



**100%**

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## Congratulations and thank you.....

for choosing *PrecisionPower* audio equipment. At *PrecisionPower* we proudly design, engineer and manufacture audio products at our facility in Phoenix, Arizona. Our award winning engineering team utilizes innovative technology to consistently deliver Absolutely State of the Art™ performance, sound quality, reliability, and value. This *PrecisionPower* product reflects our commitment to offer you unparalleled versatility and quality for years of dependable service and listening enjoyment.

### Service



Do not attempt to service *PrecisionPower* products yourself. Performing exploratory surgery on your audio equipment yourself will void the warranty. Many parts of your *PrecisionPower* gear are custom built to our specifications. Our factory parts are not made available to anyone else nor are they for sale. Our goal is to make sure that your *PrecisionPower* product will always sound as good as the day it was purchased. Contact your authorized *PrecisionPower* dealer about obtaining any warranty service through *PrecisionPower*. (See Warranty inside back cover)

### FOR YOUR RECORDS:

M o d e l \_\_\_\_\_

Serial Number \_\_\_\_\_

Purchase Date \_\_\_\_\_

### Caution!



The extended use of a high powered audio system may result in hearing loss or damage. While *PrecisionPower* systems are capable of "Concert Level" volumes with incredible accuracy, they are also designed for you to enjoy at more reasonable levels all of the sonic subtleties created by musicians. Please observe all local sound ordinances.

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## FEATURES / SPECIFICATIONS

5 Band Parametric Equalizer  
Preamp Line Driver  
Choice of 16 Selectable Frequency/Q  
Settings for Each Band  
Front and Rear Outputs with Fader Control  
Dual Selectable Illumination  
Center-Detented Boost/Cut Controls  
 $\pm 15$  dB Boost/Cut for Each Band  
Defeat Switch  
Gold-plated RCA Input and Output Connectors  
PWM (Pulse Width Modulated) Power Supply  
Independent L & R Input Gain Adjustments  
Input Clip Indicator  
Designed and Handcrafted in the U.S.A.

### Specifications



Signal-to-Noise Ratio	110 dB	
Total Harmonic Distortion (1 kHz, 1 VRMS)	0.002%	
Boost/Cut Range	± 15 dB	
Equalizer Center Frequencies and Q Values:		
<u>Band</u>	<u>Frequency</u>	<u>Q Value</u>
Sub	(30 - 66 Hz)	2.0 - 3.0
Low	(90 - 300 Hz)	3.0 - 5.5
Low-Mid	(430 - 900 Hz)	2.5 - 4.5
High-Mid	(950 Hz - 4.6 kHz)	2.5 - 6.0
Treble	(6 - 16 kHz)	1.3 - 3.3
Maximum Input Voltage (Flat)	10 VRMS	
Maximum Output (10 kΩ Load)	10 VRMS	
Frequency Response	3 to 100 kHz	
Supply Voltage	9 - 15 VDC	
Dimensions	4.60" L	
	6.75" W	
	0.95" H	

# MOUNTING

## Mounting

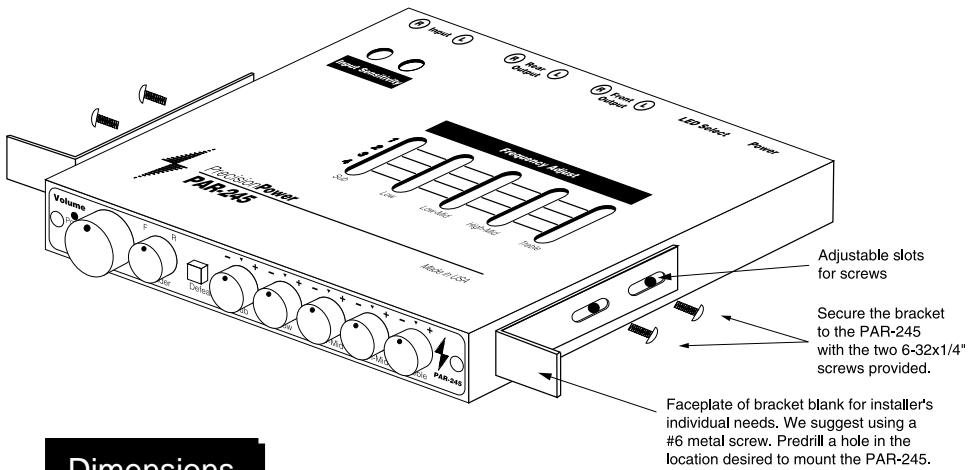


To prevent damage to the **PAR-245** while driving, mount it in a secure place. Choosing the appropriate location will depend upon your vehicle and the complexity of your system design. Typical mounting locations for your new **PAR-245** would be in the dash or center console. Never mount the component in a location that would subject it to immersion or exposure to water.



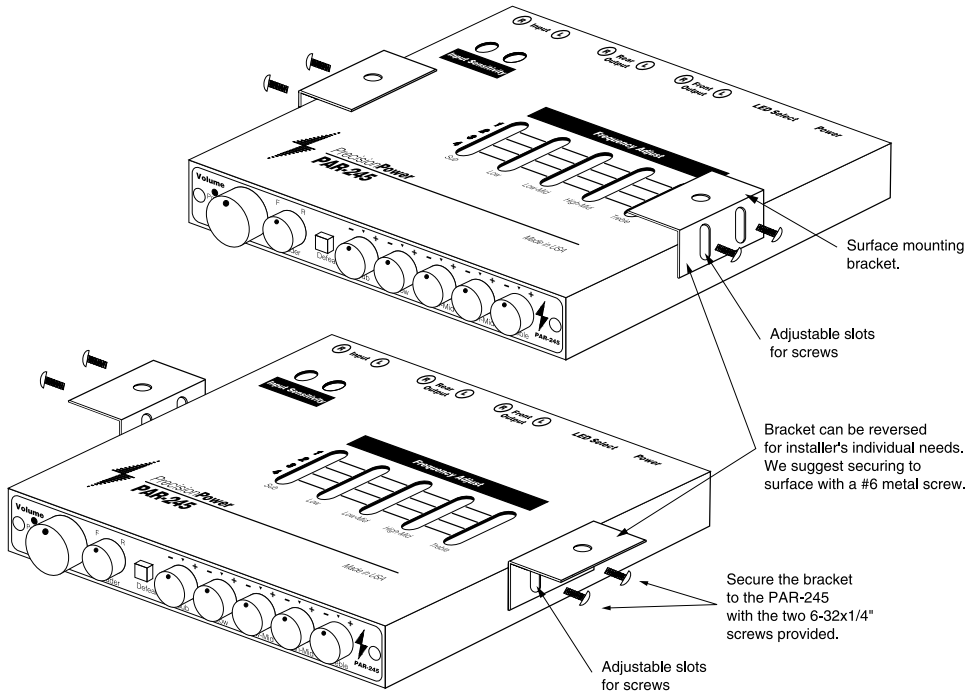
Once a location has been chosen, securely mount the **PAR-245** using the two supplied brackets. There are two different sets of brackets included with your **PAR-245**. One set is used to flush mount the **PAR-245**, as shown above. The other set is used to surface mount, as shown on the next page. The brackets are connected to the equalizer/preamp by two 6-32 x 1/4" socket head cap screws. We have made the brackets adjustable to compensate for the uniqueness of each vehicle. Be Careful! Inspect the area underneath to be sure you are not drilling into wires, etc. that could be damaged by the drill bit or screws.

# MOUNTING

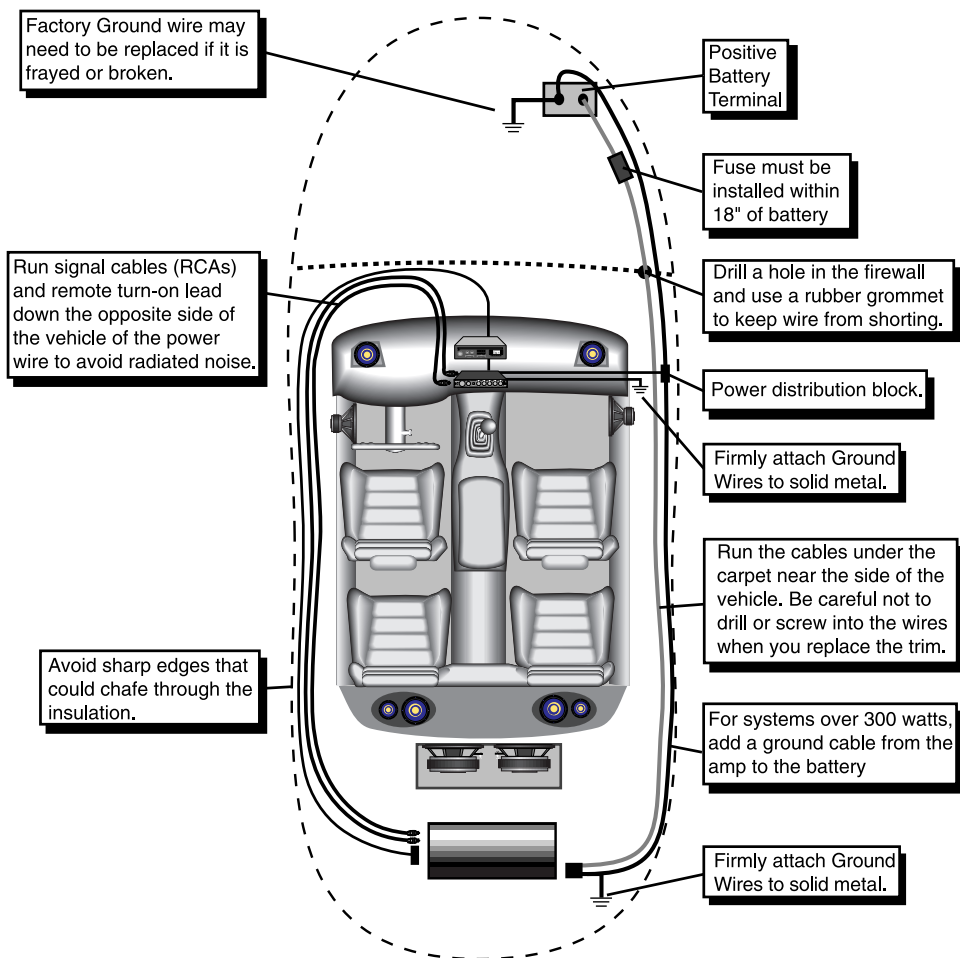


## Dimensions

6.75"W  
4.60" L  
0.95"H



# WIRING



## NOTE



Before beginning, disconnect the negative (-) terminal of the battery prior to working on the positive (+) terminal to prevent a short to ground. This is important, unless you want to spend the rest of your life with a nickname like "*Sparky*," or "*Smokey*." Reconnect the negative terminal only after all connections have been made.

## WIRING

The next step is to connect the Power, Ground, and Remote wires to your **PAR-245**. The power wire should run from the mounting location through the vehicle to the battery or power distribution block. Avoid sharp corners, creases, and sharp body parts. When passing through any metal wall (i.e. firewall etc.), a grommet must be used to prevent the wire from chaffing and shorting to ground.

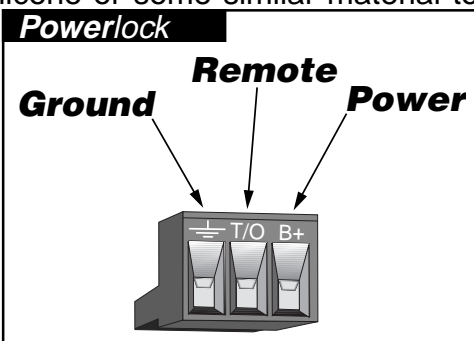
The ground wire should be of the same gauge as the power wire. As a rule of thumb, use as short a length of wire as possible.

Find a location near the equalizer that is metal (the floor is ideal) and clean an area about the size of a quarter to bare metal. Drill a pilot hole in the middle of this area. Be Careful! Inspect the area underneath to be sure you are not drilling into wires, brake or fuel lines, etc. Terminate the wire with a ring connector and attach it to the bare metal using a #8 sheet metal screw and washer (not supplied). We suggest crimping and/or soldering this connection. After the connection is complete, coat the area with silicone or some similar material to prevent rust from developing.

Finally, the remote wire needs to run to the power antenna (or amplifier remote) lead of the head unit. This wire supplies a 12 volt signal to the **PAR-245** when the main system is activated.

Once you have routed the power, ground, and remote wires through the vehicle, it is time to connect the wires to the **PAR-245**. Be sure that you have not reconnected the ground cable to the negative post of the battery.

Cut off excess wire and, using wire strippers, strip the power, ground and remote cables about 1/8 inch. Locate the power, ground, and remote **Powerlock** connector (supplied). On the top of the connector are three slotted screws. With a small flat-bladed screwdriver, loosen the screws before attempting to insert the cables. After you have inserted the stripped end of each cable into the connector, secure it by tightening the associated screw. Check that each connection is tight. If the wires are secure, the connector may be plugged into the **PAR-245**.



# FUNCTIONS

## 1. Input

Gold plated RCA inputs. Plug in the RCA cables from the source unit here.

## 2. Rear Output

Gold plated RCA outputs. Plug in the RCA cables to your rear channel amplifier here.

## 3. Front Output

Gold plated RCA outputs. Plug in the RCA cables to your front channel amplifier here.

## 4. LED Select

Push this switch IN for Red Illumination, Leave it OUT for Green.

## 5. Power

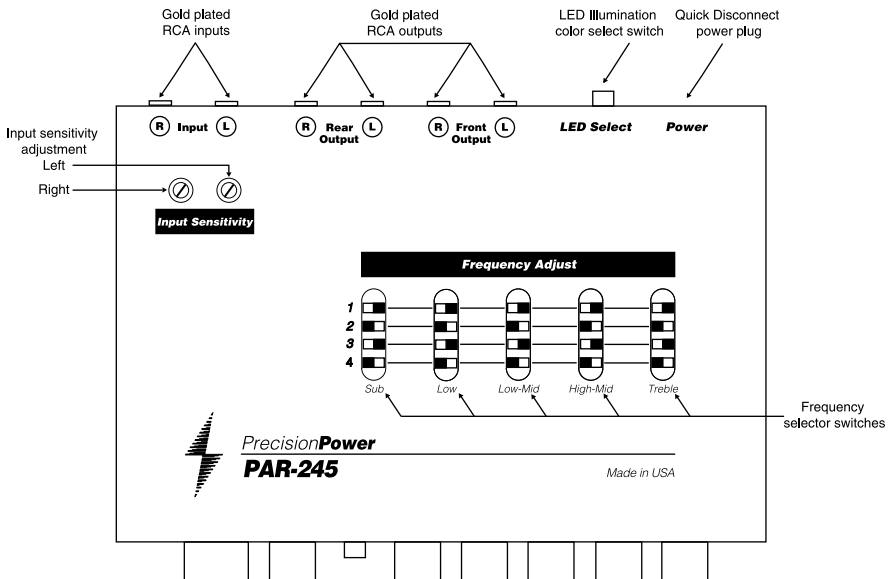
After connecting the Power, Ground and Remote wires, plug in the **PowerLock** connector here.

## 6, 7. Left and Right Input Sensitivity

Sets Left and Right input gain to match the output level from the source unit. (See Page 8)

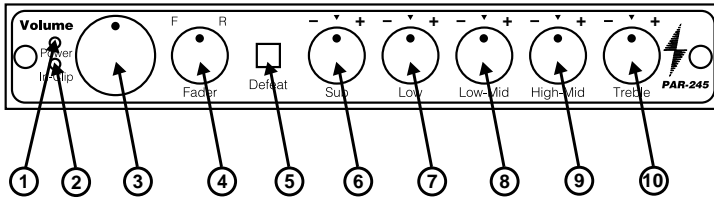
## 8. Frequency Adjust

Set the Frequency/Q combination for each band with these switches. See the Frequency/Q Selection Codes on pages 14 and 15.





# FUNCTIONS



## 1. Power LED

Red light indicates power on.

## 2. Input Clip

Input-Clip indicator lights when the PAR-245 is overdriven. With the source unit at 3/4 full volume, adjust the input sensitivity so that the light blinks only on very loud material.

## 3. Volume

Leave the source unit at 3/4 full volume, and use this control as the Master volume control.

## 4. Fader

Controls the output level to Front and Rear.

## 5. Defeat Switch

With the switch in the OUT position, the equalizer controls are bypassed. Use this switch to compare the sound with and without equalization.

## 6. Sub

Subwoofer band (30 Hz - 66 Hz) Boost/Cut control.

## 7. Low

Low band (90 Hz - 300 Hz) Boost/Cut control.

## 8. Low-Mid

Low Midrange band (430 Hz - 900 Hz) Boost/Cut control.

## 9. High-Mid

High Midrange band (960 Hz - 4.6 kHz) Boost/Cut control.

## 10. Treble

Treble band (6 kHz - 16 kHz) Boost/Cut control.

## System Gain Adjustment



In order to achieve maximum signal-to-noise performance from a high quality auto stereo system, it is desirable to use high signal levels wherever possible in the interconnect cables. High signal levels will reduce the effect of induced noise. The peak level of an audio signal is usually determined by the clipping level of electronic components. The following procedure should be used as a guide before the system installation is completed.

Adjustment of source unit output and **PAR-245** input:


1. Turn **PAR-245** volume control fully counterclockwise.
2. Turn source unit volume 1/2 to 3/4 of maximum.
3. Adjust all **PAR-245** input gains fully counterclockwise.
4. Play a CD or cassette. A loud music selection is desired.
5. Adjust the left input gain control clockwise until the input clip LED lights. Then adjust the control counterclockwise slightly until the LED doesn't light. This setting will minimize system background noise and prevents overloading the **PAR-245**.
6. Repeat Step 5 for the right input gain control. There are separate left and right gain adjustments for each input which allows left/right balance adjustments.

Adjusting amplifier input gains:

1. Adjust gains to minimum sensitivity (fully counterclockwise on the gain control of a **PPI** amplifier.)
2. Turn the volume knob on the **PAR-245** to the 3 o'clock position.
3. Increase the gain on the amplifier until the onset of audible distortion.
4. Repeat step 3 for any remaining amplifiers in the system.

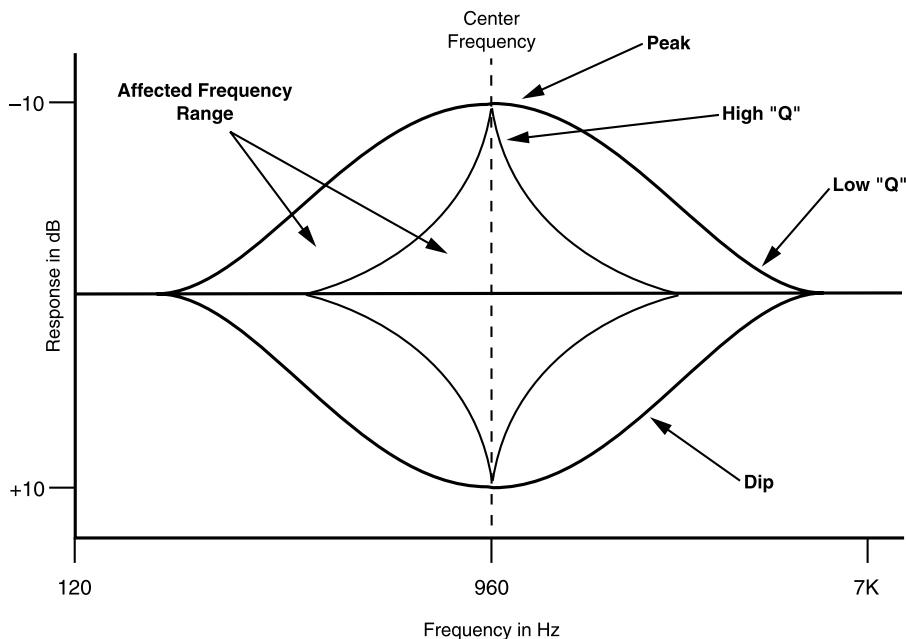
**NOTE:** In many multi-amplifier systems, the gain of some amplifiers may need to be further decreased to achieve tonal balance.

## Parametric Operation

 The **PAR-245** Equalizer/Preamp puts an incredible amount of control at your fingertips. Correctly adjusted, it can solve many of the problems you will encounter along your road to perfect sound. By following these guidelines, you will avoid common pitfalls in system tuning and get your sound quickly dialed in. We recommend that you use a Real Time Analyzer (RTA) to speed things up, but it is possible to tune your system without it.

It is important to understand what your equalizer actually controls to be able to use it effectively. On the face of the **PAR-245** are five Boost/Cut controls each corresponding to a range of frequencies. On the top are the five sets of Frequency/Q Selection switches to adjust for each Boost/Cut control on the front of the **PAR-245** (See the chart on pages 14 and 15 for Frequency/Q selection.)

Q is an indication of how wide or narrow the adjusted bandwidth is. A low Q will affect a wide range of frequencies around the selected center frequency resulting in a gently curved shape, while a high Q affects a narrow band resulting in a peaked shape as shown below.



## SYSTEM TUNING

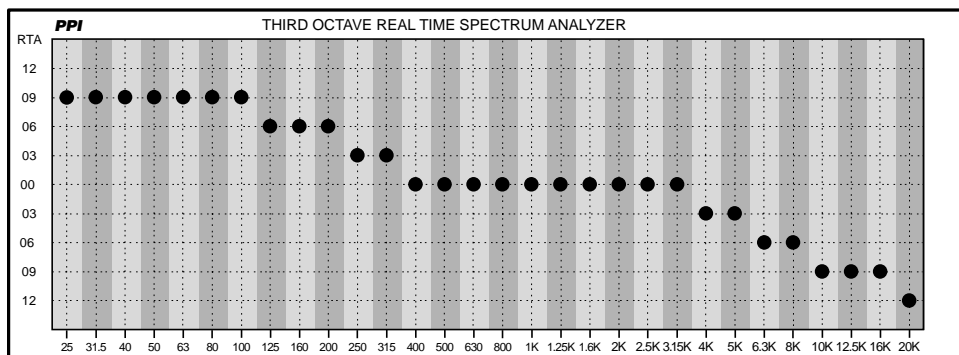
### NOTE:

If you are using the **PAR-245** as well as another equalizer (like the **DEQ-230** or **PMQ-210**) Go to step 11.

**1)** The first step is to locate a suitable source of "pink noise." A good choice would be the current IASCA competition reference disc. Also, some RTAs have a built-in pink noise source. Ideally, the pink noise should play through your head unit, allowing you to compensate for any frequency response changes caused by it, or anything else, before the amplifiers.

**2)** Next, place the microphone from the RTA in the driver's seat at approximately head level. Initially, set the analyzer to read at 3dB per step, and set the speed of the RTA's readout to medium. Turn on your system and start the pink noise. Raise or lower the volume until you can see all (or most) of your frequency response on the RTA scale (a little above or below is OK). Make sure all of the equalizer's frequency controls are centered and look at the RTA screen.

**3)** You are trying to achieve a target frequency response, or "curve" that reflects your preference. You might think that a perfectly straight line would be best, but it really doesn't sound very good. Instead, shoot for a curve that starts about 9 dB up at the low frequencies (25 Hz to about 100 Hz) dropping gently to 0 dB in the midrange (250 Hz to 3 kHz), then dropping gently to -9 dB at 16 kHz and 20 kHz.



## SYSTEM TUNING

4) If electronic crossovers are used, any large frequency sections corresponding to your crossover points that are low or high should be brought in line using crossover level controls or amp gain adjustments rather than the equalizer.

5) To begin, you will probably see several peaks and dips in your RTA curve. Find the lowest offending frequency, and choose the appropriate frequency range control on the top of the **PAR-245**.

Reading from left to right when looking at the face of your new **PAR-245**, the following are the frequency ranges;

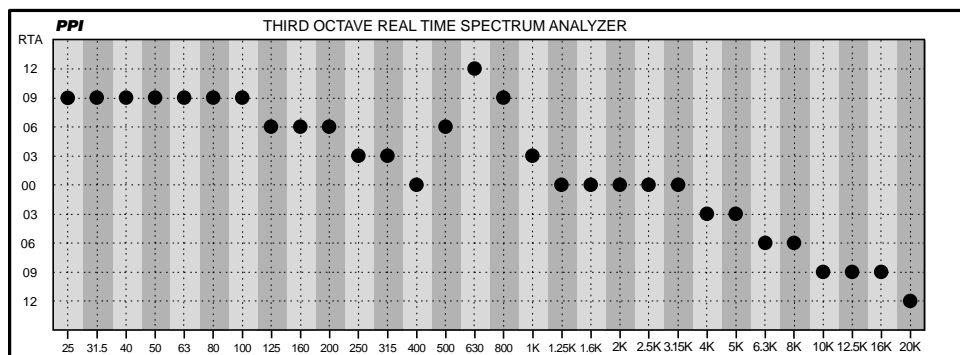
BAND	FREQUENCY
SUB	30 Hz - 66 Hz
LOW	90 Hz - 300 Hz
LOW-MID	430 Hz - 900 Hz
HIGH-MID	960 Hz - 4.6 kHz
TREBLE	6 kHz - 16 kHz

6) Looking at the Frequency/Q selection chart for the selected band, set the switches on top of the **PAR-245** to the frequency that is closest to the peak (or dip) and has the highest Q. Turn the Boost/Cut control counterclockwise until the peak (clockwise to correct a dip) comes in line with your desired curve. (See pages 14 & 15.)

7) When the center frequency of the original peak (or dip) has been brought down to where you want it, you may see that surrounding frequencies are still higher than you want them. Select the closest frequency to the original peak (or dip) that has a lower Q, and see if you now have a smooth line through that band. You may have to try a number of Frequency/Q combinations to get the best results.

## SYSTEM TUNING

8) Move to the next peak or dip, and repeat the process until you run out of frequencies to adjust. Try to remove the peaks before filling the dips. Periodically, while you are making adjustments, compare the new curve you are making to the system in an unequalized state by using the defeat switch on the front face plate of the **PAR-245**.



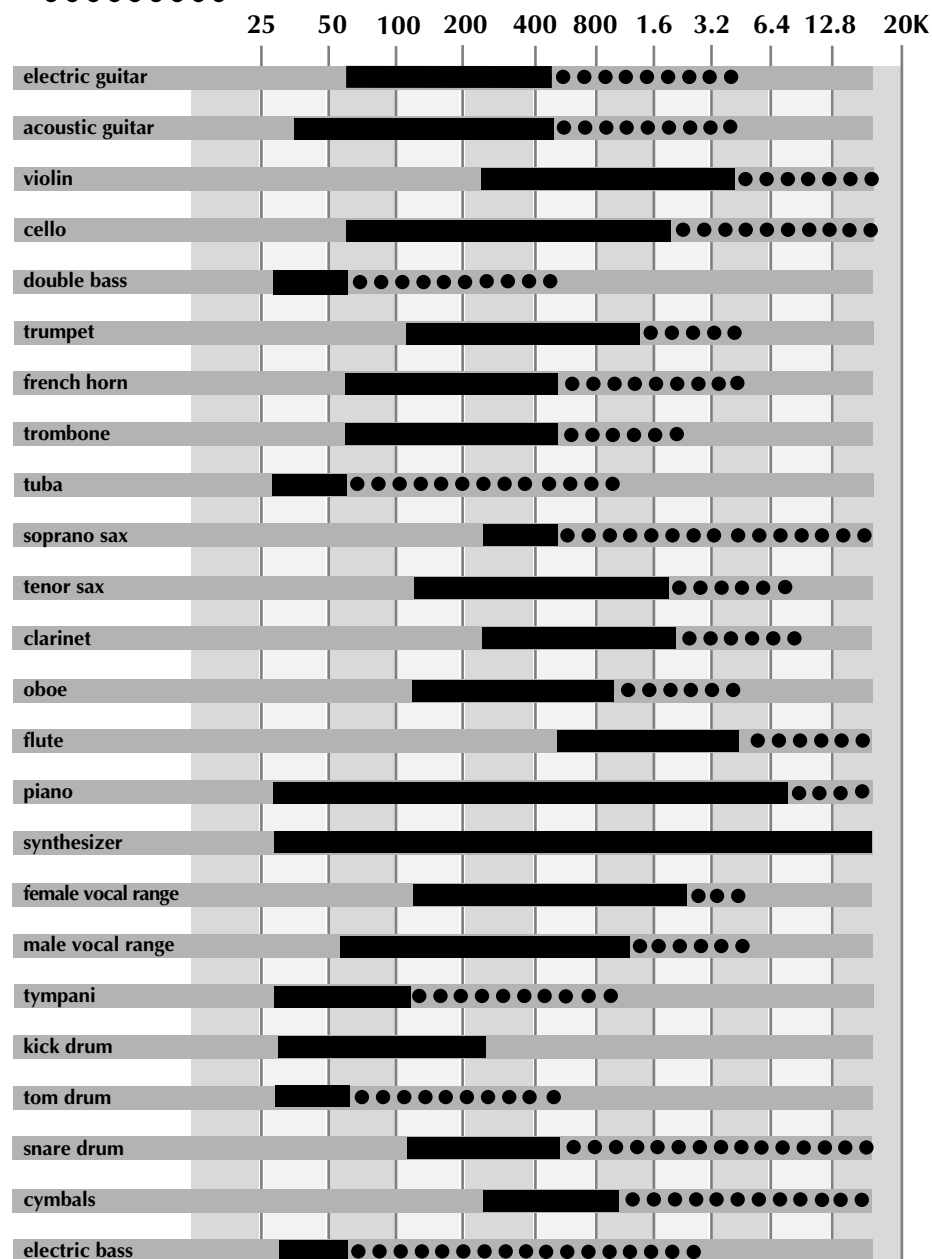
9) Play your favorite music. If the sound isn't what you're looking for, go back to the pink noise and smoothly adjust your curve for more bass, less midrange or whatever you think will correct the sound. Remember that this is your system - don't let someone else tell you how it should sound! When the sound is close to what you want, move to step 10.

10) Play several different music tracks. If you hear an instrument, voice, or other sound that is too loud, find the sound on the chart on page 14. This will give you clues as to what frequencies need to be adjusted on the **PAR-245**. (If you have already tuned using an RTA, this step is icing on the cake.) Make one adjustment at a time, giving yourself time to notice the changes.

11) If you are using another equalizer, like the **DEQ-230** or the **PMQ-210**, as well as the **PAR-245**, you should first tune the system using the other equalizer. This leaves the **PAR-245** free to make wider frequency adjustments, compensating for equalization differences between Radio, Cassette, Video and Digital sources, like DAT and CD. Select Frequency/Q combinations for each band near the center of the frequency range, with a low Q.

# FREQUENCY DISTRIBUTION

FUNDAMENTAL NOTE  
 HARMONIC OR OVERTONE



# FREQUENCY/Q SELECTION CODES

## Frequency Selection Codes

### LOW-MID

1		430	3.3	Freq Q*
2		450	3.5	
3		460	3.2	
4		480	3.3	
1		530	2.7	
2		560	2.9	
3		570	4.0	
4		610	2.5	
1		620	4.3	
2		640	2.8	
3		640	4.0	
4		670	3.8	
1		740	3.8	
2		780	4.0	
3		830	3.2	
4		900	3.5	

Switch is thrown to the right

## Frequency Selection Codes

### HIGH-MID

1		960	3.7	Freq Q*
2		1.0k	3.4	
3		1.1k	4.0	
4		1.2k	4.0	
1		1.3k	3.2	
2		1.4k	4.8	
3		1.5k	4.4	
4		1.6k	3.5	
1		1.7k	2.4	
2		2.0k	4.1	
3		2.1k	2.8	
4		2.5k	6.0	
1		2.6k	3.3	
2		2.8k	5.8	
3		3.5k	5.2	
4		4.6k	4.6	

Switch is thrown to the right

## Frequency Selection Codes

### TREBLE

1		6k	2.0	Freq Q*
2		6.8k	2.4	
3		7.1k	1.8	
4		7.4k	1.7	
1		7.8k	2.7	
2		8k	2.0	
3		8.3k	1.9	
4		9.2k	2.3	
1		9.5k	2.2	
2		9.6k	1.3	
3		9.6k	3.3	
4		10.7k	1.5	
1		11.3k	2.8	
2		11.7k	2.7	
3		12k	2.0	
4		16k	2.0	

Switch is thrown to the right



# FREQUENCY/Q SELECTION CODES

## Frequency Selection Codes

### LOW

1	2	3	4	90	4.0	120	3.3	160	5.3	210	5.3
				95	4.2	120	3.5	180	5.0	240	5.1
				100	3.6	140	3.0	190	5.5	250	4.7
				110	3.6	150	3.1	200	5.1	300	4.7

Switch is thrown to the right

## Frequency Selection Codes

### SUB

1	2	3	4	30	2.1	38	2.3	44	2.7	52	2.8
				34	2.4	40	2.2	46	2.0	58	2.6
				34	2.4	40	2.9	46	3.2	58	2.9
				36	2.2	44	2.0	50	2.5	66	2.8

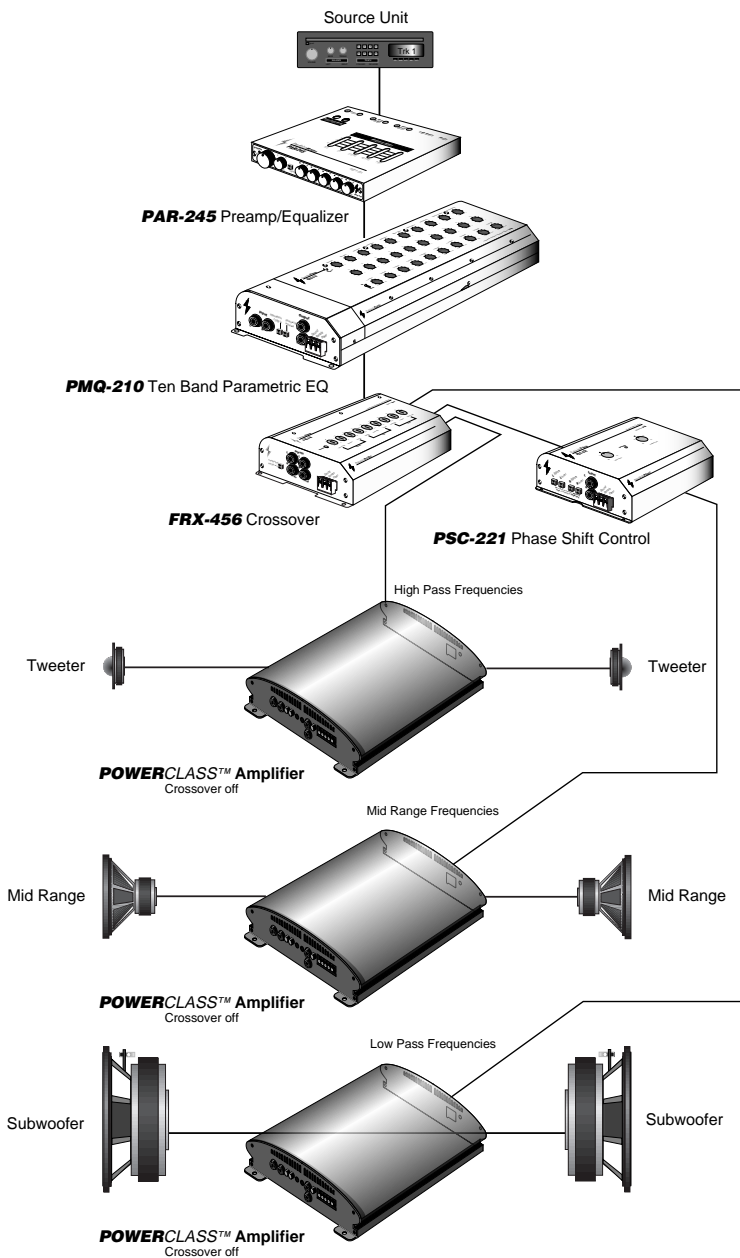
Switch is thrown to the right

## PAR-245 Frequency Controls

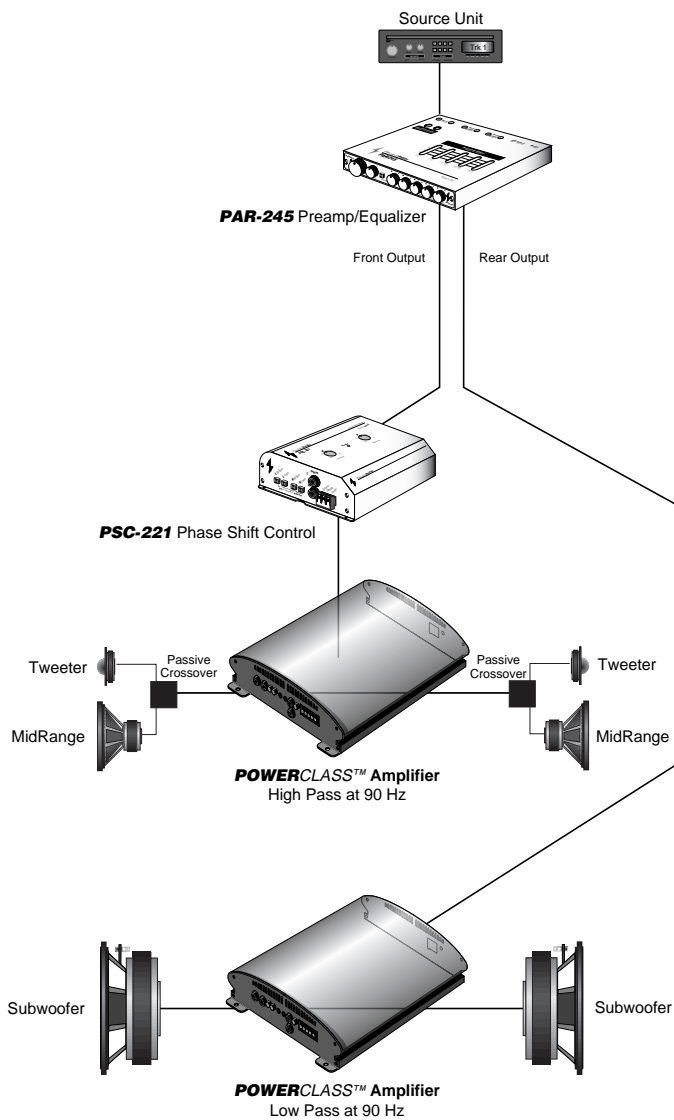


Use a small flat-bladed screwdriver to change the Frequency/Q selection switches to the settings following the System Tuning guidelines.

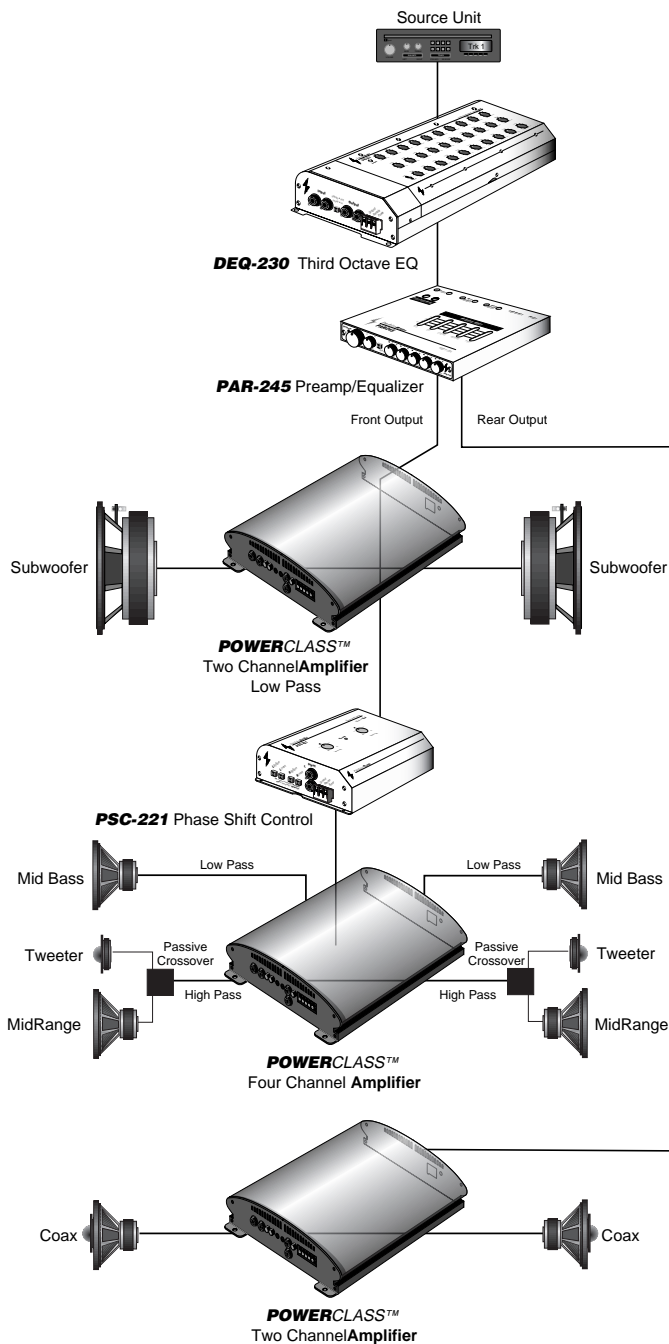
# SYSTEM ONE



# SYSTEM TWO



# SYSTEM THREE



# TROUBLE SHOOTING

## NO SOUND

Is the LED lit?

**YES**

Check Input cables for signal by connecting them to the next component in line.

**NO**

Check Power and Remote turn-on wire for voltage. Make sure Ground wire is secure.

ANY SOUND NOW?

**YES**

Problem is in the Equalizer. See your local Authorized *PrecisionPower* Dealer or call 1-800-62**POWER**.

**NO**

Problem is elsewhere in the system. Check head unit and amplifiers.

## SOUND IN ONE CHANNEL ONLY

Check Balance control.

Reverse left and right RCA outputs.

SOUND IS NOW IN

**OPPOSITE CHANNEL**

Reverse RCA inputs.

**SAME CHANNEL**

Problem is in the amplifier, speakers or associated wiring of the silent channel.

SOUND IS NOW IN

**OPPOSITE CHANNEL**

Reverse RCAs at head unit.

**SAME CHANNEL**

Problem is in the Equalizer. See your local Authorized *PrecisionPower* Dealer or call 1-800-62**POWER**.

SOUND IS NOW IN

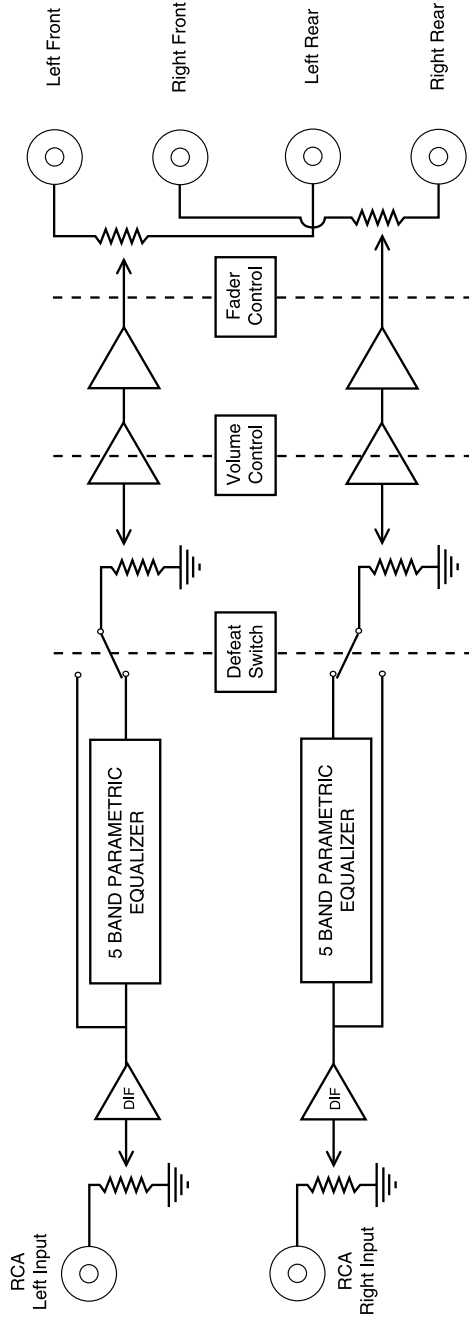
**OPPOSITE CHANNEL**

Problem is in the head unit.

**SAME CHANNEL**

Problem is in the RCA cables.

# BLOCK DIAGRAM



# WARRANTY

## Three-Year Limited U.S.A. Warranty

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. **PrecisionPower** warrants its products to be free from defects in materials and workmanship under normal use and service for a period of three (3) years from the date of original purchase when the unit is installed by an Authorized Dealer. Non-Authorized Dealer installed products carry a one (1) year parts and ninety (90) days labor limited warranty. The extent and conditions of Limited Warranty are as follows:

1. Authorized Dealer Installed Products: **PrecisionPower** will either repair or replace at no charge, to the original purchaser, any unit which **PrecisionPower's** examination discloses to be defective and under warranty, provided the defect occurs within three (3) years from the date of original purchase when the unit is installed by an Authorized Dealer and the product is returned immediately to **PrecisionPower**. This warranty is not transferable.

2. Non-Authorized Dealer Installed Products: **PrecisionPower** will either repair or replace at no charge, to the original purchaser, any unit which **PrecisionPower's** examination discloses to be defective and under warranty, provided the defect occurs within ninety (90) days from the date of purchase and the product is returned immediately to **PrecisionPower**. Warranty claims beyond ninety (90) days for Non-Authorized Dealer Installed Products will be for parts only and will extend for one (1) year from the date of purchase. This warranty is not transferable.

3. The date of purchase and proof of Authorized Dealer Installation of a PrecisionPower product must be established by an original sales receipt which must accompany the article being returned for warranty work.

4. This warranty shall NOT apply to any **PrecisionPower** product found to have the original factory serial number removed or defaced. All products received (by **PrecisionPower**) for in warranty or out of warranty repair, with their original serial numbers removed or defaced, will NOT be repaired and will be returned to sender, freight collect. Refer to original packaging for the serial number of your component speakers.

5. The provisions of this warranty shall not apply to any **PrecisionPower** product used for a purpose for which it is not designed, which has been repaired or altered in any way, or which has been connected, installed, or adjusted other than in accordance with the instructions furnished in **PrecisionPower's** owner's manual. Nor shall this warranty apply to any part which has been subject to misuse, neglect, or accident.

6. PrecisionPower does not authorize any other persons to assume any other liability in connection with its products. THIS WARRANTY IS THE ONLY EXPRESS WARRANTY MADE BY PRECISIONPOWER APPLICABLE TO ITS PRODUCTS. ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO PRECISIONPOWER PRODUCTS IS LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY. PRECISIONPOWER SHALL NOT BE LIABLE FOR THE INCIDENTAL, CONSEQUENTIAL, OR COMMERCIAL DAMAGES RESULTING FROM THE BREACH OF THIS WRITTEN WARRANTY. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts; so the above limitations or exclusions may not apply to you.

7. Your product will be serviced on an in-warranty basis within the warranty period for the correction of warranted defects. If improper operation of your **PrecisionPower** product should occur, contact your Authorized Dealer for assistance with the return and factory repair of your **PrecisionPower** product. If an Authorized Dealer is not available, return the unit including your name, telephone number, return address, a copy of your sales receipt, and a description of the problem to:

**PrecisionPower, Inc.**  
**Service Department**  
**4829 S. 38th Street**  
**Phoenix, AZ 85040-2964**

TO RETURN PRECISIONPOWER PRODUCTS OUT OF WARRANTY: Return the unit, postage prepaid, in the original protective carton. Please include a description of the problem and, if desired, a request for an estimate of repair costs. Unless a request for an estimate is included, the unit will be repaired as necessary. Please contact **PrecisionPower** Customer Service at 1-800-62-POWER for questions concerning out of warranty repair charges. Repaired unit will be returned with an itemized statement, C.O.D.

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