

RF200

OWNER'S MANUAL



**Rockford
Corporation**

613 South
Rockford Drive
Tempe
Arizona
85281

370911024

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INTRODUCTION

The Rockford Fosgate RF200 is a high performance stereo pre-amplifier. The RF200 is the latest addition to Rockford Fosgate's developing line of products for home audio use. In the Rockford Fosgate tradition, it is handmade in America, with the highest quality components available, to exacting specifications. The RF200 is designed to be a low noise pre-amplifier having complete flexibility without any unnecessary frills.

FEATURES

Provides an External Processing Loop (EPL). This allows you freedom from having to use the TAPE MONITOR loop.

Multiple pre-amplifier outputs for multiple amplifier systems

Built-in adjustable active crossovers. The active crossovers can be adjusted by simply exchanging modules (8-pin DIP packages) which are accessible from the back panel.

Uses a toroidal (donut shaped) transformer. A toroid core is used (which is more expensive than a conventional square transformer) because its higher efficiency, lower weight, smaller size, and freedom from stray magnetic fields helps produce a cleaner design and a cleaner signal.

Testing and Burn-In All Rockford Fosgate pre-amplifiers undergo a rigorous test and qualification process during normal production. After final assembly your pre-amplifier was powered up (burned-in) for a minimum of four hours prior to final testing. Quality control of this extensive nature is time-consuming and expensive, but it makes us confident that your RF200 will be of the highest quality possible.

INSTALLATION

Pre-amplifier Placement

The RF200 is designed to be placed on a shelf or other substantial support. (A rack-mount front panel is available.)

Power Connection

The RF200 is designed to operate on 120 Volts AC, 60 Hertz (standard U. S. line output) only. Connection is via a standard 2-prong polarized AC plug.

FRONT PANEL

All front panel functions are clearly marked and reasonably self-explanatory.

POWER

A rocker switch is used to turn the power to the RF200 ON and OFF. When the switch is in the ON position, the green LED to the left of the switch will light up.

HEADPHONE

A HEADPHONE jack is provided for personal listening through headphones. Using headphones will not interfere with the amplifier outputs.

Inputs

There are four independent inputs marked PHONO, CD, TUNER, and VIDEO/AUX plus a TAPE MONITOR loop.

For normal operation select the desired input by depressing the corresponding switch. For tape playback the TAPE

MONITOR switch should be depressed, otherwise this switch should usually be in the out position.

While recording a tape, you may want to monitor how the tape sounds in comparison to the source. To do this use the TAPE MONITOR switch. When the TAPE MONITOR switch is out you are listening to the source. When the TAPE MONITOR switch is in, you are listening to the recorded tape. Monitoring how the tape sounds while recording can only be done with a 3-head tape deck.

Tone Controls

The RF200 provides BASS and TREBLE controls so that the music can be personally tailored. The BASS control provides boost or cut for the low frequencies of the signal. The TREBLE control provides boost or cut for the high frequencies of the signal. Both controls have center detents (soft hold position) to quickly and accurately locate the positions for flat response (no boost or cut).

A TONE BYPASS switch has been included which allows the signal to bypass the tone circuitry (BASS and TREBLE controls). This is a desired feature if a more sophisticated frequency response enhancer is being used (i.e., an equalizer).

BALANCE

The BALANCE control adjusts the relative amplitude between the two channels. In the center detent position the amplitude of the channels is balanced. By adjusting the BALANCE control clockwise from the detent position, the right channel amplitude will be larger than the left channel amplitude. By turning the BALANCE control counter-clockwise from the detent position, the left channel amplitude will be larger than the right channel amplitude.

The BALANCE control can be used to compensate for poorly recorded (left channel is louder than the right channel or vice-versa) music or poor speaker placement.

VOLUME

The VOLUME control is a multiple detent control for adjusting the amplitude of the signal. Turning the control clockwise increases the loudness of the audible signal.

MONO/STEREO

The MONO/STEREO switch in the out position is designed to handle stereo signals. In most situations it will be used in this position. If a program is known to be monaural, depress the MONO/STEREO switch for a better balanced sound.

BACK PANEL

Inputs

All inputs are clearly marked and use pin jack connections. When making connections make sure the left channel of the player (PHONO, CD, etc.) is connected to the left channel (top row of inputs) of the pre-amplifier. Also ensure that the right channel of the player is connected to the right channel (bottom row of inputs) of the pre-amplifier. **CAUTION!** Do not use excessive force when inserting or removing the pin connectors.

The CD, TUNER, and VIDEO/AUX inputs are electrically equivalent and therefore interchangeable. This could be convenient if you have multiple similar sources: two TUNERS, three CD players, etc.

The PHONO section is designed to be used with a turntable having a moving magnet cartridge. Turntables using moving coil cartridges may work sufficiently well in the PHONO input but may require a transformer to pre-amplify their signal to work properly. Turntables utilizing ceramic cartridges should be input into the AUX/VIDEO inputs.

CAUTION! Turntables should never be placed on top of, and preferably not near, the speakers. Misplacement of the equipment could cause feedback to get into the system and cause howling. Turntables are also affected by hum which is caused by an incorrect or incomplete hook-up between the turntable and the pre-amplifier. Make sure that the right channel of the turntable is connected to the right channel of the pre-amplifier and that the left channel of the turntable is connected to the left channel of the pre-amplifier. Also ground the turntable to the pre-amplifier, this will help reduce hum. In addition, make sure the input lines from the turntable do not run alongside any A.C. power lines, this will help avoid induced hum.

Tape Loop

Ensuring that the left and right channels are correct, connect the TAPE OUT outputs of the RF200 to the "RECORD" inputs of the tape recorder, and connect the TAPE IN inputs to the "PLAYBACK" outputs of the tape recorder.

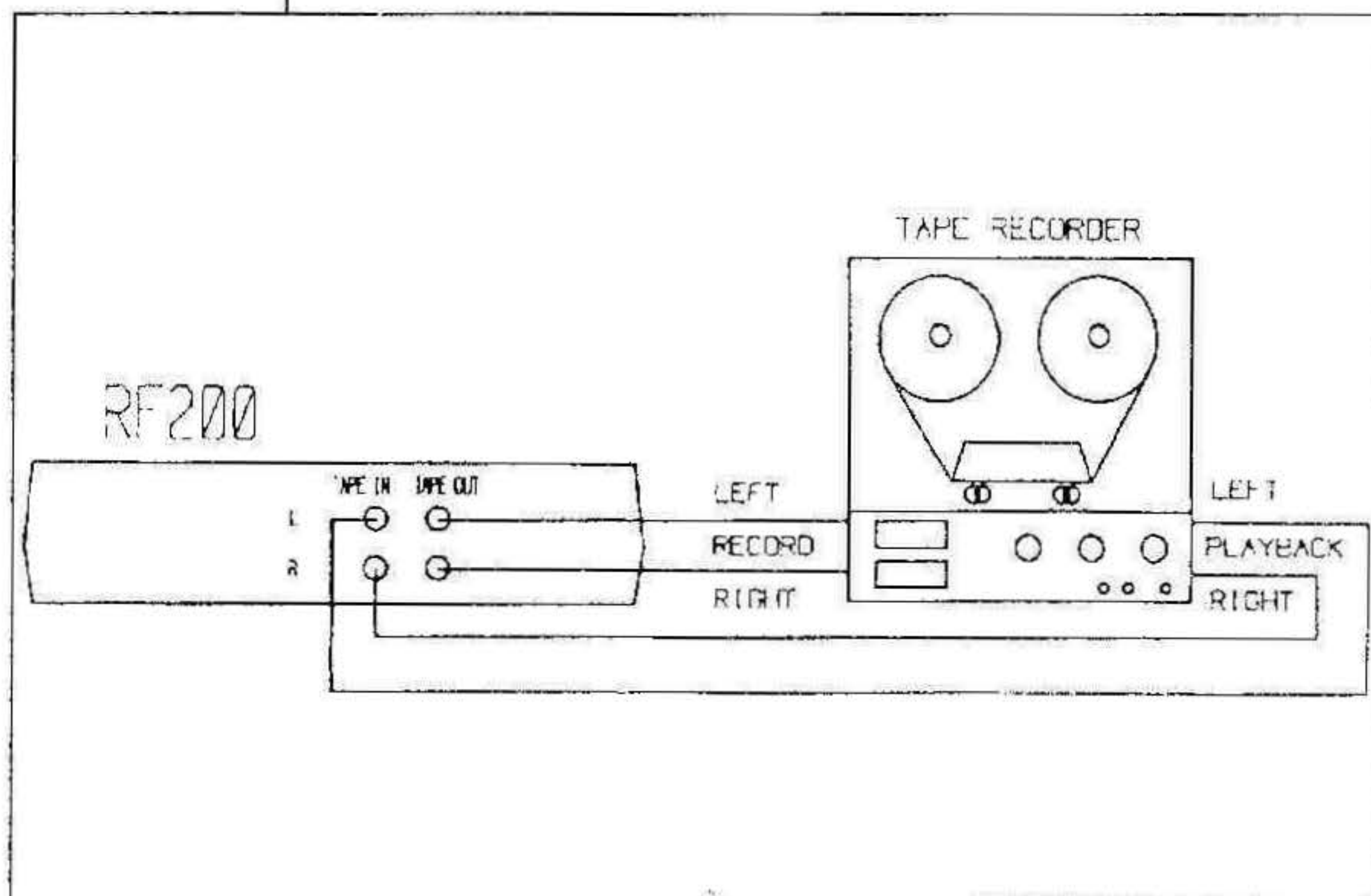


figure 1

EPL (External Processing Loop)

The RF200 is provided with a shorting bar between the EPL IN and EPL OUT for both channels. These bars should remain installed unless you are using an external processor (equalizer, dynamic range expander, etc.). If the bars are removed and there is no external processor, there will be no signal at the outputs. **CAUTION!** Ensure that the shorting bars are not inserted so far that they make contact with the ground connections (outside conductor) of the pin jacks.

To use an external processor connect the EPL OUT outputs to the inputs of the external processor and the outputs of the external processor to the EPL IN inputs. Recheck to make sure that the left and right channels are connected correctly.

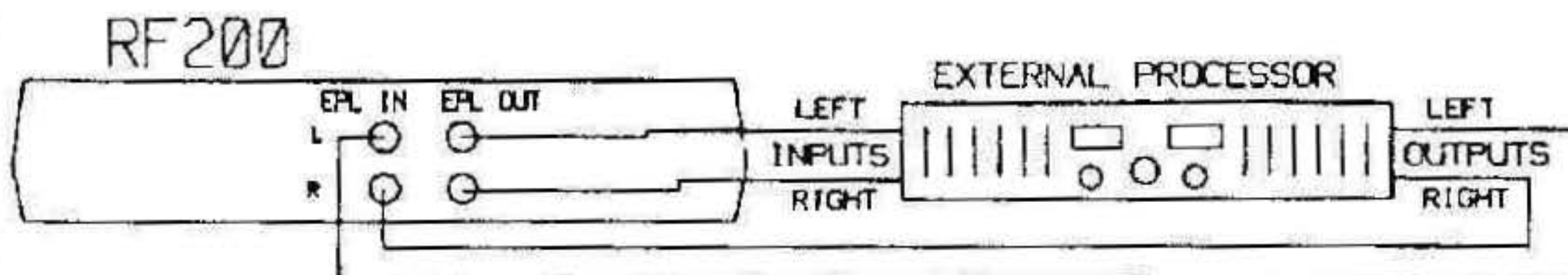


figure 2

Amplifier Outputs

The RF200 is provided with multiple amplifier outputs offering a great deal of flexibility.

MAIN

In most system hook-ups, the RF200 pre-amplifier will be connected to one power amplifier in stereo mode. For this system configuration connect the MAIN OUT outputs of the RF200 to the inputs of the power amplifier.

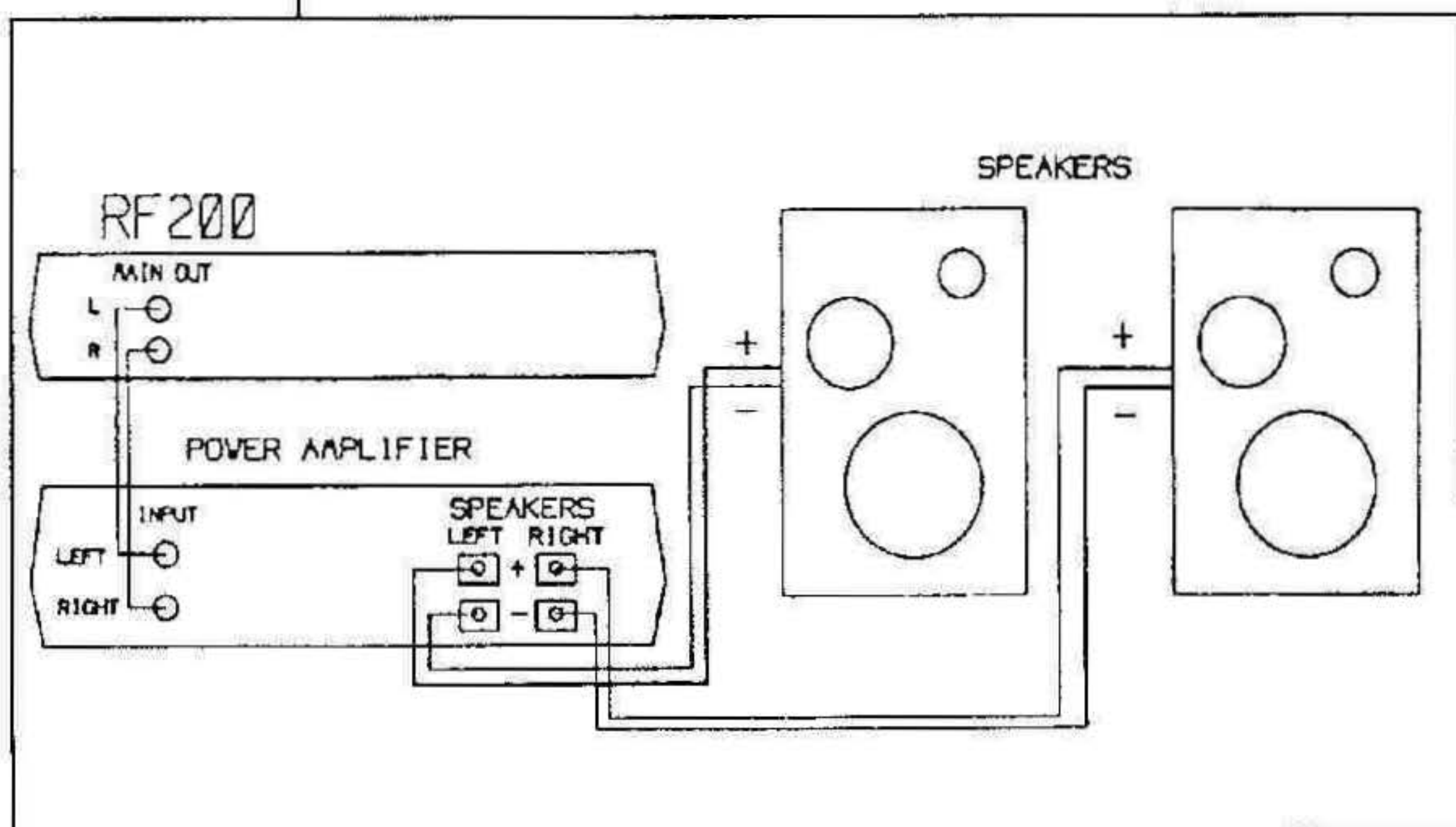


figure 3

Speaker Phasing

In any stereo system, the left and right speakers must agree in phase (polarity); that is, the positive terminals of both left and right speakers must be connected to the positive terminals of the left and right amplifier outputs, respectively. For bi-amplified systems, the phasing between the woofers on the bass channels and the midrange/tweeters on the high channels must also be considered.

When stereo pairs of speakers are connected out-of-phase, the symptoms are severe loss of bass, loss of directional information, and added coloration at middle and high frequencies. A convenient way to check for out-of-phase speaker pairs uses the BALANCE control on the RF200. Turn the BALANCE control fully clockwise (or counter-clockwise) and listen to the sound. Then turn the BALANCE control to the center detent position. If the bass decreases in the detent position, the woofers are out-of-phase. Out-of-phase midranges will not have good stereo localization and the tone will change.

If the woofers and midrange speakers of a bi-amplified system are improperly phased, a "hole" in the system frequency response will occur near the crossover frequency. This usually produces reduced impact in the bass or thin reproduction of vocals. It is always best to try out both woofer phases on the bass channel to find out which performs best. (Change the woofer polarities at the same time, because both channels must be in phase to work as a stereo pair.)

HIGH OUT and LOW OUT

The HIGH OUT and LOW OUT outputs are provided for a system configuration utilizing bi-amplification. The RF200 has a built-in active crossover network. The RF200 comes equipped with the crossover frequency set at 100 Hz for the LOW OUT and HIGH OUT outputs. The crossover network, though, is adjustable so that you may select your desired crossover frequencies. (For more information on how to adjust the active crossovers see the section titled Adjustable Active Crossovers.)

In a bi-amplified system connect the HIGH OUT outputs of the RF200 to the inputs of the amplifier which will be driving the high frequency speakers (midrange and tweeter). Connect the LOW OUT outputs of the RF200 to the inputs of the amplifier which will be driving the low frequency speaker(s) (woofer).

If you are utilizing the high and low crossovers in your bi-amplified system, take special care of how the speakers are

connected to the power amplifiers. Due to the phase shift inherent with the crossovers, you will most likely want to reverse the polarity of one set of speakers. In the case illustrated, Figure 4, the polarity of the bass speakers are reversed. To ensure that your speakers are in-phase, consult the previous section, Speaker Phasing.

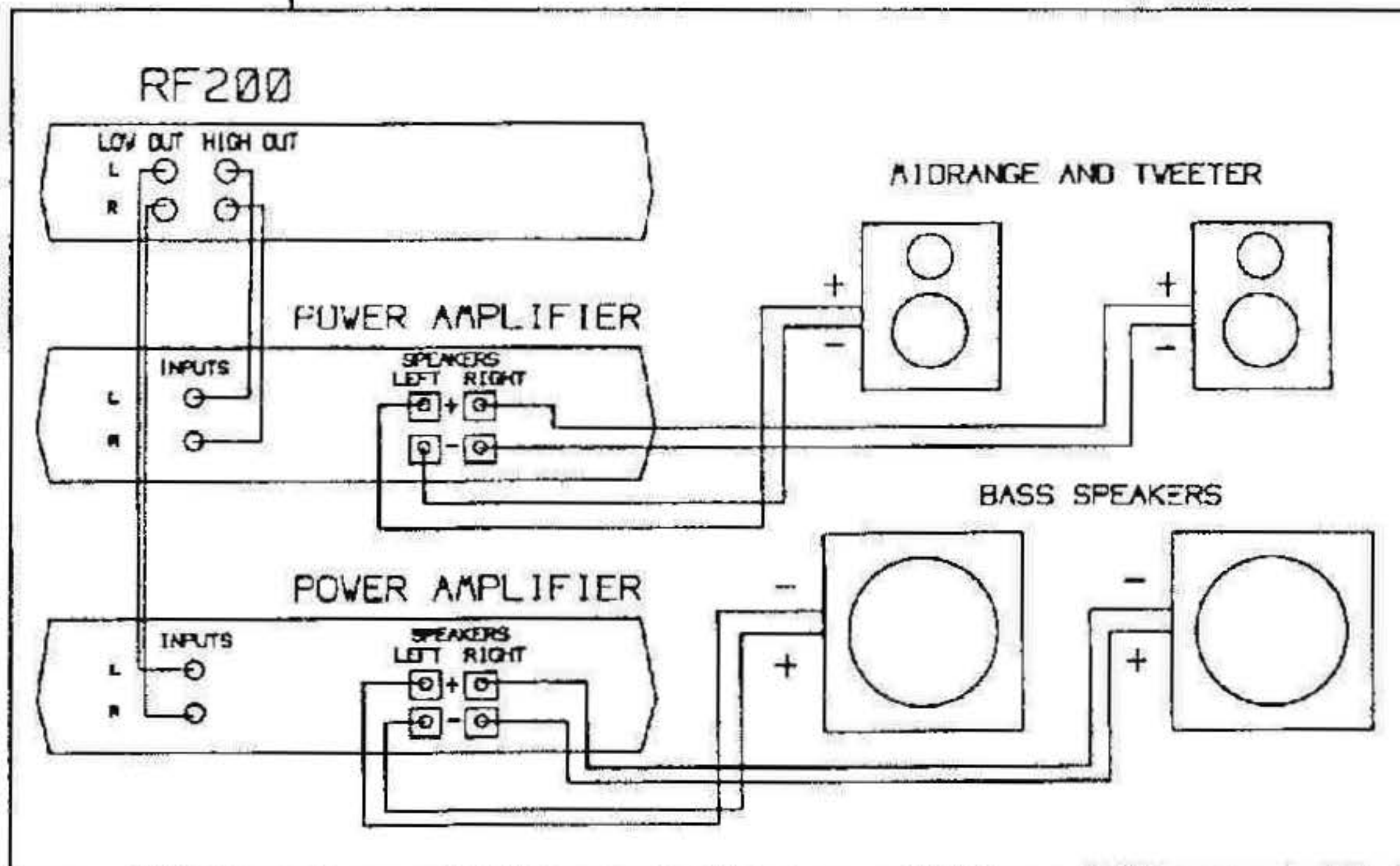


figure 4

Options

You also have the ability to bypass the HIGH OUT high frequency crossover by pushing in the HIGH XVR DEFEAT switch. Having done this, the HIGH OUT outputs deliver the same signal as the MAIN OUT outputs. If you are using a bi-amplified system with the HIGH XVR DEFEAT switch pushed in, test your system to see if the bass channel is in-phase with the midrange/tweeter channel. (Consult Speaker Phasing).

The RF200 is capable of feeding a signal to three amplifiers simultaneously by using all three outputs MAIN OUT, LOW OUT, and HIGH OUT. When designing your own multiple amplifier configuration system, you may want to consult with your Rockford Dealer or call Rockford Fosgate's Customer Service Department toll free at: 1-800-821-2349.

SWITCHED A.C. OUTLET

A SWITCHED A.C. OUTLET is provided on the back panel for the owner's convenience. This outlet can handle a two prong A.C. plug. Since it is a switched outlet, the outlet only has power when the RF200 is turned on. CAUTION! The maximum capacity of this outlet is 200 watts.

GROUND

A GROUND post is provided to help prevent ground loops. Your other equipment should be provided with similar grounding posts. To hook up, simply run wires from the grounding posts of the other equipment to the RF200's grounding post. Grounding the equipment together is always a good idea, but it will not necessarily improve the audible signal.

Adjustable Active Crossovers

The HIGH OUT and LOW OUT crossover frequencies in the RF200 are controlled by frequency modules. The crossover frequencies can be adjusted by simply exchanging the frequency modules. A series of standard Rockford modules are available and custom modules can easily be designed and fabricated (see the following section). In order to exchange a frequency module, remove the CROSSOVER ACCESS COVER from the back panel of the RF200. Remove the frequency module you wish to replace by using the extractor tool which has been provided.



figure 5

Then insert the new frequency module into the appropriate socket. CAUTION! When you are extracting the frequency module be careful that you extract only the module. If

you insert the extractor tool too far, you may grip the socket that the module is in. Pulling on the socket could damage the unit.

WARNING! Turn off the RF200 and all accompanying amplifiers before removing the modules. Also, do not operate the RF200 without the modules installed in their respective sockets. This applies even if you are not using the HIGH OUT and LOW OUT outputs.

Building a Custom Crossover Module

If you want a frequency not available in the standard Rockford modules (which are available at half-octave intervals from 50 Hertz to 9,000 Hertz), you can, in fact, build your own module.

You will need:

1. An 8-pin DIP component carrier
2. Soldering equipment
3. A source of 1/4 -watt or 1/8-watt resistors

Determine the resistance value you need for the frequency (f = frequency) you want from the formula below.

$$R = (7.23 * 1,000,000) / f$$

Use four resistors nearest the value you want and solder them into the component carrier. Refer to the following figure for an example.

figure 6

FREQUENCY RESISTOR VALUES

The following table was tabulated by using the formula that was given earlier.

<u>Frequency</u>	<u>Resistance</u>	<u>Frequency</u>	<u>Resistance</u>
50 Hz	150K ohms	800 Hz	9.1K ohms
70 Hz	100K ohms	1K Hz	7.5K ohms
100 Hz	75K ohms	1.5KHz	4.7K ohms
150 Hz	47K ohms	2K Hz	3.6K ohms
200 Hz	36K ohms	3K Hz	2.4K ohms
275 Hz	27K ohms	4.5KHz	1.6K ohms
400 Hz	18K ohms	6.5KHz	1.1K ohms
550 Hz	13K ohms	9K Hz	820 ohms
750 Hz	9.7K ohms	13K Hz	557 ohms

Care

Protect your pre-amplifier from moisture, dust, and continued direct sunlight.

Clean anodized finishes with soft damp cloth.

Save the original carton and packing. It is the only safe way to ship the pre-amplifier. If you need to replace the carton and/or packing, consult your authorized dealer or Rockford Customer Service Department.

No user serviceable parts inside. Do not disassemble the pre-amplifier for any reason. Refer to an authorized Rockford-Fosgate warranty station or to Rockford Corporation directly.

Specifications

PHONO Section -

Frequency Response (20 ~ 20k Hz)	: $\pm$ 0.4 dB
Maximum Output Voltage	: 9.25 Vrms
Total Harmonic Distortion	: < 0.005%
Sensitivity	: 0.6 mVrms
A-weighted Signal-to-Noise Ratio	: > 83 dB
Maximum Input Signal	: 75 mVrms
Input Impedance	: 47 k Ω resistor in parallel with 150 pF capacitor
Crosstalk	: < -78 dB
Separation	: < -72 dB

CD, TUNER, VIDEO/AUX Section -

Frequency Response (20 ~ 20k Hz)	: $\pm$ 0.4 dB
Maximum Output Voltage	: 9.25 Vrms
Total Harmonic Distortion	: < 0.005%
Sensitivity	: 60 mVrms
A-weighted Signal-to-Noise Ratio	: > 90dB
Maximum Input Signal	: 7.4 Vrms
Input Impedance	: > 19.5 k Ω
Crosstalk	: < -90 dB
Separation	: < -76 dB

Crossover Frequency

HIGH OUT:	-3dB @ 100 Hz slope = +12dB/octave
LOW OUT:	-3dB @ 100 Hz slope = -12 dB/octave

NOTE: RF200 is shipped with the above crossover frequencies. The crossover frequencies are adjustable.

Tone Controls:

BASS:	$\pm$ 13dB @ 38 Hz
TREBLE:	$\pm$ 11dB @ 20 kHz

Dimensions:	
Width:	17 1/2 inches
Height:	2 3/4 inches
Depth:	8 1/8 inches

Weight:	5.9 lbs.
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