

WARRANTY REGISTRATION

We ask that you please fill out this registration form and send the bottom half to:

MANLEY LABORATORIES
REGISTRATION DEPARTMENT
13880 MAGNOLIA AVE.
CHINO CA, 91710

Or you may **fax** this page to: (909) 628-2482

Registration entitles you to product support, full warranty benefits, and notice of product enhancements and upgrades. You **MUST** complete and return the following to validate your warranty and registration. Thank you again for choosing Manley.

MODEL MANLEY HIGH FREQUENCY LIMITER
SERIAL No. MHFL_____

PURCHASE DATE _____ SUPPLIER _____

PLEASE DETACH THIS PORTION AND SEND IT TO MANLEY LABORATORIES

MODEL MANLEY HIGH FREQUENCY LIMITER
SERIAL No. MHFL_____

PURCHASE DATE _____ SUPPLIER _____

NAME OF STUDIO & OWNER _____

ADDRESS _____

CITY, STATE, ZIP _____

TEL: _____ FAX: _____ email: _____

COMMENTS?? We welcome your feedback! _____

WARRANTY

All Manley Laboratories equipment is covered by a limited warranty against defects in materials and workmanship for a period of 90 days from date of purchase to the original purchaser only. A further optional limited 5 year warranty is available to the original purchaser upon proper registration of ownership within 30 days of date of first purchase.

Proper registration is made by filling out and returning to the factory the warranty card attached to this general warranty statement, along with a copy of the original sales receipt as proof of the original date of purchase. Only 1 card is issued with each unit, and the serial number is already recorded on it.

If the warranty registration card has already been removed then this is not a new unit, and is therefore not warranted by the factory. If you believe this to be a new unit then please contact the factory with the details of purchase.

This warranty is provided by the dealer where the unit was purchased, and by Manley Laboratories, Inc. Under the terms of the warranty defective parts will be repaired or replaced without charge, excepting the cost of tubes. No warranty is offered on tubes, unless:

1. a Manley Laboratories preamplifier is used with a Manley Laboratories amplifier, and
2. the warranty registration card is filled out.

In such a case a 6 month warranty on tubes is available with the correct recording of the serial number of the preamplifier on your warranty registration card.

If a Manley Laboratories product fails to meet the above warranty, then the purchaser's sole remedy shall be to return the product to Manley Laboratories, where the defect will be repaired without charge for parts and labour. The product will then be returned via prepaid, insured freight, method and carrier to be determined solely by Manley Laboratories. All returns to the factory must be in the original packing, (new packing will be supplied for no charge if needed), accompanied by a written description of the defect, and must be shipped to Manley Laboratories via insured freight at the customer's own expense. Charges for unauthorized service and transportation costs are not reimbursable under this warranty, and all warranties, express or implied, become null and void where the product has been damaged by misuse, accident, neglect, modification, tampering or unauthorized alteration by anyone other than Manley Laboratories.

The warrantor assumes no liability for property damage or any other incidental or consequential damage whatsoever which may result from failure of this product. Any and all warranties of merchantability and fitness implied by law are limited to the duration of the expressed warranty. All warranties apply only to Manley Laboratories products purchased and used in the USA.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To use this HIGH FREQUENCY LIMITER you probably don't need a serious technical manual but some features are worth explaining all the same.

The "basis" for this design was a vintage high freq limiter used primarily to "cut" vinyl records. The RIAA curve specifies a large amount of high frequency boost that is later removed (along with hiss and other noise) in playback. This is fine except that to get louder records excessive highs could produce a nasty distortion and reduce a \$5000 cutting head to a smouldering mess. There were several different high frequency limiters available to deal with this but one device in particular solved the problem in an elegant way. With this unit, the signal was put through only a few passive parts to achieve its purpose. The variable component was a special high quality transformer with a separate winding that controlled its high frequency response. The technical term is "saturable reactor". We use this technique in our HIGH FREQUENCY LIMITER and follow it with our professional line amplifier to provide make-up gain and a low impedance output. We also use modern op-amp circuitry in the control circuit (sidechain) but only a class A vacuum tube circuit is appropriate for the audio. We wanted it to remove nasty sibilance, not create more. No VCA's and no op-amps in the audio path.

While we use the original name for this circuit, it is somewhat inaccurate in today's terminology. The circuit is actually a sliding filter or voltage controlled filter (VCF) except without the distortions typical in VCF's or VCA's.

There are two "sensing" circuits. The HI-MID circuit is a tunable band-pass filter. The HIGH circuit is a tunable high-pass filter. The user can select which sensing circuit is most appropriate for the problem faced. When the offending frequency passes through the filter and is "over" the THRESHOLD then the filter begins "sliding" down from above 20 kHz until the offending frequency is reduced enough to be below the threshold. This is indicated by the meter and LED.

There is one input and two outputs. The input is floating transformer balanced in parallel with a 22K resistor. Both outputs are low impedance unbalanced. PIN 2 hot on XLRs. There is a fair amount of confusion that unbalanced outputs are not good with balanced inputs. Not true. A good balanced input should cancel as much hum as it can with either balanced or unbalanced signals. However, there are many balanced line drivers that have problems driving transformer inputs (at low frequencies) and unbalanced inputs or long lines (instability or HF oscillation). You should have no problem with hum or any instability with this unit. There are grounding options with the terminals on the back panel.

The MONITOR OUTPUT is a 1/4 inch mono jack with a special purpose. There is a switch on the front panel that selects the source to be monitored. In NORMAL the source is the same as the XLR output, in SIDECHAIN it provides a way to hear the sensing filters and tune them accurately to the problem frequency. The THRESHOLD knob will control the volume of this output. The XLR does not have this switched signal and is intended to be fed straight to tape safely, even if the engineer is "tuning"

The BYPASS switch is not a hardware bypass. The signal bypasses the De-essing circuit but still goes through the input transformer, tubes and RE-ESS circuit.

The RE-ESS control is a simple 12kHz shelving EQ with 6 dB cut and boost. We named it that just for fun. The best place to DE-ESS is individual vocal tracks usually after EQ and compression. Sometimes the right amount of de-essing unfortunately removes some of the "AIR" on a track. That name was taken. The RE-ESS control is set up to return some of those "nice" highs after the "bad" highs are buried. This control is active even in BYPASS. If you are going to use this HIGH FREQUENCY LIMITER on a mix you will notice two things. First - setting the threshold is difficult because high hats, snares and other bright sounds will trigger some de-essing. Second - the RE-ESS control is pretty damn effective in fixing that first thing. It is also useful during recording as a "safe" hi frequency boost (or cut). It can be better than most EQs because it doesn't add TIM distortion as a by-product. Some feel that the tube/transformer circuit adds the "right" warmth and not some cheesy distortion. Check it out.

While we are not in a position to tell anybody how to mix, we can communicate some mastering engineers comments. They tell us that the most common problem today is mixes that are too bright and over compressed. They also tell us that these are the most difficult problems to fix. As an engineer you know it is easier to boost a little than perform surgery to some narrow band. They have good de-essers (often ours) but de-essing a mix is difficult with hi-hats and cymbals and snares everywhere. Notching a narrow band is bound to affect all sounds that have harmonics in that band. It is better to leave a little less at both high and low frequency extremes for them to fine tune rather than too much that they have to fight to remove.

NearField Monitors provide a valuable reference for most engineers. These smaller speakers are widely recognised to be closer to the average listener's home system. They are also recognised for not providing any accuracy in the lowest octaves. Accurate lows cost exponentially in dollars and size. You may or not be aware that most monitor systems have sibilance problems of their own. Of course this doesn't directly add sibilance to a tape but if everything sounds sibilant through them how are you supposed to be judging the top end quality of your mix? The answer, once again, is electronics. This problem is far more likely to be amplifiers than speakers. Unfortunately most powered speakers use better speakers than amplifiers. The amps distort somewhat (TIM) with sibilance and high frequency transients. Shakers become pink noise. Gotta have great amps when you engineer professionally. OK, this is a cheap plug - try our tube amps. Besides knowing how much sibilance is really happening, you will get better mixes by hearing the details and beauty that was there to start with.

USING THE HIGH FREQUENCY LIMITER

First the easy step by step approach then if you want you can read some techno-babble.

- 1) Connect the XLR input and the 1/4" output. Turn the HIGH FREQUENCY LIMITER power ON and wait a few minutes for the tubes to warm up. Don't rush - It makes big thumps as it warms up.
- 2) Use the console channel inserts to patch a vocal track. Don't forget to press the channel's "insert" button if it has them. To start set all controls to half way or 12:00. Verify the signal is fine with the unit in "BYPASS". Any hum, noise? Play tape. You might "SOLO" the track if so inclined.
- 3) Switch the HFLIMITER to "IN". Switch the "MONITOR OUTPUT" to "SIDECHAIN". You should hear the bright brittle sound of the filters. If that's not bad enough, you gotta tune those filters to sound even uglier. Switch the toggle with the triangle arrows to HIGH and adjust the HIGH control to get the worst sibilance. Now switch the toggle to HIGH-MID and adjust the HIGH-MID control to tune in that sibilance again. Pick the worst or the most "ESS" with the toggle.
- 4) Had enough? Switch the "MONITOR OUTPUT" to "NORMAL". Adjust the "THRESHOLD" control to see meter movement and the LED flashing on sibilance. Only on the sibilance is the big trick.
- 5) Verify that the desired de-essing is taking place and if not re-adjust the THRESHOLD and maybe the HIGH or HI-MID controls. Compare by switching to "BYPASS".
- 6) Take the channel out of "SOLO". Adjust the RE-ESS like any EQ to fine tune the highs. Probably a little boost will help. The console INSERT button is the best way to verify "ya did it good".

PREVENTING SIBILANCE PROBLEMS

David designed this unit to be used on the most critical tracks and mixes where the maximum degree of fidelity is needed. The success of a song often depends on the vocals and production. Excessive sibilance on vocals (and mixes) is a very common problem and can be caused by several factors. We believe that the best solution is to not create the problem in the first place. The HIGH FREQUENCY LIMITER is designed for engineers needing to correct problems. The next section deals with methods to avoid sibilance problems before the fact.

The hardest problem to deal with is a vocalist with a natural sibilance problem. This is often caused by a gap in the front teeth creating a "whistle". The best cure is usually to fix the source. If the singer can not control the problem perhaps a bit of cotton in the "gap" if they can tolerate it. One might think notching the offending frequency would help but usually the whistle is a pretty wide band and a notch that wide will dull the entire vocal. The HIGH FREQUENCY LIMITER will probably be a better tool than EQ in this situation. One must be very careful during recording not to use too much deessing because correcting that in the mix can be more difficult.

Most engineers believe the worst source of sibilance problems is the common practice of boosting highs on vocals. Wrong. The most common cause of bad sibilance is bad equipment. The EQ usually just exaggerates the problem. With the right gear - no problem. The technical name for this type of sound is Transient Intermodulation Distortion (TIM). Cheap IC Opamps are the most common offender but we are aware of many tube and discrete mics and mic preamps with this curse. Our guaranteed solution is to use our REFERENCE GOLD or CARDIOID MICS with our MIC PREAMPS. This is not a cheap plug, it is the best solution that we know of. Considering the expense of your studio, it is really a relatively low cost answer to provide magnificent recordings without problems. Not only will your tracks sound awesome, it is very likely less EQ will be called for and no nasties if EQ is needed. You still need to be careful to avoid other dangers in the recording chain. Beware of cheap solid state compressors and gates, some console EQs, some digital recorders, etc. The good stuff won't add that harsh, ugly, sibilant distortion. The good news is that it is actually easy to mic, EQ, compress, record, boost highs again, compress again, mix and master without a hint of sibilance problems providing one uses good equipment and some awareness. The bad news is that too often a studio has no great choice in gear or the engineer has to fix some other person's recording.

The other sources of harsh top end are better recognised. Of course "over EQ" can do it. So can most forms of overload and clipping. The combination of EQ and clipping and cheap IC based gear is almost guaranteed to get you renting or buying de-essers. As to clipping - A good way to think of sibilance is like cymbals, hi-hats or some percussion because of similar high frequency transients. These instruments record best at a lower VU level. VU meters do not really read the fast transients nor do they show the analog tape EQ curves. If the highs are already distorted by less than wonderful equipment then naturally boosting the highs will boost that distortion with it. If the highs are clean and the top is boosted then the big variable is the quality of the EQ. Watch out for equalizers that are harsh rather than airy. While you probably have most control over how much to push the highs and at what frequency and Q remember to listen to the side effects of these changes. Remember that the mastering process is a good choice for boosting the highs, in general, on a mix. This way you don't have to "stretch" the limited range of the console EQ, and the monitors in mastering may be better suited for that final touch. Besides it is likely the mastering EQ will be better equipment than the studio has.

OPERATIONAL NOTES

SWITCHING ON

The power switch is located on the right hand corner of the front panel. Flip the switch up to turn on the unit and down to turn off the unit. Do not switch on and off rapidly in succession.

TUBE LIFE

As with all tubes, their quality degrades with age. This is due to cathode emission, a natural process found in all tubes. Excessive increase in noise (hiss) can indicate the need to replace a tube. Usually, the 12AU7A will be the one to try first as this is the tube in the gain stage. The 6414 is the output tube. Microphonics are a natural occurrence found to some extent in all tubes. We try our best to select the least microphonic tubes possible.

TUBE SUBSTITUTION

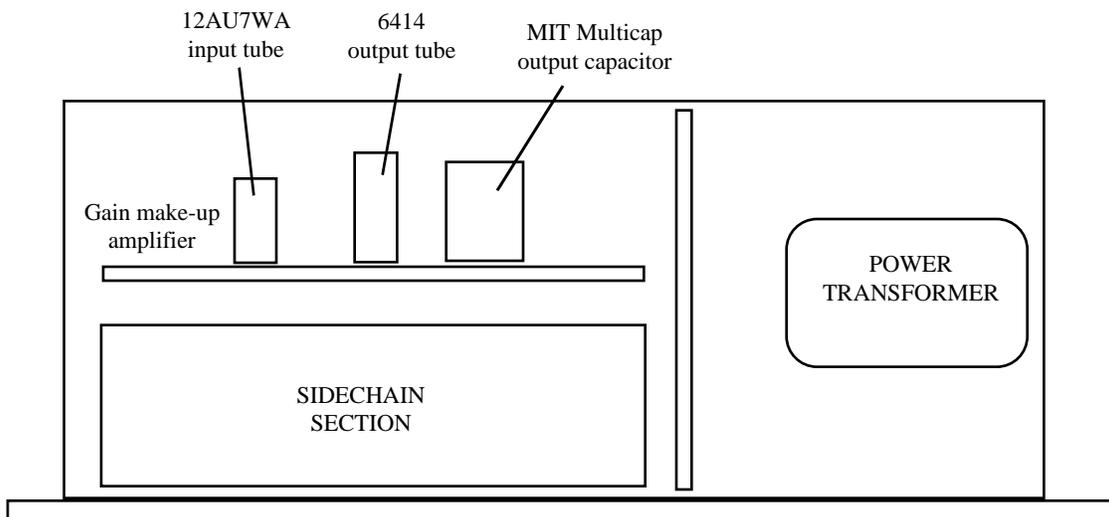
This circuit has been optimised around the 12AU7WA and the military 6414 tube types. We also believe these are the best tubes for your unit. Replacement tubes can be obtained from Manley Laboratories. However, if you're stuck in a pinch, the following tubes are approved substitutes for this unit:

For the 12AU7WA: 5814, ECC82 (exact substitutes)

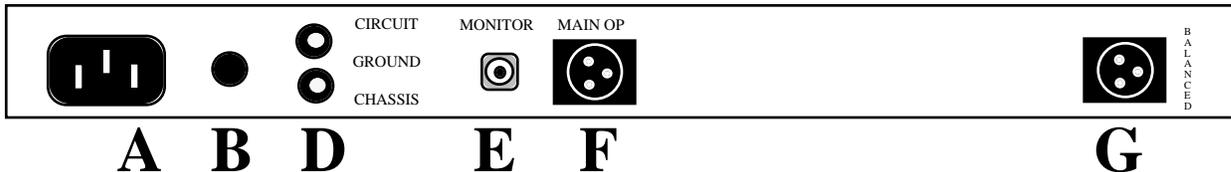
For the 6414: 12AT7, ECC81, 12BH7A (not exact substitutes, but they will work fine with a little less current output)

CUSTOM VERSIONS

For mastering use, we also build a custom version of the Manley High Frequency Limiter which has stepped controls (rotary switches) replacing all front panel pots.

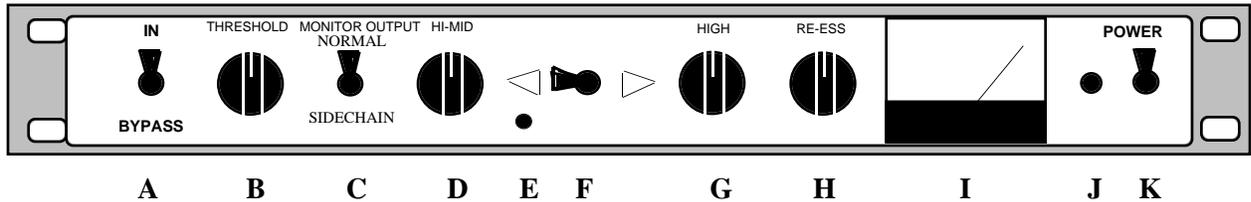


REAR PANEL



- A IEC MAINS SOCKET** - Accepts standard 50/60 Hz AC mains voltage.
- B FUSE HOLDER** - To remove the fuse, push and turn the fuse holder cap. Use a 1 Amp SLO-BLO fuse. Always replace fuse with same value and type.
- D GROUNDING TERMINALS** - These binding posts allow installation into a variety of different grounding schemes used by studios. Normally the CHASSIS GROUND and AUDIO GROUND are connected with a "strap". CHASSIS GROUND is also third pin AC ground. AUDIO GROUND could alternatively be connected with a wire to a star ground point.
- E 1/4" MONITOR OUTPUT** - The 1/4" output is controlled by with the MONITOR OUTPUT switch. It can be either parallel to the XLR output signal or derived from the sidechain filters providing a way to tune the filters to the offensive frequency. It is meant to feed a console channel not heard by the artist nor fed to tape.
- F XLR UNBALANCED OUTPUT** - This is an unbalanced output which will drive any impedance down to 600 ohms, but an impedance of 1000 ohms or greater is preferred. Pin out is as follows: PIN1 - ground, PIN3- ground (-), PIN2 - hot (+). This output is meant to feed the recording machine safely. The maximum output level is greater than +32 dBv which will provide ample headroom in all situations.
- G XLR BALANCED INPUT** - This input is transformer coupled floating balanced with PIN 1 connected to AUDIO GROUND, PIN 2 (+) connected as the positive going phase and PIN 3 (-) as the negative going phase. PIN 3 should be wired to the shield only if the source is unbalanced. Connection to PIN 1 is optional depending on the grounding scheme of the studio. The input impedance is greater than 20 Kilo-ohms. The unit will perform best with a nominal +4 signal.

FRONT PANEL



- A **IN / BYPASS** - This switch in **BYPASS** mode bypasses the DE-ESS section while the Input transformer, Re-esss circuit and amplifier remains in circuit.
- B **THRESHOLD** - This continuously variable control adjusts the onset of the de-essing. Clockwise provides a lower threshold and more de-essing
- C **MONITOR OUTPUT** - This switch only affects the 1/4" output jack. In the **SIDECHAIN** position the output is fed directly from the sidechain filters allowing the operator to accurately "tune" to the offending frequency. In **NORMAL** the 1/4" jack is fed the main output.
- D **HI-MID** - This control tunes a Bandpass filter from 5kHz to 9 kHz.
- E **SIBILANCE LED** - used for indicating when audible de-essing is occurring. This is an alternative or adjunct to the meter in many situations.
- F **SELECT** - This switch is used to select either the **HI-MID** Bandpass filter or the **HIGH** Hi-Pass filter for optimum de-essing.
- G **HIGH** - This control tunes a Hi-Pass filter from 7kHz to 16 kHz.
- H **RE-ESS** - This control is similar to a 12kHz cut and boost equalizer. The response has been tailored to introduce "air" and return some high frequency content after de-essing.
- I **METER** - This shows the cut-off frequency of the sliding filter used for de-essing.
- J **LED** - Illuminates when the power is on.
- K **POWER ON / OFF** - This switch engages **UP** turns the power **ON**; engaged **DOWN** switches the power **OFF**.

MAINS CONNECTIONS

Your HIGH FREQUENCY LIMITER has been factory set to the correct mains voltage for your country. The voltage setting is marked on the serial badge, located on the rear panel. Check that this complies with your local supply.

Export units for certain markets have a moulded mains plug fitted to comply with local requirements. If your unit does not have a plug fitted the coloured wires should be connected to the appropriate plug terminals in accordance with the following code.

GREEN/YELLOW	EARTH	terminal
BLUE	NEUTRAL	terminal
BROWN	LIVE	terminal

As the colours of the wires in the mains lead may not correspond with the coloured marking identifying the terminals in your plug proceed as follows;

The wire which is coloured GREEN/YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured GREEN or GREEN and YELLOW.

The wire which is coloured BLUE must be connected to the terminal in the plug which is marked by the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal in the plug which is marked by the letter L or coloured RED.

DO NOT CONNECT/SWITCH ON THE MAINS SUPPLY UNTIL ALL OTHER CONNECTIONS HAVE BEEN MADE.

INTRODUCTION

THANK YOU!...

for purchasing the Manley Laboratories HIGH FREQUENCY LIMITER. The Manley HIGH FREQUENCY LIMITER utilizes a passive variable reactor circuit. Our version of De-esser incorporates superior modern components with our proven line-amp superiority for absolute sonic cleanliness... Conductive plastic potentiometers and sealed gold-contact switches, polystyrene and rolled film and foil capacitors, and a brilliant mu-metal encased input transformer made in our own magnets department in-house, combined with a hi-cap power supply and state-of-the-art tube circuitry to bring the De-esser into the nineties and beyond....

Please take a few moments to read through this manual carefully as it contains information essential to proper operation of this unit.

Thank you again, and please enjoy!

GENERAL NOTES

LOCATION & VENTILATION

The HIGH FREQUENCY LIMITER must be installed in a stable location with ample ventilation. It is recommended, if this unit is rack mounted, that you allow enough clearance on the top and bottom of the unit such that a constant flow of air can flow through the ventilation holes.

WATER & MOISTURE

As with any electrical equipment, this equipment should not be used near water or moisture.

SERVICING

The user should not attempt to service this unit beyond that described in the owner's manual. Refer all servicing other than tube replacement to Manley Laboratories.



WARNING!



**TO PREVENT THE RISK OF ELECTRIC SHOCK
DO NOT OPEN THE CABINET
REFER SERVICING TO
QUALIFIED PERSONEL**

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MANLEY

LABORATORIES, INC.

OWNER'S MANUAL

HIGH FREQUENCY (DE-ESS) LIMITER

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