

# *Marshall*

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## *Valve Power Amps*

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***EL84 20/20,  
EL34 50/50  
& EL34 100/100***

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*Whilst the information contained herein is correct at the time of publication,  
due to our policy of constant improvement and development, Marshall  
Amplification plc reserve the right to alter specifications without prior notice.*

*Jan '99*

# ***Handbook***

# WARNING!

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## PLEASE READ THE FOLLOWING LIST CAREFULLY

- A. ALWAYS** fit a good quality mains plug conforming to the latest B.S.I. standards where necessary (UK only).
  - B. NEVER** attempt to by-pass fuses or fit ones of the incorrect value.
  - C. NEVER** attempt to replace fuses or valves with the amplifier connected to the mains.
  - D. DO NOT** attempt to remove the amplifier chassis, there are no user serviceable parts.
  - E. ALWAYS** have this equipment serviced or repaired by competent, qualified personnel.
  - F. NEVER** use an amplifier in damp or wet conditions.
  - G. DO NOT** switch the amplifier on without the loudspeaker connected.
  - H. ENSURE** that any extension cabinets used are of the correct impedance.
  - I. WARNING:** When fitted into a standard rack or flight case, **ALWAYS** ensure that the front and back of the case are completely removed. For stand alone use, a clearance of 30cm is required at the top, back and sides.
  - J. PLEASE** read this instruction manual carefully before switching on.
- WARNING :** This apparatus must be earthed.
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## Introduction

Models EL84 20/20, EL34 50/50 and EL34 100/100 stereo valve power amplifiers are the latest step forward in valve rack technology from Marshall. Built as dedicated guitar system based units, they incorporate many features that are both revolutionary and evolutionary. From stunning styling, through to the radical circuit design, these power amps are in a sonic class of their own.

### EL84 20/20

The EL84 20/20 is the latest all valve power amp from Marshall and utilises EL84 power valves to obtain that classic british tone, famous since the birth of British rock guitar in the early sixties. Despite its compact size and modest power rating, the 20/20 packs a big punch, both sonically and in terms of features. Carefully designed to maximise clean headroom and also endowed with superb overload capability, the 20/20 is ideal for compact rack rigs, for both sessions and club gigs alike. When miked up on larger concert stages it will provide pure valve tone with the minimum of stage spill.

The remotely switchable deep switch can be used to alter the sonic character of your pre-amp patches to great effect. Also the innovative valve line stage, at the input of each channel, helps to give true valve warmth to even the most sterile sounding pre-amp. The EL84 20/20 is a compact powerhouse which can greatly enhance the tonal palette of any rack rig.

### EL34 50/50 & EL34 100/100

With the EL34 50/50 and EL34 100/100 the specially designed Marshall 'Gold' front panel provides a deep recess in which the controls are sited giving a smooth uncluttered finish, whilst allowing the controls to be set, with little fear of accidental re-adjustment. The two power amp halves of your EL34 50/50 or EL34 100/100 are totally separate 'MonoBlocs', a feature that is normally only found on expensive valve hi-fi power amps. This means that the only common electrical item (apart from when specifically cross linking inputs) is the mains supply and that nothing that occurs to one power amp can sonically react with the other half. Also in the unlikely event of one side breaking down, the other side will carry on working regardless.

Our constant research into valve amplifier technology has resulted in further circuit design improvements which dramatically affect the overall feel and playing response of your Marshall valve power amp. These improvements include Marshalls latest True Differential Inverter technology, which expands the capability of the phase splitter (inverter). Put simply, the phase splitter takes the incoming signal and inverts half of it. This inverted half of the signal forms the bottom half of the sound envelope and the non-inverted half forms the top half. The effect of T.D.I. technology is to give a more defined spectrum of sound over a broader band width, without compromising the overdrive and compression effects for which valve amplifiers are famed. This also allows more radical uses of feedback networks and the incorporation of the 'voicing' switching found on each channel. These incredible 'voicing' options, which can be remotely activated, can be used to greatly expand your pre-amps tone forming at the flick of a switch.

### Mounting the Power Amp in a Rack

To allow the secure fastening of 19 inch rack units in a rack enclosure, a series of mounting holes are provided on the front of the EL84 20/20 and on both the front and rear of the EL34 50/50 and EL34 100/100. As with all rack mount products of substantial weight, such as the EL34 50/50 & 100/100, the rear of the unit must be supported as well as the front, therefore suitable brackets should be obtained and fitted between the provided rear mountings and the rack case. It should always be remembered that valve amplifiers generate a certain amount of heat, therefore they should never be mounted, or used, in any situation without adequate airflow.

## EL84 20/20 Front Panel Features



1. **Level** Controls Level or volume of the EL84 20/20.

2. **Presence** Adds brightness and top end bite to your sound.

3. **Deep** The Deep switch on the 20/20 affects the speaker damping. By depressing the Deep switch you will add more bottom end thud to your guitar sound. Similar to the difference between open and closed back cabinets.

4. **Standby LED** Indicates operating status of standby (see 6).

5. **Power LED** Indicates operating status of amp (see 7).

6. **Standby** Controls the H.T. supply to the valves and allows the valves to remain heated when not in use.

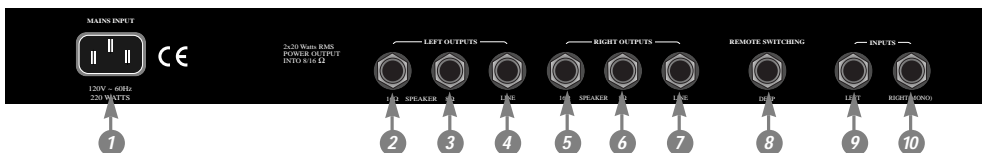
7. **Power** On/Off Switch for mains power to the amplifier.

**Note:** To prolong the life of the valves it is always advisable to switch on the Mains Power Switch (item 7) about 1 minute before switching on the Standby (item 6). This allows the valves to heat up to full working temperature before use.

On switching off, the Standby should always be switched before the Power Switch.

The standby facility is particularly useful live, where before playing and between sets, it allows you to keep the valves operating at a slightly reduced temperature but without any sound being produced.

## EL84 20/20 Rear Panel Features



1. **Mains Input** Connects the amplifier to the mains power supply.

### Left Outputs

2. **16 Ohm Jack** Speaker jack for 16 Ohm speaker cabinet for left side of power amp.

3. **8 Ohm Jack** Speaker jack for 8 Ohm speaker cabinet for left side of power amp.

4. **Line** Attenuated version of speaker signal giving whole tone of power stage. For connection to subsequent effects processor and larger power amp.

**Note:** When 20/20 is in use, speakers must be connected to both sides at all times. See Loading points later.

### Right Outputs

5. **16 Ohm Jack** Speaker jack for 16 Ohm speaker cabinet for right side of power amp.

6. **8 Ohm Jack** Speaker jack for 8 Ohm speaker cabinet for right side of power amp.

7. **Line** Attenuated version of speaker signal giving whole tone of power stage. For connection to subsequent effects processor and larger power amp.

**Note:** When the 20/20 is in use, speakers must be connected to both sides at all times. See Loading points

### Loading Points

-The 20/20 delivers 2x20 Watts into 8 or 16 Ohms.

-The 20/20 must have **either** an 8 Ohm or 16 Ohm speaker connected to either side. Under no circumstances should both the 8 and 16 Ohm sockets of the same side be used together.

-The 20/20 must have speakers connected to both sides when in use.

### Remote Switching

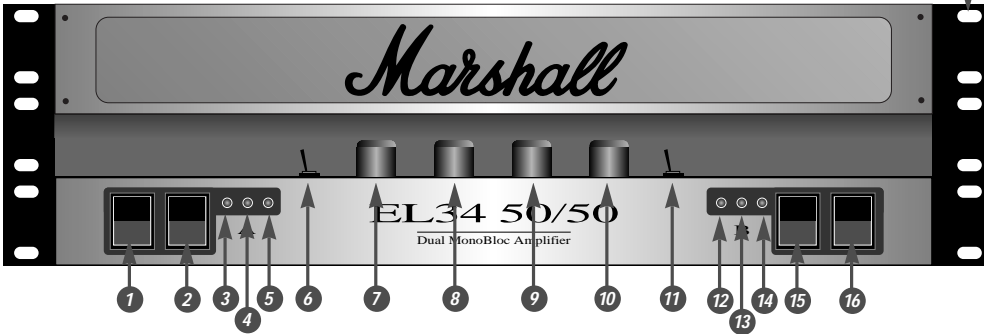
8. **Deep** In addition to the front panel, the Deep facility can be switched remotely by a footswitch or programmable device, such as an effects processor. It should be noted that this will override the front panel switch position.

### Inputs

9. **Left** Takes the left input from a stereo pre-amp.

10. **Right (Mono)** Takes the right input from a stereo pre-amp, or the mono input from a mono pre-amp. A mono input will drive both channels.

# EL34 50/50 & EL34 100/100 Front Panel Features



**1. Channel A mains power rocker switch**  
Connects channel A to incoming mains supply. LED 3 indicates red when activated.

**2. Channel A standby switch** Connects channel A's high voltage circuit to the power supply. LED 4 indicates green when activated.

*Note!* To conserve valve life, standby switch 2 should remain off for at least 1 minute after powering up the amplifier.

**3/4. Mains & standby LED's.**

**5. Voice B LED** Indicates red when channel A's voicing option B is activated.

**6. Channel A voice toggle switch** Selects voice option A or B, this function is repeated on a remote switching jack on the rear panel (see rear panel functions). The switch should be in the B position for the remote switch to be operative.

**7. Channel A presence control** Rotary control to boost the upper mid to high frequency content of sound.

**8. Channel A gain control** Rotary control to set and balance the incoming signal level.

**9. Channel B gain control**

**10. Channel B presence control**

**11. Channel B voice switch**

**12. Channel B voice LED**

**13. Channel B standby LED**

**14. Channel B mains LED**

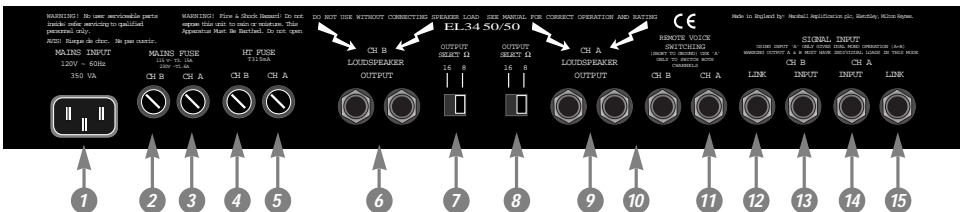
**15. Channel B standby switch**

**16. Channel B mains switch**

*Note!* Channel A's notes also apply.

**17. Front rack mount fixing holes.**

## Rear Panel Features



**1. Mains input socket** Connects amplifier to incoming mains supply.

**2. Channel B mains fuse** Please see specifications for correct ratings.

**3. Channel A mains fuse** Please see specifications for correct ratings.

**4. Channel B H.T. fuse** Please see specifications for correct ratings.

**5. Channel A H.T. fuse** Please see specifications for correct ratings.

**6. Channel B loudspeaker jacks** Connects channel B to loudspeaker load - model EL34 50/50 - 50 watts RMS, model EL34 100/100 - 100 watts RMS.

7. *Channel B output impedance select* 16 Ohm or 8 Ohm - it is important that your amplifier and loudspeaker load are correctly matched.

*Note!* If 4 Ohm output is desired please consult your authorised Marshall agent.

8. *Channel A output impedance select* (See 7 for notes).

9. *Channel A loudspeaker jacks* (See 6 for notes).

10,11. *Remote voicing switching jacks*  
10 operates on channel B, 11 operates on channel A. Short to ground function. Using jack 11 only links channel A & B switching functions for simultaneous use.

12. *Channel B link out jack* Connects channel B input signal to further power amp inputs.

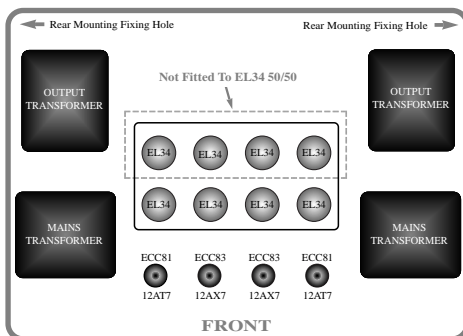
13. *Channel B input jack* Accepts input from pre-amp.

14. *Channel A input jack* Accepts input from pre-amp.

*Note!* Using 14 only connects input signal to both channels A & B for parallel mono operation.

15. *Channel A link out jack* Connects channel A input signal to further power amp inputs.

## Valve Location Guide



## Specification Chart

Parameter	EL34 50/50	EL34 100/100	Notes
Size	19" 3U x 331mm deep	19" 3U x 331mm deep	The unit must be supported at the rear when mounted in a rack
Weight	29.5 kg	34.5 kg	
Power input	350 watts	700 watts	
Voltage Input	115V or 230V	115V or 230V	Consult amp rating plate or dealer
Frequency	50 or 60 Hz	50 or 60 Hz	Consult amp rating plate or dealer
Mains fuses	T3.15A/115V	T4A/115V	Per channel
	T1.6A/230V	T2A/230V	Per channel
H.T. Fuses	T315 mA	T1A	Per channel
Output Power	50W RMS	100W RMS	At clipping (per channel)
Output Impedance	8 or 16 Ohm*	8 or 16 Ohm*	Consult dealer for 4 Ohm
Input sensitivity	OdB	OdB	
Input impedance	20KΩ	20KΩ	
Output valve	2 x EL34	4 x EL34	Per channel
Phase inverter	1 x ECC81/12 AT7	1 x ECC81/12 AT7	Per channel
Pre Driver	1 x ECC83/12 AX7	1 x ECC83/12 AX7	Per channel