

# OPERATOR'S MANUAL

**PAR-225**

**Five-Band Preamplifier/Equalizer**



**PrecisionPower**

*Amplifiers, Signal Processors and Accessories*

MADE IN THE U.S.A.

**MADE IN THE U.S.A.**

4829 South 38th Street  
Phoenix, Arizona 85040-2964  
• U.S.A. •

602 - 437 - 5207  
1-800-62-POWER

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## CONGRATULATIONS

Congratulations and thank-you for taking advantage of our new Precision Power high-performance mobile audio equipment. In your selection of the PAR-225, you will notice its unique capabilities, high-tech design, and use of "tomorrow's" technology.

We also manufacture state-of-the-art amplifiers and crossovers to further enhance your own personal sound system.

To get the utmost satisfaction and highest quality performance out of your new PAR-225, please read the accompanying manual thoroughly before installation and retain it for future use. If you encounter difficulties during or after installation and are unable to resolve the problem, contact your dealer or call Precision Power at 1-800-62-POWER for further assistance.

**CAUTION** - Use of a high-power stereo system may cause hearing loss or damage.

**CAUTION** - Use of a high-power stereo system may impair the ability to hear necessary traffic sounds and thus may constitute a traffic hazard. PPI advises use of audio components at low volume levels while driving.

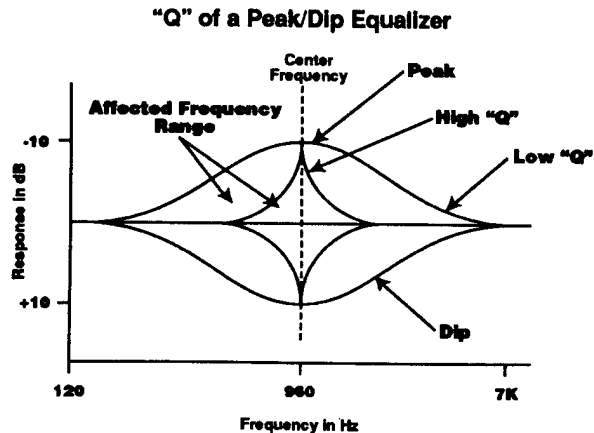
## FEATURES

- Ultra-Wide Bandwidth Circuitry
- Two Selectable Inputs
- Adjustable Input Sensitivity
- Five Bands of Quasi-Parametric Equalization
- Sixteen Selectable Presets for each of the five bands.
- Conductive Plastic Potentiometers
- Gold RCA Input Connectors
- Onboard Power Supply or Phantom Powered
- Internally Fused
- LED Power Indicator
- Adjustable Overload Indicators
- Illuminated Controls
- Remote Turn-on
- Two Year Warranty
- Manufactured in the USA

## GLOSSARY

The following terms are used within this manual. Since they may be unfamiliar, definitions are provided as follows.

- Center Frequency** The frequency at which each EQ. level control has the greatest effect. See illustration.
- Input Sensitivity or Gain** A measure of a device's input signal requirement to produce a desired output. "High" sensitivity implies a low input signal whereas "Low" sensitivity implies a higher input signal requirement.
- Input Sensitivity or Gain Control** A control that allows adjustment to the PAR-225's output level for varying input levels.
- LED** Light Emitting Diode. Used as an indicator. (i.e. on/off process)
- Parametric Equalizer** An equalizer whose parameters: boost/cut, center frequency, and bandwidth ("Q"), are independently variable without any interaction.
- Phantom Power** Power supplied to accessories from a PPI amplifier.
- "Q"** The property of an equalizer that determines the range of frequencies that are affected on both sides of the center frequency. A high number indicates a narrow range is affected (more specific). A low number indicates a wide range is affected (less specific). See illustration.
- Remote Turn-On** Low current "remote" switching circuit which is connected to the source unit via the blue wire when the PAR-225 is powered using the supplied power harness.



## SPECIFICATIONS

Signal-to-Noise Ratio ..... 110 dB  
(A-weighted in 20 KHz noise bandwidth below rated output)

Total Harmonic Distortion ..... .002 %  
(1 KHz, 1 VRMS into 10K ohms)

Boost/Cut Range ..... +/- 18 dB  
(Nominal - depends on tuning of adjacent bands)

### EQ Center Frequencies and Q's (selectable)

Sub ..... 30 Hz to 60 Hz  
"Q" from 2 to 3.8

Low ..... 80 Hz to 170 Hz  
"Q" from 3 to 6.1

Low-Mid ..... 180 Hz to 400 Hz  
"Q" from 2.7 to 6.2

High-Mid ..... 400 Hz to 4 KHz  
"Q" from .5 to 4.4

Treble ..... 6 KHz to 16 KHz  
"Q" from 1.3 to 3.3

### Input Gain

Radio ..... 0 to 20 db

CD/Aux ..... 0 to 20 db

Rated Output ..... 5 VRMS

Frequency Response ..... 10 HZ to 100 KHz  
(+/- 1 dB)

## TOOLS/MATERIALS REQUIRED FOR INSTALLATION/ADJUSTMENTS

- Miniature Flat Blade Screwdriver
- 7/64" Allen Wrench
- Drill & Bit
  - size is personal preference
- 2 Screws & 2 Washers
  - (we suggest a .110 bit for #6 metal screws)
  - size to match with drill bit
  - type is personal preference
  - (we suggest #6 metal screws)

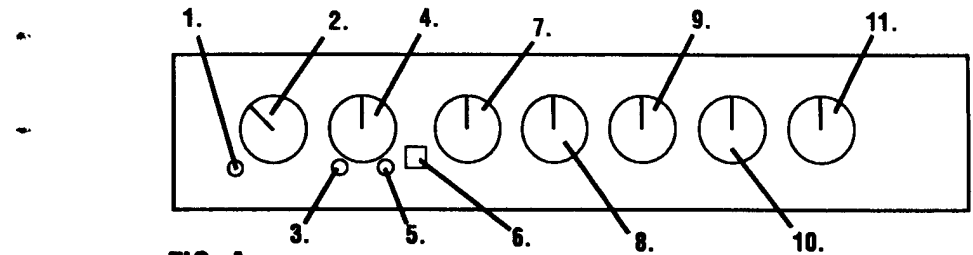
## INTRODUCTION

The PAR-225 Preamp Paragraphic Equalizer is an auto stereo control center of unequalled range and flexibility. It features 5 bands of quasi-parametric equalization, dual inputs, front and rear outputs with fader, master volume control and overload indicators. There are sixteen selectable combinations of center frequency and "Q" for each band allowing precise compensation for car acoustics. The choice of center frequencies, their spacing, and the selectivity ("Q") of each of the bands can be optimized to solve the acoustic problems unique to your installation. Please refer to the Frequency Selection Codes in Appendix A for assistance in this area.

## CONNECTIONS

### INPUTS

On the back panel the PAR-225 has RCA phono jacks for inputs from two low level sources, such as a radio/tape unit and a CD player. (Refer to Fig. B) A switch on the front panel selects the desired input source. (Refer to Fig. A) Since one input is selected the switch will automatically mute the unused output.

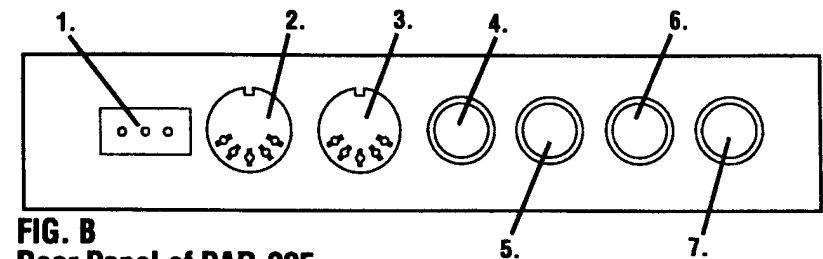


**FIG. A**  
**Front Panel of PAR-225**

- |   |                           |
|---|---------------------------|
| 1. On/off Indicator                         | 7. Sub level adjust       |
| 2. Volume Control                           | 8. Low level adjust       |
| 3. Input Clip Indicator                     | 9. Low-Mid level adjust   |
| 4. Fader Control                            | 10. High-Mid level adjust |
| 5. Output Clip Indicator                    | 11. Treble level adjust   |
| 6. Auxiliary Select (in:CD, out:Radio/Tape) |                           |

### OUTPUTS

Two DIN-jack outputs - "Front" and "Rear" are available on the back panel of the PAR-225. (Refer to Fig. B) These outputs connect directly to the DIN inputs of other Precision Power components, such as an amplifier or crossover. A DIN-to-RCA adaptor is available for connection to other manufacturer's products.

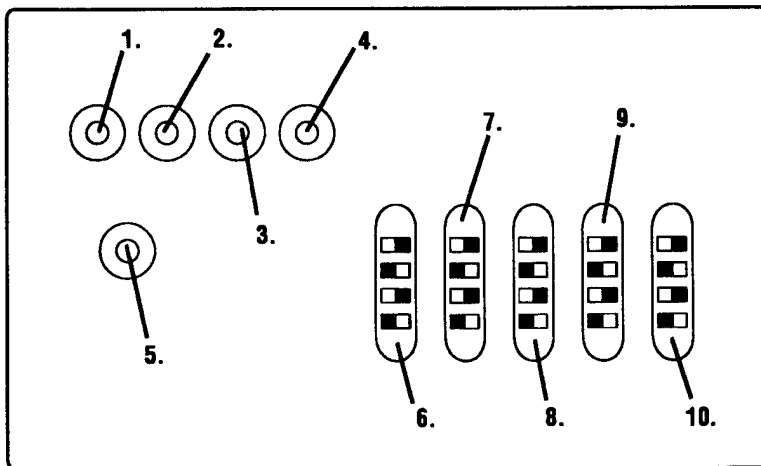


**FIG. B**  
**Rear Panel of PAR-225**

- |                             |                             |
|-----------------------------|-----------------------------|
| 1. 3 pin Socket             | 5. Right CD Auxiliary Input |
| 2. Output: Fader Controlled | 6. Left Radio/Tape Input    |
| 3. Output: Fader Controlled | 7. Right Radio/Tape Input   |
| 4. Left CD Auxiliary Input  |                             |

## FREQUENCY/"Q" SELECTION

The center frequency and "Q" of the 5 individual equalization bands can be adjusted by the proper positioning of the set of 4 switches, one set for each band. These switches are accessible through slots in the top panel of the PAR-225. (Refer to Fig. C) Each frequency/"Q" combination has a unique "code" of positions for the four switches. Refer to the listings of available combinations for each band as shown in the Frequency Selection Codes in Appendix A.

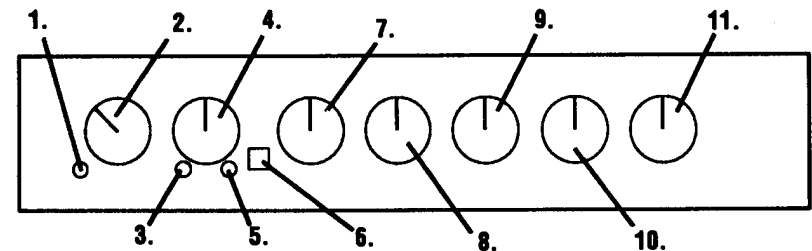


**FIG. C**  
Top Panel of PAR-225

1. Right Input Sensitivity adjustment for Radio/Tape Auxiliary
2. Left Input Sensitivity adjustment for Radio/Tape Auxiliary
3. Right Input Sensitivity adjustment for CD Auxiliary
4. Left Input Sensitivity adjustment for CD Auxiliary
5. Output Clip Sense adjustment
6. Sub Frequency Selector
7. Low Frequency Selector
8. Low-Mid Frequency Selector
9. High-Mid Frequency Selector
10. Treble Frequency Selector

## FADER

The fader control adjusts the relative level of the front and rear outputs. This control is located to the right of the volume control on the front panel. (Refer to Fig. A) If both outputs are used, the fader should be adjusted to approximately the 12 o'clock position. If it is set to either extreme, one output will be completely off.



**FIG. A**  
Front Panel of PAR-225

- |   |                           |
|---|---------------------------|
| 1. On/off Indicator                         | 7. Sub level adjust       |
| 2. Volume Control                           | 8. Low level adjust       |
| 3. Input Clip Indicator                     | 9. Low-Mid level adjust   |
| 4. Fader Control                            | 10. High-Mid level adjust |
| 5. Output Clip Indicator                    | 11. Treble level adjust   |
| 6. Auxiliary Select (in:CD, out:Radio/Tape) |                           |

## INPUT SENSITIVITY

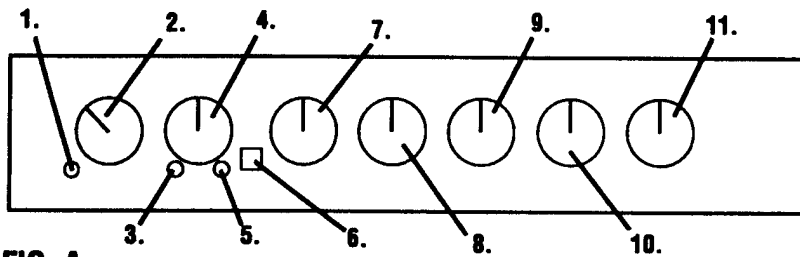
The goal of adjusting the input sensitivity, is to get the greatest possible signal level without overloading the preamp. The PAR-225's radio/tape and CD auxiliary inputs have independently-adjustable sensitivity (gain) controls to allow matching the loudness of source units with different output levels. The gain-adjust controls are accessible through holes in the top panel. (Refer to Fig. C) A miniature flat blade screwdriver is required to adjust the controls. Turning the controls clockwise increases the gain for a louder output. Increasing gain too much will overload your preamp. To help you adjust the input gains for the best performance, an Input Clip Indicator is provided on the front panel. (Refer to Fig. A)

## INPUT CLIP INDICATOR

This indicator lights when the PAR-225's internal circuitry is overdriven, due to improper adjustment of the PAR's input gain controls or excessive levels coming from the source unit. This overload will be heard as distorted sound. (Refer to Fig. A for location of LED)

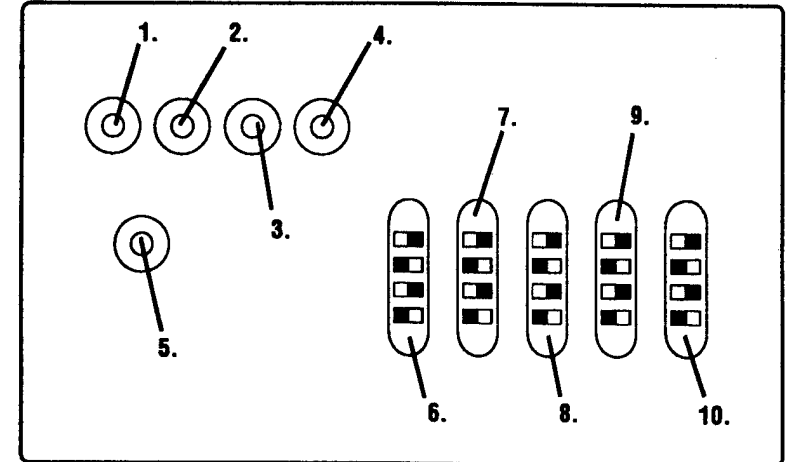
## OUTPUT CLIP INDICATOR

This is a user-adjustable indicator which is intended to light when the overall system has reached its maximum power level. It monitors the PAR-225's output level which relates directly to the amplifier output. The level at which the indicator activates is adjustable to match amplifier's maximum power level. The LED's adjustment control is accessible through a hole in the top panel. (Refer to Fig. C) Refer to Fig. A for location of the LED.



**FIG. A**  
Front Panel of PAR-225

- |   |                           |
|---|---------------------------|
| 1. On/off indicator                         | 7. Sub level adjust       |
| 2. Volume Control                           | 8. Low level adjust       |
| 3. Input Clip Indicator                     | 9. Low-Mid level adjust   |
| 4. Fader Control                            | 10. High-Mid level adjust |
| 5. Output Clip Indicator                    | 11. Treble level adjust   |
| 6. Auxiliary Select (in:CD, out:Radio/Tape) |                           |



**FIG. C**  
Top Panel of PAR-225

1. Right Input Sensitivity adjustment for Radio/Tape Auxiliary
2. Left Input Sensitivity adjustment for Radio/Tape Auxiliary
3. Right Input Sensitivity adjustment for CD Auxiliary
4. Left Input Sensitivity adjustment for CD Auxiliary
5. Output Clip Sense adjustment
6. Sub Frequency Selector
7. Low Frequency Selector
8. Low-Mid Frequency Selector
9. High-Mid Frequency Selector
10. Treble Frequency Selector

## SYSTEM GAIN ADJUSTMENTS

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 interconnection 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 complete.

### Adjustment of source unit output and PAR-225 input:

1. Turn PAR-225 volume control fully counterclockwise.
2. Turn source unit volume 1/2 to 3/4 of maximum. If available on your unit, set the output level to maximum. Some units may have a switch.
3. Set PAR-225 selector switch to either radio/tape or CD.
4. Adjust all PAR-225 input gains fully counterclockwise.
5. Play a CD if the CD input was chosen. Play a cassette or FM station if using the radio/tape input. A loud music selection is desired.
6. Adjust the left radio or CD (whichever was chosen) 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. Adjust the right channel radio or CD input gain control for proper left/right balance.
7. Set PAR-225 input selector switch to the alternate source unit, if used, and repeat steps 2 through 6.

**NOTE:** There are separate left and right gain adjustments for each input. This allows left/right balance adjustments. If equal left/right volume is desired be sure to set the controls to the same position.

### Adjusting amplifier input gains:

1. Adjust amplifier gains to minimum sensitivity (fully counterclockwise on the gain control of a PPI amplifier).
2. Turn the volume knob on the PAR-225 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 proportional balance.

### Adjusting output clip indicator:

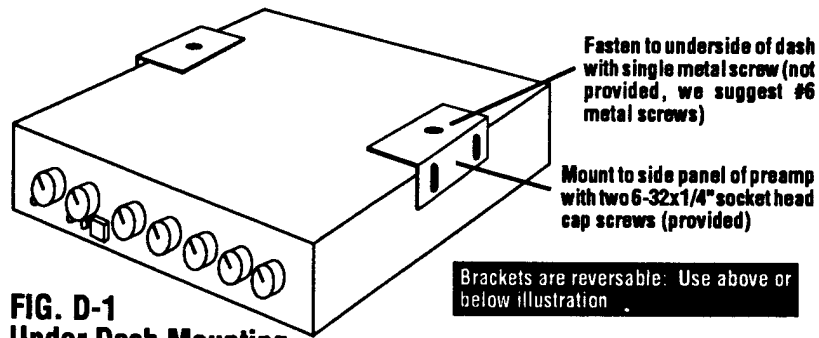
1. Adjust the output clip indicator control fully clockwise.
2. Play system at the volume where audible distortion begins.
3. Adjust the output clip indicator control counterclockwise until indicator comes on occasionally. When this indicator illuminates, the output level is approaching clipping, and the system has reached maximum power level before distortion.

Note that if an electronic crossover or other accessory is connected between the PAR-225 and an amplifier, the gain of the crossover/accessory will affect clip indicator setting. A "fine tuning" adjustment should be made so that the LED comes on just at the volume level where distortion becomes audible. The indicator is peak responding, and once triggered, it will stay on long enough to be noticed no matter how briefly the maximum level is exceeded. This way, the user is warned of the possibility of distortion before it becomes serious.

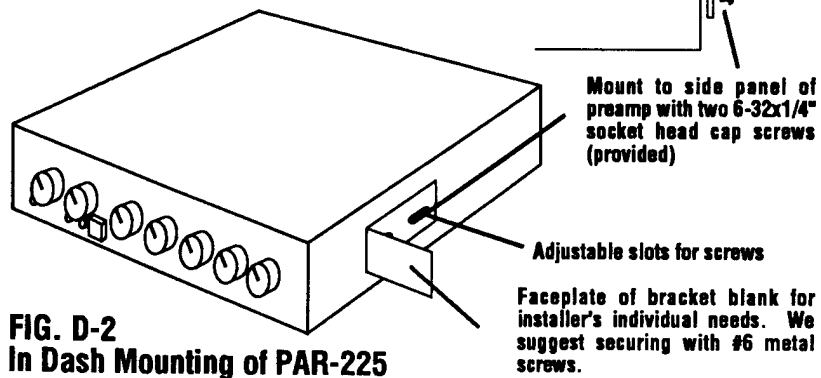


## MOUNTING

For under dash applications, two brackets are provided. This allows adjustment of the PAR-225 into the desired operating position. (Refer to Fig. D-1) If the unit is to be mounted in a dashboard, console, or other type of panel, a  $31/32" \times 6 25/32"$  rectangular hole should be cut to clear the chassis. A minimum depth of  $6 1/2"$  is required behind the panel to allow space for the connection cables. The preamp can be secured in place with the two supplied brackets. (Refer to Fig. D-2) The brackets are connected to the preamp by two  $6-32 \times 1/4"$  socket head cap screws. We have made the brackets adjustable to compensate for panel thickness. Since all dashboards are unique, the face of the brackets have been left blank for the installer's individual needs. The face bracket can be secured with nuts and bolts. (We suggest #6 metal screws.)



**FIG. D-1**  
Under Dash Mounting  
of PAR-225



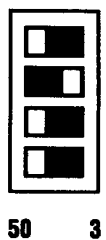
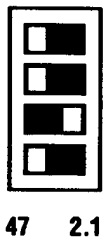
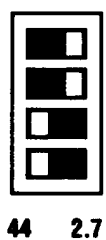
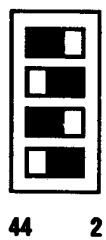
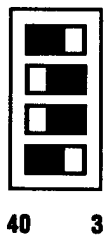
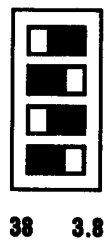
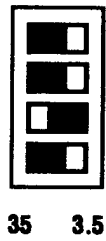
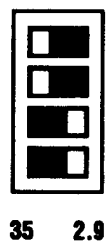
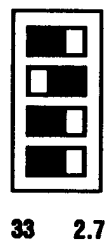
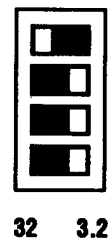
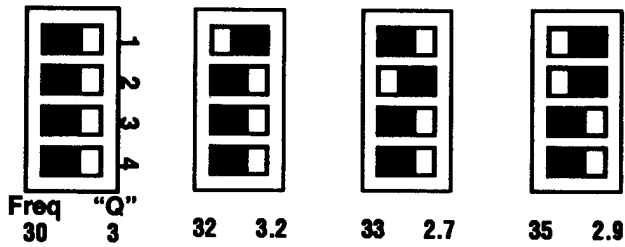
**FIG. D-2**  
In Dash Mounting of PAR-225

## THANK YOU

Thank you again for choosing Precision Power's PAR-225 to enhance your system. Your complete satisfaction is important to us. If you have any comments please feel free to write us.

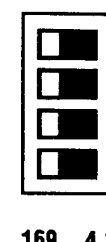
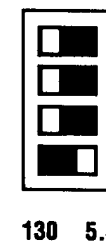
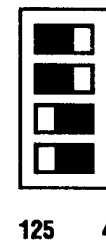
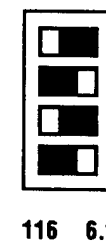
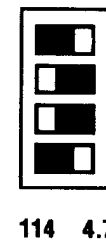
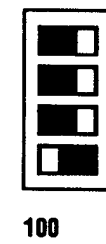
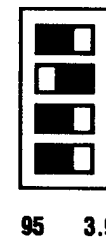
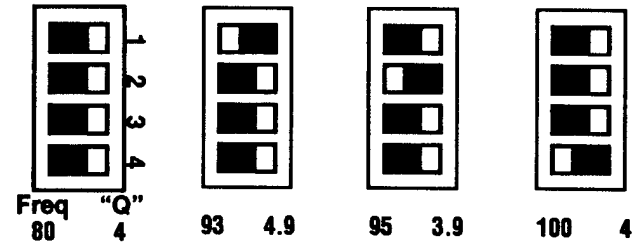
To update your system with our state-of-the-art equipment we invite you to try our other products. Precision Power is the competitive edge. Please consult your PPI dealer for further information and advertisement.

# SUB



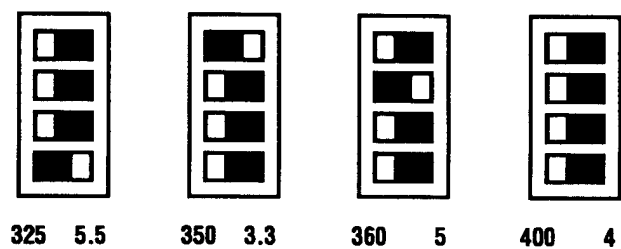
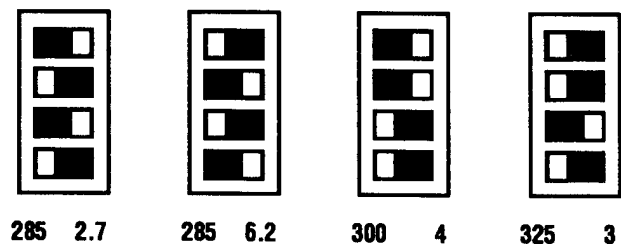
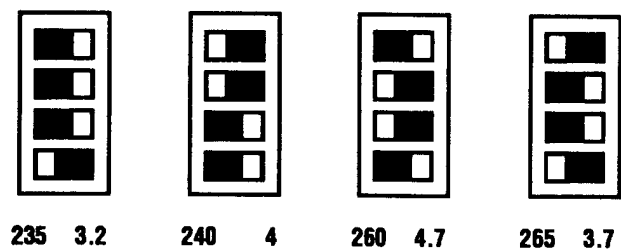
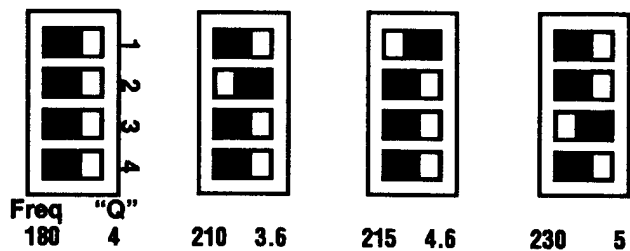
Switch is thrown to the right:

# LOW



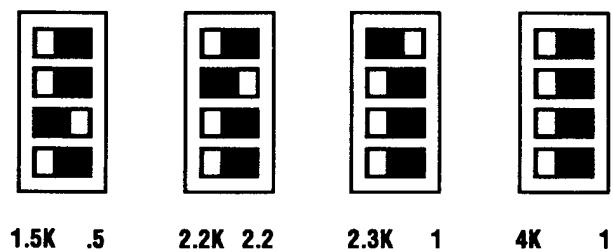
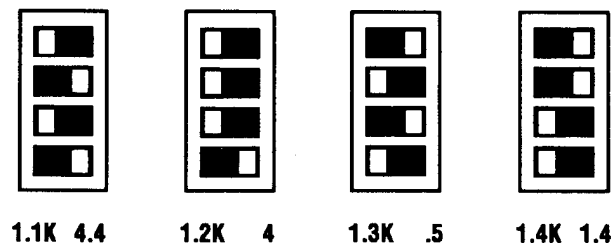
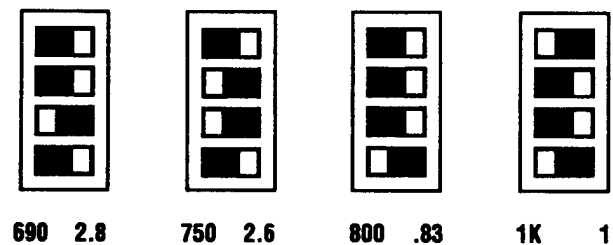
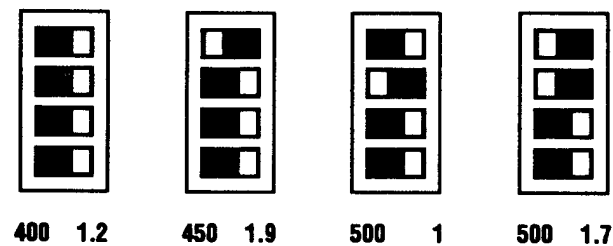
Switch is thrown to the right:

## LOW-MID



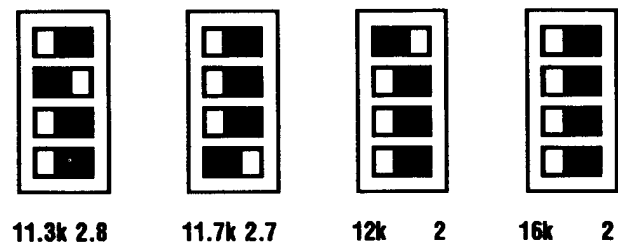
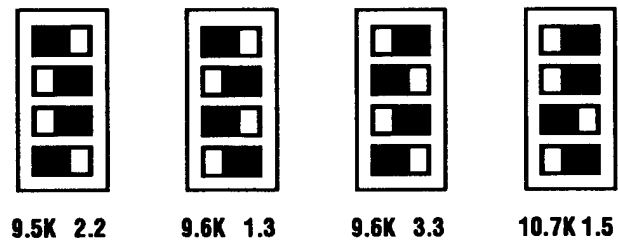
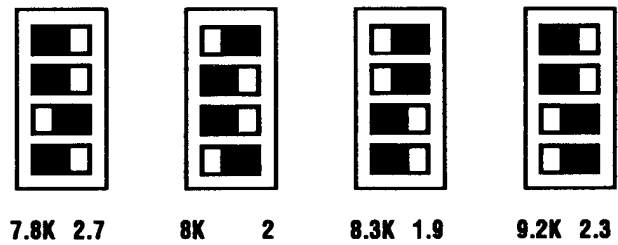
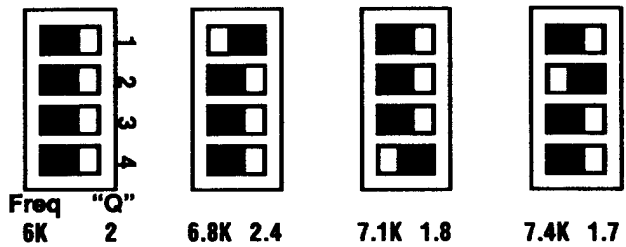
Switch is thrown to the right:

## HIGH-MID



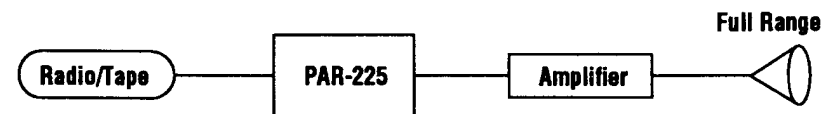
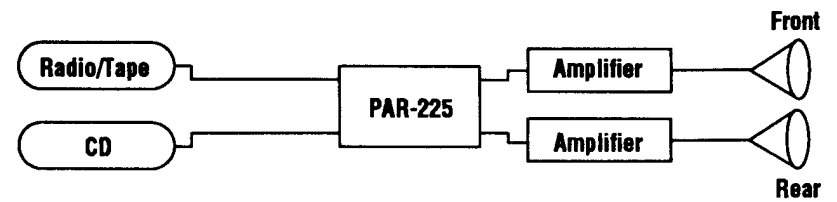
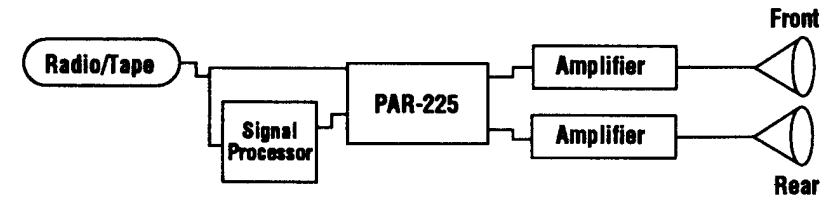
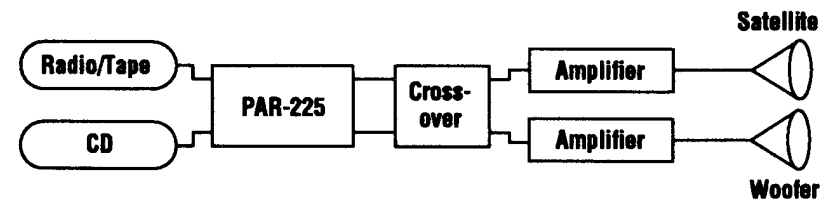
Switch is thrown to the right:

# TREBLE



Switch is thrown to the right:

# SAMPLE HOOKUP CONFIGURATIONS



## 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. Precision**Power**, Inc. ( **PPI** ) warrants its amplifiers and accessories 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 Precision**Power** Dealer. Non-Authorized Dealer installed products carry a one (1) year parts and ninety (90) days labor limited warranty. The extent and conditions of **PPI's** Limited Warranty are as follows:

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

2. Non-Authorized **PPI** Dealer Installed Products: **PPI** will either repair or replace at no charge, to the original purchaser, any unit which **PPI'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 **PPI**. 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 **PPI** amplifier and / or accessory 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 **PPI** unit found to have the original factory serial number removed or defaced. All products received (by **PPI**) 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.

5. The provisions of this warranty shall not apply to any **PPI** unit 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 **PPI's** owner's manual. Nor shall this warranty apply to any part which has been subject to misuse, neglect, or accident.

6. **PPI** 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 **PPI** APPLICABLE TO ITS PRODUCTS. ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO **PPI'S** AMPLIFIERS AND OR ACCESSORIES IS LIMITED IN DURATION TO THE DURATION OF THIS LIMITED WARRANTY. **PPI** 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 unit will be serviced on an in-warranty basis within the warranty period for the correction of warranted defects. If improper operation of your **PPI** product should occur, contact your

Precision**Power** Inc.  
Service Department  
4829 S. 38th Street  
Phoenix, AZ 85040

**TO RETURN **PPI** 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 **PPI** 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.