

# Celestial<sup>★</sup> ★★★★★ Effects<sup>®</sup>

## Gemini vtr



### OWNER'S MANUAL

The Celestial Effects™ Gemini VTR (Vibrato, Tremolo and Reverb). The Gemini VTR is a true bypass pedal. It features three independent guitar effects housed in one space saving enclosure. Built like a tank and using the best components available, this pedal will keep you rocking for many years to come.

The first effect in the signal chain is a true pitch shifting vibrato effect which utilizes an optically coupled LFO (Low Frequency Oscillator) firing two phase shifting engines to produce warm vibrato effects based on but not limited to the vibrato features found on old Magnatone amplifiers. The controls include Depth, Speed and Duty Cycle adjustments as well as a Square Wave/Triangle "V" Wave switch. With the switch set to square wave, the vibrato has a more prominent shift in pitch, the vibrato effect becomes smoother with the switch set to triangle wave. Two internal trimpot adjustments are provided to set the amount of vibrato volume and vibrato tone. The adjustments are accessible by removing the bottom cover.

Next in the signal chain is a volume attenuating tremolo effect which utilizes an optically coupled LFO (Low Frequency Oscillator) as well. The controls include Depth, Speed and Duty Cycle adjustments. Two internal trimpot adjustments are provided to set the amount of tremolo volume and tremolo tone. The adjustments are accessible by removing the bottom cover.

Last in the signal chain is analog signal opamp based path that uses a Belton® Digi-log BTDR-1H reverb tank simulator. The Gemini VTR ships with a Medium tank version but you may replace the Digi-log reverb tank simulator with either a Long or Short tank version. These are readily available on the internet and plug in replaceable by removing the bottom cover, unscrewing the two hold down screws and unplugging the unit. The signal retains all the nuances of your playing and the reverb is lush, deep and plays nice with any other effect including boosts, overdrives, fuzzes and distortions. Three internal trimpot adjustments are provided to set the amount of reverb volume and reverb tone. The adjustments are accessible by removing the bottom cover.

Finish it all off with paralleled dual output jacks and your ready to add these three versatile effects to your rig all in one box!

All Celestial Effects™ pedals are hand built and individually tested in Hudson, MA by a company that cares about quality, durability and value and we back all our products with our stellar 5 YEAR WARRANTY.

[celestialeffects.com](http://celestialeffects.com)    800-343-4492    [sales@celestialeffects.com](mailto:sales@celestialeffects.com)  
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## CONTROLS

### VIBRATO SECTION

- SPEED:** Controls the speed of the pulsing of the Vibrato section LFO.
- DEPTH:** Controls the overall intensity of the Vibrato section LFO.
- DUTY CYCLE:** Controls the LFO pulse width of the Vibrato LFO. In the middle the pulses are 50% ON and 50% OFF or symmetrical. Turning the knob counter clockwise reduces the pulse ON time so there is more OFF than ON for each pulse. Turning the knob clockwise increases the pulse ON time so there is more ON than OFF for each pulse. See below for further details.
- S/V SWITCH:** This switch allows you to run the vibrato LFO section by either a Square Wave “ON/OFF pulse” or a Triangle (V) wave linear ramping pulse.
- GAIN ADJUST:** This on-board trimpot is accessed by removing the bottom panel and controls overall vibrato volume level.
- STONE ADJUST:** This on-board trimpot is accessed by removing the bottom panel and controls overall vibrato tone.

### TREMOLO SECTION

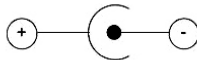
- SPEED:** Controls the speed of the pulsing of the Tremolo section LFO.
- DEPTH:** Controls the overall intensity of the Tremolo section LFO.
- DUTY CYCLE:** Controls the LFO pulse width of the Tremolo LFO. In the middle the pulses are 50% ON and 50% OFF or symmetrical. Turning the knob counter clockwise reduces the pulse ON time so there is more OFF than ON for each pulse. Turning the knob clockwise increases the pulse ON time so there is more ON than OFF for each pulse. See below for further details.
- GAIN ADJUST:** This on-board trimpot is accessed by removing the bottom panel and controls overall tremolo volume level.
- STONE ADJUST:** This on-board trimpot is accessed by removing the bottom panel and controls overall tremolo tone.

### REVERB SECTION

- REVERB:** Controls the intensity or depth of the reverb effect.
- GAIN ADJUST:** This on-board trimpot is accessed by removing the bottom panel and controls overall reverb volume level.

### **SPECIFICATIONS:**

True Bypass Switching  
Input impedance: 1 Meg Ohm  
Output impedance: 10K Ohm  
Current Draw: Approximately 210 mA at full ON



### **POWER REQUIREMENTS:**

Any HIGH QUALITY 9 VDC regulated power adapter with a 2.1mm x 5.5mm barrel plug type connector which utilizes a “Center Negative” pin configuration as per the above diagram. Celestial Effects recommends the Carl Martin Powerjack 9VDC power supply or similar. This power supply is capable of providing 1000 mA of power and is noise free. The more the capacity of the power supply, the less chance of noise and hum due to a power supply being pushed to its current capability limits.

Your Celestial Effects purchase is covered under our  
**5 YEAR WARRANTY.**

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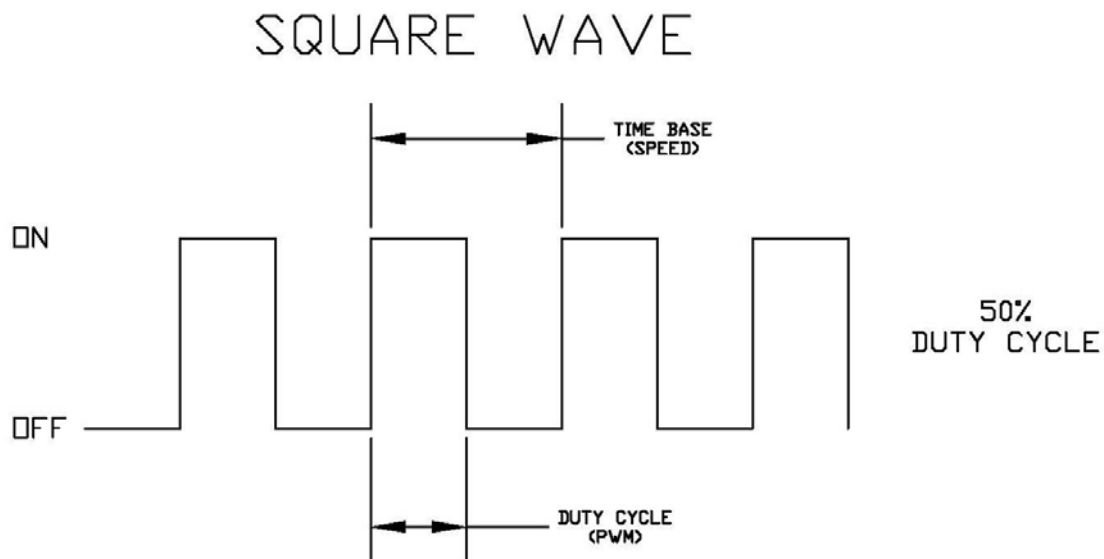
See our website for details.

## A Detailed Explanation Regarding Duty Cycle Control

Prior discussing Duty Cycle (PWM) control, we must first understand the components of a waveform. We will use a square wave in this explanation and after reading this text, you should understand the usefulness of the Duty Cycle control on the Gemini VTR.

At first glance, without delving into the waveform components, it would appear that you are just changing the Speed when adjusting the Duty Cycle controls on the Vibrato and Tremolo sections of the VTR, when in fact you are actually adjusting the ON to OFF ratio of each pulse. This is more noticeable to the naked eye when the Speed control is set to the very slow speeds.

Let us first explain the Speed of each pulse. The Speed control sets the amount of time it takes a pulse to complete one cycle from OFF to ON to OFF, defined in the case of the Gemini VTR in seconds. This is also known as the Time Base. The Duty Cycle controls the ratio of how long the pulse is ON during the Time Base cycle. This is stated as a percentage. The ON percentage PLUS the OFF percentage equals 100%.



Therefore, if you set the Duty Cycle control on the Gemini VTR to 12 o'clock, the Duty Cycle will be set to 50%. This means that during one pulse, the effect will be ON for 50% of the cycle and then OFF for 50% of the cycle. This is the normal operation of a standard Vibrato and Tremolo effect, but the Gemini VTR is not normal.

Moving the Duty Cycle control counter clockwise will reduce the ON time and increase the OFF time of each pulse. The speed is not changing. You are actually creating a shift in ON vs. OFF and creating a new effect.

Let us say now that moving the Tremolo's Duty Cycle control counter clockwise you effectively set the Duty Cycle to 20%. This will be very noticeable as you will hear very short, pulsed signals with longer times of no signal through your amplifier. Turning the Duty Cycle control clockwise, you will hear a longer signal with shorter times of no signal. You essentially are changing the effect from a regular Tremolo to one that can control the way it attenuates the signal in terms of short punctuated ON signal or long signals with very short times of no signal. The above holds true in the Vibrato section, instead of attenuating the signal, it becomes a ratio of original signal vs. pitch shifted signal.

Below are some diagrams of different Duty Cycle set waveforms:

