

Marshall

AMPLIFICATION



1974X - 18 Watt Combo
Owners Manual



From the Chairman

Congratulations on your purchase of this handwired re-issue of the model 1974 18 Watt, all-valve 1x12" guitar combo. The original versions of this wonderful sounding amplifier were produced between the years 1966 and 1968 and are now extremely rare and much sought after. This authentic re-issue of the 1974 is part of an ongoing series, which will feature revered handwired products from Marshall's history. The reason I have decided to do this is simple – public demand!

One of the things I love doing most is meeting and talking to Marshall users at the many trade shows, music fairs and shop appearances I do all over the world every year. A subject that almost always seems to come up in conversation at such events is hand-wiring. In fact, over the past few years so many people have asked me to please start building handwired re-issue products that I've lost count! One of the most requested vintage Marshall amps to appear in such a guise is the model 1974X combo you've just bought – hence its inclusion as one of our first handwired re-issues.

Like a great many vintage Marshall guitar amplifiers, the 1974X is relatively simple in terms of controls, features and circuitry, but sounds and feels fantastic. To recreate the tone and feel of the original 1974, as well as its eye-catching good looks, my team of designers have gone to enormous lengths to seek out and/or reproduce all of the original components and materials, plus revisit the original methods of construction we used back in the mid 1960s. From the handwired, tag-board circuit housed in an aluminium chassis, to the exclusively re-issued and specially 'aged' Celestion 20 Watt speaker, I am extremely proud of the incredible accuracy and authenticity of this re-issue.

I sincerely hope that this handwired piece of Marshall history will provide you with countless hours of playing pleasure.

Yours Sincerely,




Introduction

Overview: Tone and Tech Talk

The 1974X is an all-valve, 18 Watt, two-channel, 1x12" combo with valve driven tremolo and no negative feedback in its cathode-biased output stage. When building this handwired re-issue our goal was both obvious and simple: to make it as close as possible to the original.

As Jim has already pointed out, we went to incredible lengths to achieve maximum authenticity in terms of components, circuitry, constructional methods, materials, specifications, aesthetics, signal path, performance, tonal characteristics and feel. We are delighted to report that our suppliers were equally as exacting in their tasks – none more so than Dagnall Transformers and Celestion Speakers.

As you can see from its top panel layout, the 1974X is an extremely straightforward amplifier. Channel 1 (the non-tremolo channel) only boasts two, self-explanatory controls: Volume and Tone; while Channel 2, the Tremolo Channel, boasts four – namely Volume and Tone, plus Speed and Intensity for the valve driven tremolo circuit.

Like all Marshall valve amplifiers, the 1974X sounds truly majestic when turned up full – and because of its relatively low wattage this can be done at ear friendly volumes, making it a wonderful recording tool. In keeping with bigger, non-master-volume, all-valve, Marshall amplifiers such as the 1962 'Bluesbreaker' combo and the legendary 100 Watt 'Plexi' head, the 1974X's sweetly distorted, harmonically rich, thick, musical tones result from the power valves being overdriven. Our proprietary, re-issued and 'aged' 20 Watt Celestion speaker contributes to the combo's unique, punchy yet smooth sound as well. As a result, when 'cranked' the 1974X is incredibly touch-sensitive, cleaning up or, if desired, sitting right on the edge of distortion when the guitar's volume is turned down. It responds well to picking dynamics too, 'sagging' nicely when you play like you really mean it and, once again, cleaning up as you pull back on your picking attack.

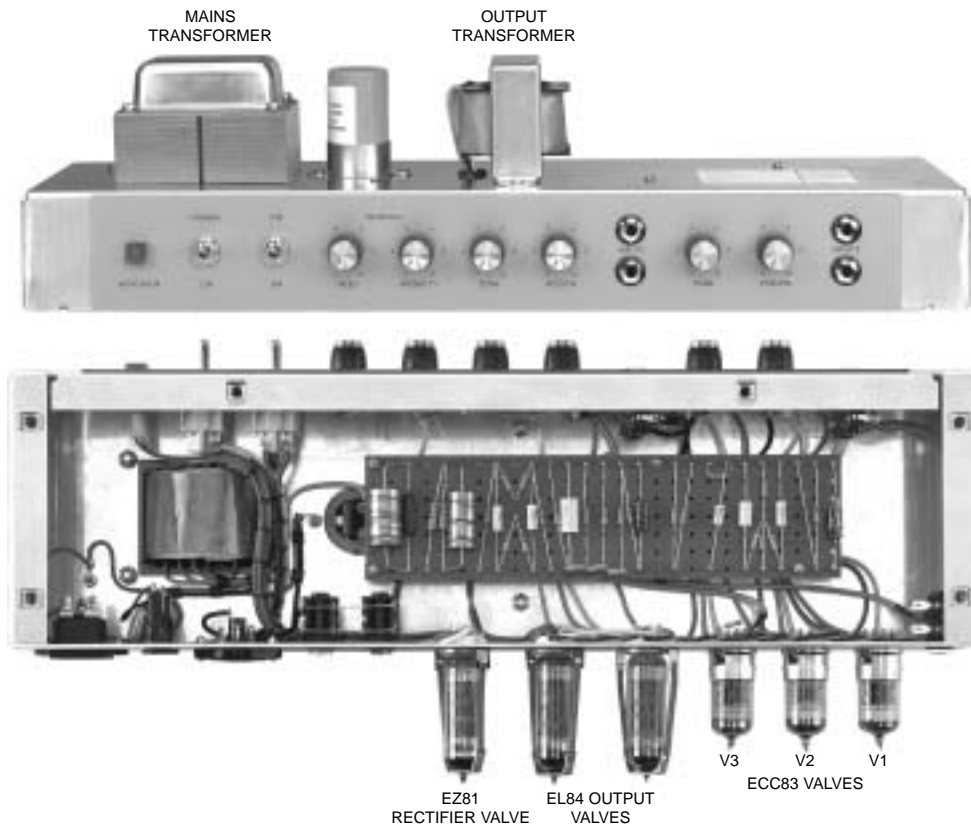
There now follows some information regarding the inner workings and build of the 1974X.

Valve complement: Three ECC83s (12AX7s) in the pre-amp, a EZ81 rectifier and a pair of EL84 power valves working in push-pull. All valves are of the highest quality available and go through a meticulous grading and testing process.

The way the three ECC83s (V1, V2 & V3) in the pre-amp are utilised is as follows: V1 is dedicated to Channel 1, the non-tremolo channel. As Channel 1's pre-amp has a single gain stage, each half of the valve (the ECC83 being a dual-triode) acts as a dedicated gain stage for the channel's two inputs (which are identical). V2 acts as the amplifier's phase-splitter. V3 is dedicated to Channel 2, the Tremolo channel. To be precise, one half of the ECC83 acts as the single pre-amp gain stage for the channel's two inputs (High and Low) while the other half acts as the oscillator for the amp's tremolo circuit.

Due to the fact that the EZ81 rectifier valve and also the pair of EL84 output valves attain extremely high temperatures when the amplifier is in use, their bases are made from the highest grade ceramic available.

Important Note: In order to comply with the strict safety requirements of modern legislation, the 1974X's valves have been housed in a removable, vented aluminium cage. This is obviously a deviation from the original spec. but has no tonal or performance impact on the amplifier what-so-ever.



Tone Circuit: In typical Marshall fashion, the tone network is post gain and passive. The tone circuit involves a blend of high frequency pre-emphasis and passive high frequency cut – the mix of which is dependant upon the setting of the Tone control on the channel being used.

Components: With the obvious exception of the valves, all components used were sourced from European and American manufacturers – including some custom built, ‘double can’ (a.k.a. ‘dual gang can’ or ‘dual electrolytic’ – meaning two capacitors in a common case) power supply capacitors due to the odd value used in the original – one of many steps taken to ensure maximum authenticity.

Tag Board: This is exactly the same as the original in terms of dimensions, thickness and matrix pitch. The material used is EM42. The reason we didn’t use a board with the exact same chemical composition as in the original units is because that material doesn’t pass current safety legislation regarding flammability.

Transformers: Because the 1974 combo was produced relatively early in Marshall’s history (1966 - ‘68), Jim had yet to strike up his now well-known relationship with transformer manufacturers, Dagnall and Drake. As a result, both the power and mains transformers used in the original 1974s were ‘off-the-shelf’ devices purchased from a highly regarded, general electronic component supplier. This company, whilst still in existence, does not have records of exactly who manufactured the original transformers. As you probably know, the output and mains transformers are vital components in an amplifier as they influence performance, sound and feel. Consequently, we worked extremely closely with our associates in Dagnall’s R&D department in order to duplicate the original transformers in all areas. To do this we spent a great deal of time and attention studying and analysing the constructional methods and materials (e.g.: lamination grade, insulation, coil spacing, etc.), used in both transformers so we could match everything as closely as possible and also ensure that the all-important electrical characteristics and performance were identical. With Dagnall’s expert help and dedication, we’ve done exactly that.

Output Transformer: In the original 1974 the speaker was hardwired directly to the 8 Ohm tap on the transformer. To make the re-issue more user-friendly, the internal speaker is not hardwired to the transformer – instead the speaker cable is fitted with a jack and then connected to the amp via one of the two speaker outputs on the rear panel of the combo. The rear panel also boasts an impedance selector with three options – 4, 8 or 16 Ohms.* These additions (the original didn’t have speaker outputs or an impedance selector) give the user maximum flexibility, enabling you to use an external cabinet (Note: the 1974CX, a cosmetically matching 1x12" extension cabinet loaded with the same 20 Watt Celestion speaker, is available) in conjunction with the internal speaker or, if you wish, disconnecting the internal speaker and using the 1974X to drive one or two external speakers cabs.

***Note 1:** Adding speaker outputs and the impedance selector has no effect on the tonal authenticity of the 1974X, they merely add to its potential flexibility.

***Note 2:** On the original output transformer you could choose from one of three taps: 8 Ohms, 16 Ohms and something called a ‘100 Volt line load’ – a quaint offering that’s completely irrelevant to musical applications. So, we replaced it with a 4 Ohm tap instead – a far more useful option, the addition of which has no effect what-so-ever on the performance of the transformer.

Mains (Power) Transformer: Just like the ‘off-the-shelf’ device used in the original, the re-issue’s mains transformer is a ‘drop through, half-shroud’ type. In order to comply with strict, current-day safety legislation the custom-manufactured Dagnall transformer we’re using is physically larger than the one in the original but, as with the output transformer, we went to great lengths to ensure that its performance mirrors that of the original. We paid particular attention to exactly replicating an effect called ‘regulation’ – which is the way that the voltage from the transformer that feeds the valve circuitry varies according to the power delivered in the speaker.

Chassis: As in the original, the chassis we’re using is made from aluminium. While the original chassis was open-ended though, the re-issue’s is closed-ended. This has been done purely for strength/constructional integrity reasons (all the open-ended originals we’ve seen have been quite badly deformed) and has no sonic effect (positive or negative).

Speaker: A definite contributing factor in the sound of the vintage 1974 amplifiers is the way the Celestion Greenback loudspeaker sound softens with age. In order to establish exactly the sound we were trying to recreate we listened to many vintage correct Greenbacks from our Museum here in Bletchley. We then met up with Celestion to decide a strategy to recreate the gorgeously smooth tones of our vintage Greenbacks which are over 35 years old.

Celestion revisited the 1967 recipe for the original 20 Watt, ceramic magnet, 15 Ohm, Greenback T1221 speaker used in the 1974 and supply it to us exclusively. They meticulously duplicated every critical vintage parameter from winding lengths, coil former dimensions and edge treatment to using the original dustcap material and adhesive. In sound tests these speakers were close, but still lacked something of the sonic signature of the originals.

Further investigation uncovered that the magnetic properties and cone make-up of the vintage speakers varied slightly from the newly manufactured speakers. This slight sonic discrepancy led us to investigate the possibilities of somehow ‘ageing’ the speakers. Celestion’s proprietary ‘ageing’ is largely achieved by the following two things:

- i) Matching the magnetic flux to that of our vintage references in order to duplicate the output of the older speakers. Doing this not only affected the ‘loudness’ of the speakers but also altered the tonal balance, warming up the low end and also making the top end less aggressive – exactly like the originals.
- ii) Specially manufacturing the cone material to be more ‘pulp’y’, recreating the ageing effect and thus further softening the sound of the combo.



Top Panel: Extra thick, gold coloured Plexiglas (actually Perspex, causing some people to refer to it as 'Perplexi!') – exactly as the original. Specific details pertaining to the front panel features can be found on page 5 of this manual.

Cabinet Construction: High-grade, flawless (knot-free) Baltic birch ply with fingerlocked (a.k.a. comb) joints for maximum strength. The main cabinet frame (both sides, top and bottom) plus the front baffle are constructed from 12mm ply while the back of the cabinet is 9mm ply. All edges have a 22mm radius.

Cabinet Cosmetics: The black Levant, beading, piping and small 6" gold logo are exactly as the original. The original grey and white striped 'Bluesbreaker' grille cloth (used from 1965 to 1968) is no longer available, which is a moot point due to the fact that it wouldn't satisfy current-day safety legislation regarding flammability because of its rubber content. Using special weave and dye technology, our current fret supplier has worked with us to come up with a paper fret alternative which is cosmetically very similar to the original.

Rear Panel Improvements

The five features listed below are all 'deviations' from the original that have been added for user-friendliness, practicality, added flexibility and/or improved serviceability. Please note that none of these have any sonic impact (positive or negative) on the combo in any way.

Speaker Output Jacks: As mentioned earlier, no speaker output jacks were present on the original – the internal speaker was hardwired directly to the output transformer and there was no provision for external cabinet usage. Adding these allows you to use an extension speaker cabinet with the internal speaker or, if you wish, disconnect the internal speaker altogether and use the 1974X to drive one or two extension cabinets.

Important Note: The 1974X should never be used without a speaker load attached and the minimum rated impedance should always be met.

Impedance Switch: Another feature that wasn't present on the original but, in conjunction with the Speaker Output Jacks, obviously adds to the unit's flexibility.

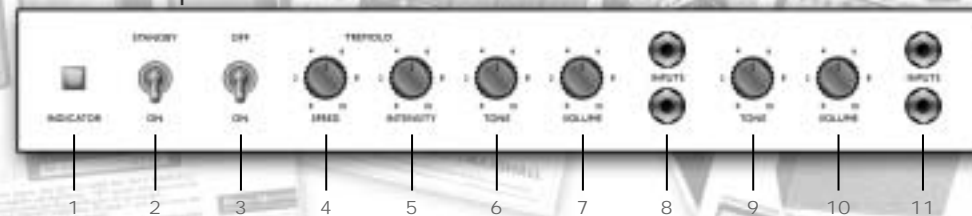
H.T. and Mains Fuses: In the original these two fuses were located within the chassis itself, making it extremely time consuming and cumbersome to access them should one blow. Making both fuses easily accessible via the rear panel is another obvious improvement we're sure you'll agree.

Tremolo Footswitch Jack: The original footswitch was hardwired to the combo.

Note: The detachable Tremolo on/off footswitch that is supplied with your unit is an exact, diecast copy of the original.

Mains Cord: The original was hardwired to the unit, for serviceability and sheer practicality the mains cord on the re-issue is detachable.

1974X Top Panel



1. INDICATOR

This filament bulb indicator will light up when your amplifier is switched on. It will not be lit when the amplifier is switched off and/or is not receiving mains power.

2. STANDBY SWITCH

The Standby Switch is used in conjunction with the Power Switch (item 3) to 'warm up' the amplifier before use and to prolong the life of the output valves.

When powering up the amplifier always engage the Power Switch first, leaving the Standby switch on 'Standby'. This allows the application of the voltage required to heat the valves to their correct operating temperature – hence the switch's name. After approximately two minutes the valves will have reached the correct operating temperature and the Standby Switch can be engaged. Upon doing this the H.T. (High Tension) voltage required by the two EL84 output valves to pass signal (and hence produce sound) is applied. In order to prolong valve life, the Standby Switch alone should also be used to turn the amplifier 'on' and 'off' during breaks in a performance. Also, upon full power down, always disengage the Standby Switch prior to the main Power Switch.

3. POWER SWITCH

This is the On/Off switch for mains power to the amplifier.

Note: Please ensure the amplifier is switched off and unplugged from the mains electricity supply whenever it is moved.

CHANNEL 2 THE TREMOLO CHANNEL

4. TREMOLO SPEED CONTROL

This controls the speed of tremolo oscillation when this effect (which can be switched on/off via the supplied footswitch) is being used. Oscillation speed increases when the Speed control is turned clockwise and decreases when it is turned anticlockwise.

5. TREMOLO INTENSITY CONTROL

This controls the intensity or depth of the tremolo oscillation when the effect is being used. The effect depth increases when the Intensity control is turned clockwise and decreases when it is turned anticlockwise.

6. TONE CONTROL

This adjusts the tonal character of the Tremolo Channel. Turning this control clockwise increases the amount of high frequencies (treble) present in the sound.

7. VOLUME CONTROL

This controls the volume of the Tremolo Channel. Turning it clockwise increases the volume level of the channel.

8. CHANNEL 2 INPUTS

These are the guitar inputs for the Tremolo Channel. The top one is the 'high sensitivity' input for this channel, the bottom one is the 'low sensitivity' input which is 6dB lower (i.e. half) than the 'high sensitivity' input and has a darker sound. Always use a high quality screened guitar lead.

CHANNEL 1 THE NON-TREMOLO CHANNEL

9. TONE CONTROL

This controls the tonal character of Channel 1. Turning the tone control clockwise increases the amount of high frequencies (treble) present in the sound.

10. VOLUME CONTROL

This controls the volume of Channel 1. Turning it clockwise increases the volume level of the channel.

11. CHANNEL 1 INPUTS

These are the guitar inputs for this Channel and both are identical.

Performance Note: Bridging or 'jumping' the two channels
 Because both Channels of the 1974X have the same number of gain stages (one) and are therefore in phase with each other, it is possible to bridge them together (a.k.a. 'slaving', 'jumping', 'linking' or even 'daisy-chaining') and use them both at the same time – providing you use the Tremolo Channel as the primary (the reverse won't work due to the way Channel 1's two identical inputs are configured). Doing this enables you to expand upon the amps tonal possibilities by mixing the two channels together.

The most common way of doing this is to plug your guitar into the top (high sensitivity) input of the Tremolo Channel and then run a short 'jumper' guitar cable (i.e. a screened cable) from the Tremolo Channel's bottom (low sensitivity) input to either one of Channel 1's two identical inputs.

It is also possible to plug your guitar into the Tremolo Channel's bottom (low sensitivity) input and then run the 'jumper' cable from its top (high sensitivity) input to Channel 1. This less common approach can yield some interesting tonal variations.



Technical Specification

Power Output	18W RMS
Weight	18.2kg
Size	532mm x 610mm x 225mm

EUROPE ONLY **CE** - Note: This equipment has been tested and found to comply with the requirements of the EMC Directive (Environments E1, E2 and E3 EN 55103-1/2) and the Low Voltage Directive in the E.U.

EUROPE ONLY - Note: The Peak Inrush current for the 1974X is 10 amps.

1974X Rear Panel



1. TREMOLO FOOTSWITCH JACK

This is where the supplied Tremolo on/off footswitch is plugged in.

2. LOUDSPEAKER OUTPUTS

There are two parallel loudspeaker output jacks provided for connection to the internal speaker and/or an external load, i.e. speaker extension cabinet(s). When connecting speaker(s) please always ensure that the amplifier's output impedance is set correctly (item 3).

WARNING! Never use the combo without a load attached!

Always use a non-screened Marshall approved speaker lead when connecting an extension cabinet to these units.

3. OUTPUT IMPEDANCE SELECTOR

Matches the amplifier's output to the load (speaker) impedance.

As is the case with any Marshall all-valve amplifier it is imperative that: a) the amplifier is connected to a load whilst in operation and b) the impedance selected on the amplifier matches the total impedance of the internal speaker and/or extension speaker cabinets.

The combo's internal speaker is 15 Ohms so when it is being used by itself the Impedance Selector must be set to 16 Ohms. If an additional 16 Ohm extension speaker cabinet is used in conjunction with the internal speaker the Impedance Selector should be set to 8 Ohms.

WARNING! An extension speaker cabinet with an impedance of less than 16 Ohms should NOT be used in conjunction with the internal speaker.

The amp should be completely powered down before the Output Impedance Selector is turned. Failure to comply with any of the points raised in this section will result in damage to the amplifier.

4. MAINS FUSE

The correct value of mains fuse is specified on the rear panel of the amplifier. **NEVER** attempt to bypass the fuse or fit one of the incorrect value.

5. H.T. FUSE

The correct value of H.T. fuse is specified on the rear panel of the amplifier. **NEVER** attempt to bypass the fuse or fit one of the incorrect value.

6. MAINS INPUT

Your amp is provided with a detachable mains (power) lead, which is connected here. The specific mains input voltage rating that your amplifier has been built for is shown on the back panel. Before connecting for the first time, please ensure that your amplifier is compatible with your electricity supply. If you have any doubt, please get advice from a qualified technician. Your Marshall dealer will help you in this respect.

Follow all instructions and heed all warnings
 KEEP THESE INSTRUCTIONS !