



SA-670 STAMCHILD - USER MANUAL

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IMPORTANT SAFETY INSTRUCTIONS



The lightning flash with the arrowhead symbol, within an equilateral triangle, is to alert the user to the presence of non insulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The exclamation point within an equilateral triangle is intended to alert the users to the presence of important operating and maintenance.

All the following safety and operating instructions should be read before operating the unit.

Caution to reduce the risk of electric shock

- Do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.

Caution to reduce the risk of fire or electric shock

- Do not expose the equipment to rain and moisture.
- The equipment shall not be exposed to dripping or splashing liquids and no objects filled with liquids shall be placed on the equipment.
- To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions.
- Repairs have to be performed by qualified service personnel.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this equipment near water.
- Clean only with dry cloth.
- Do not block any ventilation openings.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the equipment.
- Use only attachments/accessories specified by the manufacturer.
- Unplug this equipment during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the equipment has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the equipment, the equipment has been exposed to rain or moisture, does not operate normally, or has been dropped.
- The equipment shall be connected to a MAINS socket outlet with a protective earthing connection.
- Correct disposal of this product: This product must not be disposed of with household waste, according to the WEEE Directive (2012/19/EU) and your national law. This product should be taken to a collection center licensed for the recycling of waste electrical and electronic equipment (EEE). The mishandling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally

associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the efficient use of natural resources. For more information about where you can take your waste equipment for recycling, please contact your local city office, or your household waste collection service.

- Do not install in a confined space.
- Do not place naked flame sources, such as lighted candles, on the equipment.
- 20. Please keep the environmental aspects of battery disposal in mind. Batteries must be disposed-of at a battery collection point.
- 21. Use this equipment in tropical and/or moderate climates.
- Stam Audio accepts no liability for any loss which may be suffered by any person who relies either wholly or in part upon any description, photograph, or statement contained herein. Technical specifications, appearances and other information are subject to change without notice.

1.0 INTRODUCTION

While designing the SA-670 we had two main objectives in mind: first and foremost, the audio path had to remain as close as possible to the original units, and it had to be affordable.

With the aid of premium transformers reproductions made by Brian Sowter in the UK and the use of eight matched NOS 6BA6 tubes per channel and one 12AU7 tube per channel in the control amplifier, we have managed to make this 18 tubes monster virtually indistinguishable to the original.

In order to reduce the cost of manufacturing we have made some modern implementations which do not affect the audio path. We have changed the tube based power supply to a solid state one, which has no bearing on the sound. We also changed the control amp to a hybrid setup, while maintaining the original tube character of the control amplifier.

With this measures we were able to greatly reduce the cost of production, while preserving the original tone, without touching the audio path, and without removing the character produced by the tubes in the control amp.

We then wanted to add some additional features to accomplish modern studio requirements and provide a more exciting experience in your mix and mastering sessions, such as:

- Stepped sidechain filter
- Dry/Wet control for instant parallel compression
- Bypass
- Stereo master output
- Individual channel fine tuning for perfect stereo matching

1.1 COMPONENTS OVERVIEW

- Sowter input and output transformer
- True to the original Fairchild audio path schematic
- 6BA6 and 12AU7 tubes
- Simpson VU meter
- Original release and attack times
- Less than 0.5% THD
- XLR inputs
- XLR outputs
- Voltage switch selector (115V or 230V)
- 4U, 350mm depth

2.0 CONTROLS



2.1 ON/OFF SWITCH (READ CAREFULLY)

Please take care of the following before powering up your Stamchild:

- **Check the mains voltage switch** on the back of your unit (115/230). It should mark the mains voltage in use in your country. All the units are factory set for 230V operation.
- **Turn the Input and Threshold control all the way down (CCW)**. Inrush current upon power up is very high, and it will definitely damage the control amplifier.

Pilot LED and GR meter will light up upon correct powering operation. Let the tube stage heat up for at least 15 minutes

2.2 GR METER

Fairchild metering circuit operates as a real tube tester rather than showing exactly how much gain reduction in decibel is actually happening.

It measures the current of either push and pull side of the tube amplifier (with the BAL knob both in left and right position) and measuring the current through both sides of the output transformer in the center (ZERO) position.

Being a Vari-Mu compressor the Meter needle will show a decrease in current flow when gain reduction is happening. According to original Fairchild 670 specifications, the ballistic of the needle is an average visual representation of what's happening in the tube stage.

2.3 METERING SWITCH

According to original Fairchild design you are allowed to monitor the current flowing into each of the push and pull sections of the tube amplifier by switching the metering arrow on the 2 BAL positions (being CCW/Push and CW/Pull). All units are factory balanced.

2.4 ZERO

Set the Zero position of the meter needle when the unit is in steady state.

2.5 BAL

BAL trimmers allows you to fine set the levels of Left and Right channels in order to perfect match the stereo image.

The original Fairchild 670 design allowed users to control the push/pull cathode balance from the front panel. This operation was intended to be performed by very expert users (like 'Fairchild era' engineers were).

For safety reasons we decided to remove the cathode balance control from the front panel and use that trimmers for a more useful Left/Right fine tuning of the unit.

Push-Pull stages are factory balanced and calibrated. Original balancing trimmers can be adjusted from inside the unit, but this operation needs to be performed by qualified techs only, because lethal voltages are there to kill you upon improper operations.

Fairchild 670 is a living thing, so it is subject to constant small adjustments during his life. Don't be scared to grab a flat screwdriver and correct the zero position after some hours of operation or fine tune Left and Right channel by adjusting the BAL trimmers.

2.6 INPUT GAIN

Input gain control is a constant impedance input attenuator (600 ohm, balanced).

Unity gain position is between steps 8 and 6 (in L/R operation with Dry/Wet and Output at 10).

Please note that when operating the unit in Lat/Vert mode the input attenuators still operates as Left / Right input levels, because (as per original schematic) the input controls are placed before

the passive matrixing system. Lat/Vert mode allows to **limit** independently the lateral /vertical information of a stereo programme.

2.7 THRESHOLD

Set the compression threshold level for both Left/Right or Lat/Vert operation.

The amount of overall gain reduction is set with both Input Gain and Threshold levels, which are intended to work in conjunction to obtain your favourite tone (i.e. higher input gain means deeper compression for a given Threshold level and vice-versa).

Be very careful to turn the threshold all the way down before powering up the unit, to avoid severe damage to the control amplifier, due to the very high inrush current spike.

2.8 TIME CONSTANT

Set the compression time constants (Attack/Release) as follows:

Switch Position	Attack (ms)	Release (sec)
1	0.2	0.3
2	0.2	0.8
3	0.4	2
4	0.8	5
5	0.4	2 (peaks), 10 (multiple peaks)
6	0.2	0.3 (peaks), 10 (multiple peaks), 25 (programme material)

2.9 AGC

The Stamchild-670 incorporates two independent limiters in one single unit, which can limit either two independent signals, such as the Left and Right channels of a stereo signal, or the vertical and lateral components of the same (Mid/Side). The latter is accomplished by first

bringing the two stereo channels through a matrixing network, dividing them into their vertical and lateral components, **limiting them independently**, and recombining them through a second matrixing network into Left and right Channels.

Note that input gain controls always set the Left and Right levels of the audio programme (even in Lat/Vert operation), i.e. you are not able to control the Lateral and Vertical input level separately when in Lat/Vert mode.

2.6 DRY/WET

This additional feature allows the user to perform instant parallel compression of audio material, by mixing the dry and wet signal in 10% steps. **A 'hidden' full bypass mode in step 11 has been included, allowing the user to instant switch from full wet to full dry operation by switching from step 10 to step 11 (not shown in the panel silkscreen).**

2.4 AGC FILTER

Set the sidechain filter in 4 different positions, allowing the user to perform a simple multiband compression:

- OFF (full band sidechain)
- 90 Hz High Pass Filter
- 180 Hz High pass Filter
- MID RANGE (180 Hz HPF and 3KHz LPF).

Please note this filter affects the control signal only, not the audio path.

2.5 OUTPUT

A stereo master output attenuator allows the user to push the tube stage harder, enjoying a more colored sound by adding a higher degree of harmonics to the audio material without clipping the next input stage (A/D interface).

3.0 CONNECTIONS

3.1 LINE IN

Standard XLR Line Level input connection

3.2 LINE OUT

Standard XLR Line Level output connection.

4.0 TECHNICAL SPECIFICATIONS

Power Requirements 115/230 VAC - 80W

Frequency Response 10Hz to +/- 1dB at 20kHz

Input Impedance $\approx 600 \Omega$

Output Impedance $\approx 50/600 \Omega$ ***

Gain 11 dB

T.H.D. (1 KHz, 4 dBu In) : 0.14 %

Amplifier noise: -78 dBu

Mains Fuse: 1A Slow (ceramic)

HV fuse: 100mA Fast (glass)

Tubes: 16 selected NOS 6BA6 , 2 selected 12AU7

VU lights: 6VAC bulbs

*** An internal set of jumper allows the expert user to bypass the entire Solid State output stage (thus excluding DRY/WET control) and take the output signal straight from the output transformer. This feature accomplish the most 'purist' users requirements, changing the output impedance from a more convenient modern 50 ohm standard to the old 600 ohm value.