



## PJB DOUBLE FOUR



**OWNER'S MANUAL**

Thank you for purchasing the PJB DOUBLE FOUR. A great deal of dedication and passion went into designing and building this no compromise, high performance compact-combo amplifier. It was conceived to be a dedicated amplifier for the “connoisseur” bassist. Reading this manual will enable you to get the best performance from it so that you may enjoy many years of service.

### **READ THIS FIRST**

- Before using the DOUBLE FOUR please read ALL the instructions.
- On receipt of product, check for any signs of physical damage arising from shipping. If any damage is visible contact your dealer.
- Do not install this equipment in a confined or building-in space such as a book case or similar unit, and remain a well ventilation conditions at open site. The ventilation should not be impeded by covering the ventilation openings with items such as newspaper, table-cloths, curtains etc.
- WARNING: Only use attachments/accessories specified or provided by the manufacturer (such as the exclusive supply adapter etc).
- WARNING: Please refer the information on exterior bottom enclosure for electrical and safety information before installing or operating the apparatus.
- WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and that objects filled with liquids, such as vases, shall not be placed on apparatus.
- WARNING: The mains plug is used as disconnect device, the disconnect device shall remain readily operable.
- When not in use and during movement, please take care of the power cordset, e.g. tie up the power cordset with cable tie or something like that. It shall be free from sharp edges and the like that can cause abrasion of the power cordset. When put into use again, please make sure the power cordset being not damaged, If any damages found, please look for the service person to replace the power cordset specified by the manufacturer or have the same characteristics as the original one.
-  Correct Disposal of this product. This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

## OVERVIEW OF THE DOUBLE FOUR

With the great success of the PJB Bass Cub, we had many requests to make a truly affordable bass practice amp. There were two major obstacles: it had to be small and have the great PJB sound. Using existing parts we could not achieve our goals so we started from scratch with new driver design, acoustic loading and the latest digital amplifier technology. The DOUBLE FOUR is a single channel bass amplifier that has an auxiliary input for ipad/ipod, mp3 or drum machine. It features 3 band EQ that is perfectly tailored for bass guitar, headphone out jack and a line out for recording. It is ideal for all kinds of basses and can handle the open B string on a 5 string bass with ease.

### The Enclosure

It is well known that big speakers are capable of reproducing true bass fundamental frequencies but as you decrease the physical size of a speaker, the bass response will fall away. Same reason why Violins are small and Double Basses are big!

So how do you get huge bass sound from a small speaker cabinet? Well with our know how of using smaller drivers to get the ultimate bass sound, we applied our vast experience to an even smaller driver just 4 inches across. It is built with Swiss watch precision; it has to be to cope with the extreme signals coming in from an amplified bass guitar. Using our extensive R&D facility which includes the largest anechoic chamber in the bass guitar amplifier industry and the KLIPPEL transducer measurement system (it uses lasers!), we were able to develop the perfect 4 inch loudspeaker. We analyzed the neodymium magnetic system, the cone behavior at all frequencies in 3D representation, cone suspension, frame etc. until we had achieved a transducer beyond what anyone would have ever thought possible. Then we looked at the acoustic loading using the acoustic simulation software and calculated exactly the full power cone displacement at every frequency.

We designed a custom **Rectangular Auxiliary Low Frequency Radiator (RALFR®)**.

That is a pneumatically coupled radiator loaded to the rear of the two 4 inch speakers that operates at the lowest bass frequencies only. It augments the output of the loudspeakers at frequencies from 30 to 150 Hz. It also reduces the cone excursion of the speakers allowing greater power handling.

The proprietary **PJB NeoPower** 4-inch speakers are full frequency range to the highest audio frequencies. Not only does this give greater clarity and transparency to your instrument but also gives a high fidelity sound to any backing track fed into the auxiliary input.

Each speaker is fed with its own **Pulse Width Modulation PWM amplifier**. PWM amplifiers are extremely efficient compared to more traditional analog solid state amplifiers converting more electrical energy to power the speakers instead of getting hot. Heat in electrical circuits is the enemy to reliability and since the amp is running at lower working temperature, the DOUBLE FOUR will give years of service long after other amps have faded away. By using dual amplifiers one to each speaker, the bass control is greatly improved since the damping factor is doubled. Damping factor is the amplifiers ability to put on the “brakes” stopping the speaker cone from overshoot and tightening up the bass sound, so the sound is punchy, tight but never muddy or bloomy out of control bass.

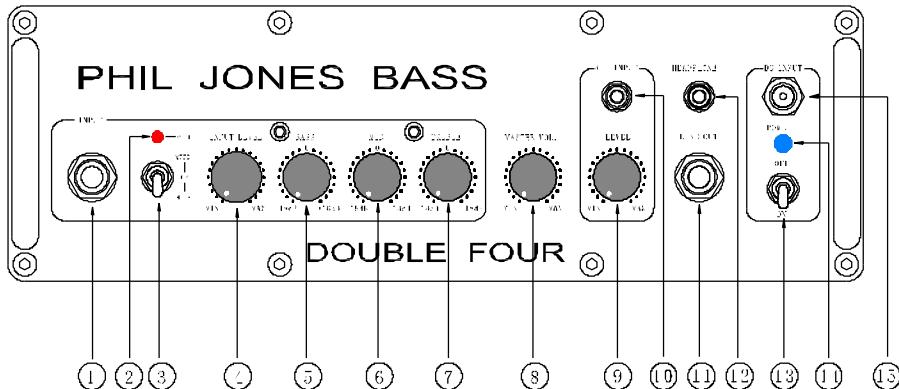
The cabinet may be as small as a shoe box but it is built to the same standards of all PJB cabinets, heavily braced internally and damped with acoustic damping materials to prevent cabinet coloration that can kill the true sound of your instrument. What you hear from the DOUBLE FOUR is the closest you can get to how your instrument actually sounds.

The DOUBLE FOUR may just be a practice amp but it does not mean that it has to sound like a practice amp. The sound is huge for its size and you may find it hard to believe that all the sound from your bass is just coming out of such a tiny jewel.

#### AMPLIFIER FEATURES

- Switchable high gain input OR low gain stage with mute function.
- One stereo input for Drum machine or I-pod/MP3 player.
- 3 Band EQ.
- Line Output for recording or driving another amplifier.  
-3-
- Sophisticated protection circuitry.
- 70watt RMS Amplifier.
- Can use on any AC voltage worldwide. (90~240V)

## PANEL OVERVIEW



## PANEL DESCRIPTION

### 1. Input Jack

This is a high impedance input and is designed for all passive and active instruments.

### 2. Clip Light.

When the amplifier output is clipping, the LED will light up with red. When the amplifier muted, the LED will light up with green.

### 3. Input Switch

Active and passive basses are different. The output from a passive bass is a higher impedance circuit with less voltage out than an active bass. So if you have a passive instrument (no internal pre amp) then set the switch to passive mode. Use active mode for basses that have higher output to prevent signal overload. The switch also mutes the input when set to mute.

### 4. Input Level Control

Different instruments and also different playing styles and even players will affect the signal level so adjust this control so that the signal overload Clip light does not light up. This optimizes the best signal to noise ratio between amp and instrument and will give you the full extent of the amplifiers tone and power.

### 5. Bass Control

This is centered on the fundamental frequencies of 4 and 5 string basses. Boosting or cutting this will have significant effect on the weight of the tone.

**6. Mid Range Control**

This gives the "voice" of your instrument. Generally you will find that cutting this control instead of boosting will have more of a truer bass sound. Boosting may be useful for soloing or special effects.

**7. Treble Control**

This gives the instrument the definition to the sound. Boosting it for "slap" bass or cutting back for "Reggae" bass sound.

If you boost excessively you may get more noise as hiss and that could be due to the noise coming from the pre amp in your bass or a poorly shielded instrument cable. PJB has a dedicated bass instrument cable (Model BI-12) that is totally noise free and actually will improve the tone of your instrument.

**8. Master Volume**

This controls the volume of both instrument and auxiliary input.

**9. Auxiliary Input Level**

Adjust this to balance your backing track to your bass level.

**10. Auxiliary Input Jack**

This is a stereo mini jack and can accept any signal from iPod, iPad, computer or drum machine.

**11. Line output jack**

The pre amp in the DOUBLE FOUR is recording studio quality so the line out is a very pure signal for recording or driving another amplifier.

**12. Headphone Jack**

You can use any kind of stereo headphones on this jack but remember you will only sound good in your headphones if they are high quality. Don't try using those cheap ones you get with a phone, you will be disappointed. We recommend the best you can afford and PJB have designed a high quality headphone (model HD850) that can handle bass guitar (many can not!) and they sound great on music too.

**13. Power Switch**

This switches off the amplifier from the DC supply but AC signal will still be in the external supply. We advise that you disconnect the power supply from AC source if you do not intend to use the DOUBLE FOUR for long periods of time.

**14. Power Indicator**

Will light up when you have DC supply connected and amp switched on.

**15. DC Input**

Connect the PJB DC power supply supplied with DOUBLE FOUR here. DO NOT USE ANY OTHER POWER SUPPLY AS THIS WILL DAMAGE YOUR AMPLIFIER!

## **OPERATION & POSITIONING**

**TURN THE VOLUME DOWN** on the DOUBLE FOUR before plugging in your instrument. You may notice the clip light blinks once on turn on. This is normal and the amplifier is functioning correctly. It is just a characteristic of the circuit.

### **Positioning the DOUBLE FOUR for Best Sound**

Often, playing in different venues will cause your bass to sound different. This is partially due to the acoustics of the hall influencing the low frequency waves that are coming from your speaker. Bass waves are large and room dimensions heavily influence them when the walls reflect the sound waves, causing them to collide by adding together or canceling each other out. This causes some fundamental notes (the ones you feel more than hear) to ring out louder than others and some notes not to be heard at all.

Here is an indication of where fundamental bass frequencies are, showing open string's approximate frequencies and acoustic wavelength:

<b>B string</b>	<b>31Hz</b>	<b>36 feet</b>
<b>E string</b>	<b>41Hz</b>	<b>27 feet</b>
<b>A string</b>	<b>55Hz</b>	<b>20 feet</b>
<b>D string</b>	<b>73Hz</b>	<b>15 feet</b>
<b>G string</b>	<b>98Hz</b>	<b>11 feet</b>
<b>C string</b>	<b>130Hz</b>	<b>9 feet</b>

This may give you some indication of the offending notes (frequencies) that may be booming or resonating louder or quieter than others. For example if your speakers are five feet from a wall, the open A string may sound weak. That could be because the path length of the reflected sound off the wall from your speaker is exactly corresponding to half a wavelength on the open A string causing that particular note to cancel out.

Where you position the DOUBLE FOUR will ultimately affect your low frequency limit. For best results keep the DOUBLE FOUR on the floor. Placing it on objects off the floor will cause it to sound thin and lack bass punch. Placing the DOUBLE FOUR with the back close to a wall will help reinforce the lower notes. Placing it in a room corner will further enhance the low notes.<sup>-6-</sup>

Room size makes a large difference in how deep the bass will sound. The further the distance to the listener the less the bass will be. This is due to the physics of acoustics not the unit itself.

Unfortunately for bass players, low frequencies are always very difficult to control with room acoustics. The reproduced wavelengths of the notes you are playing often correspond to the room dimensions, in which case the reflected sound off the walls interferes with the sound from the speaker as you get further away from it.

#### **Getting the most from your DOUBLE FOUR**

**It is important to understand that this is a very different amplifier from conventional analog amp. The controls send information to two internal micro computers: one for the pre amp and the second for the power amp. This information is processed as EQ changes or level changes so it takes a very small amount of time for the computers to act on changes to EQ and volume controls. This is known as latency and if you change a control while playing simultaneously, you will notice a very slight delay as the changes are processed. It is simply the characteristic of the processors and not a fault on the unit.**

All amplifiers will be affected by the room they are in and in fact it can make a huge difference to the sound where you place your amplifier. If you place the amp on a table far from any wall, this will give you the least bass (low frequency) output. Walls, Floor and Ceiling act like a mirror to the amplifier because the sound wave is reflected back and it will magnify the sound. So placing the unit on a floor and close to a room corner will give you the most bass output. You should experiment to see the best placement for your sound. Speakers are a bit like shoes, new ones are never as comfortable as worn in older ones and in time speakers will "soften" up. The sound will be warmer and fuller in time and a break in period of playing is required to get the amp to perform its best. This can also be done just by playing music through the aux input instead of playing.

## **TRANSPORTING AND STORING THE DOUBLE FOUR**

When transporting in a vehicle, it is recommended that you use an external case or heavy-duty cover to prevent it being damaged by falling over or other objects falling on it.

#### When Storing:

- Keep in a dry location preferably at room temperature.
- Do not store in temperatures below -20 Degrees C or above 40 Degrees C.
- Do not allow it to get wet. If this occurs, never turn it on in this condition.
- Do not leave the DOUBLE FOUR permanently connected to a power source.

## SPECIFICATIONS

### Speaker

#### **Rectangular Auxiliary Low Frequency Radiator (RALFR®) Enclosure**

Speaker Frequency Response: 60Hz – 15KHz

Speaker Compliment: 2 x 4 inch proprietary, extended-range drivers

Internal Speaker Impedance: 4 Ohms

Dimensions(WxDxH): 8.2 x 8 x 6.8 inch  
208 x 203 x 172mm

Weight: 8.8 lbs / 4 kg

### Amplifier

70watt, digital amplifier with DSP. (Digital signal processing)

### Signal to Noise Ratio

Better than 84 dB (EQ off, Volume on Full.)

### Impedance

High Input: >1MΩ/22pF

Low Input: >30KΩ/22pF

Pre Amp Line Out: < 2KΩ

### Levels

High Input: 30mV-2V

Low Input: 50mV-1.5V

Pre Amp Out: 1.2V

### Included Parts

DC power supply

## SERVICE/WARRANTY INFORMATION

The **DOUBLE FOUR** has a warranty period of 2 years, starting from the date of purchase. The buyer must complete and return the enclosed warranty card within 14 days of purchase.

This warranty covers defect in materials or workmanship that occurs in normal use. Within warranty period PJB will repair or replace the defect unit free of labor and parts charge. It is the buyer's responsibility to use the unit strictly according to instructions written in this manual and amplifier manual.

This warranty is not transferable; it is provided to original owner only. Damage/defects caused by the following conditions are not covered by this warranty:

- Improper handling, neglect or failure to operate the unit in compliance with the instructions given in user manual;
- Connection or operation of the speakers in any way that does not comply with the technical or safety regulations applicable in the country where the product is used;
- Repairs or modifications by anyone other than authorized PJB service agent;
- Damages/defects caused by force majeure or any other condition that is beyond the control of PJB.

Should you need any warranty service, please bring the **DOUBLE FOUR** back to the dealer from whom you purchased, along with your sales receipt. Depending on the complexity of the repair work, your dealer may return the defect unit to PJB service center for repair or replacement.

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