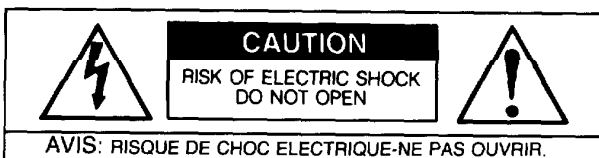


ADCOM[®]
HIGH CURRENT
POWER AMPLIFIER
GFA-545 II

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 CHOCS 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

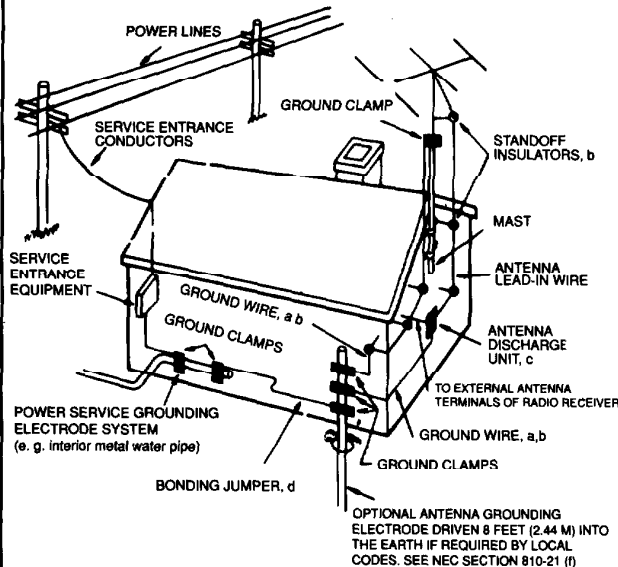
Any outdoor antenna must be located away from all power lines.

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, size of grounding conductors, location of 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.

INTRODUCTION

Please read thoroughly these operating instructions for the GFA-545II before connecting or attempting to operate the unit. The installation and operation of the GFA-545II are described in the following pages. We sincerely hope you will value and enjoy the considerable attention we have given its design and construction. This manual has been written to help you understand the correct operation of the GFA-545II. Please read it carefully to fully comprehend all features and functions and thereby derive maximum performance from its use in your system. It is a good idea to keep this manual handy for future reference.

FEATURES

The GFA-545II is a completely upgraded version of the famous GFA-545. While it retains the conservative power-output rating of the original GFA-545, its redesign significantly reduces distortion in the amplifier when driving difficult loudspeaker loads. Among its design improvements are the following:

- Triple-Darlington output stage 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.
- Larger potted transformer provides better overall regulation for driving lower impedances at high power levels; also provides greater peak-current capability into loudspeaker loads.
- No electrolytic capacitors in the low-frequency signal path or feedback-loop path. Only precision non-polarized capacitors are used.
- Lowered distortion products throughout the operating audio range of the amplifier circuits regardless of the impedance or voltage/current phase angle of the load.
- Addition of a servo circuit minimizes DC-offset voltage at the loudspeaker outputs; this insures that there is no woofer "biasing" with attendant low-frequency distortion.
- Higher-grade power-supply filter capacitors with much lower ESR for greater power delivery at low frequencies and lower overall high-frequency distortion.
- Larger heatsinks for each channel for greater heat dissipation and better temperature and dynamic bias tracking. Greater thermal stability is thereby insured.
- More cooling vents on top cover and chassis for greater cooling efficiency and cooler operation into lower impedances.
- High-quality, gold-plated brass RCA input jacks with Teflon insulators.
- Upgraded gold-plated brass, 5-way binding-posts for speaker outputs.
- Thermal overload indicator LED on front panel.

We have designed the GFA-545II to deliver a significant improvement in performance over its predecessor, the GFA-545, which served for several years as the reference product in its price and power category.

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-545II 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-545II, 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-545II

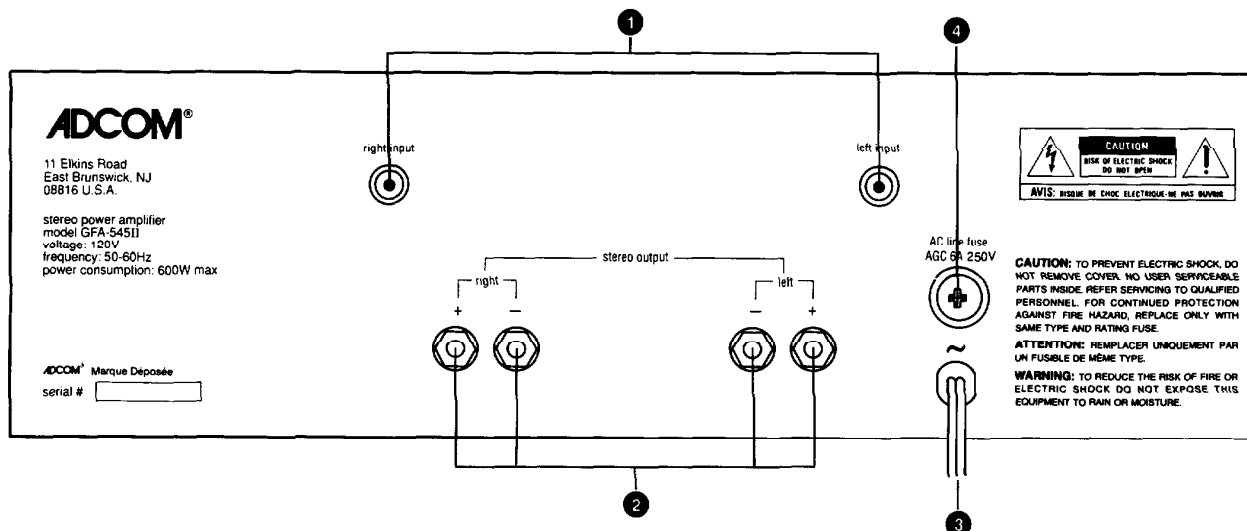
During normal home operation the internal heatsinks of the GFA-545II will become barely warm; however, there are instances during high-level playback into low impedances when the heatsinks will become much warmer than usual. Therefore, adequate air circulation must be made available to insure proper 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-545II 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-545II 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 amplifier's chassis have been provided with vents to allow the 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 amplifier and speaker system, we recommend that you do not stack other components on top of the GFA-545II. Not only will the heat generated by the amplifier affect the performance of equipment stacked on top of the GFA-545II, but the free flow of air through the ventilating slots provided in the chassis of the amplifier may be partially obstructed.

If you observe these recommendations, the GFA-545II 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, panels and around the ventilating slots should be all that is required.



GFA-545II Rear Panel Diagram

CONNECTING THE GFA-545II

The optimal performance of the GFA-545II will ultimately depend on the care with which you perform the connections between the amplifier, preamplifier 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 relevant sections below. Please refer to the rear-panel diagram to identify all the connector locations.

NOTE

WHENEVER CONNECTIONS TO OR FROM THE GFA-545II ARE BEING MADE, BE CERTAIN THAT THE AC ON/OFF SWITCH ⑤ ON THE AMPLIFIER IS IN ITS OFF POSITION, THE AC CORD ③ OF THE AMPLIFIER IS DISCONNECTED FROM THE AC WALL OUTLET AND THAT ALL ASSOCIATED COMPONENTS ARE TURNED OFF.

RIGHT/LEFT INPUT ①

The audio inputs to the GFA-545II are through two high-quality, gold-plated brass RCA jacks with Teflon insulation to minimize high-frequency losses, noise, etc. 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-545II 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, or tuner-preamplifier, has a high output impedance. Generally speaking, a cable with a capacitance of around 100pF will work well.

The load impedance which the GFA-545II inputs present to the source preamplifier, or tuner-preamplifier, is 100,000 ohms. This load impedance results in minimal amplifier noise and is more than adequate for use with any associated source component regardless of its output impedance.

To preserve the correct stereophonic effects, please be certain to connect the left output of the preamplifier, or tuner-preamplifier, to the RCA jack on the GFA-545II labelled LEFT INPUT and the right output of the preamplifier section to the RIGHT INPUT jack.

RIGHT/LEFT STEREO OUTPUT ②

The GFA-545II's connections to the loudspeakers are made through high-grade 5-way, gold-plated brass binding-post terminals ② located on the rear panel. These terminals will accommodate either bare wire, tinned wire, terminal pins, spade lugs, 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-545II 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.

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 most often 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 AWG 18 stranded wire and available 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 additional requirements which you should observe in order to insure maximum performance from your amplifier. It is most important that you 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 OUTPUT **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 connectors themselves. There are "sockets" provided in the center of the binding posts' studs which permit secure seating of the banana plugs. Make certain, however, that the hexagonal head 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, hexagonal head of the binding post until the hole in the binding-post stud is accessible. You can then insert the bare or tinned wire, or terminal pin, through the hole. You can also use the many varieties of spade lugs available by simply placing the tines of the spade lug onto the binding post stud. Turn the insulated hex head 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 required to cause a "pinching" action among the different metal surfaces to insure proper connection.

All loudspeaker systems having a nominal impedance down to 4 ohms can be connected to, and driven by, the GFA-545II. The GFA-545II 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 applications, you can drive two or more 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 **8** 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 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.

AC LINE CORD ③

The AC cord provides power to operate all the GFA-545II's circuits. Its plug can be inserted in a standard 120V/60Hz wall outlet or in the switched or unswitched outlet of a preamplifier, or tuner-preamplifier. Its connection will be determined by your specific usage.

NOTE

The GFA-545II's power cord is supplied with a "polarized" AC plug as required by UL/CSA standards and the 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 ④ protects the electronic circuits of the GFA-545II. This fuse will normally blow only if there is an overload within the GFA-545II. Since this fuse has been designed to protect the electronic circuits in the GFA-545II, 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 operation of the amplifier on 120VAC/60Hz. For the correct fuse values to operate the GFA-545II on other voltages and frequency, please consult the Service Manual for this amplifier available from the ADCOM Technical Service Department.

Whenever the AC ON/OFF SWITCH ⑤ on the front panel is turned on and the amplifier is energized, the POWER ⑥ LED will glow. If turning on the amplifier does not cause the POWER ⑥ LED to glow, this may indicate that the AC LINE FUSE ④ is blown. Unplug the AC LINE CORD ③ from the AC wall outlet and turn the AC ON/OFF SWITCH ⑤ off and check the fuse. If the fuse is blown, replace it with one of the fuses listed in the table below, then plug the amplifier into its AC wall outlet and turn on the amplifier. If, after replacing the fuse, it blows immediately upon turning on the amplifier (POWER ⑥ LED does not glow), a failed electronic component or other internal problem must be suspected. Make no further attempts at fuse replacement or operation of the amplifier. **Refer the problem to competent ADCOM-authorized service personnel.**

NOTE

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

AC LINE FUSES

BUSSMAN	AGC-6/250V
LITTELFUSE	3AG312006/250V
BEL	3AG 6A/125V

To remove a blown or suspect fuse from its fuse holder, use only a number 2 Phillips screwdriver to prevent damage to the fuse holder. Simply press lightly on the fuse-holder cap and turn counterclockwise. The cap will "pop" out after several turns. To replace the fuse-holder cap, once a new fuse has been properly installed in its seat on the fuse-holder cap, press lightly inward, after the fuse and cap have been inserted in the fuse-holder body, and turn the cap clockwise until it is firmly seated in the fuse-holder body. Be certain not to cause cross-threading of the fuse-holder body and cap to prevent damage to the fuse holder. **DO NOT FORCE THE FUSE-HOLDER CAP INTO THE THREADS.** Seating of the cap in the fuse-holder body should be easily accomplished without excessive force.

NOTE

The fuses listed, 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 only with one of the fuses 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.**

AC ON/OFF SWITCH ⑤

The AC ON/OFF SWITCH ⑤ controls power to the power transformer and circuits of the GFA-545II. Whenever the GFA-545II is energized, the red POWER ⑥ LED will glow. Push the **top** of the rocker switch to energize the GFA-545II. Push the **bottom** of the rocker 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-545II 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 amplifier, but it does not signify that all the amplifier's circuits are in operation. If, for example, you have blown one or more of the INTERNAL PROTECTION FUSES, the amplifier will not operate — that is, the amplifier will not produce any audio signal — even though the POWER ⑥ LED is glowing. Similarly, if the THERMAL PROTECTION ⑧ LED glows, the amplifier will not produce sound even though the POWER ⑥ LED may still glow.

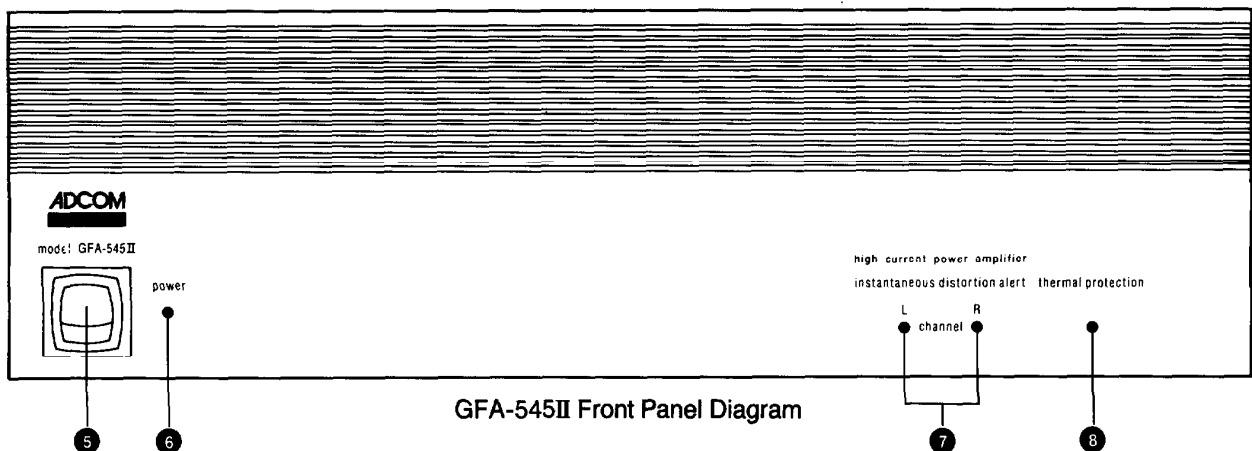
Additionally, the internal power transformer is provided with a thermostat which will interrupt power into the transformer if its temperature exceeds 125°C. This high a temperature will seldom, if ever, be encountered unless the amplifier is subjected to abnormal conditions, such as operation into loads of less than 3 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 ⑧ LED 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 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, you must reduce the sound level demands into such low impedances, rectify the load-impedance condition, or both.

For a more detailed description of the operation of the THERMAL PROTECTION ⑧ LED circuit and the INTERNAL PROTECTION FUSES, please refer to their respective sections.

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 voltage/current 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 during 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 particular loudspeakers which you are using. If, however, the INSTANTANEOUS DISTORTION ALERT LEDs glow brightly or are illuminated most of the time during playback, 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, damage your loudspeakers.



GFA-545II Front Panel Diagram

THERMAL PROTECTION ⑧ LED

The GFA-545II is provided with a thermal protection circuit which will shut down the amplifier if either heatsink's temperature reaches 85°C. The THERMAL PROTECTION ⑧ LED will light whenever the thermal protection circuit on either channel, or on both channels, 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 channel's output through the loudspeaker(s) ceases abruptly, and the THERMAL PROTECTION ⑧ LED glows, you will know that its heatsink temperature has become unacceptably high and the circuitry is protecting the amplification devices. Please note that the 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 resume operation.

If the amplifier ceases to operate and both the POWER ⑥ LED and the THERMAL PROTECTION ⑧ LED do not glow, the condition may indicate that the AC LINE FUSE ④ has blown. Please refer to the section entitled AC LINE FUSE ④ for instructions on replacing this fuse.

NOTE

ACTIVATION OF THE THERMAL PROTECTION CIRCUITRY IN THE GFA-545II 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-545II in the form of INTERNAL PROTECTION FUSES for the DC rails on each channel. These fuses will blow if excessive current demands are made of 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 the amplifier ceases to operate, either on one or both channels, particularly during high-level passages, or long-term high-volume playback, and the POWER ⑥ LED glows while the THERMAL PROTECTION ⑧ LED is out, the chances are that one or both of the INTERNAL PROTECTION FUSES on that channel, or both channels, are blown.

Your ADCOM amplifier is designed to activate its protective devices reliably, particularly when the amplifier is carelessly operated well beyond its limitations. Other types of protection circuits, beyond the methods used in the GFA-545II amplifier, usually result in deterioration of the audio performance of the amplifier.

While the GFA-545II 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 undertakings which must be avoided, if damage to the amplifier or to the loudspeakers being used is to be prevented, are actions such as connecting the inputs or outputs to or from the amplifier while the amplifier is **ON**; or using what is 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**.

Should the INTERNAL PROTECTION FUSES on the DC rails need to be replaced, only one of the fuses listed in the following table 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-4/250V
ITTTEL FUSE	3AG312004/250V
BEL	3AG 4A/250V



WARNING

THERE ARE POTENTIALLY LETHAL VOLTAGES WITHIN THE GFA-545II 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 MEANT ONLY 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-545II UNLESS YOU ARE A TECHNICALLY QUALIFIED SERVICE PERSON.

CARING FOR YOUR GFA-545II

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-545II. 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-545II, 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-545II SPECIFICATIONS

Power Rating (To FTC Requirements)

100 watts continuous average power into 8 ohms at any frequency between 20Hz and 20kHz with both channels driven at less than 0.04% THD.

150 watts continuous average power into 4 ohms at any frequency between 20Hz and 20kHz with both channels driven at less than 0.04% THD.

IM Distortion (SMPTE)

1 watt to 100 watts into 8 ohms $\leq 0.02\%$
 1 watt to 150 watts into 4 ohms $\leq 0.02\%$

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

100 watts into 8 ohms $\leq 0.006\%$
 150 watts into 4 ohms $\leq 0.009\%$

THD + Noise at 100 Watts into 8 Ohms

20Hz 0.008%
 1kHz 0.006%
 10kHz 0.008%
 20kHz 0.015%

THD + Noise at 150 Watts into 4 Ohms

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

Frequency Response @ 1 Watt into 8 Ohms

10Hz to 20kHz +0, -0.25dB

Power Bandwidth (-3dB)

1.7Hz to 100kHz

Dynamic Headroom into 4 Ohms

2.1dB

Signal-to-Noise Ratio, "A" Weighted

100 watts into 8 ohms > 110dB

Gain

27dB

Input Impedance

100,000 ohms

Input Sensitivity

100 watts into 8 ohms 1.25V rms
 1 watt into 8 ohms 130mV rms

Damping Factor

20Hz to 20kHz ≥ 400

Rise Time

5kHz, 70V peak-to-peak square wave, 20% to 80% 2.3

Semiconductor Complement

38 transistors, 2 zener diodes,
 12 diodes, 2 ICs, 2 diode bridges

Power Consumption (Continuous, Both Channels Driven)

Quiescent 50VA
 Maximum 720VA
 100 watts into 8 ohms 325VA
 150 watts into 4 ohms 550VA

GENERAL

Power (available in 220V or 240V on special order) 120VAC/50-60Hz
Chassis Dimensions 5" (127mm) x 17" (432mm) x 11" (279mm)
Maximum Dimensions 5-7/16" (138mm) x 17" (432mm) x 12-3/16" (310mm)
Weight 24 lbs. (11kg)
Weight, Packed 29 lbs. (13kg)

Specifications subject to change without notice.

ADCOM®

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CVC1970

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