

AUDIOPHILE WOOFERS

RFA-408

RFA-808

RFA-410

RFA-810

RFA-412

RFA-812

OWNER'S MANUAL



Dear Customer,

Congratulations on your purchase of America's finest brand of car audio components. At Rockford Fosgate we are committed to 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.

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

To get a free brochure on Rockford Fosgate products and Rockford accessories, please call 1-800-669-9899 or FAX 1-602-966-3983 in the U.S. For Canada, call Korbon Trading at 905-567-1920. For international orders FAX 001-1-602-967-8132 or call 001-1-602-967-3565.

PRACTICE SAFE SOUND™

CONTINUOUS EXPOSURE TO SOUND PRESSURE LEVELS OVER 100dB MAY CAUSE PERMANENT HEARING LOSS. HIGH POWERED AUTO SOUND SYSTEMS MAY PRODUCE SOUND PRESSURE LEVELS WELL OVER 130dB. USE COMMON SENSE AND PRACTICE SAFE SOUND.

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 1-800-795-2385. 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 be sure to record it in the space provided below as your permanent record. This will serve as verification of your factory warranty and could become useful in recovering your product if ever stolen.

Serial Number: _____

Model Number: _____

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PUNCH AUDIOPHILE WOOFER CONTENTS

Punch Audiophile Woofer
Punch Audiophile Woofer manual

INTRODUCTION

This manual provides information on the construction, installation and operation of the Punch Audiophile Woofers. We suggest you save this manual for future reference.

The Punch Audiophile woofers are a full line of low frequency drivers in 8", 10", and 12" sizes; in 4 or 8 ohm impedance. They are designed for use primarily in small, sealed enclosures. By utilizing the latest materials and construction techniques, we are able to offer a speaker with good, low frequency response while requiring a minimum of operating space.

DESIGN FEATURES

Cone – The cone material used is spruce pulp paper reinforced with Kevlar® fiber (8" and 10" only). This provides the necessary combination of weight and strength and allows high levels of output without cone break up. The cone is treated with a water resistant Polyvinyl Acetate Emulsion (PVA) which increases the cone rigidity and lowers distortion.

Vented Pole Piece – To allow operation at reasonably high power levels, ventilation is needed. This is done through the use of a vented pole piece. The venting allows fresh air to circulate and remove the built up heat from the voice coil assembly.

Suspension – The suspension holds the cone to the basket and supports the voice coil in the magnetic gap. The suspension should allow the cone to move in and out freely but not allow side to side motion. The Punch Audiophile woofers all use a Nitrile rubber surround for the front and a flat spider design for the rear. This combination takes full advantage of the Kevlar® cone's stiffness allowing clean, uncolored reproduction.

Voice Coil – The construction of the voice coil is designed to maximize the speaker's power handling. The wire used is high temperature copper, wound in multiple layers on a black, anodized aluminum former. The wire will withstand high temperatures while the former conducts heat away from the coil.

Powder Coated Basket – The stamped steel baskets of the Punch Audiophile woofers are finished with a powder coat process. This good looking finish damps the basket resonance, preventing basket vibration from coloring the sound. Unrelated to the sonic performance of the speakers, but equally important, the powder coating used is environmentally friendly since no toxic chemicals are released into the atmosphere during the process.

Epoxy Filled Inverted Dust Caps – The inverted dust cap provides a flatter power response and rigidity to the cone. Epoxy filling adds mass, to ensure the high performance in small, sealed boxes.

Dual Input Terminals – To facilitate hook-up in multiple driver configurations, each positive and negative terminal has two connecting lugs. **The positive terminal is identified by a dot which also indicates the speaker's impedance.** A red dot is used on an 8Ω speaker, a violet dot on a 4Ω speaker.

LOW FREQUENCY SPEAKER SYSTEMS

The Punch Audiophile woofers require an enclosure to achieve optimum results. The enclosure allows the speaker to operate at lower frequencies with improved power handling. The two most commonly used types of low frequency speaker systems are acoustic suspension and bass reflex. The acoustic suspension enclosure, commonly referred to as a sealed box, relies upon the changing air pressure in a tightly sealed chamber of its operation. The bass reflex, commonly referred to as a ported enclosure, uses a vent inserted into the box which takes over for the speaker at a desired frequency which is determined by the internal volume of the enclosure and the size of the vent used. **The Punch Audiophile woofers will yield optimum performance in a small, sealed enclosure.**

USING THE PUNCH AUDIOPHILE WOOFERS

Speakers are built in different sizes to optimize their performance in different frequency bands. Crossovers are used to route the different frequency bands for each appropriate speaker. There are two operational types of crossovers, active and passive. An active crossover is an electronic filter which is placed before the amplifier and separates the signal fed to different amplifiers in the system. A passive crossover is positioned after the amplifier and separates the signal fed to each speaker in the system. Active crossovers offer the accuracy and flexibility needed for a sophisticated system and are used in complex multiple amp designs. Passive crossovers (capacitors and inductors) allow the use of multiple speakers in a simple system which can easily be expanded over time. We recommend using a 6dB per octave, 100Hz low pass crossover for the Punch Audiophile Woofers when used with a passive system.

To customize the installation, try adjusting the crossover point one octave up or down to optimize the system staging.

CALCULATING LOAD IMPEDANCE

The Punch Audiophile Woofers are used for the sub-bass region, those frequencies below 100Hz. This is the foundation for the music and the frequency range you feel. Before selecting the passive crossover it is necessary to calculate the load impedance of the speaker system. In a series circuit the impedance is determined by the formula:

$$R_T = R_1 + R_2 + R_3 + \text{etc.}$$

In a parallel circuit the impedance is determined by the formula:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4} + \text{etc.}$$

Where R_T is the total speaker load and R_1 , R_2 , etc. represent each speaker in the system.

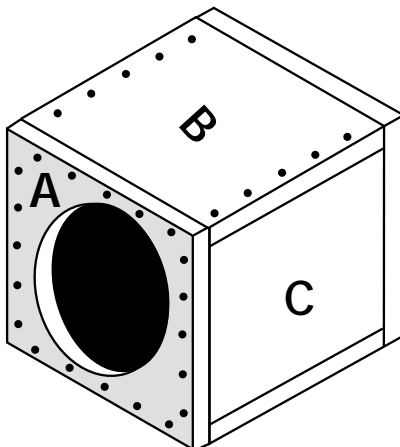
The crossover is connected in line to the positive terminal of the speaker system. Crossovers are available from Authorized Rockford Fosgate Dealers.

CALCULATING VOLUME

Calculating volume is merely a matter of measuring the dimensions in inches and using the formula: $\text{Volume} = \text{Height} \times \text{Width} \times \text{Depth}$. The result is in cubic inches. Convert this to cubic feet by dividing by 1,728 (the number of cubic inches in a cubic foot). If two facing sides are of uneven length, add them together and divide by two to take the average. Using this number will give you the volume without the necessity of calculating the box in sections and adding the sections together. The thickness of the baffle material reduces the internal volume so this must be subtracted from the outside dimensions to determine the internal volume. The speaker itself also reduces the internal volume. The amount of air displaced by each model is listed on the specification sheet and should also be subtracted from the gross volume calculation.

BUILDING AN ENCLOSURE

To work properly, the walls of the enclosure must be rigid and not flex when subjected to the high pressures generated by the speaker's operation. We recommend using 3/4" thick high density particle board or medium density fiberboard (MDF), which are available at most building supply stores. For a large box, internal bracing is needed for reinforcement. The joints should be glued and secured with either nails or screws; internally the joints should be sealed with silicon to prevent air leaking. Wood glue works best. Because the high density particle board and MDF are porous materials, it is suggested to seal the outside enclosure walls with polyurethane.



Cut out two pieces of each panel using 3/4" MDF.

Model #	Panel "A"	Panel "B"	Panel "C"	Volume
RFA-408/808	10.5" x 16.5"	4.75" x 16.5"	4.75" x 9"	.33 cu. ft.
RFA-410/810	12.75" x 19.75"	6.25" x 19.75"	6.25" x 11.25"	.66 cu. ft.
RFA-412/812	13.5" x 20.5"	7.75 x 20.5"	7.75" x 12"	.88 cu. ft.

In Conclusion

Special care has been taken to ensure your satisfaction with the Punch Audiophile Woofers. The materials and workmanship have been carefully selected to guarantee performance equal to the needs of the most demanding conditions. If you have any further questions or advanced system needs, your Authorized Rockford Fosgate Dealer will be happy to assist you.

SPECIFICATIONS

Model	RFA-408	RFA-808	RFA-410	RFA-810	RFA-412	RFA-812
Nom. Imped.	4	8	4	8	4	8
FS (Hz)	29	31	23	25	21	22
RE (Ohm)	3.5	7	3.5	7	3.5	7
LE (mH)	0.59	1	.86	1.3	1	1.6
QMS	2.08	2.19	1.94	2.03	2.2	2.8
OES	0.53	0.69	0.47	0.58	0.45	0.58
QTS	0.42	0.52	0.38	0.45	0.38	0.48
VAS (cu.ft)	2.154	2.154	3.5	3.5	9.128	9.128
VAS (liter)	61	61	127	127	260	260
Power (Watts RMS)	150	150	150	150	250	250
SPL (dB @ 1w/1m)	86.6	86.4	87	86.5	89.4	89
X-MAX (inches)	0.25	0.25	0.34	0.34	0.37	0.37
X-MAX (mm)	6.3	6.3	8.5	8.5	9.3	9.3
Rec. Box Vol. (cu. ft.)	0.33	0.33	0.66	0.66	0.88	0.88
Spk. Dis. Outside (cu. ft.)	0.04	0.04	0.07	0.07	0.11	0.11
Spk. Dis. Outside (liters)	1.13	1.13	1.79	1.79	3.04	3.04
Spk. Dis. Inside (cu. ft.)	0.05	0.05	0.08	0.08	0.12	0.12
Spk. Dis Inside (liters)	1.35	1.35	2.24	2.24	3.52	3.52
Mntg. Dia. (in.)	7-3/8	7-3/8	9-3/8	9-3/8	11	11
Mntg. Dia. (mm)	187.4	187.4	238.1	238.1	279.4	279.4
Mntg. Depth (in.)	3-5/8	3-5/8	4-1/2	4-1/2	5-1/8	5-1/8
Mnt.g. Depth (mm)	92.1	92.1	114.3	114.3	128.6	128.6

WARRANTY INFORMATION

Rockford Fosgate warrants all loudspeakers to the original purchaser for a period of two (2) years parts and labor, providing the product was purchased from an Authorized Rockford Fosgate Dealer. Speakers found to be defective during the warranty period will be repaired or replaced (with a product deemed to be equivalent) at Rockford Fosgate's discretion. ***Repaired or replaced speakers will cover the balance of the original warranty period only.*** Warranty applies only to original purchaser and is non-transferable. Warranty does not cover abuse or installation error. If a determination is made that the product has been abused or is out of the warranty period, it will be repaired, exchanged, and billed. Parts not covered under warranty will be repaired or replaced and billed. For speaker boxes, please return the speaker only. Serial number must be intact to obtain warranty. Speakers must be returned prepaid to Grand Rapids, Michigan.

GENERAL

Electronics and speaker warranties do not cover any appearance item, any cost or expense related to the removal or reinstallation of the product, any accessory used in conjunction with the product, damage to the product resulting from alteration, accident, misuse or abuse, or improper installation. This warranty does not apply if the parts or labor, which would otherwise be provided without charge under this warranty, are obtained from any source other than Rockford Fosgate or an Authorized Rockford Fosgate Service Center.

The warranty is the only express warranty and does not create any implied warranties. Rockford Fosgate limits its obligations under any implied warranties under state laws to a period not to exceed the written warranty period. Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply. This warranty applies only to products sold in the United States of America or its possessions. For warranty outside the U.S.A., please contact the nearest Authorized Rockford Fosgate Dealer. This warranty gives the consumer specific legal rights, and the consumer may have other rights which vary from state to state.

A defective product must be shipped prepaid to the Authorized Rockford Fosgate Dealer from which the consumer purchased the product or to the address below, in the original factory carton or equivalent. Any shipping loss or damage will be borne by the consumer or the consumer's shipper. **A consumer returning a product to the factory must call (800) 669-9899 for a Return Authorization Number.** All shipments shall be clearly marked with the Return Authorization Number on the outside of the shipping carton.

Rockford Corporation
609 Myrtle N.W.
Grand Rapids, MI 49504 (Receiving-speakers)

NOTES

Rockford Fosgate

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