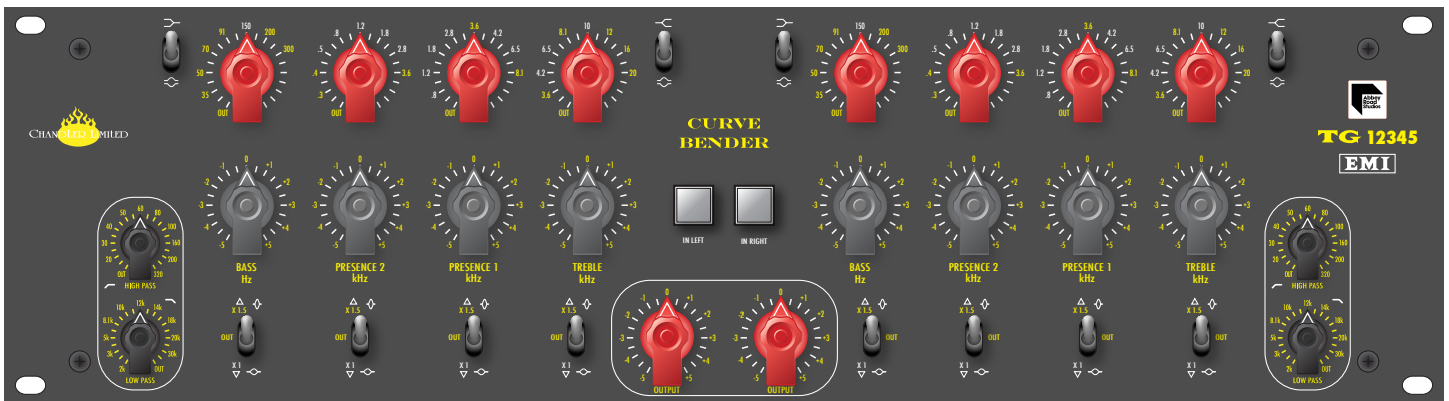


# Chandler Limited<sup>®</sup> TG12345 Curve Bender<sup>®</sup> User Manual



# **TGI2345 CURVE BENDER**

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## **INTRODUCTION**

### **TG12345 Curve Bender**

Thank you for purchasing the Chandler Limited TG12345 Curve Bender EQ, you now own a piece of EMI/Abbey Road Studios official equipment.

Issued in celebration of the 75th anniversary of Abbey Road Studios, and conceived by Chandler Limited's Chief Designer Wade Goeke, the Chandler Limited TG12345 Curve Bender EQ is based on the vintage EMI TG12345 recording consoles of the late '60s and early '70s.

Chandler Limited's TG12345 Curve Bender is a stereo/dual mono tracking and mastering equalizer, featuring a greatly expanded control-set over the original equipment. Chandler Limited's TG12345 Curve Bender EQ delivers the historic TG sound with modern conveniences and greater flexibility.

Your Chandler Limited TG12345 Curve Bender EQ has been carefully crafted and built by hand, at Chandler Limited in Shell Rock IA, U.S.A., using through-hole components for the ultimate analog experience.

At Chandler Limited we are proud of our American made products and we hope you like them!

Please feel free to call our shop anytime for help or questions.

Phone: (319) 885-4200.

## **History**

Conceived from meetings in 1967 between Abbey Road and EMI's Central Research Laboratories teams, the EMI TG12345 MK.I, a solid-state germanium transistor-based console was designed as replacement for the earlier valve based EMI REDD desks.

The equalizer facilities of the revolutionary TG12345 desks, though limited by modern standards were a large step forward from the REDD console era.

Installed in Abbey Road's Studio Two in November 1968 and making its debut on an 8-track recording by the Shadows, the transistorized desk marked a departure from the earlier REDD valve consoles.

The EMI TG12345 MK.I desk helped shape the sound of the Beatles' final album, Abbey Road, which was markedly richer sounding to that of the band's earlier work.

EMI TG12345 consoles were used on everything from Pink Floyd's "The Dark Side of the Moon" and "Wish You Were Here," John Lennon's "Plastic Ono Band," George Harrison's "All Things Must Pass" to epic film scores including Raiders of the Lost Ark.

EMI TG12345 consoles encountered many revisions throughout the '70s and became the main recording console used at the studios until 1983; TG consoles were never commercially available to the public.

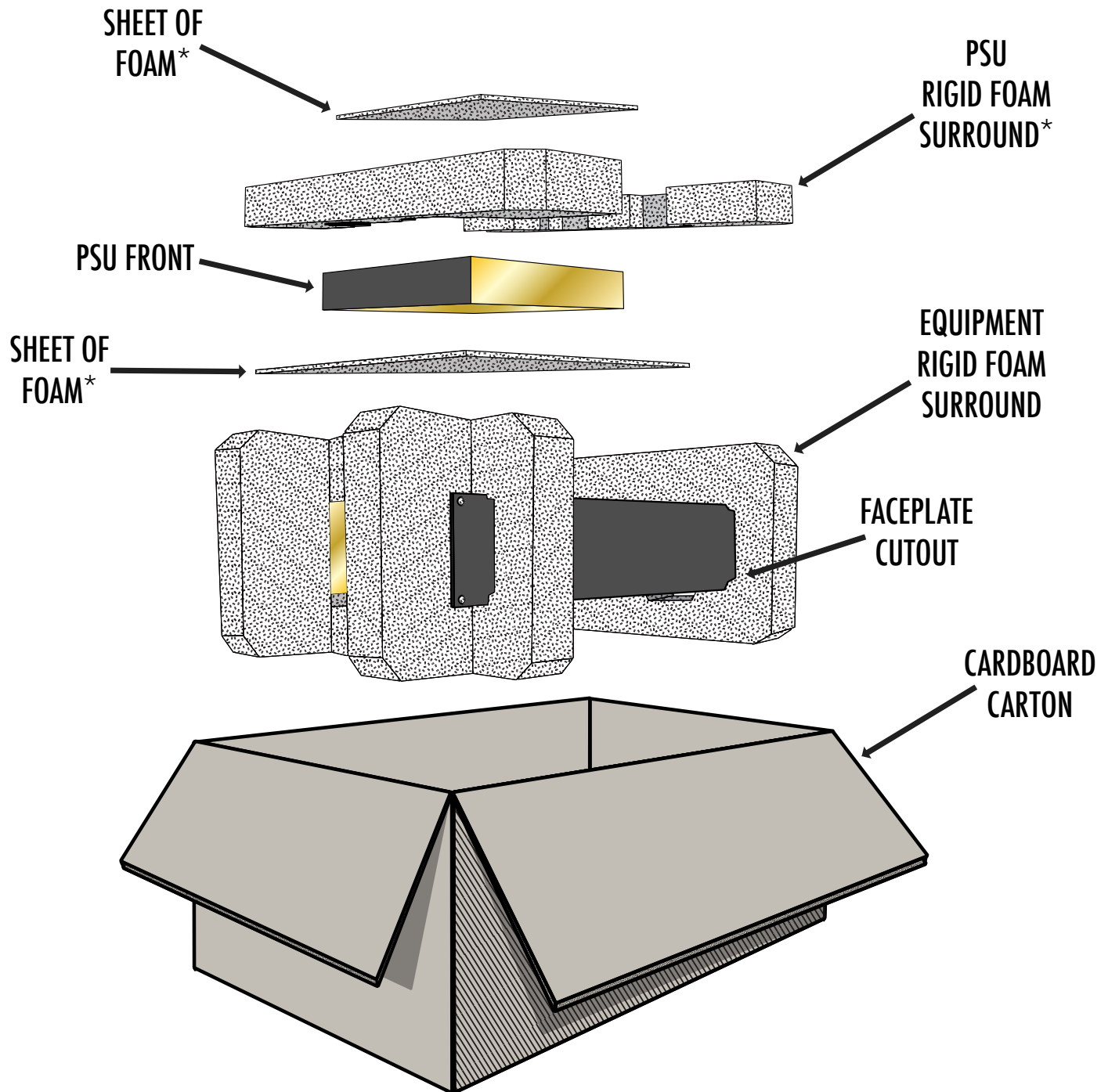


OFFICIAL  
EQUIPMENT

## SHIPMENT AND STORAGE

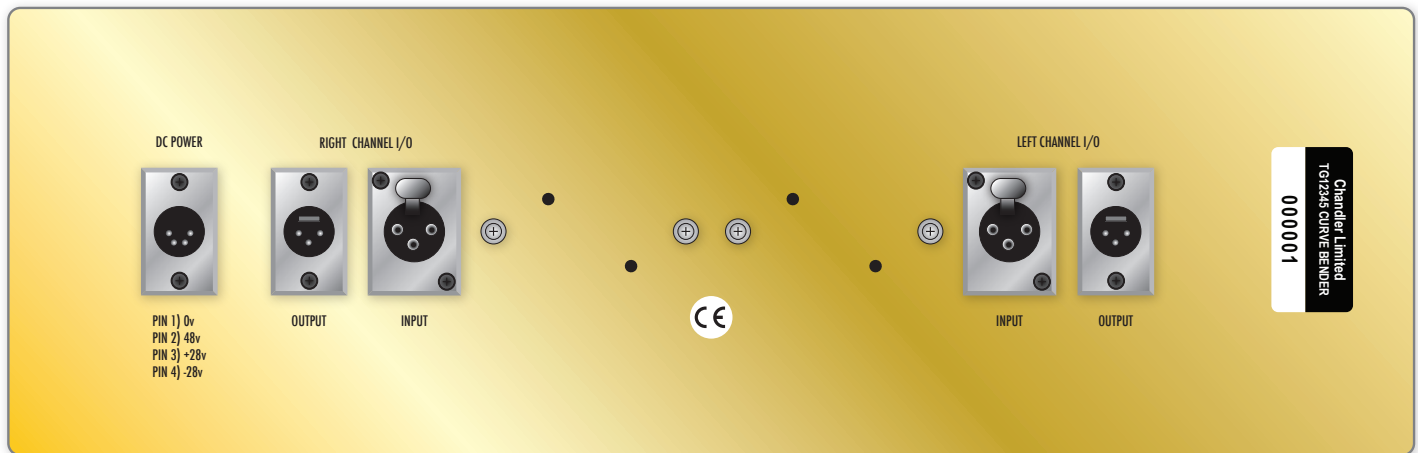
### Packaging

This packaging has been designed specifically for Chandler Limited equipment. The cardboard carton and rigid foam surrounds provide protection for shipment and storage. Please retain the container and associated materials for future use.



**\*Note:** PSU rigid foam surrounds and sheets are not included for equipment shipped without a power supply unit inside the equipment container.

# INSTALLATION



## Power

The TG12345 Curve Bender is powered remotely by the Chandler Limited *PSU-1* power supply, and connected at the, four pin, *DC POWER* connector. The *PSU-1* is an external power supply capable of powering two units; the *PSU-1* is purchased separately.

### PSU-1 POWER SUPPLY

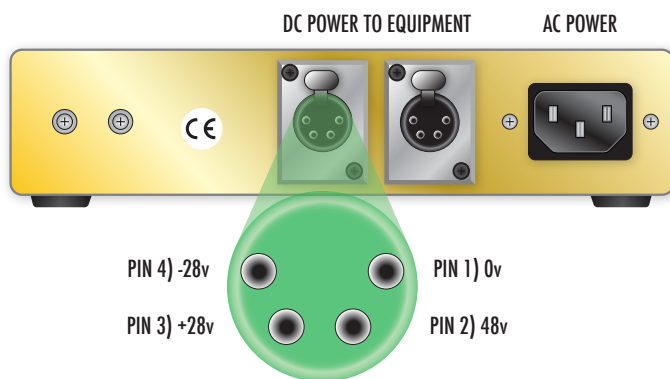


FUSE 1.5 AMPS 250 V

**Legacy PSU-1 Grounding Notes Only:** On the rear of the legacy *PSU-1* power supply are two black banana connectors. These join the audio ground to earth ground with a solid wire between them. Depending on your studio, you may want this connected or disconnected. Turn up your monitors or headphones a bit and experiment with which has a lower noise floor in your system. You may also need to join the audio banana plug to other sections of your studio to obtain lowest noise floor. The audio banana is located closest to the edge of the power supply case. Use something simple like a guitar cord and touch the tip to other portions of your studio to find best results. In some cases it may be best to connect a 10 ohm resistor between banana plugs.

## Audio Input & Output Connections

On the rear panel of the TG12345 Curve Bender exists, two sets of male and female XLR connectors, one input/output (I/O) pair for each channel side. All audio XLR connectors are wired pin 2 hot.



### DC POWER CABLE - 4 PIN XLR



**Note:** Legacy *PSU-1* power supplies featured external grounding studs. As of mid 2015, grounding studs have been removed and resistance applied internally.

## OPERATION

### Nomenclature

You will notice white and gold markings on the controls of the front panel; this is by design.

Because of the new controls and settings added to the TG12345 Curve Bender, we have used two colors for control settings. White labels designate a setting exactly as it would have been on a vintage TG unit, gold designates selections chosen by Chandler Limited's Chief Designer, Wade Goeke.

This way you may accurately recall a standard TG setting or purposely break all the rules.

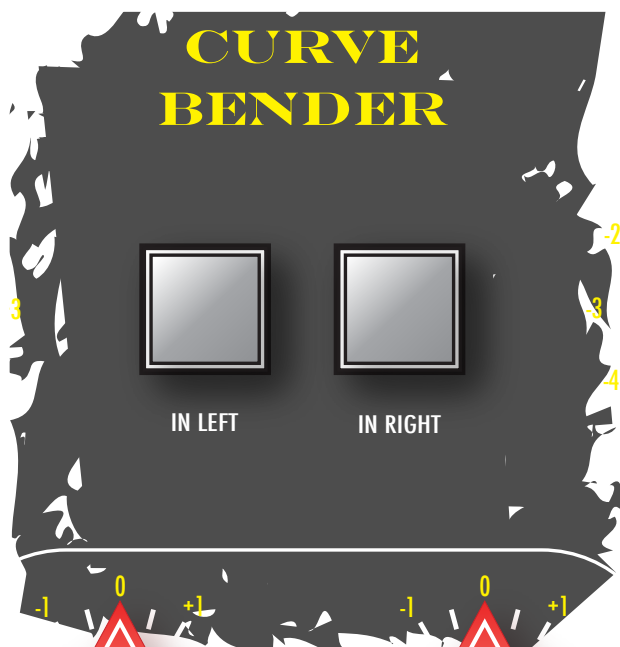
### Bypass

Each channel "IN LEFT" and "IN RIGHT" of the TG12345 Curve Bender may be fully bypassed by use of these push-buttons. Their main use is for direct comparison of processed and unprocessed sound.

When depressed, the button's LED will illuminate bright blue, signifying the EQ channel is active.

Conversely, when the button is not depressed, button's LED will not be illuminated, and the EQ channel is bypassed.

This bypass functionality is 'true bypass', i.e. the TG12345 Curve Bender is completely removed from the signal path.

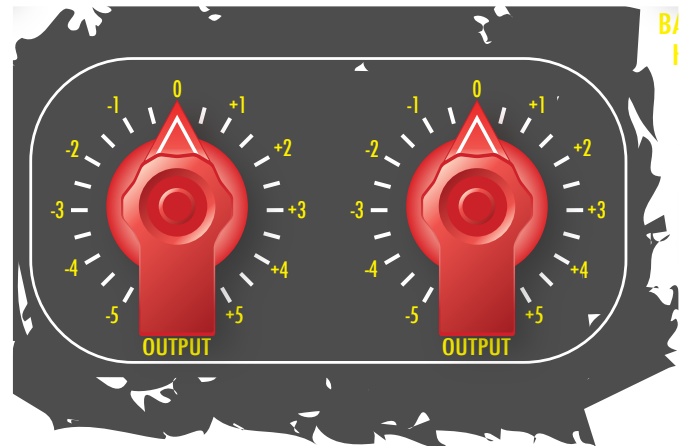


**Note:** Very early Chandler Limited TG12345 Curve Bender EQs were not 'true bypass'.

### Output Gain Control

The Left/Right master output channel gain controls feature stepped hand-wired gold contact switches for audiophile quality.

The master output channel gain switches are labeled for +/- 5db and adjustable in .5db steps, and are used for adjusting unity gain through the unit as you apply equalization.



**Revision Note:** Prior to 2011, standard version TG12345 Curve Benders featured +/-10db output controls, in 1db steps.

**Historical Note:** The TG12345 MK.I amplifier was used in the following TG consoles:

MK.I - was the original prototype desk used to record the Beatles Abbey Road album; only one of these was ever produced.

MK.II - Three of these were built for deployment in studios 1, 2, 3 at Abbey Road Studios and a fourth for the mobile recording section. These desks were used to record John Lennon's "Instant Karma," Paul McCartney's "Maybe I'm Amazed" and George Harrison's "All Things Must Pass" singles and albums respectively.

MK.III - The TG12345 MK.I amplifier was also used in the MK.III desk.

The TG12345 MK.IV desk was the huge wrap-around TG desk used to record Pink Floyd's "Dark Side of the Moon," and was the first implementation of the TG MK.IV silicon based amplifier. The MK.IV amp is prevalent in much of the Chandler Limited, EMI/Abbey Road Studios reissues.

Initially, MK.IV desks were fitted with MK.II and MK.III cassettes, however, were upgraded to MK.IVs. Once upgraded and having quadraphonic capabilities, these TG MK.IV desks were also known as 'Mark.Q'.



## Frequency Bands

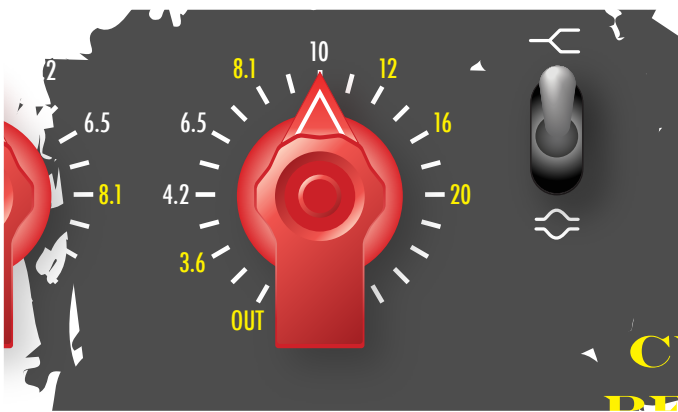
The TGI2345 Curve Bender has four frequency bands per left and right channels— Bass, Presence 1, Presence 2, and Treble.

The Treble and Bass bands are peak or shelf switchable.

**Note:** Historic frequencies are marked in white, and modern additions in gold.

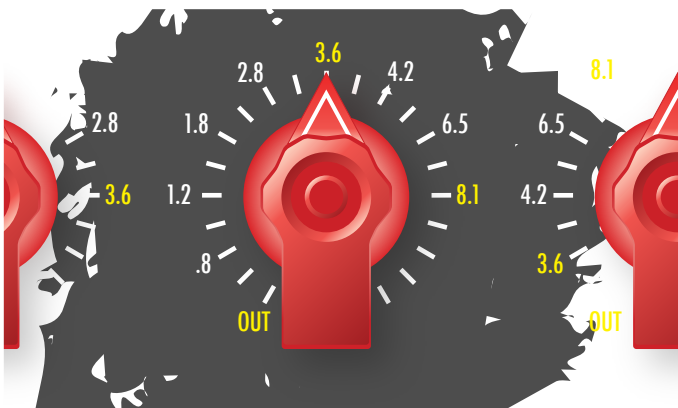
### Treble

The 'TREBLE' band on the Curve Bender is Peak or Shelf switchable, featuring eight frequency selections (3.6, 4.2, 6.5, 8.1, 10, 12, 16kHz, and 20kHz) and an "OUT" or band bypass position.



### Presence 1

The 'PRESENCE 1' or mid band on the Curve Bender is a Bell type, featuring 8 frequency selections (.8, 1.2, 1.8, 2.8, 3.6, 4.2, 6.5, 8.1 kHz) and an "OUT" or band bypass position.



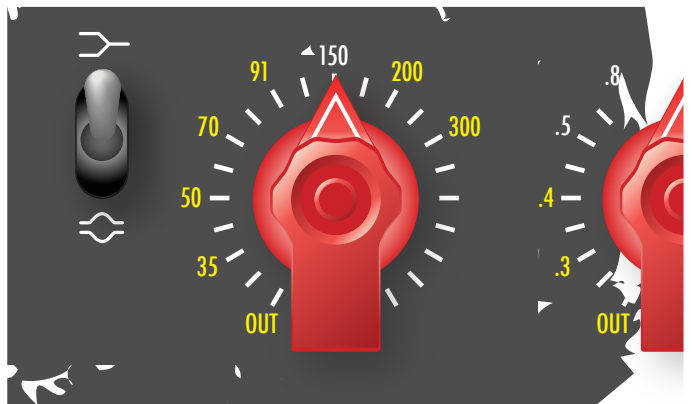
### Presence 2

The 'PRESENCE 2' or mid band on the Curve Bender is a Bell type, featuring 8 frequency selections (.3, .5, .8, 1.2, 1.8, 2.8, 3.6kHz) and an "OUT" or band bypass position.



### Bass

The 'BASS' band on the Curve Bender is Peak or Shelf switchable, featuring 7 frequency selections (35, 50, 70, 91, 150, 200, 300Hz) and an "OUT" or band bypass position.



**Note:** Beginning with the TGI2345 MK.II desk, the low frequency had a single shelving selection and the presence had eight peaking selections. In the spirit of making the ultimate TG EQ, we reproduced the curves of the shelving and peaking bands so that the treble and bass sections can now use the curves of each. I.e. You may now peak or shelf on the bottom or top.

Historic frequency selections were as follows— .5, .8, 1.2, 1.8, 2.8, 4.2, 6.5, 10kHz, and low shelf at 50Hz.

## Boost/Cut and Multiply

Each frequency band features a boost/cut control, and an x1/x1.5 multiply toggle switch.

Boosting or cutting of a selected frequency is achieved by adjustment of the boost/cut control for the desired result.

The boost/cut control is stepped and labeled +/-5.



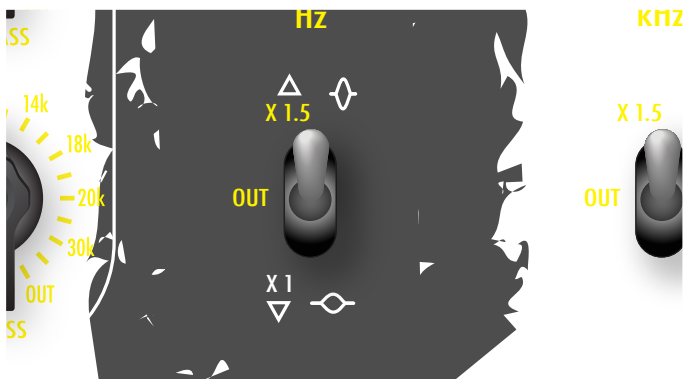
For greater flexibility, the amount of boost/cut available is influenced by the position of the x1/x1.5 multiply toggle switch.

A setting of x1 provides both a wider Q curve and a boost/cut of +/-5db in .5db steps.

A setting of x1.5 provides both a sharpening of Q curve and a boost/cut of up to +/-13.5db.

Setting the x1/x1.5 multiplier switch to the center 'OUT' position, bypasses the band, allowing for quick AB listening of the band without losing your frequency position.

**Note:** The multiply toggle switch is not a frequency multiplier.



**Revision Note:** Prior to 2011, there were two versions of the TG12345 Curve Bender, Standard and Mastering. The standard TG12345 Curve Bender offered boost/cut in 1db steps and its controls were labeled for +/-10; mastering versions provided boost/cut in .5db steps. In late 2011, standard and mastering versions of the TG12345 Curve Bender EQs

were combined into a single and more flexible unit.

## Filters

The TG12345 Curve Bender EQ features both a high and low-pass filter facility per Left and Right channel.

**Historical Note:** The original Curve Bender and TG12345 console did not have high or low-pass filters; we thought it was important to add them.

Although we selected our own frequencies, it is an important fact that new circuitry was not invented to add this feature. Simply put, appropriate circuits and amplifiers were borrowed and slightly modified from existing TG amplifiers to maintain authenticity throughout the unit.

### High-Pass

The high-pass filter features 10 frequency options (20, 30, 40, 50, 60, 80, 100, 160, 200, 320Hz,) at a gentle slope, and an "OUT" position to bypass the control.

### Low-Pass

The low-pass filter features 9 frequency options (30, 20, 18, 14, 10, 8.1, 5, 3, 2kHz,) at a gentle slope, and an "OUT" position to bypass the control.

**Tip:** Use the low-pass filter as a way to create a great low-fi drums sound.





## **SERVICE**

### **United States**

Prior to sending in equipment for repair, please contact our shop at the number below. We will assist you in troubleshooting, and if needed, we will issue an RMA# to return the equipment for service.

### **Send Repairs To:**

Chandler Limited, Inc.

Attention: Repairs

222 S. Cherry St.

PO Box 38 (if sending via the postal service)

Shell Rock IA 50670

Phone: (319) 885-4200

Email: [support@chandlerlimited.com](mailto:support@chandlerlimited.com)

### **International**

Repair of Chandler Limited products purchased, outside of the United States, is provided by local or regional authorized Chandler Limited distributors. To obtain service or repairs, please contact your local dealer or regional distributor for further instruction.

Visit [chandlerlimited.com](http://chandlerlimited.com) for a list of authorized International Distributors.

## **CE CERTIFICATION**

Chandler Limited declares under its sole responsibility that all products manufactured by them are in compliance with Electromagnetic Compatibility (EMC) Directive 2014/30/EU; Standards: EN55103-1:2009+A1:2012; EN55103-2:2009; EN55013:2013 and Low Voltage Directive (LVD) 2014/35/EU; Standards: EN60065:2002+A1:2006+A11:2008+A2:2010+A12:2011.

## **Product Limited Warranty**

During the first year from the date of the original purchase, this product is warranted to be free from defects in materials and workmanship under normal use, service and maintenance. This warranty applies to the original purchaser and is subject to the following terms and conditions:

**What Is Covered:** The product's components as originally installed by the manufacturer that are defective in materials or workmanship under normal use, service and maintenance.

**What Is Not Covered By This Warranty:** This warranty does not extend to or cover:

1. Any defect due to the negligence of others; failure to install, operate or maintain the product properly; unreasonable use; accidents; alteration; use of unauthorized or non-standardized parts; acts of God; theft; vandalism; electrical malfunctions (i.e., resulting from power surges, shorted or overloaded circuits, etc.), use of any power source other than supplied by manufacturer; repair by anyone other than an authorized Chandler Limited representative; or damage resulting from improper packing or mishandling by a shipper.
2. Normal wear and tear of parts.
3. Shipping, handling, packaging and delivery costs of the product.

**Who Is Covered:** The original purchaser.

**Repair During The First Year:** During the first year, all defective product components that are covered by this Limited Warranty will be repaired free of charge including parts and labor. The purchaser will pay shipping costs AND a \$35 handling fee per unit.

**What You Must Do for Warranty Service (in the United States):** If you live in the United States and your product was purchased through a U.S. Dealer, please contact your dealer OR call 319-885-4200 or e-mail [support@chandlerlimited.com](mailto:support@chandlerlimited.com).

**What You Must Do for Warranty Service (outside of the United States):** For warranty service if you live outside of the United States, please contact the dealer where you purchased the product.

Any products returned to Chandler Limited for repair should include: (1) complete description of the problem; (2) name, address, phone number, fax number, and/or e-mail address; (3) receipt of original purchase; (4) power supply and all accessories and cables. The purchaser is responsible for the shipping costs to and from Chandler Limited. Chandler Limited is not responsible for damage resulting from improper packing and/or mishandling by a shipper.

If sent by UPS or Federal Express, ship to: Chandler Limited, 222 South Cherry Street, Shell Rock IA 50670

If sent by Postal Service, ship to: Chandler Limited, PO Box 38, Shell Rock IA 50670

The foregoing expresses Chandler Limited's obligations and liabilities with respect to the quality of the product, its components and accessories. All other warranties, express or implied, including the warranties of merchantability or fitness for a particular purpose are disclaimed. Chandler Limited shall not be liable for the loss or use of the product, its components and accessories, inconvenience, loss or any other damages, direct or consequences arising out of the use of, or inability to use the product or its components or damages resulting from or attributable to defects in the products or its components. No one other than Chandler Limited has authority to extend or modify the terms of this limited warranty in any manner whatsoever.

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### **LIMITATION OF LIABILITY**

THE LIABILITY OF CHANDLER LIMITED, IF ANY, AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY FOR DAMAGES FOR ANY CLAIM OF ANY KIND WHATSOEVER, REGARDLESS OF THE LEGAL THEORY AND WHETHER ARISING IN TORT OR CONTRACT, SHALL NOT BE GREATER THAN THE ACTUAL PURCHASE PRICE OF THE PRODUCT WITH RESPECT TO WHICH SUCH CLAIM IS MADE. IN NO EVENT SHALL CHANDLER LIMITED BE LIABLE TO PURCHASER FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION, REIMBURSEMENT OR DAMAGES ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS OR FOR ANY OTHER REASON WHATSOEVER.