CARVER

CARVER CORPORATION
LIMITED WARRANTY
HOME AUDIO PRODUCTS

Product	Warranty Period
Amplifiers, Pre-Amplifiers, Sonic Hologram Generator, Speaker Control Boxes	3 years
Receivers, Tuners, Integrated Amplifiers. Pre-amp/Tuners, Selector Boxes	2 years
Video and Compact Disc Players and Changers, Cassette Tape Decks, Remote Controls, In wall Remote Sensors and Transmitters and Other Accessories	1 year

YOU MUST RETAIN AND PROVIDE YOUR SALES RECEIPT TO OBTAIN COVERAGE UNDER THIS LIMITED WARRANTY. The Warranty Period begins from the date of first consumer purchase from an Authorized Carver Dealer.

WHAT IS COVERED: THIS WARRANTY COVERS DEFECTS IN MATERIAL AND WORKMANSHIP ONLY. This Limited Warranty DOES NOT extend to: (1) Damage caused by shipment; (2) damage caused by accident, misuse, abuse, failure to perform owner maintenance, or operation contrary to the instructions in the Carver Corporation owner's manual; (3) units on which the serial number has been defaced, modified or removed; (4) damage resulting from modification or attempted repair by any person other than authorized by Carver Corporation; and (5) use for industrial, commercial, and/or professional application.

WHAT WE WILL PAY FOR: Carver will pay all labor and material expenses for items covered under this Limited Warranty. See the next section concerning shipping charges.

WHAT YOU MUST DO TO OBTAIN WARRANTY SERVICE: In the event your Carver product requires service, write to Carver Corporation (Attention: Customer Service Department), P.O. Box 137, Woodinville, Washington 98072-0137 or call the Customer Service Department directly at (425) 482-3400. You will be directed to an Authorized Carver Service Station or receive instructions to ship the unit to the factory. Please save the original shipping carton and packing materials in case shipping is required. Please DO NOT ship Parcel Post. Include a complete description of the problem, the associated components and connections, and a copy of the purchase receipt. Initial shipping costs are not paid by Carver Corporation; return shipping costs will be pre-paid if repairs were covered by the scope of this warranty.

Shipping address
CARVER CORPORATION
15300 Woodinville/Redmond Rd.
Woodinville, WA 98072

LIMITATIONS OF IMPLIED WARRANTIES: ALL IMPLIED WARRANTIES FOR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED IN DURATION TO THE WARRANTY PERIOD FOR YOUR PRODUCT, UNLESS OTHERWISE PROVIDED BY STATE LAW.

EXCLUSION OF CERTAIN DAMAGES: IN NO EVENT SHALL CARVER CORPORATION BE LIABLE FOR PROPERTY OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM THE FAILURE OF THIS PRODUCT. IF YOUR CARVER PRODUCT PROVES DEFECTIVE IN MATERIAL OR WORKMANSHIP, THE LIABILITY OF CARVER CORPORATION SHALL BE LIMITED TO THE REPAIR OR REPLACEMENT, AT THE OPTION OF CARVER CORPORATION, OF ANY DEFECTIVE PART.

STATE LAWS MAY DIFFER: SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OR LIMITATION OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

OTHER IMPORTANT PROVISIONS: Carver Corporation reserves the right to make changes in design and improvements to its products without the responsibility of installing such changes or improvements on products previously sold by Carver. We suggest that you attach your purchase receipt to this Warranty and keep both documents in a safe place. Thank you for your choice of a Carver Corporation product.

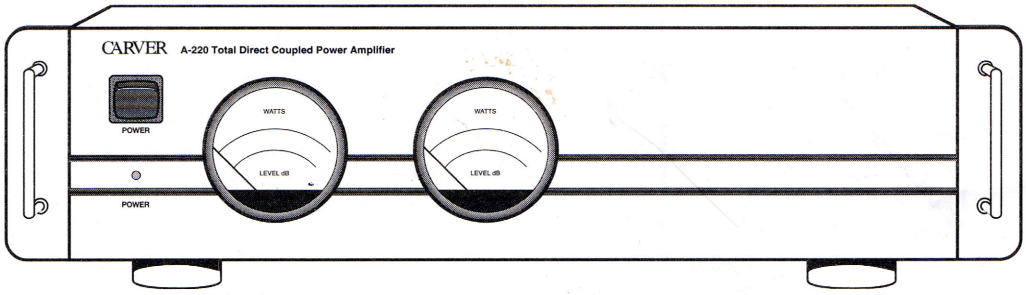
NOTE: The preceding warranty is exclusive to the United States and its possessions and territories. Please see your Carver dealer; or distributor for the correct warranty information in your area or locale.

July, 1997

990-00029-00 Rev. C

CARVER

A-220



A-220
Total Direct Coupled Power Amplifier
Owner's Manual

CARVER

1. Safety Instructions

1. Read Instructions -- All the safety and operation instructions should be read before the Carver Component is operated.

2. Retain Instructions — The safety and operating instructions should be kept for future reference.

3. Heed Warnings — All warnings on the Component and in these operating instructions should be followed.

4. Follow Instructions — All operating and other instructions should be followed.

5. Water and Moisture — The Component should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

6. Ventilation — The Component should be situated so that its location or position does not interfere with its proper ventilation. For example, the Component should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through ventilation openings.

7. Heat — The Component should be situated away from heat sources such as radiators, or other devices which produce heat.

8. Power Sources — The Component should be connected to a power supply only of the type described in these operation instructions or as marked on the Component.

9. Power Cord Protection — Power-supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the Component.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

PORTABLE CART WARNING

Carts and stands - The Component should be used only with a cart or stand that is recommended by the manufacturer.
A Component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Component and cart combination to overturn.

10. Cleaning — The Component should be cleaned only as recommended in this manual.

11. Non-use Periods— The power cord of the Component should be unplugged from the outlet when unused for a long period of time.

12. Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the Component.

13. Damage Requiring Service — The Component should be serviced only by qualified service personnel when:

A. The power-supply cord or the plug has been damaged; or

B. Objects have fallen, or liquid has spilled into the Component; or

C. The Component has been exposed to rain; or

D. The Component does not appear to operate normally or exhibits a marked change in performance;
or

E. The Component has been dropped, or its cabinet damaged.

14. Servicing — The user should not attempt to service the Component beyond those means described in this operating manual. All other servicing should be referred to qualified service personnel.

15. To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.
Pour préevenir les chocs électriques ne pas utiliser cette fiche polariseé avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans laisser aucune pariie à découvert.

16. Grounding or Polarization — Precautions should be taken so that the grounding or polarization means of the Component is not defeated.

17. Internal/External Voltage Selectors — Internal or external line voltage selector switches, if any, should only be reset and reequipped with a proper plug for alternate voltage by a qualified service technician. See an Authorized Carver Dealer for more information.

18. Attachment Plugs for Alternate Line Voltage (Dual voltage models only) — See your Authorized Carver Dealer for information on the attachment plug for alternate voltage use. This pertains to dual-voltage units only.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

WARNING – TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.
ATTENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU'AU FOND.

Contents

2. Prelude

As an American electronics innovator for over fifteen years, Carver Corporation has contributed some of the industry's most impressive and remarkable audio technologies. In fact, many features that are now considered standard (surround sound and advanced signal processing) had their first successful consumer applications in Carver products. Today, many of our components are regarded as "Classics" and many are still used by their original owners. Our continuing goal is to provide affordable products of exceptional quality, aimed at reproducing sound with absolute accuracy.

The A-220 amplifier benefits from our experience as an industry leader and innovator in amplifier design. It was developed to fulfill one main role, which is to amplify the audio signal without any sort of degradation or distortion. This is achieved with our Total Direct Coupling design which improves the damping factor of the amplifier.

The damping factor specification is an expression of how an amplifier will affect the speaker performance. The higher the damping factor, the better the amplifier will have control of the speaker movement. This leads to more accurate sound reproduction, the speakers are doing exactly what you want them to, without any extraneous cone motion.

Conventional amplifier designs must use stabilizing networks to protect the amplifier. The traditional stabilizing method comes at a price, although it gives good damping factors in the bass and mid-range, it reduces the damping factor at higher frequencies. This can cause roll-off or peaks in the high frequency performance.

With Carver's Total Direct Coupling design, there is no need for the stability networks and their inherent flaws. In essence, the signal path between the speakers and the amplifier is uninterrupted and the frequency response remains flat at all levels and loads. This design creates a totally stable power amplifier and provides a high damping factor at any frequency– not just in the bass and mid-range. The result is pure clean sound with inaudible distortion.

Carver engineers have designed the A-220 to set new standards for reliability and value. The amplifier makes full use of a modular design philosophy and open-frame architecture. This allows for efficient and cost effective assembly while providing superior isolation and low noise operation. The chassis is designed to provide good air access to the heat sinks with improved dissipation of heat away from the high current output devices. This attention to detail comes from our reputation for reliability and longevity.

The A-220 was designed and manufactured by people with a commitment to providing fine quality components for sound reproduction and home entertainment. Thank you for placing your confidence in Carver Corporation. We know that your amplifier will provide you with many years of listening enjoyment.

3. Features

- ❑ 110 watts per channel into 8 ohms
- ❑ 175 watts per channel into 4 ohms
- ❑ 350 watts bridged mono into 8 ohms
- ❑ Total Direct Coupling™ for high damping factor at all frequencies
- ❑ Each channel protected by:
  Individual fusing
  DC fault sense
  Shorted-load sense
  Excess temperature sense
  Power-on delay
- ❑ Minimal signal path design
- ❑ Precision passive components used in all critical signal paths (no electrolytic capacitors in signal path)
- ❑ Fully-complementary differential circuitry using low-noise, high speed transistors throughout
- ❑ DC Servo correction
- ❑ Double-stage ground isolation system prevents ground loops and RF interference
- ❑ Triple-diffused planar high-current output devices
- ❑ Dual analog lighted meters with range selection switch
- ❑ Meter light On/Off switch
- ❑ Gold-plated RCA input jacks
- ❑ Level control for each channel
- ❑ Removable handles for placement in 17" wide cabinet space (with trim end caps)
- ❑ Designed and manufactured in the USA

4. Specifications

Power Output:

Stereo operation:
Power FTC 20Hz-20kHz
110 watts per channel into 8 ohms
with THD < 0.08%
175 watts per channel into 4 ohms

Mono operation:
350 watts into 8 ohms

Dynamic Headroom: > 1.0dB @ 8 ohms
both channels driven

Frequency Response: 20 Hz to 20 kHz
(+0,-0.2 dB)

Separation: > 70 dB @ 1kHz

Damping Factor: > 150 (20 to 20kHz)

Input Impedance: 50 kohms

Sensitivity: 1.0V rms input for 110W output

Gain: 29.0 dB (+/- 0.5dB)

Input-to-Output Phase: 0° (±10°)

IM Distortion:
SMPTE < 0.03%
CCIF < 0.01%

THD: < 0.03%

Signal-to-Noise Ratio: > 112 dB
A-weighted, referenced to rated power
> 92 dB, referenced to 1 watt

Slew Rate: > 30 V/us

Power Consumption:

40W at idle
350W with musical program
750W at full power into 8 Ω (continuous)

Power Requirements:
120VAC/60Hz (USA and Canada)
Other voltages as required for export

Display: 2 Analog Meters;
0 dB = 110 watts into 8 Ω
0 dB = 11 watts into 8 Ω (x10 range)

Dimensions (H x W x D):

4.8" x 19" x 15.3" (122mm x 483mm x 389mm)
with handles

4.8" x 17" x 14.3" (122mm x 432mm x 363mm)
without handles

Net Weight: 27 lbs. (12 kg)

Shipping Weight: 33 lbs. (15 kg)

Features and specifications are subject to change without notice.

5. Unpacking and paperwork

Carefully unpack your A-220 and keep the original carton and packing materials for future moving, shipment or long-term storage. Make sure that you save the two end caps which come in the box. These are used if you do not want the handles fitted.

The amplifier should reach you in perfect condition. If you notice any shipping damage, please contact your Carver Dealer immediately.

Important Paperwork

You should save your sales receipt and keep it in a safe place. This is required if you ever need to obtain warranty service.

Write down the serial number which is located on the back of the A-220 and record it in the space provided below.

Please take a moment to fill out the customer response card packed with the amplifier and return it to Carver. This provides us with important information from our valued customers. There is also a section for you to note any comments you may have about our products.

Model: A-220

Serial Number: _____

Purchased at: _____

Date: _____

Handle Removal

The A-220 comes with the handles installed. They can be replaced with the two supplied end spacers, as follows :

1. Unplug the power cord.
2. Remove the three Phillips screws on each side of the chassis as shown below.
3. Pull out the handle assembly and install the spacers provided.
4. Reinstall the three screws on each side of the chassis to secure the spacers in place.
5. Store the handles in a safe place for future use.

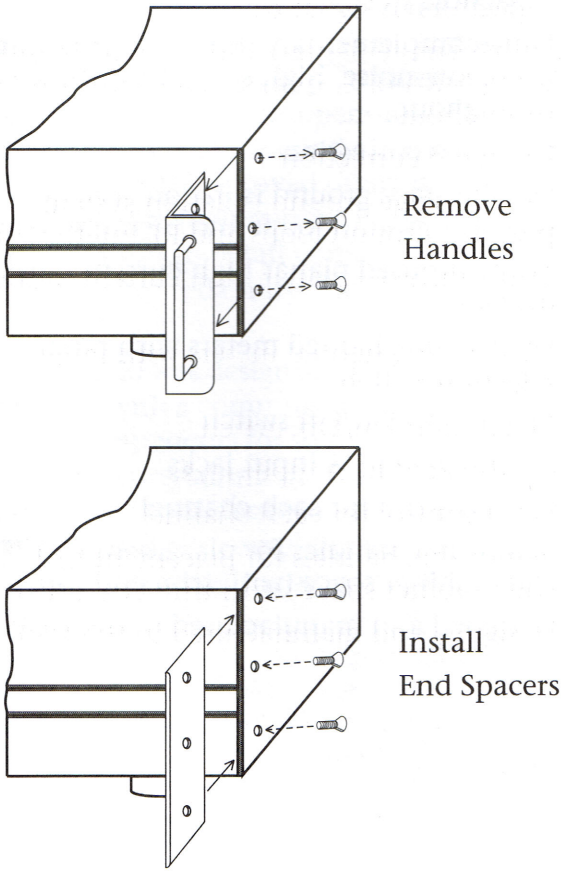


Figure 1. Handle Removal

6. Installation

Observe the following precautions when choosing a location for the A-220:

- Protect from prolonged exposure to direct sunlight and other direct sources of heat, such as heating vents and radiators.

- All components produce some heat during operation, so make sure that the ventilation holes are not covered and that air is allowed to circulate freely behind, beside and above the unit. Allow at least 3 inches of air space above the unit, and at least 1 inch on either side.

- Do not place the amplifier on carpeting or any surface that might tend to block its ventilation slots from air circulation. Excessive heat is the single greatest source of component failure.

- Do not expose the unit to rain or moisture. If fluid or a foreign object should enter the unit, disconnect the power plug and contact your Carver dealer or an authorized service center.

- Avoid excessive exposure to extreme cold or dust.

- Do not place heavy objects on the unit.

- Do not place magnetic storage media such as audio or video tapes near the amplifier. All power amplifiers contain transformers that are surrounded by a fluctuating magnetic field which can erase magnetic tapes (or floppy disks).

- If possible, place the A-220 in its own shelf space, separate from other components.

AC Power Considerations

Ensure that the A-220 is plugged into an outlet capable of supplying the correct voltage specified for your model and with enough current to allow full-power operation of all the components connected to it. The voltage of your A-220 is marked on the rear panel near the power cord.

The 120 volt USA model will draw a maximum current of approximately 6.3 amps when it is running at full power.
The 240 volt version will draw 3.2 amps.

The A-220 should be plugged into a separate wall socket or a power strip. Do not use the preamplifier's convenience sockets as they are meant for lower power components such as CD players or Tape decks. Most do not have enough current to run an amplifier.

Connection Tips

Before setting up your new system, please consider the following :

- Always make sure that your components are all turned OFF before making or changing any connections.

- Make sure that the A-220 is turned off before moving the Mono switch.

- Whenever possible, keep the power cords away from the signal cables or speaker wires to prevent any hum or interference from being heard in the speakers.

7. Rear Panel Features

1. Mono Switch

For normal Stereo operation, this switch should remain in the OUT position.
See page 13 for more information about using the A-220 in Mono.

2. Level Controls

These controls can be used to adjust the input sensitivity of each channel. Usually, you would leave these controls in the fully clockwise position. Each channel will then provide a sensitivity of 1 volt input = 110 watts output.

If you did turn them down a little, this would give you more fine adjustment of the preamp volume control. You would still be able to get the full output power from the amplifier but you would have to rotate the preamp volume control further than before.

3. Input Connectors

These inputs connect to the output of your preamplifier using standard RCA patch cords.

Pages 12-15 show some typical preamplifier connections.

4. Output Terminals

These terminals connect to your loudspeakers with speaker wire. They will accept bare wire or banana plugs but not spade terminals. See page 11 for more details.

5. Meter Light Switch

This turns the meter lights ON or OFF.

6. Meter Range Switch

When pushed in, the meter sensitivity will be increased ten-times. The 0 dB mark will then represent 11 watts instead of 110 watts.

If you are running louder than 11 watts, the switch must be out, otherwise the needles will be off the scale and possibly damage the meters.

This switch only affects the meter range, it does not change the output power.

7. AC Linecord

Connect to a properly configured outlet providing the correct line voltage specified for your model.

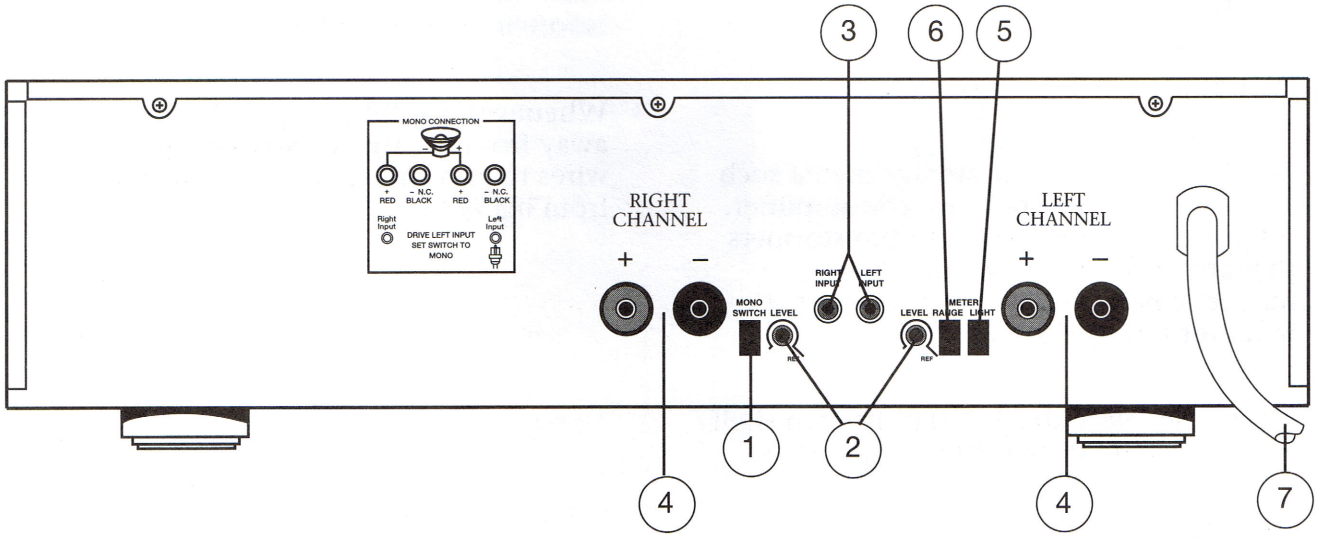


Figure 2. Rear Panel

8. Front Panel Features

8. Power Switch

When the A-220 is turned on, the indicating light (9) comes on and the outputs will be muted for a few seconds to allow the amplifier to stabilize.

Make sure that a loud signal source is not playing when the amplifier is turned on, or you'll be in for a big surprise when the muting circuit disengages.

- We recommend that you turn the amplifier **on Last**, after all of your other components have been turned on.
- When you have finished with your listening session, turn the amplifier **off First.**

These precautions will reduce any turn-on or turn-off noises heard in the speakers.

10. Power Meters

The A-220 features ballistically-weighted power meters that are calibrated in decibels. The main dB scale has a top value of +3dB, with 0dB equal to the maximum rated continuous power (into 8 ohms) of 110 watts per channel.

The meter ballistics include a fixed amount of overshoot, the needles can move past the 0dB level when played loud.

On some musical material, the amplifier could be reaching its maximum power even though the meters aren't reaching full scale. This is because the meters are indicating the *average* power output. Momentary musical peaks can drive the amplifier to its maximum output for brief periods, faster than the meter needles can respond.

The best way to tell whether the amplifier is overloading is to listen. If the sound becomes distorted on musical peaks at the same time the meter needles are "pegging", you have probably exhausted the A-220's power reserves. If this occurs, you should reduce the volume level.

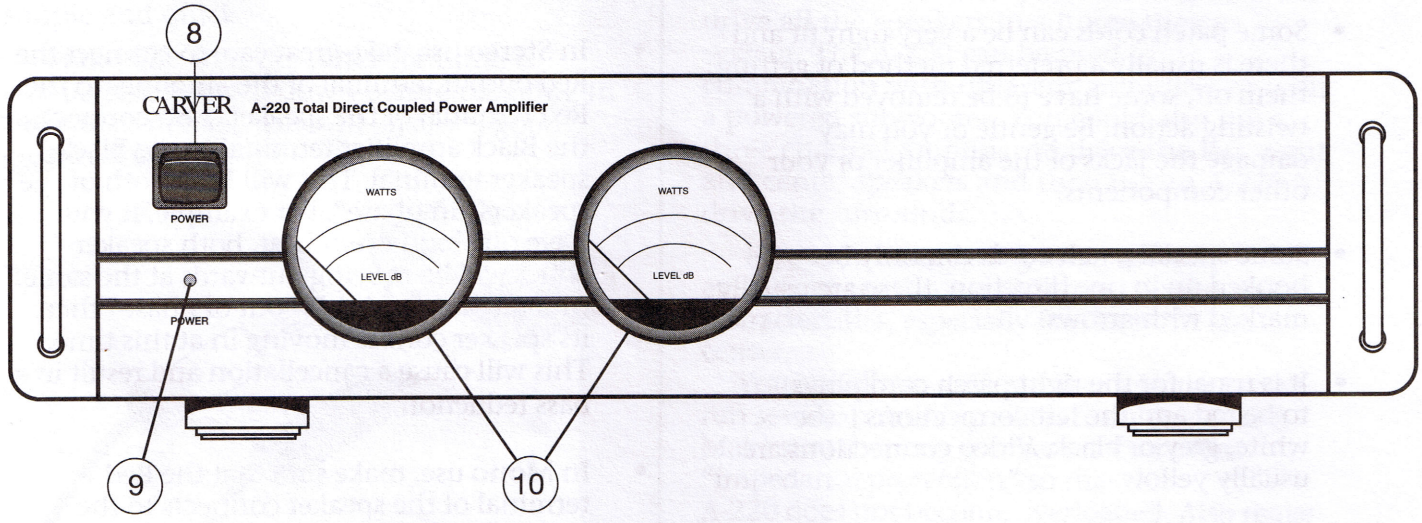


Figure 3. Front Panel

9. Connections

Amp-to-Preamp Connections

The source components, such as CD players, LaserDisc players and VCRs are connected to your preamplifier. This is the main controller which allows you to select the source and to adjust the volume.

Your preamplifier produces a *line level* signal that can be connected to the input of the A-220.

The A-220 is designed to be compatible with virtually any quality preamplifier, preamplifier/tuner, surround sound processor or THX controller. For the A-220 to reach full power output, your preamp should have an output voltage of 1 Volt (rms) or more.

Connection Cords

- Choose reliable hookup cables, also called patch cords or RCA cables. There are many different grades of cable available and you might want to ask your Carver dealer for advice. The main thing is that they should be fully shielded and as short as possible for the job. Try to layout the system so that most patch cords are less than six feet, perhaps most will be three or four feet long.
- Some patch cords can be a very tight fit and there is usually a preferred method of getting them off, some have to be removed with a twisting action. Be gentle or you may damage the jacks of the amplifier or your other components.
- Some special patch cords can only be hooked up in one direction, these are usually marked with arrows.
- It is usual for the right patch cord plugs to be red and the left connections to be white, grey or black. Video connections are usually yellow.

Amp-to-Speaker Connections

The A-220 amplifies the line level signals and they become *speaker level* signals, strong enough to drive most types of speakers.

Speaker wires

- Use thick wire for speaker connections. The greater the distance between your A-220 and speakers, then the larger the diameter of the wire.
  Use the following chart as a guide:

Wire Length	Wire Gauge
Up to 25 ft	16 gauge
25 to 40 ft.	14 gauge
40 to 60 ft.	12 gauge
60 to 100 ft	10 gauge

- You might try some standard speaker wires to start with, then upgrade at a later time if you want to fine tune the system.
- Make sure the speaker wires do not pass too close to any AC lines or sockets as this may cause interference.

Speaker Phasing

- In **Stereo** use, take great care to connect the Red output terminal of the amplifier to the Red terminal of the speaker. Also connect the Black amplifier terminal to the Black speaker terminal. This will keep both of the speakers "in phase". For example, if you have one loud drum beat, both speaker cones will be moving outwards at the same time. If one speaker is "out of phase" then its speaker cone is moving in at this time. This will cause a cancellation and result in a bass reduction.
- In **Mono** use, make sure that the Red terminal of the speaker connects to the Red-Left amplifier terminal. The Black speaker terminal connects to the Red-Right amplifier terminal. The amplifier Black terminals are not used in Mono mode.

Speaker wire connections

The A-220 output terminals are designed to accept bare speaker wires or standard banana plugs.

For bare wire connections:

1) Strip 1/2" of insulation off each wire and make sure to carefully twist all the fine strands together. If even one strand is loose and touches the opposite terminal, a short circuit will result.
2) Unscrew the amplifier terminals and insert the wire. Tighten the connection down onto the wire (finger tight only, DO NOT use a wrench).

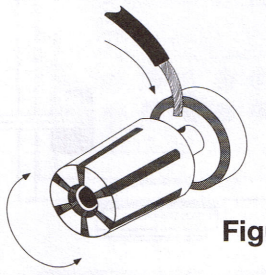


Figure 4. Bare Wire Connection

For banana plug connections:

The A-220 will accept banana plugs ,this makes connecting and disconnecting speakers simple and quick.

Make sure that the outer terminal is completely screwed down before plugging in the banana plugs, this will ensure a good electrical contact.

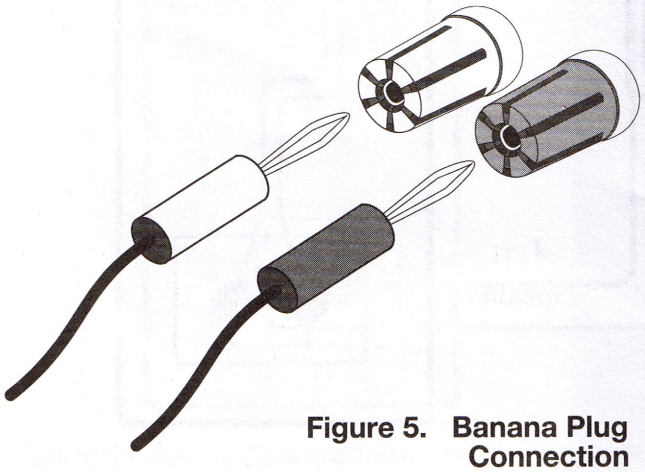


Figure 5. Banana Plug Connection

10. System Configurations

The following pages show some typical connections that you might make in your installation. They show how the inputs and outputs on the rear panel of the A-220 are connected to your preamplifier and speakers.

Stereo connections, Page 12

This shows the most common use for the A-220, each amplifier channel drives a single speaker with up to 110 watts of output power.

Mono connections, Page 13

The A-220 can be used in Mono, this will allow the power from both amplifier channels to be combined to drive a single speaker, up to 350 watts. This is also called bridged mono and is useful for driving a powerful single speaker such as a center channel or a subwoofer.

Page 14 shows two A-220 amplifiers being used in Mono to create a very powerful stereo system.

Home Theater use, Page 15

This shows three amplifiers being used to drive all the speakers in a home theater system. The A-220 can be used in combination with different amplifiers or with a powered subwoofer. You could also use a three channel amplifier to drive the left, right and center speakers and then use an A-220 to drive the surrounds.

If you are considering using several amplifiers, try those which have similar sound characteristics, especially for the front and center.

You could also use a speaker selector box to run several pairs of speakers from one A-220. Make sure that any speaker selector offers "impedance protection" so that the A-220 does not become overloaded. Also make sure that the selector box is capable of safely handling the full power output of 110 watts.

Stereo Connections

Your speaker impedance must be 4 Ohms or more when the A-220 is used in Stereo. This will prevent the amplifier from being overloaded and tripping its protection circuits.

1. Make sure that the Mono switch is pushed OUT.
2. Connect the left preamplifier output to the left amplifier input.
3. Connect the right preamplifier output to the right amplifier input.
4. Connect the Black (–) amplifier output terminals to the Black (–) terminals on the speakers.
5. Connect the Red (+) amplifier output terminals to the Red (+) terminals on the speakers.

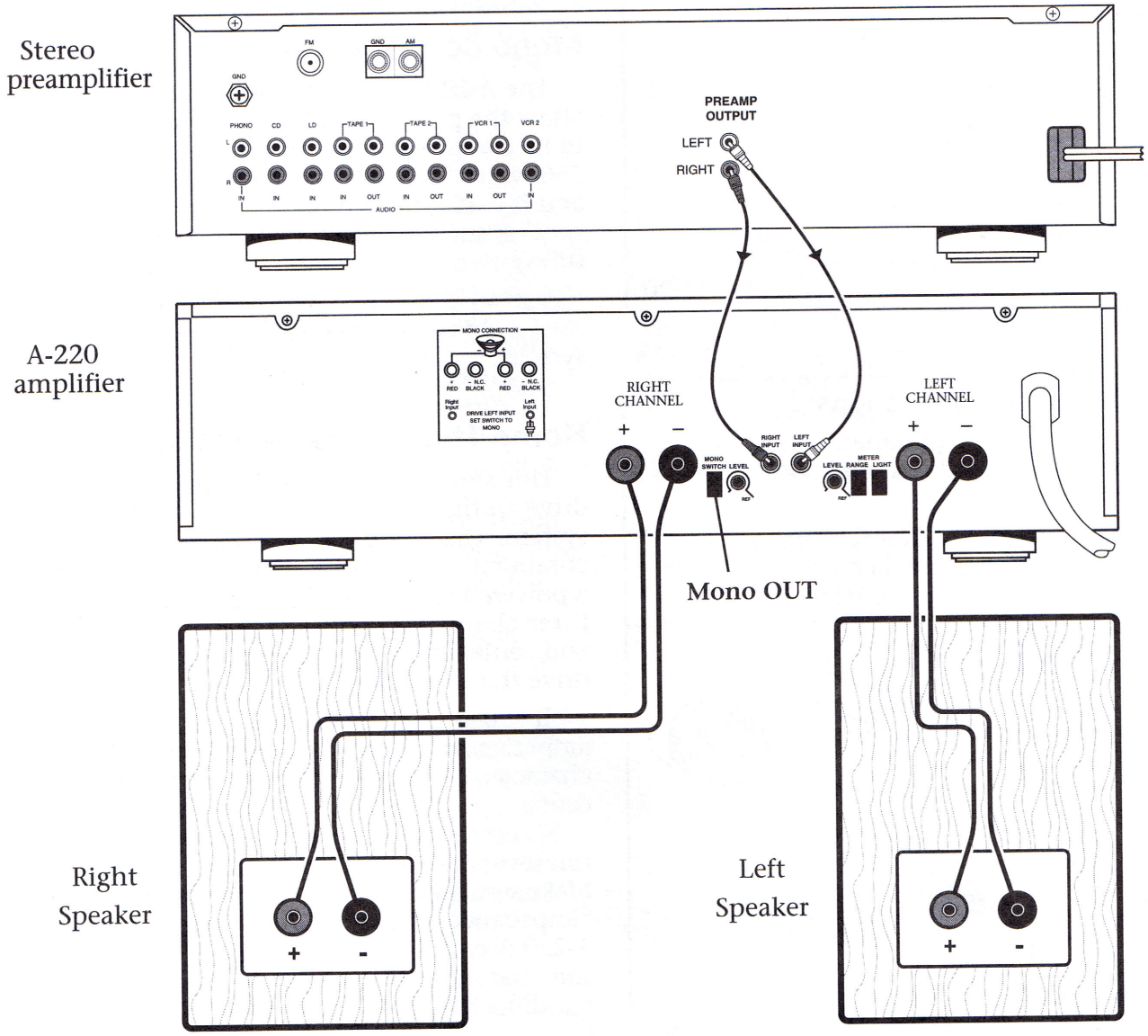


Figure 6. Normal Stereo Connections

Mono Connections

Your speaker impedance must be 8 Ohms or more when the A-220 is used in Mono.
This will prevent the amplifier from being overloaded and tripping its protection circuits.

1. Make sure the MONO switch is pushed IN.
2. Connect one output from the preamplifier to the LEFT input jack of the A-220.
   Do not connect anything to the Right input jack.
   Only the Left Level control will work in Mono mode.
3. Connect the Red (+) terminal of your speaker to the Red-LEFT amplifier output terminal.
4. Connect the Black (-) terminal of your speaker to the Red-RIGHT amplifier output terminal.

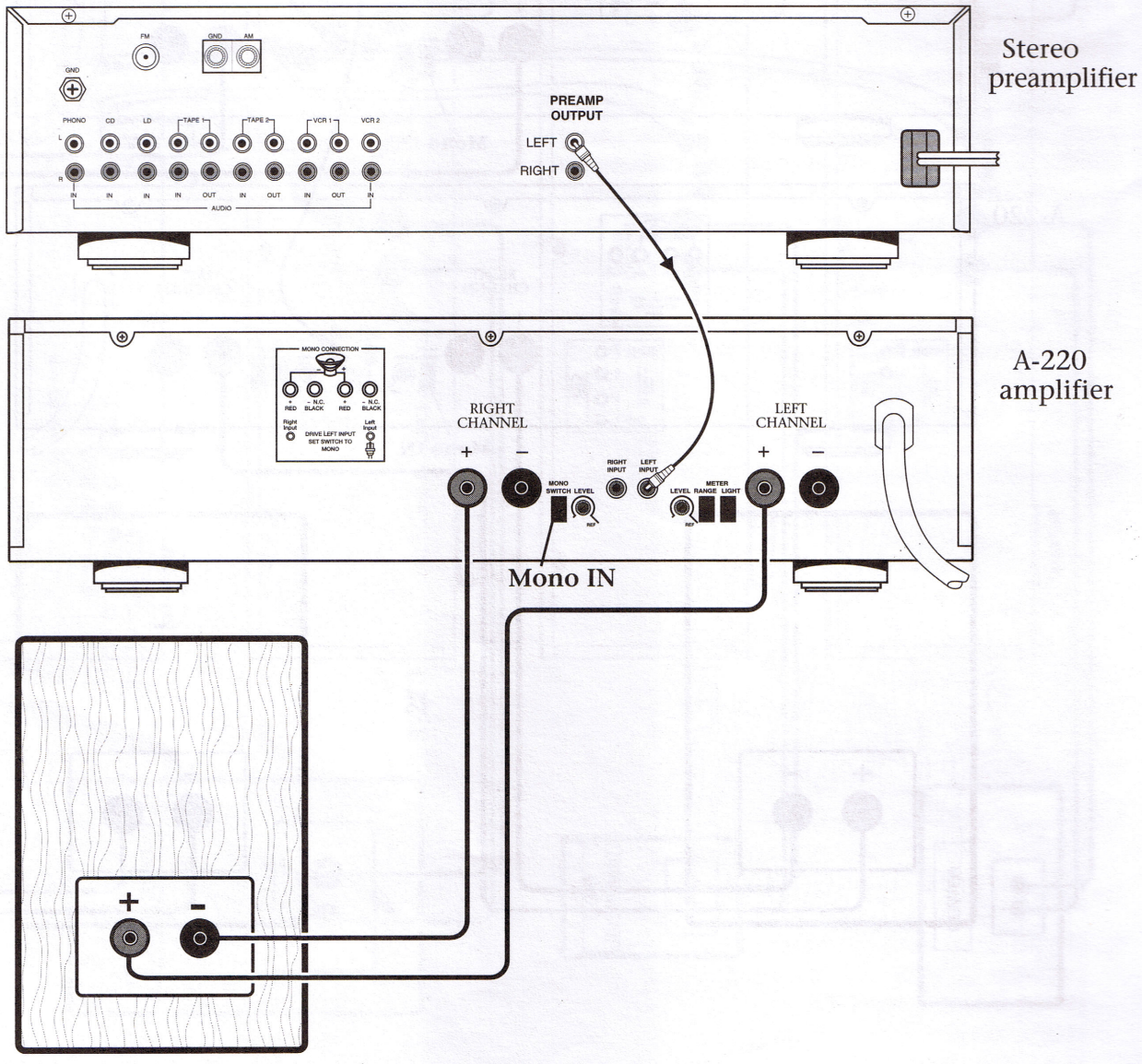


Figure 7. Mono Connections

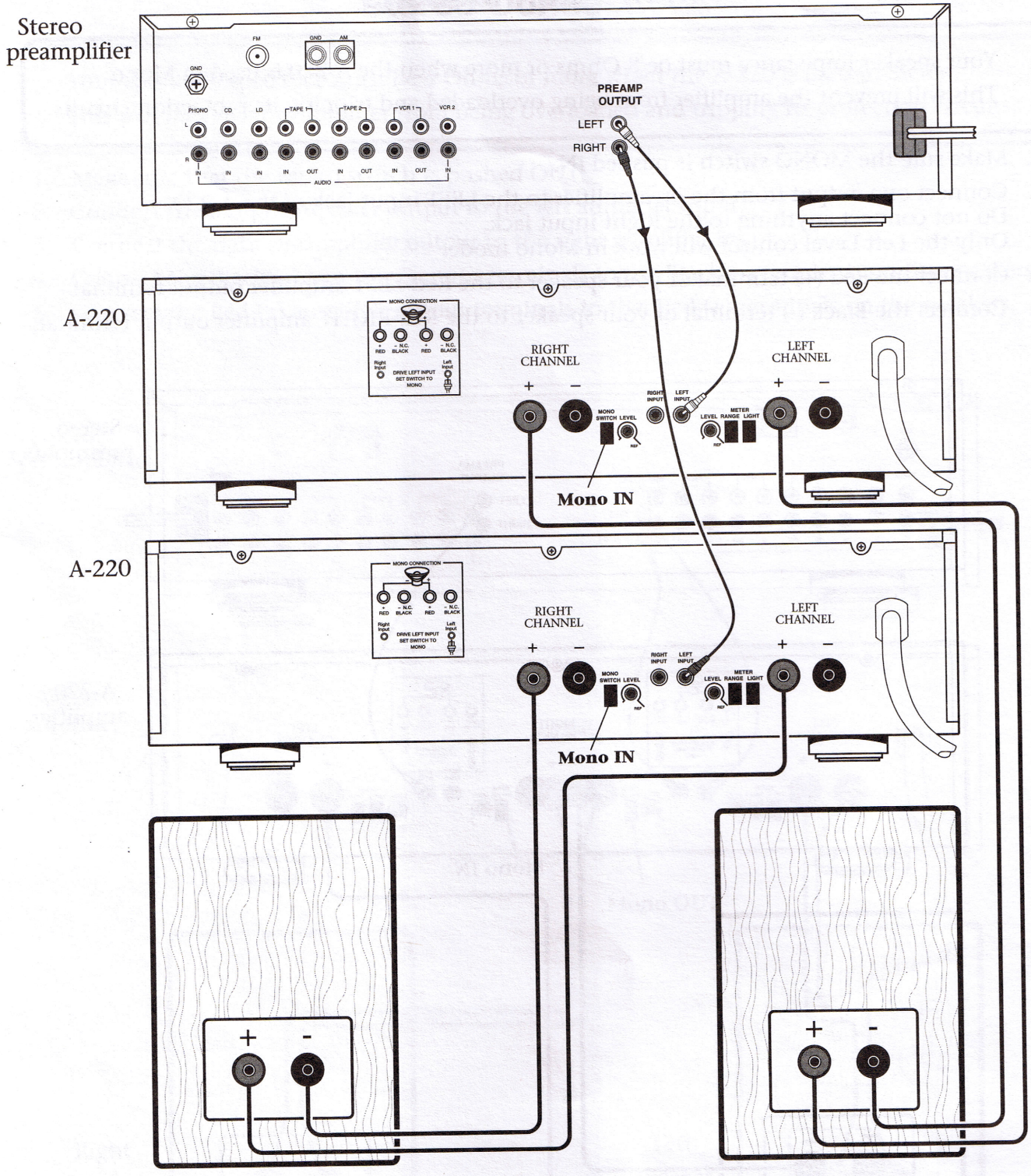


Figure 8. Typical Mono Operation, using two amplifiers

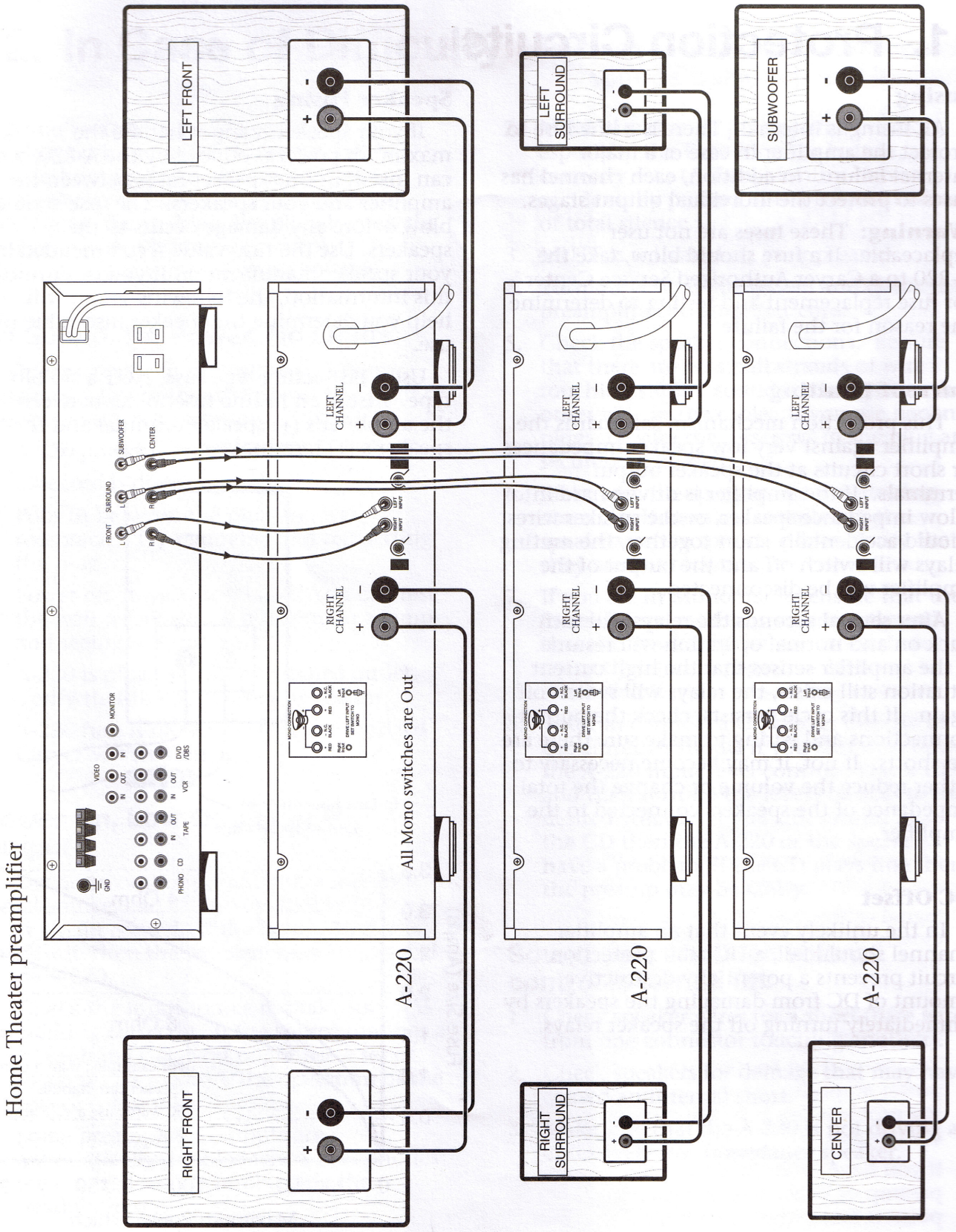


Figure 9. Typical Home Theater Surround Sound System, using three amplifiers

11. Protection Circuits

Fusing

All fusing is internal. There is a line fuse to protect the amplifier in case of a major internal failure. In addition, each channel has fuses to protect the individual output stages.

Warning: These fuses are not user replaceable. If a fuse should blow, take the A-220 to a Carver Authorized Service Center for fuse replacement and testing to determine the reason for the failure.

Current Limiting

This protection mechanism safeguards the amplifier against very low speaker impedances or short circuits at the speaker output terminals. If the amplifier is driven hard into a low impedance speaker, or the speaker wires should accidentally short together, the muting relays will switch off and the output of the amplifier will be disconnected.

After several seconds the relays will turn back on and normal operation will resume. If the amplifier senses that the high current situation still exists, the relays will switch off again. If this cycle persists, check the output connections and wiring to make sure there are no shorts. If not, it may become necessary to either reduce the volume or change the total impedance of the speakers connected to the amplifier.

DC Offset

In the unlikely event that an amplifier channel should fail, a DC fault protection circuit prevents a potentially destructive amount of DC from damaging the speakers by immediately turning off the speaker relays.

Speaker Fusing

If your speakers cannot handle the maximum power produced by the A-220, you can install in-line speaker fuses between the amplifier and your speakers. The fuse should blow before any damage occurs to the speakers. Use the fuse value recommended by your speaker manufacturer. If you can't find this information, the following graph will help you determine the speaker fuse value to use.

Use a fast-acting type fuse, NOT a slo-blo type. Install an in-line fuseholder between the amplifier's (+) speaker terminal and the speaker's (+) terminal.

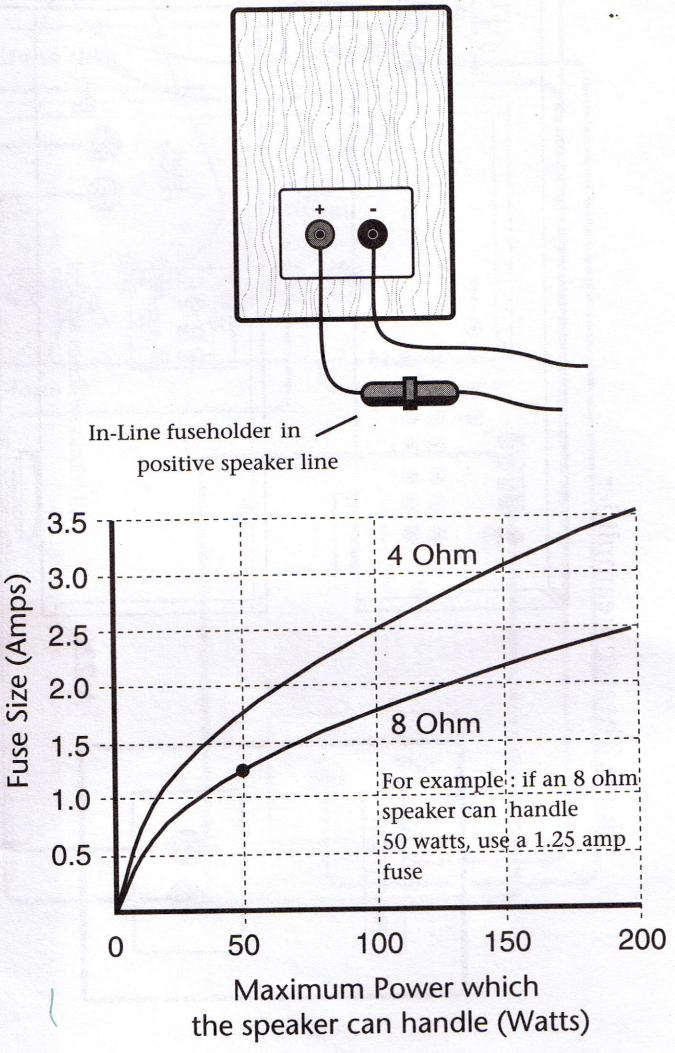


Figure 10. Fuse Protection for Speakers

12. In Case of Difficulty

If you're having trouble or suspect a problem with the A-220, try some simple troubleshooting before contacting your Carver dealer or Carver Technical Service. Most likely, the problem lies elsewhere in the system or with a button or control inadvertently left in the wrong position.

No Sound, No Power, No Lights.

This is usually an indication of a power supply problem, either the power line itself or the amplifier's power supply.

1. A-220 power is switched off.
2. Linecord is disconnected.
3. Poor fit between the plug and wall receptacle. Try removing and reinserting the plug.
4. Power off at wall receptacle. You can test the wall receptacle by plugging in a lamp and seeing if it turns on.
5. A-220 is plugged into a switched outlet. Verify that the outlet is switched on.
6. A-220 fuse is blown. Refer to authorized Carver Service Center.

Power On, Low Output or No Output

Low or no output problems are usually signal-source, bad cable or partial output short circuit related. If the items listed below check out, then the problem may be internal to the A-220.

1. Check the input source to make sure it is working correctly. If the source unit has a headphone jack, you might use a set of headphones to check the operation of the source component.

   Some preamplifier outputs are automatically disabled when headphones are plugged in. Try unplugging the headphones.
2. Make sure that all preamplifier controls, especially the Tape Monitor button, are correctly set. (A Tape Monitor button accidentally pushed in is a frequent cause of total silence.)
3. MUTE is activated on your preamp.
4. Turn off your audio system and check the preamplifier-to-amplifier cords.
5. Check the speaker connections. Be sure that there are no small strands of wire touching similar strands coming from the other wire in the cable. If you use banana plugs, be sure the setscrews in the plug are securely tightened.
6. Make sure the speakers are functioning correctly. If fuses are installed in the speakers or the speaker cables, verify that they are not blown.
7. If you are in Mono mode, ensure that the Stereo/Mono switch is set correctly and that the speaker cables are connected correctly (refer to page 13 – *Mono connections*).
8. You can connect a CD player directly to the amplifier inputs if you first turn down the A-220 input level controls. Play a CD and then turn up the level controls to the desired volume. If you still cannot hear the CD then the A-220 or the speakers have a problem. If the CD plays fine then the preamp may be faulty.

Sound cuts off when volume control is turned up.

1. Check speaker wires for a short (bare wire from one connector touching another).
2. Check speakers for damage that may have caused an internal short.
3. Make sure that the A-220 is not driving an excessively low impedance speaker.

continued .....

No sound in one channel or one channel has distorted sound.

1. Check the preamplifier's BALANCE control and make sure that it is in the center position.
2. Turn the A-220 off. Temporarily swap over the LEFT and RIGHT speaker cables at the amplifier's output terminals. After turning the unit back on, see if the same speaker is dead or distorted. If it is, the fault lies with that speaker cable or the speaker.
3. If speaker fuses are installed in the speakers or the speaker cable, verify that they are not blown.
4. If, after following step 2, the dead channel DOES switch to the other speaker, the problem may be in the A-220, the preamplifier, signal source or connecting cables. You can check for a possible cable problem by substituting a good set of cables.
5. Try swapping the patch cords between the preamplifier and A-220, connecting the left preamp output to the right amp input and the right preamp output to the left amp input. If the problem does change sides, the fault is in the preamplifier.

Playback is mixed with hum.

1. Defective or loose signal cables.
2. Make sure that each connector is securely seated into its socket.
3. Signal cables may have been routed too closely to AC cables, power transformers, motors or other EMI inducing device. Lighting fixtures such as dimmer switches or Halogen lamps are a common cause of interference
4. Try connecting another source to the same power amplifier inputs. If the hum stops, the problem lies with the original source component.
5. If you have cable TV connected to the preamp or VCR, try disconnecting it at the point it first enters the room. If the hum stops, contact your cable provider to check the cable ground.

Distortion

Distortion is usually caused by:

1. An input signal that is too low (where the preamplifier can't produce enough output),
2. Overdriving resulting in output clipping, or
3. Current limiting caused by excessively low load impedances.

Check the following:

1. If the setting of the preamplifier's volume control is high, it may not have sufficient output to drive the A-220. Your preamp should have an output of 1 volt or more for the A-220 to reach its full power output.
2. Check the speaker cables and verify that all connections are tight and that there are no stray strands of wire that could cause short circuits.
3. Verify that the total load impedance presented to the amplifier is not less than an average of 4 ohms.

13. Care and Service Assistance

Care

You'll want to wipe off the A-220's front panel and chassis from time-to-time with a soft, dry cloth. If you have something stubborn to remove, use a mild dish soap or detergent sparingly applied to a soft cloth. Don't use alcohol, ammonia, or other strong solvents.

Make every effort to keep your amplifier away from high external temperatures, moisture and airborne substances that can leave greasy deposits and dust.

Service Assistance

We suggest that you read the LIMITED WARRANTY completely to fully understand your warranty/service coverage. Also be sure to save the sales receipt in a safe place. It will be necessary for warranty service.

If your A-220 should require service, we suggest you contact the Dealer from whom you purchased your unit. Should the Dealer be unable to take care of your needs, please contact us at the Factory.

Have the model number and serial number ready and we will then give you detailed instructions on how to obtain prompt repair service.

If you have access to the Internet, you can check out the full line of Carver products and company announcements on our World Wide Web page (http://www.carver.com).

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Carver Corporation reserves the right to improve its products at any time. Therefore, specifications are subject to change without notice.

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