2-channel Amplifiers
operation & Installation
Dear Customer,

Congratulations on your purchase of the world’s finest brand of car audio amplifiers. At Rockford Fosgate we are fanatics about musical reproduction at its best, and we are pleased you chose our product. Through years of engineering expertise, hand craftsmanship and critical testing procedures, we have created a wide range of products that reproduce music with all the clarity and richness you deserve.

For maximum performance we recommend you have your new Rockford Fosgate product installed by an Authorized Rockford Fosgate Dealer, as we provide specialized training through Rockford Technical Training Institute (RTTI). Please read your warranty and retain your receipt and original carton for possible future use.

Great product and competent installations are only a piece of the puzzle when it comes to your system. Make sure that your installer is using 100% authentic installation accessories from Connecting Punch in your installation. Connecting Punch has everything from RCA cables and speaker wire to Power line and battery connectors. Insist on it! After all, your new system deserves nothing but the best.

To add the finishing touch to your new Rockford Fosgate image order your Rockford wearables, which include everything from T-shirts and jackets to hats and sunglasses.

To get a free brochure on Rockford Fosgate products and Rockford accessories, in the U.S. call 602-967-3565 or FAX 602-967-8132. For all other countries, call +001-602-967-3565 or FAX +001-602-967-8132.

If, after reading your manual, you still have questions regarding this product, we recommend that you see your Rockford Fosgate dealer. If you need further assistance, you can call us direct at 1-800-669-9899. Be sure to have your serial number, model number and date of purchase available when you call.

The serial number can be found on the outside of the box. Please record it in the space provided below as your permanent record. This will serve as verification of your factory warranty and may become useful in recovering your amplifier if it is ever stolen.

Serial Number: ______________________________
Model Number: ______________________________
Welcome to Rockford Fosgate! This manual is designed to provide information for the owner, salesperson and installer. For those of you who want quick information on how to install this product, please turn to the Installation Section of this manual or refer to the icons listed below. Other information can be located by using the Table of Contents. We, at Rockford Fosgate, have worked very hard to make sure all the information in this manual is current. But, as we are constantly finding new ways to improve our product, this information is subject to change without notice.

Sections marked ADVANCED OPERATION include in-depth technical information.

Sections marked INSTALLATION include “slam dunk” wiring connections.

Sections marked TROUBLESHOOTING include recommendations for curing installation problems.
INTRODUCTION

Rockford engineers designed the Punch 55.2, 75.2, 125.2 and 225.2 amplifiers to withstand the rugged automotive environment while delivering superior sound quality in a flexible, reliable, and efficient package. TRANS•ANA is a low voltage circuit in the preamp stage of all Punch .2 amplifiers that lets the music sound crystal clear and very real, even when played at high volume levels. This is matched with TOPAZ, a unique grounding circuit used to eliminate noise problems associated with car audio systems and their installation. Flexibility is accomplished with the use of a built-in XCard. Reliability is all but guaranteed with the use of a protection circuit called NOMAD, while MOSFET and DSM (Discrete Surface Mount) technology improve amplifier efficiency. The result of these components give the Punch amplifier awesome sound quality in a “Bullet Proof” package. An explanation of these technologies, most of which are exclusively designed and patented by Rockford, are described in the Technical Design Features.

PUNCH AMPLIFIER ACCESSORY PACK

The accessory pack shipped with the Punch 2-channel amplifiers includes the mounting hardware necessary to secure the amp to the vehicle and to attach the end caps to the amplifier.

Installation & Operation Manual
Punch Verification Certificate
(4) Amplifier mounting screws (#8 x 3/4" Phillips)
(6) Speaker & power connector screws (3/32" Allen)
(4) End cap mounting screws (9/64" Allen)
(1) Allen Wrench 9/64"
(1) Allen Wrench 3/32"
(1) ATC Inline Fuseholder (Punch 55.2, 75.2, 125.2)
(1) AGU Inline Fuseholder (Punch 225.2)
(1) ATC 20 Amp Fuse (Punch 55.2)
(1) ATC 30 Amp Fuse (Punch 75.2)
(1) ATC 40 Amp Fuse (Punch 125.2)
(1) AGU 50 Amp Fuse (Punch 225.2)
**TECHNICAL DESIGN FEATURES**

◆ **TRANS•ANA**

*(TRANSconductance Active Nodal Amplifier)*

The **TRANS•ANA** (TRANSconductance Active Nodal Amplifier) is a circuit that allows the audio signal to pass through the amplifier at low voltage. The signal is directly level-shifted to the fixed high voltage rails via a pair of driver transistors. Signal linearity is assured by an active node formed by the drive transistors at ultrasonic frequencies. This allows amplifier performance similar to trans•nova which is highly stable and linear while utilizing the advantages of a non-floating power supply.

**THE RESULT:** An extended frequency bandwidth accurately supplied to the output stages of the amplifier.

◆ **MEHSA** *(Maximum Efficiency Heat Sink Application)*

The **MEHSA** (Maximum Efficiency Heat-Sink Application) is a proprietary process that yields up to 5 times better heat transfer than traditional FET mounting techniques using the exact same components. A multi-layer insulated metal substrate operating with minimal thermal resistance spreads heat both downward & outward to quickly dissipate heat from each device across the heat sink. This process combined with our DSM technology and MOSFET devices allow us to squeeze more watts per cubic inch from every output device as well as provide consistent thermal stability.

**THE RESULT:** Optimized power output, enhanced thermal stability, and maximum component reliability.

◆ **TOPAZ** *(Tracking Operation Pre-Amplifier Zone)*

The **TOPAZ** (Tracking Operation Pre-Amplifier Zone) circuitry solves ground loop noise problems common to automotive amplifier design. This innovative new development allows vastly improved isolation of the input signal grounds from the power supply ground of the amplifier. This is accomplished by allowing the source unit to control the potential “environment” of the entire input structure or “zone” of the amplifier. This process improves the noise rejection of the amplifier by 30-40dB – an astounding 30-100 times better than amplifiers without TOPAZ.

**THE RESULT:** Elimination of troublesome ground loop noise between source and amplifier.
**DSM (Discrete Surface Mount) Technology**

The DSM (Discrete Surface Mount) manufacturing process combines the advantages of both discrete components and integrated circuitry. Rockford Fosgate is the only American amplifier manufacturer to have invested millions into this process. DSM components differ from conventional discrete components in different ways. They are more compact, more rugged, and they efficiently dissipate generated heat. Using them wherever appropriate allows the advantages associated with discrete circuitry to be retained while also providing room for both highly advanced processing features and generous PC board copper paths where needed. Their short lead-out structures allow maximum audio performance and highest signal-to-noise ratios to be obtained in amplifiers of desirable package size without resorting to “amplifier-on-a-chip” shortcuts. These advantages are shown below in Figure 1.

**THE RESULT:** Fewer connections, improved reliability, shorter signal paths, superior signal-to-noise ratio and awesome sonic performance.

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**Figure 1**

![Diagram showing DSM technology comparison between Thru-Hole and Surface Mount components](image)

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**XCard (Internal Crossover)**

The Punch amplifiers utilize internal active crossovers. These crossovers have many performance advantages such as using discrete components for exact frequency adjustments which are far superior to potentiometers. Additionally, the XCard can be configured for high-pass, low-pass and full range operation. With slight modifications, many crossover frequencies and slope configurations can be achieved.

**THE RESULT:** Increased system design flexibility with a precise electronic crossover without the limitations of conventional potentiometer designs.
MOSFET Devices

Rockford Fosgate is one of the few manufacturers in the sound community to utilize MOSFET devices in both the power supply and the output stages. MOSFET (Metal Oxide Semiconductor Field Effect Transistor) devices offer several important inherent advantages over the 30 year old technology of bipolar design. These advantages include: thermal stability, switching speed, ultra low output impedance and wider bandwidth linearity. In addition, MOSFETs operate very similarly to vacuum tubes in that they are more linear than bipolar transistors. However, MOSFETs can deliver the midrange clarity without the limitations of transient response and high frequency phase shifting normally associated with tube operation.

THE RESULT: Operational characteristics similar to vacuum tubes without the performance limitations of tube design.

NOMAD (NOn-Multiplying Advanced Decision)

The Punch amplifiers use an analog computer process to maximize safe output power under all operating conditions. The innovative NOMAD (NOn-Multiplying Advanced Decision) system is the most sophisticated version of this technique ever used, bringing previously unavailable levels of accuracy, stability, temperature immunity and reliability to this critical process. NOMAD makes advanced decisions based on device voltages to precisely control the awesome levels of current available in the output MOSFETs to safe values – but only when absolutely needed.

THE RESULT: Extremely fast protection system that always protects the amplifier and never degrades the sound.

Punch EQ

The Punch EQ helps correct for acoustical deficiencies in the listening environment. Two unique potentiometers that control bass and treble compensate for the response errors present in most car environments. Unlike conventional tone controls, Punch EQ corrects the specific problems of poor low bass response and high frequency rolloff.

THE RESULT: Full range sound without excessive boost in areas where it is not needed.
DESIGN FEATURES

1. **Cast Aluminum Heatsink** – The cast aluminum heatsink of the Punch amplifier dissipates heat generated by the amplifier’s circuitry. The inherent advantage of casting provides a 30% improvement of cooling over conventional extrusion heatsink designs.

2. **End Caps** – The unique end caps conceal the wiring and input cables, giving the amplifier a clean “stealth” look.

3. **Speaker Terminals** – The heavy duty, gold-plated terminal block connectors (+ and −) will accept wire sizes from 8 AWG to 18 AWG. These gold-plated connectors are immune to corrosion that can cause signal deterioration.

4. **Power Terminals** – The power and ground connectors on the Punch amplifier are gold-plated and will accommodate up to 8 AWG wire maximizing the input current capability of the amplifier.

5. **REM Terminal** – This gold-plated spade terminal is used for the auto power/remote turn on of the Punch amplifier.

6. **RCA Input Jacks** – The industry standard RCA jacks provide easy connections for signal level input. They are gold-plated to resist the signal degradation caused by corrosion.
7. **Input Sensitivity Controls** – The input level controls are preset to match the output of most source units. They can be adjusted to match output levels from a variety of source units.

8. **Punch Equalization Controls** – The Punch EQ helps correct for acoustical deficiencies in the listening environment. The Bass control allows a narrow band adjustment of up to 18 dB centered at 45 Hz. The Treble control is a wide band hinged adjustment with a maximum of 12 dB at 20 kHz. The Punch EQ can be bypassed by turning the controls to their minimum or counterclockwise position.

9. **LED Power Indicator** – The LED illuminates when the unit is turned on.

10. **XCard (Internal Crossover)** – This built-in crossover card is configurable for a multitude of operating frequencies. The orientation of the card in its socket determines the function of high-pass, low-pass, or full range operation.
The following is a list of tools you will need for installing the Punch amplifier:

- Allen wrenches 9/64" & 3/32" (included)
- Voltmeter
- Wire strippers
- Battery post wrench
- Electric hand drill w/assorted bits
- Wire cutters
- 17' (518.16cm) Red Power Wire
- Assorted connectors
- 12' (365.76cm) Remote Turn-On Wire
- Wire crimpers
- 1.5' (45.72cm) Black Grounding Wire

This section focuses on some of the vehicle considerations for installing your new Punch amplifier. Checking your battery and present sound system, as well as pre-planning your system layout and best wiring routes will save installation time. When deciding how to lay out your new system, be sure that each component will be easily accessible for making adjustments.

Before beginning any installation, be sure to follow these simple rules:

1. Be sure to carefully read and understand the instructions before attempting to install the amplifier.

2. **For safety**, disconnect the negative lead from the battery prior to beginning the installation.

3. For easier assembly, we suggest you run all wires prior to mounting your amplifier in place.

4. Route all of the RCA cables close together and away from any high current wires.

5. Use high quality connectors for a reliable installation and to minimize signal or power loss.

6. **Think before you drill!** Be careful not to cut or drill into gas tanks, fuel lines, brake or hydraulic lines, vacuum lines or electrical wiring when working on any vehicle.

7. Never run wires underneath the vehicle. Running the wires inside the vehicle provides the best protection.

8. Avoid running wires over or through sharp edges. Use rubber or plastic grommets to protect any wires routed through metal, especially the firewall.

9. **ALWAYS** protect the battery and electrical system from damage with proper fusing. Install a fuseholder and appropriate fuse on the +12V power wire within 18" (45.7 cm) of the battery terminal.

10. When grounding to the chassis of the vehicle, scrape all paint from the metal to ensure a good, clean ground connection. Grounding connections should be as short as possible and always be connected to metal that is welded to the main body, or chassis, of the vehicle.
Mounting Location

The mounting location and position of your amplifier will have a great effect on its ability to dissipate the heat generated during normal operation. The design of our cast aluminum heatsink serves to easily dissipate the heat generated over a wide range of operating conditions. However, to maximize the performance of your amplifier, care should be taken to ensure adequate ventilation.

Trunk Mounting
Mounting the amplifier vertically on a surface with the fin grooves running up and down will provide the best cooling of the amplifier.

Mounting the amplifier on the floor of the trunk will work but provides less cooling capability than vertical mounting.

Mounting the amplifier upside down to the rear deck of the trunk will not provide proper cooling and will severely affect the performance of the amplifier and is strongly not recommended.

Passenger Compartment Mounting
Mounting the amplifier in the passenger compartment will work as long as you provide a sufficient amount of air for the amplifier to cool itself. If you are going to mount the amplifier under the seat of the vehicle, you must have at least 1" (2.54 cm) of air gap around the amplifier’s heatsink.

Mounting the amplifier with less than 1" (2.54 cm) of air gap around the amplifier’s heatsink in the passenger compartment will not provide proper cooling and will severely affect the performance of the amplifier and is strongly not recommended.

Engine Compartment Mounting
Rockford Fosgate amplifiers should never be mounted in the engine compartment. Not only will this void your warranty but could create an embarrassing situation caused by the ridicule from your friends.
Battery and Charging

Amplifiers will put an increased load on the vehicle’s battery and charging system. We recommend checking your alternator and battery condition to ensure that the electrical system has enough capacity to handle the increased load of your stereo system. Stock electrical systems which are in good condition should be able to handle the extra load of any Rockford amplifier without problems, although battery and alternator life can be reduced slightly. To maximize the performance of your Rockford Fosgate amplifier, we suggest the use of a heavy duty battery and an energy storage capacitor.

Wiring the System

**CAUTION:** Avoid running power wires near the low level input cables, antenna, power leads, sensitive equipment or harnesses. The power wires carry substantial current and could induce noise into the audio system.

- For safety, disconnect the negative lead from the battery prior to beginning the installation.

1. Configure the internal XCard crossovers prior to installation. Refer to “Using the XCard” (page 14) for further information.

2. Plan the wire routing. Take care when running signal level RCA cables to keep them close together but isolated from the amplifier’s power cables and any high power auto accessories, especially electric motors. This is done to prevent coupling the noise from radiated electrical fields into the audio signal. When feeding the wires through the firewall or any metal barrier, protect them with plastic or rubber grommets to prevent short circuits. Leave the wires long at this point to adjust for a precise fit at a later time.

3. Prepare the Power cable for attachment to the amplifier by stripping 5/8" of insulation from the end of the wire. To prevent the wire from fraying, strip the insulation at a 45° angle. Insert the bared wire into the B+ terminal with the long side of the insulation on the top. Bend the cable down at a 90° angle. Tighten the set screw to secure the cable in place.
Punch 55.2, 75.2, 125.2
Trim the power cable to within 18" of the battery and install the protective rubber boot, which is packed with the fuseholder, over the end of the wire. Strip 3/8" of insulation from the wire and insert into the end of the fuseholder, then crimp it in place. Slide the rubber boot into place to cover the connection. Use the section of cable that was trimmed earlier and connect it to the other end of the fuseholder.

Punch 225.2
Mount the fuseholder within 18" of the battery using two (2) #8 screws. Disassemble the fuseholder. You should have 2 black plastic end caps, 2 gold-plated fuse clips, a plastic spacer and the fuseholder body. Trim the amplifier power cable to reach the fuseholder and strip the wire 3/8". Slide one of the end caps over the wire (narrow end first) and insert the wire into one of the fuse clips. Tighten the set screw. Screw the black end cap to the fuseholder body to secure the cable. Use the section of cable that was trimmed earlier and connect it to the other end of the fuseholder. Install the plastic spacer in the fuseholder and attach the cable to the fuseholder body.

NOTE: The B+ cable MUST be fused 18" or less from the vehicle's battery. Install the fuseholder under the hood and prepare the cable ends as stated above. Connections should be water tight.

4. Strip 3/8" from the battery end of the power cable and crimp a large ring terminal to the cable. Use the ring terminal to connect to the battery positive terminal. Do not install the fuse at this time.

5. Prepare a length of cable to be used for the ground connection. Strip 5/8" of insulation from the end of the cable as described previously and connect to the appropriate terminal of the amplifier. Prepare the chassis ground by scraping any paint from the metal surface and thoroughly clean the area of all dirt and grease. Strip the other end of the wire and attach a ring connector. Fasten the cable to the chassis using a non-anodized screw and a star washer.

6. Prepare the REM turn-on wire for connection to the amplifier by stripping 1/4" of insulation from the wire end and crimping an insulated spade connector in place. Slide the connector over the REM terminal on the
amplifier. Connect the other end of the REM wire to a switched 12 volt positive source. The switched signal is usually taken from the source unit’s auto antenna or the accessory lead. If the source unit does not have these outputs available, the recommended solution is to wire a mechanical switch in line with a 12 volt source to activate the amplifier.

7. Securely mount the amplifier (with supplied screws) to the vehicle or amp rack. Be careful not to mount the amplifier on cardboard or plastic panels. Doing so may enable the screws to pull out from the panel due to road vibration or sudden vehicle stops.

8. Connect the source signal to the amplifier by plugging the RCA cables into the input jacks at the amplifier.

9. Connect the speakers. Strip the speaker wires 5/8". Insert the bared wire into the speaker terminal and tighten the set screw to secure into place. Be sure to maintain proper speaker polarity. **DO NOT chassis ground any of the speaker leads as unstable operation may result.**

10. Perform a final check of the completed system wiring to ensure that all connections are accurate. Check all power and ground connections for frayed wires and loose connections which could cause problems.

11. After the final inspection is complete, install the power fuse and enjoy listening. During the initial listening period, you may need to “fine tune” any phasing and level settings within your particular vehicle. To aid in this procedure, play a track with high musical content and cruise around your neighborhood. After fully evaluating the transient response of your system and making any final adjustments, all your neighbors within a 1 mile radius will assume that you have just successfully completed another upgrade to your audio system for which they will probably spill thumbtacks on your driveway.
A passive crossover is a circuit that uses capacitors and/or coils and is placed on speaker leads between the amplifier and speaker. The crossover delegates a specific range of frequencies to the speaker for optimum driver performance. A crossover network can perform one of three functions: High-Pass (capacitors), Low-Pass (inductors or coils) and Bandpass (combination of capacitor and coil).

The most commonly used passive crossover networks are 6 dB/octave systems. These are easy to construct and require one component per filter. Placing this filter in series with the circuit will reduce power to the speaker by 6 dB/octave above or below the crossover point depending on whether it is a high-pass or low-pass filter. More complex systems such as 12 dB/octave or 18 dB/octave can cause impedance problems if not professionally designed.

Passive crossovers are directly dependent upon the speaker’s impedance and component value for accuracy. When passive crossover components are used in multiple speaker systems, the crossover’s effect on the overall impedance should be taken into consideration along with the speaker’s impedance when determining amplifier loads. **CAUTION: The Punch amplifiers are not recommended for impedance loads below 2 Ω stereo and 4 Ω bridged (mono) loads.**
### Table of Crossover Component Values

<table>
<thead>
<tr>
<th>Freq. Hertz</th>
<th>2 OHMS</th>
<th>4 OHMS</th>
<th>8 OHMS</th>
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<td></td>
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<td>C</td>
<td>L</td>
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<tr>
<td>80</td>
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</table>

L = Low-Pass (Inductor)  
C = High-Pass (Capacitor)

For more information, see your Authorized Rockford Fosgate Dealer.
**USING THE XCARD**

The crossover functions are controlled through the use of an XCard and can be set for high-pass, low-pass or full range operation. The XCard shipped with your amplifier is set for Full Range. Each crossover card has two faces: one face operates **Full Range**, the other has arrows to indicate the edge for selecting **HP** (high-pass) or **LP** (low-pass) operation. Orient the card with the desired operating edge, indicated by the arrow, toward the socket terminals inside the amplifier. Firmly, but carefully, plug the card into the socket.

The crossover point can be altered by changing all 4 resistor values. Use the following formula to select the appropriate resistor value to be placed on the XCard.

\[
\frac{3386}{f_o} = R \text{ (in k}\Omega\text{) for } .047 \mu f \text{ cap}
\]

\[
\frac{7234}{f_o} = R \text{ (in k}\Omega\text{) for } .022 \mu f \text{ cap}
\]

The actual formula is:

\[
R = \frac{1}{2\pi f_o c}
\]

Where:

- \(R = \Omega\)
- \(f_o = \) desired crossover frequency
- \(c = \) capacitor in farads
- ex: \(.047 \times 10^{-6}\) for \(.047 \mu f \text{ cap}\)
Our tests have shown that using 0.047 \( \mu \text{F} \) capacitors for frequencies below 100 Hz, and 0.022 \( \mu \text{F} \) capacitors for frequencies above 100 Hz, result in more linear crossover control. Refer to the Specifications page to determine the capacitor value of each supplied XCard.

### Butterworth Alignment \( Q = .707 \)
1% resistors used with 0.047 \( \mu \text{F} \) caps

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<th>Frequency</th>
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<tr>
<td>7 kHz</td>
<td>487 Ω</td>
<td>487 Ω</td>
</tr>
<tr>
<td>8 kHz</td>
<td>422 Ω</td>
<td>422 Ω</td>
</tr>
</tbody>
</table>

### Butterworth Alignment \( Q = .707 \)
1% resistors used with 0.022 \( \mu \text{F} \) caps

<table>
<thead>
<tr>
<th>Frequency</th>
<th>R1</th>
<th>R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Hz</td>
<td>357 kΩ</td>
<td>357 kΩ</td>
</tr>
<tr>
<td>25 Hz</td>
<td>287 kΩ</td>
<td>287 kΩ</td>
</tr>
<tr>
<td>30 Hz</td>
<td>237 kΩ</td>
<td>237 kΩ</td>
</tr>
<tr>
<td>35 Hz</td>
<td>205 kΩ</td>
<td>205 kΩ</td>
</tr>
<tr>
<td>40 Hz</td>
<td>178 kΩ</td>
<td>178 kΩ</td>
</tr>
<tr>
<td>45 Hz</td>
<td>162 kΩ</td>
<td>162 kΩ</td>
</tr>
<tr>
<td>50 Hz</td>
<td>143 kΩ</td>
<td>143 kΩ</td>
</tr>
<tr>
<td>55 Hz</td>
<td>130 kΩ</td>
<td>130 kΩ</td>
</tr>
<tr>
<td>60 Hz</td>
<td>121 kΩ</td>
<td>121 kΩ</td>
</tr>
<tr>
<td>65 Hz</td>
<td>110 kΩ</td>
<td>110 kΩ</td>
</tr>
<tr>
<td>70 Hz</td>
<td>102 kΩ</td>
<td>102 kΩ</td>
</tr>
<tr>
<td>75 Hz</td>
<td>95.3 kΩ</td>
<td>95.3 kΩ</td>
</tr>
<tr>
<td>80 Hz</td>
<td>90.9 kΩ</td>
<td>90.9 kΩ</td>
</tr>
<tr>
<td>85 Hz</td>
<td>84.5 kΩ</td>
<td>84.5 kΩ</td>
</tr>
<tr>
<td>90 Hz</td>
<td>80.6 kΩ</td>
<td>80.6 kΩ</td>
</tr>
<tr>
<td>200 Hz</td>
<td>35.7 kΩ</td>
<td>35.7 kΩ</td>
</tr>
<tr>
<td>300 Hz</td>
<td>23.7 kΩ</td>
<td>23.7 kΩ</td>
</tr>
<tr>
<td>400 Hz</td>
<td>17.8 kΩ</td>
<td>17.8 kΩ</td>
</tr>
<tr>
<td>500 Hz</td>
<td>14.3 kΩ</td>
<td>14.3 kΩ</td>
</tr>
<tr>
<td>600 Hz</td>
<td>12.1 kΩ</td>
<td>12.1 kΩ</td>
</tr>
<tr>
<td>700 Hz</td>
<td>10.2 kΩ</td>
<td>10.2 kΩ</td>
</tr>
<tr>
<td>800 Hz</td>
<td>9.9 kΩ</td>
<td>9.9 kΩ</td>
</tr>
<tr>
<td>900 Hz</td>
<td>8.6 kΩ</td>
<td>8.6 kΩ</td>
</tr>
<tr>
<td>1.0 kHz</td>
<td>7.15 kΩ</td>
<td>7.15 kΩ</td>
</tr>
<tr>
<td>1.2 kHz</td>
<td>6.04 kΩ</td>
<td>6.04 kΩ</td>
</tr>
<tr>
<td>2.0 kHz</td>
<td>3.57 kΩ</td>
<td>3.57 kΩ</td>
</tr>
<tr>
<td>3.0 kHz</td>
<td>2.37 kΩ</td>
<td>2.37 kΩ</td>
</tr>
<tr>
<td>4.0 kHz</td>
<td>1.76 kΩ</td>
<td>1.76 kΩ</td>
</tr>
<tr>
<td>5.0 kHz</td>
<td>1.43 kΩ</td>
<td>1.43 kΩ</td>
</tr>
<tr>
<td>6.0 kHz</td>
<td>1.21 kΩ</td>
<td>1.21 kΩ</td>
</tr>
<tr>
<td>7.0 kHz</td>
<td>1.02 kΩ</td>
<td>1.02 kΩ</td>
</tr>
<tr>
<td>8.0 kHz</td>
<td>0.90 kΩ</td>
<td>0.90 kΩ</td>
</tr>
</tbody>
</table>
**Power Connections**

- **LED**
  - Connect to remote turn-on lead of source unit

- **B+**
  - Connect to chassis ground of vehicle*

- **GND**
  - Connect to B+ of battery with appropriate fuse value

*Keep grounds as short as possible*
Stereo Operation

- **RCA** inputs are connected to both left and right channels
- **Gain** for left and right channels operate independently
- **Impedance** for each channel should be 2Ω minimum
- **XCard** can be set for High-Pass, Low-Pass or Full Range
Mono Operation

- **RCA** inputs are connected to both left and right channels
- **Gain** for left and right channels are set equally to balance the subwoofer
- **Impedance** for mono channel should be 4Ω minimum
- **XCard** can be set for High-Pass, Low-Pass or Full Range
Stereo/Mono Operation

- RCA inputs are connected to both left and right channels
- Gain for left and right channels are set equally to balance the subwoofer
- Impedance for each channel should be $2\,\Omega$ minimum
- Impedance for mono channel should be $4\,\Omega$ minimum
- XCard is set for Full Range
- Passive Crossovers are needed for proper stereo/mono operation
2-Way System

- Tweeter
- Midrange
- Crossover

80Hz HP
12dB/octave HP

80Hz HP

XCard
3-Way System

Front

80Hz LP

Crossover

Tweeter

Midrange

Rear

80Hz HP

Crossover

Tweeter

Midrange

8Ω Woofer

8Ω Woofer

8Ω

12dB/octave HP

8Ω

12dB/octave LP

8Ω

8Ω
4-Way System

- Front
- Midrange
- Midbass
- Woofers

- 80Hz HP 12dB/octave HP
- 24dB/octave HP
- 80Hz HP 12dB/octave HP
- 24dB/octave LP
- XCard
- 275Hz LP

- 80Hz HP 24dB/octave HP
- 30Hz 12dB/octave HP
- 80Hz HP 12dB/octave HP
- 24dB/octave LP
- XCard
- 80Hz LP
- 30Hz 80Hz 12dB/octave HP
- 12dB/octave LP
4-Way System w/Fadable Rear Stage

- Front
  - Tweeter
  - Midrange
  - Crossover
  - 80Hz HP
  - 24dB/octave HP
  - 80Hz LP

- Rear
  - Tweeter
  - Midrange
  - Crossover
  - 80Hz HP
  - 24dB/octave HP
  - 80Hz LP

- Midrange
  - Midrange
  - Crossover
  - 80Hz HP
  - 24dB/octave HP
  - 12dB/octave LP

- Front Woofer
  - 8Ω
  - 80Hz HP
  - 12dB/octave HP
  - 24dB/octave HP

- Midbass
  - 4Ω
  - 80Hz HP
  - 12dB/octave HP
  - 80Hz LP

- Tweeter
  - 80Hz HP
  - 24dB/octave HP

- Crossover
  - 275Hz LP
  - 30Hz
  - 12dB/octave HP

- RDMRPTSCAN PAUSED.SCN DIM
- AUD SEL
- 1
- 2
- 3
- 4
- 5
- 6

- AM FM
- Ch
- RPTLD RDM
- DISC
- ST
- PAUSED
- LOUDDSPL
- R
- CLOCK ILLUM
- PWR
- AUTO
- VOL TUNE
Energy Storage Capacitors

Energy storage capacitors are used to provide extra current needed by amplifiers to reproduce musical transients. The capacitors also have the natural ability to filter AC ripple caused by the alternator, reducing the chance of noise in the system. The Punch Caps are available in a variety of values and will maximize both the sound quality and performance that Rockford Fosgate amplifiers can deliver.

- **Recommended capacitance** is 1 farad per 1000 watts

**ATTENTION**: We recommend your Authorized Rockford Fosgate Dealer install your new accessory.
XCard Crossovers

Additional crossover card frequencies are available for specialized requirements. You can get the following XCards from your Authorized Rockford Fosgate Dealer.

<table>
<thead>
<tr>
<th>XCard</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>XM50</td>
<td>50Hz</td>
</tr>
<tr>
<td>XM70</td>
<td>70Hz</td>
</tr>
<tr>
<td>XM80</td>
<td>80Hz</td>
</tr>
<tr>
<td>XM100</td>
<td>100Hz</td>
</tr>
<tr>
<td>XM150</td>
<td>150Hz</td>
</tr>
<tr>
<td>XM200</td>
<td>200Hz</td>
</tr>
<tr>
<td>XM275</td>
<td>275Hz</td>
</tr>
<tr>
<td>XM400</td>
<td>400Hz</td>
</tr>
<tr>
<td>XM4.5k</td>
<td>4,500Hz</td>
</tr>
<tr>
<td>XM6.5k</td>
<td>6,500Hz</td>
</tr>
<tr>
<td>XMD0</td>
<td>Blank card for custom crossover</td>
</tr>
</tbody>
</table>

ATTENTION: We recommend your Authorized Rockford Fosgate Dealer install your new accessory.
## TROUBLESHOOTING

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Diagnosis</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amplifier does not turn on</strong></td>
<td>Voltage applied to the REM terminal of the amplifier is not between 10.5 and 15.5 volts or there is no voltage present.</td>
<td>Check the alternator, battery, fuse, and wiring and repair as necessary. If the voltage is above 15.5 volts, have the electrical system inspected by an authorized car service center.</td>
</tr>
<tr>
<td><strong>Amplifier has no sound</strong></td>
<td>Voltage to the B+ terminal of the amplifier is not between 10.5 and 15.5 volts or there is no voltage present.</td>
<td>Check the alternator, battery, fuse, and wiring and repair as necessary. If the voltage is above 15.5 volts, have the electrical system inspected by an authorized car service center.</td>
</tr>
<tr>
<td></td>
<td>Amplifier is not properly grounded.</td>
<td>Check wiring and repair as necessary.</td>
</tr>
<tr>
<td><strong>Amplifier does not turn on</strong></td>
<td>RCA Input from source unit is not connected or not functioning properly.</td>
<td>Check connections, substitute with known working source and cables and repair or replace as necessary.</td>
</tr>
<tr>
<td><strong>Amplifier has no sound</strong></td>
<td>XCard is missing or not placed properly in crossover slots.</td>
<td>Check XCard position and repair or replace as necessary.</td>
</tr>
<tr>
<td></td>
<td>Speaker leads are shorted to each other or to the chassis of the vehicle.</td>
<td>Disconnect existing speakers and test with known working speakers and wires. If amplifier plays, check and repair wiring and installation of speakers as necessary.</td>
</tr>
<tr>
<td></td>
<td>Speakers are defective.</td>
<td>Disconnect existing speakers and test with known working speakers. If amplifier plays, check and repair speakers as necessary.</td>
</tr>
<tr>
<td><strong>Symptom</strong></td>
<td><strong>Diagnosis</strong></td>
<td><strong>Remedy</strong></td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>Speaker Output</strong>&lt;br&gt;Low or Distorted</td>
<td>Input gain signal for amplifier is incorrectly set.</td>
<td>Readjust input gains of amplifier.</td>
</tr>
<tr>
<td></td>
<td>Source unit output too low or source unit has no output.</td>
<td>Check system with known working source and repair or replace original source as needed.</td>
</tr>
<tr>
<td></td>
<td>XCard is missing or not placed properly in crossover slots.</td>
<td>Check XCard position and repair or replace as necessary.</td>
</tr>
<tr>
<td></td>
<td>Low battery voltage or large voltage drops to the amplifier under load.</td>
<td>Check the alternator, battery, fuse, and power and ground wiring. Repair as necessary.</td>
</tr>
<tr>
<td><strong>Amplifier Noise</strong>&lt;br&gt;(Turn-on Pop)</td>
<td>Voltage spike from output of preceding component is entering amplifier through input signal.</td>
<td>Disconnect input signal to amplifier and turn amplifier on and off. If noise is eliminated, connect REM lead of amplifier to source unit with a delay turn-on module.</td>
</tr>
<tr>
<td></td>
<td>Voltage spike from remote turn-on lead is entering through REM input terminal.</td>
<td>Use a different 12 volt source for REM lead of amplifier. (i.e., battery direct) If noise is eliminated, use a relay to isolate amplifier from noisy turn-on output.</td>
</tr>
<tr>
<td>Symptom</td>
<td>Diagnosis</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Engine Noise</td>
<td>Noise is radiating into RCA signal cable.</td>
<td>Check connections, run the RCA cables on a different route away from sources of high current.</td>
</tr>
<tr>
<td></td>
<td>Bad component in the signal chain.</td>
<td>Check connections, bypass additional components (cross-overs and equalizers) between the source unit and the amplifier. Connect one component at a time to determine the culprit. Repair or replace components as necessary.</td>
</tr>
<tr>
<td></td>
<td>Noise is radiating into speaker cables.</td>
<td>Disconnect existing speakers and connect a test speaker to the output terminals of the amplifier. If noise is gone, re-route the speaker cables away from sources of high voltage.</td>
</tr>
<tr>
<td></td>
<td>Multiple grounds in the audio system.</td>
<td>Check ground connections and connect amplifiers, signal processors, and other components to a central location or try a different grounding point on the chassis.</td>
</tr>
<tr>
<td></td>
<td>Ground loop between source unit and antenna.</td>
<td>Check connections, disconnect antenna from source unit. If noise is gone, install an antenna ground loop isolator.</td>
</tr>
</tbody>
</table>

- If noise persists, see your Authorized Rockford Fosgate Dealer.
About the Dynamic Power Measurements

The Audio Graph PowerCube is a test instrument used to measure the output of an amplifier in accordance with IHF-202 industry standards. The IHF-202 standard is a dynamic power measurement and was developed as a means of measuring power in a manner that best represents the Real World operation of an amplifier. Many manufacturers, including Rockford Fosgate, at times will measure amplifier power into a fixed resistor (4 ohm, 2 ohm). While this method is useful in some types of evaluation and testing, it is not representative of an amplifier that is connected to a speaker and playing music.

Music

Music is dynamic; the sound waves are complex and constantly changing. In order to simulate this, the IHF-202 standard calls for the input signal to the amplifier to be a 1kHz bursted tone. This signal is input (on for 20 milliseconds) and reduced 20dB for 480 milliseconds. The signal is gradually increased in level until the amplifier’s output exceeds 1% Total Harmonic Distortion (THD). At 1% distortion becomes audible, therefore, any power produced above that level is considered unusable. Many manufacturers represent their amplifiers’ output power in excess of 10% distortion. They use many names for this measurement, such as Total Maximum Power or Maximum Output Power. This is not indicative of the actual usable output power.

Listening to Loudspeakers - Not Resistors

A loudspeaker is not a resistor. A resistor’s value (resistance measured in ohms) is fixed. A loudspeaker’s impedance is dynamic. It is constantly changing in value, dependent upon the frequency of the input signal. Therefore, measuring power with the amplifier loaded into a 4 ohm resistor is not the same as measuring power with the amplifier connected to a 4 ohm speaker. Most people do not listen to music through a resistor.

A 4 ohm speaker may experience a drop in impedance 4-6 times lower than its nominal (printed) impedance. A speaker will also create phase shifts in the signal that is passed through it. These phase shifts happen because a speaker is an inductor (voice coil) and a capacitor (compliance of the surround/spider), as well as a resistor (voice coil wire).

To simulate a speaker the Audio Graph PowerCube measures output power into 20 different loads. It tests at 8 ohms, 4 ohms, 2 ohms and 1 ohm. Each of these impedances is also tested at –60°, –30°, 0°, +30° and +60° phase angles. These different impedances and phase angles represent the shifts in impedance and phase that can occur in a typical loudspeaker.
Information Cubed

The data acquired in the testing procedure is then graphed in the form of a 3-dimensional cube, hence the name **PowerCube**.

The Phase Angle is expressed on the horizontal axis, the Output Voltage is presented on the vertical axis and the Impedance is displayed on the Z axis. Output Power, in watts, is listed on the left hand side for each impedance at each phase angle.

![Audio Graph - The PowerCube™](image)

- Example of a Punch 200.2 PowerCube

**What is an Amplifier?**

An amplifier by definition is a voltage generating device, recreating the signal which is input to it identically but with increased volume. It will be connected to a reactive load (the speaker). The impedance of this load and phase of the signal passing through the load will vary, dependent upon the frequency of the input signal (music).

Therefore, a perfect amplifier will be able to maintain the same output voltage regardless of load characteristics and will not alter the signal it is reproducing. A perfect amplifier when measured by the Audio Graph PowerCube would present data that forms a perfect cube. Unfortunately, amplifiers are not perfect. The laws of physics generally prevent it. A great amplifier is about the best one can hope to attain.

As you can see by the PowerCube and as you will experience by listening, your Punch amplifier is a GREAT AMPLIFIER!
## SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>PUNCH 55.2</th>
<th>PUNCH 75.2</th>
<th>PUNCH 125.2</th>
<th>PUNCH 225.2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dynamic Power Rating (IHF-202 Standard)</strong> - Measured at 14.4 Volts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mono into a 4Ω Load</td>
<td>240 Watts</td>
<td>320 Watts</td>
<td>440 Watts</td>
<td>690 Watts</td>
</tr>
<tr>
<td>Per channel into a 2Ω Load</td>
<td>120 Watts</td>
<td>160 Watts</td>
<td>220 Watts</td>
<td>345 Watts</td>
</tr>
<tr>
<td>Per channel into a 4Ω Load</td>
<td>85 Watts</td>
<td>105 Watts</td>
<td>145 Watts</td>
<td>220 Watts</td>
</tr>
<tr>
<td><strong>Continuous Power Rating (Competition Standard)</strong> - Measured at 13.8 Battery Volts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RMS continuous power per channel, both channels driven into a 4Ω load from 20 to 20,000 Hz with less than 0.05% Total Harmonic Distortion (THD)</td>
<td>27.5 Watts</td>
<td>37.5 Watts</td>
<td>62.5 Watts</td>
<td>112.5 Watts</td>
</tr>
<tr>
<td>RMS continuous power per channel, both channels driven into a 2Ω load from 20 to 20,000 Hz, with less than 0.1% Total Harmonic Distortion (THD)</td>
<td>55 Watts</td>
<td>75 Watts</td>
<td>125 Watts</td>
<td>225 Watts</td>
</tr>
<tr>
<td>RMS continuous power mono into a 4Ω load from 20 to 20,000 Hz, with less than 0.1% Total Harmonic Distortion (THD)</td>
<td>110 Watts</td>
<td>150 Watts</td>
<td>250 Watts</td>
<td>450 Watts</td>
</tr>
<tr>
<td><strong>Signal-to-Noise Ratio</strong></td>
<td></td>
<td></td>
<td>&gt; 100dB A-weighted</td>
<td></td>
</tr>
<tr>
<td><strong>Crossover Slope</strong></td>
<td></td>
<td></td>
<td>12dB/octave Butterworth</td>
<td></td>
</tr>
<tr>
<td><strong>Factory Default Crossover Frequency</strong></td>
<td></td>
<td></td>
<td>80Hz adjustable (.047µF)</td>
<td></td>
</tr>
<tr>
<td>Specifcation</td>
<td>PUNCH 55.2</td>
<td>PUNCH 75.2</td>
<td>PUNCH 125.2</td>
<td>PUNCH 225.2</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>------------</td>
<td>------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Dimensions</td>
<td>9(\frac{5}{8})&quot; (24.4cm) W</td>
<td>9(\frac{5}{8})&quot; (24.4cm) W</td>
<td>9(\frac{5}{8})&quot; (24.4cm) W</td>
<td>9(\frac{5}{8})&quot; (24.4cm) W</td>
</tr>
<tr>
<td></td>
<td>10(\frac{1}{8})&quot; (26.1cm) L</td>
<td>11(\frac{1}{8})&quot; (28.65cm) L</td>
<td>12(\frac{1}{8})&quot; (31.16cm) L</td>
<td>13(\frac{1}{8})&quot; (33.70cm) L</td>
</tr>
<tr>
<td></td>
<td>2(\frac{5}{8})&quot; (6.6cm) H</td>
<td>2(\frac{5}{8})&quot; (6.6cm) H</td>
<td>2(\frac{5}{8})&quot; (6.6cm) H</td>
<td>2(\frac{5}{8})&quot; (6.6cm) H</td>
</tr>
<tr>
<td><strong>Frequency Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bandwidth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Damping Factor @ 4(\Omega) (at output connector)</strong></td>
<td></td>
<td></td>
<td>&gt;200</td>
<td></td>
</tr>
<tr>
<td><strong>Slew Rate</strong></td>
<td></td>
<td></td>
<td>30 Volts (\mu)s</td>
<td></td>
</tr>
<tr>
<td><strong>IMD Distortion (IHF)</strong></td>
<td></td>
<td></td>
<td>&lt;0.05%</td>
<td></td>
</tr>
<tr>
<td><strong>Source Unit Compatibility (+15dB gain overlap)</strong></td>
<td></td>
<td></td>
<td>17V max.</td>
<td></td>
</tr>
<tr>
<td><strong>Input Sensitivity (+0dB gain overlap)</strong></td>
<td>Variable from 150mV to 3V</td>
<td>Variable from 150mV to 3V</td>
<td>Variable from 150mV to 3V</td>
<td>Variable from 150mV to 3V</td>
</tr>
<tr>
<td><strong>Protection</strong></td>
<td>NOMAD - Internal analog-computer output protection circuitry limits power in case of overload. Thermal switch shuts down the amplifier in case of overheating.</td>
<td>NOMAD - Internal analog-computer output protection circuitry limits power in case of overload. Thermal switch shuts down the amplifier in case of overheating.</td>
<td>NOMAD - Internal analog-computer output protection circuitry limits power in case of overload. Thermal switch shuts down the amplifier in case of overheating.</td>
<td>NOMAD - Internal analog-computer output protection circuitry limits power in case of overload. Thermal switch shuts down the amplifier in case of overheating.</td>
</tr>
<tr>
<td><strong>Battery Fusing Rates (External to Amplifier)</strong></td>
<td>20 amps</td>
<td>30 amps</td>
<td>40 amps</td>
<td>50 amps</td>
</tr>
<tr>
<td><strong>Fuse Type</strong></td>
<td>ATC</td>
<td>ATC</td>
<td>ATC</td>
<td>AGU</td>
</tr>
<tr>
<td><strong>Equalization</strong></td>
<td>Bass: +18dB Maximum at 45Hz</td>
<td>Treble: +12dB Maximum at 20kHz</td>
<td>Treble: +12dB Maximum at 20kHz</td>
<td>Treble: +12dB Maximum at 20kHz</td>
</tr>
<tr>
<td><strong>Input Impedance</strong></td>
<td>20k ohms</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice.
Limited Warranty Information

Rockford Corporation offers a limited warranty on Rockford Fosgate products on the following terms:

- **Length of Warranty**
  - 3 years on electronics
  - 2 years on source units
  - 1 year on speakers
  - 90 days on electronic B-stock (receipt required)
  - 30 days on speaker B-stock (receipt required)

- **What is Covered**
  This warranty applies only to Rockford Fosgate products sold to consumers by Authorized Rockford Fosgate Dealers in the United States of America or its possessions. Product purchased by consumers from an Authorized Rockford Fosgate Dealer in another country are covered only by that country’s Distributor and not by Rockford Corporation.

- **Who is Covered**
  This warranty covers only the original purchaser of Rockford product purchased from an Authorized Rockford Fosgate Dealer in the United States. In order to receive service, the purchaser must provide Rockford with a copy of the receipt stating the customer name, dealer name, product purchased and date of purchase.

- **Products found to be defective**
  During the warranty period will be repaired or replaced (with a product deemed to be equivalent) at Rockford’s discretion.

- **What is Not Covered**
  1. Damage caused by accident, abuse, improper operations, water, theft
  2. Any cost or expense related to the removal or reinstallation of product
  3. Service performed by anyone other than Rockford or an Authorized Rockford Fosgate Service Center
  4. Any product which has had the serial number defaced, altered, or removed
  5. Subsequent damage to other components
  6. Any product purchased outside the U.S.
  7. Any product not purchased from an Authorized Rockford Fosgate Dealer

- **Limit on Implied Warranties**
  Any implied warranties including warranties of fitness for use and merchantability are limited in duration to the period of the express warranty set forth above. Some states do not allow limitations on the length of an implied warranty, so this limitation may not apply. No person is authorized to assume for Rockford Fosgate any other liability in connection with the sale of the product.

- **How to Obtain Service**
  Please call 1-800-669-9899 for Rockford Customer Service. You must obtain an RA# (Return Authorization number) to return any product to Rockford Fosgate. You are responsible for shipment of product to Rockford.

Ship to: **Electronics**
Rockford Corporation
Warranty Repair Department
2055 E. 5th Street
Tempe, AZ 85281
RA#:_________________

Ship to: **Speakers**
Rockford Acoustic Design
(Receiving-speakers)
609 Myrtle N.W.
Grand Rapids, MI 49504
RA#:_________________
LEA DETENIDAMENTE LAS SIGUIENTES INSTRUCCIONES DE INSTALACION DEL PRODUCTO. EVITARA POSIBLES DAÑOS A VD., AL VEHICULO O AL PRODUCTO.

INTRODUCCION

Los ingenieros de Rockford han diseñado los amplificadores Punch.2 para ofrecer en el difícil entorno de un automóvil una calidad de sonido superior en un producto flexible, fiable y eficiente. Trans•ana es un circuito de baja tensión en la etapa de preamplificación de los amplificadores Punch.2 que permite que la musica suene limpia y cristalina y muy real, incluso a altos niveles de audicion. Esto se complementa con el TOPAZ, un circuito exclusivo de masa utilizado para eliminar los ruidos asociados con las instalaciones de car-audio. La flexibilidad esta garantizada con el uso de la XCard incorporada. La fiabilidad se refuerza con el uso de un circuito de proteccion llamado NOMAD, mientras que los MOSFET y la tecnologia DSM (montaje discreto en superficie) aumentan la eficiencia del amplificador. La combinacion de todos estos componentes dan al amplificador Punch una impresionante calidad de sonido en un chasis discreto. Mas adelante encontrara mas explicaciones de todas estas tecnologias, la mayoria de ellas usados en exclusiva y patentadas por Rockford.

UBICACIÓN PARA EL MONTAJE

Montaje en el Malatero
Monte el amplificador verticalmente con las lineas del radiador orientadas de arriba hacia abajo. De esta manera conseguira la mejor ventilacion.

Montaje en el Compartimiento de Pasajeros
El montaje en el compartimento de pasajeros sera eficiente en funcion de la ventilacion que tenga el amplificador. Si va a instalar el amplificador bajo un asiento debera dejar al menos 2.5cm libres sobre la carcasa del amplificador.

Instalacion
Por seguridad, desconecte el terminal negativo de la bateria antes de comenzar la instalacion.

Terminal B+
El cable B+ debe ir provisto de un fusible a una distancia no mayor de 45cm de la bateria. Prepare el cable e instale el portafusibles en el compartimento del motor. Las conexiones han de ser impermeables.
Terminal GND
Prepare un trozo de cable para usarlo como toma de masa. Prepare un punto de masa en el chasis rascando y eliminando la pintura de la superficie de metal y limpielo de toda suciedad asegure el cable al chasis con un tornillo.

Terminal REM
Conecte el cable REM a un punto de +12V con mutable. La señal se suele coger de la salida auto antena del radio cassette si este no tiene salida remote.

Funcionamiento Estereo/Mono

- Las entradas RCA se conectan a ambos canales izquierdo y derecho
- Las ganancias izquierda y derecha han de ajustarse igual para ambos canales
- La impedancia minima para cada canal debe ser $2\Omega$.
- La impedancia minima mono debe ser $4\Omega$.
- XCard en Full Range
- Debe usarse un filtro pasivo para la configuración estereo/mono
- No llevar a masa ningún cable de altavoz
- Crossovers pasivos se requieren para operar el amplificador en estereo/mono
ATTENTION: Veuillez lire les instructions suivantes pour l'installation de cet amplificateur. Ne pas les suivre pourrait causer des blessures ou endommager le véhicule.

**Introduction**

Les ingénieurs de Rockford Fosgate ont conçu l'amplificateur Punch.2 pour supporter l'environnement rude de l'automobile en délivrant une qualité de son supérieure dans un ensemble efficace, fiable et flexible. Trans•ana est un circuit de bas voltage dans l'étage de préamplification de tous les amplificateurs Punch.2 qui reproduit un son musical clair comme du cristal et très réel, même à très haut volume. Ceci est accompagné du TOPAZ, un circuit unique employé pour éliminer les problèmes de bruits parasites associés aux systèmes audiomobile et leur installation. La flexibilité est assurée par l’emploi d’une XCard incorporée.

La fiabilité est garantie grâce au circuit de protection NOMAD, la technologie MOSFET et DSM (Composants Montés en Surface) améliorent l’efficacité de l’amplificateur.

L’ensemble de ces atouts donne à l’amplificateur Punch une qualité de son inégalable sous une carrosserie "pare-balles."

Vous trouverez de plus amples informations sur ces technologies, exclusivement conçues et brevetées par Rockford, dans la rubrique technique.

**Montage**

**Montage dans le coffre**

Monter l’amplificateur verticalement avec les rainures de haut en bas ce qui lui permet de refroidir plus facilement.

**Montage dans l’habitacle**

Monter l’amplificateur dans l’habitacle ne pose aucun problème, du moment qu’il y ait assez d’air pour le refroidir. Si vous montez l’ampli en dessous du siège, prévoyez 3 cm d’air autour du radiateur.

**Installation**

Pour votre sécurité, déconnectez la borne négative de la batterie du véhicule avant de commencer l’installation.

**Terminal B+**

Il est impératif qu’il y ait un fusible sur le câble pour la connexion à la masse. Préparez le châssis en grattant la peinture de la surface métallique et nettoyez la saleté et l’huile. Attachez le câble au châssis avec une vis.
Terminal GND
Préparez une longueur de câble pour la connexion à la masse. Préparez le châssis
en grattant l’apeinture de la surface métallique et nettoyez la saleté et l’huile. Attachez
le câble au châssis avec une vis.

Terminal REM
Connectez le fil REM à une commande 12 volts positive de la source. La
commande 12 volts est habituellement prise sur la sortie antenne électrique
de la source ou la commande accessoire. Si la source ne dispose pas de
ces sorties, nous vous recommandons d’installer un interrupteur qui
fournira un positif 12 volts au REM de l’amplificateur.

Opération stéréo/mono (tri
mode)

- Les entrées RCA sont connectées aux canaux gauche et droit
- Les Gains des canaux gauche et droit sont réglés de la même manière
  pour équilibrer le subwoofer
- L’impédance de chaque canal devrait être de minimum 2Ω
- L’impédance du canal mono devrait être de minimum 4Ω
- Les XCard sont introduites sur full range
- Il est conseillé d’utiliser les filtres passifs lorsqu’on fait fonctionner
  l’amplificateur en tri-mode
- NE connecter AUCUN des câbles HP à la masse au risque d’un
  fonctionnement instable
- Des filtres passifs sont nécessaires pour un bon fonctionnement en
  mode stéréo/mono
BITTE LESEN SIE DIESE GEBRAUCHSANLEITUNG ZUERST SORGFÄLTIG DURCH. DAS KANN SIE VOR DEM FALSCHEN EINSATZ, AUSFALLEN ODER SOGAR BESCHÄDIGUNG DES PRODUKTES ODER IHRES FAHRZEUGES SCHÜTZEN.

EINLEITUNG

Rockford Ingenieure haben die Punch.2 Verstärker entwickelt. Mit höchstem Technologie-Standart, hervorragender Klangqualität, einfacher Handhabung und bester Servicefreundlichkeit Trans•ana ist eine Nieder-Volt Schaltung im Vorverstärkerteil aller Pünch.2 Verstärker die für kristallklaren Klang auch bei sehr hohen Lautstärken sorgt. TOPAZ, eine einzigartige Erdungsschaltung verhindert und unterdrückt Einstreuungen und Störungen die nur allzu oft Car Audio Systeme beeinträchtigen. Flexibilität durch die Vielfalt der Aktivweiche mit ihren XCards, lange Lebensdauer durch die Schutzschaltung NOMAD und der Einsatz von MOSFET Transistoren und DSM (Discrete Surface Mount), machen diese Verstärker so effizient. Das Ergebnis all dieser Komponenten machen Punch-Verstärker so einzigartig und in ihrer Klangqualität nahezu unschlagbar. Eine genauere Beschreibung dieser Technologien, die größtenteils einzigartig und von Rockford patentiert sind, finden Sie unter Technical Design Features.

EINBAUORT

Im Fahrzeugkofferraum
Der vertikale Einbau der Endstufen, das bedeutet, dass die Kühlrippen von oben nach unten verlaufen, gibt dem Verstärker die beste Kühlung.

Auf der Beifahrerseite
Sollte der Verstärker auf der Beifahrerseite montiert werden, so ist es sehr wichtig, für eine ausreichende Kühlung zu sorgen. Sollte der Verstärker z. B. unter dem Beifahrersitz montiert werden, sollte dem Kühlkörper mindestens ein Luftspalt von 3 cm bleiben, um so für eine ausreichende Kühlung zu sorgen.

Einbau
Zur Sicherheit klemmen Sie den Negativ-Pol der Batterie während des gesamten Einbaues ab.

B+ Anschluß
**GND Anschluss**
Preparieren Sie Ihr Kabel für die Negativ Leitung (Erdung). Preparieren Sie die Anschlussstelle des Erdungskabels, indem Sie das Metall gründlich reinigen und vom Lack befreien. Befestigen Sie nun die Erdung an dieser Stelle mit einer Schraube.

**REM Anschluss**

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**Stereo/Mono Operation**

- Chinch Eingänge des rechten- und linken-Kanales anschließen
- **Gain-Kontrolle** gleich stellen um das Signal des Subwoofer anzugeleichen
- **Die Impedanz** für jeden Kanal sollte minimum 2 Ohm betragen.
- **Die Impedanz** des Mono Kanales sollte minimum 4 Ohm betragen
- **Die Aktivweichen-Module** sollten auf jeden Fall im Stereo/Mono Betrieb verwendet werden
- Vermeiden Sie auf jeden Fall eine Erdung der Lautsprecher-Kabel, da sonst ein einwandfreier Betrieb nicht garantiert werden kann
- **Passive Frequenzweichen** werden für korrekte Stereo/Mono Operationen benötigt
ATTENZIONE: SI PREGA DI LEGGERE LE SEGUENTI ISTRUZIONI PER L’INSTALLAZIONE DI QUESTO PRODOTTO. IL NON SEGUIRLE POTREBBE RISULTARE SERIAMENTE DANNOSO PER LA PERSONA O PER IL VEICOLO.

INTRODUZIONE

Gli ingegneri Rockford hanno progettato la serie di amplificatori Punch.2 per resistere all’ostico ambiente automobilistico mentre suonano con una musicalità superiore, offrendo un insieme versatile, affidabile ed efficiente. Trans•ana è un circuito a bassa tensione dello stadio preamplificatore del Punch.2 che permette al suono di essere cristallino e reale anche in presenza di volumi molto elevati… tutto questo è accoppiato TOPAZ, un esclusivo circuito di massa impiegato per eliminare i problemi di rumore comunemente presenti negli impianti car audio. Il massimo della versatilità é raggiunto con l’impiego delle XCard. L’affidabilità é completamente garantita dall’impiego di un circuito di protezione chiamato NOMAD, mentre l’uso di MOSFET e della tecnologia DSM (Discrete Surface Mount) permette di raggiungere efficienze elevatissime. Il risultato finale di tutte queste tecnnologie moderne é che gli amplificatori Punch suonano meravigiosamente e sono indistruttibili, a “prova di proiettile.” Una spiegazione di queste tecnologie innovative, molte coperte da brevetti Rockford, sono descritte in un’altra sezione di questo manuale.

DOVE POSIZIONARLO

Nel Bagagliaio
Montando l’amplificatore su una superficie in verticale con le alette direzionate dall’alto verso il basso si garantirá un miglior raffreddamento dell’amplificatore.

Nell’abitacolo
Montare l’amplificatore nell’abitacolo si avrà un funzionamento regolare se si garantisce un flusso d’aria sufficiente. Per l’installazione sotto un sedile, é necessario avere uno spazio di almeno 3 cm attorno a tutto l’amplificatore.

Installazione
Per sicurezza, scollegare il polo negativo della batteria dell’auto prima di iniziare l’installazione.

Terminale B+ (cavo positivo)
Il cavo positivo deve essere protetto da un fusibile a non piú di 45 cm dalla batteria. Terminare il cavo e installare il fusibile nel vano motore. Tutte le connessioni devono essere a prova d’acqua.
Terminale GND (cavo negativo)
Decidere la lunghezza del cavo e terminarlo. Preparare la massa grattando la vernice dal telaio dell’auto ed eliminando tracce di olio o sporco. Fissare il cavo di massa al telaio con una vite.

Terminale REM (Consenso di accensione)
Collegare il cavo REM ad un positivo presente solo ad autoradio accesa (normalmente il cavo pilota dell’antenna elettrica o il cavo accessori dell’autoradio). Se la sorgente non dovesse essere equipaggiata con queste uscite, la soluzione raccomandabile è di inserire un interruttore su un cavo positivo e connettersi all’amplificatore.

Stereo/Mono Operation

- Ingressi RCA collegati sia al canale destro sia al sinistro
- Gain (controllo di sensibilità) regolati in modo identico per bilanciare il subwoofer
- L’impedenza di ciascun canale deve essere minimo 2 Ω
- L’impedenza per il canale mono deve essere minimo 4 Ω
- La scheda XCard deve essere in posizione Full Range
- Nel funzionamento Stereo/Mono simultaneo devono essere impiegati i crossover passivi
- Non cortocircuitare a massa nessun cavo degli altoparlanti, potrebbe portare ad un funzionamento irregolare
- Crossover passivi sono indispensabili per un corretto funzionamento stereo/mono
MADE IN THE USA

This product is designed, developed and assembled in the USA by a dedicated group of American workers. The majority of the components used in the construction of this product are produced by American companies. However, due to the global nature of their manufacturing facilities and the loudspeaker parts industry in general, some parts may be manufactured in other countries.

Rockford Fosgate
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