



DA-770 Series
Professional Power Amplifiers.

Owners Manual

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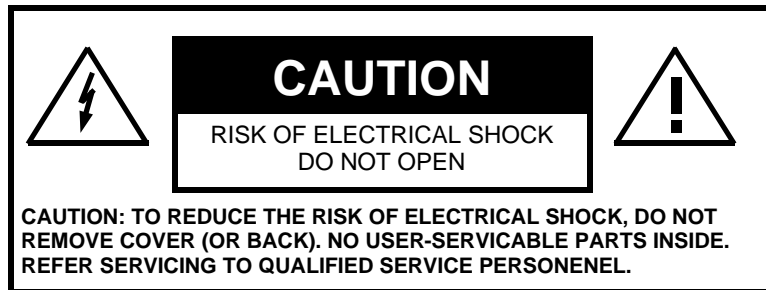
WHEN THE PERFORMANCE DEPENDS ON IT

Safety

Notes:

Before using your Stewart Audio Power Amplifier, please read this owner's manual carefully to ensure optimum trouble-free performance.

Warning: To REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT EXPOSE THIS AMPLIFIER TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE CHASSIS. DO NOT OPEN THE COVER. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.



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 electrical shock to persons.



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

Notes:

- Important Safety Instructions - Please Read Prior to Product Installation.

All of the safety and operating instructions should be read before the amplifier is operated. Retain these instructions for future reference. All instructions should be followed; all warnings on the amplifier and in the operating instructions should be adhered to.

This amplifier should not be used near water, for example, near a bath tub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool, etc. The amplifier should be situated so that its location and position do not interfere with its proper ventilation. For example, the amplifier should not be placed on a rug, sofa, or similar surface which impedes the airflow across the chassis. Airflow through the ventilation openings should be unobstructed.

The amplifier should only be connected to a properly grounded AC outlet as indicated under **AC Power Connections** in this manual. Do not defeat the ground or polarization of the power plug.

Route all power cords and other cables so that they are not likely to be walked on, tripped over, or stressed. Pay particular attention to condition of cords and cables at plugs, and the point where they exit from the amplifier. To prevent risk of fire or injury, damaged cords and cables should be replaced immediately.

Clean the amplifier with a damp cloth. Do not use solvents or abrasive cleaners. Never pour any liquid on or in the amplifier.

The amplifier should only be serviced by qualified service personnel.

Introduction:

Congratulations! You have just purchased a new, state of the art, 70.7V Digital Power Amplifier which will provide you with many years of reliable service. Stewart Audio's commitment to innovation in design and quality workmanship has provided its customers with a unique combination of performance and reliability. This commitment to excellence has gained the respect of industry professionals around the world.

The DA-770-2 Series Professional Power Amplifier utilizes a new high speed switching power supply and Class "T" output topology. The amplifier will deliver over 80 Watts @ 70.7V of power per channel and is offered in a 2 channel configuration. This remarkable performance comes in a very compact package weighing a mere 3.4 pounds and occupying just one-half standard rack space. The DA-770-2 Series Amplifiers are convection cooled and require no noisy fans for cooling.

We at Stewart Audio strive to bring you the finest in professional electronics, and we thank you for your choice, which we see as an appreciation for our efforts.

The Stewart Audio Design Team

Specifications

8 Ohm Stereo Power	35 Watts/Ch
4 Ohm Stereo Power	70 Watts/Ch
Frequency Response (+0, -0.5 dB, 1W)	20 Hz—20 kHz
Full Power Bandwidth (20-Hz-20 kHz)	± .7 dB
Signal to Noise	>93 dB
THD+N	< .25%
Input Sensitivity	1V (0 dBV)
Standard Voltage Gain	17X (25 dB)
Input impedance (Balanced / Unbalanced)	20k Ohms / 5k Ohms
Class	Damped Ternary Modulation
Input Connectors	Phoenix Type
Output Connectors	Phoenix Type
Power Supply	High Speed Switching
Cooling	Convection (No Fans)
Controls	Power on/off, Channel Gain
LED Indicators	Power & Clip
Construction	Steel & Aluminum Chassis
Dimensions (height, width, depth)	1.75"H x 8.26"W x 10.6"D
Max Weight	3.4 lbs (1.54 kg)
Warranty	3 years Parts & Labor

Troubleshooting Reference Chart

Symptom:	Recommended Action:
No output Power indicator is off. (There is a normal delay of up to 30 seconds on turn-on.)	Be sure power outlet is "live" Be sure power switch is "on."
No output Power indicator LED cycles on and off.	This indicates a short-circuit condition on the output. Disconnect speaker wires and turn amplifier power switch on. If amp stays on, the problem is in the output wiring or speakers.
Power indicator on; no output from one or more channels.	Check input level controls, input and output cables, input signal and speakers.
Low volume in one or more channels.	Check input level controls, input wiring and input signal levels. Be sure speakers are the same impedance.
Amplifier overheats and/or shuts off.	Review section on Thermal Considerations. Check clip lights for indication of overdriving. (NOTE: overdriving for a long period of time can cause thermal shutdown.)
Distorted output.	Check input signal level and signal source. (Set gain by turning amplifier volume all the way down, set preamp level to normal, turn up amplifier volume to desired level.)
Noise on output.	Check signal source for noise. Long unbalanced lines can cause noise, change to balanced lines. (See set gain above.)

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For The Record

In the spaces below, record the Model, Serial number and Purchase information of your Power Amplifier.

Model Number: _____

Serial Number: _____

Purchase Date: _____

Purchased From: _____

Retain this information for future reference.

Special Features

Stewart Audio's new "Compact Series" Power Amplifiers utilizes the latest in Digital Audio Technology. The new, all Digital DA Series Power Amplifiers were developed by Stewart Audio's Digital Audio Team and represent the pinnacle of Stewart Audio technology and design.

Please take a few moments to read through this section of the manual, which provides an overview of the features that makes this amplifier unique.

How is the DA-770-2 Amplifier different from other Amplifiers?

Advances in semiconductor technology have enabled a digital revolution and spawned products that entertain us and improve our productivity. From CD players to digital high definition TV; from the PC, through optical networks, to the Internet and wireless telephones, digital electronics and signal processing has been the core enabling technology that brings the performance and cost for mass adoption.

Stewart Audio Inc. has used its Digital Power Processing technology to create a new breed of digital audio Power Amplifiers. This new class of digital amplifiers provide the audio fidelity of traditional linear (Class-A/B) amplifiers with more than twice the power efficiency of these devices. This leads to higher levels of integration and smaller packages at the semiconductor level. At the system level, these advantages reduce the size of power supplies and heat sinks and significantly reduce the heat management challenges of today's modern Power Amplifiers. Power conversion efficiencies of 80% to more than 90% is typical of this design.

While pulse width modulated (PWM) switching amplifiers (Class-D) can also achieve similar power advantages, none have been able to do so without a significant compromise in audio fidelity. Hence the new Stewart Audio digital amplifier – A new standard in audio performance and power efficiency. Customers no longer have to choose between sonic fidelity or efficiency. Both can now be achieved with Stewart Audio's new Digital Technology.

Trouble shooting

If you experience difficulty in operating your new DA-770 Series amplifier, Chances are good that you will be able to remedy the problem yourself using standard troubleshooting techniques and the suggestions offered in the troubleshooting table on the next page.

When wiring cables it is imperative that all connections be made cleanly with no stray wire strands to short terminals. Make sure the wire clamp screws are tight. For proper connection all wire should be stripped to bare approximately ¼ inch of wire. Make sure that the connector set screw seats on copper, not insulation.

Keep in mind that other components in the system can cause problems which may appear to be caused by the amplifier; systematic troubleshooting will allow you to isolate the source of difficulty.

If you fail to correct the problem by following the outlined chart on the next page, **do not attempt** to open or repair the unit yourself.

Please contact Stewart Audio at 209.588.8111 to obtain a Return Authorization (RA) Number and shipping instructions. Once an RA Number is obtained, return the unit to Stewart Audio at the address indicated on the RA Form. Refer to the enclosed Warranty information for Terms and Conditions of Warranty.

Input Wiring

Your DA-770-2 Series amplifier is provided with a 3 conductor Phoenix Type connector for each input. The connector may be wired Balanced by connecting to Ground – and + as marked on the chassis over each input. If you wish to operate the amplifier unbalanced, connect your line across Ground and + and add a jumper from – to ground.

Output (Speaker) Wiring

Your DA-770-2 Series amplifier is provided with a two conductor Phoenix Type connector for each output. The connector may be wired by connecting the speaker line to – and + as marked on the chassis over each output.

Bridging

Bridging of the DA-770-2 Series is possible to achieve a 140V line. This may be accomplished by feeding the signal to input 1 and inverting the signal to input 2. Both gain controls must be set to the same setting, typically

High Frequency Switch Mode Power Supplies

The foundation of all amplifier design is the power supply. For years Stewart Audio has pioneered leading edge, power supply technology. All Stewart Audio amplifiers feature a High-Frequency Switch Mode Power Supply. Because of this use of advanced technology some explanation is in order.

Conventional Power Supplies operating at 60 Hz (standard line frequency) recharge only 120 times per second, requiring their storage capacitors and transformers to be quite large to supply the energy needed during the intervals between cycles when power is not available from the wall. The power supply must act as a local reservoir of power from which the amplifier circuits draw. This storage function is responsible for much of the bulk, weight and cost of traditional power amplifiers.

Stewart's famous, High Frequency Switch Mode Power Supplies fully recharges 1000 times faster than conventional supplies, requiring far less capacitance for filtering and storage. This high-speed recharging reduces power supply "sagging" common with other designs.

The **New DA-770-2 Series Digital Amplifiers** utilizes a new, regulated, forward converter design Switch Mode Power Supply operating at a frequency 2/3 faster than our old standard supply.

If mounted in a sealed rack, leave the top and bottom spaces open to create a chimney effect within the rack, which will provide cooling as air is drawn in the bottom and exhausted out the top. The amount of airflow necessary will be determined by a number of factors, including ambient temperature, the amount of heat generated by other equipment in the rack, the properties of the enclosure being used, and how hard the amplifier is working. In extreme cases it might be necessary to install a cooling fan in the rack for additional cooling.

In free standing installations where the amplifier is sitting on a shelf or hard floor the four rubber feet must remain mounted to the bottom of the amplifier. Under no circumstances should the amplifier be placed directly on carpeting or similar surfaces.

AC Power Considerations

Your Stewart Audio DA-770-2 amplifiers are designed to operate on 120 volt, 60 Hz AC current.

Average power consumption will depend on load impedance, signal level and program material.

Typical power consumption in Amperes:
(All channels driven @ 4 Ohms /120V AC)

<u>Model</u>	<u>Idle</u>	<u>1/8 power</u>	<u>1/3 Power</u>	<u>Full Power</u>
DA-770-2

Installation

Mechanical considerations

The Stewart Audio DA-770-2 Series amplifier occupies just one-half standard rack space, is only 10.6" deep and weighs just over 3 pounds, making it easier to install and transport than almost any other comparable power amplifier. Still some precautions are in order.

Rack mounting of the DA-770-2 Series may be achieved by using either the Stewart Audio RMK-70-S or RMK-70-D rack kits. The RMK-70-S centers the amplifier in a single rack space, while the RMK-70-D allows you to rack two amps side by side in a single rack space. For stability always use four screws to affix the amplifier to the rack, preferably using rack washers to avoid cosmetic damage to the rack mount panels. When rack mounting your DA-770-2 Series amplifiers be sure to remove the four adhesive rubber feet from the bottom of the unit. The DA-770-2 Series amplifiers can also be mounted to a standard rack shelf or used as a stand alone product.

Thermal Considerations

Cooling of the DA-770-2 Series amplifiers is achieved by Stewart's unique whole chassis heatsink design, which utilizes the entire chassis as a heatsink to cool the heat generating components inside. In the event the internal ambient temperature reaches 85 degrees centigrade, the protection circuit will shut down the power supply until the amplifier cools down.

Although the sophisticated thermal management system in the DA-70 Series makes it less susceptible to overheating than other amplifiers, it remains good practice to provide airspace around the chassis.

Front Panel

Simplicity is a design objective in the development of all Stewart Audio power amplifiers. These amplifiers remain simple and intuitive to operate even while incorporating some of the most advanced technology available today.

Power On/Off and LED Clip Indicators

The front panel provides visual feedback of the amplifiers status. The front panel power switch is accompanied by an LED which will illuminate upon power-up. (Note there is an initial delay of up to 30 seconds when the amplifier is first turned on.) Additional LEDs (one for each channel) will illuminate Green when a signal of approximately -20 dB to 0 dB is present. When the signal exceeds 0 dB the LED will turn Red indicating the amplifier is being driven into clipping.

All adjustable controls and connections are located on the rear panel to provide tamper proof security.

Rear Panel

Level Controls

The DA-770-2 has been equipped with a recessed stepped level control for each channel, located on the rear panel.

Inputs

Each Channel has a phoenix type connector which may be used with either balanced or unbalanced lines.

See *Input Wiring* in the section on Installation (Page 14) for more details.

Speaker Outputs

Each Channel has a phoenix type connector which may be used to connect loudspeakers.

See *Output Wiring* in the section on Installation (Page 14) for more details.

AC Power Connection

All DA-70 Series amplifiers are equipped with a IEC socket on the rear apron for AC connections.

Models DA-70-2 and DA-70-4 may only be connected to 120VAC mains.

Models DA-70-2-PFC and DA-70-4-PFC are Power Factor Corrected and may be connected to any AC main from 90VAC-240VAC.