POWER WOOFERS

PWR-410 **PWR-810**

PWR-412 **PWR-812**

PWR-415 **PWR-815**

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 1-800-398-3985 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 futher 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 become useful in recovering your product if ever stolen and serve as verification of your factory warranty.

Serial Number: _____

Model Number: _____

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Punch Power Woofer
Baseplate Label

INTRODUCTION

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

The Punch Power Woofers incorporate the best available materials in an innovative design that achieves solid low frequency performance at high levels with outstanding power handling. From the oversized magnet for high motor efficiency to the low resonant cast aluminum basket no detail has been overlooked in designing the finest low frequency speaker available. The materials and construction techniques which make this possible are listed below.

DESIGN FEATURES

Cast Aluminum Basket – The basket is the supporting structure for the speaker and must not vibrate or flex with the speaker's operation. The low resonant cast aluminum basket used on the Punch Power Woofers is strong enough to support the large magnet assembly and will allow the speaker to operate at low frequencies without sonic coloration.

Oversized Magnet – Oversized magnets are used for high efficiency and improved power handling. The magnet is protected by an attractive rubber cover which can be oriented to match the system layout.

Binding Post Terminals – The amplifier connects to the speaker through the use of gold-plated 5-way binding posts. These binding posts are versatile connectors which allow for the connection of the speakers with a variety of different terminals such as banana plugs or spade lugs. The binding post will also accept bare wire up to 12 gauge and are spaced on 3/4" centers to accommodate dual banana plugs.

AeroVent™ Pole Piece – The AeroVent™ provides ventilation for the voice coil for improved power handling. The AeroVent™ is aerodynamically shaped to allow passage of large amounts of air without constricting the air flow which can cause whistling or turbulence noise.

Suspension – The suspension holds the cone to the basket and suspends the voice coil in the magnetic gap. The surround, which supports the cone, is made from a dual laminate foam which minimizes edge deterioration. The proprietary flat spider design maintains linear motion of the voice coil even at high listening levels.

Voice Coil – The voice coil is wound on a large diameter anodized aluminum former for highly efficient thermal transfer. The large gauge high temperature copper wire allows operation at high power levels.

Cone – The cone is made of a heavy and rigid paper material which allows for very low frequency response and resists deforming when driven at high power levels.

Low Frequency Speaker Systems

The Punch Power 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 for 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 tuned frequency which is determined by the internal volume of the enclosure and the size of the vent used. The Punch Power Woofers will yield optimum performance in a small, ported enclosure.

Using The Punch Power 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 speaker. There are two operational types of crossover: 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 Power 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 Power 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. The 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: Volume = Height x Width x 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 (use non-flammable carpenter glue) and secured with either nails or screws. Internally the joints should be sealed with silicon to prevent air leaking. Because the high density particle board and MDF are porous materials, it is suggested to seal the outside enclosure walls with polyurethane. Ideally, the port should be located on the same face as the speaker and positioned at least one port diameter away from the side and back walls.

In Conclusion

Special care has been taken to ensure your satisfaction with the Punch Power 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	PWR-410	PWR-810	PWR-412	PWR-812	PWR-415	PWR-815
Nom. Imped.	4	8	4	8	4	8
FS (Hz)	30	33	25	27	24	25
RE (Ohm)	3.5	7	3.4	6.8	3.4	6.8
LE (mH)	1.0	1.5	1.3	1.8	1.3	1.8
QMS	2.11	2.1	2.89	2.8	3.2	2.86
QES	0.24	0.32	0.28	0.36	0.31	0.34
QTS	0.22	0.28	0.26	0.31	0.28	0.31
VAS (cu.ft)	2.507	2.507	4.697	4.697	11.795	11.795
VAS (liter)	71	71	133	133	334	334
Power (Watts RMS)	300	300	600	600	600	600
Power (Watts Peak)	600	600	1200	1200	1200	1200
SPL (dB @ 1w/1m)	91	91	91	91	94	94
X-MAX (inches)	0.3	0.3	0.24	0.24	0.24	0.24
X-MAX (mm)	7.7	7.7	6.2	6.2	6.2	6.2
Port Diameter (in.)	4	4	4	4	5	5
Port Length (in.)	11	11	10.75	10.75	7	7
Rec. Box Vol. (cu. ft.)	1.5	1.5	2	2	4	4
Cutoff-F3 (Hz)	37.6	41.4	36.4	39.3	38.6	40.2
Spk. Dis. Outside (cu. ft.)	0.12	0.12	0.21	0.21	0.25	0.25
Spk. Dis. Inside (cu. ft.)	0.13	0.13	0.22	0.22	0.26	0.26
Mntg. Dia. (in.)	9-19/32	9-19/32	10-15/16	10-15/16	13-29/32	13-29/32
Mntg. Depth (in.)	4-7/8	4-7/8	5-19/32	5-19/32	6-29/32	6-29/32

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 should 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 Fosgate:
609 Myrtle N.W.
Grand Rapids, MI 49504 (Receiving-speakers)

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Rockford Fosgate
Rockford Corporation
546 South Rockford Drive
Tempe, Arizona 85281 U.S.A.
In U.S.A., (602) 967-3565
In Canada, call Korbon (905) 567-1920
In Europe, Fax (49) 4207-801250
In Japan, Fax (81) 559-79-1265

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