 5.

MIDDLE Control: This knob adjusts the overall amount of mid-range frequencies in your tone. Keep in mind this is the tonal area of your guitar as well, so pulling out or lowering the mid-range control is actually reducing some of the natural tone of the guitar. It is recommended to start with a setting around 4.

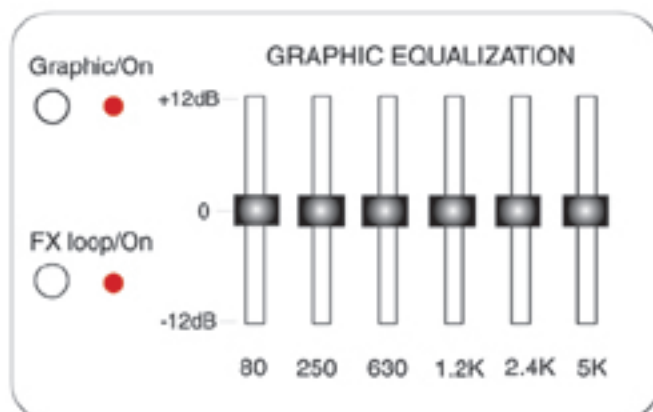
TREBLE Control: The knob controls the amount of upper mid-range to lower high end frequencies in your tone. The passive "Middle" and "Treble" controls work very closely together and slightly overlap depending on where the "Middle" knob is set. If the "Middle" knob is set lower you will notice that the "Treble" control seems extremely active, but as the "Middle" control is set higher the "Treble" becomes less active. Start with a setting of 7 on the "Treble" control.

Functions of the Front Panel Controls/continued

V2 GRAPHIC EQ/LOOP ASSIGN

GRAPHIC Button: The Graphic EQ can be quickly turned on/off and/or assigned to any of the three V2 channels. To manually turn the Graphic on/off, simply push & release the button. Once you have selected the Graphic on/off you can store this setting using the included RF5V2 MIDI foot controller. See the Quick Start functions page found earlier in this manual.

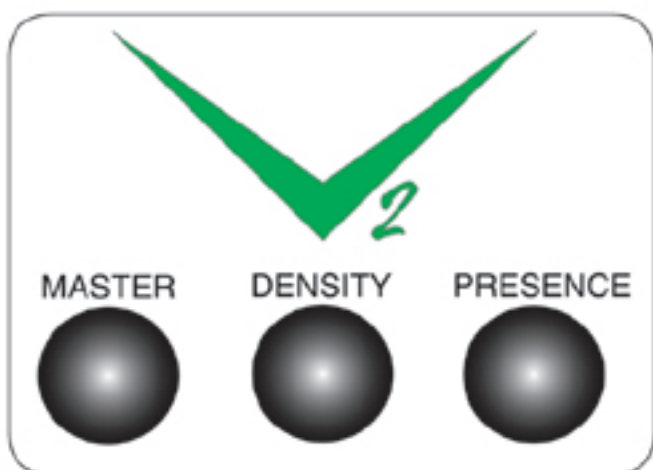
FX LOOP Button: Just like the Graphic EQ, the "Effects loop" can be quickly turned on/off or assigned to any of the three channels. To manually turn the Graphic on/off, simply push & release this button. Once you have selected the Loop as on/off you can store this setting using the included RF5V2 MIDI foot controller. Again, see the Quick Start functions page found earlier in this manual.



GRAPHIC SLIDER Controls: When designing the new V2, we set up the preamps to need only slight to minimal tweaking depending on a specific tone. Start by slightly adjusting each knob until you achieve the tone you're looking for. You'll find the sliders will need only minimal tweaking. We recommend that you *DO NOT* drastically pull out the middle frequencies (630Hz & 1.2K) or your guitar tone will not cut through the mix in a rehearsal or live situation. Now, a mid-scoop setting may sound cool at lower volumes or to achieve a certain industrial type tone, however you will be lost and quickly reaching for the volume knob once the band is playing along with you. A slight cut in the mid-range is fine.

MASTER SECTION

MASTER Level Control: The Master Level control is the main volume control for the amplifier. Once you've set the the Level controls for each channel so the volume is balanced when you switch between them, at that point simply use the Master volume to achieve the desired volume. It's not uncommon for the Master volume to be set much higher than the channel volume. A common setting for Tube channel would be Level control around 4 and Master control around 6. This would be a louder stage volume setting.



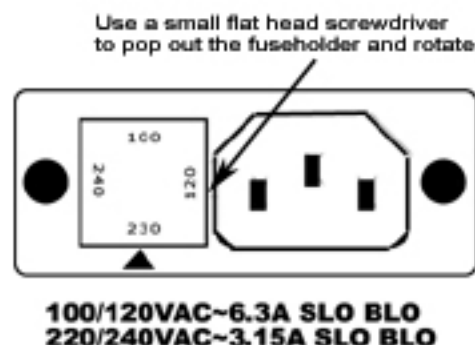
VALVE-DYNAMIC DENSITY Control: This is basically the *Kick* you in the you know where control. This knob specifically controls the amount of focused low end, which you'll find in most high gain tube amps. BEWARE: This knob comes on slow with little effect until you reach a mid level setting. Once you reach 5 the intensity begins to really kick in. You can set this control high at lower volumes for additional low end chunk, but as the amp volume increases we recommend lowering the control as the Low end may become too intense and start to distort your speakers.

VALVE-DYNAMIC PRESENCE Control: This knob controls the amount of extreme high frequency and sizzle in the power section. Set higher for real top end definition and attack or roll back to smooth out the highs.

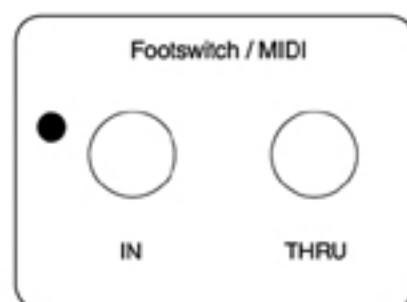
V2/T2 BACK PANEL FEATURES:

WORLD VOLTAGE SELECTOR/AC INLET:

A great feature now found on several late model Randall amps. This AC power inlet gives you the option of four different voltages which allows you to travel basically anywhere in the world and quickly convert your amp to the correct voltage of the country you're in. As illustrated to the right, to change or rotate the fuse, simply pop out the fuse holder using a small flathead screwdriver then rotate and insert the fuseholder back into place with the black arrow pointing at the correct country voltage. Keep in mind the fuse value must be changed if you are traveling from a 100/120V country to a 230/240V country. See the correct fuse value listed directly below the fuse holder as shown above.

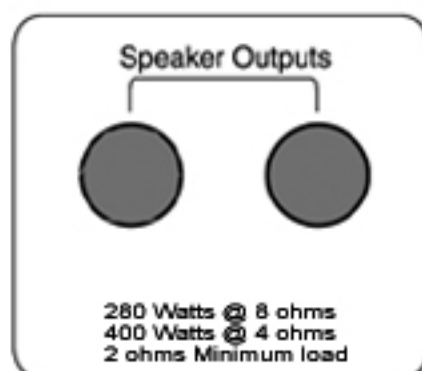


MIDI IN/THRU: The V2/T2 are equipped with full MIDI capability and can be used with any MIDI capable device such as a MIDI effects unit. The MIDI function allows you to store or program different effects or settings to each channel, then store them to be recalled at anytime. The two MIDI jacks found on the back panel serve different purposes. The MIDI in jack is used to connect the included RF5V2 foot controller or any multi-button MIDI pedal. The MIDI thru jack is used to connect to the MIDI capable effects unit or device that you want to interface or hook up with the V2 & T2.



Please note: You must use a 7-PIN MIDI cable like the one provided, as it provides power to the foot controller. If you choose to use a standard 5-PIN cable then you must use an external wall adaptor (not included) to power the foot controller.

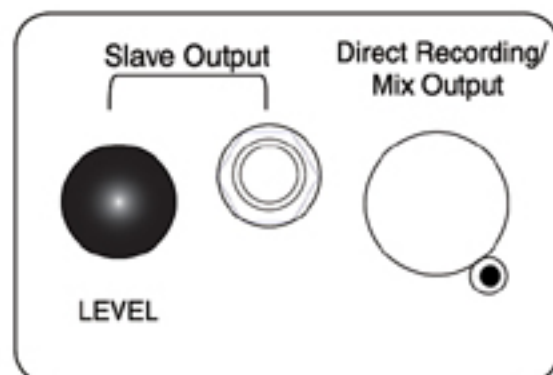
SPEAKER OUTPUTS: These two 1/4" jacks are the main outputs to be connected to any external speaker cabinet. Using a high quality speaker cable, simply connect the cable to either "SpeakerOutput" jack then connect the other end to the 1/4" input on the external speaker cabinet. Due to the higher power output of the V2 & T2, we recommend that you use a heavy duty lower gauge speaker cable.



V2/T2BACK PANEL FEATURES:(Cont)

SLAVE OUTPUT:

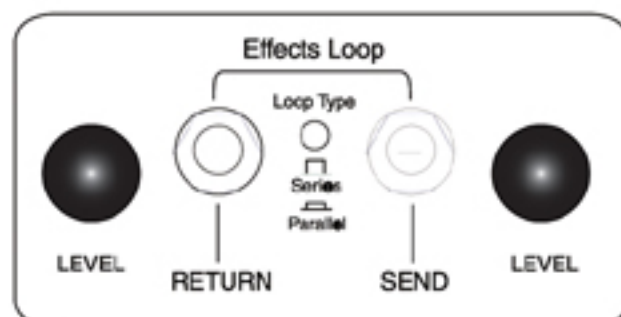
A post preamp signal output used as a send to any additional power amp or rack mount units. This is not a direct recording or mix output and should not be used as such.



DIRECT RECORDING/MIX OUTPUT:

A filtered direct output based on our current Mic Eliminator circuit. Used primarily for direct recording purposes or in live performance applications. This XLR output can and should be connected to any quality mixing console for laying down quiet studio tracks or as a direct signal to the onstage or front of house mixing console. It's sound is based on the tone marriage of the industry standard microphone and guitar speaker. You will not find a better sounding, more realistic, direct output circuit on the market.

EFFECTS LOOP: The connection point when using any external processing or effects with this amplifier. These amps give you a choice of loop type that can be used, both of which have very specific purposes. Please read carefully the description for each loop type below and be sure to use the correct loop for your specific application. For a default and for simple ease of operation, we recommend the you use the Series loop if you intend to use a mix of or combination of different effects from one unit. Both



loops are for line level operation only, not for common guitar level effects and distortion type of pedals. Although some floor or tabletop effects pedals may work, the loops are designed for line level rack mount type effects units. You will know an effects unit or pedal is not made for line level loops, if when you plug the unit into the loop you notice distortion or a loss in volume. If your pedal will operate at line level then you can connect normally.

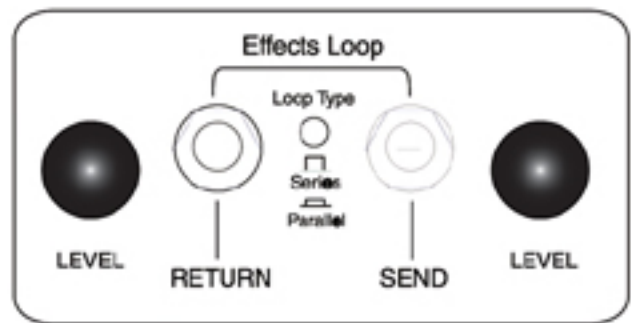
SERIES LOOP: When an external effect is patched into the Send and Return jacks, the path is interrupted and 100% of the signal is routed through the effect. This puts some special demand on the effects unit. It must be essentially transparent, meaning it shouldn't "mess" with your tone. The Input and Output levels must be set properly for maximum headroom and it needs to operate at "Line Level". Proper setting of the levels can be achieved using the following method.

- 1) Set your amp volume levels for normal playing level. Connect a high quality instrument cable from the Send jack to the effects unit Input jack.
- 2) Adjust the effects unit Input level to "just peak" while playing your most aggressive licks.
- 3) Now connect another high quality instrument cable from the amps Return jack to the effect units Output jack.
- 4) Adjust the effects unit output level to match the volume you heard before connecting the return cable. You can check this by pulling this return cable in and out while playing to verify there is no substantial volume difference. Once the volume is basically the same level when the cable is in or out, this is common known as "Unity Gain". Because the Series loop breaks the direct path and processes 100% of the signal, it will essentially work with any line level unit or gadget. Here are some of the units that should and can be used with the Series loop: For all noise gates/suppressors, compressor/limiters, equalizers and tone enhancement type of units, you must use on the Series loop mode. Echo's, delay's, reverb's, tremolo's, or any type of effect will also work well in the Series loop.

ADVANTAGES OF THE SERIES LOOP MODE: Works fine with just about any effect. No special requirements, other than the above "Unity Gain" settings are needed. Basically a Plug in and Play loop.

V2/T2 Parallel Loop Mode:

This is more specialized loop. It has the advantage of maintaining your dry signal, while allowing you to mix in the amount of effect that you want, meaning both the dry guitar tone and the wet effects remain separated so you can hear both more clearly. Its much like the effects buss on a traditional mixing console. Because of the difference in loop type, there are a few basic rules that must be followed when using the Parallel loop. One concern when choosing the Parallel loop is the fact that many multi-effect units have a combination of many different effects. This is important, because when using this Parallel loop type you must be aware of which effects can and can't be used.



ADVANTAGES OF A PARALLEL LOOP:

While the Parallel loop has more limited application and uses, it has the distinct advantage of not messing with your tone. This loop is ideally suited for what are called time based effects, which includes every type of delay, reverb, chorus, and flanging. These types of effects work best in the Parallel loop because your direct dry guitar signal is always present. You cannot use effects that require a 100% processing, such as equalizers, noise gates/reduction, tremolo or compressor/limiters. These should only be used in the Series loop mode.

Randall V2/T2 MIDI Amplifier Receiver

Functional Details

On power-up only the Mute output will be on, the other five outputs will be off. The MCU will then quickly check the EEPROM flag bit to see if it's the first time being powered, if so it will proceed with initializing the EEPROM, if not the MCU will then check to see if the Channel Select/Pgm. Store switch is being pressed/held-down (by an end user to select a different MIDI Channel – see the MIDI Channel Selection section for details). If the Channel Select/Pgm. Store switch is NOT being held-down all five LED's will turn on and remain on for 2 seconds (to allow the end user to verify they are functioning properly). After the 2 second LED test/delay, all the LED's will turn off with the exception of the Channel 1 LED and the Channel 1 output will turn on. Then 2 seconds later the Mute output will turn off – the amplifier is ready to go...

Pressing & releasing the FX Loop switch will toggle the FX Loop output and LED on and off.

Pressing & releasing the Graphic EQ switch will toggle the Graphic EQ output and LED on and off.

Pressing & releasing the Channel Select/Pgm. Store switch will change the channel from 1 to 2, pressing & releasing again 2 to 3, and again 3 to 1, and once again 1 to 2...

When Channel 1 is on, the Channel 1 output and LED will be on, and the Channel 2 and 3 outputs and LED's will be off.

When Channel 2 is on, the Channel 2 output and LED will be on, and the Channel 1 and 3 outputs and LED's will be off.

When Channel 3 is on, the Channel 3 output and LED will be on, and the Channel 1 and 2 outputs and LED's will be off.

When the Channel Select/Pgm. Store switch is pressed & released to select a different channel or a MIDI message is received causing the channel to be changed, the Mute output will immediately turn on. After the Mute output has been on for 5 milli-seconds, the appropriate channel outputs and LED's will turn off and on. Then after 10 milli-seconds, the Mute output will turn off. The Mute output will ONLY turn on for 15 milli-seconds when a channel is actually being changed, for example - if Channel 1 is on and a MIDI message is received that is supposed to cause Channel 1 to turn on, the Mute output will NOT turn on since Channel 1 is already on...

If the Mute output is already on as a result of receiving MIDI Control Change #61 (w/Control Value of 127) via the MIDI input jack, changing channels will NOT cause the Mute output to turn off after the 15 milli-seconds... Only the reception of MIDI Control Change #61 (w/Control Value of 0) via the MIDI input jack will cause the Mute output to turn off.

ADDED 09/01/05 : When the FX Loop switch is pressed to turn it (the FX Loop) on or off, or a MIDI message is received causing the FX Loop on/off status to be changed, the Mute output will immediately turn on. After the Mute output has been on for 5 milli-seconds, the FX Loop output and LED will change states. Then after 10 milli-seconds, the Mute output will turn off. The Mute output will ONLY turn on for 15 milli-seconds when the on/off status of the FX Loop is actually being changed... If the Mute output is already on as a result of receiving MIDI Control Change #61 (w/Control Value of 127) via the MIDI input jack, turning the FX Loop on or off will NOT cause the Mute output to turn off after the 15 milli-seconds...

Pressing & holding the Channel Select/Pgm. Store switch for 1 second will save the current settings (such as which channel is on - 1, 2 or 3 and the on/off status of the FX Loop and Graphic EQ) in one of the 128 preset locations in the EEPROM memory. The preset location used for saving the settings will be determined by the most recent MIDI Program Change message received via the MIDI input jack. After the 1 second has passed and the user settings have been saved, all five LED's should flash (indicating to the end user that the preset has been saved) as follows - on for 400 milli-seconds, off for 400 milli-seconds, on for 400 milli-seconds, off for 400 milli-seconds, then the on/off status of all five LED's should be updated as per the preset. If a valid MIDI Program Change message has not been received via the MIDI input jack either due to the wrong MIDI Channel, a broken MIDI cable, the MIDI pedal not being connected... pressing & holding the Channel Select/Pgm. Store switch for 1 second (or more) will do absolutely nothing.

EEPROM Memory

This MIDI receiver will have non-volatile EEPROM memory (130 bytes will be required - either onboard the MCU or a separate IC) so all user data will be saved when power is removed, without the use of a backup battery.

The MIDI receiver will always perform a very quick check of an EEPROM flag bit, on power-up, to see if it's the first time it is being powered up, such as during production testing... If it is the first time, the MCU will perform a physical test of all the EEPROM's memory locations to ensure they are useable and it will create the following default (user) data.

MIDI Ch. = #1
Preset #1 = Channel 1 – on FX Loop – off Graphic EQ – off
Preset #2 = Channel 2 – on FX Loop – off Graphic EQ – off
Preset #3 = Channel 3 – on FX Loop – off Graphic EQ – off
Preset #4 = Channel 1 – on FX Loop – on Graphic EQ – off
Preset #5 = Channel 2 – on FX Loop – on Graphic EQ – off
Preset #6 = Channel 3 – on FX Loop – on Graphic EQ – off
Preset #7 = Channel 1 – on FX Loop – off Graphic EQ – on
Preset #8 = Channel 2 – on FX Loop – off Graphic EQ – on
Preset #9 = Channel 3 – on FX Loop – off Graphic EQ – on
Preset #10 = Channel 1 – on FX Loop – on Graphic EQ – on
Preset #11 = Channel 2 – on FX Loop – on Graphic EQ – on
Preset #12 = Channel 3 – on FX Loop – on Graphic EQ – on
Preset #13 = Channel 1 – on FX Loop – off Graphic EQ – off
to
Preset #128 = Channel 1 – on FX Loop – off Graphic EQ – off

If the EEPROM is bad, missing, not installed properly... the MIDI receiver will turn the Mute output on, turn off the Channel 1, Channel 2, Channel 3, FX Loop and Graphic EQ outputs and will flash (500msec on and 500msec off...) all five LED's and lock-up, not allowing any MCU inputs or outputs to work until the EEPROM problem is corrected.

MIDI Channel Selection

If on power-up, the MCU detects that the Channel Select/Pgm. Store switch is being pressed/held-down, the Mute output will turn on and the Channel 1, Channel 2, Channel 3, FX Loop and Graphic EQ outputs will remain off. The Channel 1 LED will begin to flash at a rate of 500 milli-seconds on and 500 milli-seconds off, indicating a special mode (the MIDI Channel Selection Mode) has been selected. The Channel 2, Channel 3, FX Loop and Graphic EQ LED's will display the MIDI Channel (as per the chart below) currently saved in the EEPROM. The user can now press/hold the FX Loop switch

to move/scroll through and select the MIDI Channel he/she wishes the amplifier to receive MIDI messages on (every change in the on/off status of the LED's will be automatically saved in EEPROM) or he/she can press the Graphic EQ switch to exit the MIDI Channel Selection Mode and continue/proceed with regular power-up operations (as per the Functional Details section above).

MIDI CHAN.	Ch. 2 LED	Ch. 3 LED	FXL LED	GEQ LED
16	on	on	on	on
15	on	on	on	off
14	on	on	off	on
13	on	on	off	off
12	on	off	on	on
11	on	off	on	off
10	on	off	off	on
9	on	off	off	off
8	off	on	on	on
7	off	on	on	off
6	off	on	off	on
5	off	on	off	off
4	off	off	on	on
3	off	off	on	off
2	off	off	off	on
1	off	off	off	off

MIDI Reception/Implementation

The MIDI receiver will respond to the following MIDI messages on a user selected MIDI Channel (saved in EEPROM) and it will be capable of functioning properly even if Running Status is utilized by the MIDI transmitter.

- (1) Program Changes 1 to 128 select presets 1 to 128, which are saved in EEPROM memory.
- (2) Control Change #56 (w/Control Value 127 = on) allows for "Instant Access" selection of Channel 1.
Control Change #57 (w/Control Value 127 = on) allows for "Instant Access" selection of Channel 2.
Control Change #58 (w/Control Value 127 = on) allows for "Instant Access" selection of Channel 3.
Control Change #59 (w/Control Value 0 = off & 127 = on) allows for "Instant Access" of the FX Loop.
Control Change #60 (w/Control Value 0 = off & 127 = on) allows for "Instant Access" of the Graphic EQ.
Control Change #61 (w/Control Value 0 = off & 127 = on) allows for "Instant Access" of the Mute Output.

Randall V2 MIDI Pedal

Functional Details

On power-up all five LED's will turn on and remain on for 2 seconds (to allow the end user to verify they are functioning properly). After the 2 second LED test/delay, all the LED's will turn off with the exception of the Channel 1 LED, and the MIDI data associated with the Channel 1 switch will be transmitted via the MIDI output jack.

Pressing the FX Loop switch when the FX Loop LED is off will cause MIDI Control Change #59 with a Control Value of #127 on MIDI Channel 1 to 16 (OMNI mode) to be transmitted via the MIDI output jack and the FX Loop LED will turn on.

Pressing the FX Loop switch when the FX Loop LED is on will cause MIDI Control Change #59 with a Control Value of #000 on MIDI Channel 1 to 16 (OMNI mode) to be transmitted via the MIDI output jack and the FX Loop LED will turn off.

Pressing the Graphic EQ switch when the Graphic EQ LED is off will cause MIDI Control Change #60 with a Control Value of #127 on MIDI Channel 1 to 16 (OMNI mode) to be transmitted via the MIDI output jack and the Graphic EQ LED will turn on.

Pressing the Graphic EQ switch when the Graphic EQ LED is on will cause MIDI Control Change #60 with a Control Value of #000 on MIDI Channel 1 to 16 (OMNI mode) to be transmitted via the MIDI output jack and the Graphic EQ LED will turn off.

UPDATED 09/01/05 : The three channel switches will now function as channel/preset switches. They will still select the appropriate amp channel; 1, 2 or 3, but they will also transmit MIDI data relating to the FX Loop and Graphic EQ on/off status, which will be stored in EEPROM. As such, pressing the three channel switches will also affect the on/off status of the LED's for the FX Loop and Graphic EQ...

The default for a new pedal fresh off the assembly line will have the FX Loop and Graphic EQ stored in the off setting for each of the three channel/preset switches...

Pressing the Channel 1 switch will cause the following to be transmitted via the MIDI output jack;

- MIDI Control Change #56 with a Control Value of #127 on MIDI Channel 1 (selects channel 1 on receiver)
- MIDI Control Change #59 with a Control Value of #000 on MIDI Channel 1 (turns FX Loop off on receiver)
- MIDI Control Change #60 with a Control Value of #000 on MIDI Channel 1 (turns Graphic EQ off on receiver)

The above three messages will be re-transmitted on MIDI Channel 2, then 3... all the way up to 16 (OMNI Mode)

The Channel 1 LED will turn on and the Channel 2, Channel 3, FX Loop and Graphic EQ LED's will turn off.

Pressing the Channel 2 switch will cause the following to be transmitted via the MIDI output jack;

- MIDI Control Change #57 with a Control Value of #127 on MIDI Channel 1 (selects channel 2 on receiver)
- MIDI Control Change #59 with a Control Value of #000 on MIDI Channel 1 (turns FX Loop off on receiver)
- MIDI Control Change #60 with a Control Value of #000 on MIDI Channel 1 (turns Graphic EQ off on receiver)

The above three messages will be re-transmitted on MIDI Channel 2, then 3... all the way up to 16 (OMNI Mode)

The Channel 2 LED will turn on and the Channel 1, Channel 3, FX Loop and Graphic EQ LED's will turn off.

Pressing the Channel 3 switch will cause the following to be transmitted via the MIDI output jack;

MIDI Control Change #58 with a Control Value of #127 on MIDI Channel 1 (selects channel 3 on receiver)
MIDI Control Change #59 with a Control Value of #000 on MIDI Channel 1 (turns FX Loop off on receiver)
MIDI Control Change #60 with a Control Value of #000 on MIDI Channel 1 (turns Graphic EQ off on receiver)

The above three messages will be re-transmitted on MIDI Channel 2, then 3... all the way up to 16 (OMNI Mode)

The Channel 3 LED will turn on and the Channel 1, Channel 2, FX Loop and Graphic EQ LED's will turn off.

MCU task's and pedal functionality when a channel switch is pressed, released and/or held down for five seconds...

1. A channel (1, 2 or 3) selection switch is pressed.
2. The MCU checks to see if the switch was already active (its LED on).
3. If NOT, the MCU will transmit the preset MIDI data stored in the EEPROM for the switch, turn the appropriate LED's on/off, and return to checking for a new switch press.
4. If the channel switch pressed in Step #1 was already active, the MCU will check to see if the on/off state of the Graphic EQ and/or FX Loop switches have changed from the preset settings stored in the EEPROM.
5. If the on/off status of Graphic EQ and/or FX Loop switches has NOT changed, the MCU will return to checking for a new switch press.
6. If the on/off status of Graphic EQ and/or FX Loop switches has changed, the MCU will start a 5 second counter.
7. If the channel switch pressed in Step #1 is released prior to the counter reaching 5 seconds, the MCU will return to checking for a new switch press.
8. If the channel switch pressed in Step #1 is NOT released when the counter reaches 5 seconds, the MCU will update the preset stored in the EEPROM with the new/changed FX Loop and Graphic EQ on/off settings.
9. Upon saving the new settings in the EEPROM, the MCU will flash (indicating to the end user that the preset has been saved) the FX Loop and Graphic EQ LED's as follows – both off for 400 milli-seconds, both on for 200 milli-seconds, both off for 400 milli-seconds. Then the on/off status of the FX Loop and Graphic EQ LED's should be updated as per the preset.