

Chandler Limited[®] TG Microphone Cassette User Manual





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Thank you for purchasing the Chandler Limited TG Microphone Cassette, you now own a piece of EMI / Abbey Road Studios official equipment.

Chandler Limited's TG Microphone Cassette is a full-featured mono mixing console channel strip, incorporating elements of the historic EMI/Abbey Road Studios TG12345 recording and mastering desks of the late '60s and '70s.

The three sections of the TG Microphone Cassette comprise Chandler Limited's TG2 Pre-Amp coupled with a Curve Bender EQ section, and a TG1 Opto Limiter, delivering the historic TG sound with modern conveniences and flexibility.

Your Chandler Limited TG Microphone Cassette 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 Mark I desk

ushered in a sea of change in sound and flexibility at Abbey Road Studios.

The new transistorized EMI TG12345 console was modular in design, with twelve dual-channel microphone "cassettes." The TG desks featured expanded EQ, and for the first time ever, a compressor/limiter on every channel.

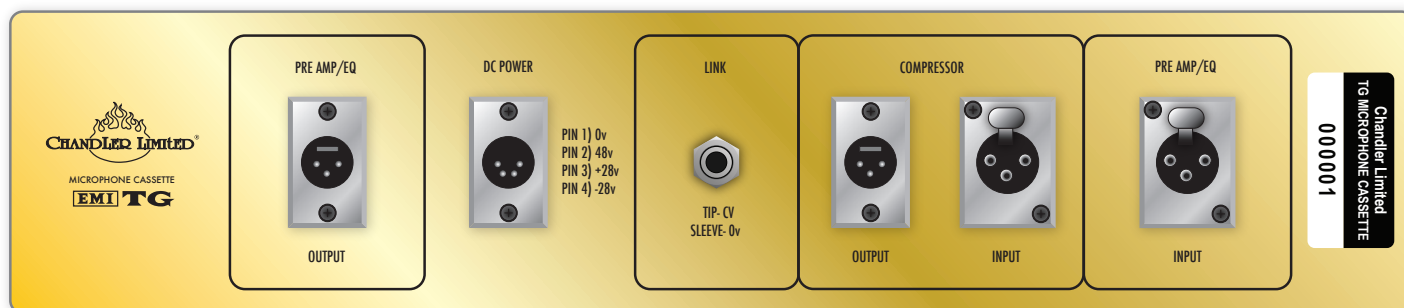
Installed in Abbey Road's Studio Two in November 1968 and making its debut on an 8-track recording by the Shadows, the transistorized desk marked a departure from the earlier REDD valve consoles. The EMI TG12345 desk helped shape the sound of the Beatles' final album, Abbey Road, which was markedly richer sounding to that of the band's earlier work. The sonic qualities of classics like "Here Comes the Sun," "Come Together" and "Something" would have been very different without the EMI TG12345.

The desk encountered many revisions throughout the '70s and became the main recording console used throughout the studios until 1983. The EMI TG12345 console Marks I-IV were used on everything from Pink Floyd's "The Dark Side of the Moon" and "Wish You Were Here" to John Lennon's "Plastic Ono Band," George Harrison's "All Things Must Pass" to epic film scores including Raiders of the Lost Ark.



OFFICIAL
EQUIPMENT

CONNECTIVITY



POWER

The TG Microphone Cassette is powered by the Chandler Limited PSU-1 power supply. The PSU-1 is an external power supply that can power two units and is purchased separately.

INPUT/OUTPUT

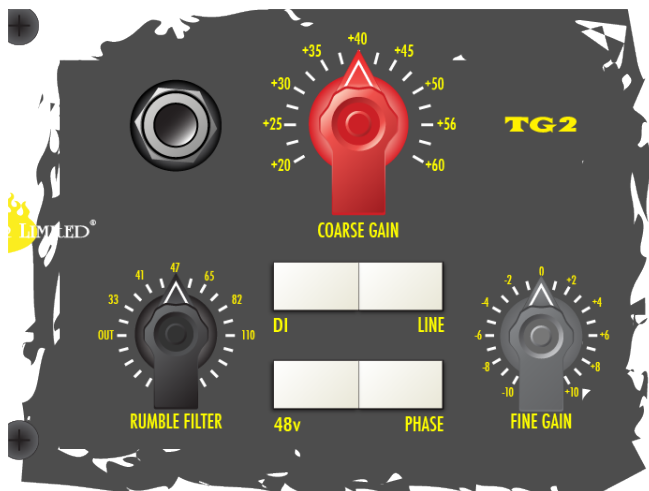
On the rear panel of the TG Microphone Cassette exists two sets of male and female XLR jacks (wired pin 2 hot), one for the TG2 Pre Amp/DI and Curve Bender EQ, the other for independent access of the TG1 Opto limiter.

NOTE: To include the TG1 Opto limiter in the audio path, a short XLR cable must be patched from the PRE AMP/EQ XLR output to the compressor's XLR input.

LINK

The TG Microphone Cassette's 'TG1 Opto' limiter is stereo linkable to a second device. Via a standard $\frac{1}{4}$ " cable, using the 'LINK' jack on the rear panel, simply patch the cable between two units

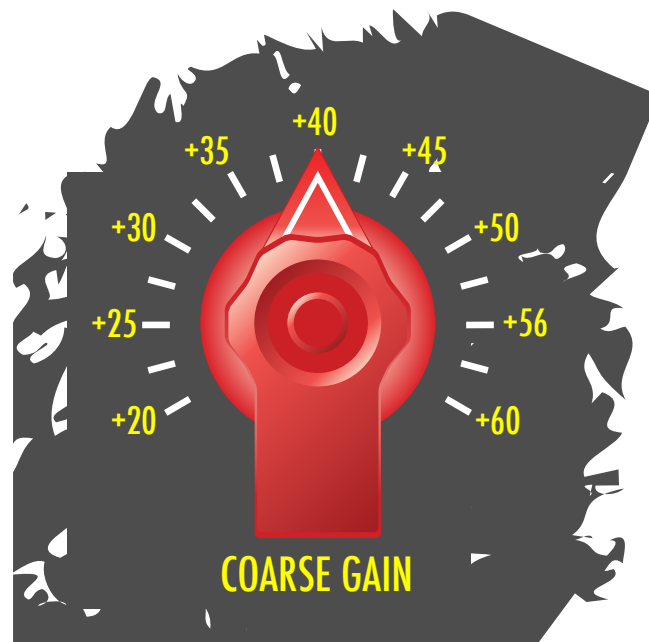
TG2 (Pre Amp/DI)



The TG2 section of the TG Microphone Cassette is adapted from Chandler Limited's TG2 Pre Amp/DI, an historic recreation of the rare EMI TG12428 amplifier employed in the EMI mixing and mastering consoles of the late '60s and '70s.

COARSE GAIN

'COARSE GAIN' is a stepped input control, switchable in 5db increments, with a range of +20db to +60db gain. Use this control to set your initial input gain level.



FINE GAIN

'FINE GAIN' is a variable control, adding an additional +/-10db available input gain, for a total of +70db maximum gain in combination with 'COARSE GAIN'. When gain staging, set this control to middle (0), and set the 'COARSE GAIN' first. Use the 'Fine Gain' to variably fine-tune the input gain +/-10db.



TIP: Interactively using the 'FINE GAIN' with the 'COARSE GAIN' is a great way to dial-in pre-amp coloration.

Historical Note: The stepped 'COARSE GAIN' combined with a separate variable 'FINE GAIN' control was how gain staging was achieved on original TG consoles.

RUMBLE FILTER



The 'RUMBLE FILTER' control is a low cut mechanism, featuring six frequency settings (33, 41, 47, 65, 82, 110hz). The 'RUMBLE FILTER' may be fully disengaged from the amplifier by setting it to 'OUT.' This feature is useful for removing unwanted low frequency information from the signal.

NOTE: The original 'RUMBLE FILTER' was a low cut circuit available via a jumper on the REDD.51 valve consoles. This 'RUMBLE FILTER' was both unique in circuit design and function, rolling off lows at a fixed 30hz. More than simply a low cut or high pass, the filter has an effect on the overall signal and can be used as a powerful tone control.



48V

Some microphones require phantom power. Depress this switch to enable 48 volts phantom power; use only for microphones that require it.

WARNING: Only engage or disengage phantom power with the microphone already connected to the pre-amplifier. Disconnecting a microphone while phantom power is on may cause damage to equipment downstream. Never use phantom power with ribbon microphones.

PHASE

The 'PHASE' button, when depressed, reverses phase of the input signal 180°. This feature may be useful when a microphone is not ideally placed, a cable is wired incorrectly, or source material is out of phase.

DI

Engaging the DI button allows the TG Microphone Cassette to accept instrument level signal via the $\frac{1}{4}$ " input jack on the front panel.

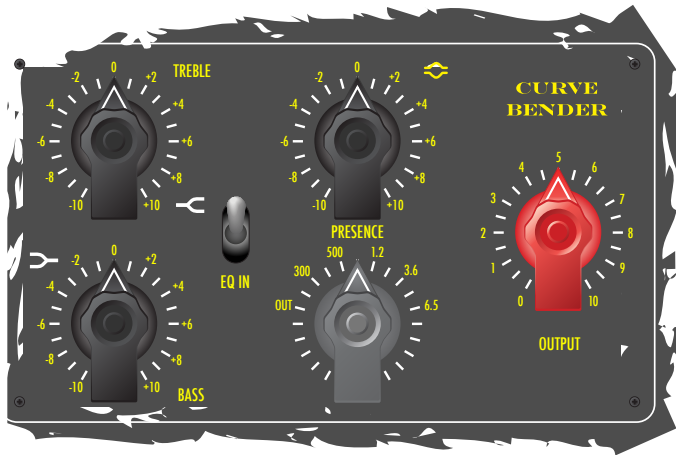
When using the DI, the output signal will be available from the Pre Amp / EQ XLR jack on the rear of the unit.

LINE

Depress this switch to set the TG Microphone Cassette to accommodate line level signal. Apply the line level signal to the TG Microphone Cassette using the pre-amp input XLR connector.

TIP: Sending line level source into the pre-amplifier is a great way to further process your material, adding the rich harmonic texture available from this historic circuit. Use a pair of TG Microphone Cassettes on your mix bus!

CURVE BENDER (EQ)



The Curve Bender EQ section of the TG Microphone Cassette is an adaption of Chandler Limited's acclaimed EMI TG12345 Curve Bender, itself a greatly expanded recreation of the EMI TG12345 mixing console's channel equalizer of the late '60s and '70s.



Use the corresponding black TG knob to cut or boost the selected frequency for the desired effect.

HISTORICAL NOTE: 500, 1.2, and 6.5 khz were frequencies originally available on the input channels of the EMI TG12345 desks. The original cut/boost control was stepped.

EQ IN

The 'EQ IN' switch, when set downward, inserts the Curve Bender EQ into the audio path; in the upward position, the EQ section is bypassed.

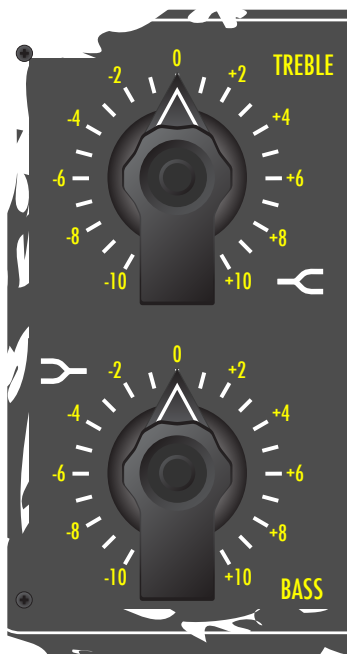


OUTPUT

The 'OUTPUT' control acts as a fader would on a mixing console. Use this to control the overall output level of the pre-amplifier/EQ to your recording device, or drive the input of the TG1 Opto compressor/limiter. When setting input gain levels,

start with the 'OUTPUT' control set fully clockwise for unity level, adjust back as needed so as not to clip the targeted input.

TIP: If you want to overdrive the pre-amp for wonderful crunchy tone, set the 'OUTPUT' control lower, crank the 'COARSE GAIN', and use the 'FINE GAIN' to achieve just the right tone.



TREBLE

'TREBLE' on the Curve Bender EQ section is a shelving type, fixed at 8.1 khz, use this variable control to cut or boost as needed.

BASS

The 'BASS' control on the Curve Bender EQ section is a shelving type, fixed at 91hz, use this variable control to cut or boost as needed.

PRESENCE

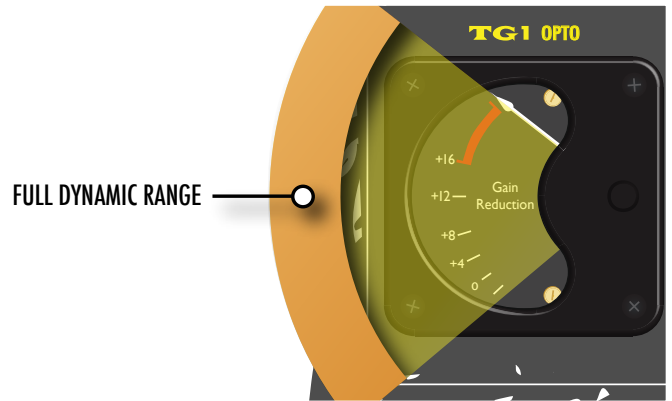
The 'PRESENCE' or mid band on the Curve Bender EQ section is an frequency selectable bell type, and can be bypassed independently apart from the treble and bass.

Use grey TG knob to select the desired frequency (300, 500, 1.2, 3.6, 6.5 khz) to cut or boost, or set the switch to 'OUT' to bypass the presence control.

TG1 OPTO (Comp./Limiter)



Without applying signal to the compressor (or bypassed), set the 'HOLD' knob fully clockwise (0), placing the meter's needle at the top of the scale range. This setting is equivalent to zero compression, i.e. full dynamic range.



It is little known that EMI technical staff experimented with optos in their compression circuits. The TG1 Opto is an opto cell adaptation of Chandler Limited's TG1 Limiter, a recreation of the historic EMI TG12413 limiters found in EMI's TG12345 mixing and mastering consoles of the late '60s and '70s.

Without applying signal (or bypassed), adjust the 'HOLD' knob to place the meter's needle for the desired amount of compression (counterclockwise equals more compression).

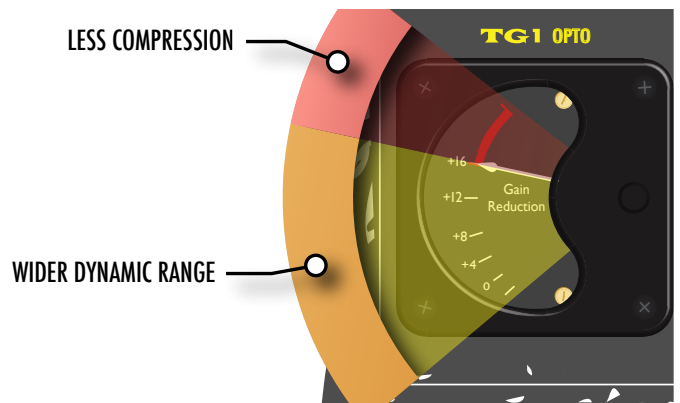
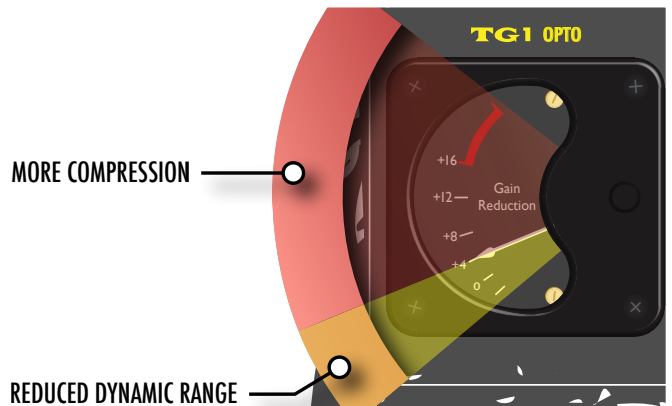
The TG1 Opto should be considered a dynamic gain range reducer; it attenuates transient peaks while, simultaneously amplifying quieter signals.

More compression, narrows the dynamic range, conversely less compression will yield wider dynamic range.

METER

The key towards optimal employment of the TG1 Opto Limiter is understanding, the ballistics or metering, without signal present.

WITH THE TG1 OPTO IN BYPASS, the position of the needle relative '0' on the meter's scale can be seen as representing dynamic range. In contrast, the position of the meter's needle relative to the top of scale represents the amount of compression.





HOLD

The 'HOLD' control is used to set the amount of compression, a setting of 0 is least and -10 is maximum gain reduction.

OPERATION: Without signal present (or bypassed), while observing the gain

reduction meter, adjust the 'HOLD' control to position the needle for the desired amount of compression. The further away or lower the needle is placed from the top of the gain reduction meter, the greater the amount of compression or limiting will occur and the narrower the dynamic range will be, i.e. with signal active, the greater the throw or deflection of the gain reduction meter's needle, the more the source signal is being compressed or limited.

NOTE: The 'HOLD' control works independently of input level applied to the compressor/limiter input.



ATTACK

'ATTACK' is a variable control and determines the speed at which compression or limiting action is triggered.

HISTORICAL NOTE: EMI Limiters from the RS114 tube limiter, RS124 compressor, RS168 Zener prototype, TG12345 console limiter, and TG12413 all had fixed attack times.



RELEASE

'RELEASE' is variable, use this control to set speed at which compression or limiting is disengaged.

HISTORICAL NOTE: EMI Limiters from the RS114 tube limiter, RS124 compressor, RS168 Zener prototype, TG12345 console limiter, and TG12413 mastering limiters had six fixed recovery (release) times. The TG1 Opto's variable release control provides expanded flexibility and tonal character.



OUTPUT

'OUTPUT' is technically a make-up gain control, traditionally this control would be used to return signal to pre-compressed or limited levels. However, in the way the TG1 Opto acts as a dynamic gain range reducer, the more

you compress the louder the resultant output signal may appear, thus necessitating a reduction of the output level control.



KNEE

The TGl Opto features two compressions knees, 'SHARP' or 'ROUNDED'.

'SHARP' is equivalent to 'LIMIT' mode on the TGl or Zener Limiter, and by definition is

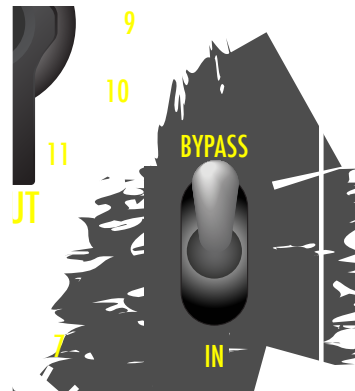
considered hard. With the 'KNEE' switch set to 'SHARP', compression, once triggered, will be full ratio.

TIP: Sharp knees are often employed for source that has more transient peaks, such as drums or rhythmic source.

HISTORICAL NOTE: On the EMI TG12345 desk limiter, 'LIMIT' was intended to mimic the curve of the Fairchild 660.

'ROUNDED' is of a soft type. The traditional soft knee is one in which, once triggered, onset of the compression ratio is gradual. However, the TGl Opto limiter's soft knee implementation functions independently of compression.

TIP: Rounded or soft knees are great in situations where compression is required to be less obvious, such as vocals and other melodic source.



BYPASS

When the 'BYPASS' switch is set downward to 'IN', the TGl Opto is active, conversely when the switch is in the upward position, the compressor/limiter is fully bypassed.

NOTE: For the TGl Opto to be active in the TG Microphone Cassette signal chain, it must be physically patched at the rear, using a short male to female XLR cable (wired pin 2 hot), connected from the Preamp/EQ output to the compressor input.

LINK

When linked to a second TG Microphone Cassette using a standard $\frac{1}{4}$ " cable via the 'LINK' jack at the rear of the unit, the two compressor/limiters are controlled by whichever of the two control voltages is instantaneously the greater.

TIP: When using the TGl Opto independent of a second unit, be sure to remove any link cable as to not influence each other.

U.S. SERVICE

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

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

INTERNATIONAL SERVICE

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Visit 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.

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

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