

GETTING MORE OUT OF YOUR OVATION DEACON OR BREADWINNER

The tone of a guitar can be described as having three components: **bass**, **mid-range** and **treble**. The selector switch can be considered a bass control; toward the peghead you are listening to the neck pickup; in the middle position the bridge pickup is connected; and in the far position both pickups are connected out-of-phase, which produces a bright sound lacking bass. The notch switch controls mid-range as described below. The tone control determines the amount of treble. If you think of these three controls as just bass, mid-range and treble controls, it will make it easier to find sounds. The out-of-phase position which is often too bright, becomes more usable if the tone control is turned to "0".

Our ears cannot take a lot of mid-range, and associate excessive mid-range with electrified instruments, and radios and stereos that use small speakers. A very unpleasant experience is realized when the mid-range is taken out and the result is a sound that is generally like that of an acoustic guitar which does not produce as much mid-range as bass and treble.

The notch or mid-range switch when pushed towards the peghead produces a 20 db reduction for notes around 60 cycles. The high "E" string is usually cut in volume when the mid-range is filtered out, as its fundamentals and overtones fall into this notch.

For jazz and folk chords and acoustic-type licks, it is better to have the mid-range out (with the notch switch in or toward the peghead). In this position the "E" string will be reduced in volume and for lead guitar work, especially up the neck, the switch should be thrown away from the peghead, which is flat response.

One of the advantages of having a pre amplifier built into a guitar is that there is high impedance to the circuitry which enables you to get more high frequency response from the pickup.

We find that when the Deacon or Breadwinner tone control is set on "5", they have the sound of other electric guitars whose tone control is set on "10".

The electronics in your guitar draw 150 microamps, and if you remove the connecting cord from the guitar, you will automatically shut the battery off. In a guitar using an alkaline type battery, we would expect you to get the shelf life of the battery, usually one to two years, depending on its freshness. If your battery is becoming too weak to use, there should be a noticeable increase in distortion in the pre amplifier. A fresh alkaline battery should produce 2,000 to 3,000 hours of continuous use. It is recommended that you periodically purchase a fresh battery for replacement purposes.

Frequency Response Curves For Conventional Passive Guitar Electronics

1. Flat response is a term used to describe an electronic circuit which treats all frequencies or notes with equal volume. Connecting a pickup directly to an amplifier should produce flat response. However, the input impedance of most amplifiers causes some of the high-pitched notes to be lost.
2. The tone control in conventional guitars filters away some of the midrange and most of the high frequency overtones. This loss of treble makes the instrument sound warmer. With passive electronics it is only possible to filter signal away, resulting in a certain amount of volume loss.
3. On most guitars when the selector switch is in the middle position, both pickups are connected in-phase. Since the two pickups do not receive exactly the same information from the string, they are both in-phase and out-of-phase at different notes, the final result being a sound compromise between the neck and bridge pickups, with a somewhat out-of-phase quality to the higher overtones.

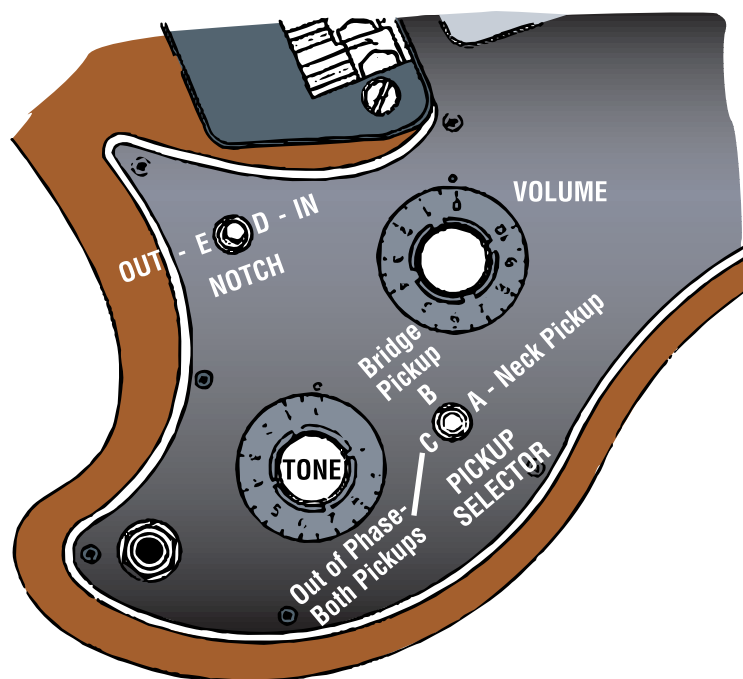
Frequency Response Curves For Deacon And Breadwinner Active Electronics

1. The input impedance of the pre amplifier built into the guitar is much higher than conventional guitar amplifiers, therefore, none of the higher overtones are lost and a brighter sound results.
2. When tone control is set on 5, the Deacon sounds as if the pickups had been connected directly to the guitar amplifier.
3. When all the controls are working, it is impossible to show an accurate frequency response curve. The sound that results is of unique funky quality, with some of each - bass, mid-range and treble.
4. When the tone control is set on 0, the treble sounds are diminished, while the bass notes are increased. The result when playing a chord is no overall change in volume, but a change in tone. It is accomplished by turning the volume of the pre amplifier up while filtering away the higher overtones. This also lets us use a more dramatic tone control than would be acceptable in a conventional guitar. On the Deacon each position of the tone control was calibrated so that the tone change was met with the correct volume change.
5. The notch switch changes the response of the amplifier so that the mid-range frequencies are filtered out and the bass and treble that are left are boosted in volume so that there is no overall volume loss. This setting produces a sound similar to an acoustic guitar.
6. In a conventional guitar an out-of-phase wiring produces a serious lack in volume because the lower overtones have all been filtered away. In the Deacon, an 8 dB increase is automatically connected, producing a mid-range and treble sound equal in volume to the other sounds in the guitar.
7. Letting the notch filter out the mid-range and the tone control filter out the high frequencies, you are left with a deep bass sound.
8. When the guitar is switched to the out-of-phase position, the lower overtones of any note are cancelled and the higher overtones are left. By combining the out-of-phase with the tone control, both the lows and highs are filtered away, leaving only the mid-range.
9. When the notch is added to the out-of-phase, both the lows and midrange are cancelled, leaving a piercing treble.

A guitar's tone is made up of lows, mid-range and highs. With the active circuitry of the Ovation Solid Bodies, these can be completely controlled, enabling all the tonal variations possible. Although additional circuitry can be added, it would be another way of varying the same portions of the sound range. The above tonal variations, combined with complete volume compensation, gives the Deacon the simplest controls with the greatest variations in sound possible.

Typical Sounds When Playing A Deacon Or Breadwinner Through A 50 Watt Marshall Amp

	TONE	SELECTOR SWITCH — PICKUP	NOTCH
Allman Brothers, Les Paul Bridge Pickup	3	B — BRIDGE	E - OUT
Les Paul Neck Pickup	3	A — NECK	E - OUT
Doobie Brothers Sound	0	B — BRIDGE	D - IN
Gibson SG	5	A — NECK	E - OUT
Fender Telecaster	5	B — BRIDGE	D - IN
Loggins & Messina, Fender Stratocaster	4	A — NECK	D - IN
Sly & The Family Stone Soul Sound	4	C — OUT-OF-PHASE	E - OUT
Ovation Only Sound	0	C — OUT-OF-PHASE	D - IN
Maximum Bass	0	A — NECK	D - IN
Maximum Treble	10	C — OUT-OF-PHASE	D - IN



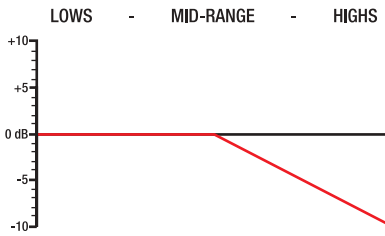
FREQUENCY RESPONSE CURVES

Conventional Passive Guitar Electronics

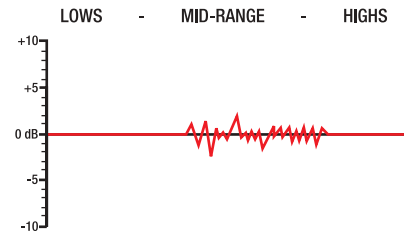
1. FLAT RESPONSE



2. BASS + MID-RANGE

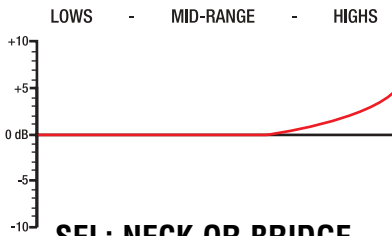


3. BOTH PICKUPS IN PHASE



Deacon & Breadwinner Active Electronics

1. FULL RESPONSE



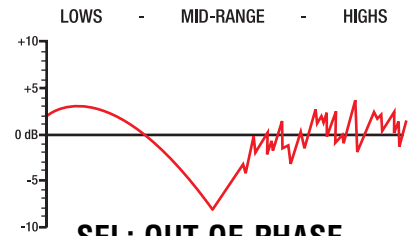
**SEL: NECK OR BRIDGE
TONE: 10 / NOTCH: OUT**

2. TYPICAL GUITAR



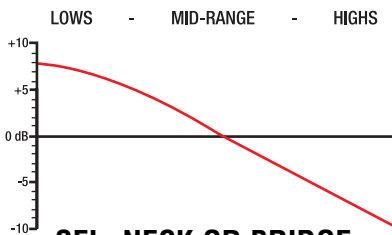
**SEL: NECK OR BRIDGE
TONE: 5 / NOTCH: OUT**

3. FUNKY



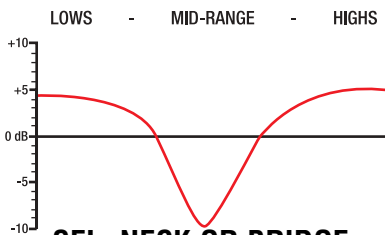
**SEL: OUT-OF-PHASE
TONE: 0 / NOTCH: IN**

4. BASS + MID-RANGE



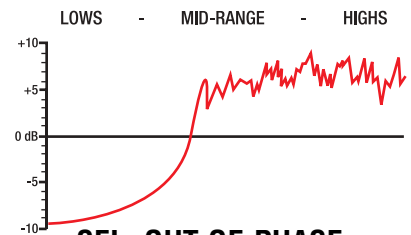
**SEL: NECK OR BRIDGE
TONE: 0 / NOTCH: OUT**

5. BASS + TREBLE



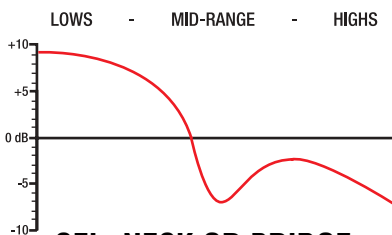
**SEL: NECK OR BRIDGE
TONE: 10 / NOTCH: IN**

6. MID-RANGE + TREBLE



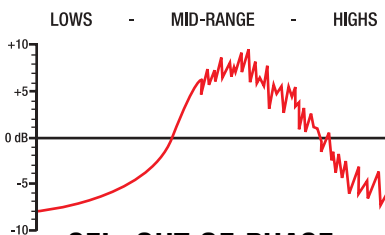
**SEL: OUT-OF-PHASE
TONE: 10 / NOTCH: OUT**

7. BASS



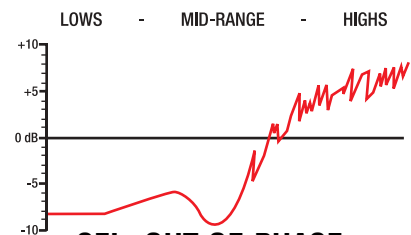
**SEL: NECK OR BRIDGE
TONE: 0 / NOTCH: IN**

8. MID-RANGE



**SEL: OUT-OF-PHASE
TONE: 0 / NOTCH: OUT**

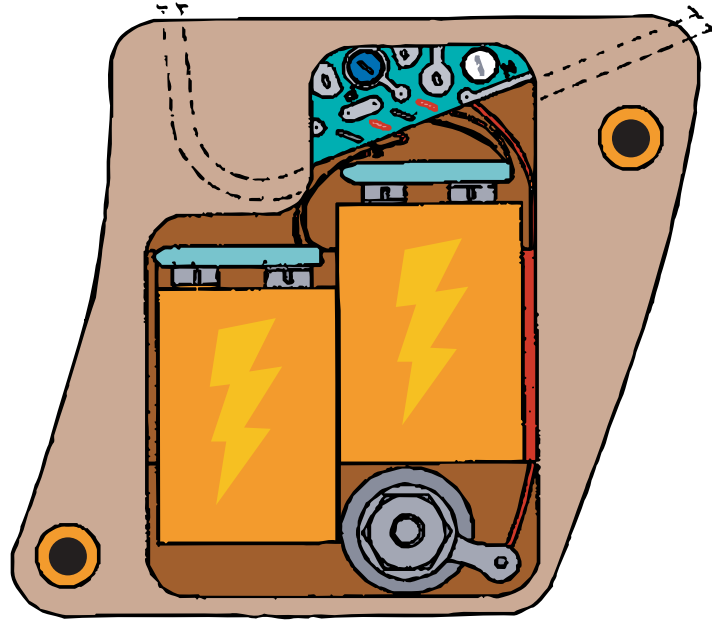
9. TREBLE



**SEL: OUT-OF-PHASE
TONE: 10 / NOTCH: IN**

NOTE: The tone control gives almost infinite variation of the above sounds.

Trim Controls



Two volume trim controls are supplied to maintain maximum performance. Both controls have been pre-set at the factory for correct balance in volume between the neck pickup and the bridge pickup.

The trim controls, located in the circuit board in the battery chamber, may be adjusted to personal preference when switching from playing rhythm to playing lead.

The **white control** adjusts the volume of the neck pickup, which is normally louder because the string moves more over that pickup. If the neck pickup is used for rhythm only, it would be desirable to adjust the volumes equal when playing lead notes on the bridge pickup and full chords on the neck pickup.

The **blue trim control** adjusts for maximum out-of-phase effect when the selector switch is in position "C". By turning the blue control with a small screwdriver, you will achieve minimum volume when the strings are strummed. It is important that you find the minimum volume or else you will not achieve maximum out-of-phase effect.

The trim controls enable you to use the selector switch with maximum performance and effect.