

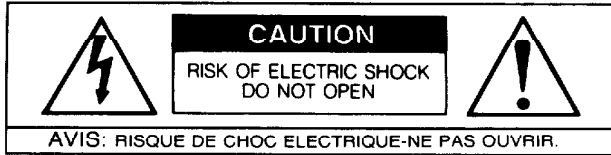
ADCOM[®]

**THREE/FOUR CHANNEL
HIGH CURRENT
POWER AMPLIFIER**

GFA-2535

THE FOLLOWING PRECAUTIONS AND SAFETY INSTRUCTIONS ARE REQUIREMENTS OF UL AND CSA SAFETY REGULATIONS

Warning: To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.



The graphic symbol of a lightning flash with an arrow point within a triangle signifies that there is dangerous voltage within the unit and it poses a hazard to anyone removing the cover to gain access to the interior of the unit. **Only qualified service personnel should make any such attempt.**



The graphic symbol of an exclamation point within an equilateral triangle warns a user of the device that it is necessary to refer to the instruction manual and its warnings for proper operation of the unit.



Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to a child or adult, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the unit. Any mounting of the device should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

Read all the safety and operating instructions before connecting or using this unit.

Retain this notice and the owner's manual for future reference.

All warnings on the unit and in its operating instructions should be adhered to.

All operating and use instructions should be followed.

Do not use this unit near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

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

The unit should be situated away from heat sources such as radiators, heat registers, stoves, or other devices (including amplifiers) that produce heat.

The unit should be connected to a power-supply outlet only of the voltage and frequency marked on its rear panel.

The power-supply cord should be routed so that it is not likely to be walked on or pinched, especially near the plug, convenience receptacles, or where the cord exits from the unit.

Clean unit only as recommended in its instruction manual.

The power-supply cord of the unit should be unplugged from the wall outlet when it is to be unused for a long period of time.

Care should be taken so that objects do not fall, and liquids are not spilled, into the enclosure through any openings.

This unit should be serviced by qualified service personnel when:

- A. The power cord or the plug has been damaged; or
- B. Objects have fallen, or liquid has been spilled, into the unit; or
- C. The unit has been exposed to rain, or liquids of any kind; or
- D. The unit does not appear to operate normally, or exhibits a marked change in performance; or
- E. The device has been dropped, or the enclosure damaged.

**DO NOT ATTEMPT SERVICING OF THIS UNIT YOURSELF.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

ATTENTION

POUR PREVENIR LES CHOCES ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

CAUTION

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.

CAUTION POWER LINES

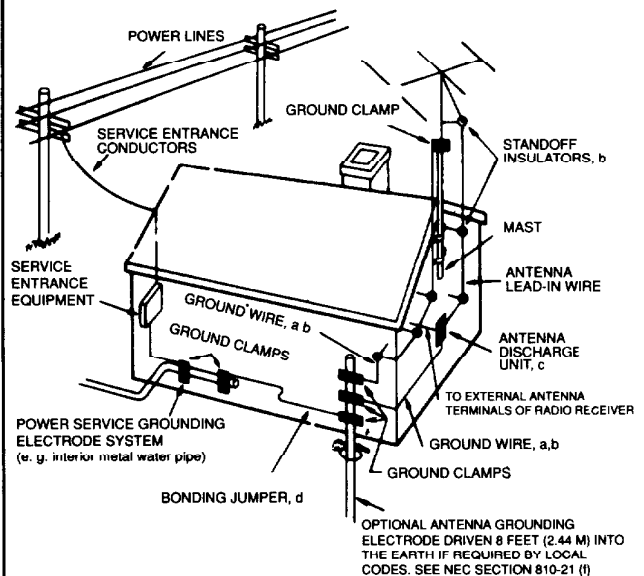
Any outdoor antenna must be located away from all power lines.

OUTDOOR ANTENNA GROUNDING

If an outside antenna is connected to your tuner or tuner-preamplifier, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

- a. Use No.10 AWG (5.3 mm²) copper, No.8 AWG (8.4 mm²) aluminum, No.17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as a ground wire.
- b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83 m) apart.
- c. Mount antenna discharge unit as close as possible to where lead-in enters house.
- d. Use jumper wire not smaller than No.6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21 (j).

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 - RADIO AND TELEVISION EQUIPMENT.



NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the National Electrical Code that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

FEATURES

The GFA-2535 is a three/four-channel amplifier tracing its lineage to the very successful and legendary GFA-535, but with improved overall performance. Its new design significantly reduces distortion in the amplifier when driving difficult loudspeaker loads. Among its features are:

- Triple - Darlington configuration of driver and output stages reduces the effects of speaker impedance variations on the open-loop gain of the amplifier. This keeps distortion products at a minimum when driving difficult loudspeaker loads.
- Lowered distortion products throughout the operating audio range of the amplifier circuits regardless of the impedance or phase angle of the load.
- High-grade, power-supply filter capacitors with low ESR for greater power delivery at low frequencies and lower overall high-frequency distortion.
- Gold-plated brass RCA input jacks.
- Separate thermal overload LED indicators for each amplifier on the front panel.
- High quality, banana-plug-compatible, multi-way binding posts for speaker outputs.
- Four "matched" power amplifiers ideal for use in both a bi-amplification configuration or surround-sound applications.
- Special power-supply and input circuitry to permit bridged operation of AMPLIFIER B.
- Identical input impedance and sensitivity in AMPLIFIER B whether used in the bridged or stereo mode to prevent level mismatch with AMPLIFIER A and consequent level differences in center-channel and/or subwoofer.
- Switch-selectable bridged/stereo operation on AMPLIFIER B.

We have designed the GFA-2535 to provide a level of performance which was previously unobtainable in its class of power amplifiers. We are certain it will become the reference standard in its category and at its price.

IMPORTANT NOTICE

ADCOM PROTECTION PLAN (U.S.A. ONLY)

ADCOM offers the enclosed valuable Limited Warranty. Please read the details on the Warranty Card carefully to understand the extent of the protection offered by the Warranty, its reasonable limitations, and what you should do in order to obtain its benefits.

Be sure to verify that the serial number printed on the rear panel matches the serial number on the outer carton. If any number is altered or missing, or if the ADCOM Warranty Card is not included in the carton, you should notify us immediately in order to insure that you have received a genuine ADCOM product which has not been opened, mishandled or tampered with in any way.

UNPACKING

Before your GFA-2535 left our plant, it was carefully inspected for physical imperfections and tested for all electrical performance parameters as a routine part of ADCOM's systematic Quality Control. This, along with full operational and mechanical testing, should insure a product flawless in both appearance and performance. After you have unpacked the GFA-2535, inspect it for physical damage. Save the shipping carton and all internal packing materials, as they are intended to reduce to a minimum the possibility of transportation damage, should the amplifier ever need to be shipped again. In the unlikely event damage has occurred, notify your dealer immediately and request the name of the carrier so that a written claim to cover shipping damages can be initiated.

THE RIGHT TO A CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY IN WRITING AND IF THE SHIPPING CARTON AND PACKING MATERIALS ARE NOT AVAILABLE FOR INSPECTION BY THE CARRIER. SAVE ALL PACKING MATERIALS UNTIL THE CLAIM HAS BEEN SETTLED.

INSTALLING THE GFA-2535

Although during normal home operation the internal heatsinks of the GFA-2535 will become barely warm, there are instances during high-level playback into low impedances which will cause the heatsinks to become much warmer than normal. Adequate air circulation, therefore, must be made available to insure proper heat dissipation from the heatsinks. You will insure the amplifier's long-term, trouble-free operation if you keep it away from external sources of heat, such as radiators or hot-air ducts, and provide reasonable ventilation. The GFA-2535 should never be placed with other heat-producing components in a cabinet or enclosure lacking free air flow. You should also provide adequate space around the amplifier to insure good air circulation.

If you require that the GFA-2535 be mounted in an enclosed cabinet, it is recommended that the rear panel of the cabinet be provided with slots at the bottom and top to allow air to circulate freely through the cabinet.

The top and bottom panels of the amplifiers' chassis have been provided with vents to allow necessary cooling of the heatsinks and other internal components. You should insure that these vents are not obstructed in any way.

If your system includes low-impedance loudspeakers which are difficult to drive, or if you will consistently demand high volume levels from the amplifiers and speaker systems, we suggest that you do not stack other components on top of the GFA-2535. Not only will the heat generated by the amplifiers affect the performance of equipment stacked on top of the GFA-2535, but the free flow of air through the ventilating slots provided in the chassis of the amplifiers may be partially obstructed.

If you observe these recommendations, the GFA-2535 will perform quite reliably in any reasonable environment. You should also pay attention to such normal considerations as protection from excessive dust and moisture. Occasional vacuuming of accumulated dust on the surfaces of the chassis, panel and around the ventilating slots should be all that is required.

WARNING

DO NOT EXPOSE THE AMPLIFIER TO RAIN, WATER OR MOISTURE OF ANY KIND.

For use in professional installations, the GFA-2535 may be mounted in a standard 19-inch rack using the optional RM-5 rack-mount adaptors available through ADCOM dealers. When you rack mount the GFA-2535, the use of a shelf to support the weight of the amplifier is strongly recommended.

CONNECTING THE GFA-2535

The optimal performance of the GFA-2535 will ultimately depend on the care with which you perform the connections between the amplifiers, preamplifiers and the loudspeakers. All the input- and output-signal connections should be made with only high-quality, low-loss, low-capacitance cables following the recommendations made in the individual sections below. Please refer to the rear-panel diagram to identify all the connector locations.

Since the GFA-2535 is in reality two stereo power amplifiers within one chassis, the following instructions, for the sake of simplicity, refer only to the connections to and from **one** of the amplifiers. Connections to and from the second amplifier are identical for stereophonic reproduction. AMPLIFIER B, however, can be "bridged" for more powerful **mono** operation with a subwoofer, special surround-sound installations or the like. For instructions on how to connect and operate AMPLIFIER B in the bridged, mono mode, please refer to the section STEREO/BRIDGED MONO INPUT/OUTPUT **S**.

RIGHT/LEFT INPUTS ①

The audio inputs to the GFA-2535 are through high-quality, gold-plated brass RCA jacks. They will accept standard RCA-type plugs, one for each channel, LEFT and RIGHT, usually supplied at the ends of interconnecting cables. To insure that the performance designed into the GFA-2535 is preserved, you should use the highest quality plugs and cable as are feasible. There are many cables which are designed specifically for these applications and your ADCOM dealer can be of help in selecting the best cable for your application. Whatever cable you finally select, it should have low capacitance. This is particularly important if you use a long run between the preamplifier and the amplifier or if your preamplifier, tuner-preamplifier, or source has a high output impedance. Generally speaking, a cable with a capacitance of around 100pF will work well.

The load impedance which the GFA-2535 inputs present to the source, preamplifier, or tuner-preamplifier, is 22,000 ohms. This load impedance results in minimal amplifier noise and is more than adequate for use with any associated source component.

To preserve the correct stereophonic effects, please be certain to connect the left output of the source, preamp, or tuner-preamplifier, to the RCA jack on the GFA-2535 labelled LEFT INPUT and the right output of the source or preamplifier section to the RIGHT INPUT jack.

RIGHT/LEFT STEREO OUTPUTS ②

The GFA-2535's connections to the loudspeakers are made through high-grade binding-post terminals ② located on the rear panel. These terminals will accommodate either bare wire, tinned wire, terminal pins or "banana plugs", both single and dual. These output terminals are color-coded RED and BLACK to indicate polarity. To insure correct stereo phasing, you must connect the RED output terminal (labelled "+") to the loudspeaker input terminal color-coded RED (or labelled POSITIVE, "+", POS, 8 OHMS or 4 OHMS). The BLACK binding post terminal on the amplifier (labelled "-") should be connected to the BLACK loudspeaker terminal (or labelled NEG, "-", C, COM, COMMON, G, or GROUND).

NOTE

The GFA-2535 is polarity correct; that is, it does **not** invert "phase". Any positive-going signal at its inputs will appear as a positive-going signal at its outputs.

The RIGHT STEREO OUTPUT should be connected to the right-channel loudspeaker, as you face the pair of loudspeakers, and the LEFT STEREO OUTPUT to the left-channel loudspeaker. These instructions presuppose that both amplifiers in the GFA-2535 will be used in the standard stereophonic configuration. If you use the GFA-2535 in other configurations, such as in surround-sound applications, etc., the standard reference to LEFT and RIGHT channels may not be applicable. In these instances, please refer also to the manual supplied with the surround-sound processor, DSP (Digital Signal Processor), etc., for more specific instructions on how to connect the ancillary rear or surround speakers.

Be certain, when AMPLIFIER B in the GFA-2535 is used in its stereophonic mode, the STEREO/BRIDGED MONO INPUT ③ switch is in the STEREO position. Otherwise, the amplifier will not operate in the stereo mode. You will amplify only the left channel through both outputs of the amplifier. For further clarification, please refer to the section STEREO/BRIDGED MONO INPUT/OUTPUT ③.

In order to insure that connections to the loudspeakers are correct, you must be able to identify each wire conductor of the loudspeaker cables at both ends of the cables. This is relatively easy to do since most loudspeaker cables consist of two parallel, stranded conductors in a flexible insulation, with a coding system for wire identification. Sometimes there is a colored "tracer" wrapped around one of the conductors; some cords have one of the conductors colored silver and the other copper; some have a "ridge" molded on the insulation on one of the conductors, while others are marked with a "+" and/or "-". Your ADCOM dealer also sells special loudspeaker interconnecting cables and these are almost always labelled with respect to polarity.

Generally speaking, when making connections to the loudspeakers from the amplifier, it is very important to use the correct type and size of wire in order to avoid unnecessary loss of amplifier power in the cable, reduction of amplifier damping factor (DF) and other undesirable conditions. For runs up to 12 feet, ordinary "zip" or lamp cord, made of AWG18 stranded wire and obtainable in a variety of insulation colors may be used. For runs up to 40 feet, AWG16 stranded wire

should be used to prevent power losses. For lengths over 40 feet and not exceeding 60 feet, use AWG14 stranded wire only. Runs exceeding 60 feet require the use of heavier conductors such as AWG12 stranded wire. If you find it difficult to obtain the correct-size wire for your specific connecting length, you can parallel two runs of the next smaller gauge of wire to keep wire resistance at a minimum. For example, if you require a run of 35 feet to your loudspeakers and AWG16 wire is not readily available, you can parallel two 35-foot lengths of AWG18 stranded wire for use with each speaker (you'll require a total of four 35-foot lengths in such an instance) and solder the two conductors of each wire making up each double cable, at both the speaker and amplifier ends, to insure good electrical and mechanical connections of the conductors.

Regardless of the cables you select to connect your loudspeakers, there are some other requirements which you should observe if you want to insure maximum performance from your amplifier. Most important is to make certain the wiring you have selected has as low a capacitance as possible. All amplifiers, particularly wide-bandwidth audio amplifiers, are susceptible to the capacitance cables present to their outputs at extremely high frequencies. This capacitance, in conjunction with the inductance of the wire itself and the reactive load of the loudspeakers, can create anomalies at ultrasonic frequencies, which, although inaudible, can affect performance in the audible range.

There are different ways to connect the wiring to the RIGHT/LEFT STEREO OUTPUTS ②. The methods used will depend on the specific type of connectors supplied with the loudspeakers, the speaker cables, etc. As a matter of course, we prefer to use double banana plugs because it is generally the most secure method of connection. Also, the plated-bronze springs of the banana plugs effect a self-cleaning action which insures the best contacts between the binding posts and the connector itself. There are "sockets" provided in the center of the binding posts' studs which permits secure seating of the banana plugs. Make certain, however, that the knurled section of the binding post is securely tightened before inserting the banana plugs firmly into the binding posts' sockets.

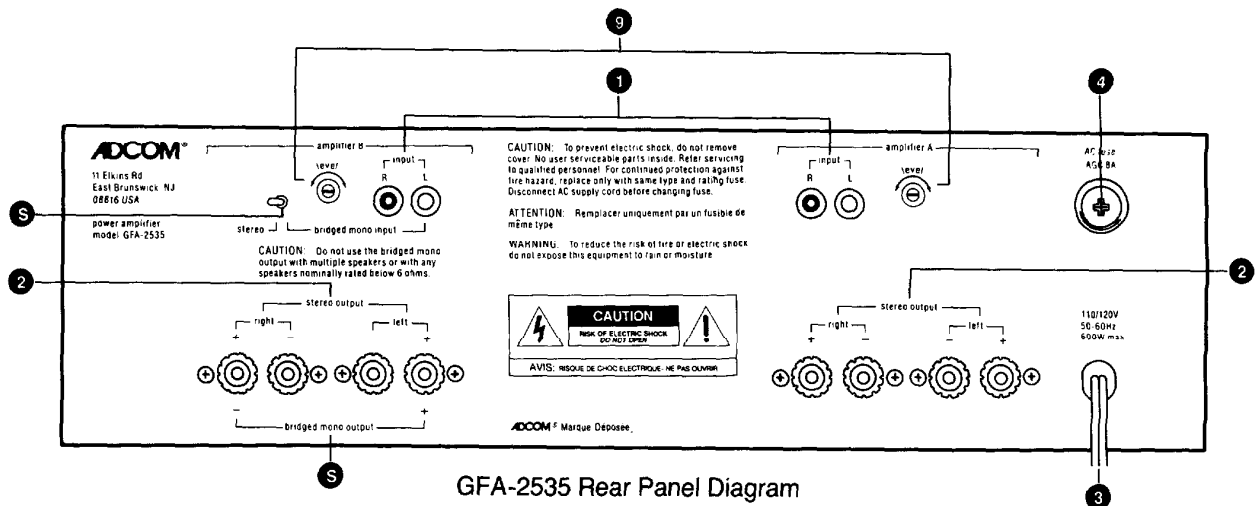
Additionally, when connecting the cables to the amplifier and loudspeakers, it is important that you "tin" the wires with good solder (preferably high-silver-content solder) in order to minimize contact resistance. Tinning prevents the build-up of surface compounds which form with copper wire and which increase its contact resistance. It is partly for this reason that double or single banana plugs are preferred. However, make sure that the cable ends are tinned before you make the cable connections to the banana plugs. Alternatively, you can use "crimped" pins or other lugs to insure lowest contact resistance at the connection to the amplifier and loudspeakers.

If you prefer to use other methods of connection, unscrew the insulated, knurled section of the binding post until the hole in the binding-post stud is accessible through the slot in the collar. You can then insert the bare or tinned wire, or terminal pin, through the hole. Turn the insulated knurled section of the binding post clockwise until the wire or connector is firmly secured. Finger pressure is sufficient and you should not use pliers, or other tools, which could damage or over-tighten the binding post assembly. The binding post has been designed in such a way that finger pressure is all that is needed to cause a "pinching" action among the different metal surfaces to insure a proper connection.

All loudspeaker systems having a nominal impedance down to 4 ohms can be connected to, and driven by, the GFA-2535. The GFA-2535 can drive these low impedances at more than adequate power levels with no difficulty. It should be noted here that many loudspeaker systems which are rated, nominally, at 4 ohms drop in impedance, in some parts of their frequency range, to as low as 2 ohms (and some others to even less than 2 ohms). You will not experience difficulties even with these very low-impedance loads unless you demand excessively high volume levels from the system.

In most normal applications, you can drive two sets of loudspeakers. You should note, however, that when loudspeakers are paralleled, the impedance presented to the amplifier is lower than the nominal impedance of each loudspeaker. In other words, if you parallel two 8-ohm sets of loudspeakers, the resultant impedance will be 4 ohms. If you parallel two sets of 4-ohm-impedance loudspeakers, the resultant impedance of the load will be 2 ohms. If 8-ohm and 4-ohm loudspeakers are paralleled, the resultant impedance will be about 2.6 ohms. In these last two situations, and depending on the lowest impedance of the nominally-4-ohm speakers, and when making excessive power demands from the amplifier, you may trigger the THERMAL PROTECTION ③ on the amplifier or blow one of the INTERNAL PROTECTION FUSES. See its respective section for more information. For convenient switching of multiple sets of speakers with impedance protection for the amplifier, you should consider the use of an ADCOM speaker selector. These are available from your ADCOM dealer.

Should you wish to verify that your loudspeakers are in-phase, once connections to the amplifier have been made, play a recording of solo voice with single-instrument accompaniment, at normal volume with the preamplifier's, or tuner-preamplifier's, mode switch in the mono or A+B position. Stand about three feet in front of the loudspeakers and exactly between them. If your loudspeakers are in-phase, the voice and accompanying instrument will appear to originate from a point directly in front of you and exact localization will be fairly easy. If you now move a foot or two to the left and the right of your previous position, the singer and instrumentalist will still appear to come from a point directly in front of you. If your loudspeakers are out-of-phase, the image of the performers will be imprecise and difficult to pinpoint. Depending on the room, the image may appear to be coming from behind you, or the sound will seem to surround you, and, as you move left and right from your center position, the origin of the sound will seem to change instantaneously. Should your connections have resulted in an out-of-phase condition, simply reverse the leads on **one** of the loudspeakers; that is, switch the wire connected to the positive input terminal of the loudspeaker to the negative terminal of the loudspeaker and vice-versa. Repeat the listening test with the mono signal to make sure you are correct in your initial evaluation. If you can now achieve a precise and stable image of the singer and instrument between the two speakers, make that connection to the speaker permanent.



INPUT LEVEL CONTROLS

The input signal of the two stereo amplifiers in the GFA-2535 can be attenuated independently by using the rear panel level controls ⑨. That is, the left and right output of amplifier A can be set to a different power level than the left and right output of amplifier B, with the same input level. This may be useful for balancing the sound stage in the Dolby surround sound system, or matching levels in a multi-amplifier type system.

Turning the level controls fully clockwise will set the amplifiers for maximum gain. This is usually a good place to start and in most systems you will not have to deviate from maximum gain. If there is need to trim levels, the higher levels should be decreased. This is done by turning the level control of the appropriate amplifier counter-clockwise until the desired level is achieved.

STEREO/BRIDGED MONO INPUT/OUTPUT S

AMPLIFIER B in the GFA-2535 can be used as a powerful mono amplifier to drive 8-ohm or 6-ohm impedance loudspeakers when in its "bridged" mode. No modification to the amplifier is necessary for operation in the bridged mode, nor are any additional accessories required.

To set the amplifier in bridged mono operation, flip the STEREO/BRIDGED MONO INPUT S switch into the BRIDGED MONO INPUT position. When in the bridged mono mode, input to the amplifier is made **only** through the LEFT INPUT RCA jack. The connection to the RIGHT INPUT jack should be removed since the right-channel input portion of the amplifier is inoperative.

Only a single loudspeaker is to be connected to AMPLIFIER B when in the bridged mono mode. Please note that connections made to the loudspeaker from AMPLIFIER B, when used in the bridged mono mode, are different from those made when the amplifier is used in the stereo mode. The **LEFT RED** output binding-post terminal (labelled BRIDGED MONO OUTPUT "+") should be connected to the loudspeaker input terminal color-coded RED (or labelled POSITIVE, "+", POS, 8 OHMS or 4 OHMS). The **RIGHT RED** output binding post terminal on the amplifier (labelled BRIDGED MONO OUTPUT "-") should be connected to the BLACK loudspeaker terminal (or labelled NEG, "-", C, COM, COMMON, G, or GROUND). All the wiring and phasing recommendations in the section RIGHT/LEFT STEREO SPEAKER OUTPUTS ② apply to this connection as well. Please note that if you want to insure correct stereo phasing with optimal bass response, you must observe these connections precisely.

Although AMPLIFIER B can generate a substantially greater amount of power in the bridged mono mode than when it is in its normal stereo mode, it requires the use of loudspeakers the nominal impedance of which does not drop below 6 ohms. It is not recommended that the GFA-2535 be used in the bridge mono mode into loudspeakers, or multiple loudspeaker loads, which drop in value substantially below 6 ohms. Otherwise, you may trigger the THERMAL PROTECTION ③ or blow one of the INTERNAL PROTECTION FUSES. Please refer to the section RIGHT/LEFT STEREO SPEAKER OUTPUTS ② for further clarification. A little known fact is that when any amplifier is operated in the bridged mode, the load is "split" between the two amplifiers in the bridged configuration. Therefore, an 8-ohm loudspeaker will be seen by the amplifier as if it were a 4-ohm load; a 6-ohm loudspeaker load will be seen by the amplifier as a 3-ohm load.

NOTE

If the connections described above are followed exactly, AMPLIFIER B will be polarity correct, that is, it will **not** invert "phase". Any positive-going signal at its input will appear as a positive-going signal at the louspeaker.

AC LINE CORD ③

The AC cord provides power to operate all the GFA-2535's circuits. Its plug can be inserted in a standard 120V/60Hz wall outlet or in the switched or unswitched outlet of a processor, preamplifier, or tuner-preamplifier. Its connection will be determined by your specific usage.

NOTE

The GFA-2535's power cord is supplied with a "polarized" AC plug as required by UL/CSA standards and National Electrical Code. To minimize the risk of electrical shock, and to insure minimal hum from the system, do not defeat the polarity-insuring feature of the plug (one wide blade and one narrow blade). To prevent electrical shock, do not use this polarized plug with an extension cord or receptacle, or other outlet, unless the blades can be fully inserted to prevent blade exposure.

AC LINE FUSE ④

The AC LINE FUSE protects the electronic circuits of the GFA-2535. This fuse, normally, will blow only if there is an overload within the GFA-2535. In some instances, however, it can also be blown by demanding excessively high power into extremely-low-impedance loads. Since this fuse has been designed to protect the electronic circuits of the GFA-2535, it is recommended that it be replaced only with one of the fuses listed in the table below. Please note that the fuses listed are for use with operation of the amplifier on 120VAC/60Hz. For the correct fuse values to operate the GFA-2535 on other voltages and frequency, please consult the Service Manual for this amplifier available from the ADCOM Technical Service Department.

NOTE

Before checking or replacing a blown fuse, make certain you **UNPLUG THE POWER ③ CORD FROM THE AC WALL OUTLET TO PREVENT POSSIBLE ELECTRICAL SHOCK.**

AC LINE FUSES

BUSSMAN	AGC-8/250V
LITTELFUSE	3AG312008/250V
BEL	3AG 8A/250V

NOTE

The fuses listed above, and their time-current blowing points, have been carefully selected and thoroughly tested to deliver optimal performance while still accomplishing their protective functions. Replace the AC LINE FUSE ④ only with one of the fuses listed above. **DO NOT USE ANY SUBSTITUTE FUSES WITH DIFFERENT RATINGS, TIME-CURRENT CURVES OR VALUES.** Failure to observe this precaution may cause serious damage to the amplifier circuits, **MAY CREATE A FIRE HAZARD, AND MAY VOID YOUR WARRANTY.**

AC ON/OFF SWITCH ⑤

The AC ON/OFF switch ⑤ controls power to the power transformers and circuits of the GFA-2535. Whenever the GFA-2535 is energized, the red power ⑥ LED will glow. Press the switch to energize the GFA-2535. Release the switch to turn the unit off.

POWER ⑥ LED

This LED will glow whenever the AC ON/OFF switch ⑤ is turned on and the GFA-2535 is energized. If the AC LINE FUSE ④ blows, the POWER ⑥ LED will cease to glow.

The POWER ⑥ LED indicates that there is AC voltage being fed to the amplifiers, but it does not denote that all the amplifier's circuits are in operation. If, for example, you have blown the INTERNAL PROTECTION FUSES, the amplifiers will not operate - that is, the amplifiers will not produce any audio signal - even though the POWER ⑥ LED glows. Similarly, if the THERMAL PROTECTION LED ⑦ LEDs glow, the amplifier will not produce sound even though the POWER ⑥ LED still glows.

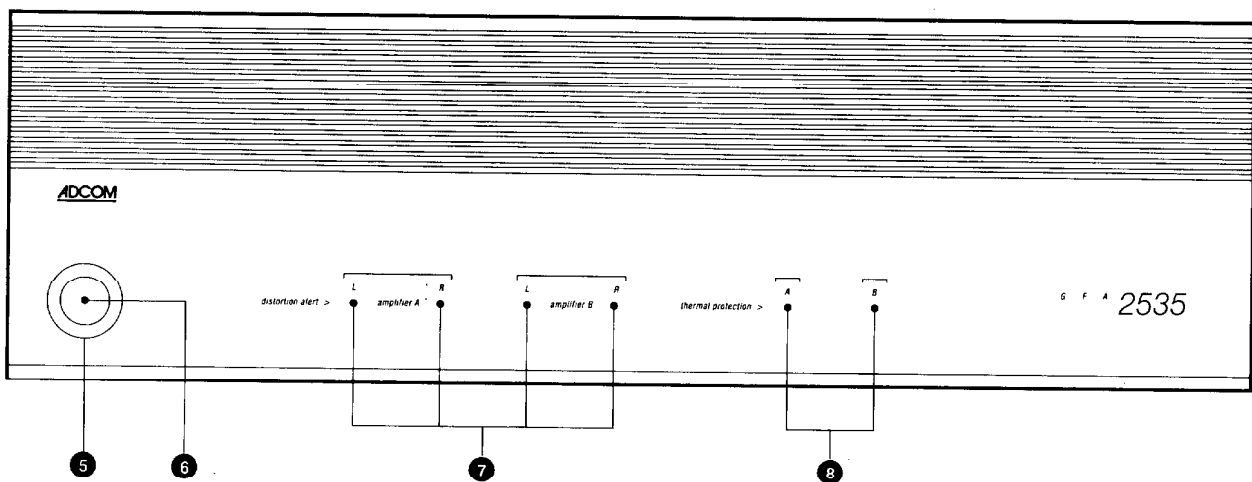
Additionally, the internal power transformers are provided with a thermostat which will interrupt power into the transformer if its temperature exceeds 125°C. This high temperature will seldom, if ever, be encountered unless the amplifier is subjected to abnormal conditions, such as operations into loads less than 4 ohms at very high listening levels, etc. If the AC line fuse ④ is not blown, the POWER ⑥ LED is out, the THERMAL PROTECTION ⑦ is out and the INTERNAL PROTECTION FUSES are intact, this would indicate that the thermostat within the transformer has opened.

Once the temperature within the transformer(s) decreases to a normal level, the thermostat will reset itself and normal operation will resume. If you are to avoid continually tripping the thermostat in the transformer(s), you must reduce the sound level demands into such low impedances, rectify the load-impedance condition, or both.

For a more detailed description on the operation of the THERMAL PROTECTION **8** LEDs circuit and the INTERNAL PROTECTION FUSES, please refer to its specific section below.

INSTANTANEOUS DISTORTION ALERT **7** LEDs

The INSTANTANEOUS DISTORTION ALERT circuit is a unique ADCOM distortion-detection system which reads all forms of non-linear distortion such as THD, IM, slew-induced, "clipping", etc. The INSTANTANEOUS DISTORTION ALERT **7** LEDs will light when distortion reaches 1% regardless of the impedance, or the phase angle and the reactance of the loudspeakers which the amplifier is driving. Sometimes, when the amplifier is in use, the LEDs may occasionally flicker under high-volume listening, particularly if you are driving low impedances. This flickering is no cause for concern. The LEDs are simply warning you that the amplifier is approaching its maximum power output into the specific loudspeakers which you are using. If, however, the INSTANTANEOUS DISTORTION ALERT LEDs glow brightly or are on most of the time during listening, you are overdriving the amplifier and should turn down your volume control to reduce the listening-level demands, or you may blow the INTERNAL PROTECTION FUSES, cause the THERMAL PROTECTION **8** (q.v.) to be activated or, in extreme cases, even cause damage to your loudspeakers.



GFA-2535 Front Panel Diagram

THERMAL PROTECTION **8** LEDs

AMPLIFIER A and AMPLIFIER B are provided with a thermal protection circuit which will shut down either amplifier if its heatsink temperature reaches 85°C. The individual THERMAL PROTECTION **8** LED will light whenever the thermal protection circuit on either amplifier, or on both amplifiers, has been triggered and the amplifier is inoperative. The thermal protection circuitry will typically be triggered by very high-power demands into impedances much lower than the amplifier is capable of driving at those levels. If either amplifier's output through the loudspeaker(s) ceases abruptly, and its THERMAL PROTECTION **8** LED glows, you will know that its heatsink temperature has become uncomfortably high and the circuitry is protecting the amplification devices. Please note that its POWER **6** LED will remain on and the amplifier will still be energized.

Once the temperature of the heatsink(s) drops to a safe operating level, the amplifier will automatically return to operation.

If the amplifier ceases to operate and both the POWER **6** LED and the THERMAL PROTECTION **8** LED are **off**, the condition may indicate that the AC LINE FUSE **4** has blown. Please refer to the section titled AC LINE FUSE **4** for instructions on replacing this fuse.

NOTE

ACTIVATION OF EITHER THERMAL PROTECTION CIRCUITRY IN THE GFA-2535 IS AN INDICATION THAT THE AMPLIFIER HAS BEEN OVERDRIVEN OR THAT THE LOAD THE LOUDSPEAKERS ARE PRESENTING TO THE AMPLIFIER IS UNREASONABLY LOW. IF YOU WISH TO PREVENT RECURRENT ACTIVATION OF THE THERMAL PROTECTION CIRCUITRY, YOU MUST REDUCE THE VOLUME LEVEL DEMANDS OR RECTIFY THE LOAD-IMPEDANCE CONDITION WHICH MAY BE CAUSING ACTIVATION OF THIS CIRCUITRY, OR BOTH.

There is an additional protection provided to the GFA 2535 in the form of INTERNAL PROTECTION FUSES for the DC rails on each amplifier. These fuses will blow if excessive current demands are made from the amplifier, either long-term or short-term, and are meant to protect not only the loudspeakers, but the power output devices as well.

If either amplifier ceases to operate, particularly during high-level passages, or long-term high-volume playback, and the POWER LED glows while the THERMAL PROTECTION LED is out, the chances are that one or both of the INTERNAL PROTECTION FUSES on that amplifier are blown.

Your ADCOM amplifier is designed to activate its protective devices reliably, particularly if the amplifier is carelessly operated well beyond its limitations. Other types of protection circuits, beyond the methods used in the GFA-2535 amplifier, usually result in deterioration of the audio performance of the amplifier.

While the GFA-2535 will operate reliably under every normal condition, no amplifier is impervious to abuse. There are conditions which must always be avoided if the amplifier is to operate reliably and if triggering of protective devices is to be avoided. The preceding is particularly true of amplifiers which have extremely-wide audio bandwidth, such as ADCOM amplifiers. Among the actions which must be avoided, if damage to the amplifier or to the loudspeakers being used is to be prevented, are undertakings such as connecting the inputs or outputs to or from the amplifier while the amplifier is ON; or using what has been commonly termed the "thumb test" — that is, touching the center pin of the RCA jack on one end of the audio interconnecting cable while the other end is plugged into the amplifier and the amplifier is ON.

In the event that the INTERNAL PROTECTION FUSES on the DC rails need to be replaced, only one of the fuses listed in the table below should be used. Please note that the fuses listed in the table, and their time-current blowing points, have been carefully selected and thoroughly tested to deliver optimal performance while still accomplishing their protective functions. Replace these fuses, individually, only with the specific types listed. **DO NOT USE ANY SUBSTITUTE FUSES WITH DIFFERENT RATINGS, TIME-CURRENT CURVES OR VALUES.** Failure to observe this precaution may cause serious damage to the amplifier circuits, **MAY CREATE A FIRE HAZARD, AND MAY VOID YOUR WARRANTY.**

INTERNAL PROTECTION FUSES FOR DC RAILS

BUSSMAN	AGC-8/250V
LITTELFUSE	3AG312008/250V
BEL	3AG 8A/250V



THERE ARE POTENTIALLY LETHAL VOLTAGES WITHIN THE GFA-2535 AMPLIFIER WHICH WILL BE ACCESSIBLE ONCE ITS TOP COVER IS REMOVED. DO NOT ATTEMPT TO REPLACE THE INTERNAL PROTECTION FUSES ON THE DC RAILS. REFER SERVICING ONLY TO QUALIFIED SERVICE PERSONNEL. THE FUSES LISTED ARE ONLY MEANT TO PROVIDE YOU WITH THE CORRECT TYPE FUSE FOR REPLACEMENT. THIS IS NOT MEANT TO SUGGEST THAT YOU UNDERTAKE THE REPLACEMENT YOURSELF. DO NOT UNDERTAKE ANY SERVICE PROCEDURES IN THE GFA-2535 UNLESS YOU ARE A TECHNICALLY QUALIFIED SERVICE PERSON.

CARING FOR YOUR GFA-2535

Great care has been taken by ADCOM to insure that your amplifier is as flawless in appearance as it is electronically. The front panel is a heavy-gauge, high-grade aluminum extrusion carefully finished and anodized for durability. The chassis, top cover and rear panel are of heavy-gauge steel, both painted and baked. If the front panel, top or sides should become dusty or fingerprinted, they can be cleaned with a soft lintless cloth, slightly dampened with a very mild detergent solution or glass cleaner.

NOTE

DO NOT SPRAY OR USE LIQUIDS OF ANY KIND ON THE SURFACES OF THE GFA-2535. DO NOT EXPOSE THE AMPLIFIER TO RAIN, WATER OR MOISTURE OF ANY KIND.

SERVICING

ADCOM has a Technical Service Department to answer questions pertinent to the installation and operation of your unit. In the event of difficulty, please contact us for prompt advice. If your problem can not be resolved through our combined

efforts, we may refer you to an authorized repair agency, or authorize return of the unit to our plant. To aid us in directing you to a convenient service station, it would be helpful if you indicate which major city is accessible to your home.

Please address mail inquiries to:
 ADCOM Service Corp.
 11 Elkins Road
 East Brunswick, NJ 08816
 U.S.A.

Phone or Fax Inquiries:
 Monday through Friday
 9:00AM to 4:00PM Eastern Time
 Phone Number: 908-390-1130
 Fax Number: 908-390-9152

For fax inquiries, please include a return fax number for the reply.

When calling or writing about your GFA-2535, be sure to note and refer to its model and serial numbers as well as the date of purchase and the dealer from whom it was purchased. In the event the unit must be returned to our plant for service, you will be instructed on the proper procedure when you call or write for a Return Authorization. UNDER NO CIRCUMSTANCES SHOULD YOUR UNIT BE SHIPPED TO OUR PLANT WITHOUT PRIOR AUTHORIZATION, OR PACKED IN OTHER THAN ITS ORIGINAL CARTON AND FILLERS.

If the original shipping carton and its fillers have been lost, discarded, or damaged, a duplicate carton may be obtained from our Service Department for a nominal charge. Inquire as to the procedure when requesting a Return Authorization.

Always ship PREPAID VIA UNITED PARCEL SERVICE (UPS) OR OTHER APPROVED CARRIER. DO NOT SHIP VIA PARCEL POST, since the packing was not designed to withstand rough Parcel Post handling. FREIGHT COLLECT SHIPMENTS CAN NOT BE ACCEPTED.

GFA-2535 SPECIFICATIONS

Power Rating (To FTC Requirements)

60 watts continuous average power into 8 ohms at any frequency between 20Hz and 20kHz with both channels driven at less than 0.06% THD.

90 watts continuous average power into 4 ohms at any frequency between 20Hz and 20kHz with both channels driven at less than 0.09% THD.

200 watts continuous average power into 8 ohms at any frequency between 20Hz and 20kHz at less than 0.09% THD, bridged, AMPLIFIER B only.

IM Distortion (SMPTE)

1 watt to 60 watts into 8 ohms ≤ 0.05%
 1 watt to 90 watts into 4 ohms ≤ 0.07%

IM Distortion (CCIF, Any Combination from 4kHz to 20kHz)

60 watts into 8 ohms ≤ 0.01%
 90 watts into 4 ohms ≤ 0.02%

THD + Noise at 60 Watts into 8 Ohms

20Hz 0.01%
 1kHz 0.009%
 10kHz 0.015%
 20kHz 0.025%

THD + Noise at 90 Watts into 4 Ohms

20Hz 0.02%
 1kHz 0.02%
 10kHz 0.04%
 20kHz 0.06%

IM Distortion, Bridged (SMPTE), AMPLIFIER B, Only

1 watt to 200 watts into 8 Ohms ≤ 0.09%

IM Distortion, Bridged (CCIF, Any Combination from 4kHz to 20kHz), AMPLIFIER B, Only

200 watts into 8 Ohms ≤ 0.02%

THD + Noise at 200 Watts into 8 Ohms, Bridged, AMPLIFIER B, only

20Hz 0.02%
 1kHz 0.02%
 10kHz 0.04%
 20kHz 0.06%

Frequency Response @ 1 Watt into 8 Ohms	..... +0, -0.5db
10Hz to 20kHz .....	..... 7Hz to 150kHz
Power Bandwidth (-3dB) .....	..... 1.5dB
Dynamic Headroom into 4 Ohms .....	..... ≥ 100dB
Signal-to-Noise Ratio, "A" Weighted	..... ≥ 100dB
60 watts into 8 ohms .....	..... 27dB
Gain .....	..... 22,000 ohms
Input Impedance .....	..... 1.0V rms
Input Sensitivity	..... 130mV rms
60 watts into 8 ohms .....	..... 1.75V rms
1 watt into 8 ohms .....	..... 130mV rms
Input Sensitivity, Bridged, AMPLIFIER B, Only	..... 1.75V rms
200 watts into 8 ohms .....	..... 130mV rms
1 watt into 8 ohms .....	..... > 400
Damping Factor	..... > 400
20Hz to 20kHz .....	..... 2.3us
Rise Time	..... 2.3us
5kHz, 60V peak-to-peak square wave, 20% to 80% .....	..... 66 transistors, 16 diodes, 2 diode bridges
Semiconductor Complement .....	..... 66 transistors, 16 diodes, 2 diode bridges
Power Consumption (Continuous, Both Channels Driven)	..... 65VA
Quiescent .....	..... 960VA
Maximum .....	..... 510VA
60 watts into 8 ohms .....	..... 840VA
90 watts into 4 ohms .....	..... 840VA

GENERAL

Power (available in 220-240VAC on special order) .....	..... 110-120VAC/50-60Hz
Chassis Dimensions .....	..... 5" (127mm) x 17" (432mm) x 13" (330mm)
Maximum Dimensions .....	..... 5-½" (140mm) x 17" (432mm) x 14" (356mm)
Weight .....	..... 32 lbs.(15kg)
Weight, Packed 35 lbs.(16kg)

Specifications subject to change without notice.

ADCOM®

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