

MATCHLESS

Musical Instrument Amplifiers: *Clubman '35, Chieftain Reverb 210, 112, and 212*

INTRODUCTION

Thank you for choosing a MATCHLESS brand instrument amplifier. Your amplifier has been carefully hand-crafted using only quality materials. The chassis of your amplifier is completely hand wired employing construction techniques of military electronics manufacturers. We utilize point-to-point wiring instead of a printed circuit board. The wire used is silver coated, stranded copper in a Teflon jacket for extra resistance to heat and decay. The hand wound transformers are the heart and soul of our amplifiers, and these are designed for 100% duty cycle. Vacuum tubes are selected for tone, low noise, and performance. Our output tubes are carefully matched for power, balance and long life. This kind of craftsmanship and attention to detail enables us to offer the original purchaser our unconditional six year warranty.

If a defect occurs in a Matchless amplifier chassis, the repairs will be made at no cost to the original purchaser for 6 years from the purchase date.

Warranties are granted to the original owner and are non-transferable.

Matchless products are built rugged, and aside from periodic vacuum tube or indicator lamp replacement, should require very little maintenance. We have designed your Matchless product to be a trouble-free workhorse and hope you enjoy yours for many years to come.

FEATURES

The *Clubman '35* and *Chieftain Reverb* are both vacuum tube no nonsense single channel amplifiers. They offer wide-range tone controls, a master volume and an effects loop. The output amplifier is a solid *Class-A* design employing a pair of EL-34 vacuum tubes.

The preamp section on the *Clubman '35* and *Chieftain Reverb* is quite unique employing a 12AX7A tube for the first preamplifier and an EF-86 (6267) tube in the tone control circuit. The *Chieftain Reverb* utilizes 4 - 12AX7's for the Pre-amp, the tone controls, and the reverb. The tone controls are essentially passive with massive amounts of gain provided by the circuitry. The power supply is also vacuum tube rectified for smooth natural compression at high volume and full richness at low volume. Matchless designs its tone circuits to be Interactive thus enabling the user to achieve a wide variety of voicings with just a few simple controls. The effects loop enables the signal to be interrupted between the preamplifier and the power amplifier. This is useful for several purposes. It enables the preamplifier signal to be *tapped* and fed to another amplifier, or the power amplifier to be fed directly (*or slaved*) from an external signal source. Effects processors may also be inserted through the effects loop and mixed with the guitar's signal. All vacuum tubes are individually shock mounted for maximum durability.

OPERATION: GENERAL

Your *Clubman '35* and *Chieftain Reverb* are both an all tube design. If your experience is limited with regard to vacuum tube amplifiers, you should become familiar with the characteristics that differentiate them from their solid-state counterparts, aside from their tone or sonic performance.

1. Vacuum tubes require a "warm up" period of up to a full minute before they become operational, and they usually sound better as they "cook" This is due to the fact that electrons can only flow when the *cathode* of a tube is fully heated This is also the reason that vacuum tube amplifiers run so much hotter than solid state designs
2. Many amplifiers employ a *Stand-By* switch which aside from muting the amplifier, performs a more valuable function by removing current from the circuit while allowing the *heaters* to remain energized. *Class-A amplifiers should not be allowed to idle with no signal!* The stand-by mode is used during short breaks and is usually preferred to turning the amplifier off. This allows the amplifier to cool, and greatly enhances the life of the output tubes.
3. It is recommended that the power switch be energized for at least one minute before activating the amplifier with the stand-by switch. This allows all the circuits to stabilize and is a good practice in maintaining the overall reliability of the tubes and internal components.

NOTE: *Matchless amplifiers are biased hot and should not be allowed to operate with no input signal for long periods. Use the Stand-By function or shut the amplifier off during prolonged rest periods.*

Vacuum tube amplifiers are inherently sensitive to speaker impedance matching. A load imbalance can cause loss of power, self oscillation, or excessive current to flow in the output stage. In severe cases this condition can cause the output transformer to run *hot* and may damage or destroy the output tubes. This kind of damage would not be covered by a warranty. Your *Clubman '35* and *Chieftain Reverb* both have three jacks on the rear of the chassis marked 4, 8, and 16 Ohms. Select the impedance that most closely matches that of your speaker cabinet. Do not plug several speaker cabinets into the other jacks! Only one speaker jack may be used at a time. If more than one cabinet is to be used with your amplifier, they must be hooked together first, either in series or parallel. Calculate the correct Impedance and attach both cabinets to your amplifier through the appropriate jack

When it is desired to use additional speakers with an amplifier, or multiple speakers with an amp head, it is necessary to calculate the proper load Impedance. This is easily accomplished using a simple Ohm's law formula:

<u>Formula:</u>	$\frac{\text{Load 1} \times \text{Load 2}}{\text{Load 1} + \text{Load 2}}$	<u>Example:</u>	$\frac{8 \text{ Ohms} \times 8 \text{ Ohms}}{8 \text{ Ohms} + 8 \text{ Ohms}} = 4 \text{ Ohms}$
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The correct selection for *two 8 Ohm cabinets* connected in parallel would be the 4 **Ohm** jack on the rear of the amplifier. It is also possible to calculate speaker cabinets of unequal impedance values using this same formula. Simply attach the connected enclosures to the appropriate impedance value marked on the rear of the chassis. Remember, the volume output may be unequal on speakers of unequal impedance values. It is likely that a lower impedance speaker may sound louder because it demands the most power from the amplifier. Also be sure the power handling capacity of your speakers is adequate to handle the power from your amplifier.

POWER SOAK DEVICES

The use of "power-soak" devices is not recommended with your amplifier. These devices can severely shorten the life of the output tubes which *must be replaced as a matched pair*. Replacing vacuum tubes can be quite expensive. If, however, one of these devices is an integral part of your sound, choose one that is well designed and built by a reputable company. When the amplifier starts to sound dull, it's probably time to replace the output tubes. Always replace them with a premium quality pair of *two matched tubes*. Cheap tubes will not sound very good and will not last. Matchless sells replacement tubes for all models. Please contact your dealer or the factory.

SWITCHES AND INDICATORS

Power: Off/ On

This switch supplies A.C. mains power to the *Clubman/Chieftain* power supply and is used to turn the amplifier *off* and *on*. The amplifier *on* status is verified by the illumination of the "MATCHLESS" logo on the front of the amplifier. All vacuum tube heaters are energized when this switch is activated

CAUTION: Due to the demands of Class-A operation and to prolong tube life, it is recommended that the amplifier Power switch be turned on first. Allow the heaters to warm up and stabilize for at least one minute before activating the amplifier with the Stand-By switch. It is not recommended to turn the Power and Stand-By switches on simultaneously.

STAND-BY:

This switch is used to activate and de-activate the amplifier. It controls the high voltage section of the power supply. The Stand-By mode serves as a mute for the amplifier and is useful when changing or un-plugging guitar cords or taking breaks, especially if volume control settings are to be set and left. Additionally, the *Stand-By* function allows the amplifier to cool down, extending the life of the output tubes. Substantial amounts of current flow through the output tubes whenever the amplifier is *operational*, even with *no signal from an instrument*. The operate status is verified by the illumination of the "dash board" or front control panel.

PRECAUTION! Cathode biased Class-A amplifiers do not like to "idle" with no input signal for prolonged periods. These amplifiers can draw more current idling than they do while being played. Use the Stand-By mode or turn the amplifier off if you are not going to play for a while. Save your output tubes!

ABOUT THE FUSE!

Your Matchless amplifier employs a line safety fuse for protection against damage. The line fuse offers protection against irregularities in an A.C. source, tube failure, severe overload in the output amplifier, and other conditions that prove unsafe or damaging to the amplifier. If the amplifier line fuse blows, an investigation into its cause is required. Correct any problems that may be found before putting the amplifier back in service.

Never replace a line safety fuse with one of a higher amperage rating! Not only is it unsafe, but it leaves your amplifier unprotected in the event of tube or component failure and voids your warranty.

Your *Clubman '35* and *Chieftain Reverb* amplifiers can be ordered to accommodate the voltages for many different countries. The correct fuse size and type is indicated on the vacuum tube chart on the inside of the amplifier cabinet.

THE CLUBMAN '35 PREAMPLIFIER

INSTRUMENT INPUTS:

Your amplifier has two instrument inputs, one next to the other. The input on the left (*input number 1*) is the high gain input. It is a high sensitivity input and works well with vintage guitars or instruments with low output pickup coils. The input on the right (*input number 2*) is a lower gain input. This input offers less gain and therefore is less sensitive. This input may offer a better match in terms of clean headroom with instruments having *hot* pickups. Instrument pickups vary in signal strength and the user may find that one input offers better overall tonal character than the other. The channel volume control also influences the sensitivity of both input jacks. Feel free to experiment and decide for yourself which input sounds best with your instruments. If you prefer to overdrive the high gain input with a hot guitar, have no fear of harm being done to the preamplifier. If it sounds good, *do it!*

VOLUME CONTROL:

The channel **Volume** control sets the gain of the first preamp stage. This control acts as a *sensitivity* control and a *drive* control. The higher the setting, the easier it is to overdrive the following stage. By careful adjustment of the *Volume* control, it is possible to obtain both *clean* and *overdriven* amplification by using just the volume controls on your instrument. Use the channel *Volume* control in conjunction with the *Master* volume control to define both clean and overdriven character.

The Clubman '35 is very responsive to the input signal from the guitar. Turning the volume down on the guitar will significantly "clean up" the sound when the amplifier is set at high volume for overdrive. This allows the player to choose between rhythm and lead sounds from the guitar without using pedals or switches.

TONE CONTROLS:

There are three controls that make up the equalization section of the preamplifier. The *Bass* control sets the overall *depth* or *body* of the signal. This control has very wide range and was designed to give maximum flexibility over low frequency tone shaping, especially when used for recording work. One word of caution should be noted when using the *Bass* control, due to its very wide range, excessive amounts of bass can cause floppiness and lack of definition at high volume settings. Use discretion with regard to the amount of bass you employ. The *Treble* control defines the tonal *voice* of the instrument by regulating the mid-band and upper mid-band frequencies. The *Brilliance* control adjusts the overall high frequency response of the *power* amplifier. The *Brilliance* control is used to *smooth* out high frequency edginess or *bring it forward*. Usually, an overall guitar tone is dialed in using the *Bass* and *Treble* controls, as they are highly interactive. Then the *Brilliance* control offers extra flexibility and tone shaping by widening or narrowing the broad-band response of the amplifier. These three controls provide exceptional voicing capability for your instrument by their unique and interactive design.

Channel volume settings also affect the performance and personality of the tone control circuits and it is recommended that the user explore this harmonically rich territory that makes up the entire Clubman '35 preamplifier!

MASTER VOLUME CONTROL:

The *Master* volume control adjusts the overall gain of the output amplifier. Normally (*for maximum clean headroom*) the *Master* volume control is set to its maximum (*fully clockwise*) position. This allows the power amplifier to run at full gain. For *dirtier* sound, the *Master* volume control enables the preamplifier to be *saturated* without having the amplifier at full volume. For overdriven tone of varying degrees of character and volume, the *Master* volume control is used in conjunction with the channel *Volume* control. Experimentation here can truly be a rewarding experience.

EFFECTS LOOP:

Your *Clubman '35* is equipped with an effects loop feature. There are two 1/4" jacks on the rear of the chassis, one marked *Send* and the other marked *Return*. The signal of the preamplifier is fed to the power amplifier through these two jacks. When nothing is plugged into either jack, the signal is *normalled* through to the power amplifier. The effects loop can be used in a number of ways.

PRECAUTION: Always turn the amplifier off or put in Stand-By mode when making connections to the effects loop.

The *first* use of the *Loop* is to take the output of the preamplifier section of the *Clubman '35* and feed it to another amplifier in addition to the internal power amplifier. To do this, simply take a guitar cord and connect it to the *Send* feed and then to whatever equipment you are going to feed the signal to.

Taking a signal from the *Send* does *not* interrupt the signal being fed through to the power amplifier. If you do not want the signal fed to the internal power amplifier, plug in a shorted 1/4' phone plug into the *Return*.

The *second* use for the *Loop* is to use the power amplifier section of the *Clubman '35* as a *slave* amp or with a different preamplifier. To use this feature, take a guitar cord and insert it into the *Return* section of the loop. Connect the other end of the guitar cord to the output of the device you would like to drive the amplifier from. Inserting a plug into the *Return* disables the internal *Clubman '35* preamplifier.

The *third* use for the *Loop* is with an effects device. Using two guitar cords, insert one into the *Send* and connect the other end of this cord to the *input* of the effects device. Insert the other cord into the *output* of the effects device and then to the *Return* jack on the Chieftain. This completes the connections. Careful adjustment of the *input* and *output* level controls on the effects device is required for optimum performance. This is called *setting the operating level or gain structure*.

THE CHIEFTAIN PREAMPLIFIER

Chieftain Instrument Input:

Chieftain Reverb amplifiers have a single input jack on the front panel. This input is a standard high impedance type and is designed to accommodate a wide variety of pick-ups and signal levels. Whether your instrument is a vintage model or a high tech model employing active electronics your Matchless Chieftain will work well with them all. The preamplifier is carefully designed to provide adequate headroom and lowest possible noise for whatever instrument is used

VOLUME CONTROL:

The channel *Volume* control sets the gain of the first preamp stage. This control acts as a *sensitivity* control and a *drive* control. The higher the setting, the easier it is to overdrive the following stage. By careful adjustment of the *Volume* control, it is possible to obtain both *clean* and *overdriven* amplification by using just the volume controls on your instrument. Use the channel *Volume* control in conjunction with the *Master* volume control to define both clean and overdriven character.

The Chieftain Reverb is very responsive to the input signal from the guitar. Turning the volume down on the guitar will significantly "clean up" the sound when the amplifier is set at high volume for overdrive. This allows the player to choose between rhythm and lead sounds from the guitar without using pedals or switches.

TONE CONTROLS:

There are three controls that make up the equalization section of the preamplifier. The *Bass* control sets the overall depth or body of the signal preamplifier. The *Bass* control sets the overall depth or body of the signal. This control has very wide range and was designed to give maximum flexibility over low-frequency tone shaping, especially when used for recording work. One word of caution should be noted when using the *Bass* control, due to its very wide range, excessive amounts of bass can cause floppiness and lack of definition at high volume settings. Use discretion with regard to the amount of bass you employ. The *Treble* control defines the tonal voice of the instrument by regulating the mid-band and upper mid-band frequencies. The *Brilliance* control adjusts the overall high frequency response of the power amplifier. The *Brilliance* control is used to smooth out high frequency edginess or bring it forward. Usually, an overall guitar tone dialed in using the *Bass* and *Treble* controls, as they are highly interactive. Then the *Brilliance* control offers extra flexibility and tone shaping by widening or narrowing the broad-band response of the amplifiers. These three controls provide exceptional voicing capability for your instrument by their unique and interactive design.

Channel volume settings also affect the performance and personality of the tone control circuits and it is recommended that the user explore this harmonically rich territory that makes up the entire Chieftain preamplifier!

MASTER VOLUME CONTROL:

The master volume control adjusts the overall gain of the output amplifier. Normally (for maximum clean headroom) the *Master* volume control is set to its maximum (fully clockwise) position. This allows the power amplifier to run at full gain. For dirtier sound, the *Master* volume control enables the preamplifier to be saturated without having the amplifier at full volume. For overdriven tone of varying degrees of character and volume, the *Master* volume control is used in conjunction with the channel *Volume* control. Experimentation here can truly be a rewarding experience.

EFFECTS LOOP:

Your Chieftain Reverb is equipped with an effects loop feature. There are two ¼" jacks on the rear of the chassis, one marked *Send* and the other marked *Return*. The signal of the preamplifier is fed to the power amplifier through these two jacks. When nothing is plugged into either jack, the signal is normalled through to the power amplifier. The effects loop can be used in a number of ways.

PRECAUTION:

Always turn the amplifier off or put in Stand-By mode when making connections to the effects loop.

The first use of the *Loop* is to take the output of the preamplifier section of the Chieftain Reverb and feed it to another amplifier in addition to the internal power amplifier. To do this, simply take a guitar cord and connect it to the *Send* feed and then to whatever equipment you are going to feed the signal to.

Taking a signal from the *Send* does not interrupt the signal being feed through to the power amplifier. If you do not want the signal fed to the internal power amplifier, plug in a shorted 1/4' phone plug into the *Return*.

Never operate your Clubman '35 or Chieftain without a speaker or suitable load. Severe damage can be caused to the amplifier if it is operated without a load. Don't do it!

The second use for the Loop is to use the power amplifier section of the Chieftain Reverb as a slave amp or with a different preamplifier. To use this feature, take a guitar cord and insert it into the Return section of the loop. Connect the other end of the guitar cord to the output of the device you would like to drive the amplifier from. Inserting a plug into the Return disables the internal Chieftain preamplifier.

The third use for the Loop is with an effects device. Using two guitar cords, insert one into the Send and connect the other end of this cord to the input of the effects device. Insert the other cord into the output of the effects device and then to the Return jack on the Chieftain. This completes the connections. Careful adjustment of the input and output level controls on the effects device is required for optimum performance. This is called setting the operating level or gain structure.

REVERBATION:

Chieftain Reverb model amplifiers have built in reverberation effect which is footswitch controllable. The knob on the front of the amplifier adjusts the amount or degree of reverb that is added to the normal signal. Turning the knob fully clock wise provides the maximum degree of added effect. Care should be exercised when playing the amplifier at extremely loud levels with reverb effect, as it is possible to couple the speaker's acoustic energy back into the spring reverb tank. Under extreme conditions this can cause the tank to "feed-back" or howl. Re-adjustment of the reverb level control can minimize this condition.

A standard push-on/push-off footswitch can be used to turn the reverb effect on and off. This switch plugs into the back of the amplifier using a ¼" phone plug.

MAINTENANCE

Aside from routing vacuum tube or indicator lamp replacement, your Matchless should require very little in the way of service. Periodically examine the condition of the output tubes which are visible from the rear of the chassis. Any tendency of one or both of these tubes to glow reddish in the plate area is an indication of an imbalance in the amplifier. This should be checked out by a technician or by substituting a fresh set of matched tubes. If over a period of time of hard playing the amplifier sounds weak or dull, it may be an indication that output or preamp tubes are "tired" and probably require renewal. Always replace output tubes as a matched pair. If one or more of the preamp or phase inverter tubes becomes abnormally micro phonic or the amplifier "whistles" with the controls set at maximum (with nothing plugged into the inputs) a replacement may be required to fix the problem.

It should be noted that it is normal to experience somewhat mild micro phonic behavior at very high volume settings. The Clubman '35 uses very high gain tubes in the preamp section and they are sensitive to mechanical vibration!

VACUUM TUBE REPLACEMENT:

Never attempt to replace vacuum tubes while power is applied to the amplifier or the amplifier is hot. To replace tubes, disconnect the amplifier from the mains and remove the back panel screws. The power amplifier and rectifier tubes are secured with a special clamp which must be loosened before the tubes can be removed. The preamp tubes and the phase inverter tube are secured with a twist-lock tube shield. Push down and turn tube shield counter-clockwise to remove it. Be very careful not to bend tube pins or force a tube into its socket. Before replacing the back panel, test the amplifier and make sure it functions normally. Look possible for signs of overheating in the output tubes. If all appears well, re-tighten the clamps, replace the tubes shields and secure the back panel. Test again for good measure.

INDICATOR LAMP REPLACEMENT:

Matchless employs incandescent bayonet style lamps to illuminate the logo and dash board or front panel. All the lamps are of the same type for simplicity. A standard type #47 is recommended for all lamps, although a type # 44 may be substituted if a brighter look is desired.

FRONT PANEL OR "DASHBOARD" LAMP REPLACEMENT:

There are five lamps used to illuminate the front panel of the amplifier. When one of these lamps requires replacement, the entire chassis must be removed from the cabinet. To do this, first remove the power cord from the chassis. Take off the back panel by first removing the screws that secure it to the cabinet. Loosen the clamp screws that secure the output tubes (EL-34's). Remove these two tubes so they won't be damaged when the chassis is removed from the cabinet. Remember which socket each tube was removed from. Make certain they are replaced in their original sockets. Remove two twisted wires that provide power to the logo illuminating light box. They are affixed with quick disconnect terminals. Carefully remove the four screws on top of the cabinet while supporting the weight of the chassis with one hand. Slide the chassis out to replace the bulbs. To re-install the chassis, simply reverse the process.

LOGO LAMP REPLACEMENT:

There are four lamps used to illuminate the "MATCHLESS" logo. If the logo appears unevenly lit, one of these lamps is probably out. The lamps are located in a reflector assembly known as the light box. To replace one of these lamps first remove the chassis as described in the previous section. Remove the screws that secure the light box assembly to the cabinet. Remove the light box assembly and replace the defective bulb(s). To re-install the light box and chassis, simply reverse the process.

CAUTION!

Never place drinks on top of the amplifier for obvious reasons. Spilled liquids can cause the glass envelopes of the hot vacuum tubes to crack possibly shorting out the amplifier. Liquids can also cause severe damage to delicate switches, sockets and potentiometers and generally reduce the overall reliability of your amplifier as well as require an expensive repair. If an accidental spill does occur, remove the amplifier from the cabinet, remove the tubes, and thoroughly clean and dry the chassis before attempting to use the amplifier.

Never replace the protective fuse with one of a higher amperage rating. If an amplifier starts blowing fuses, it may be a warning of an impending problem with the amp and should be looked over by a professional.

USE IN OTHER COUNTRIES:

Your Matchless *Clubman '35* or Chieftain Reverb amplifier is equipped with a multiple primary winding power transformer enabling the amplifier to be configured for use in foreign countries. This is an internal connection change and must be done by a qualified technician. Matchless amplifiers can operate on voltages ranging from 110-120 volts A.C. at 60 Hertz and 220-240 volts A.C. at 50 Hertz. If you have any questions about this conversion, please contact the factory.